# SERVING FARMERS AND SAVING FARMING

## FIRST REPORT

सत्यमेव जयते

**NATIONAL COMMISSION ON FARMERS**
**MINISTRY OF AGRICULTURE**
**GOVERNMENT OF INDIA, NEW DELHI**
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# EXECUTIVE SUMMARY

## CHAPTER I - WAKE-UP CALL

The acute agricultural distress now witnessed in the country, occasionally taking the form of suicides by farmers, is the symptom of a deep seated malady arising from inadequate public investment and insufficient public action in recent years. The precise causes of the agrarian crisis are many and varied, but there are five basic factors which are central to the present crises. These are: unfinished agenda in land reform, quantity and quality of water, technology fatigue, access, adequacy and timeliness of institutional credit, and opportunities for assured and remunerative marketing. Adverse meteorological factors add to these problems. The worst affected are small and marginal farmers, tenants and share croppers, landless agricultural labour and tribal farmers, since their coping capacity is very limited. Women suffer more since they have little access to institutional credit or organised extension support.

2. The ecological foundations of sustainable agriculture such as land, water, biodiversity, forests and the atmosphere are under varying degrees of anthropogenic pressures. Water tables are going down and land degradation and soil salinisation are on the rise. Average size of farm holdings is declining and there are now nearly 115 million farmers, most of them belonging to the small and marginal farmer categories. Farmers' indebtedness is growing even in a State like the Punjab, which is the heartland of the green revolution.

3. State governments have an equal responsibility for ensuring that adequate and appropriate support is extended to the farm sector, comprising crop and animal husbandry, forestry, fisheries and agro-processing and agri-business. Even if there are good schemes which can be of real help to farm women and men, their delivery is poor. Illiterate farm women and men are also often unaware of their entitlements. An urgent need at the field level is achieving convergence and synergy among all on-going programmes. It is therefore suggested that the numerous Technology Missions currently

under implementation, such as the ones dealing with oilseeds, pulses, maize and millets, cotton, horticulture and Dairy may converge on a watershed basis, so that the water harvested and saved in the watershed is put to optimum use. To facilitate such convergence in delivery, we suggest the formation of a **National Federation of Farm Technology Missions** chaired by a farm woman or man, with an outstanding record of practical achievement.

4. Small farm families will have to be conferred with the power of scale at the production and post-harvest phases. Different institutional devices like the formation of self-help groups (SHGs), contract farming based on a code of conduct, group farming through small Farmers' Cotton, Horticulture and Poultry Estates, and the nurturing of watershed and command area communities, will have to be adopted according to local socio-cultural and agro-economic conditions. There is also a need for a **New Deal for Women in Agriculture**, in order to ensure that working women have the needed support services and have access to timely credit and extension services.

5. The two pronged strategy to resource mobilization consists of optimizing the benefits of all Government schemes and reducing their transaction costs, and optimizing the return from the resource endowments of farmers like land, livestock and water. The additional funds needed will be for filing critical gaps in current public investments and programmes.

6. Irrigation water is becoming a critical constraint in agriculture. In the Union budget of 2004-05, provision has been made to launch a massive scheme to retain, renovate and restore all the water bodies that are linked to agriculture. The following two programmes are suggested for taking this movement forward.

i) A million well recharge programme

ii) A programme for building, repair, recharging and rebuilding water bodies linked to agriculture.

iii) There is need for a mandatory water harvesting regulation as is already in practice in Tamil Nadu. Government support for the Million Wells and

water bodies rehabilitation programmes could be in the form of a rebate on agricultural credit.

7. Besides the quantity and quality of irrigation water available, soil health influences output. Soils, particularly in dry farming areas, suffer from hidden hunger caused by the deficiency of micronutrients. Soil testing laboratories need to be upgraded. Hence, a **National Network of Advanced Soil Testing Laboratories** is recommended. Also, farmers need proactive advice on land use. Computerised databases need to be developed by multidisciplinary teams of experts. Such data can be transmitted to farming families through the Village Knowledge Centre programme.

8. In the midst of the hunger and distress "hot spots", there are numerous agricultural "bright spots" in the country. The 'bright spots' covering crops, fruits trees, farm animals and fisheries indicate how we can spape our agricultural future. These bright spots are the result of the work of innovative and hard working farm women and men. It is suggested that **Farm Schools** may be established in the fields of such innovative farmers, in order to spread their message and methods. A cadre of grass root Master Trainers can be built up in such Farm Schools. Farm schools can also be powerful instruments for participatory research and knowledge management. Thus, starting with Farm Schools in working farmers' fields, there will be a chain of capacity building institutions including KVKs and Agricultural Universities. Promoting 50,000 Farm Schools across the country will require an investment of Rs.150 crore.

9. The 150 districts chosen for the launch of the Food for Work and Employment Guarantee Schemes require considerable support from S & T institutions for fostering sustainable livelihoods, through integrated attention to on-farm and skilled non-farm employment. In order to facilitate multi-institutional and multi-disciplinary support for launching a job-led economic growth strategy, it is proposed that a **National S&T Alliance for Rural Livelihood Security** may be formed in consultation with national S&T institutions, Agricultural and Rural Universities, Civil Society and private sector industrial institutions and with counterpart structures in the States taken up for the initial Food for Work programme. An appropriate State Agricultural University may service

the State level S & T Alliance, while at the District level, the Alliance partners may work with DRDA. The aim of this partnership among public, private and academic sector S & T institutions is the technological and skill empowerment of assetless rural women and men in order to add economic value to their time and labour. If technology has been a factor in widening the rich-poor divide in the past, **the National S & T Alliance will strive to make technology an ally in the movement for gender and social equity.**

10. Our agriculture is at the crossroads economically, environmentally, socially and technologically. To reverse the present decline in farm productivity and farmers' well being, we should go back to the advice given by Jawaharlal Nehru in 1948, "Everything else can wait but not agriculture".

# EXECUTIVE SUMMARY

## CHAPTER II - INTEGRATED LIFE SAVING SUPPORT PROGRAMME FOR FARM FAMILIES FACING ACUTE DISTRESS

The reasons for farmers' distress are many and varied. The low growth in agricultural per capita income is a major problem. The farmers also have to face climatic and market risks without satisfactory risk mitigation systems in position and extremely poor qualitative supply of services and inputs including credit. These constraints individually or in combination lead to poor returns and sometimes huge losses. When these take place repeatedly, the distress is acute. The cyclical nature of agriculture with occasional blessings has encouraged many small and marginal subsistence farmers to enter commercial agriculture from a position of extreme vulnerability. When their expectations are not met either due to natural or human factors, these farmers suffer a great deal. Then, there are events in the lives of the poor people like illness, accidents, large social expenditure, a major loss of asset or earning system/capacity, which drive them to the money lenders who charge high rate of interest and put harsh conditionalities to their loans. This further reduces their incomes and ultimately leads to loss of assets and finally land. With the weakening of community support as well as that of kin-networking, the farmers are driven to a state of helplessness and sorrow and in extreme cases to suicides.

2. The remedies are mainly the relief and rehabilitation measures in the event of disaster impacting a large area and their fine tuning, an effective community managed 'Nutritional Security System' on a life cycle basis, enhancing the productivity, profitability and stability of crop-livestock farming, creation of multiple livelihood opportunities in the farm, off-farm and non-farm sectors, improvement of the existing crop insurance system and introduction of an integrated insurance package covering accident/death/medical cover and loss to dwelling unit and other property due to fire/earthquake, etc.

3. The financial implications of taking up two immediate measures i.e., starting 10,000 community based grain banks initially in 38 out of 150 districts identified for the National `Food for Works' Programme where the SC/ST population is more than 50% would work out to Rs.75 crore and for an integrated insurance covering accident risk, fire risk to the dwelling, natural death & medical cover for about two crore families would work out to Rs.310 crore for 2005-06.

4. The following other initiatives are suggested:

(i) Create a National Level Steering Committee with representatives from the Govt.of India, IRDA, National Commission for Women, NABARD, IBA, NAIC, the four General Insurance Companies, SBI, the National Federation of State Cooperative Banks and one or two RRBs to oversee the development of rural insurance.

(ii) NABARD and the Banks to broaden and deepen the Self Help Group linkages to Banks specially in the 150 identified districts and link those up with private sector/other institutions for backward & forward linkages for their products.

(iii) Encourage establishment of private nursing homes/hospitals and Voluntary Health Services network in rural areas and block head quarters by providing tax holiday for five years and concessionality in bank credit. Such healthcare providers should agree to extend high quality but low or no cost medical facility to the poor.

(iv) It would be useful to designate the small amount of financial help recommended for enabling the resource poor to take to insurance as life saving support and not as "subsidy, since such help is totally non-trade distorting. This will help to bring about a change in mindset with regard to saving the poor from acute distress.

## PARIVAR BIMA POLICY

Based on a felt need and the IRDA decision to encourage micro insurance by allowing appointment of the Non Governmental Organisations (NGOs) and the Self Help Groups (SHGS) as agents for accepting insurance proposals upto Rs.10,000/-, an integrated family insurance policy named Parivar Bima Policy (PBP) providing floating cover for various risks other than crop and livestock has been devised. The proposed Policy could include mediclaim insurance providing reimbursement of hospitalization expenses for husband, wife and two dependent children upto Rs.10,000/- including transportation and meal charges not exceeding Rs.200/- and Rs.150/- respectively, life cover against natural death for Rs.5000/- for self (male or unmarried female taking the cover) or husband if the female is married, cover against accidental death or permanent total or permanent partial disability upto Rs.10,000/- and for insurance of dwelling unit for Rs.10,000/- to cover loss or damage to the house and contents (excluding jewellery) due to fire, lightning, riot, malicious damage, landslide, earthquake, etc. The policy thus covers the major risks which could seriously impact the life of the rural poor. The annual premium is likely to be around Rs.225/- p.a. (exact premium and the terms and conditions would, however, have to be firmed up in consultation with the Insurance Companies and IRDA). To facilitate larger coverage under the scheme, the NGO/SHG/Primary Agricultural Cooperatives (PACS) etc. could advance loan towards the premium cost to the insured and recover the same in installments. There is a potential of covering about 2 crore rural families under the PBP in the next two/three years.

# EXECUTIVE SUMMARY

## CHAPTER III –PRODUCTIVITY AND LIVELIHOOD ENHANCEMENT IN RAINFED AREAS: TOWARDS A RAINBOW REVOLUTION

The greatest distress to farm and rural communities occurs in areas with low and uncertain rainfall, mainly in the arid and semi-arid regions of the country. The research and development work done in different parts of the country during the last 35 years has highlighted the need for the following concerted actions towards improving productivity and livelihoods in such areas:

(i) Capturing and conserving every drop of rainwater.

(ii) Enhancing the water infiltration and holding capacity and overall physical and chemical properties of the soils.

(iii) Cultivating crops which can perform optimally under conditions of water stress and scarcity.

(iv) Adopting a farming systems approach, with appropriate blends of crop-livestock integration.

(v) Improved post harvest technology and value addition to crop and animal products.

2. The principal constraints observed in reaping the full benefits from dryland farming research are the following:

(i) Lack of a watersheds approach, with all members of the watershed community working together to save and share water.

(ii) Lack of social synergy in the area of land and water use planning, with emphasis on collaborative efforts in both the production and post harvest phases of farming.

(iii) Dry lands soils are both thirsty and hungry. It is important that steps are taken to overcome these two constraints by judicious water harvesting and use, and by applying to the soil the needed micro- and macro-nutrients. The hidden hunger of the soil caused by micronutrient deficiencies needs to be addressed on a priority basis.

**Major Recommendations**

3. Establish a **National Network of Advanced Soil Testing Laboratories** capable of testing large volumes of soil samples for 16 macro and micronutrients – 1000 laboratories in all parts of the country, with 500 of them being located in dry farming areas, where there is scope for doubling average yields immediately through addressing the deficiencies of micro-nutrients in the soil, in addition to attending the needs for N, P, K.

4. Highest priority should be given to augmenting water availability by vigorously promoting **rainwater harvesting, restoring water bodies and a million wells recharge programmes.**

5. **Convergence and synergy of all agricultural programmes around a watershed**: We have recommended the formation of a **National Federation of Farm Technology Missions** which can assist the watershed community to access the provisions of appropriate technology missions like those relating to oilseeds, pulses, cotton, horticulture, dairy, etc. In addition, we propose the setting up at the national level a **Commission for Sustainable Livelihood Security in Dry Farming Areas** under the Chairmanship of an eminent farmer, who is an achiever in increasing productivity and income per every unit of water.

6. **Lab to Land**: Large-scale demonstrations should be organized on catalytic interventions both factor oriented, such as application of micro-nutrients for improving soil health and implements for improving soil physical properties (soil physics, chiseling

and enhancing rain water absorption) and system oriented, such as crop-livestock and crop-livestock-fish integrated systems. These would be undertaken in collaboration with CRIDA and ICRISAT.

7. Post harvest processing and value addition in collaboration with CFTRI and private sector should receive priority attention. A post harvest technology wing should be added to each Krishi Vigyan Kendra to bridge the gap between production and post harvest technologies and the KVKs may be redesignated as **Krishi and Udyog Vigyan Kendras (KUVKs)**.

8. **Rainbow revolution** should be promoted in rainfed areas achieving substantial enhancement in the productivity of millets, pulses, oilseeds and livestock through large scale adoption of highly successful new technology packages, such as hybrid pigeonpea. Fifty thousand **Farm Schools** should be established in the fields of farmer-achievers.

9. Create pulses and oilseeds villages (eg. *Arhar* Villages, Sesame Villages) for specialized enhanced production (ensuring full availability of quality seeds and other specified inputs), efficient processing and remunerative producer-oriented marketing of the selected crops as well as the optimization of producing more crops and income per every drop of water by cultivating low water-requiring crops.

**Financial Provision in the Union Budget for 2005-06**

10. The following allocations are recommended:

(i) 1,000 advanced soil testing laboratories across the country, with 500 of them located in dry farming areas, each laboratory costing Rs. 50 lakhs - total allocation Rs. 500 crore.

(ii) 5,000 large-scale demonstrations on catalytic interventions in collaboration with CRIDA and ICRISAT, establishment of 1,500 seed banks and creation of 6,000 Small Holders' Estates - Rs. 100 crore.

(iii) Establishing 50,000 Farm Schools in the fields of framer-achievers - Rs. 150 crore.

(iv) Post harvest processing and value addition in collaboration with CFTRI and private sector and strengthening of Krishi and Udyog Vigyan Kendras for post harvest management - Rs. 150 crore.

(v) Augmenting water availability by vigorously promoting water harvesting and restoring water bodies – Rs. 70 crore.

(vi) Million Wells Recharge Programme ( to be promoted through interest rebate on loans)

(vii) Rainbow Revolution in rainfed areas achieving substantial enhancement in productivity of millets, pulses, oilseeds and livestock through large scale adoption of highly successful new technology packages, such as hybrid *arhar* - Rs. 50 crore.

(viii) Creation of pulses and oilseeds villages (*Arhar* Villages, Sesamum Villages) for specialized enhanced production, efficient processing and remunerative producer-oriented marketing of the selected crops - Rs. 30 crore

**Recommended total allocation: Rs. 1,050 crore**

# EXECUTIVE SUMMARY

## CHAPTER IV: A NEW DEAL FOR WOMEN IN AGRICULTURE

Under its terms of reference, NCF is "to recommend measures for the credit, knowledge, skill, technological and marketing empowerment of women, taking into consideration the increasing feminization of agriculture and the proposed conferment of right to land ownership". Women in agriculture include women farmers, share croppers and farm labourers. Though their role and contribution to agriculture is immense, it is not adequately recognized and measured and hence is not integrated into development planning and resource allocations for Plans / Budgets. This results not only in women suffering from hard work, long working hours, drudgery, poor nutrition and inadequate economic returns, but also leads to sub-optimal productivity at the national level. Women's lack of title to land limits access to credit. Technical know-how and gender specific technologies also do not reach them. Further, their traditional wisdom and experience relating to biodiversity conservation and enhancement, seed selection and storage, water harvesting, risk-minimising agricultural practices, and sustainable use of natural resources are not adequately recognized and compensated.

2. Pro-active approaches and affirmative action strategies are needed particularly at legal, policy, strategy, programme and resource allocation levels to provide all the categories of women a level playing field in relation to their contributions in the areas of conservation, cultivation, consumption and commerce. The following priority action plan is recommended in this context.

3. Priority Action Plan:

(i) Legal land titles including allotment of surplus land and joint pattas as well as equal returns for equal work have to be ensured through time-bound and well monitored State action. Steps should be taken to provide women access to Kisan Credit Cards and other forms of institutional credit.

(ii) The proposed Employment Guarantee Act as well as the implementation rules relating to the Protection of Plant Varieties and Farmers' Rights Act (2001) and the Biodiversity Act (2002) should be engendered.

(iii) The on-going Food for Work programmes should provide adequate, timely and gender-specific work for women, especially to women-headed families; the concept of "work" in the case of women should include the organization of a wide variety of support services for women, such as crèches and day care centres, preparation of noon meals, etc.

(iv) In the 150 districts identified for EGS, support services and nutrition supplement, including temporary crèches, should be provided to pregnant women and mothers. Also, nutrition support should be extended to adolescent girls and infants in the 0-2 age group in 20 selected districts to begin with.

(v) Women self-help groups have to be at the core of initiatives for income generation along with close interaction with partner agencies.

(vi) Programmes covering biodiversity, Farmers' Rights, food security at household and community levels, training, access to technology, information and credit have to promoted. The proposed Rural Knowledge Centres should promote quality, food safety, trade and legal literacy movements among women.

(vii) Engendering the Curriculum of Agricultural and Veterinary Universities, based on the Kerala Agricultural University model, should be made obligatory.

(viii) A Gram Panchayat Mahila Fund should be established to enable SHGs and other women's groups to undertake community activities that help to meet essential gender specific needs.

(ix) The overall focus would have to be on the landless and land poor sections of women working in dryland farming systems, and the marginalized groups who find their access to natural resources dwindling.

(x) An institutional mechanism for policy formulation and oversight and gender audit is essential. This could be achieved through the establishment of a National Board for New Deal for Women in Agriculture headed by the Union Minister for Food and Agriculture, with the Union Ministers for Women and Child Development, Rural Development and Panchayati Raj serving as Co-chairs. The Board should include in its Membership representatives of various stakeholders including the National Commission for Women, State Women's Development Corporations, Women's Organisations, NGOs, financial institutions, academia and media.

4. Financial Provision in the Union Budget for 2005-06:

The following allocations are recommended:

(i) Gram Panchayat Mahila Fund @ Rs.2 lakhs each for 10,000 panchayats – Rs. 200 Crore

(ii) Day Care Cum Nutrition for 0-2 years children of poor rural women – Rs. 500 Crore

(iii) Support to women SHGs and other women's groups for taking up common activities for women including women's toilets, market yards, worksheds, etc., @ Rs.1 lakh for 2500 selected groups – Rs. 25 Crore.

(iv) Preparation of engendered curriculum in Farm Universities, Regional consultations on the issue of land title to women, meetings of the National

Board for New Deal for Women in Agriculture and of an Expert Group for engendering the EGS and Food for Work Programme – Rs. 1 crore.

# EXECUTIVE SUMMARY

## CHAPTER V - STRENGTHENING AND EXPANDING THE HORTICULTURE REVOLUTION

The "horticultural revolution" during the past 10-15 years, led by Maharashtra and a few other States, has resulted in considerable expansion of horticultural production and consumption. However, the overall horticultural productivity has shown little change and the productivity of fruits and plantation crops has declined during the past decade. Moreover, little is known of the benefits reaching the small and marginal farmers and landless agricultural workers. The impact has also been skewed geographically as several States did not benefit from the opportunity and the investments made. The serious mismatch between production and consumption continues due to heavy post harvest losses, poor processing, low value addition and disorganized marketing. The ongoing Horticultural Technology Mission for North Eastern Region holds good promise but its four Mini Missions are disjointed and so far not much has happened in the highest priority area of post harvest management, processing and marketing.

**Major Recommendations**

2. In order to provide focused attention to the high priority areas in the proposed National Horticultural Mission aiming to uplift both the rural economy and national nutritional security, we would like to suggest the following:

(i) **A National Horticulture Council** may be established with the Union Minister of Agriculture as its Chairman and the Union Ministers of the other concerned Ministries as Members, which should ensure synergy and convergence among the sectoral missions (the Mini Missions) of the National Mission.

(ii) An agro-ecologically and socio-economically differentiated approach should be adopted to cater to the needs and potential of the different agro-ecological

settings and sectors of the society *viz*. small farmers, tribals, landless labour and women's groups.

(iii) Based on the studies done so far, **a pilot insurance project for horticultural crops** should be launched under the existing National Agriculture Insurance Scheme.

(iv) In order to ensure convergence and synergy among the four Mini Missions, a **National Mission Director**, who must be an eminent horticulturist with outstanding achievements in horticultural research and development, should be appointed. He/she alongwith the coordinators of the different Mini Missions should identify the priority horticultural species and areas of activities through a participatory mode, particularly taking note of the needs and potential of the small holders. Highest priority should be given to prevention of post harvest losses, processing, value addition and marketing; the NDDB model and other successful models of production–processing–marketing integration should be replicated widely.

(v) Rejuvenation of old plantations and replanting senile and unproductive orchards, production and distribution of certified planting materials, implementation of SPS measures and other regulatory mechanisms and skill development should be undertaken on priority basis.

(vi) The long standing serious diseases of major fruits viz. malformation, alternate bearing and spongy tissue of mango, should receive highest attention of researchers and technology developers.

(vii) Small farmers' SHGs should be helped to organize themselves as **Small Farmers' Horticulture Estates (SFHE)** covering an area of 200 to 500 ha. each, to capture the economies of the scale. Landless labour should be supported in specialized activities, particularly with women self help groups

for beekeeping, vermicompost, production of bio agents, tissue culture and other planting materials. Young graduates should be engaged in precision horticulture, e-trading, establishment and management of agri-clinics, and soil and pesticide testing. Low cost green houses and fertigation should be actively promoted. The KVKs and ATMAs should also perform the role of Udyog Vigyan Kendras.

(viii) The successful experience of Maharashtra and of other places should be shared widely through organizing: (i) visits to "bright" spots, (ii) linking horticulture to national Food for Work and National Rural Employment Guarantee Schemes, (iii) revitalizing the NHB on the lines of NDDB and (iv) engendering all horticultural programmes.

**Financial Provisions in the Union Budget**

3. Rs. 21,699 crore is already proposed under the NHM for the next seven years. The resources may be reallocated according to the priorities suggested in this Report, especially the following areas:

(i) Organization of Small Farmers' Horticulture Estates

(ii) Post harvest management, processing and marketing

(iii) Production and distribution of quality seeds and planting materials

(iv) Imparting quality literacy.

# EXECUTIVE SUMMARY

## CHAPTER VI - ENHANCING COTTON PRODUCTIVITY, QUALITY AND GLOBAL COMPETITIVENESS

Cotton, coupled with the cotton-based textile industry, is the largest employer and income provider in India, second only to agriculture as a whole. With the coming to an end of the multi-fiber agreement on the 1st January, 2005, our cotton producers, weavers, and the textile industry will encounter both new opportunities and threats. Therefore, synergistic interaction among all the stakeholders in the country is needed to enhance the efficiency of cotton production, processing and marketing.

**Major Recommendations**

2. India's cotton production is besieged with low yields, poorer fibre quality, deteriorating soil health, heavy pest infestation and excessive use of pesticides and poor supply of quality seed and other inputs. The following public policy actions are recommended for alleviating these constraints towards enhancing cotton productivity and competitiveness:

(i) Establishment of a **National Cotton Council** to serve as the apex level coordinating body comprising multiple stakeholders under the Chairmanship of the Union Minister for Agriculture, with the Union Minister for Textiles serving as Co-Chairman.

(ii) Ensuring remunerative prices to the farmers and promoting farmer-centered marketing; since the landed price of cotton this year is somewhat lower than the price prevailing in the domestic market, **the import duty may be raised from 10% at present to 30%, barring that on extra long fine cottons. Appropriate levels of export tariff may be provided for maintaining the farmers' income and the overall cotton economy.**

(iii) Appointment of a **Mission Director,** who must be an eminent cotton improvement and production expert, to integrate and coordinate the work of and to bring convergence and synergy among the four Mini Missions.

(iv) **Expanding the role of Cotton Corporation of India** in insulating the farmers from the wide price fluctuations and to advise them on the quality and varieties of cotton to be grown.

3. Priority should be accorded to the following research and technology transfer programmes.

(i) Consistent with the bio-security requirements, promotion and development of Bt cotton and other bio-technologically designed varieties.
(ii) Widespread adoption of new *arboreum* varieties and hybrids.
(iii) Improvement of fiber quality to meet international standards.
(iv) Correction of micronutrient deficiencies and carbon enrichment of soils.
(v) Adoption of new water retention and management practices.
(vi) Wide adoption and integration of IPM and IRM.
(vii) Production and distribution of quality seed, biopesticides and bioagents.

4. Biomass utilization should be promoted for enhanced income and job security.

5. Establishment of **Small Farmers' Cotton Estates,** each covering 500-1000 hectare, to increase efficiency and to provide small producers with the economies of scale, combining the advantages of production by masses with mass production technologies by fostering decentralized production supported by key centralized services at the production and post harvest phases. Each Estate can be supported by an Agri-clinic and Agri-business center operated by Farm Graduates. The Small Farmers' Cotton Estate can each host a Rural Knowledge Centre based on modern Information and Communication Technology (ICT).

6. Credit, insurance, marketing may all be included in the Estate. The design of the Small Farmers' Cotton Estates should be such that it represents a win-win situation for all participating farmers. Production, processing and marketing can be dealt with in an integrated manner.

**Financial Provision**

7. The following additional financial provisions are recommended for 2005-06:

(i) Establishment of 100 **Small Farmers' Cotton Estates,** each covering 500-1000 hectare, - Rs. 175 crore

(ii) Research and technology transfer through integrated technology demonstrations - Rs. 50 crore

(iii) Promotion of biomass utilization - Rs.25 crore.

**Recommended total allocation: Rs. 250 crore**

# EXECUTIVE SUMMARY

## CHAPTER:VII - SUSTAINING AND EXPANDING FARM COMMODITIES TRADE: SANITARY AND PHYTOSANITARY DIMENSIONS

India's preparedness in the field of Sanitary and Phytosanitary (SPS) measures is highly inadequate. As a result of this several consignments of Indian farm exports were rejected in recent past. The situation is likely to get serious in the coming years since health safety standards as presented by *Codex Alimentarius* are getting increasingly stringent and the goal posts in developed countries have been shifting very fast. Thus, there is need for urgently launching a quality and food safety literacy movement in the villages and strengthening of SPS infrastructure.

2. We should also strengthen our quarantine facilities as several invasive weeds, pests and diseases have been introduced in the country along with grain, seed and planting material imports. About 50, important pests not yet in India, but found in the trading partner countries, could enter our country if not checked and destroyed at the border, or else these will destroy our agriculture. The Asian Flu disease of chicken in South East Asia is a case in point.

**Major Recommendations**

3. In view of the urgency of the steps needed both to safeguard our agricultural exports and to capture new markets, the following steps are suggested:

(i) establishing a **Food Safety Council of India** chaired by the Union Minister Agriculture with the Union Commerce Minister as Co-Chairman. There should be wide representation of members especially from major exporting States, both women and men covering all aspects of crops, livestock, fisheries and herbals

(ii) augmenting and creating Survey, Surveillance and Quality Literacy Programme

(iii) strengthening SPS infrastructure and capacity

(iv) generating awareness abroad on steps taken in India to maintain high standards regarding food safety and biosecurity.

**Financial Resources Required**

4. To meet the above requirements and challenges of SPS Agreement, the country needs:

(i) comprehensive operation systems at all strategic points

(ii) credible diagnostic and accreditation system

(iii) science–based Pest Risk Assessment (PRA) and management

(iv) surveillance systems

(v) information, awareness and databases

(vi) audit and quality control system and enhanced quality and food safety standards.

To attain the above outputs and for spreading *Codex Alimentarius* standards, an additional sum of Rs 100 crore is required for the next two years, **of which Rs. 60 crore is proposed during 2005-06.**

# EXECUTIVE SUMMARY

## CHAPTER VIII: TOWARDS AN ERA OF KNOWLEDGE INTENSIVE AGRICULTURE MISSION 2007: EVERY VILLAGE A KNOWLEDGE CENTRE

Ecologically sound agriculture is knowledge intensive. Information empowerment of farm men and women on agriculture and allied activities, as also knowledge empowerment on a variety of issues ranging from health, education, *on-farm* and *off-farm* livelihoods, enterprise development, market linkages and quality literacy is the need of the hour. This can be effectively done through a network of Rural / Village Knowledge Centres harnessing ICT and other modern tools of communication.

These centres could operate from either the Panchayat building or village school or Study Centre of an open university and be designed on the underlying principles of social inclusion, gender equity and reaching out to remote areas and vulnerable populations. A National Alliance for **MISSION 2007: Every Village a Knowledge Centre** has been formed to mobilize the power of partnership among the public and private sector, academia, mass media and civil society organizations, to work together in making this vision a reality. The initiative calls for public policy support under the USO Fund and for a proactive Rural ICT policy including a community radio policy, and for public investment primarily in the areas of connectivity and setting up and operation of the Rural Knowledge Centres. There is also a felt need for **Farmers' Distress Call Centres** in each State to provide timely and effective aid to farmers during periods of crises.

The four major components of Mission 2007 are Connectivity, Content, Capacity Building and Care & Management. India is in the fortunate position of being able to connect all the 600,000 villages speedily. BSNL and all the other agencies working on connectivity, including educational institutions like IIT, Chennai, should join together in fostering the rural connectivity movement. The Content has to be location specific and need based. A wide range of agencies will have to be involved for creation of relevant

content and brought under the umbrella of a **National Digital Gateway for Rural Livelihood Security**. A blend of non-formal training approaches, content creation in a virtual mode and its use at the Village Knowledge Centres is necessary for making a mass impact. A district level **Content Consortium** can be formed in each district. Again a District level **Capacity Building Consortium** can help to organise capacity building programmes using the pedagogic methodology of learning by doing. The care of the equipment and management of the knowledge centre can be undertaken by trained ICT-SHGs linked to Panchayats.

In this manner, an integrated self-sustaining and self-replicating system of Village Knowledge Centres can be built up. These Centres will be powerful vehicles for making the Right to Information (at the correct time and place) a reality.

It is proposed to establish 20,000 Rural Knowledge Centres covering 100,000 villages in the 150 less developed districts identified by the Planning Commission, on a priority basis in 2005. Investment support of Rs.500 crore for this is sought from the Ministry of Panchayati Raj and the USO Fund under the Ministry of Communications and Information Technology. The Ministry of Panchayati Raj is also requested to make an allocation for setting up RKCs in each Panchayat, provide for training of managers of these centres (Rural Virtual Academicians), extend incentives to rural service providers, and outsource revenue generating services to these centres (Rs.150 crore). The Farmers' Distress Call Centres may be set up by the Ministry of Agriculture (Rs.100 crore). The creation of the National Digital Gateway for Rural Livelihood Security needs an allocation of Rs.100 crore. An Innovation Fund for rural connectivity and incentives for Rural Service Providers is called for under the USO Fund (Rs.500 crore). Banks and Financial institutions may extend low interest loans to ICT-SHGs that will manage the RKCs, to encourage ICT-based entrepreneurship (Rs.100 crore). The Ministry of Information and Broadcasting is requested to frame a community radio policy for the country and provide licenses to 4000 community radio stations in the coming year. The total financial support that will be needed from USO and the Ministries of Agriculture and Panchayati Raj during 2005-06 will be of the order of Rs.1450 crore. Such an investment will enable our villages to leapfrog in promoting knowledge intensive

agriculture and agri-business and in providing opportunities for a healthy and productive life to everyone in the village.

# EXECUTIVE SUMMARY

## CHAPTER IX - FOOD AND NUTRITION SECURITY

Under its terms of reference, NCF has been called upon "to work out a comprehensive medium-term strategy for food and nutrition security in order to move towards the goal of universal food security over time". The serious hunger problems in our country relate to under-nutrition caused by inadequate purchasing power, and micro-nutrient malnutrition or hidden hunger caused by both poverty and lack of nutritional literacy. Inspite of striking progress in improving agricultural production, India is the home of the largest number of undernourished children, women and men. This unenviable reputation is unnecessary and inexcusable.

2. Nutrition Security involves economic, physical, social and environmental access to balanced diet and safe drinking water. The country has the capacity to achieve freedom from chronic hunger speedily through the introduction of an interactive and decentralized Nutrition Security programme under the supervision of Panchayats.

3. Ultimately, the country should introduce a Food Guarantee Scheme, combining the features of Employment Guarantee and Food for Work. **A National Committee for a Hunger Free India** may be set up under the Chairmanship of the Prime Minister, with the Union Minister for Food and Agriculture and Co-Chair, for preparing a road map for launching such a **National Food Guarantee Programme** The National Committee should include in its membership Chief Ministers of States characterized by the high incidence of hunger hot spots.

There is also need to bring about a paradigm shift in the delivery of nutrition support programmes from a department-centred to a human life-cycle centred approach.

5. The following allocations are recommended during 2005-06 for moving towards the goal of achieving relative freedom from hunger by 15$^{th}$ August, 2007, which marks the 60$^{th}$ anniversary of our independence:

i) Supplementary nutrition for adolescent girls, pregnant women and 0-2 age group children– 250,000 tons of food grains

ii) Nutrition support to HIV/AIDS/Tuberculosis affected rural women and men – 100,000 tons of food grains.

iii) Elimination of hidden hunger caused by the deficiency of iron, iodine, zinc and Vitamin A – Rs.200 crore

iv) Establishment of Community Food and Fodder Banks – Rs.75 crore for 10,000 Community Food Banks as recommended in Chapter II and Rs.25 crore for Fodder Banks.

# EXECUTIVE SUMMARY

## CHAPTER X – LIVESTOCK AND LIVELIHOODS

The ownership of livestock is much more egalitarian than that of land. Livestock are particularly important in arid and semi-arid areas for strengthening household livelihood and food security. The Diary and Poultry sectors, which are already playing a key role in enhancing income and nutrition, need additional attention from the point of view of the following needs.

2. **Diary:** Under and mal-nutrition of livestock cause reduced milk yield. There is need for intensifying production and distribution of fodder and feed, since most of the dairy animals are stall-fed. Fodder and Feed Banks operated by SHGs would help landless labour families to take to animal husbandry.

3. There is urgent need for a **Livestock Food Corporation** organized jointly by NDDB,SFAC and NABARD top promote and assist SHGs to undertake fodder and feed production. It is suggested that a sum of Rs.100 crore may be provided in the budget of 2005-06 to support SHGs undertaking the production of fodder and feed. Also fodder production (both perennial and annual fodder) should receive priority in the EGS and Food for Work programme.

4. **Poultry:** Resource poor farmers, particularly belonging to SC/ST rural communities can be assisted to form **Poultry Estates** based on the provision of key centralized services to support decentralized production. The help of the Egg. Coordination Council and organized poultry companies in the private sector may be taken to integrate poultry farming in the **Engendered Sustainable Livelihood Security Movement.**

5. The sanitary and phytosanitary measures should be strengthened to avoid the introduction of invasive alien pests and pathogens.

# EXECUTIVE SUMMARY

## CHAPTER XI - BEYOND TSUNAMI : SAVING LIVES AND LIVELIHOODS

The Tsunami disaster has provided a unique opportunity for launching through public-private sector partnership an integrated psychological, ecological, agronomic and livelihood rehabilitation programme. Rehabilitation efforts in the recent tsunami affected areas have to be adopted for operation across three time dimensions: Immediate (Jan-Mar 2005), Medium term (2005-07) and Long Term (2005-10), in order to alleviate the distress of the affected fisher and farm families

2. The immediate is in terms of i) psychological rehabilitation by way of counseling to recover from the trauma and ii) livelihood rehabilitation. It is recommended that A **Special Food for Livelihood Revival and Eco-protection programme** be initiated in the affected areas to create assets for the tsunami ravaged families. It is recommended that 300,000 tonnes of food grains be allotted immediately for this programme.

3. The medium and long-term strategies should cover all families along the coast and fall into three broad categories –

a) Ecological rehabilitation through coastal bio-shields, participatory management and enhancement of coastal mangroves forests and other wetlands, promotion of community nurseries of species chosen for the bio-shield and agro-forestry programmes, regeneration of fisheries, raising of artificial coral reefs, management of marine biosphere reserves, special attention to housing through a human security driven design of coastal habitations and construction of permanent sea walls in places where there is heavy sea erosion. There should be a Code of Conduct for construction beyond 500 metres.

b) Agronomic rehabilitation through reclamation of salinised soils. This has to be done on a priority basis the help of Agricultural Universities, ICAR and CSIR. A consortium of R&D institutions set up jointly by the Department of Ocean Development, Department of Science and Technology, and Indian Meteorological Department, Government of India should map human and agricultural vulnerability to potential changes in sea level. Scientific land and water use planning will have to be done to prevent salinisation of ground water.

c) Livelihood Rehabilitation through a sustainable strategy based on the principles of social inclusion and gender equity. Aquatrian Policy should focus on conservation and sustainable use of living aquatic resources, harmony between artesenal and mechanized fishing and equitable sharing of benefits, promotion of Sea Water Farming and establishment of Coastal Biovillages. Aquaculture Estates in the Biovillages can help confer the power of scale to fisher families and lateral learning should be promoted through a coastal grid of farm schools and demonstration centers.

4. A network of Rural Knowledge Centres should be established all along the coast as soon as possible and capacity built for disaster preparedness and management

# SERVING FARMERS AND SAVING FARMING

## COMPOSITE FINANCIAL SUMMARY

### Chapter II: Integrated Life saving support Programme for Farm families facing acute distress

| | | |
|---|---|---|
| 1. | **Community Grain Banks numbering 10,000 in the hunger hot-spots in the 150 Districts identified for National Food for Work Programme.** | **Rs. 75 crore** |
| 1. | **Parivar Bima Policy for healthcare accidents and loss of property.** | **Rs. 260 crore** |
| 3. | **Rural Insurance Development Fund -** | **Rs. 50 crore** |
| | **Sub-total:** | **Rs. 385 Crore** |

### Chapter III: Productivity and Livelihood Enhancement in Rainfed Areas: Towards a Rainbow Revolution

| | | |
|---|---|---|
| 1. | **Million Wells Recharge Programme** | **Interest rebate on loans** |
| 2. | **Restoring Water Bodies and Promoting Water Harvesting** | **Rs. 70 crore** |
| 3. | **Soil Health Enhancement through a National Network of 1000 soil testing laboratories** | **Rs. 500 crore** |
| 4. | **50,000 Farm Schools in the fields of farmer- achievers** | **Rs. 150 crore** |
| 5. | **Krishi Vigyan Kendras for post-harvest processing and value addition** | **Rs. 100 crore** |
| 6. | **Large-scale demonstrations of dryland farming technologies, overcoming micronutrient deficiencies in the soil, organisation of farmers' groups, establishment of seed banks and popularisation of hybrid *arhar*** | **Rs. 230 crore** |
| | **Sub-total:** | **Rs. 1050 Crore** |

## Chapter IV: A New Deal for Women in Agriculture

| | |
|---|---|
| **1. Supplementary nutrition for 0-2 years age group children in 20 selected districts** | **Rs.500 crore** |
| **2. Gram Panchayat Mahila Fund @ Rs. 2 lakhs for 10,000 selected Panchayats** | **Rs. 200 crore** |
| **3. Support to women Self-Help Groups for taking up common activities for women including Ladies' toilets,market yards, worksheds etc. @ Rs. 1 lakh for 2500 selected groups** | **Rs. 25 crore** |
| **4. Promotion of engendered curriculum in Agricultural universities , Regional Consultations on land titles, Meetings of National Boards and Expert Group etc.** | **Rs. 1 crore** |
| **Sub-total:** | **Rs. 726 Crore** |

## Chapter V: Strengthening and Expanding the Horticulture Revolution

**1. About Rs. 15,000 Crore is already proposed under the NHB. Provision for the measures suggested in the Report will have to be made in the National Horticulture Mission.**

## Chapter VI: Enhancing Cotton Productivity, Quality and Global Competitiveness

| | |
|---|---|
| **1. Integrated Technology. Demonstrations including value addition to cotton biomass.** | **Rs. 75 crore** |
| **2. Establishment of 100 Small Farmers' Cotton Estates, each covering 1000 hectare to increase efficiency and provide small producers with the economies of scale, credit, insurance, marketing. (in addition to Budget of the Cotton Technology Mission)** | **Rs. 175 crore** |
| **Sub-total:** | **Rs. 250 Crore** |

## Chapter VII: Strengthening Sanitary and Phytosanitary Measures

| | |
|---|---|
| **1. Imparting quality and trade literacy, meeting codex alimentarius standards and preventing the introduction of invasive alien species.** | **Rs. 60 Crore** |

## Chapter VIII: Every Village a Knowledge Centre

| | | |
|---|---|---|
| **1.** | **Mobilizing Information Communication Technologies (ICT) for the knowledge empowerment of rural families in areas relating to weather, water, health, education, nutrition, agriculture, markets and government entitlements through Village Knowledge Centres.** | **Rs 750 crore** |
| **2.** | **Establishment of a National Digital Highway for Rural Livelihood Security.** | **Rs 100 crore** |
| **3.** | **Establishment of Farmers' Distress Call Centres.** | **Rs 100 crore** |
| **4.** | **Establishment of 20,000 Rural Knowledge Centres.** | **Rs 500 crore** |
| | **Sub-total:** | **Rs. 1450.00 Crore** |

## Chapter IX: Hunger Free India

| | | |
|---|---|---|
| **1.** | **Supplementary nutrition for adolescent girls, pregnant women and 0-2age group children** | **2.5 lakh tonnes of food grains** |
| **2.** | **Nutrition support to HIV/AIDS/Tuberculosis affected rural women and men.** | **1.0 lakh tonnes of food grains** |
| **3.** | **Elimination of hidden hunger caused by the deficiency of iron, iodine, zinc and Vitamin A.** | **Rs. 200 crore** |
| **4.** | **Establishment of Community Food and Fodder Banks.** | **Rs. 25 crore** |
| | **Sub-total:** | **Rs. 225 Crore + 3.5 lakh tonnes of food grains** |

## Chapter X:-Livestock and Livelihoods

| | | |
|---|---|---|
| **1.** | **Organisation of Livestock Food Corporation of India jointly by NDDB,SFAC and NABARD for Fodder; and establishment of Small Farmers Poultry Estates.** | **Rs. 100 Crore** |
| | **Sub Total:** | **Rs 100 Crore** |

## Chapter XI: Beyond Tsunami: Saving Lives and Livelihoods

| | | |
|---|---|---|
| **1.** | **Food for Livelihood Revival and Eco-protection Programme** | **3.0 lakh tonnes of food grains** |

**Grand Total: Rs. 3496.00 Crore + 6.5 lakh tonnes of food grains.**

**Abbreviations:**

| | | |
|---|---|---|
| **1.** | **IRDA -** | **Insurance Regulatory Development Authority** |
| **2.** | **NCW -** | **National Commission on Women** |
| **3.** | **NABARD-** | **National Bank for Agriculture & Rural Development** |
| **4.** | **IBA -** | **Indian Banks Association** |
| **5.** | **NAIC -** | **National Agriculture Insurance Corporation** |
| **6.** | **RRB -** | **Regional Rural Bank** |
| **7.** | **CRIDA -** | **Centre for Research in Dryland Agriculture** |
| **8.** | **ICRISAT** | **International Centre for Research in Semi-Arid Tropics** |
| **9.** | **CFTRI -** | **Central Food Technology Research Institute** |
| **10.** | **SHG -** | **Self Help Group** |
| **11.** | **NGO -** | **Non-Government Organisation** |
| **12.** | **NHB -** | **National Horticulture Board** |
| **13.** | **NDDB -** | **National Dairy Development Board** |
| **14.** | **SPS -** | **Sanitary and Phytosanitary** |
| **15,** | **EGS -** | **Employment Guarantee Scheme** |
| **16.** | **USO -** | **Universal Service Obligation** |
| **17.** | **ICT -** | **Information Communication Technology** |

# COMPOSITE ADMINISTRATIVE INITIATIVES

## Chapter I: Wake-up Call

1. Organisation of a S&T Alliance for Rural Livelihood Security for providing technical backstopping to the National Food for Work and Rural Employment Guarantee programme.

## Chapter II : Integrated Life Saving support programme for farm families facing acute distress

1. Create a National Level Steering Committee with representatives from the Govt. of India, IRDA, NCW, NABARD, IBA, NAIC, the four General Insurance Companies, SBI, the National Federation of State Cooperative Banks and one or two RRBs to oversee the development of rural insurance.

2. NABARD and the Banks to broaden and deepen the Self Help Group linkages to Banks specially in the 150 identified districts and link those up with private sector/other institutions for backward & forward linkages for their products.

3. **Encourage establishment of private nursing homes/hospitals and Voluntary Health Services network in rural areas and block head quarters by providing tax holiday for five years and concessionality in bank credit.**

## Chapter III: Productivity and Livelihood Enhancement in Rainfed Areas: Towards a Rainbow Revolution

1. Establishment of a National Network of Advanced Soil Testing Laboratories- 1000 laboratories in all, with 500 in dry farming areas.

2. Million Wells Recharge Programme during 2005-06 by providing a rebate on interest.

3. Establishment of 50,000 Farm Schools in the farms of farmer-achievers.

4. Formation of Federation of Farm Technology Mission for assisting the water-shed community to access the appropriate technology missions.

5. Setting up a Commission for Sustainable Livelihood Security in Dry Farming Areas under the Chairmanship of an eminent farmer.

6. Demonstration on catalytic interventions in collaboration with CRIDA and ICRISAT.

7. Post harvest processing and value addition in collaboration with CFTRI and private sector. Adding a Post Harvest Wing to each Krishi Vigyan Kendra and redesignating them as Krishi and Udyog Vigyan Kendra.

8. Rainbow Revolution in rainfed areas achieving substantial enhancement in productivity of millets, pulses, oilseeds and livestock through large scale demonstrations of highly successful new technology packages, such as hybrid pigeonpea.

9. Creation of pulses and oilseeds villages (eg. Arhar Villages, Sesame Villages) for enhanced production, efficient processing and remunerative producer-oriented marketing of selected crops as well as the optimization of production of crops and income for every drop of water by cultivating low water-requiring crops.

## Chapter IV: A New Deal for Women in Agriculture

1. Legal land titles including allotment of surplus land and joint pattas as well as equal rights for equal work have to be ensured through time-bound and well-monitored State Action.

2. Women self-help groups have to be at the core of initiatives along with close interaction with partner agencies.

3. Programmes covering bio-diversity, food security at household and community levels, training, access to technology, information and credit have to be ensured.

4. Support services and nutrition supplement for expectant and mothers especially through temporary crèches at work sites, particularly in 20 selected districts out of the 150 districts identified for EGS. To begin with, nutrition for children in the 0-2 age group in view of their vulnerability.

5. Margin money for Women's SHGs for undertaking common productive activities for farming women.

6. Engendering of curriculum in Agriculture Universities based on Kerala Agricultural University model.

7. A Gram Panchayat Mahila Fund for women to enable SHGs of women to undertake community activities that help to meet essential gender specific needs.

8. Overall focus would have to be on the landless and land poor sections of women working in dryland farming systems and the marginalized groups who find their access to natural resources dwindling.

9. Establishment of a National Board for Women in Agriculture headed by Union Minister for Agriculture and co-chaired by Union Minister for Women & Child Development and Union Minister for Panchayati Raj, and consisting of various stakeholders including NGOs, financial institutions, academia, media etc. for policy oversight and gender audit.

## Chapter V: Strengthening and Expanding the Horticulture Revolution

1. A National Horticulture Council may be established with the Union Minister of Agriculture as its Chairman.

2. A pilot insurance project for horticultural crops may be launched.

3. A National Mission Director may be appointed to identify the priority horticultural species and areas of activities.

4. Small farmers SHGs may be helped to organize themselves into Small Farmers' Horticulture Estates covering an area of 200 to 500 hectares to capture the economies of scale.

**5.** The successful experience of Maharashtra and of other places should be shared widely through organizing (i) visits to "bright" spots, (ii) linking horticulture to National Food for Work and National Rural Employment Guarantee Schemes, (iii) revitalizing the NHB on the lines of NDDB and (iv) engendering all horticulture programmes.

## Chapter VI: Enhancing Cotton Productivity, Quality and Global Competitiveness

1. Establishment of a National Cotton Council to serve as the apex level coordinating body comprising multiple stakeholders under the Chairmanship of the Union Minster for Agriculture, with the Union Minister for Textiles serving as Co-chairperson.

2. Import duty on cotton may raised from 10% to 30%, barring the extra long fine cotton. Appropriate levels of export tariff may be provided for maintaining the farmers' income and the overall cotton economy.

3. A Mission Director may be appointed to integrate and coordinate the work of the four Mini Missions.

4. The role of Cotton Corporation of India may be expanded for insulating the farmers from wide price fluctuations and to advise farmers on the quality and variety of cotton to be grown.

5. Small Farmers Cotton Estates may be established to increase efficiency and to provide small producers with the economies of scale. Credit, insurance and marketing may all be included in the Estates and supported by an Agri-clinic and Agri-business centres.

## Chapter VII: Sustaining and Expanding Farm Commodities Trade: Sanitary and Phytosanitary Dimensions

1. Establishment of Food Safety Council of India chaired by the Union Minister of Agriculture with the Union Commerce Minister as Co-Chairperson and representation from all stakeholders.

2. Survey, Surveillance and Quality Literacy Programme.

3. Strengthening SPS infrastructure and capacity.

4. Generating awareness abroad on steps taken in India to maintain high standards regarding food safety and biosecurity.

## Chapter VIII: Towards an Era of Knowledge Intensive Agriculture Mission 2007: Every Village a Knowledge Centre

1. Establishment of 20,000 Rural Knowledge Centres (RKC) covering 1 lakh villages in 150 districts identified by the Planning Commission for EGS.

2. Establishment of RKCs in each Panchayat, providing for training of managers of these centres, extending incentives to rural service providers, and outsourcing revenue generating services to these centres.

3. Establishment of Farmers' Distress Call Centres.

4. Establishment of National Digital Gateway for Rural Livelihood Security.

5. Establishment of an Innovation Fund for Rural Connectivity and incentives for rural service providers under the USO Fund.

6. Access to low interest loans to ICT-SHGs from banks and financial institutions.

7. Developing a new policy to encourage the spread of Community Radio(FM) and license to 4000 community Radio Stations.

## Chapter IX: Hunger Free India

1. Setting up of a National Committee for Hunger Free India under the chairmanship of the Prime Minister, with the Union Minister for Food and Agriculture as Co-chair for preparing a Road Map for launching a National Food Guarantee Programme, combining the features of Employment Guarantee and Food for Work.

2. Establishment of a Food Safety Council of India with the Union Minister for Food and Agriculture as Chairman and the Union Minister for Health and Commerce as Co-chairs.

3. Supplementary nutrition for adolescent girls, pregnant women and 0–2 age group children.

4. Nutrition support to HIV/AIDS/Tuberculosis affected rural women and men.

5. Programme for elimination of hidden hunger caused by the deficiency of iron, iodine, zinc and Vitamin A.

6. Establishment of Community Food and Fodder Banks.

## Chapter X:-Livestock and Livelihoods

1. Organisation of Livestock Food Corporation of India jointly by NDDB, SFAC and NABARD for stimulating and supporting Fodder;and Feed Producing SHGs.

2. Formation of Poultry Estates by resource poor farmers for achieving centralized services to support decentralized production with the help of the Egg Coordination Council ,

3. Strengthening of the sanitary and phytosanitary measures to avoid introduction of invasive alien pests and pathogens.

## Chapter XI: Beyond Tsunami: Saving Lives and Livelihoods

1. Setting up of a Committee under the chairmanship of Union Home Minister, to monitor progress in the implementation of the integrated rehabilitation strategy suggested by NCF for Tsunami affected regions.

2. Launching of Special Food for Livelihood Revival and Eco-protection Programme in Tsunami affected areas.

3. Fostering a Coastal Bio-shield programme for minimizing the fury of cyclonic storms and tidal waves.

4. Fostering a Coastal Bio-village Movement for providing multiple livelihood opportunities.

5. Organising a network of Rural Knowledge Centres in Coastal villages.

6. Aquarian Reforms for promoting sustainable fisheries

Abbreviations:

1. IRDA - Insurance Regulatory Development Authority
2. NCW - National Commission on Women
3. NABARD- National Bank for Agriculture & Rural Development
4. IBA - Indian Banks Association
5. NAIC - National Agriculture Insurance Corporation
6. RRB - Regional Rural Bank
7. CRIDA - Centre for Research in Dryland Agriculture
8. ICRISAT International Centre for Research in Semi-Arid Tropics
9. CFTRI - Central Food Technology Research Institute
10. SHG - Self Help Group
11. NGO - Non-Government Organisation
12. NHB - National Horticulture Board
13. NDDB - National Dairy Development Board
14. SPS - Sanitary and Phytosanitary
15, EGS - Employment Guarantee Scheme
16. USO - Universal Service Obligation
17. ICT - Information Communication Technology

# CHAPTER I

## WAKE-UP CALL

"Forget the past, Remember every day dawns for us from the moment we wake up. Let us all, every one, wake up now"

Mahatma Gandhi, January 1948

This report is designed to serve both **as a wake-up call** to the nation on the deteriorating farm conditions, as well as on the opportunities available to enhance our global agricultural competitiveness and to overcome to a great extent the scourges of endemic and hidden hunger now affecting nearly 25% of our population by 15 August, 2007, which marks the 60th anniversary of "our tryst with destiny", to quote Jawaharlal Nehru's historic words. Our agriculture is at the crossroad economically, ecologically, technologically, socially and nutritionally. A "business as usual approach" in the farm sector now will lead to an unprecedented human calamity, the beginnings of which we are now witnessing in the form of suicides by farmers in several parts of the country, including the Punjab which is the heartland of intensive agriculture.

2. In order to recommend policies, programmes and measures for accelerated, diversified agricultural development, that would alleviate rural poverty and raise the standard of living of the farmers' community in the new millennium, a National Commission on Farmers was set up vide Resolution dated 10th February 2004 of the Ministry of Agriculture, Government of India, under the Chairmanship of Shri Som Pal and consisting of two Full-time Members and three Part-time Members in addition to a Member Secretary.

Following the installation of the United Progressive Alliance (UPA) Government in the Centre, it was deemed necessary to revise the Terms of Reference and Composition of the Commission in order to reflect the priorities and concerns outlined in the Common Minimum Programme. Accordingly, the Commission was reconstituted under the Chairmanship of Prof. M.S.Swaminathan. The terms of reference and the composition of NCF are in Annexure 1.

Prof M S Swaminathan joined as Chairman, NCF on 11 August 2004. Since then, the Commission has held consultations with State Governments, financial and insurance institutions, representatives of farm and tribal women and men, and civil society organizations, academia and media representatives working on problems relating to farming and farmers. In addition to several meetings in New Delhi, consultations were held at Cochin, Chennai, Hyderabad, Jeypore (Orissa), Ahmedabad, Shillong, Dehra Dun and Mumbai. Ensuring the income, work and livelihood security of farming families through enhancing the productivity, profitability and sustainability of the major farming systems, strengthening the food and nutrition security of the nation, imparting value addition to the time and labour of assetless agricultural labour families through technological and skill empowerment, ensuring gender justice and equity in all agricultural development programmes, and involving Panchayati Raj institutions in fostering environmentally sustainable agricultural progress have been the basic principles in the approach of NCF to fostering agrarian prosperity and rural livelihood and ecological security.

## 3. Challenges

Farm families in India constitute over two thirds of the population. Since farmers are also consumers, the sharp distinction often made in industrialized countries between the interests of farmers and consumers, is not valid in the Indian context. Detailed analyses of the causes of food insecurity in rural and urban areas have revealed that the major cause of under- and malnutrition among children, women and men is the lack of adequate purchasing power to permit access to balanced diets and clean drinking water. Therefore, NCF feels that a 3-pronged strategy needs to be introduced to ensure the economic well-being and nutrition security of rural families. First, families possessing assets like land, livestock or fish ponds will have to be assisted to enhance the productivity of their resource endowments in an environmentally and economically sustainable manner. The smaller the holding, the greater is the need for marketable surplus. Hence, the highest emphasis has to be placed on increasing output per units of land, water, nutrients and labour based on technologies which are ecologically and economically sound. For this, we need more research on the development of eco-technologies based on blending traditional ecological prudence with frontier technologies like information and biotechnology and space and renewable energy technologies.

Second, nearly a third of the rural population and a large proportion of women earn their livelihood through wage employment. They have no assets like land or livestock or fish ponds and are also often illiterate. The challenge in the case of landless agricultural labour is enhancing the economic value of their time and labour by bringing about a paradigm shift from unskilled to skilled work. A massive effort in the area of knowledge and skill empowerment of the women and men constituting the landless labour work force is essential if economic value is to be added to their time and labour. They will have to be enabled to take to skilled non-farm employment through market-driven micro-enterprises supported by micro-credit. Self-help Groups (SHGs) of assetless women and men will have to be made sustainable through backward linkages to credit and technology and forward linkages with markets. Common property resources will have to be developed and managed in a manner that they can provide essential support systems in areas such as fodder and feed for stall-fed animal husbandry as well as fuel wood. At the same time, the unfinished segments of land reform including the distribution of ceiling surplus land to assetless families should be attended to with speed and commitment. The interests of unregistered cultivators, tenants and tribal cultivators will have to be safeguarded.

The third group are rural artisans working in the secondary and tertiary sectors of the economy. Their skills will have to be mobilized to enhance the competitiveness of agriculture through value-addition to primary products and diversification of livelihood opportunities. The strategy for the technological upgradation of rural professions should be based on the principle of social inclusion.

Thus, the three pronged strategy consists of improving the productivity of land, water, livestock and labour in the case of asset owning farm families, converting unskilled agricultural labour into skilled entrepreneurs engaged in organizing market-driven non-farm enterprises, and enhancing the skills of families involved in the secondary and tertiary sectors of the rural economy, so that they are able to assist in improving agricultural efficiency and competitiveness and in ending the prevailing mismatch between production and post-harvest technologies.

4. **Threats**:

First, the ecological foundations essential for sustained advances in productivity, such as soil, water, biodiversity and forests are under severe anthropogenic pressures. The human and

farm animal population supporting capacity of the ecosystem has been exceeded in many parts of the country. The quantity and quality of ground water, which is now the dominant source of irrigation water, is fast deteriorating. Although India has over 20% of the world's farm animal population, good grazing lands are practically non-existent. Compounding current problems, the possibility of adverse changes in precipitation, temperature and sea level due to global warming and climate change is no longer just a theoretical conjecture.

Second, in the area of farm economics, resource flow to the agriculture sector is declining and indebtedness of small and marginal farm families is rising. Input costs are increasing, while factor productivity is declining. Contrary to the general impression of agrarian prosperity in the Punjab, the total debt in the farm sector has been estimated to have increased from Rs.5,700 crore in 1996-97 to Rs. 11,133 crore in 2002-03. The average farm debt in the Punjab now exceeds a lakh of rupees (Rs. 1,01,210), out of which more than 40% is provided by non-institutional sources at an interest rate of nearly 24% per annum. The cost-risk-return structure of farming is becoming adverse to over 80 million farming families operating small holdings, since the resource poor families cultivating 1 to 2 ha or less are unable to benefit from the power of scale at both the production and post-harvest phases of farming.

Third, **a technology fatigue** has further aggravated farmers' problems, since smaller the farm the greater is the need for sustained marketable surplus, in order to have cash income. Linkages between the laboratory and the field have weakened and extension services have often little to extend by way of location, time and farming system specific information and advice. Good quality seeds at affordable prices are in short supply and spurious pesticides and biofertilizers are being sold in the absence of effective quality control systems. Input supply is in a disarray particularly in dry farming areas. Micronutrient deficiencies in the soil as well as problems relating to soil physics are crying for attention. Farmers have no way of getting **proactive advice** on land use based on meteorological and marketing factors. Though it is now over ten years since the WTO regime started operating in agriculture, serious attempts are yet to be made to launch in rural areas movements for quality literacy (sanitary and phytosanitary measures and *codex alimentarius* standards of food safety), trade literacy (likely demand-supply and price situation) legal literacy (IPR, Farmers' Rights) and genetic literacy (genetically

modified crops). No wonder the prevailing gap between potential and actual yields even with technologies currently on the shelf is very wide (Table 1).

**T A B L E - I**

Comparative Crop Productivity (kg/hectare)

| Crop | USA | China | India |
|---|---|---|---|
| Maize | 8900 | 4900 | 2100 |
| Paddy | 7500 | 6000 | 3000 |
| Soybeans | 2250 | 1740 | 1050 |
| Seed Cotton | 2060 | 3500 | 750 |
| Tomato | 6250 | 2400 | 1430 |

5. In the area of technology, there is also need to bridge the growing digital and genetic divides. Post-harvest technology is poor and there is little value addition particularly in the case of fruits, vegetables and spices including a wide range of tubers and medicinal and aromatic plants. Sustainable intensification, ecologically, economically and nutritionally desirable diversification and value addition to the entire biomass are important for raising small and marginal farm families above subsistence level. All this will call for initiating an era of **knowledge intensive agriculture**. Modern information communication technologies (ICT) afford an opportunity for launching a knowledge revolution in rural India. The torch bearers of this revolution should be rural women and men. **Participatory research and knowledge management involving farm women and men should be the principal pathways of research, education and extension. Farmers should be regarded as partners and innovators in bringing about agricultural transformation and not as <u>beneficiaries</u> of government programmes. Such a change in mindset among government functionaries is essential for progress.**

Technologies should help in promoting labour diversification and not displacement. Women farmers and labour particularly need to be assisted with implements and equipment which will help to reduce drudgery and the number of hours of work, while adding economic value to each hour of work. Women suffer from a multiple burden on their time due to home making and keeping, child rearing and income earning responsibilities. They need appropriate support services like crèches and child care centres and adequate nutrition. The feminisation of agriculture, due to male outmigration, needs specific attention with reference to gender sensitive

farm and credit policies. **All research and development programmes in agriculture must be engendered.**

Revitalisation of small farmer-friendly technologies should be based on sound principles of economics and participatory research and knowledge management. If for example, rice-wheat rotation is not desirable in the Punjab from the standpoint of ecological sustainability, the alternative farming systems proposed should be capable of yielding similar income. **Agronomic data should not only indicate yield per hectare of land, but also the likely return from every rupee invested and every liter of water used by the farmer.** Lateral learning among farm women and men should be fostered, since farmer to farmer learning is based on the principle – "one ounce of practice is worth tons of theory". India is also the home of some of the best farm families in the world. In the midst of many hunger and agro-ecological "hot spots", there are also numerous farming "bright spots". In order to multiply the benefits from the experience and skills of outstanding farm men and women, **Farm Schools** should be established in their fields.

6. **Priorities:**

Based on Consultations with State Governments as well as discussions with farm and tribal women and men and media representatives, a few areas were identified for priority public policy support and financial allocation in the Union and State budgets for 2005-06. A business plan approach was adopted while developing the immediate, "save farmers and farming action plan", since we are aware that our proposals should not merely be desirable, but **should be actionable and affordable**. **We would like to stress that agriculture being a State subject, State governments also have the responsibility of providing adequate support particularly to meet the needs of location-specific agricultural problems, as well as the health, education, drinking water and other social and production infrastructure essential for farm and agricultural labour families to have an opportunity for a healthy and productive life.** Public policies which are likely to result in ecocides (i.e. ecological suicides) should be avoided. Pandemics like HIV/AIDS and Tuberculosis need to be checked, if our agriculture is not to experience the kind of human disease-induced setback currently occurring in several countries in Africa.

Based on such considerations, the following areas have been identified for adequate support in the Union and State budgets of 2005-06:

A. Life-saving support for farm families experiencing acute distress due to a combination of meteorological, marketing, technological, social and credit and input management factors: The causes for the distress are diverse and there is no simple or single remedy. Our immediate suggestions relate to risk management through a basket of insurance options, and streamlining of delivery systems relating to credit and other entitlements. At the same time, a beginning can be made in the 150 districts identified for the National Food for Work programme to form consortia of public and private sector agencies for assisting resource poor farm women and men to strengthen their livelihood security through additional on-farm and off-farm income. The private sector can particularly play a vital role by helping to provide assured and remunerative marketing avenues for farm produce and for the products produced by SHGs. Outsourcing of manufacturing tasks from urban to rural areas should be fostered.

B. Productivity and Livelihood Enhancement in rainfed areas. The major pathway has to be productivity enhancement and the cultivation of high-value but low-water requiring crops. A catalytic intervention which will help to increase productivity immediately is attention to soil healthcare. The provision of micronutrients like sulfur, zinc and boron can help to increase yield by over 50% in dryland farming areas. Facilities for identifying and remedying micro-nutrient deficiencies in soils are urgently needed. **Soil Health Clinics** can be operated by SHGs comprising rural women and men who can issue each farm family with a **Soil Health Card**. Also, livestock and livelihoods are closely inter-related in dry farming, semi-arid and arid-areas. Hence, the establishment of fodder and feed banks should receive urgent attention. The gap between available scientific know-how and field level do how is very large in dryland farming areas. Bridging the productivity gap in an economically viable manner is the best safety net against farmers' distress in such areas. For accelerating progress in finding lasting solutions to the economic woes of farmers and agricultural labour, it would be useful to form District-level consortia of private and public sector institutions willing to help in improving small farm income and off-farm employment opportunities.

C. Small Farmers' Horticulture Estates. The cultivation of fruits, vegetables, flowers, spices, medicinal and aromatic plants is now happening in a big way in several parts of the country. Being perishable commodities, horticultural crops need effective infrastructure support in the areas of production, processing, storage, transportation and marketing. In villages adjoining large consumption centres (both for home and export markets), small farmers can be helped to organise **Small Farmers' Horticulture Estates** in the form of SHGs covering an area of 200 to 500 hectares. In such Estates, specialized activities like seed production, tissue culture propagation, production of compost, vermiculture, biofertilizers, biopesticides and e-commerce can be promoted through technological and credit empowerment. Such Estates will confer on farmers cultivating one to two hectares the power of scale both at the production and post-harvest phases of the horticultural enterprise. Low cost green houses coupled with fertigation techniques can be promoted, in addition to high-tech horticulture which can be undertaken by farm and home science graduates. The production of good quality, disease-free planting material is important in all clonally propagated species. Also, seeds and planting materials of varieties suitable for processing will have to be provided to farmers in areas where production and processing are linked. Such symbiotic linkages between producers and processors will facilitate sourcing of good quality raw material for the processing industry.

D. Enhancing the productivity of cotton and the global competitiveness of the cotton textile industry:

The textile sector is a major employment and income providing sector of the national economy. With the coming to an end of the multi-fibre arrangement on 1st January, 2005, our cotton producers, weavers and the textile industry will encounter both new opportunities and threats. Without enhanced efficiency, it will be impossible to take advantage of the emerging market opportunities. Technological upgrading of all the components of the cotton production – processing – marketing cycle, will be needed to prevent this vital sector of our economy, particularly with reference to both employment and export earning potential, from setbacks. A productivity, quality and value addition revolution is urgently needed in cotton production and processing. To provide overall

coordination and policy support it will be advisable to establish a Multi-stakeholder **National Cotton Council**, with the Union Ministers for Agriculture & Food and for Textiles as Chair and Co-Chair of the proposed National Cotton Council.

E. Women farmers and farm labour:

There is increasing feminisation of agriculture in families with small and marginal holdings, due to the out-migration of men. The problem is particularly severe in hill areas like Uttaranchal, Jharkhand and the N.E. States. Yet, out of nearly 44 million Kisan Credit Cards so far issued in the country, less than 10 percent seem to have been issued to women (precise data are not available). The proposed conferment of land rights to women will help to redress this distressing situation. Meanwhile, **joint pattas** will have to be issued to make women eligible for institutional credit. Also, women working the whole day in the field require support services like crèches and day care centres. A unique opportunity now exists for engendering the ongoing National Food for Work programme by enlarging the concept of **work** in the case of women by including such initial activities like running crèches and child care centres, preparing school noon meals, undertaking immunization of children, providing family planning services, etc. The curriculum of Agricultural, Veterinary, Forestry and Fisheries Colleges should be engendered without further delay.

F. Every Village a Knowledge Centre:

India's strength in ICT provides uncommon opportunities for taking digital and knowledge connectivity to every village in the country by August 15, 2007. Reaching the unreached and voicing the voiceless will be possible through an integrated ICT strategy involving the internet, community radio, cable TV and vernacular press. The fibre optic network of Bharat Sanchar Nigam Ltd (BSNL), comprising 30,000 exchanges, covers all the 6,000 blocks of the country. If each exchange is extended to 20 nearby villages, all the 600,000 villages can be covered at minimal expenditure. It is unfortunate that out of 16 tetra bits of international connectivity available now, only 0.35 tetra bits have been lit. Less than 0.20 tetra bits are being used. We should aim to leapfrog in spreading the power of the digital age to rural India.

The Rural Knowledge Centres should be located in public spaces like Panchayat Centres or Village Schools, so that there is social inclusion in access. The National Alliance for Mission 2007 : Every Village a Knowledge Centre and the Jamsetji Tata National Virtual Academy for Rural Prosperity are effective instruments for launching knowledge based agriculture and rural non-farm enterprises. Panchayat Raj institutions will have to play a leading role. NABARD, SBI and other financial institutions can support Rural ICT SHGs, who can maintain and operate the Knowledge Centres. Connectivity, content, capacity building, care and management of the Knowledge Centre will all need integrated attention to make the movement socially meaningful and economically sustainable.

G. Building a Sustainable Nutrition Security System:

Nutrition security is best defined as "physical, economic, social and environment access to balanced diet and clean drinking water for all and for ever". The Central and State Governments have initiated from time to time a large number of nutrition safety net programmes. An accelerated advance in achieving the goal of nutrition security at the level of every child, woman and man will be possible through the following interactive steps:

- Deliver all nutrition support programmes on a whole life cycle basis and fill up gaps in ongoing programmes, such as the nutritional needs of adolescent girls, pregnant women and 0-2 infants.

- Ensure access to clean drinking water, environmental hygiene, primary healthcare and primary education.

- Take special steps to overcome hidden hunger caused by micronutrient deficiencies like iron, iodine, zinc and Vitamin A.

- Promote the cultivation and consumption of fruits and vegetables as well as of dairy products.

- Facilitate the setting up of local level community Food Banks, comprising locally grown grains like millets and legumes, thereby enlarging the

composition of the food basket. Also, promote the setting up of Fodder and Feed Banks, since livestock and livelihoods are intimately related in most parts of the country, particularly in semi-arid and arid areas.

- Generate awareness about the human and farm animal population supporting capacity of the ecosystem, in order to generate interest in population stabilization.

- Launch a massive movement in rural areas for additional employment and income generations. The on-going Self-help Group (SHG) revolution should be made sustainable through backward linkages with technology and credit and forward linkages with markets.

- Provide nutrition support to rural women and men suffering from HIV/AIDS and Tuberculosis.

**Such a local level Nutrition Security Compact is best designed and managed by SHGs operating under the oversight of the Gram Panchayat and Gram Sabha.** We should also plan to launch a **Food Guarantee Scheme** by integrating the principles of Employment Guarantee and Food for Work programmes.

H. Employment generation in Agriculture:

In the ultimate analysis, a sustainable end to hunger can be achieved only by providing opportunities for every woman and man **to earn** their daily bread. A detailed strategy for creating additional skilled jobs through horticulture, cotton, energy plantations, animal husbandry, biofuels and biomass utilization is being developed. India is rich in livestock resources. Nearly 20% of the farm animal population are in India. Crop-livestock integrated production systems can help to enhance both household nutrition security and cash income. Over-riding priority should go to fighting the famine of jobs / sustainable livelihood opportunities through the creation of economically rewarding and intellectually stimulating work opportunities in villages. This is the only way to attract and retain educated youth in villages.

7. **Uncommon Opportunities**:

This first report is designed to assist Central and State Governments to arrest the decline of farm income and farmers' distress. It provides implementable and affordable suggestions for triggering an agriculture-led economic and livelihood revolution. No further time should be lost in taking advantage of the opportunities for saving farmers and farming through the opportunities highlighted in this report in the form of business plans.

There are numerous institutional structures already available to Government, like SFAC, NHB, NDDB, Agri-clinics, Agri-business Centres, Food Parks, Agro-export Zones, several Commodity Centred Technology Missions, Watershed and Wasteland Development Programmes etc. Instead of starting many new schemes, what is needed is the revitalization and restructuring of existing schemes and institutional structures and the retooling and retaining of existing staff. Also, we are suggesting ways of minimizing transaction costs and improving delivery efficiency through convergence and synergy among the numerous on-going vertically structured programmes.

The initiation of a National Rural Employment Guarantee scheme together with an expanded Food for Work Programme provides a unique opportunity for launching a multi-pronged attack on poverty and rural unemployment. Engendered work under this programme can become a catalyst of a long term sustainable livelihood security movement in the different ecological, hydrological and farmers' distress hot spot regions of the country.

NCF feels that all the above programmes will have to be implemented in a decentralized manner with authority and accountability being linked at the field level. The 11$^{th}$ Schedule of the Constitution Seventy-Third Amendment Act 1992 on The Panchayats lists agriculture, including agricultural extension as the very first responsibility of Panchayats (Article 243 G). Other items including Animal husbandry, dairying and poultry, fisheries, minor irrigation, water management, watershed development, land improvement, implementation of land reforms and land consolidation and soil conservation are also the responsibilities of Panchayats. Therefore they should

be actively involved in the detailed planning and implementation of the priority action plan proposed in this Report.

## 8. Malady – remedy Analysis

The crisis in our agriculture has arisen because of lack of appropriate public policies as well as adequate public investment in rural infrastructure. Therefore, the cures for the prevailing maladies can be found only in public policies and investment. Spending by Central and State Governments in strengthening the ecological, technological and social foundations for sustained advances in farm productivity has been going down. Most of the money spent by Central and State Governments goes to the salaries of government officers and employees. Consequently, rural infrastructure including power, irrigation, market yards, rural godowns and communication, as well as vital sectors like health and education remain grossly under-funded.

Declining credit-deposit ratios in rural areas, volatility of prices, weak research and extension and neglect of women farmers and farm labour have all added to the woes of the farming community. Indebtedness of farmers is rising not only because of farming related expenditure, but also because of the need for money for healthcare. The public healthcare system in villages is in a state of collapse. Pandemics like HIV/AIDS and Tuberculosis are spreading in villages. Because of protein-energy under-nutrition as well as micro-nutrient deficiencies, a purely drug based approach to the control of diseases is not adequate. A nutrition support programme is equally important. Thus, there is need for a holistic approach in addressing the technological, financial, health, educational and marketing problems faced by farm women and men.

The crucial role of women farmers and labour in agriculture is yet to receive recognition. Women play a key role in all the four major components of farming, namely, conservation, cultivation, consumption and commerce. Until the commitment to provide land rights to women is fulfilled, it is important to ensure that joint pattas making women eligible for Kisan Credit Cards and institutional credit, are issued without further delay. 2005 marks the tenth anniversary of the Beijing Conference on Women and Development which drew attention to the growing feminisation of agriculture and of

poverty. Therefore it will be appropriate to introduce in the 2005-06 budget a **New Deal for Women in Agriculture**. The various components of such a New Deal are described in this Report. Credit, insurance, technology development and dissemination, healthcare, education, input supply, output marketing and rural employment and food for work programmes should all be engendered.

Another area which needs urgent attention is the economy of scale in farm holdings. The average size of farm holding has declined from 2.69 h.a. in 1960-61 to 1.41 h.a. in 1995-96. The process of decline in the size of an operational holding is continuing. There are now about 115.6 million farms. The use of purchased inputs by farmers has multiplied 283 times during 1950-51 to 2000-01. To meet input costs, the rural poor borrow 84% of their credit needs from non-formal sources. The quantities of marketable surplus have multiplied to the tune of 10 times of cereals, 4.6 times of oilseeds, 5.3 times of milk, 15.4 times of poultry products and 7.4 times of fish during the last 50 years. Yet, post-harvest infrastructure is weak. Even now farmers in several parts of the country dry the freshly harvested paddy on paved roads, where there is often heavy vehicular traffic. Drying yards are a luxury in a majority of villages.

Value addition in the case of horticulture products is less than 10%. The gross marketing margin in farm commodities is estimated at Rs.1009 billion, out of which nearly 70% is accounted by marketing cost. About 77% of marketing costs are estimated to be avoidable losses during handling, storage and transport. Quality, labeling, brands, taxes, subsidies, sanitary and phytosanitary (SPS) issues, price volatility, removal of quantitative restrictions on imports and the absence of a level playing field in international trade due to the very high support (nearly 1 billion dollars per day for 10 million farming families) extended to farmers in OECD countries, are all becoming significant factors in agricultural marketing.

## 9. Enhancing Agricultural Competitiveness: Basket of Choices

Raising the agricultural competitiveness of farmers with small holdings is a major challenge. Methods of conferring the power of scale to small farm families both at the production and post-harvest phases of farming is an urgent necessity. A basket of

choices should be available to farm women and men cultivating 1 or 2 h.a. or below to enhance their income earning capacity. Productivity improvement to increase the marketable surplus available to small farm families, assured and remunerative marketing opportunities, and creating opportunities for landless agricultural labour families for skilled non-farm employment should be the bottom line of public policy. The basket of choices for enhancing productivity, profitability and sustainability could include the following:-

a) Formation of Self-help groups of farm families to undertake group operations in areas like water harvesting and management, pest management and post-harvest technology. Some examples are: Small Farmers' Horticulture, Cotton and Poultry Estates.

b) **Promotion of contract farming** to ensure assured marketing outlets on the basis of a well defined Code of Conduct; the **Code of Conduct for Contract farming** should include provision of support to small producers in the areas of technology and input supply and fair price for the produce.

c) Revitalising and restructuring various government schemes like Agri-clinics, Agri-business centres, Rural Godowns, Small Farmers Agri-Business Consortium (SFAC), National Horticulture Board, etc. so as to make them farmer centric.

d) Promoting the active involvement of Panchayati Raj institutions and local bodies to foster Water-shed/Command Area Communities and **making the Water-shed or the irrigation command area the point of convergence and integration of all relevant Technology Missions like those relating to oilseeds, pulses, maize, cotton, horticulture, milk, etc.** Convergence and Synergy among the numerous Technology Missions now in progress will improve their utility and impact and also help to reduce overall transaction costs. All the Missions could be integrated under an umbrella set-up which could be termed **"National Federation**

**of Farm Technology Missions**". The ongoing Missions operating on parallel lines appear to have very little accountability, since inspite of their existence, imports of pulses and oilseeds are going up. Pulses and oilseeds are important nutrition and income providing crops in rainfed areas and farmers in dry farming areas will continue to suffer in poverty and deprivation unless the proposed National Federation of Farm Technology Missions extends to them the needed help at the right time and place. Such a National Federation is best Chaired by a practicing farm woman or man, who has a proven record of unleashing the power of creativity in small farm management. Its major aim should be to enhance farm productivity and agrarian and rural prosperity.

10. **Resources**

The underlying principles governing our recommendations are affordability and implementability. Catalytic actions are needed to achieve more from the available resources. The resource use and mobilization strategy of NCF has the following four components:

a) Maximise the benefits from the resources allotted to agriculture by the Central and State Governments by bringing about convergence and synergy among the numerous on-going programmes with the active involvement of Panchayats and local bodies. An example is the proposal to use the watershed or command area of an irrigation project as the hub of all appropriate Technology Missions and create for this purpose a National Federation of Farm Technology Missions chaired by an outstanding farmer.

b) Make additional allocations to fill critical gaps in essential rural and agricultural infrastructure and services, including education, irrigation and post-harvest technology.

c) Enable small farm families to maximize the benefits of their land, livestock and other assets by bridging the prevailing gap between scientific know-how and field

level do-how through mutually reinforcing packages of technology services and public policies.

d) Help rural families without assets like land, livestock or fish pond to take to skilled non-farm employment through market driven micro-enterprises supported by micro-credit.

e) Promote the effective implementation of all land reform measures, including the distribution of ceiling surplus land to antyodaya families and the security of tenure in the case of tenant and tribal farmers.

11. **Critical role of education and healthcare**

The important steps recommended by NCF, such as value addition to primary products, turning unskilled into skilled labour and using digital technology in villages, require for effective implementation an educated population, with minimum level of Class X education. Unless all children in our villages, especially girls, dalits and rural poor get educated, the goals of social equity and agrarian and rural prosperity cannot be achieved. Until formal literacy becomes universal, the techniracy movement (i.e. learning the latest technical skills through work experience) should be spread. For this Krishi Vigyan Kendras should be developed into Krishi Aur Udyog Vigyan Kendras, with equal emphasis on production and post-harvest technologies. Farm Schools can also be established in the fields of innovative farmers.

Along with education, healthcare facilities for the rural poor need to be strengthened. There is need to increase substantially public investment both in elementary education and healthcare in rural India.

12. **Addressing Five Basic Needs**

Asset reform, technology, water, credit and producer-oriented market are among the five basic needs of farm women and men. Hence, these critical factors need to be taken into account in plans designed to reverse the prevailing farmers' distress. We have accorded priority attention to them in the action plans described in this Report. Since

water is vital for agriculture, action in ensuring water security for agriculture as well as for domestic and industrial purpose needs overriding priority. A few suggestions relating to the building of a sustainable water security system are therefore given based on the initiatives outlined by the Union Finance Minister, Shri P.Chidambaram, in the budget for 2004-05.

13. **Policy for Water for Agriculture**

The lack of availability of water has become the most critical limiting input for Indian agriculture. Farmers from across the country say that water shortage, during drought and even during non-drought years, is destroying their ability to grow food. What is often not appreciated is that groundwater irrigates a larger area than surface water; over 60 percent of the cropped area in the country. Another 20 percent of the agricultural area is irrigated using groundwater in conjunction with tanks and canals. Groundwater levels are declining sharply. This is partly because technology is allowing for deeper and deeper penetration and extraction, with little regulation over use or misuse. The Central Groundwater Board estimates that 65% of the districts in the country are over-exploited from the point of view of ground water. The electricity subsidy worsens the situation, with estimations that farmers end up using almost double the water for each unit of crop when they have access to cheap or free power as compared to pumpsets using paid diesel. But worse, electricity supply to farmers is always uncertain and unreliable, which affects their capacities to take decisions. It is imperative, therefore, that any policy for agricultural reform, must take into account the need to evolve programmes for recharge and management of the groundwater reserves of the country.

It is also clear that farmers will remain dependent on rainfall water for agriculture. Rainfed agriculture, however, risky and vulnerable, continues to play an important role in India, contributing 60 percent of the cropped area and 45 percent of the total agricultural output. There is a need for renewed attention to programmes, which effectively address the challenge of improving productivity and reliability of rainfed agriculture.

In this context, the programme announced by the Finance Minister Shri P.Chidambaram in his budget of 2004-05 to "launch a massive scheme to repair, renovate and restore all the water bodies that are linked to agriculture" is of paramount importance. We should put in place an effective and sustained programme for implementation of this programme so that we can provide water security and hence livelihood security to our farmers.

It is also worrying that drought is no longer a question of a failure or variation in the current rainfall, but one that concerns the increased vulnerabilities of the farm sector to cope and withstand shocks. It is important to note that drought, for the rural sector, is not only about the lack of drinking water or declined agriculture productivity, it is also about non-availability of fodder for animals. The shortages of fodder results in the loss of livestock, which in turn makes them weaker and more disabled to deal with the vagaries of the next season. Drought in this way does not remain a temporary phenomenon, but one that is permanently crippling. It is therefore, essential that not only does the country have an effective system for monsoon management and drought monitoring but also places renewed emphasis on grassland development so that food reserves of the country's animals can be built along with the food banks of its people.

It is equally clear that water use is increasing in all sectors. Therefore, the use of water in agriculture will face greater and greater competition from others – in industry and urban areas – and this will inevitably lead to conflict. It is therefore important to begin to build policies for conserving water in all sectors, including agriculture. The use of water in agriculture is consumptive – in other words, the used water is consumed and 'virtually' transferred via a product – to us in our food. This is different from the use of water as a process, where water is mostly discharged after use and rejoins the water cycle. For instance, cities discharge 80 percent of the water consumed as sewage back to the hydrological system.

Policies will have to be built to optimize water use in both these broad sectors. In the case of agriculture we will have to invest in improving the yield per hectare and per unit of water consumed. A recent study shows that of the 660 billion cubic metres of

total consumptive use of water by crops, roughly 55 percent is accounted for by irrigated crops. While rice accounts for a little over 20 percent of all water consumed by all crops, wheat alone uses 30 percent of the irrigated water. Interestingly, while yields per unit of irrigated area are higher than in unirrigated areas, the yield per unit of consumptive use of water is not always higher – in fact, they are normally 10 to 30 percent lower. It is important for us to invest in research, which will promote water-efficient crops and do all we can to value each drop of water.

14. **Immediate Tasks**.

a) **Million wells recharge programme.**

Research from across the world as well as India suggests that groundwater is actually more productive (producing more crops per hectare) than surface water. This is because farmers who use groundwater can get as much water as they need, when and where they want. It is not surprising therefore, while canal irrigation was the main driver of irrigated agriculture in the 1970s, by the 1990s, groundwater had become the major force. Studies also suggest that small and marginal farms, which make up 29 percent of the total agricultural area, account for 38 percent of the net area irrigated by wells and 35 percent of the tubewells fitted with electric pump sets.

But the problem is that even as the use of groundwater has increased little has been done to recharge the aquifers so that as far as possible we can ensure that abstraction is limited only to what we can annually recharge. Today, much of the recharge is natural and incidental. This recharge depends on various factors like rainfall, soil characteristics and geomorphology. The Central Groundwater Board, which has calculated the rainfall infiltration factors for different hydrogeological situations in the country, estimates that the highest infiltration is between 20-25 percent (in sandy areas). There is a need to rebuild reserves through artificial recharge using rainfall and monsoon flows in rivers.

As yet, there is no government programme, which specifically targets the individual wells of farmers. It is estimated in various studies that there are roughly 19-20 million well owners in the country. This programme needs to be targeted towards each

well owner, encouraging them, with small financial assistance, to undertake a programme to recharge their well, by channelising the rainwater to the well. The cost of the individual well recharge is between Rs.1000-5000 as this depends on the cost of the filter that is needed to ensure that mud and soil do not enter the well. As the quantum required is very small and will lead to high transaction costs, **we would suggest that the million well recharge programme is linked to a rebate in the rate of interest provided under the enhanced agricultural credit programme.** In this way the programme will provide farmers an incentive to invest in well recharge, which in turn will make agricultural productivity more reliable and less risky.

b) **Rebuilding water bodies.**

The Finance Minister has already announced this programme. But being linked to an annual budget, there are constraints on the programme's sustainability. It is important to understand that water harvesting is not about an instant (annual) miracle. It will take time and investment to rebuild our rural capital. We have to think of it like a bank account, which we have overdrawn upon. Similarly, our groundwater aquifers are in deep trouble. We need to replenish these speedily. It is clear that all villages, which have practiced water conservation between 7-10 years at a stretch are able to build capacity to withstand even prolonged drought. But the challenge is to build this programme with farm families, as they alone can invest in their water security.

**We would suggest a massive programme for water bodies with the objective to secure water and food security in the country**.

The programme may be organised as follows:

a. It must draw upon the current fragmented programmes – Drought Prone Areas Programme (DPAP), Desert Development Programme (DDP), National Watershed Development Programme for Rainfed Areas (NWDPRA), Integrated Watershed Development Projects and Programme (IWDP), the National Afforestation Programme (NAP) and the National Watershed Development Fund – for a common objective purpose to build water and livelihood security. There is

no apparent shortage of funds in this area. The task is to work towards an effective programme, which is driven by a common objective. For instance, the National Afforestation Programme alone has been allocated Rs 1,115 crore for the 10th plan. The work of this programme is to regenerate the forests, which in turn will rebuild the watersheds of agriculture.

**b.** The problem is that there is no enabling mechanism to effectively coordinate the delivery of the programme. The only mechanism is through the common approach guidelines evolved between the Ministries of Agriculture and Rural Development. This matter has been deliberated upon for many years, without much headway. We would **therefore suggest that the best coordinating mechanism for these programmes is through the greater involvement of the Panchayati Raj department so that village communities play a direct and enabling role in the delivery of these schemes.**

c. In addition, the programme must make use of the funds available in existing employment programmes – such as food for work, or the proposed employment guarantee programme as the main aim of labour in villages is to build natural assets.

d. **Over and above this we would suggest enhanced allocation specifically for water bodies in the next budget, as an endowment fund.** The 2004-05 budget provided for two specific programmes (restoring water bodies and water harvesting) with **a financial allocation of Rs 200 crore**. This allocation must be increased and provided as an endowment so that funds for this activity are available over a period of time, which will make it sustainable.

15. **National S&T Alliance for Rural Livelihood Security**.

At a consultation organized jointly by NCF and the Union Planning Commission at Delhi on 23rd December 2004, it was decided to form a **National Alliance of S and T institutions** in the public and private sectors to provide technical backstopping to the National Rural Employment Guarantee and National Food for Work programmes, so that the work undertaken leads to an engendered livelihood security system. **The National**

**S&T Alliance for Rural Livelihood Security** will bring together ICAR, CSIR, ICMR, ICSSR, Departments of Atomic Energy, Science and Technology, Biotechnology and Ocean Development, UGC, Ministry of Non-Conventional Energy Sources and other Central Government institutions, Agriculture, Rural and Women's Universities, as well as private sector and civil society R&D institutions and Banks and financial institutions for the purpose of initiating in the 150 districts identified by the Planning Commission for special attention, an engendered sustainable livelihood security programme through knowledge, skill, information and market empowerment. The National S&T Alliance will be a virtual organization and will promote a multi-institutional and multi-disciplinary team effort to foster **job-led economic growth in rural India**. The areas of concern will include, besides the promotion of economically viable SHGs, health, education and nutrition. The S&T Alliance will aim to bring about confluence and synergy among the efforts of private, public and academic sector institutions to undertake a massive human resource development and capacity building programme, to begin with in the 150 districts chosen for the National Food for Work Programme. Sustainable SHG programmes based on poor-friendly technologies will be developed. The National S&T Alliance will be serviced by the National Academy of Agricultural Sciences.

The National S&T Alliance will promote the formation of similar alliances at the State level. The State level S&T consortium will be serviced by the appropriate State Agricultural University. At the district level, this programme will be linked to the DRDA. The District level S&T consortium will give priority to the following activities:

- Assisting local farm and landless labour families to access their entitlements
- Capacity building – building a cadre of Master Trainers
- Mentoring
- Establishing market linkages

The formation of National and State Level S&T Alliances for fostering economically sustainable and gender sensitive livelihood systems in villages will be an important step in mobilizing the power of partnership in ushering in an era of job led economic growth

in rural India, based on a pro-poor, pro-women and pro-nature orientation to technology development and dissemination. Technology can then become an ally in the movement for gender and social equity.

16. **Soil Health Management**.

An important reason for the low return per unit of water is the lack of synergy between a genetic strain, irrigation water and soil nutrition. Hidden hunger in the soil resulting from micronutrient deficiencies results in hidden hunger in farm animals and human beings. We should strengthen our capacity to advise farmers on soil healthcare.

There is need for additional facilities for reliable soil test analysis for 13 macro and micronutrients, since this is critical for improving crop productivity. This requires sophisticated, finely-tuned equipment (atomic absorption spectrophotometer, UV spectrophotometer, etc.) that are currently unavailable in most soil testing laboratories. Implementation of the technology will require a quantum jump in the number of soil test laboratories and soil test analyses conducted throughout the country. Therefore it is advisable to establish new laboratories to supplement the existing network. Since the laboratory equipment requires frequent recalibration to maintain reliability, a national monitoring agency is also required to obtain and compare test results on standard samples on a monthly basis.

Initially it cannot be expected that farmers will fully appreciate the value of a complete soil test. Therefore, it is proposed that the Government conduct an intensive programme of free tests for the first one or two years, until the efficacy of the approach is demonstrated. Thereafter, fees can be charged to recover the cost of the tests and the cost of establishing additional laboratories. If a commercial fee structure is fixed of Rs 200 to 250 per test, then farm graduates will be attracted to supplement the government effort by establishing Agri-clinics which can undertake such tasks as soil health monitoring and management and pest proofing on an area basis. Agri-clinics can also be established in Farm Schools. A Project Design Team could be set up to work out the details on the lines indicated below.

1. Objective: To establish a national network of sophisticated soil testing laboratories capable of testing large volumes of soil samples on a full spectrum of 13 macro and micro nutrients.

2. Anticipated Benefits: To provide farmers with essential tools for doubling or tripling crop yields and farm incomes.

3. Actions Required by Government:

    - Conduct an inventory of all existing soil test labs to ascertain the type, age, condition and test volume capabilities.

    - For labs that report having the required equipment, conduct calibration tests to ensure that the equipment is working properly.

    - All labs that do possess the required equipment should be upgraded or supplemented by new labs.

    - Establish a national monitoring system to recalibrate all lab equipment on a monthly basis or as often as necessary to maintain test accuracy.

4) Programme Cost & Funding:

    - The objective should be to provide a complete soil test analysis at the commencement of each cropping season. Since accurate analysis requires limiting the sample size to three or four acres per sample, this will require approximately 25,000 to 50,000 tests per district per month. In the first phase there should be a minimum of one lab per district, each with the capacity to conduct a minimum of 10,000 complete soil analyses per month.

    - The cost of a new lab capable of processing 400 samples per day will be approximately Rs 30 lakhs for equipment.

    - Subsidies for comprehensive soil testing programme -- The materials cost for each complete soil test approximately Rs 150. The total cost of materials, labour, interest, and depreciation will come to about Rs 200 per test.

    This is an investment which will yield a rich dividend.

17. **Technological upgrading of Farm Practices: Development of Computerised Farm Advisory System (CFAS)**

Soil test results will be of little value unless expert advice is available to the farmers to interpret the significance of nutrient levels and recommend appropriate steps to enhance soil nutrition. The required inputs will vary significantly from crop to crop. The most appropriate selection of inputs will also vary with fluctuations in input prices. **In order to service millions of farmers with timely and reliable interpretation, it is proposed that expert systems be developed for all major crops specifying the optimum levels of each nutrient required to compensate for soil deficiencies and produce maximum yields and net income for the farmer**.

a) Objectives:

- Create computerized expert systems for all major crops to provide recommendations based on soil tests and the steps needed for the farmer to achieve optimal yields and income.

- The expert system should cover at least 20 major crops and be customized to different agro-climatic zones.

b) Anticipated Benefits:

- Each farmer who submits soil for a soil test can receive an automated report specifying the crops most suitable for cultivation according to the soil profile and providing detailed instructions on how to enhance the soil to ensure proper plant nutrition for optimal yields and profitability.

- Quality of information can be the best in the world.
- Speed of service will be very high.
- Cost of delivering information will be very low.

c) Actions Required by Government:

- Recommending optimal cropping pattern options based on soil analysis, cost of inputs & prevailing market prices, including cost-benefit for each crop

Recommending optimal package of cultivation practices for specific crops based on field conditions & soil test results

- Generating detailed crop production instructions for the specific crop and field conditions.

d) Programme Cost & Funding:

- Major cost may be for acquisition of expert knowledge both from within the country and outside

- Cost for development of expert systems for interpretation of soil test results customized to different regions and types of soil is roughly estimated at Rs 10 to 25 lakhs per crop.

- This programme can be linked to the "Every Village a Knowledge Centre" movement.

18. **Farm Schools**

There are at present training facilities for farmers in Krishi Vigyan Kendras (KCKs) and farmers' training centres of various kinds (Krishi Gyan Kendra, etc.) in different States. It is becoming clear that farmer to farmer learning is the most credible and effective. The numerous agricultural "**bright spots**" we see around the country are associated with the initiative of hard working and innovative farm men and women. Krishi Pandits, Karshaka Shris (an award in Kerala) and other outstanding farmers should be involved in participatory research and knowledge management systems in a more structured manner. For this purpose, we suggest that **Farm Schools** may be established in the fields of outstanding men and women farmers. Such Farm Schools will be based on the principles of learning by doing as well as "seeing and harvesting is believing". The Farm Schools will help to impart a sense of grassroot realism to the capacity building programmes.

The Farm Schools can receive training and technical support on a continuing basis from a network of State level training centres, from the soil testing labs, the farm equipment hiring service and the expert computer system. The characteristics of the Farm Schools should be as follows:

a) Objectives:

- To establish a cost-effective system of on-farm training to farmers in every village of the country.

- To double agricultural productivity and farm incomes by dissemination of science-based agricultural technologies for plant nutrition, pest management and water conservation**.**

b) Anticipated Benefits**:**

- Cost-effective system for training 25 million farmers a year in advanced methods of agricultural production.

- Improved dissemination of technology by demonstrating advanced agricultural production practices on farmers' lands in the village.

c) Strategy:

- Promote the establishment of 50,000 village-based farm schools throughout the country, on the farms of innovative farm men and women supported by Agricultural and Rural Universities / ICAR institutes.

- All agro-industries, KVKs, agricultural colleges and research institutes to assist in setting up village based farm schools on farmers' fields.

- Agricultural graduates and lead farmers to be certified as instructors and offered incentives for establishing private farm schools to train local farmers.

- Establish central and satellite farm production training institutes in each state to train and certify farm school instructors.

- Multimedia training materials to be developed for training farm school instructors and for farmer training.

- Computerised expert systems to be developed for crop selection, soil nutrition, identification and treatment of pests.

- Farm schools to be linked to Rural Knowledge Centres to provide access to multimedia training materials, computerized expert systems, web-based technical and marketing information.

d) Programme Cost & Funding**:**

- Based on a model project developed for Tamil Nadu, a State-wide system for farm school training, extension, soil labs, and agro-services, including multimedia training materials and computerised experts for farm management capable of generating and supporting 50000 farm schools may require an initial investment of approximately Rs 150 crore.

  The on-going Agri-clinic scheme could be restructured to include the establishment of Farm Schools. Also, special Farm Schools can be established to spread the expertise of outstanding farm families who have achieved great proficiency in water harvesting and management, wasteland development, horticulture, agro-forestry, organic farming, poultry and animal husbandry and coastal and inland aquaculture. It is suggested that Rs.150 crore may be allotted for initiating a well organized programme for accelerated agricultural progress with the help of achievers in farming.

19. We must begin the process of imparting dynamism and optimism in the farm sector, as was done in the nineteen sixties. Accelerated agricultural progress based on the enhancement of productivity, sustainability and profitability through farming systems diversification, sustainable intensification, quality upgradation and value addition, is vital

not only for food security and poverty eradication, but also for national sovereignty. Jawaharlal Nehru's often quoted remark made in 1948 "Everything else can wait, but not agriculture" is even more relevant today. Let us therefore wake up both to the fast spreading agrarian crisis and to the opportunities available for converting the crisis into an era of restructuring and strengthening the support systems for the over 110 million farming families in the country (they constitute 25% of the global farming population).

## Annexure I

**The Terms of Reference of the National Commission on Farmers** are as under:[1]

- Work out a comprehensive medium-term strategy for food and nutrition security in the country in order to move towards the goal of universal food security over time.

- Propose methods of enhancing the productivity, profitability, stability and sustainability of the major farming systems of the country based on an agro-ecological and agro-climatic approach and the harnessing of frontier technologies.

- Bring about synergy between technology and public policy and recommend measures for enhancing income and employment potential in rural areas through diversification, application of appropriate technology including IT for information on market, weather, credit facilities and e-commerce, training and market reforms.

- Suggest measures to attract and retain educated youth in farming and recommend for this purpose; methods of technological upgrading of crop husbandry, horticulture, animal husbandry, fisheries (inland and marine), agro-forestry and agro-processing and associated marketing infrastructure.

- Suggest comprehensive policy reforms designed to enhance investment in agri-research, substantially increase flow of rural credit to farmers including small and marginal, triggering agricultural growth led economic progress, which can lead to opportunities for a healthy and productive life to rural families.

- Formulate special programmes for dryland farming for farmers in the arid and semi-arid regions, as well as for farmers in hilly and coastal areas in order to link the livelihood security of the farming communities living in such areas with the ecological security of such regions. Review in this context, all ongoing Technology Missions like those relating to pulses, oilseeds, maize, cotton, watershed etc. and recommend methods of promoting horizontal integration of vertically structured programmes. Also suggest credit-linked insurance schemes which can protect resource poor farm families from unbearable risks. Further, suggest methods of strengthening and streamlining the National Horticulture Development Board.

- Suggest measures for enhancing the quality and cost competitiveness of farm commodities so as to make them globally competitive through providing necessary facilities and application of frontier science and promote quality literacy for codex alimentarius standard, sanitary and phyto-sanitary measures among farmers through reorienting and retooling extension machinery. Also suggest methods of providing adequate protection to farmers from imports when international prices fall sharply.

[1] * Resolution dated 3rd November, 2004, Ministry of Agriculture (Department of Agriculture & Cooperation)

- ❖ Recommend measures for the credit, knowledge, skill, technological and marketing empowerment of women, taking into consideration the increasing feminization of agriculture and the proposed conferment of right to land ownership.

- ❖ Suggest methods of empowering male and female members of elected local bodies to discharge effectively their role in conserving and improving the ecological foundations for sustainable agriculture like land, water, agro-biodiversity and the atmosphere with priority attention to irrigation water.

- ❖ Consider any other issue, which is relevant to the above or is specially referred to the Commission by Government.

The Commission is to submit a mid-term policy for food and nutrition security in the country in order to move towards the goal of universal food security over time within the next three months and to submit its recommendations on other Terms of Reference as the soon as practicable and in any case on or before 13th October, 2006. The Commission, however, is permitted to submit interim reports on any of the Terms of Reference it deemed fit or expected of it.

**Composition of the NCF**

| | | | |
|---|---|---|---|
| 1. | Prof. M.S. Swaminathan | … | Chairman |
| 2. | Shri Atul Sinha | … | Member Secretary |
| 3. | Prof. R.B. Singh | … | Member |
| 4. | Shri Y.C. Nanda | … | Member |
| 5. | Shri Atul Kumar Anjan | … | Member (part-time) |
| 6. | Ms. Chanda Nimbkar | … | Member (part time) - Yet to join. |
| 7. | Shri Jagdish Pradhan | … | Member (part time) |
| 8. | Dr. R.L. Pitale | … | Member (part-time) |

# CHAPTER – II

## AN INTEGRATED LIFE-SAVING SUPPORT PROGRAMME FOR FARM FAMILIES FACING ACUTE DISTRESS

The causes of farmers' distress are many and varied. The dismal growth in agricultural per capita income for decades and the increasing disparities between the agriculture and non-agricultural per capita incomes have meant greater comparative poverty in the rural areas. Inequality in land ownership and technical progress biased against labour compound the problem. The deficiencies in institutional factors, like those related to credit, insurance, supply of inputs like seeds, fertilizers and pesticides and marketing are becoming serious. Prolonged drought and the shrinking production base are other issues. The rigidities of the formal credit institutions and the exploitative attitude of the money-lenders and traders and the weakening of the cooperatives are aggravating particularly the deprivation of the small and marginal farmers and agricultural labour. Compounding the crumbling system of kin, social and institutional support are other factors such as disconnect between research, education and extension organizations, irregular and erratic power supply, land degradation, unsustainable ground water exploitation and successive droughts or other natural calamities. Market uncertainties and imports of farm commodities and economic liberalization have added fuel to the fire.

2. The fundamental cause of the collapse of rural economy is the less than satisfactory performance of the agriculture sector. The low growth in agricultural per capita income is caused by both fast growth of population in rural areas and the relatively slow growth of agricultural and rural output.

3. In the wake of commercialization of Indian agriculture, many small/marginal farmers enter the high risk commercial farming from a position of extreme vulnerability due to meagre asset base and lack of knowledge of technology and familiarity/support for handling the market forces. The cyclical nature of farming with occasional blessings encourages them to take risks much beyond their capacity. When these expectations are not met either due to natural factors or human greed (supply of spurious seeds, pesticides, etc.) or lack of institutional support, these

farmers suffer a great deal. The cycle of distress often starts with increase in borrowings, mostly from money lenders/traders at high rates of interest and with rather unfavourable conditionalities which in most cases lead to further reduction in income, culminating, finally, in loss of land. The farmers are generally in a position to manage one cycle of drought or other distress but are most likely to succumb to it if the cycle was repeated. It is the successive droughts, illness, unexpected large expenses to meet social obligations, collapse of market, a major loss of asset or earning system/capacity which causes severe unbearable distress among the rural people. Public health care systems are very weak in rural area, and expenses related to medical care add to the debt burden.

4. The decline in expenditure on infrastructure in rural areas and reduction in capital formation in agriculture in public sector has meant less wage earning opportunities in agriculturally backward areas leading to overcrowding the labour market thereby further depressing the already low wage rates in these areas. With virtually no specialized skills and limited educational background, the only jobs when and if available to them are manual jobs with low wages. Unemployment leading to out migration of assetless from the rural areas is increasing with resultant stresses and strains. It is also a fact that the income from animal husbandry and wages tend to expand and contract in response to performance of the agriculture sector. In drought years, saving the animal wealth becomes a major issue for the small, marginal farmers and the other poorer households

5. Though the line between the household shocks and the shocks impinging on all the households in an area is not always clear-cut, it is better to distinguish the two. Most of the financial shocks for the households are caused by death/illness/theft/fire, etc. and are expected to be taken care of from the past savings/investments or support from the kin and community. However, with community support system becoming weaker and the vast population existing on the verge of poverty, some financial arrangement to overcome these household shocks are essential. The shocks impinging all people in a large area call for State intervention and relief measures. Besides the short-term measures to deal with specific events leading to distress,

strategies to minimize such events and improving the capabilities of the people to combat such distress, if they occur, are required to be put in position on a long-term basis.

6. Five sets of action points emerge from the earlier paragraphs:

(a) Immediate relief and rehabilitation measures in the event of disaster impacting a large area.

(b) A community managed 'Nutritional Food Security System' for distress prone areas.

(c) Enhancing the productivity, profitability and stability of the crop-livestock farming systems particularly in the 'distress hot spots' to begin with. It is expected that in due course the measures would spread to other areas.

(d) Creation of multiple livelihood opportunities through integrated attentionto on-farm and non-farm enterprises

(e) Introduction of an integrated rural insurance package covering accident, death, medical expenses and loss to dwelling unit and other property due to fire/earthquake, etc.

7. It will be appropriate to discuss these in some more detail.

The Immediate Relief and Rehabilitation Measures. In the case of events leading to distress, the Centre/State Governments often announce special packages to mitigate the sufferings of the farmers. Some bold and unconventional steps have been taken in the recent past to mitigate acute distress. While these are helpful, there is need to look at the system to deal with loss of crops due to droughts and other natural calamities which often take place.

8. While the national/state level capacity to spare and mobilize resources to mitigate the impact of national disasters has improved, the farm level vulnerability persists particularly in dry

and other fragile regions. The physical, social, economic vulnerability to drought in marginal eco-systems of arid and semi-arid regions is a serious concern. The cyclones in coastal regions and floods particularly in certain parts of eastern India and the north-east do cause considerable distress regularly. The Famine Codes are in existence in India since the British days. After independence, attempts were initiated to change famine relief to scarcity relief. The objective of the new policy was not only to prevent starvation deaths but also the prevention of pauperization of rural population. In some States, Scarcity Relief Manuals replaced Famine Codes. Over time, the approach underwent further changes and the Scarcity Relief Manual/Codes were modified and replaced by Drought Relief Manuals or Drought Hand Books.

9. There is no doubt that the relief and rehabilitation measures have evolved and would undergo further changes as we move from 'relief' to 'management' approach, the issue will be of the speed and manner in which the relief is delivered to the distressed population. Declaration of Annawari and steps like Remission of Land Revenue which are pre-requisites for the cooperative banks to provide reschedulement/conversion of short-term crop loans into medium-term loans take a long time very often defeating the very objective of relief by reschedulement/conversion of loans. The delays in completion of the crop cutting experiments also lead to a considerable delay in settlement of crop insurance claims. There is need for constant updating/revisions on the basis of learnings from field level experiences and also for efficient, transparent and speedy implementation of instructions. There are instances where declaration of drought in certain areas is influenced by political considerations rather than on the behaviour of the rains which leads to building up shades of doubts and uncertainity in the response of financial institutions in particular.

10. Community Managed Nutritional Security System: An important step in alleviating human sufferings and building a healthy society would be the establishment of community managed Nutritional Security System with the following components:

i. Operation of Community Grain Banks, specially in the tribal areas and other far flung areas where Public Distribution System is not effective and efficient

ii. Food for Nutrition Programme on a life cycle basis for pregnant women, infants and old and infirm persons including 'noon meal' programme for the school-children.

Community Grain Bank is a tried concept which enables the community to take care of the individual family's needs in the period of grain shortage. There is a need to cover all tribal villages with Community Grain Banks. To begin with, during 2005-2006 we may plan a target of covering at least 38 out of the 150 districts identified by the Government of India for 'National Food for Work Programme' where more than 50% population belongs to SC/ST communities. On the basis of about 25-30 community grain banks in each of the tribal blocks, [villages may be selected on the basis of remoteness, and the proportion of SC/ST families] we could plan about 10,000 grain banks. This should mean a grain bank for every 3-4 villages in the first year itself. The success could lead to more self-help initiatives in other villages. On the basis of 8 ton grain per community grain bank, it would require about 80,000 tons of grains [on the basis of an average price of Rs 5 per Kg the cost would work out to Rs 40 crore]. In addition, about Rs.35 crore may be provided for transportation, storage of grains and formation of grain banks, etc. during 2005-2006. In the subsequent years the coverage could be deepened and also extended to the remaining districts needing this assistance. (A note is at Annexure-I).

11. Enhancing the productivity, profitability and stability of the farming systems: Raising agriculture productivity requires increased investments in human resources, agriculture research and development of efficient and effective extension services, improved information systems, markets, roads and related infrastructure. Better input supply system including credit and power, and larger investments in irrigation systems are also important. Bridging the yield gaps between regions and between the demonstration farms and the farmers fields require no technology revolution but adoption of practices and timely availability of quality inputs. This is important and should get a high priority. For ensuring better profitability and stability, a finely tuned insurance system covering production risks, storage facilities and developed future market in agricultural commodities is needed. For small and marginal farmers in particular, the livestock sector needs better attention and so do the small mechanized tools which could reduce drudgery

and not employment as also the custom hiring facilities to avoid over capitalization. Post harvest handling needs special care and attention to reduce losses and also to improve quality through proper packaging, handling and transportation. Needless to say, an efficient marketing system is important and farmers' organizations could play a crucial role in ensuring better share to the farmers in the prices paid by the ultimate consumers. The need for food testing laboratories, certifying agencies and a system of dissemination of information about quality standards cannot be over emphasized to build quality consciousness among the farmers to face the future market challenges. Technologies which could reduce the impact of long dry period on crops, enabling the farmers to have a diversified income flow by a mix of crop, horticulture, tree crops, animal husbandry and small micro enterprises would greatly help in stabilizing farmers income.

12. Soil health and seeds need urgent attention. The Government of Gujarat's decision to have soil health cards for all holdings is a step in the right direction. Application of needed micro-nutrients could increase productivity with a very high cost benefit ratio. Researchers and scientists believe that applying micro-nutrients alone could double or even triple crop yields.

13. At some stage in future, land use may have to reflect the market needs more closely. There have been instances where the farmers have gone in for certain crops where the market was not deep enough to absorb increased production, leading to collapse of prices. A well organized, proactive and efficient Land Use Board could provide valuable advice to the farmers. Seed villages, agri-clinics and one window approach for availability of inputs, technical advice and information are other strategies likely to serve agriculture as well as create additional jobs in the rural areas. The scheme of agri-clinic needs special attention and review because of its potential but rather tardy progress so far. More flexibility and some capital subsidy (back ended to ensure better utilization) could help. Since farmers availing services from agri clinics would have to make payment for extension services which for long have been provided to the farmers free of cost, some government financial support at least during the remainder of the Xth Plan period could help. Once the system stabilizes and more and more farmers develop confidence in the new arrangements, the Governmental support could be withdrawn.

14. Creation of multiple livelihood opportunities in the off-farm and non-farm areas: The Government of India have identified 150 most backward districts for implementation of the National Food for Work Programme (NFFWP). The list is attached at Annexure II. It contains Andhra Pradesh (6 Districts), Assam (7 districts), Bihar (6 districts), Chattisgarh (15 districts), Gujarat (8 districts), Jharkhand (19 districts) Karnataka (4 districts), Madhya Pradesh (20 districts), Maharashtra (15 districts), Orissa (27 districts), Rajasthan (7 districts), Tamilnadu (2 districts), Uttar Pradesh (7 districts) and West Bengal (7 districts). The NFFWP is a very major initiative and would not only reduce the distress of the poor people but would also add to the purchasing power in the rural areas which would stimulate demand for both farm and non-farm products. However, to get the best results the programme may have to the planned very carefully. It would be necessary to select such investments in the 150 districts as would add to productive potential of the area and lead to permanent increase in employment and incomes. The issue of the maintenance of the assets so created would also require to be looked at. Further, the work selection may have to be such as to encourage women participation and benefits. It is also important that these works are planned with due regard to the heterogeneous character of the poor and their uneven distribution in the districts. The identification of the poor, formulation of concrete programme which could lead to increase in productivity, as also provide adequate opportunities to the women and create appropriate organization systems for effective and transparent implementation would require time and effort. The strategy should be to lead to long-term benefits for the poor and not just the short-term transfer of resources.

15. Improving access to institutional credit. Credit is an important input. In India, the State has always shown concern and involvement in rural credit particularly agriculture credit. At the time of independence, institutional credit support for agriculture was nominal and bulk of the requirements of the farmers were met by non-institutional agencies. The Rural Debt and Investment Survey 1951 revealed that 92.7% of the rural household debts were from the money lenders (69.7%), traders (5.5%), landlords and others (3.3%) and relatives and friends (14.2%). The Cooperative Banks (3.3%), the Commercial Banks (0.9%) and the Government (3.1%) provided the institutional credit support aggregating 7.3% of the total. The Government took many measures like the nationalization of private commercial banks, liberal and concessional financing of the cooperative banks by RBI/NABARD, establishment of NABARD, fixing

priority sector/agriculture sector lending targets for commercial banks, establishment of 196 Regional Rural Banks (RRBs) and introduction of crop insurance and by 1991 the share of institutional credit had increased to nearly 66.3% of the total indebtedness.

16. During 2003-04, the banks provided nearly Rs.80,000 crore as agriculture credit. The Union Government wants the credit flow for agriculture to double i.e. reach a level of Rs.1.60 lakh crore by 2006-2007. For 2004-05, a growth of 30% has been envisaged and the credit flow during the year is targeted to reach Rs. 1.05 lakh crore. A series of measures have also been taken/are being taken to reach the above level. The UPA Government is also committed to nurse the rural credit system back to health. It is expected that measures to revitalize the cooperative credit system linked to a reform agenda is also likely to be announced. In view of the initiatives being taken by the Union Government and the recently submitted Prof. V.S.Vyas Committee Report, we could expect considerable acceleration in flow of rural credit and improvements in quality lending.

17. A notable development during the nineties has been the improvement of the outreach of the banking system through linking of the Self Help Groups (SHGs) to the bank branches. By March 2004, nearly 10.79 lakh SHGs had been linked to the banks. During 2003-04, the banks provided an aggregate of Rs.1855.53 crore as loans to the SHGs. There is no doubt that the SHG-Bank linkage programme has contributed substantially to the feminisation of 'micro finance' banking in India. The members of the SHGs are those people who were earlier bypassed by the banking system and are poor. Incidentally, the SHG-Bank linkage is the largest and the fastest growing micro finance outreach programme anywhere in the world.

18. This approach has enabled 1.67 crore poor families to have access to financial services including credit and has generally helped in increasing their incomes/work days.

19. Keeping in view the success of the programme, it is suggested that NABARD/Banks may make further efforts to deepen the programme particularly in the 150 identified districts for wage employment programme. The approach should be to saturate these districts with SHGs and give

a very large coverage to the rural poor under the programme and thereby improve their access to financial services. According to a NABARD publication, ten out of these 150 districts do not have SHGs linked to the banks. These districts are Jaspur, Korba, Koria (Chattisgarh State), Dangs (Gujarat), West Nimar, Umaria, Sidhi, East Nimar, Katni (Madhya Pradesh) and Phulbani (Orissa). The approach could be to make special efforts to broaden the programme to cover the above ten districts and deepen the programme in the remaining 140 districts on a priority basis. It is also worth noting that in as many as 50 out of the 140 districts, the spread of the SHGs linked to the banks is very thin in as much as the number of SHGs linked to the banks is less than 500 in each of these districts.

20. By broadening and deepening of the SHG Bank Linkage Programme in the above 150 identified districts, these groups could provide an effective mechanism for the public and private sector agencies to reach them and extend support to enable them to strengthen their livelihood security through additional on-farm, off-farm and non-farm activities. The private sector could play an important role by helping to provide assured and remunerative marketing avenues for the products of the SHG members.

21. Insurance- A financial product to mitigate the sufferings : Crises are recurrent in the lives of the poor. These crises, caused by personal, social or certain natural disasters usually need large expenditure to tide over and lead a poor family deeper into poverty. The range of crises is large. The common among them are accidents, hospitalization, death in the family, death of the bread winner, loss of crops or assets and natural calamities like droughts, floods, cyclones. Expenses to be met during these crises are met either by drawing on savings/investments, borrowings or sale of assets, etc. Institutional arrangements for meeting such expenditure is virtually not in existence and unless relatives/friends agree to help, money lender/traders provide the facilities but at terms and conditions which are generally exploitative. The household suffers an increase in debt/liabilities, increase in expenditure (debt service) and reduction in income. It leaves the poor weaker and more vulnerable, ultimately leading to loss of land.

22. Insurance is a financial product that could help the poor in the event of crop loss, cattle loss, accident, death of the insured, hospitalization charges and loss of insured asset by pooling the risks and distributing the costs among a larger number of people. So far the insurance market in India is concentrated in the urban middle and upper income groups. With a view to improving the penetration into rural areas the Insurance Regulatory and Development Authority (IRDA) has stipulated that a certain minimum fixed percentage of the total business should come from the rural sector.

23. While the need for insurance as a financial product for covering the risks is well established, the issues are the low level of awareness about insurance as a financial product for mitigating various risks which the rural people have to face, the inability of the poor to pay insurance premium upfront , low premium incomes and high service cost of the insurance companies and the absence of an effective network of insurance agents in a perceived low potential rural area. Insurance products for rural areas would have to take care of the above issues. It is obvious that small valued insurance policies could mainly be sold to groups, as individual sales would be uneconomical. Further, it would also facilitate both the insured and the insurer if the premium amount was built into a loan component which the insurer could repay in appropriate instalments either with other loans or independently. Lastly, if the banks or other people's structures could be involved it would minimize the need for traditional agent net-work and also add a little income/incentive to those organizations. At present mainly the crop loss and loss of livestock and other assets purchased with institutional credit are largely covered by insurance in rural areas.

24. While the general insurance covering risks mentioned earlier is feasible with linkage to bank credit, the life cover which is normally a savings/investment option with risk cover may not be feasible with credit linkages which are in the nature of short-term or at best medium-term arrangements. However, efforts may have to be continued for development of suitable product with endowment after three/five years along with providing the risk cover. There is need for innovation and developing different products for meeting the requirements of the rural population keeping in view their income flows and risk perceptions. However, the product may

have to be simple and attractive. But for the present, it may be appropriate to make a beginning with general insurance of risks encountered by farmers in their daily life including the cover for death. However, that part of the premium which covers 'life' will have to be passed on to the specialized institutions dealing with life insurance. Other covers including accident leading to physical injury or death could be handled by the organisations permitted to deal with general insurance.

25. Insurance cover requirement of the farmers and others in the rural areas are mainly for crop loss, asset loss, loss/damage to the dwelling place, accidents causing physical loss/loss of life, medical expenses, natural death etc. These are discussed below in detail.

Crop Insurance

26. The first and foremost risk of the farmer is the crop risk. The risk of crop failure is being met under the National Agriculture Insurance Scheme (NAIS) which is being implemented through the Agriculture Insurance Company of India Ltd. The scheme is presently being implemented by 23 States and 2 Union Territories. The scheme covers food crops and oilseeds, annual commercial/horticulture crops. The premium rates for food crops and oilseeds range from 2.5%-3.5% during Kharif and 1.5% - 2% during Rabi. The rates for annual commercial crops are actuarial. The scheme operates on area approach for widespread calamities and on individual basis for specified localized calamities. However, individual assessment of losses is experimented only in a few areas.

27. The small/marginal farmers are subsidized in premium to the extent of 50% to be shared equally by the Centre and States. The subsidy is proposed to be phased out over a six year period. Accordingly, the eligible subsidy is 10% during 2004-05. The scheme covers all farmers (compulsory for loanee farmers and voluntary for non-loanee farmers). The scheme is open to all States/Union Territories on optional basis. A State opting for the scheme will have to continue for minimum three years. The States which are not covered are Punjab, Arunachal Pradesh, Manipur, Nagaland and Mizoram.

28. Till Kharif 2003, the NAIS covered 4.18 crore farmers for a premium of Rs. 1,179 crore and finalized claims of Rs. 4,473 crore. During 2002-03, 102.97 lakh farmers were covered for a sum of Rs. 9,951 crore and the premium collected was Rs. 321 crore. According to available data, claims costing Rs. 810 crore were settled benefiting nearly 26 lakh farmers.

29. In addition to the above, the Government of India is also implementing a Farm Income Insurance Scheme (FIIS) from Rabi 2003-04 in 19 districts in 12 States on a pilot basis for Rice and Wheat. The Scheme covered 1.8 lakh farmers for a sum insured of Rs. 241 crore. The FIIS is also based on an area approach and provides income guarantee based on the 'Minimum Support Price' (MSP). If the actual income [Current yield X current market price] is lower than the guaranteed income [Average yield of 7 years X the level of indemnity i.e., 80% or 90% as the case may be, X MSP] the insured farmer is compensated. The premium rates are actuarial with 75% subsidy to small/marginal farmers and 50 % to others. The scheme was extended to Kharif 2004 season, and was implemented in 19 districts of four States for Rice. The scheme is rather new and is being tested on a pilot basis.

30. In addition to the above, weather insurance scheme covering anticipated shortfall in crop yield on account of adverse weather parameters has been introduced recently. All individuals who stand to lose financially on account of adverse incidence of weather could take insurance. The advantages of weather insurance are as under:

(a) The trigger events like adverse rainfall, temperature, moisture, relative humidity etc can be independently verified and measured.

(b) It allows for speedy settlement of indemnities as early as a fortnight after the indemnity period.

(c) It could be implemented for all crops with little historic yield data.

(d) Problems of adverse selection and moral hazards could be controlled to a large extent.

(e) All cultivators and other people who are dependent on agriculture, could be covered.

(f) Wide choices of payment options could be provided commensurate with premium.

(g) The scheme is easy to operate and understand.

31. The weather insurance (Varsha Bima) was launched on a pilot basis in 20 rain guage areas of Andhra Pradesh, Rajasthan and Uttar Pradesh during Kharif 2004. It is likely to be expanded to about 100 districts in Kharif 2005. There is a great potential for extending the coverage of the scheme.

32. While the crop insurance scheme, the NAIS is in operation since Rabi 1999-00, there is a lot of criticism about the delay in settlement of claims, the basis of settlement and the need to switch over to a smaller 'defined area' from Block or Tehsil to Panchayat etc. Further, the scheme has primarily covered the loanees of banks. Substantial number of farmers who have no access to crop loans from the banks and raise money from non-formal institutions are virtually out of the scheme. The awareness level about the crop insurance, its rationale and advantages have not been adequately disseminated. Even the loanee farmers who are covered by the crop insurance are taking the cover not because of its perceived usefulness to them but because it is compulsory. Considerable work in building awareness, getting feedback and developing appropriate products needed by the farmers was perhaps necessary. In Gujarat, a study done by the Disaster Mitigation Institute in 3 districts of Patan, Kutch and Surendranager, revealed that nearly 40% of the farmers were not aware of the Crop Insurance Scheme (the coverage of crop insurance is high in Gujarat; during Kharif 2003, out of nearly 80 lakh farmers taking crop insurance in India, nearly 10.16 lakh i.e. about 13% were from Gujarat alone). It would appear that realising the need and importance of broad basing the crop insurance programme and to make it more farmer friendly, the Government of India have recently constituted a Joint Group under the Chairmanship of Additional Secretary (Ministry of Agriculture) to review various aspects of crop insurance. The Group would consider improvements in crop insurance particularly the NAIS. The Group is likely to submit its report shortly.

33. In view of the above, we may await the report for needed improvements in the crop insurance scheme. However, it is necessary that the scheme be more farmer friendly. It may cover more crops, the farmer may have the option of seeking higher compensation, the settlement may be much quicker and the area as the basis for assessing the crop loss may have to be much smaller than what it is now.

34. Cattle Insurance

Cattle risk is another significant risk for the rural people. The animal husbandry sector contributes nearly 23% of the agricultural GDP. Cattle provides much needed diversification of farmers' income as also a regular cash inflow against income from crop which is seasonal. The total value of milk group to the economy is nearly 1.5 times the total value of paddy and nearly 2.4 times the value of wheat. Further, ownership of livestock is more evenly distributed than land. However, it may not be possible to cover cattle in the integrated insurance product. There would be different breeds, age group, sex and quality and number of animals with individuals in a group which would attract different insurance premium. The general premium for cattle insurance is around 4% while milch animals financed under 'schemes' are covered at a subsidized rate of 2.25%. While there is no doubt about the importance of livestock, insurance for the farmers, for the time being, may have to be mainly on individual basis. However, the implementation of the cattle insurance as it obtains now, does not satisfy the farmers much. The procedure for verification of claims and their settlement is a source of constant irritation and subject of many jokes. This calls for a relook.

35. This brings us to other risks, i.e.; the accident risk, loss/damage to dwelling and property, natural death and medical cover. It is possible to cover these with an integrated product. However, considerable effort is required for building up awareness about the utility of insurance products. It appears that many in the rural areas are driven to extreme poverty and distress due to illness, loss of income due to injury by accident, etc. Risks to health are frequent and generally have a serious impact on the welfare of the family. It reduces their incomes and increases the expenses. This would mean borrowing from the moneylenders at very high interest rates leading to ultimately loss of assets and land. It is also a fact that the rural medical facilities are not

adequate and the people have also to spend money on transportation/meals, etc. The same may therefore have to be built into the insurance product. It would be ideal if an effective third party administration system could be developed for medical coverage, where the lists of hospitals could be firmed up with uniform charges for different surgical interventions as also other treatments. In this system, the insured could get the treatment and the bill to the extent of the insurance cover directly settled by the third party administrator (TPA) system. The insured would be required to make direct cash payment for only the excess amounts (over and above the ceiling of the cover) if any. However, in absence of such arrangements on an all India basis and the need to extend medical insurance urgently, it may be useful to introduce cover for hospitalization charges to start with. Incidentally, the Common Minimum Programme of the United Progressive Alliance has mentioned that a national scheme for health insurance for the poor families would be introduced. The efforts may, however, be continued to have a TPA system all over the country at the earliest. It is also expected that with the coverage of large number of people under the scheme and the involvement of the SHGs/other peoples' structures/NGOs and Banks, there would be strong pressure on the health services and insurance companies to improve their products and become more user friendly than what they are today. The TPA/Insurance Companies would, in their own interest, make efforts to improve 'preventive' systems and practices and also negotiate with rural health service providers to reduce costs and improve services. Another issue is the poor spread of the rural health services. It may be useful to encourage establishment of private nursing homes/hospitals and Voluntary Health Services in the rural areas by providing tax benefits, concessionality in the credit /back ended subsidy etc. They should provide low or no cost healthcare of high quality. The large expansion in demand for 'paid' health services under insurance cover is expected to be seen by the private health service providers as a huge expansion of the market and incentive for them to reach the rural areas.

36. There has been a recent development in the micro insurance sector. The Insurance Regulatory and Development Authority [IRDA] has issued instructions regarding issuance of license to the NGOs/SHGs for working as agents for accepting insurance proposals upto a sum assured of Rs.10,000. The NGO/SHG would be entitled for commission on this work and the qualification/training requirements for issuance of license to them have also been kept low. In

view of the above, it may be appropriate to devise a suitable product which could be canvassed by the NGOs/SHGs to their members.

37. The cover could be floating for different insurance risks. The product could be as under:

A. The integrated Insurance Policy for the poor – through the Self Help Groups etc. could cover:

(i) Dwelling and household assets (excluding jewellery and valuables) against.fire, allied perils and earthquake for Rs.10000/- and Rs.5000/- respectively. In case of 'hut' the sum insured would be Rs.4000 for the dwelling unit and Rs.1000 for the contents.

(ii) Personal cover against accidental death, permanent total disability and permanent partial disability, the sum insured would be Rs.10,000/-.

(iii) Mediclaim insurance in case of hospitalization – benefit upto Rs.10000/- for husband, wife and two dependant children on floater basis including sums not exceeding Rs.200/- for transportation and Rs.150/- for meals during the policy period.

(iv) Natural death of the insured male or unmarried/widowed woman and husband in the case of married woman – Rs.5000/-.

The premium could be around Rs.225 to Rs.300/-.p.a (the exact premium however have to be ascertained from the insurance companies). This product could be called '**Parivar Bima Policy'**.

B. Another product could be with higher cover [aiming mainly at the KCC holders) as under:

i) Building and household contents (excluding jewellery and valuables) against fire, allied perils and earthquake for a sum of Rs.30,000/- and Rs.10,000/- respectively.

ii) Personal cover against accidental death, permanent total disability and permanent partial disability for a sum of Rs.50,000/-.

iii) Mediclaim insurance for Rs.30,000/- on floater basis (applicable to any of the five members) with a cap of Rs.15,000/- per illness. The premium for this coverage is Rs.548 with exemption from service charges. It is exactly the same as 'Universal Health Insurance' introduced by the Government of India for below the poverty line (BPL) families with a subsidy of Rs.300/-.

The annual premium would be around Rs.575 (the exact premium however have to be ascertained from the Insurance companies).

38. The choice of policy could be left to the individual/ group. However, if the policy is covered under micro insurance, it would have to be limited to Rs.10,000 only. In all the cases, loan could be included/advanced for the insurance cover and recovered along with other loan or as per instalments etc.

Need for special developmental efforts/support for integrated Insurance products.

39. Insurance is an essential financial product and together with facilities for deposits and credit constitute the major financial services required by the people. While micro finance has got lot of attention during the last decade or so the emphasis has been mainly on thrift and credit. Micro or even rural insurance (excepting crop insurance or insurance of cattle and other assets financed by the banks) has not made much progress. There is also a need for engendering the insurance system which so far has mainly covered the male population. Besides the issues of low value covers, high transaction costs, problems connected with servicing of individual clients who are scattered and lack of traditional network of agents and moral hazards, the other issues are

building up the confidence and awareness of the rural population about the insurance products, designing appropriate products and innovations in delivery system to popularize them and the ability of the poor to buy insurance cover which they need most but are unable to afford. There is a developmental role for the insurance companies, the IRDA, the banks and the Government particularly about building up awareness of the rural population and convincing them about settlement of claims without too much procedural delays and form filling.

40. As a part of providing safety net to the very poor, the Government may consider meeting part of the premium at least during the remaining years of the Xth plan period. The position could be reviewed thereafter. The crop insurance has been financially supported for quite some time for all farmers. The Government of India have also agreed to provide support to the tune of Rs.300/- (out of a premium of Rs.548/-) for 'Universal Health Insurance' for BPL families. Subsidy of Rs.200 out of a premium of Rs.365 if the coverage is only of one person in the family and Rs.400 against a premium of Rs.730 if besides the family of five (as in Universal Health Scheme) the parents are also covered. It would, however appear that in the absence of proper delivery arrangement and developmental efforts, the scheme has not made much headway.

41. The insurance products listed earlier have a potential of reaching about 2 crore poor families mainly through the SHG route in 2-3 years and another about 4 crore Kisan Credit Card holders in the same period. In other words, there is potential to cover upto half the rural families in the country by 31st March 2007. Incidentally, since around 90% of the SHG members are women, the coverage would also contribute towards engendering the insurance system to a certain extent.

42. If the 'Universal Health Insurance' cover had been extended to about one third of the BPL families (about 2 crore families) the annual support would have worked to around Rs.600 crore per annum. However, the scheme has not made much progress perhaps because of inadequate attention to the delivery system and special efforts essential to popularize a new product could not be made. It would be necessary to have a National Level Steering Committee to look into the progress on a regular basis. The Committee could have representatives from

Govt. of India (Deptt. of Banking & Insurance and also Ministry of Health), IRDA, the National Commission for Women, NABARD, IBA, National Agriculture Insurance Company, all the four general insurance companies, SBI, NASCOB (Federation of State Cooperative Banks) and one/two representatives of the RRBs. The National Agriculture Insurance Company could provide the secretarial assistance and house the Committee.

43. In order to encourage resource poor families to take up the cover, the GOI may support the scheme which is really a life saving support to the rural poor. The premium could be shared by the GOI and the insured people in the ratio of 1:1 in the case of Scheme-A of micro insurance i.e. the Parivar Bima Policy and at the present rate under the Universal Health Insurance Scheme for the BPL families covered under the Scheme-B. For non BPL families, covered under Scheme-B a token support of Rs.100 may be provided. If about 1.5 crore people take up Scheme-A (Parivar Bima Policy) through the SHGs etc during 2005-06, the life saving financial support would work out to about Rs.169 crore on the basis of 50% of the likely premium of Rs.225 and for Scheme-B, assuming about 5% of KCC holders are BPL, i.e., about 20 lakh KCC holders, the support (average taken at Rs.300) would be around Rs.60 crore and for non BPL families assuming about 30 lakh people take the cover would work out to another Rs.30 crore. The total would be Rs 259 crore or say Rs.260 crore.

45. A Rural Insurance Development Fund of Rs.50 crore may also be created at the National Agriculture Insurance Company to take up development work for spreading rural insurance. The Standing Committee referred to earlier could also be asked to frame guidelines for use of the Fund.

**Annexure-I**

# COMMUNITY GRAIN BANKS

Community Grain Golas (Banks) are an age old concept in the villages particularly the tribal villages. The entire community contributes grain to the 'Gola' from which any family could draw the grains at the time of need and return the same with an additional quantity representing 'interest' at the harvest time. This provided nutritional security to the poor families particularly during the 'Monsoon' period when there were no work opportunities in the villages and going out in search of employment outside the village or in the forests for collecting minor forest produce was not feasible. One should also bear in mind that a large number of villages, particularly the remote tribal villages, do get cut off during rains making it difficult for the villagers to go out or the supplies to reach them. This period also often coincided with depletion of the saved grains from the previous harvest making nutritional security a serious issue for below the poverty line population and more particularly the children, infants and pregnant and lactating mothers.

2. Grain Golas are a community self-help system which could go a long way to provide nutritional security to the poor tribal families. Under an on-going scheme, the Government is assisting in the formation of Grain Golas in the tribal areas. The idea is to cover all the tribal villages (about one lakh) in due course. The target for 2004-05 is however only 3500 grain banks. According to the TRIFED data, between 1996-97 to 2003-04, money has been released (Rs.20.50 crore) for establishment of 4858 Grain Banks in 11 States viz. Andhra Pradesh (905), West Bengal (152), Bihar (61), Gujarat (237), Madhya Pradesh (2461), Orissa (662), Tripura (78), Rajasthan (33), Tamil Nadu (2), Kerala (2) and Maharashtra (259). No Grain Bank could be established under the Scheme in Uttar Pradesh and Manipur which were also covered under the programme. The coverage of these grain banks is about 3.50 lakh families. Incidentally, nearly 62% of the Grain Banks were supported in 2002-03 and 2003-04 and about 83% of these were in the three States of Madhya Pradesh, Andhra Pradesh and Orissa.

3. Under the Scheme 100 qtls of grain for 100 families @ 1 qtl per family (the total quantity of 100 qtls is fixed regardless of families) is provided, alongwith Rs.2000 for weights/balance and Rs.2000 for storage bins, etc.

4. The cost of transport is met by the Centre and the State Government at 1:1 ratio.

5. It is understood that the scheme is under revision in the following respects:-

(a) The scheme would be available to all BPL families

(b) The main focus would be on endemic drought and migration prone tribal concentration areas. The non-tribal areas to be included later.

(c) The allocation of grain would be @ 2 qtls per family and for an average Grain Bank covering 40 families, 80 qtls of grain would be supplied.

(d) In addition the Grain Banks would also be given Rs.5000 for weights/measurements/storage bins, etc.

(e) A training support of Rs.500 would also be provided to the NGO promoting each Grain Bank.

(f) 50% of the transportation cost would be borne by the concerned State Government.

6. In order to encourage self-help and make the Grain Banks sustainable, it is suggested that:

(a) The Government may consider whether it would not be better to release only 50% of the grain in the first instance and balance on a matching basis with the grain saved/increased by the Grain Bank

(b) The NGO assisting in the formation of a Grain Bank may be given at least Rs.2500 for establishment of each grain bank and another amount of Rs.1000 after one year of the establishment provided the Grain Bank is operating successfully and has collected additional grain from members by contribution/interest-charged which is not less than 50% of the grain initially given by the Government. It is felt that the proposed provision of only Rs.500 for training for each Grain Bank is far too inadequate. The remote tribal areas which would be initially selected, would pose serious problems of transport and communication and hence the NGOs taking up the responsibility of the formation of the Grain Banks need be compensated for their expenses and efforts. Payment of additional Rs.1000 if the grain bank develops would serve as an incentive to the NGO to focus on this area and develop sustainable Grain Banks.

(c) The sum of Rs.5000 for weights/measures/storage bins, etc. as proposed under the scheme appears to be inadequate. Storage bins for storing about 8-10 tons of two different types of cereals may cost more. According to the Indian Grain Storage Management and Research Institute, Hapur, the estimated cost for a 12 tons grain storage with inlet and outlet made of RCC sheets was around Rs. 22000 (2002 estimates). A storage built with reinforced bricks (RBs) with a capacity of 6.68 ton would cost around Rs.24000. It is suggested that an average estimated cost for each Community Grain Bank for storage, weights and measurements, etc. may be placed at Rs.25000.

(d) Instead of spreading the scheme thinly in a large number of States/districts, the Government may consider saturating the districts which have at least 50% of the populating belonging to the ST and SC categories. In 150 districts identified by the Government of India for employment guarantee scheme, there are 38 districts where the tribals and the Scheduled Caste constitute at least 50% of the total population. The list of these districts is attached (Appendix A). During 2004-05, the programme could be to set up 10,000 Grain Banks in the above districts i.e. about 250-275 grain banks in each district.

7. Besides, the cost of grains, the other costs for 10,000 community grain banks would be as under:

| | | (Rs. in crore) |
|---|---|---|
| a) | Cost of formation @ Rs.2500 each & incentive @ Rs.1000 each | 3.50 |
| b) | Cost of Weights /Measures & Storage arrangements @ Rs.28000 each | 28.00 |
| c) | Transport @ Rs.90/- p. qtl. 50% i.e. Rs.3600 per grain bank | 3.60 |
| | | 35.10 |

As regards the cost of grains, on the basis of an average Rs.5/- per Kg. the total cost would work out to Rs.40 crore. Thus the total outlay would be about Rs.75.1 crore or say Rs. 75 crore.

## APPENDIX – A

**Districts* with more than 50% population of SCs/STs**

| Sl. No. | State | District | Total SC/ST Population in %age (1991 Census) |
|---|---|---|---|
| 1 | Gujarat | Dangs | 94.7 |
| 2 | Madhya Pradesh | Jhabua | 88.3 |
| 3 | Rajasthan | Bansswara | 78.5 |
| 4 | Jharkhand | Simdega | 76.1 |
| 5 | Jharkhand | Gumla | 76.1 |
| 6 | Chattisgarh | Bastar | 73.3 |
| 7 | Chattisgarh | Dantewada | 73.3 |
| 8 | Chattisgarh | Kanker | 73.3 |
| 9 | Rajasthan | Dungarpur | 70.4 |
| 10 | Orissa | Koraput | 69.3 |
| 11 | Orissa | Malkangir | 69.3 |
| 12 | Orissa | Nabrangpur | 69.3 |
| 13 | Orissa | Rayagada | 69.3 |
| 14 | Assam | Northcatcharhills | 68.1 |
| 15 | Madhya Pradesh | Mandla | 66.0 |
| 16 | Orissa | Mayurbhanj | 64.9 |
| 17 | Madhya Pradesh | Dhar | 60.4 |
| 18 | Jharkhand | Lohardagga | 60.2 |
| 19 | Chattisgarh | Jaspur | 59.9 |
| 20 | Chattisgarh | Korba | 59.9 |
| 21 | Chattisgarh | Raigarh | 59.9 |
| 22 | Jharkhand | Saraikela | 59.7 |
| 23 | Jharkhand | Singhbhum West | 59.7 |
| 24 | Orissa | Sundergarh | 59.5 |
| 25 | Chattisgarh | Koria | 59.2 |
| 26 | Chattisgarh | Sarguja | 59.2 |
| 27 | Gujarat | Valsad | 57.4 |
| 28 | Madhya Pradesh | Barwani | 56.0 |
| 29 | Madhya PRadesh | West Nimar | 56.0 |
| 30 | Orissa | Phubani | 56.0 |
| 31 | Orissa | Boundh | 56.0 |
| 32 | Orissa | Keonjhar | 56.0 |
| 33 | Assam | Karbi Anglong | 55.3 |
| 34 | Madhya Pradesh | Umaria | 54.0 |
| 35 | Madhya Pradesh | Shahdol | 54.0 |
| 36 | Gujarat | Dohad | 50.9 |
| 37 | Gujarat | Panch Mahal | 50.9 |
| 38 | Maharashtra | Gadchiroli | 50.9 |

*Out of the 150 districts identified by the Planning Commission for National Food for Work Programme

ANNEXURE -II

# 150 DISTRICTS IDENTIFIED FOR WAGE EMPLOYMENT PROGRAMMME

| **Sl No.** | DISTRICT | AGRICULTURAL LABOURERS | | |
|---|---|---|---|---|
| | **ANDHRA PRADESH** | MALE | FEMALE | TOTAL |
| 1. | ADILABAD | 146489 | 195804 | 342293 |
| 2. | KHAMMAM | 270517 | 339653 | 610170 |
| 3. | MAHBUBNAGAR | 288261 | 488784 | 777045 |
| 4. | WARANGAL | 227417 | 376957 | 604374 |
| 5. | RANGAREDDY | 116226 | 178814 | 295040 |
| 6. | CHITTUR | 309246 | 319151 | 628397 |
| | | | | |
| | **ASSAM** | | | |
| 7. | NORTH CACHAR HILLS | 1980 | 1620 | 3600 |
| 8. | KARBI ANGLONG | 20549 | 25421 | 45970 |
| 9. | KOKRAJHAR | 48838 | 31028 | 79866 |
| 10. | DHEMAJI | 8666 | 11434 | 20100 |
| 11. | NORTH LAKHIMPUR | 16938 | 18777 | 35715 |
| 12. | BONGAIGAON | 34597 | 18197 | 52794 |
| 13. | GOALPARA | 32708 | 17662 | 50370 |
| | | | | |
| | **BIHAR** | | | |
| 14. | GAYA | 320597 | 242819 | 563416 |
| 15. | VAISHALI | 245579 | 82665 | 328244 |
| 16. | SAMASTIPUR | 371205 | 175933 | 547138 |
| 17. | SHEOHAR | 82988 | 17227 | 100215 |
| 18. | JAMUI | 124705 | 70092 | 194797 |
| 19. | NAWADAH | 152571 | 121702 | 274273 |
| | | | | |
| | **CHATTISGARH** | | | |
| 20. | BASTAR | 70528 | 140898 | 211426 |
| 21. | DANTEWADA | 17776 | 34548 | 52324 |
| 22. | KANKER | 32151 | 52405 | 84556 |
| 23. | JASPUR | 39342 | 60296 | 99638 |
| 24. | KORBA | 54505 | 78883 | 133388 |
| 25. | RAIGARH | 108078 | 125351 | 233429 |
| 26. | KORIA | 23275 | 37525 | 60800 |
| 27. | SARGUJA | 133602 | 209364 | 342966 |
| 28. | BILASPUR | 138891 | 195559 | 334450 |

| | | | | |
|---|---|---|---|---|
| 29. | JANGIR-CHAMPA | 89073 | 125397 | 214470 |
| 30. | KAWARDHA | 36776 | 55804 | 92580 |
| 31. | DHAMATRI | 57434 | 83652 | 141086 |
| 32. | MAHASAMUND | 76430 | 98629 | 175059 |
| 33. | RAJNANDGAON | 65037 | 99236 | 164273 |
| 34. | DURG | 145363 | 205224 | 350587 |
| | | | | |
| | **GUJARAT** | | | |
| 35. | DANGS | 10382 | 16200 | 26582 |
| 36. | DOHAD | 52776 | 126191 | 178967 |
| 37. | PANCH MAHALS | 81685 | 153774 | 235459 |
| 38. | VALSAD | 66885 | 87510 | 154395 |
| 39. | BHARUCH | 121328 | 105105 | 226433 |
| 40. | NARMADA | 52609 | 65408 | 118017 |
| 41. | NAVASARI | 88866 | 91463 | 180329 |
| 42. | SABARKANTHA | 107996 | 145943 | 253939 |
| | | | | |
| | **JHARKHAND** | | | |
| 43. | SIMDEGA | - | - | - |
| 44. | GUMLA | 43290 | 66583 | 109873 |
| 45. | LOHARDAGGA | 14066 | 20870 | 34936 |
| 46. | SARAIKELA | - | - | - |
| 47. | SINGHBHUM WEST | 121769 | 167040 | 288809 |
| 48. | DUMKA | 139156 | 130879 | 270035 |
| 49. | JAMTARA | - | - | - |
| 50. | SAHEBGANJ | 76350 | 50665 | 127015 |
| 51. | PAKUR | 55584 | 40718 | 96302 |
| 52. | CHATRA | 64704 | 54465 | 119169 |
| 53. | GARHWA | 100153 | 96007 | 196160 |
| 54. | PALAMAU | 191298 | 157382 | 348680 |
| 55. | LATEHAR | - | - | - |
| 56. | GODDA | 17543 | 84315 | 201858 |
| 57. | BOKARO | 68982 | 39912 | 108894 |
| 58. | SINGHBHUM EAST | 94260 | 101281 | 195541 |
| 59. | HAZARIBAGH | 61196 | 64078 | 125274 |
| 60. | KODERMA | 16894 | 18595 | 35489 |
| 61. | GIRIDIH | 118170 | 90431 | 208601 |
| | | | | |
| | **KARNATAKA** | | | |
| 62. | CHITRADURGA | 94281 | 146661 | 240942 |
| 63. | DAVANAGERE | 121807 | 149202 | 271009 |
| 64. | BIDAR | 95212 | 114089 | 209301 |

| | | | | |
|---|---|---|---|---|
| 65. | GULBARGA | 190381 | 348981 | 539362 |
| | | | | |
| | **MADHYA PRADESH** | | | |
| 66. | JHABUA | 37680 | 64421 | 102101 |
| 67. | MANDLA | 80745 | 111215 | 191960 |
| 68. | BARWANI | 65747 | 80079 | 145826 |
| 69. | WEST NIMAR | 116315 | 129189 | 245504 |
| 70. | DHAR | 105806 | 134757 | 240563 |
| 71. | SEONI | 101751 | 135601 | 237352 |
| 72. | UMARIA | 36488 | 44242 | 80730 |
| 73. | SHAHDOL | 101400 | 136101 | 237501 |
| 74. | CHINDWARA | 120086 | 154356 | 274442 |
| 75. | SIDHI | 111103 | 126414 | 237517 |
| 76. | BETUL | 95984 | 135451 | 231435 |
| 77. | HARDA | 42086 | 44484 | 86570 |
| 78. | EAST NIMAR | 140943 | 153595 | 294538 |
| 79. | SATNA | 117244 | 119930 | 237174 |
| 80. | BALAGHAT | 119059 | 163430 | 282489 |
| 81. | PANNA | 54460 | 60739 | 115199 |
| 82. | KATNI | 66430 | 75208 | 141638 |
| 83. | DEWAS | 93237 | 111322 | 204559 |
| 84. | CHHATARPUR | 55485 | 65522 | 121007 |
| 85. | GUNA | 91620 | 100089 | 191709 |
| | | | | |
| | **MAHARASHTRA** | | | |
| 86. | GADCHIROLI | 76455 | 122565 | 199020 |
| 87. | DHULE | 139797 | 192396 | 332193 |
| 88. | NANDUBAR | 124624 | 170470 | 295094 |
| 89. | BHANDARA | 106667 | 147877 | 254544 |
| 90. | CHANDRAPUR | 151834 | 231426 | 383260 |
| 91. | GONDYA | 94700 | 125195 | 219895 |
| 92. | HINGOLI | 80005 | 102419 | 182424 |
| 93. | NANDED | 232758 | 291520 | 524278 |
| 94. | AURANGABAD | 136819 | 184729 | 321548 |
| 95. | AHMEDNAGAR | 210681 | 290231 | 500912 |
| 96. | YAWATMAL | 264480 | 315348 | 579828 |
| 97. | THANE | 144336 | 176262 | 320598 |
| 98. | AMRAWATI | 295406 | 288744 | 584150 |
| 99. | LATUR | 151266 | 176419 | 327685 |
| 100. | WARDHA | 112322 | 137164 | 249486 |
| | | | | |
| | **ORISSA** | | | |

| | | | | |
|---|---|---|---|---|
| 101. | KORAPUT | 93487 | 136222 | 229709 |
| 102. | MALKANGIR | 23822 | 40460 | 64282 |
| 103. | NABARANGPUR | 107014 | 156998 | 264012 |
| 104. | RAYAGADA | 75331 | 106622 | 181953 |
| 105. | MAYURBHANJ | 182447 | 214322 | 396769 |
| 106. | SUNDERGARH | 84722 | 135748 | 220470 |
| 107. | PHULBANI | - | - | - |
| 108. | BHODH | 28806 | 39007 | 67813 |
| 109. | KEONJHAR | 106580 | 119448 | 226028 |
| 110. | NUAPADA | 45233 | 64496 | 109729 |
| 111. | KALAHANDI | 139206 | 173014 | 312220 |
| 112. | SAMBALPUR | 69156 | 64787 | 133943 |
| 113. | BARGARH | 118750 | 128272 | 247022 |
| 114. | DEOGHAR | 24145 | 31363 | 55508 |
| 115. | JHARSUGUDA | 24507 | 22000 | 46507 |
| 116. | SONEPUR | 49796 | 56515 | 106311 |
| 117. | BOLANGIR | 105989 | 119884 | 225873 |
| 118. | ANGUL | 62781 | 64873 | 127654 |
| 119. | DHENKANAL | 78350 | 43879 | 122229 |
| 120. | BALASORE | 155756 | 57831 | 213587 |
| 121. | BHADRAK | 90029 | 21081 | 111110 |
| 122. | JAJPUR | 111406 | 23695 | 135101 |
| 123. | GAJAPATI | 48605 | 76049 | 124654 |
| 124. | GANJAM | 202591 | 299215 | 501806 |
| 125. | JAGATSINGHPUR | 61512 | 22386 | 83898 |
| 126. | KENDRAPARA | 77502 | 21336 | 98838 |
| 127. | CUTTACK | 126024 | 56281 | 182305 |
| | | | | |
| | **RAJASTHAN** | | | |
| 128. | BANSWARA | 22253 | 52600 | 74853 |
| 129. | DUNGARPUR | 22549 | 65074 | 87623 |
| 130. | UDAIPUR | 40744 | 79268 | 120012 |
| 131. | SIROHI | 20062 | 42002 | 62064 |
| 132. | JHALAWAR | 44816 | 74180 | 118996 |
| 133. | DAUSA | 12098 | 23810 | 35908 |
| 134. | TONK | 18726 | 38063 | 56789 |
| | | | | |
| | **TAMILNADU** | | | |
| 135. | SOUTH ARCOT/CUDDALORE | 236740 | 217874 | 454614 |
| 136. | VILLUPURAM | 317783 | 363654 | 681437 |
| | | | | |
| | **UTTAR PRADESH** | | | |

| | | | | |
|---|---|---|---|---|
| 137. | SONBHADRA | 103781 | 105500 | 209281 |
| 138. | SITAPUR | 196449 | 50566 | 247015 |
| 139. | UNNAO | 117706 | 83881 | 201587 |
| 140. | RAEBARELI | 182159 | 176730 | 358889 |
| 141. | HARDOI | 168402 | 41441 | 209843 |
| 142. | FATEHPUR | 159571 | 125387 | 284958 |
| 143. | LALITPUR | 22141 | 50340 | 72481 |
| | | | | |
| | **WEST BENGAL** | | | |
| 144. | JALPAIGURI | 130124 | 100239 | 230363 |
| 145. | PURULIA | 172130 | 234705 | 406835 |
| 146. | COOCH BIHAR | 169551 | 115586 | 285137 |
| 147. | BANKURA | 258845 | 243379 | 502224 |
| 148. | WEST/NORTH DINAJPUR | 226237 | 144844 | 371081 |
| 149. | EAST/SOUTH DINAJPUR | 129144 | 92910 | 222054 |
| 150. | BIRBHUM | 281210 | 135285 | 416495 |

# CHAPTER - III

## PRODUCTIVITY AND LIVELIHOOD ENHANCEMENT IN RAINFED AREAS

### Towards a Rainbow Revolution:

The greatest distress to farm and rural communities occurs in areas with low and uncertain rainfall. These areas occur mainly in the arid and semi-arid regions of the country. The people living in such environmentally underprivileged areas have over centuries developed methods of coping with natural calamities. Migration with their cattle or sheep was one common method of withstanding the problem of water, food and fodder shortage. Women often stayed behind and had developed fairly effective methods of saving whatever rain water became available and shared it equitably. Anil Agarwal and Sunita Narain[2] have documented such "dying wisdom". As early as 1925, the Royal Commission on Agriculture emphasized the need for developing technologies which can help to elevate and stabilize crop and livestock production in dry farming areas. After independence, several collaborative projects were undertaken in the field of dry farming, like the Indo-French project in Anantapur district, the Indo-UK project in Indore and the Indo Canadian project all over India. National and international research efforts were strengthened and an International Centre for Research on Semi-arid Tropics (ICRISAT) was established in 1972 at Hyderabad. Inspite of the very valuable work done under these projects, the fate of farmers in rainfed areas continues to remain a gamble in the monsoon.

2. Covering 66% of the cultivated area, rainfed farming continues to be critical for meeting the livelihood needs of a vast majority of small, marginal and tribal farmers in the chronically drought prone areas of the country. Despite the development of new technologies related to crops, resource management, livestock and fisheries during the last 3-4 decades, the farm level adoption and impact on the farmers' income and livelihood in these disadvantaged areas has not

[2] Agarwal, Anil and Sunita Narain eds (1997). Dying Wisdom: Rise, Fall and Potential India's Traditional water Harvesting System. New Delhi, Centre for Science and Environment.

been as significant as in irrigated areas. This is mainly due to the low and highly fluctuating productivity and the low risk bearing capacity of the rainfed farmers, for whom risk aversion is more important than productivity enhancement. Low rainwater use efficiency and the constant threat of water scarcity and drought aggravate the situation. Land degradation and declining soil health, acute fodder shortage and poor livestock productivity are the other serious constraints. These challenges are further compounded by a large number of institutional, policy and infrastructural constraints, like lack of assured and remunerative marketing opportunities.

3. Though rainfed agriculture has remained a high priority area through all the Five Year Plans, the UPA Government has identified this area as one of the key priorities to address the problems of poverty, food insecurity and regional and gender inequity. Accordingly, 150 most backward districts in the country have been identified, a majority of which are rainfed. Any improvement in the livelihood of the farmers and landless labourers in these areas is intimately linked to the progress achieved in rainfed agriculture including horticulture, agro-forestry, livestock, poultry and all related farming systems. A Rainbow Revolution is needed for achieving congruent and synergistic improvement of all the components leading to enhanced and sustainable agricultural productivity and profitability and strengthening of livelihoods through eco-technologies, diversification, value addition, and work security.

## Strategic Paradigm Shifts for Converting Potential into Production

4. In order to bridge the prevailing income and livelihood divides and to break the nexus of poverty, food insecurity and natural resource degradation, the following strategic paradigm shifts are suggested.

4.1 Foster and build convergence and synergy among components of development, interventions and stakeholders – public-private-corporate-NGO-CSO-farmers, and leverage the potential of small farmers and landless labourers, including women, through group actions and institutions.

4.2 Undertake area-based actions for wet, dry and semi-arid rainfed areas by involving the active participation of grass root communities through Panchayats and Gram Sabhas, engendering the transformation process, and meeting the needs and potentials of rural people – farmers, landless agricultural labour and artisans, using a disaggregated and differentiated approach.

4.3 Move from commodity to farming system approach to integrate crop, horticulture, livestock, aquaculture through development and adoption of system based eco-technologies rooted in the principles of inclusiveness, environmental sustainability and economic viability.

4.4 Build capacity through knowledge empowerment in areas relating to weather, water, pest management, post-harvest technology and home and external markets.

## Convergence through Watershed Development

5. Integrated watershed management is the most proven approach for increasing productivity and strengthening livelihoods. Recent study jointly conducted by ICRISAT and International Water Management Institute (IWMI) involving 311 watershed programmes in India showed that the mean benefit cost ratio of watershed programme in the country is 1:2.14 with an internal rate of return of 22% which is comparable with many rural development programmes. The watershed program had generated new employment opportunities, augmented irrigated area, enhanced cropping intensity and better conserved soil and water resources (Box. 1).

6. The demonstrated success of the above mentioned watersheds and a few other watersheds in the country notwithstanding, the success has not been as pervasive as desired. In general, the following problems have been identified as major bottlenecks in implementing watershed programmes: (i) multiple funding sources and guidelines and top-down approach of priority setting, (ii) compartmentalization, lack of coordination and monitoring, (iii) diversion of funds to unrelated uses, (iv) limited community participation, specially of women, (v) unsustainability of the gains and low build up of asset and (vi) less focus on landless and non-agricultural groups.

# Box-1

## An innovative farmer participatory watershed development model with consortium for technical backstopping

**International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) in partnership with Central Research Institute for Dryland Agriculture (CRIDA), National Remote Sensing Agency (NRSA), State Agricultural Universities, State Government Departments, Non-Government Organizations and Farmers Associations/Organizations have developed and tested an innovative integrated watershed development model for enhancing the productivity of rainfed agriculture, minimizing land degradation and improving the livelihoods. The pilot model was developed and evaluated in Adarsha Watershed at Kothapally in Shankarpally Mandal in Ranga Reddy district of Andhra Pradesh. The main components of the participatory consortium approach for community watersheds are :**

- Farmers collectively identify and prioritize the problems for possible technical interventions, participatory planning and implementation of watershed development involving all the stakeholders.
- A consortium of research and development organizations including NGOs provided technical backstopping to community watershed programs.
- Increased individuals participation is ensured by providing tangible economic benefits through *in-situ* water conservation of rainwater which is translated into increased productivity and incomes through integrated genetic and natural resources management (IGNRM) approach Holistic systems approach for watershed management for livelihood improvement in place of compartmental approach adopted earlier.
- Knowledge flow is facilitated by linking successful on-station watersheds and on-farm watersheds for strategic research
- Islanding approach is used in which a strategic research watershed is established within the macro-watershed/district to serve as a site of learning.
- Cost effective and environment-friendly soil, water, nutrient, crop and pest management practices for wider adoption to raise the carrying capacity of the system.
- Empowerment of communities, individuals and the strengthening of the village institutions is achieved for sustainable development.
- Continuous monitoring and participatory evaluation by researchers and elimination of contractors for implementing the works increased transparencies, over all performance and sustainability of the program.

This approach resulted in substantial reduction in runoff volume (29% less than untreated area), significant reduction in soil loss (only 1/3) was found from treated compared to untreated watershed. Increased groundwater availability in the watersheds resulted in reviving of dead open wells and additional 55 new borewells were dug during the project. Due to additional groundwater recharge, 200 ha area were irrigated in post-rainy season and 100 ha in summer season growing vegetables and other high value crops. Mean average raised groundwater was 415 cm during 1999-2001. With improved technologies, farmers' crop yields are increased by 2.2 to 2.5 times for maize, sorghum, chickpea and upto 4 times in case of pigeonpea. Income of individual households was substantially increased and the net returns on rainfed cereal crops were more than double as compared to the non-watershed village and also with the baseline incomes in 1998. Average household income from crop production activities within and outside the watershed was 15,400 and 12,700 respectively. The respective per capita income was 3,400 in the watersheds and 1,900 outside watershed. This resulted into significant impact of watershed interventions towards poverty reduction in the watershed through increased incomes for the poor from crop production activities.

ICRISAT led consortium has scaled-up this model in 200+ watersheds with the funding from Sir Dorabji Tata Trust, Andhra Pradesh Rural Livelihood Program of Government of Andhra Pradesh supported by DFID. U.K. and with Asian Development Bank in states of India (Gujarat, Madhya Pradesh, Andhra Pradesh, and Rajathan) and parts of north-east Thailand, northern Vietnam and South China. The results during the last 2 years have clearly demonstrated that this model could be scaled-up and the productivity of rainfed agriculture along with incomes were substantially improved while minimizing the land degradation in the rainfed areas. For scaling-up the benefits from the pilot 200 villages necessary details of linkages, institutions, policies are being worked out. This holistic innovative model has changed the paradigms for watershed management in India where watersheds are used as an entry point for improving the livelihoods and protecting the environment. Main success of the model depends on implementation of participatory approach by the community, empowerment of the stakeholders, building the available institutions and community-based organizations and most importantly technical backstopping by the consortium.

## Major Pathways to Productivity and Livelihood Enhancement:

### A. Public Policies:

7. **Convergence and synergy**: There is a need to achieve convergence and synergy among all the dryland farming and watershed programmes in India. For this purpose, we suggest the setting up of a **Commission for Sustainable Livelihood Security in Dry Farming Areas** under the Chairmanship of an eminent farmer. Appropriate counterpart bodies at the State, district and watershed (local) levels should also be constituted.

8. **Technology:** In the watershed development projects technical backstopping is lacking and hence 15% of the developmental project budgets could be earmarked for on-farm strategic research to ensure refinement and incubation of new technologies in the developmental programmes.

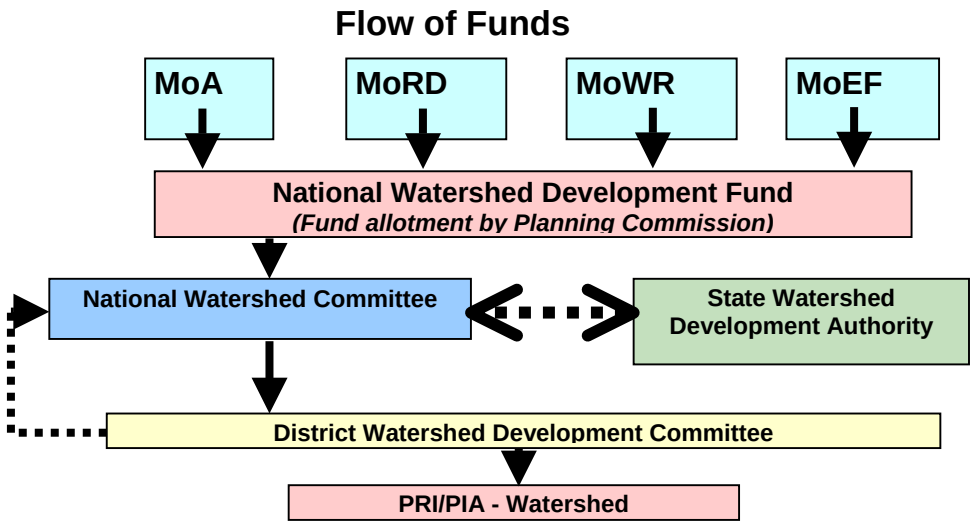
9. Fortunately, we have excellent national and international research institutes like Central Research Institute for Dryland Agriculture (CRIDA) and ICRISAT in Hyderabad, which have rich technical knowledge in elevating and stabilizing the yield of dryland crops. The Commission for Sustainable Livelihood Security should take full advantage of the vast pool of unutiliized knowledge available in research institutions/Agricultural Universities.

10. **Empowering the grass root institutions**: Empowerment of community based organizations (CBOs) and Panchayati Raj Institutions (PRIs) is critical and special measures to augment the technical expertise at PRI level need to be done through appropriate policies and resource allocation. The development work in the district can be taken through PRIs effectively utilizing the existing infrastructure present in various line departments associated with development of rainfed areas.

11. **Establishing R& D consortia**: All development programmes for the rainfed areas should have technical backstopping through a district level R&D consortium of organizations, which should include the relevant experts, development agencies, women's groups, farmers, private

sector companies, financial institutions and other stakeholders. The consortium is designed to bring the best available scientific know-how and crop varieties to farm families.

12. **Flow of Funds:** Funds for development work, as shown below, can go directly from the Commission to the district and from district to the PRIs. For strategic and applied research, the total fund designated for the purpose may be passed on to the research organizations implementing the project. The development part of fund can be channeled through the project to the PRI.




13. **Enhancing investment in rainfed areas**: Several studies in India and elsewhere have shown that the economic returns to investment in rainfed areas, specially in research and technology development, is much higher than that in irrigated and congenial areas, let alone the gains in environmental health and agro ecological security. Therefore, it is heartening that the UPA Government is giving high priority to rainfed areas, which should enhance effective investments in these areas. Recognising that development of technologies like IPM, IRM, INM, biotechnological alchemy of bio-resources and other system based technology developments are much more costlier than the technologies designed for single commodities and based on single discipline, the enhanced investment in rainfed agricultural research and technology development should particularly be given high consideration. About 10 percent of the total investment in watersheds should be allocated for rainfed research and technologies.

14. **Enhancing the Social Capital and Insulating Farmers from Risks**: Investing in the social capital in the risk prone rainfed areas is equally important, if not more, than the monetary investment for creation of physical assets. The process of transforming the rainfed area must be engendered through the promotion of sustainable women SHGs. Their access to entitlement such as land, water, food for work programme and overall employment should be proactively promoted. Given the high risk, coupled with the low investment capacity of the farmers and other inhabitants of rainfed areas and the acute distresses created due to layers of indebtedness through borrowing from non-formal institutions, highest priority should be given to the access to formal credit, insurance and other institutional supports particularly to the weaker sections of the society. In order to build the human capital, nutritional security of children and women through the whole life cycle approach coupled with safety net provisions should be given top priority in the hot spots. Safety nets and input supports such as development of seed villages and establishment of seed/grain/fodder banks through the leadership of SHGs and involvement of agri-clinics will prove extremely effective in enhancing food security. The Governments should proactively support the purchase of local grains, such as millets, jowar, ragi, oilseeds and pulses for stocking the grain banks. This will empower the local people both economically and nutritionally and many of these grains are much more nutritive than rice and wheat – the commodities which presently constitute the bulk of the national food buffer stock.

15. **Strengthening Enabling Mechanisms:** Livelihood of small and resource-poor farmers are directly linked with the magnitude of their marketable surpluses and remunerative returns of their products. While through group actions (cooperatives, SHGs, farmers' associations, etc.), economies of scale should be realized by effecting the integration of production, processing, value addition and marketing, appropriate regulatory mechanisms should be in place for protecting the rights of rainfed farmers on indigenous agricultural biodiversity, which they have conserved and evolved over generations. These resources possess extremely valuable genes and constellation of characters, such as the extremely high fat content of milk of local buffalo breeds.

16. Effective Sanitary and Phytosanitary measures and quarantine management must be in place to protect the trade and biosecurity of rainfed people (Refer Chapter VII). In this context, necessary institutional and awareness development programmes need to be designed particularly

for the rural people, to enhance their trade, legal quality and genetic literacy to empower them for their active participation in the development process and for capturing the new opportunities.

## B. Catalytic Interventions:

### B1 Adopting Existing Technologies:

17. **Narrowing yield gaps:** For the last many years, the average yields in rainfed areas have been hovering around 1 ton/hectare. However, the recent on-station and operational research on large number of farmers fields across the country clearly showed that the yield level can be at least doubled to 2 tonnes/ha. if only a "campaign mode" approach is adopted to popularize the technologies matched with appropriate policy and institutional support. Some of the key elements for the successful adoption of improved technologies are: (i) consortium approach for technical coordination and implementation, (ii) direct fund flow to the PRIs/PIAs, (iii) involvement of financial and marketing agencies at the village/district level, (iv) proper synergy with the existing schemes of the State departments of agriculture and leveraging their strengths particularly in input supply like seeds, micro nutrients, machinery and (vi) participatory involvement of the stakeholders including the PRIs, SHGs and other grass root organizations on the choice of interventions and resorting to a bottom-up priority setting based on the local needs assessed through participatory rural appraisal.

18. **Bridging the R&D disconnect:** Indian researchers, sometimes in collaboration with CGIAR and other international and developed countries' research and technology development institutions have developed some world class research outcomes and technologies, which have substantially contributed to our agricultural production and natural resource management. These "bright" spots should be expanded and shared through traveling seminars, visits and exchange of farmers and technology transfer agents. The critical elements of success should be identified and effectively internalized in the development process. **Farmers Field Schools**, promoting farmer-farmer lateral learning, involving even the *Krishi Pandits*, should be promoted and further expanded.

19. To have a measurable impact on production, income and livelihoods at the district level, it is important that a sizeable number of the farmers in the target areas adopt technology and the institutional consortia should facilitate this through a well defined institutional and policy framework. CRIDA and ICRISAT are willing to provide this framework on a pilot basis in few districts which need to be replicated all over the country, particularly the 150 districts by involving the institutions in the National Agriculture Research System (NARS), NABARD and the private sector. For internalizing the proven technologies in the development process, Agricultural Technology Management Agency (ATMA) should strengthen its linkage with the ICAR. Private sector participation is particularly relevant in areas like input supply, soil testing and marketing. Some examples of the rainfed farming technologies that can be popularized in the backward districts are: (i) Soil test based micronutrient application for maximizing yields, (ii) Popularisation of hybrid pigeonpea, (iii) Ridge and furrow method of cotton cultivation, (iv) Popularization of high quality *arboreum* cottons (MDL-2463. PA-255 and DLSA-17), (v) Upland rice + pigeonpea intercropping system (5:2), (vi) Double cropping in rice fallows of eastern India, (vii) On-farm water harvesting in rainfed rice through *dabris* and *(viii)* Integrated rice-fish-duck farming system. **Nearly 2000 large-scale farmers' fields demonstrations are proposed.**

20. Other promising technologies which have equal potential but need some more refining are: (i) Popularization of multicrop safflower harvester, (ii) Multipurpose 6 row seed drill for rainfed crops, (iii) Water harvesting through small farm ponds, (iv) Improved intercropping systems for different agro ecological regions of the rainfed crops, (v) Ridge and furrow planting method of rice + pigeon pea, (vi) Popularization of improved rabi sorghum variety CSV-216-R, (vii) Utilization of sunflower heads as a cattle feed through pulverizing machines, (viii) Pulse beetle control in stored pulses like redgram, greengram and blackgram through probe cum pitfall trapping, (ix) Improved storage of soybean seed for increased viability (vacuum storage techniques), (x) Horti-agricultural system in rainfed areas and (xi) Improved livestock nutrition. **For these, 3,000 demonstrations are proposed**. Micro enterprises for landless workers needing widespread adoption are: (i) Promotion of using improved machinery through custom hiring centres (for seeding/tillage/interculture/harvesting/threshing/shelling and drying), (ii) Kisan nurseries for landless women, and (iii) Village seed banks: **about 1500 seed banks (10 villages in each of the 150 districts) may be set up.**

## B-2 Transferring New Technologies:

21. The following thematic interventions are considered the most critical towards increasing productivity and livelihoods in rainfed areas: (i) water resource development, (ii) investing in soil health, (iii) integrated crop management and production, (iv) integration of alternate land use with livestock/aquaculture/ horticulture, (v) post harvest management, processing and value addition, (vi) micro-enterprises and marketing and (vii) social engineering, group dynamics, engendering the movement; expanding the knowledge base.

22. Based on the research done and the successful cases of transfer of some of the technology packages in selected pockets in different zones of the country, the following interventions have been found to be extremely effective for enhancing productivity and livelihood in rainfed areas and deserve large scale adoption.

22.1 Participatory augmentation and management of surface and groundwater.

22.2 Soil test based integrated nutrient management with focus on micro nutrients and soil carbon.

22.3 Participatory selection of crop varieties and village based seed/fodder/grain banks, based on the NERICA model (New Rices for Africa adopted successfully in west Africa).

22.4 Promoting increased fodder production and livestock health care.

22.5 Production and distribution of quality planting material of horticultural crops.

22.6 Skill enhancement of artisans and promoting micro enterprises for value addition through post harvest processing and ICT –mediated knowledge sharing.

23. **Soil test based micro-nutrient amendments for increasing yields:** While scaling-up, the consortium model noted that with 80-100% of the tested farmers' fields in Andhra Pradesh, Madhya Pradesh, Rajasthan and Gujarat in 200 watersheds were severely deficient in boron, zinc and sulphur in addition to the macro-nutrients like nitrogen and phosphorus. Farmer participatory trials with micro-nutrient amendments in 200 watersheds during the last 2 years increased crop yields by 30 to 120% in case of maize, groundnut, sorghum, pigeonpea, chickpea,

soybean, greengram etc. The economic gains with the application of micro-nutrients in three districts of Andhra Pradesh is ranging from Rs.1,500 to Rs.16,500 per hectare. This technology should be adopted on large scale throughout rainfed areas of the country with due attention to the 150 districts for improving the productivity of the rainfed systems. Additional facilities for soil test analysis for all the 16 macro and micronutrients are needed to implement this programme. To begin with, each district must have one adequately equipped soil testing laboratory which could reliably test for the various nutrients, especially the micronutrients. Additional investment both in terms of equipment and human resources are required to create a national grid of advanced soil testing laboratories (ref. Chapter I) .

24. **Enhanced soil health through vermicompost and *in-situ* generation of organic matter:** Indian soils are severely deficient in soil organic matter which is the main driving force for agricultural production. At the same time, there are large quantities of farm residues available in the villages and wastes in the cities which can be converted into value added compost through vermi-composting. The farm boundary bunds are successfully used for generating N-rich organic matter by growing nitrogen-fixing shrubs on the farm boundaries. These shrubs can provide 25 to 30 kg of N per hectare through loppings and also improve the soil health through building the soil carbon. Both these technologies can result in building assets in the villages which will enhance the agricultural productivity and at the same time create long-term employment in the villages while improving the soil health and improving the productivity. **Small Holders' Estates**, landless labour and non-agricultural groups must all actively promote this green technology.

25. **Availability of high quality improved variety seeds through village-based seed banks:** Timely availability of good quality seeds of high-yielding improved varieties of crops is one of the major constraints farmers face in the rainfed areas. The consortium model has demonstrated that with the support from the consortium to the farmers for producing high quality seeds using the breeders seed material, grading, storage and distribution could result in increased productivity and employment opportunities in the village. The SHGs managed the village-based seed banks and through value addition more income was generated in the village and at the same time, productivity of large rainfed areas were substantially increased. Successful examples of

village-based seed banks in Madhya Pradesh and Rajasthan supported by Sir Dorabji Tata Trust project and in Andhra Pradesh supported by APRLP-DFID projects have been in operation for the last 2 to 3 years. The villagers are empowered and are managing the village-based seed banks effectively for crops such as groundnut, chickpea, sorghum and soybean. Other governments, private sector, NGOs and SHGs should also adopt this programme.

26. **Rainwater harvesting through farm ponds for supplemental irrigation and recharging the dead open wells:** In most of the rainfed areas, the seasonal rainfall which comes as downpour, substantial part of that goes waste through runoff causing soil erosion as well as impoverishing the soil through soil erosion. It has been demonstrated throughout India that harvesting of excess runoff and storage into farm ponds as well as restoring water bodies and recharging the dead open wells is a very feasible and successful option for improving the groundwater recharge as well as enhancing the productivity of rainfed agriculture through supplemental irrigation. In the areas with rainfall above 400 mm these technologies could be widely adopted which will enhance the cropping intensity, diversify the system into high value crops, increase the productivity and incomes from rainfed agriculture and at the same time, create assets in the villages. These technologies have shown remarkable increase in the groundwater as well as productivity and incomes for the farmers. The watershed programmes should adopt a **million well recharge programme** to be linked to a rebate in the rate of interest provided under the enhanced agricultural credit programme, on priority basis. All the Technology Missions should also contribute to the national scheme to retain, renovate and restore the water bodies that are linked to agriculture.

27. **Popularization of improved high yield varieties/hybrids:** Large number of high yielding varieties/hybrids of number of rainfed crops are released by research organizations and private entrepreneurs in the country. However, availability of these seeds to the farmers is lacking in remote areas. By popularizing these improved varieties and establishing linkages with private entrepreneurs, the benefits of increased productivity can be harnessed. This technology can be widely adopted by conducting front line demonstrations on the farmers' fields through farmer participatory approach. At the same time, linking villagers with the private entrepreneurs will increase the employment opportunities in the villages and serve the purpose of increasing

productivity and incomes of rainfed agriculture. NABARD Agriclinics, contract farming and Small Holder Estates, with active involvement of corporate sector should be the main drivers of this technology.

28. ***In-situ* moisture conservation through land farm treatments:** Based on the type of soil and rainfall different land forms such as ridges and furrows, broad bed and furrows (BBF), raised beds and sunken furrows, contour planting and bunding and conservation furrows at specified intervals can substantially enhance the infiltration of rainfall resulting in increased soil moisture for growing the rainfed crops. These technologies are well proven and can be widely adopted in the specific areas based on the type of soil and rainfall in the region. Through these interventions, rainwater use efficiency can substantially lower the runoff, soil loss can be decreased and productivity of rainfed systems and incomes from rainfed agriculture can be substantially increased.

29. **Integrated livestock and horticulture with crops:** Livestock are important source of livelihood for the rainfed farmers and landless people. In order to improve the livelihoods of landless people in the watersheds, enhancing the incomes through improved animal production (for milk, meat and other products), the intervention will be through improved forage production, seed quality improvement, improved animal health and breed improvement. At the same time, agricultural systems with improved water availability can be diversified using high value crops (fruits and vegetables), the incomes of the small holders can be substantially enhanced. It is proposed to target weaker sections and landless people for the livestock and small holders with irrigation facilities for diversification with high value crops.

30. **Post harvest management, processing and marketing:** Recognising that huge post harvest losses especially in horticultural and livestock and dairy products, cause significant depression in productivity, quality and income, highest emphasis should be placed on investment in infrastructure for post harvest management, transportation of agricultural goods ( the production centres are generally placed distantly from the processing and marketing centers in rainfed areas), agri export zones, processing and modernized retail outlets, Growers' cooperatives and SGHs should play an active role. . The highly successful NDDB model of

linking production – processing – value addition – marketing of milk and dairy products should be replicated for other commodities. Appropriate harvesting and processing machines, shellers, threshers, dal mills, oil expellers etc. should be promoted and supported both by the public and private sectors. The involvement of women SHGs closely linked with the home science activities promoted by the agricultural universities and ICAR Institutes should be duly supported. Low cost storage structures for fresh fruits and vegetables, pulses, grain banks and hand tools to reduce drudgery among women should be actively promoted. A post-harvest technology wing may be added to the existing Krishi Vigyan Kengras (KVKs), in order to bridge the huge gap between production and post-harvest technologies, particularly in horticulture resulting in considerable post-harvest losses as well as loss in opportunities for value addition. As such, Krishi Vigyan Kendras may suitably be redesignated as Krishi and Udyog Vigyan Kendras (KUVKs).

31. The following micro enterprises and marketing approaches are strongly recommended to be adopted towards the goal of enhanced productivity and livelihood security, especially by landless and non-agricultural people:

31.1 Intensification and spread of household income generating activities like mushroom cultivation, sericulture, backyard poultry, apiculture, vermicomposting and pisciculture.

31.2. Promotion of custom hiring of farm machinery, irrigation and plant protection equipment etc.

31.3. Establishing and fostering linkages with market committees by e-networking

31.4. Linking SHGs and other farmers organizations/groups with credit, insurance, private & corporate sector to promote Small Holder Estates to benefit from the power of scale.

31.5. Establishing ICT based knowledge centre/internet kiosks for market information and virtual extension service (Refer Chapter VIII).

**C. Leveraging Group Dynamics**:

32. In order to take advantage of the scale of economies, small and resource poor farmers should be helped to organize themselves as **Small Holders' Groups**, on the lines of SHGs, each covering an area of about 500 ha. About 6000 such groups could be created in the 150 districts identified by the Planning Commission. Through appropriate skill development and based on agro-ecological capacity, and strategic locations, such groups may further form themselves into clusters of groups to undertake mass production by masses of specified commodities. The smaller groups may concentrate on seeds, planting materials, biofertilizers, marketing and e-commerce. These groups should be duly empowered to enhance their access to modern technologies, formal credit and marketing. The group action will dispel the risk aversion attitude of otherwise individual resource poor farmers and other workers and will provide the necessary confidence to adopt new technologies, investments and avenues of employment and income generations. Since their access to appropriate insurance packages and life saving supports from the Government will enhance considerably, the adoption rate of new technologies and intensification processes will grow fast. Further the group action will insulate the small farmers from the gambles both in monsoon and the market place by scaling up their power both in production and distribution. The proposed **National Commission for Sustainable Livelihood in Dry Farming Areas**, through the watershed management programmes, should make special efforts to create such groups throughout the country. The role of Panchayat Raj in creation and management of such groups can hardly be over emphasized and PRIs should suitably be strengthened by providing necessary financial and human resources support.

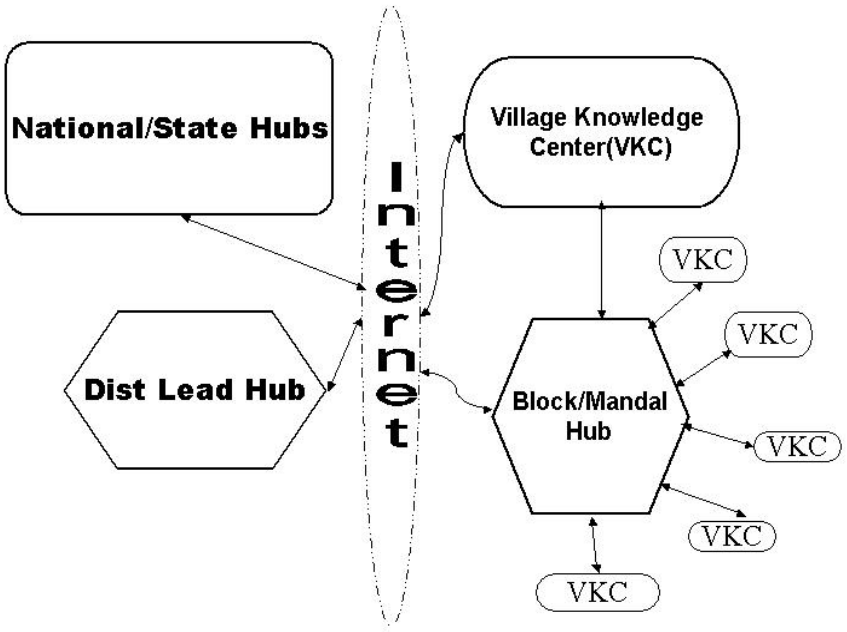
**D. Socio-economically and Agro-ecologically Differentiated Approach**:

33. In rainfed areas, natural resources endowment and development potential vary greatly from location to location. Therefore, location specificity must be emphasized in micro planning, in allocation of resources and in setting socio-economic targets. Area-based development duly internalized in the integrated watershed management approach, should be the hall mark of development and growth of rainfed areas (Fig 1). Therefore, we propose that the agro ecological sub-regions of the 150 districts should be delineated and the various programmes should be designed to match their capacities, as illustrated in Fig.2. This will particularly be important for creating assets to ensure sustainability of the watersheds.

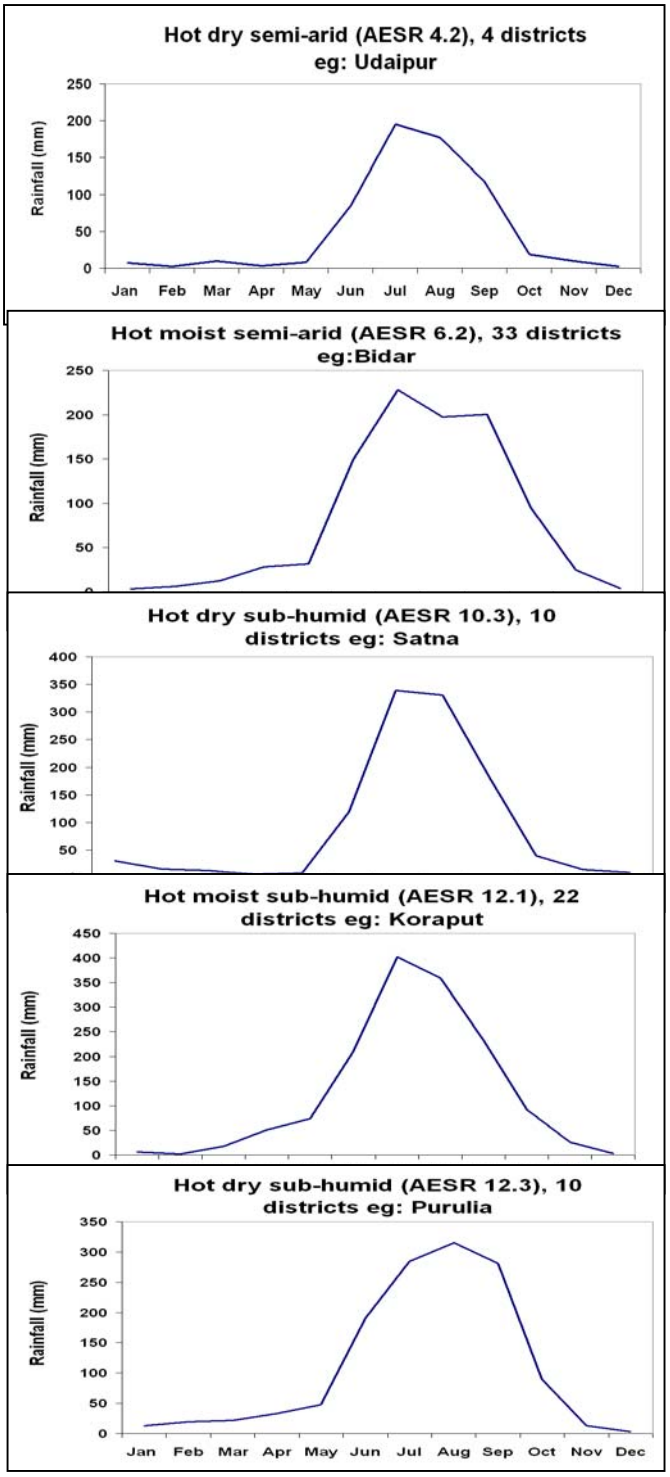
## E. Capacity Building and Knowledge Sharing for Improved Livelihood Security in Rainfed Areas*:*

34. The new approach to productivity improvement and employment generation in the rainfed areas is more information and knowledge-intensive. The majority of the individuals covered require support to meet a range of information needs that arise with the deployment of new technologies and services. There is also a need to build and strengthen new local capacities in aspects of resource management and in responding to credit or market movements. Both these dimensions require a functional and affordable arrangement that brings knowledge and information sources and the rural families together for improved livelihood security of the families. Capacity building and knowledge sharing approach that integrates the bottom-up with the top-down approach is also needed.

35. Through a system of ICT based rural knowledge centres (Refer Chapter VIII), the families in the dryland areas can access information and knowledge resources with facilitation by a district-level consortium, and can raise their queries. The following figure describes this arrangement, which is itself derived from the significant national experience in rural IT kiosks in recent times.



## Figure 2. Representative Climatic Patterns of Selected Districts



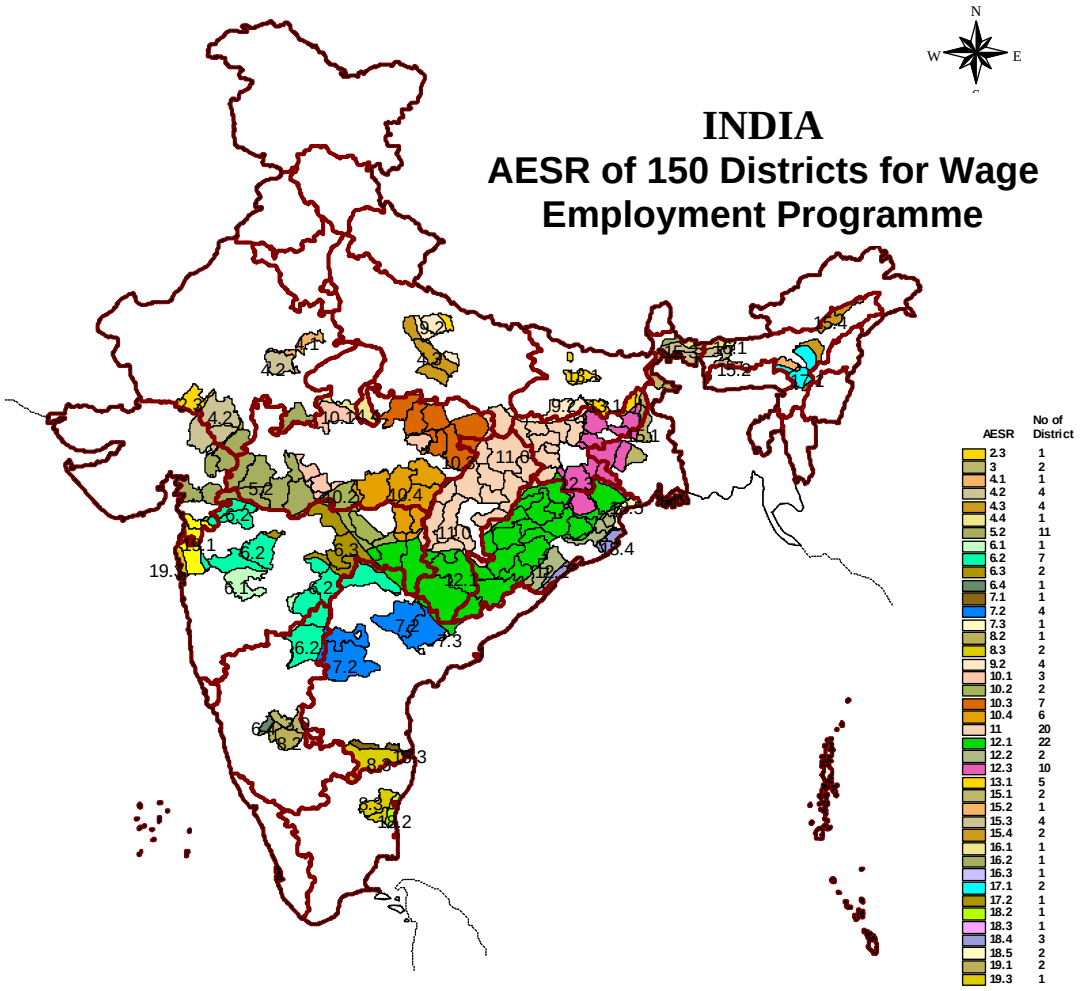

**Focus on *in situ* moisture conservation , inter cropping, livestock**

**Land use diversification and rain water harvesting, livestock**

**Scope for intensification of double cropping, rainwater harvesting**

**Immense scope for rainwater harvesting, horticulture**

**Intensification of upland rice, paddy-fish-pig integrated farming, oilseeds and pulses**


N
W
E
INDIA
AESR of 150 Districts for Wage Employment Programme
AESR
No of District
2.3 1
3 2
4.1 1
4.2 4
4.3 4
4.4 1
5.2 11
6.1 1
6.2 7
6.3 2
6.4 1
7.1 1
7.2 4
7.3 1
8.2 1
8.3 2
9.2 4
10.1 3
10.2 2
10.3 7
10.4 6
11 20
12.1 22
12.2 2
12.3 10
13.1 5
15.1 2
15.2 1
15.3 4
15.4 2
16.1 1
16.2 1
16.3 1
17.1 2
17.2 1
18.2 1
18.3 1
18.4 3
18.5 2
19.1 2
19.3 1

**Financial Resources**

36. A National Network of Advanced Soil Testing Laboratories will be required towards addressing the soil fertility imbalances, particularly the deficiencies of micronutrients in the soil. Factor oriented (eg. micro-nutrient deficiencies, implements etc.) and system oriented (eg. crop-livestock-fish integration) demonstrations need to be organized in resource poor farmers' fields by the R&D Consortium to be set up by the Commission on Sustainable Livelihood in Dry Farming Areas. Farm Schools will have to be established using the services of outstanding farmers. Additional financial resources will be required also for strengthening processing and post-harvest management, rainwater harvesting and restoring water bodies as well as for the creation of pulses and oilseeds villages. ICAR should provide part of the funds needed through re-ordering of priorities and redeployment of personnel. **An additional sum of Rs.1,050 crore, as detailed below, may be provided in the budget for 2005-06 to cater to the above mentioned requirements**.

36.1 **A National Network of Advanced Soil Testing Laboratories** – 1,000 laboratories across the country, with 500 of them located in dry farming areas, each laboratory costing Rs. 50 lakhs - total allocation Rs. 500 crore.

36.2 Five thousand large-scale demonstrations on catalytic interventions in collaboration with CRIDA and ICRISAT, establishment of 1,500 seed banks and creation of 6,000 Small Holders' Estates - Rs. 100 crore.

36.3 Establishing 50,000 **Farm Schools** in the fields of framer-achievers - Rs. 150 crore.

36.4 Post harvest processing and value addition in collaboration with CFTRI and private sector and strengthening of **Krishi and Udyog Vigyan Kendras** for post harvest management - Rs. 150 crore.

36.5 Augmenting water availability by vigorously promoting water harvesting and restoring water bodies – Rs. 70 crore.

36.6 **A Million Wells Recharge Programme** ( to be promoted through interest rebate on loans)

36.7 Rainbow Revolution in rainfed areas achieving substantial enhancement in productivity of millets, pulses, oilseeds and livestock through large scale adoption of highly successful new technology packages, such as hybrid *arhar* - Rs. 50 crore.

36.8 Creation of pulses and oilseeds villages (*Arhar* Villages, Sesamum Villages) for specialized enhanced production, efficient processing and remunerative producer-oriented marketing of the selected crops - Rs. 30 crore.

# CHAPTER IV

## A NEW DEAL FOR WOMEN IN AGRICULTURE

The Sixth Five-Year Plan (1980-95) should be remembered as a watershed in the history of post-independence Indian planning. For the first time, the Plan document presented a separate chapter titled Women in Development. Government of India had finally accepted that women were vital actors, contributors and agents of development planning. Since then, each Five Year plan introduced development schemes for women. An illustrative list of the important and significant programmes presently being implemented in the Ministry of Agriculture (MOA) is provided below: -

- The Central Sector Scheme of Women in Agriculture (launched in the Eighth Plan) (now covers 15 States in the country)

- Externally aided projects on Women in Agriculture: (the earliest of these began in 1982, now running in 4 States)

- Externally aided GOI-UNDP Food Security Programme (began in 1998, running in 4 States)

- Projects to promote women's involvement in the cooperative movement (as part of the general education programmes of the National Cooperative Union of India; formation of self-help groups of women is one of the activities)

- Gender-friendly agricultural Implements and Machinery: (as part of the MOA general programmes on implements and machinery)

- General programmes of Integrated Pest Management, National Perspective Development Plan, etc. also specifically focus on women in training programmes, access to subsidized equipment and earmarking of benefits at the field level.

- Organic Farming: A National Project on Organic Farming has been formulated in the Tenth Plan, and a National Institute of Organic Farming has been set up as a Central body. The links between women, biodiversity and organic farming make it one of the potential programme areas for women farmers.

- The MOA has mandated 30% of benefits from all development programmes to reach women, the target date for which is proposed by MOA as 2006-07.

2. These programmes are a mix of a) those specially designed for women, b) those that form components or have special focus on women as part of larger programmes, c) those that bear critical importance and potential for women.

**The Path Ahead:**

3. The Common Minimum Programme (CMP) provides that -

"The UPA government should ensure that at least one-third of all funds flowing into panchayats should be earmarked for programmes for the development of women and children. Village women and their associations should be encouraged to assume responsibility for all development schemes relating to drinking water, sanitation, primary education, health and nutrition."

"Complete legal equality for women in all spheres should be made a practical reality, especially by removing discriminatory legislation and by enacting new legislation that gives women, for instance, equal rights of ownership of assets like houses and land."

4. In the current context of the increasing feminization of agriculture, planning for women in this sector needs to keep their critical role in view in –

1. Conservation
2. Cultivation
3. Consumption
4. Commerce

5. Keeping in view the above perspective, a three-pronged approach for engendering the Tenth Plan for Agriculture is required:

- New special programmes for women with specific focus on the most marginalized families of the farming and rural labouring population and their gendered situational needs

- Affirmative action for women farmers in the programmes being currently implemented by providing 30% of benefits (including selection of numbers of women in participation in programmes as well as programme benefits) with specific reference to training, extension, provision of inputs, subsidies and support services etc. with effect from 1/4/05.

- Creation of institutional mechanisms for a) integrating women farmers' concerns in 'mainstream' agriculture at policy, strategy and programme levels and, b) incorporating gender analysis, gender-sensitive monitoring and evaluation and stronger affirmative action for women

6. Agriculture for the purpose of this Chapter, from the women's context, is envisaged in the broadest dimension. It is not restricted to cultivation only. It includes not only crop production and horticulture, but also dairying, small animal husbandry, fisheries, poultry, natural resource management in its widest sense (including forestry, tree crops, minor forest produce) as well as subsistence production. It requires creative and combined approach in order that women workers belonging to small and marginal farmer households can use a small piece of land optimally to generate year round employment. It calls for promoting a farming systems approach based on crop-livestock-fish integration, but goes even further.

7. Given this comprehensive operational framework, the suggestions made in this chapter cut across conventional sectoral lines of subject-matter demarcation; inter-sectoral collaboration and coordination is therefore of prime importance to the success of these ventures. The

mechanisms that are needed for ensuring such collaboration and coordination have, however, not been gone into in detail in the chapter.

8. **New Programme Initiatives:**

8.1 Rights, entitlements and better access to land, water and other physical resource base:

8.1.1. Effective access to land is perhaps the single most significant determinant of economic and social status and power in rural India and "women's unequal access to it is one of the most important forms of persistent gender inequalities in India today" (Bina Agarwal, 2004) (mimeo). Land is a productive resource and placed in women's hands means well -being of the family, as evidenced in better access to education, health and nutrition of its members, especially the children. In the interest of social justice as well as well being of families, enhancement of women's rights and entitlements to land deserves to be the first priority on the agricultural agenda. "In other words, enhancing women's direct access to land in the rural economy could prove critical for meeting the national goals of improving food and livelihood security, children's welfare, agricultural productivity and women's empowerment". (Bina Agarwal 2004)(ibid).

8.1.2 Women have been agitating for better access to credit and credit instruments. It is the absence of land titles that prevents women farmers from being granted kisan credit cards.

8.1.3 For the purpose of this section of the chapter, accelerated programme activities based on the following are recommended to be taken up –

i. Existing policy pronouncements and directives of direct transfer of government land to women,

ii. Improving inheritance rights of women to land by bringing changes in laws and working towards better implementation,

iii. Enabling women to buy land from the market

a) *Transfer of Government land, including wasteland, ceiling surplus land, etc. to women*

Government has issued policy directives from time to time to all States on allotment of land on joint pattas in the names of husband and wife. In addition, Government has also issued directives on allotment of such land in the names of women only. The Sixth Plan recommended allotment of at least 40% of land pattas to women and the remaining pattas in joint names of husband and wife. This was further taken up in the Seventh Plan as well as in the National Perspective Plan for Women (1988-2000). Allotment of land under various welfare and anti-poverty schemes on the basis of joint pattas to husband and wife is a part of Government policy of strengthening women's legal entitlements.

Since the subject of land is within the competence of the State governments, the implementation of these directives is not uniform. Nor is there an effective monitoring system in place at either State or central level. While some States have gone far ahead and have issued orders for enforcing land transfers to women or in the joint names of husband and wife, some others have not been proactive.

Joint pattas give a measure of protection to wives against indiscriminate sale by husbands without consulting them. In case of marriages breaking up, joint pattas ensure a share in the property to the wives. However, joint pattas have several flaws, as women are not able to have legal rights of disposal of the land. Women also find it difficult to access the produce of the land and enjoy it. Joint pattas also

obstruct women from joining with other women to take up agricultural activities as a group.

The Center of Rural Studies, Lal Bahadur Shastri National Academy of Administration, Mussoorie has brought out a number of publications on gender discrimination in land ownership. These studies bring out that the majority of women, especially those who belong to the target group of welfare and anti-poverty programmes, under which these allotments are made, are themselves not aware of these Government directives and of their entitlements to land. In the Uttar Pradesh study, (covering two districts), none of the rural households interviewed reported the case of any such land allotment, either on individual or joint patta basis under the land reform programme. They did not understand the phrase “joint patta” and expressed their ignorance of the government directives on land allotment. In Orissa, the study found that land compensation for development projects was paid to the male heads of families only. In case of landowners who were female-heads of households, widows, or destitute women, etc. the compensation was diverted to middlemen or others who cheated the women of the money. Government of Orissa had issued its first directive on grant of joint land pattas to husband and wife in 1989. In October 2002, the Government further directed that 40% of the Government wasteland allotted for agriculture, ceiling land, bhoodan land etc. may be allotted to widows, unmarried women, victimized women and women living under the poverty line as far as is practicable. No consolidated information was made available to the research team on the progress of implementation of these directives. There was some evidence of title transfers

on joint patta basis in a few places where the administration had started the same on "experimental basis".

Programme activities for 2005-06 should focus on –

i) Setting targets State-wise, for allotting at least 40% of government land distributed (including water bodies, wasteland, surplus land, etc.) to women's groups for taking up agriculture and allied activities.

ii) Setting targets State-wise, for allotment of remaining government land transfers on the basis of joint pattas to husband and wife

iii) Setting targets State-wise for at least 40% of government land distributed to SC/ST to go to the women of these communities.

iv) Allocation of land in State Farms (both Central and State) to women SHGs engaged in the production of seeds and planting material for horticultural crops including medicinal plants.

Though 'land' is a State subject, the Central Government should oversee this programme and monitor its implementation. Most of these directives on providing titles to land for women emanated from Central Plans, based on the recommendations of planning groups and other high level policy making bodies.

The Central Government and State Governments can earmark land on government-owned farms to be given to Self Help Groups (SHGs) of women for agricultural purposes.

Monitoring of the implementation of grant land titles on exclusive or joint patta basis to women should be taken up as a new programme and should form a part of

the Ministry's activities during 2005-06. Such a pro-active step by the MOA should establish that programmes and policies for women in agriculture cannot be designed and carried out without reference to legal rights as well as access to land. It is not enough to provide women with access to knowledge, skills and productive resources such as credit and technology, marketing, quality control, etc. without legal entitlements. It is necessary for MOA and its various agencies to be seen as supporting affirmative action to raise women farmers' status by facilitating their ownership and access to land and other physical assets.

MOA should carry out 4 regional consultations on issues of land rights and women during the FY 2005-2006 in collaboration with State departments of agriculture and rural development (among others). In addition, a special consultation should be held in the North-East region where issues of land rights and women need special attention.

b) *Private land*

In the short term, overcoming existing legal obstacles to equal access to land and property for women pose grave challenges. However, the need to provide equal rights to land through amendments to existing laws cannot be put on the backburner. Follow up of earlier initiatives should be accorded top priority. Union Cabinet has recently approved amendments to the Hindu Succession Act 1956, providing that daughters would get equal rights in ancestral property.

While ownership of private land is skewed by both class and gender in India, it is ironical that the largest numbers of women farmers and workers in agriculture belong to the tenant category, who work on the lands belonging to others. Share cropping and other similar systems provide livelihoods to the largest numbers of families in the country and in the background of increasing male out-migration, women have become effective share croppers in large parts of the country. Though it is a loss making activity, it generates foodgrains and provides a modicum of food security. These women have no better

alternatives and stand marginalized by banking institutions, agricultural and scientific establishments and governments. With increasing feminization of agriculture, these women are taking up more and more of agricultural tasks hitherto carried out by males. They have no security of tenure and are seldom allowed to cultivate the same piece of land continuously. They have no access to credit and therefore buy the agricultural inputs, often of poor quality, at exorbitant prices, some safety nets are required for this very large category of women workers, for which NABARD can set up a working group or a committee.

c) *Purchase of land from the market*

There is also the successful initiative where a Scheduled Caste Development Corporation (SCDC) (Andhra Pradesh) has enabled dalit women's groups (by giving subsidized credit) to purchase/lease private land from the market for cultivation of crops. The ownership rests with the group, which manages and controls the land and its cultivation. The SCDC has sought partnership in this endeavor from NGO's working in the State. This initiative can be recommended to the other States, especially where the problems of landless dalit women are in large numbers, either as an alternative or in conjunction with the grant of leases/pattas of government-owned land.

8.2 Improvement of land records to strengthen women's land security

*Special problems arising from lack of proof of community-owned land: the case of the North East*

Women in certain areas or belonging to certain communities of the country, especially the North-Eastern region, are often handicapped in the absence of legal proof of entitlements to their customary and traditional rights to agricultural lands as well as the accompanying responsibilities that they are required to carry out. The All India Federation of Women in Agriculture has demanded a cadastral survey to be conducted in the North Eastern region, which should enable the women as well as the men to have proof of the ownership of land. Though land is

not a problem in this area traditionally, as it was considered ‘non-tribal’ not to own land, with increase in land grabbing, problems are arising. The privatization of community land is increasing and land is being leased to private groups.

The North East region is known for its customary land systems adhering to tribal and other ethnic norms of property ownership and use in which the community ownership is predominant. However, in most areas of this region, the land system has not been codified nor cadastral surveys conducted. This has led to a situation where there is no record of land rights. With the increasing socio-economic changes and trends towards modernization, community and communally owned land resources are in danger of being encroached upon by individuals. Pattas are being issued indiscriminately by local authorities that do not have the sanction of customary laws. Women stand to lose a great deal in these transactions that are taking place. Their control over natural resources is getting more and more endangered with the conversion of community-owned lands to private property. The conventional images of women of the north east region having property rights is not always borne out by actual field realities. Even if women have proprietary rights over land, it is the males who may more often control its use. The decline of jhum cultivation and its replacement by conventional individual farming is an example.

The urgent necessity of undertaking a comprehensive survey of the land and preparation of a statute book or a compilation of record of rights based on cadastral maps has been emphasized by many authorities, including some of the high courts and land reforms commissions in the region. Even when some of the States have passed enabling legislation to provide for surveys, the same have not so far been enforced for all the States of the region as a whole.

A comprehensive survey of land ownership in the North East should be taken up during 2005-06, using the latest technology so as to ensure accuracy of mapping as well as saving of time. Ensuring a participatory and transparent process to the

planning as well as the conduct of the survey is vital to its success. Unrecorded rights traditionally enjoyed by individuals or groups, such as women (but not confined to women only) run the risk of being excluded when a formal exercise of surveying ownership rights and then recording them, collects oral evidence and uses it as an important input. Very often members of marginal groups fail to turn up for the hearings. It is essential that all women of the region and the areas being surveyed are consciously involved in the process. In order to give wide publicity to the process, public hearings can be made an integral part of the process. Disputes and jurisdictional complexities can be dealt with better by using such open forums.

Clear village-scale maps, using informal and formal mapping methods including GIS and GPS, and a database of the updated land records should be prepared. Records of land rights can be computerized and made available in hard copies to local agencies for public use and perusal. Capacity of local women and men to upgrade the records from time to time should be built.

Apart from the special issues relating to land records of the North East region, there are other problem areas in the rest of the country that obstruct the enjoyment of women's rights over land in the possession of the family.

8.1.4 There are two other problem areas needing interventions at various levels –

1

a) Absence of women's names in general in the land records of land-owning families: Generally, only men's names are shown as owners of land. Women's names are often not recorded as claimants. This is more so in the case of daughters. Improving the maintenance of land records is in the interest of increasing women's ability to obtain land from their families and ensuring that their claims are properly recorded in the village registers. Women's names go by default in the ownership or possession columns. Since 86% of arable land is privately owned, the absence of revenue record showing women's claims to

land severely affects women's capacity to take up productive land-based activities on ownership basis. The example set by the Government of Assam is worth emulating. In 1989, it took a policy decision to include the name of the wife in settlement pattas. It was part of the Government Land Policy of 1989, which marked a complete departure from the earlier State land policies, which did not mention women by name. The Policy stipulates that all allotments and settlements of land, both in rural and town areas, should be in the names of the spouse, conferring joint title to the husband and wife of a family. The State Government followed this up by issuing patta passbook with specific columns to show share holders of the property. Even though the policy of inclusion of wife's name in the settlement pattas has remained on paper in the State, the initiative taken by the State to include this provision in the Land Policy is worthy of emulation by other States. It protects the inheritance rights of women, especially of widows. This can be recommended to other States in the country. On the analogy of the Assam initiative, MOA should ask all State governments to include the names of women family members in the revenue records as claimants of landed property.

b) Problems arising from lack of recorded rights of certain exclusive communities: Rights of women of the traditional farming communities, pastoral, artisan and fishing communities, women's share of common property rights over pastures, forests, wetlands, and other lands are seldom recorded. The same situation exists for individual rights of women and men over agricultural fields. Most nomadic communities have no written record of the rights enjoyed by them. They exist in a State of uncertainty, because they do not have a title deed to the lands and waters that they have traditionally or customarily used for their livelihoods. This situation often creates indifference and a lack of stake in maintaining and enhancing biologically diverse, sustainable farming, pastoral, and fishing practices.

Improvement of the preparation and maintenance of land records is to ensure women secure and clear tenure, especially women of communities who traditionally enjoyed common property rights in the absence of any record or document of these rights. Women holding individual rights over agricultural land are also benefited by the proper upkeep of land records.

A similar exercise should be carried out for customary/traditional right-holders such as tribals, nomadic groups, pastoral communities, traditional farmers, artisans, fishing communities, etc. with special focus on women in these communities. What is needed is to compile and collate existing records at village level, so that it is possible to look at issues of conflict, areas of dispute and at competing claims and try to arrive at solutions amongst the different parties involved including the government departments. Women of these communities should be involved in these village level discussions and public hearings.

A large number of line agencies should be involved in these exercises. The objective should be to move towards a secure and clear tenure by way of both individual and common property rights that can be recorded and made into a document that is easily accessible to every one at the village level.

8.3 Partnership programmes in promoting women's productivity (Supporting women's groups in enhancing productivity with the help of established women's organizations working at grassroots level)

8.3.1 In the short and medium term, poor women's groups should be provided programme support (technical, financial, management, etc.) for agriculture, horticulture, fisheries, wasteland development, rejuvenation of grasslands, natural resource management, village pond development etc. through the agriculture and allied extension machinery backed by NGO support. Instead of following the

conventional top-down approach whereby government 'motivates' the 'beneficiaries' to avail of new government schemes and projects, the MOA should make efforts to identify groups of women where a latent demand for such opportunities already exists (the term "beneficiary" denotes a patronage approach; there is need for a shift in mindset from patronage to partnership).

8.3.2 Those grassroot organizations in different parts of the country who have successfully spearheaded poor women's groups to demand land from the government should be involved by the MOA in these efforts. Organizations that have achieved many successes in these fields should receive formal recognition as resource agencies to help the MOA for designing and running these programmes, according to the needs of the local context and situation.

8.3.3 Organizing and mobilizing poor women who are in search for new alternative livelihoods is an essential ingredient for the success of these programmes at the local level. This enables women to create their own organizations, whether in the form of self-help groups, cooperatives, societies or other forms. It is only as members of their own organizations that the women can aim to increase productivity, income and bargaining power. Such a partnership should enable MOA to avoid the pitfalls of a 'targeted' approach where quantitative aspects are deemed to be a measure of success.

8.3.4 The group approach is essential to strengthen women's capacity to retain control over the land as well as to access production resources of better quality with greater ease and convenience. The entity of a group also enhances the status of women as compared to individual leases or pattas. This should be therefore a non-negotiable feature of this scheme

8.3.5 This programme initiative should take the following elements into account:

a) The State authority enabling ownership of/access to land by hitherto landless or land-poor women organized into groups through its rules and procedures.

b) The presence of intermediary organization(s),

c) Fostering a collective ethos amongst the women through mobilization of a broadly homogenous set of asset-poor women, which is essential to the sustainability of the programme;

d) Mobilization, specifically in the context of building an organization of women workers.

e) Mobilization around issues that are local-specific, differing from area to area on the basis of agro-climatic or other factors; relating to challenges that the women have to battle with for survival and subsistence, such as water, soil, natural calamities, displacement etc.

f) Involvement of women not only in crop production but in any of a sweep of activities based on land and water, bio-diversity, natural resource management, etc. with an open-ended approach.

g) The importance given to removal of food insecurity at both the household and community levels as one of the main objectives of the programmes.

h) The asset-poor women's collective entity cannot be restricted to the self-help group model alone (which is what most of the MOA programmes are based on) as the funding norms may not suffice. There is a need to look at other models such as the cooperative, the mahila mandals, village groups, or others. Different organizational models could be combined, as for example, a women's cooperative at the district or sub-district level could mobilize women into self-help groups/credit and savings groups or other informal groups or sanghas at the village level. These formations of women should be legally eligible and authorized in terms of policy mandates to lease or purchase land for agriculture. Self-help groups of women, for example, should be given the

same status as farmers' groups in accessing resources for land-based activities.

i) Self-help groups are generally understood in a narrow and instrumental sense, as a conduit for delivery of services. They should not be merely instrumental entities, or used for their instrumental value, but should be strong collectives of women. They should be sustainable SHGs, ensuring backward linkages with technology and credit and forward linkages with markets so as to generate both farm and non-farm livelihood opportunities. In order to upscale their activities (such as marketing or quality control), they could join to create federations at higher cluster levels. Management of sustainable SHGs should be improved and made more transparent by introduction of relevant accounting software.

8.3.6 Programme components should broadly cover food and nutrition security at community and household levels, conservation of bio-diversity, organic farming, information dissemination and documentation of best practices, community-based production, storage and distribution systems, popularization of traditional health foods, etc. Specifically, they should focus on the women of the poorest and most vulnerable communities (such as dalits, marginal and landless families and agricultural labour) and could include the following illustrative activities: -

A. *Food Security of communities and Households Agricultural Biodiversity Documentation*

(a) Encouragement of alternative public distribution systems based on locally produced food items, especially organic food and coarse grains;

(b) Support women in the communities to launch and participate in movements to save and preserve several varieties of indigenous seeds of crops such as rice,

rajma, millets, vegetables, spices, herbs, etc. (on the analogy of Beej Bachao Andolan of Tehri Garhwal);

(c) Initial support in the form of wheat, rice, or jowar to local SHGs and groups to establish food, feed, fodder and water banks can be thought of. Such banks can be operated by SHGs on revolving funds basis

(d) Integration of locally produced foodgrains and food items within the State sponsored programmes such as Integrated Child Development Scheme (ICDS), Mid day Meals, etc. Gram Sabhas and village panchayats can monitor the extent of use of locally produced food grains and food items in these programmes;

(e) Creation of community grain banks and seed banks by women's groups/NGOs for retrieving and conserving local varieties of grains, millets, pulses, oilseeds, etc. for ensuring regular supply and distribution of seeds to farmers (on return basis as well as outside sale) aimed at conservation and food security;

(f) Promotion of organic fertilizer, especially for homestead vegetable production

(g) Support to women's groups in villages for retrieving varieties of traditional grains such as millets, pulses and oilseeds and for conserving them in community banks at the cluster level ;

(h) Encouraging cultivation of bio-diverse crops and augmenting the seeds that are vanishing or are becoming scarce at the local level;

(i) Retrieval and conservation of seeds at the village level by women farmers;

(j) Encouraging women's groups to grow organic spices under the scheme launched by the Spices Board;

(k) Support training of local women's groups to produce compost manure and vermi- compost;

(l) Bio-diversity festivals and contests, kitchen garden contests;

(m) Documentation of women's oral knowledge of traditional systems of cultivation, including those based on agro-biodiversity, which are still evolving in dynamic modes and innovations; methods of seed selection, preservation, storage, crop planning, conservation of germplasm, management of yield and production vis-à-vis diversity of land types; recipes, nutritional, dietary and recuperative value of traditional crops; collection of data on domesticated diversity from villages, information on livestock diversity; local knowledge and practices of women on the nutritive and medicinal qualities of both cultivated and uncultivated foods; women's contribution to local subsistence economy and use of local natural resources, women's experiences of seed selection and storage practices

(n) Better access to credit, technology, collaboration with technical, financial and management institutions;

(o) Promotion of legal literacy relating to Protection of Plant Varieties and Farmers' Rights Act, 2001as well as on Biodiversity Act, 2002; and the urgent need for making the implementation rules for these Acts gender sensitive.

*B Women's Rights to Common Property Resources and Role of Village Panchayats*

The one million elected women representatives of the panchayati raj institutions can play a major role in conserving common property resources for sustainable use in the following ways:

(a) Support to poor women's groups dependent on village common lands for grazing their livestock by not diverting them to other uses;

(b) Legally enabling women to manage part of the common lands by handing them over to women's groups for meeting their needs of fuel, fodder and pasture;

(c) Support to women's groups to access village water bodies to promote fish farming; one third of village ponds and water bodies to be leased by panchayats to self help groups or other formations of landless and poor women for fish rearing;

(d) Support to training in skill development and training programmes targeted at women involved in fisheries;

(e) Panchayats to respect and pay due consideration to women's priorities in the management of common lands; village common lands used for grazing of livestock;

(f) Technologies for wasteland development such as agro forestry, planting of bio-fuel trees, fertilizer trees, arjun trees for tassar rearing, could be supported on leased common lands over a viable time period ;

(g) Support to programmes aimed at increasing women's ownership of livestock by improving their skills of management and increasing their income by better marketing through cooperatives and other channels;

(h) Support the designing of training programmes for women as para veterinarians with focus on women's traditional knowledge of animal healthcare remedies.

The list of the possible activities to be taken up by women's groups given above is largely based on actual grassroots initiatives and experiments. A study of these initiatives of action groups outside the government, which have recorded success reveals a process-oriented approach rather than a target-oriented one. It is suggested that MOA

launches this programme in the FY 2005-06. The ground should be prepared by holding formal but intensive discussions with the State governments and the partner organizations with the full involvement of the National Board for a New Deal for Women in Agriculture (proposed in para 8.8), which could form a sub-group for this purpose. A few projects can be initiated during 2005-06 where enabling conditions on the ground are present. The launch of the programme, however, needs the legal and procedural conditions of lease and patta to be put in place by the State Governments and adequate land (revenue, forest-degraded, common property) to be identified well in time. MOA should therefore monitor the progress of the State governments and agencies, especially in those States where food insecurity is a major problem.

## 8.4 Engendering the Agriculture Curriculum

Both proactive efforts and consistent follow up are needed to remove gender stereotypes and build awareness about women workers of whom, in developing countries more are concerned with land and agriculture. This is specially vital for educational institutions.

Kerala University, in collaboration with M S Swaminathan Research Foundation (MSSRF), has pioneered a course for under graduates in agricultural colleges / universities since these students are the potential future professional leaders in areas such as research, extension work, policy, teaching and activism.

The course has the following specific objectives: -

1. To build a perspective by providing an overview of the social construction of gender and gender inequality.

2. To create skills by identifying gender roles, rights and responsibilities and their bearing on gender relations.

3. To bring about attitudinal change, creating gender sensitivity and helping students to internalize equity concerns as fundamental human rights.

The course consists of two modules, one on gender relations and rural livelihoods and the other on gender issues in different agrarian sectors. Teachers can use it as it is or adapt it to suit local-specific learning objectives in any University. It can be adopted for use with undergraduates of any discipline.

Other Agricultural Universities as well as those belonging to the Veterinary, Fisheries and Forestry disciplines should be asked to take up similar programmes. The process should be completed by 2005, the tenth anniversary of the Beijing Conference since its outcome document, the Platform for Action, has been ratified by the Government of India. In the Platform For Action, under the thematic area Women and the Economy, member-countries of the UN have pledged to promote women's economic rights, including access to employment, appropriate working conditions and control over economic resources and to eliminate occupational segregation and all forms of employment discrimination.

## 8.5 Gram Panchayat Mahila Fund for Women

Under the provisions of the 73rd Constitutional amendment and the revised State Panchayat Acts, responsibility for agricultural development now lies with the panchayats. The village panchayat has one-third representation of women. Most State Acts have a provision for special committees, standing committees or sub-committees to be constituted by the village panchayats from amongst its elected members (including its women members) to look after broad categories of production, finance and social justice. These committees interact with a whole range of representatives of line departments depending on their mandated areas of jurisdiction. There are very few States that have specific policy or legal requirements that elected women panchas should be members of any of these committees. In some States, there is a requirement that a women member should be part of the Social justice committees.

The presence of one third elected women in the village panchayats or approximately one million elected women members is crucial and opens a door to possibilities of greater collaboration and coordination between them and the women farmers in the area. This is a potential that has not yet been tapped fully for the purpose of engendering of the Gram Panchayat budget. The CMP has indicated that 30% of the Gram Panchayat funds would be allocated for women's programmes.

Part of these specially allocated funds could be used as an incentive for initiating the participatory decision making process in which the elected women representatives (EWRs) and the farmwomen could be partners.

A Gram Panchayat Mahila Fund (GPMF) should be created for this purpose. In the initial stage of this new programme, the Fund could be started in selected 10,000 Gram Panchayats in the States. The GPMF should accord priority to building technological skills, providing information and empowering women in agriculture. This fund could be used for the purpose of establishing a facility, like women's toilets, or for purchasing an item of equipment that should serve the needs of farmwomen in their role as farmers. It should meet the common need of the women farmers and not of an individual woman farmer only. A small fee or rental can be charged from the users by the Fund managers/Gram Panchayats.

Members of Parliament are allocated financial resources for their constituencies which they can use with a great degree of flexibility for public good. GPMF should enjoy a similar flexibility for taking up community activities that help to meet essential gender specific needs.

Some illustrative examples of its use are:

Tools that can benefit women in their farm work such as seed drills, levellers, winnowers etc. or in post harvest processing work, such as dal splitters, etc. can be included.

The GPMF can establish a common facility that can be used by groups of women farmers for drying of crops, or for seed banks, nurseries, compost making, water ponds, cattle troughs, etc.

The Fund can be used to procure services from external sources to meet women farmers' needs such as veterinary and poultry services, information on specific crops and technologies, etc.

The Fund can be used to provide training for building women farmers' technical skills, build an information database that can be used by the women in the village and empower the women through better access to information.

To the maximum extent, the suggestions given in this chapter on starting new ventures by women's groups could be tied up/converged with the funds from this source to be managed by the Panchayat. However, the following should be ensured: -

1. The Fund should not be used for distributing money to selected beneficiaries for any agricultural or allied purpose. It should be used only for spending on common facilities.

2. Training programmes should not be covered, but equipment and sheds for training can be included.

3. The scope of 'agriculture' for the purpose of using the Fund would conform to the suggestions made in this paper ("integrating" approach that would enable optimal use of land, water, livestock, commons, forests and allied resources). It would not include income generation activities unconnected with the primary sector, (such as sewing machines, repair of schools, literacy, etc.). However, infrastructure and facilities for essential child support services for women farmers could be included as a special case on strategic priority depending on the context and in consultation with all partners.

4. The Fund should remain a dedicated Fund and should not become a part of the GP general fund. It should be administered under the leadership of the EWRs with the consent of the GP as a whole.

Selection of the Gram Panchayats could be attuned to the following factors: -

1. Number of active EWRs in the GP
2. EWR holding the position of Pradhan or Up-Pradhan
3. An active Standing Committee on Agriculture/Production set up in the panchayat, preferably with an EWR as a member.
4. Presence of resource organizations (very widely defined) in the vicinity for technical advice, back up and hand-holding, whose interest in land-related gender issues is well-known.

5. Presence of any type of extension machinery for farm women.

The elected women could initiate a participatory decision making process with the women farmers of the panchayat belonging to small and marginal/subsistence farmer families. The farmwomen of the Gram Panchayat supported by the EWR's of the Panchayat could take decisions on how the fund shall be used and this should then be discussed in the Gram Sabha in which the village women should take part. This should be preceded by a series of participatory and consultative dialogue amongst the elected women, the farm women and the gram panchayat on how the fund should be used.

The quantum of funds to be placed in the GPMF depend on many factors. However, it may be of the order of Rs. 2 lakhs in order to be effective and meaningful. The administration of the Fund by the Panchayat should also be overseen by the EWRs and it is essential that the Gram Panchayat, by a resolution, delegates the maximum power of administering the Fund, to the EWRs.

One of the likely and desirable outcomes of the Fund use should be an enhanced status to the Standing Committee on Production/Agriculture and the nomination of more EWR's to it.

8.6 *Child Care as an essential Support Service to Poor and Needy Rural Working Women*

*Target group*

The term "rural poor women" includes women small and marginal farmers, women farm labourers, including temporary and seasonal labourers, women in fisheries, forest-based activities, fuel and fodder gathering, livestock rearing, agro-based activities, and home-based work. Such women require child care services because of their "triple roles"--they are engaged in productive economic work, household chores as well as having exclusive responsibility for child care, and are often unable because of poverty, lack of time and resources to effectively attend to all three.

The age-group for which child care services are required is 0-5 +, with special emphasis on the age-group 0-2, that is, children below three. This age-group is important for the following reasons:

- Criticality of the period not only for brain growth, of which 80% is completed by the age of two, but also for overall development—physical, mental, emotional and social, and as preparation for education

- Evidence of continuing malnutrition (0-2), high infant and child mortality, maternal anaemia, and other indicators of human development.

Basic components of the services

Child care for this age-group, to be effective, that is, to combat malnutrition and provide an environment for healthy and all-round development, must include the following components:

- Food, adequate in quantity and quality. The word quality implies not only its nutritious value, but also that there is a proper combination of semi-solid and sold foods, adapted to age, hygienically prepared, and offered at frequent intervals throughout the day (about five time a day for children below eighteen months) and with attention, affection and concern).

- Reasonably safe and healthy environment, and some stimulation, attention and interaction
- The above two conditions can only be met by the continued and regular presence of an adult care provider with some skills and a warm and caring relationship with the child.

- This implies that for the youngest children the ratio of adults to children has to be high enough to allow for care, attention and interaction.

To meet these conditions, especially the first, day care is a must for large numbers of poor rural working women. Mere distribution of food supplements at a feeding center is not enough. However, child care, especially of the youngest, is a highly context and situation specific activity. For example, some women may need child care for eight to ten hours a day, others for only four or five hours, and the actual duration and timings for which it is needed may vary. Again, women working as temporary or seasonal workers may need it only for specified months. Effective day care may be one way of attacking .multiple problems.

Basic principles for implementation

Experience has shown the desirability of some of the following principles of implementation

1. Plurality of models - a single monolithic model for all situations in a diverse country is not appropriate. In practice, four models may be sufficient at present.

2. Context-specificity - making services/programmes very specific to local needs and demands, locally determined.

3. Flexible norms and ratios -- ratios such as population-centre ratio and worker-child ratio should be worked out for different situations.

4. Per child per day cost norms. If diverse and flexible norms have to be adopted, then it is more practical to provide a per child per day norm as the basis for funding and leave it to the programme authorities in each case to work out the nature of the programmes and activities.

5. Decentralisation. The responsibility, as well as the funding and powers for management of child care support services for women may be handed over to local Bodies (PRIs). This would enable them to fulfil the responsibility of catering to all children, especially the most vulnerable ones, in their jurisdiction, and break the stranglehold of the norms relating to size of the "habitation" which is entitled to have a center. .

Advantages of decentralisation

Local procurement of food for the programme from local sources, cutting down the wastage, delay, leakage and other problems connected with centralized storage

- Linking up centralised sources with local grain banks for food supply and promoting the grain bank movement for food security in rural areas.

- Local cooking and serving of food with the help of local women, either through SHGs or other organizations. Successful examples of SHGs supplying food to anganwadis already exist.

- Monitoring and supervision of the crèche and child care services with the help of women members of the PRIs, local grassroots organizations, womens' groups, and where available NGOs.

- Monitoring by the women users on a day to day basis, and responsiveness to their needs.

- User fee. Experience shows that where there are quality services, women are not only prepared to leave their children there but even the poorest users are willing to pay a small user fee. Confidence in the service has to be established first.

*Models*

A four-model scheme of child care services (including day-care) for the 0-2 years is recommended to be launched during 2005-06 in rural areas of the country, incorporating the basic principles and strictly following the implementation strategies laid down. Specifically, the scheme is intended to provide support services for women who have to leave their homes for work in the fields during the working season. During the off-seasons, the women may look for intermittent and miscellaneous work opportunities, which again may be located far away from their homes.

The four models need to be used flexibly, keeping in mind local requirements, context, resources and women's own needs and preferences. There may also be changes from season to season, depending on intensity of work, climate, and other factors. Of the four

models, three are existing schemes, incorporating positive modifications and improvements within the existing format. The fourth model, that of seasonal or temporary crèches, is being suggested in the context of the Rural Employment Guarantee Programme (REGP) being launched in 150 districts of the country. The four models are

1. ICDS—additional services for 0-2 years children
2. Mini-ICDS centres or outreach services for 0-2 years children
3. Creches run with grant-in aid and
4. REGP - Seasonal or temporary crèches for short duration are required not only by seasonal agricultural labourers such as sugarcane workers, but also by women working on roads and public works, construction sites, quarries, brick kilns and by all the various works undertaken by Government departments as part of employment programmes. The new REGP would also come under this purview.

Here the number and age composition of the children cannot be predicted in advance. However, wherever there are children below three, it is likely that there should also be a certain number of children above three (up to the age of eight or ten) as the older children are usually engaged in looking after the younger ones and/or helping in the women's work. Hence, no minimum number should be specified

The model has to include at least two workers, one with exclusive responsibility for the below threes. The actual number needed at each place should have to be decided by the situation. If the child care workers are employed by a local authority with jurisdiction over a specified area, (for example, Panchayat or ICDS) then they can be shifted from place to place within that local area without much inconvenience.

The Departments of Agriculture in the States are expected to prepare a shelf of projects aimed at increasing productivity of land and labour, diversifying agriculture and thereby creating more work opportunities in the medium and long run by taking up water and soil conservation works, land development and other rural infrastructure

works. Other line Departments should also take similar action on horticulture, forestry, animal husbandry and allied subjects. These work sites are bound to attract large numbers of women, especially in the off-season, when the guarantee schemes are expected to be in full swing. The women generally bring young children to the work sites, thus offering both opportunity and need for effective and focused child care services. If this is not done, the children may be left in the care of slightly older siblings, either on-site or off-site, thus depriving the latter of their education.

*Resource Allocation*

Here it is attempted to indicate the likely order of resource allocation that may be needed for the enlarged programme of child care services, with special reference to children in the 0-2 age group. Details and cost of each model can only be worked out later.

The chosen criterion for costing is the cost per child per day, and the approximate number of children in need of the services.

At current prices, it is estimated that the cost per child per day would be a maximum of Rs.10.00 (or Rs.4,000 per child per year). This includes the following items - food, salaries, equipment, materials for cleanliness, hygiene, medical care, immunization and healthcare, developmental activities, training, supervision and guidance.

The total number of number of children 0-2 years who need such services, calculated on the Census (2001) data on number of children aged 0-4, and the likely number of mothers of young children in the work force, would be a maximum of 4 crore.

The total resources needed to provide every child in need in this each group would be of the order of Rs.16,000 crore.

It is suggested that the programme could be started in 20 most disadvantaged districts from the 150 districts selected for the REGP. The funds needed for this would be about Rs. 500 crore, including preparatory activities, during 2005-06.

## 8.7 Engendering Acts in areas of concern to women in Agriculture:

The proposed Act relating to Employment Guarantee should be gender-sensitive, with a definition of work which includes work in the areas of human development and keeping in mind working women's needs in relation to child care and nutrition. The implementation rules relating to the Protection of Plant Varieties and Farmers' Rights Act and the Biodiversity Act should also be engendered.

## 8.8 Institutional Mechanisms for Policy Oversight and Gender Audit

Though women continue to figure in the plans and programmes of the MOA, their presence is very thin in term of actual numbers and resource allocation. Women still are not fully recognized as productive agents in agriculture or as farmers. In order to ensure that women's issues are not crowded out or marginalized in the sector, it is important to devise high level institutional mechanisms that would advise the Government on issues of policy, strategies, programmes etc. keeping the women's interest in mind.

In order to provide effective support and monitoring of programmes for women in agriculture, it is necessary to constitute a high-level body combining political commitment to gender justice with expertise and committed advocacy. A National Board for a New Deal for Women in Agriculture, headed by the Union Minister of Agriculture should be set up. It should be co-chaired by Union Minister for Women & Child Development, Union Minister for Rural Development and Union Minister for Panchayati Raj. It should provide policy over sight and enable gender audit. Besides the concerned

Central Ministers/Ministries and State Government representatives, the Board should include -

a) Women farmers' representative bodies

b) Representatives of panchayati raj institutions, academicians, experts from different disciplines and backgrounds, but with a common background of having worked with or a demonstrated interest in advancing the cause of poor women in land-based livelihoods in agriculture. These could include agricultural and extension specialists, representatives and leaders of women's organizations, trade unions, banks and credit institutions like NABARD, women's advocacy groups, etc.

c) Representatives of agricultural universities and other educational/technical institutions involved in extension, teaching and research on issues of women in agriculture.

d) Non-governmental bodies working at grass root level with farming women

e) Policy makers and analysts,

f) Media,

g) Rights-based and other groups working on issues of sustainable livelihoods and environment, bio-diversity.

h) National and State Commissions for Women

i) Women's Universities.

j) Women's Development Corporations

The Board could consider giving a certain direction to the broad band of programmes dealing with land and livelihoods (including anti-poverty, employment generation, safety nets etc.) by linking them up with gender and social equity and equality. Since such programmes are spread over many sectoral agencies and ministries, the Board should enable effective coordination amongst all these agencies.

While it should not be too large so as to become unwieldy and should meet at least once a quarter, it should represent all the stakeholders. Every State Government may be advised to set up a Gender Resource Unit or Cell in the Departments of Agriculture and Rural Development, linked with line Departments including Panchayati Raj, Women, Tribals, Forestry, Fisheries etc. These could be networked by a similar Gender Resource Cell recently set up by MOA.

# CHAPTER – V

## STRENGTHENING AND EXPANDING THE HORTICULTURE REVOLUTION

**Mobilising Untapped Opportunities**

1. Horticulture is now widely recognized as one of the major components of the strategy for uplifting both the rural economy and national nutritional security. Diversification of Indian agriculture in the area of horticulture will enhance returns to the farmers, generate rural employment, increase farm exports and expand agro-industrial base, thereby contributing to higher economic growth. Recognising this, the Plan outlay for Horticulture in the VIII Plan was raised to Rs.1,000 crore (excluding the outlay for research to ICAR) as against Rs. 27 crore in the VII Plan (40 times more). The support continued in the IX and X Plans with allocations of Rs. 1,400 and Rs. 2,100 crore, respectively, including the Horticulture Technology Mission for the North East Region and three hill States of Western Himalayas and the Coconut Mission.

2. The above mentioned schemes of the GOI provided liberal assistance as subsidy for the development of horticulture crops such as fruits, vegetables, ornamental crops, plantation crops, spices, medicinal and aromatic crops, mushrooms, beekeeping etc. for improving productivity and overall production, reducing post harvest losses and also for enhancing exports. Assistance was provided for major activities such as area expansion under individual crops, multiplication of seed and planting material, improvement of productivity of the area already under these crops, use of plastics (drip / sprinkler irrigation, green/poly houses, plastic mulches), infrastructure for post harvest management (PHM) of the crops, training and demonstrations in new technologies etc. Some State governments also made special efforts to promote horticulture.

3. The above efforts had led to the expansion in exports of horticulture products, faster promotion and use of drip irrigation, establishment of green houses, promotion of cut flower production, exploitation of hybrids in vegetable production, adoption of beekeeping as an essential input also for fruit and vegetable seed production, development of infrastructure and adoption of improved techniques for PHM and processing in some pockets. Further, horticultural consumption by the middle and upper class population increased tremendously.

4. The UPA Government has accorded high priority to this sub-sector by announcing the launching of the National Horticulture Mission (NHM). Through this initiative, the Government has affirmed its faith in horticulture development for improving rural economy through diversification of land use and improving productivity and marketing. In compliance with the above, the Department of Agriculture and Cooperation has now submitted a detailed proposal on the NHM for a total outlay of Rs. 21,699 crore to be used during the coming 7 years to achieve the Stated goal of raising the total production of horticultural commodities to 300 million tonnes.

**A "Business as Usual" Approach will not Help to Realize the Goal**

5. As seen from table 1, during the past decade, while overall production of horticultural crops improved by 27.1 % and the area expanded by 27.7 %, the overall productivity showed little change. As a matter of fact, the productivity of fruits and plantation crops declined during the 10-year period. However, vegetables showed a marginal increase, while it was comparatively higher only in spices. It is, therefore, clear that huge investments made in the two Plan (VIII & IX) periods did not help to make a major dent in the productivity (except in spices).

Table 1: Area, production and yield of horticultural crops during 1993 to 2002

| Commodity | | 1993-94 | 2001-02 | % increase |
|---|---|---|---|---|
| A. Total | Area (mha) | 13.0 | 16.6 | 27.7 |
| | Production (mt) | 114.7 | 145.8 | 27.1 |
| | Yield (t/ha) | 8.8 | 8.8 | Nil |
| B. Fruits | Area (mha) | 3.18 | 4.01 | 26.1 |
| | Production (mt) | 37.25 | 43.00 | 15.4 |
| | Yield (t/ha) | 11.7 | 10.7 | (-) 8.5 |
| C. Vegetables | Area (mha) | 4.88 | 6.15 | 26.0 |
| | Production (mt) | 65.78 | 88.62 | 34.7 |
| | Yield (t/ha) | 13.5 | 14.4 | 6.7 |
| D.Plantation | Area (mha) | 2.45 | 2.98 | 21.6 |
| | Production (mt) | 8.87 | 9.70 | 9.4 |
| | Yield (t/ha) | 3.6 | 3.3 | (-) 8.3 |
| E. Spices | Area (mha) | 2.47 | 3.22 | 30.4 |
| | Production (mt) | 2.51 | 3.76 | 49.8 |
| | Yield (t/ha) | 1.0 | 1.2 | 20.0 |

**Source**: National Horticulture Board

6. Little is known of the benefits reaching the small and marginal farmers and landless agricultural workers. The old and senile plantations continue to remain neglected, bringing down the national averages of productivity but occupying prime fertile land area all over the country.

7. Only a few States, such as Maharashtra, Karnataka, Andhra Pradesh, and Tamil Nadu have registered excellent progress, especially in the production of fruits. The regional disparity in horticultural development has become much more pronounced now, despite the strong potential all the regions possess. Several States have not benefited from the opportunity and the investment made.

8. One of the major reasons for low and skewed impact can be attributed to the absence of prioritization of developmental activities in each State based on location, potential, needs, aspirations and capabilities for fund utilisation. This may be attributed to the non-participatory mode of identifying the priorities and resource deployment. Consequently, support was provided for all crops and for all components, thus spreading the support too thin to make any tangible impact.

9. Serious mismatch between production and consumption continues although there is no reliable data available to estimate the success achieved during the last 10 years in reducing post harvest losses. The estimates of monetary losses being incurred in the country keep rising at regular intervals, as evident from the four reports brought out during the past decade:-*1993-94 = Rs 8,000 crore (Min. of Food Proc.); 1996-97 = Rs. 25,000 crore (Mckinsey Report); 1999-00 = Rs. 50,000 crore (Anon.) and 2004-05 = Rs. 85,000 crore (Directorate of Marketing, Maharashtra).* The huge investments made not only by the Department of Agriculture and Cooperation, but also by the APEDA, NCDC, NAFED, Ministry of Food Processing etc. have thus not succeeded much in reducing the staggering post harvest losses. No authentic data are available on the reduction in losses, if any, achieved due to the infrastructure created, improved PHM technologies promoted and several policy initiatives taken for streamlining the systems involved.

10. All investments and efforts made for improving PHM have ended at the storage level of bulk quantities of a few commodities, with no care taken at the retail level. Consequently, the fresh produce continues to be sold in open stalls, roadside kiosks, carts, footpaths etc. causing serious loss in quality of the produce besides adding to the PH losses. A recent FAO study on handling of apple in HP State showed that the fruits record a pressure of 18 - 20 lb/ *sq.in* at harvest which gets reduced to 5-6 lb/ sq.in when sold in retail, as a result of the time the fruit takes to reach the retail market. Both producers and consumers suffer due to deterioration in quality between the farm gate and the consumer.

11. The above trends of stagnant or declining national productivity and high post harvest losses point to two main things: either the NHB data are not based on methodologies which can capture the real situation or the investments have failed to produce the intended outcomes (outputs counted in terms of subsidies distributed and additional hectares planted to horticultural crops may not reflect the real impact).

## Lessons Learnt from the Technology Mission for the North East Region

12. The TM for the North East Region (NER) is now in its 4$^{th}$ year of implementation. The Mission consists of four Mini Missions (MM) viz. MM I for improved seed and planting material, technology refinement and adoption, handled by the ICAR; MM II for improving crop production and productivity covering support for area expansion, creation of water resources and on-farm water management, multiplication of seed and planting material, promotion of organic farming, use of bio-fertilizers, IPM, INM, tissue culture, plant health clinics, disease diagnostic and plant tissue analysis labs., training of farmers etc. handled by the DAC; MM III for post harvest management, marketing including export by Directorate of Marketing and APEDA; and MM IV for processing and product development under the control of MOFPI.

13. Review of the Mission activities shows a large gap between the original concept and actual implementation in the field. Linkages among the four MMs are weak. Each MM is working independent of the other under the control of their respective administrative agencies.

14. Other gaps and weaknesses awaiting redressal are as below:

14.1 Targets for annual area expansion under different crops and the varieties to be promoted are fixed arbitrarily without any long term planning of the total area to be put under individual crops and without consultation with the research units located in the States.

14.2 Every State has been allotted financial support for all crops and all the components, irrespective of the commercial potential and need suggesting the lack of an agro-ecological and comparative advantage approach in priority setting.

14.3 Production of planting material is yet to take off within the States and hence procurement is done from outside the State from untested sources; a permanent damage thus being inflicted because of the perennial nature of the fruit species.

14.4 Procurement procedures for seed and planting material adopted leave considerable doubt about the quality of the planting material being used.

14.5 Varieties / hybrids promoted are chosen arbitrarily mostly those available in the market, irrespective of the adaptability and superiority.

14.6 Implementation of several cost-intensive components are contracted out on turn-key basis, a few of them being taken up on joint venture basis in partnership with private sector.

14.7 Assistance for highly technical units such as plant tissue analysis lab, disease forecasting lab, tissue culture units, plant health clinic etc has been provided to all States irrespective of the needs, competence of the staff and availability of appropriate technology for using the facilities for the farmers.

14.8 The R&D activities taken up under MM I are not need-based to provide technological support for the crops and activities identified for development by the States.

14.9 Infrastructure for PHM including marketing and processing is planned without any relation to the total production targeted at a given point of time.

14.10 The PHM units created so far are better handled under SHGs or the private sector,

14.11 Subsidy for inputs for newly planted area is not used effectively nor verified; the States are seeking subsidy hike from the current level of Rs 13,000 to Rs 30,000 per hectare (and this has already apparently been agreed to as judged by the rate used in the NHM project document), and

14.12 Absence of field monitoring, inadequate trained staff in the departments and urgent need for training of farmers.

**RECOMMENDATIONS: THE PATH AHEAD**

15. In order to achieve the goals of the horticulture-led agrarian prosperity and to realize the objectives of the National Horticulture Mission, the following recommendations related to policy, institutions, infrastructures, organizations and
implementation are made:

A. Public Policy

16. **National Horticulture Council***:* Given the goal, interdisciplinary nature, size and high pervasiveness of the horticulture-led nutritional, agro-ecological and livelihood security, an apex level national body (**National Horticulture Council**) may be established with the Union Minister of Agriculture as its Chairman and Union Ministers of the other concerned Ministries, such as Ministries of Rural Development, Commerce, Environment and Forests and Science and Technology as members. A Steering Committee of the National Horticulture Council, headed by Agriculture Secretary with counterparts of the concerned Ministries and eminent representatives of professionals and technical experts, private sector, industry, NGOs and farmers may be constituted to ensure effective, timely and synergistic implementation of the programmes and activities. Counterpart bodies may be established at the State and district levels. At the grassroot level, panchayats, other grassroot institutions and SHGs should be suitably empowered and interlinked. Farm Schools may be established in the fields of outstanding horticultural farmers.

17. **Socially differentiated approach***:* The wide variety of horticultural species have been exploited differently by different sections of the society. For instance, organized commercial fruit production and plantation has been pursued mostly by larger scale and resource-rich farmers. Small farmers are generally more involved with intensified vegetable and flower production, whereas tribals have greater affinity with medicinal plants and indigenous fruits and vegetables abounding in forest areas. However, national and international experiences show that, if organized in groups, the small farmers could effectively adopt and prosper from commercialization of fruits as well as other such horticultural commodities. Given that 80 percent of the Indian farmers are small (possessing less than two ha.) and marginal, explicit policy provisions must be made for resource poor farming families, who have generally been excluded from the past horticultural development process. Programmes and institutional support should be designed with focus on the small and tribal farmers.

18. Horticulture has the potential of engaging rural women, both skilled and unskilled, in gainful employment and consequently for their emancipation through resultant economic independence. Women are best suited to handle activities like vegetable and flower seed production, production of hybrids, floriculture, tissue culture, grading, sorting of fresh produce, preparation of processed products etc. Assistance for such activities should therefore be made subject to the engagement of women. Training of women in different operations should receive priority and be supported under the NHM. The Mission should also help the States to promote setting up of women SHGs for strengthening institutional base at the village level on the pattern in place in Assam and Kerala. Engendering the Horticulture Mission is a priority task.

19. Consumption of horticulture products (fruits and vegetables) is acknowledged globally as a sustainable source of nutritional security to the masses, particularly the children and women. The country's economic prosperity would not make it an advanced nation unless the masses are healthy and free of the effects of malnutrition. The revolution should, therefore, pay appropriate attention to promoting consumption, particularly in the rural areas through promotion of backyard / kitchen gardens and development of easy to use household products, backed by a strong awareness campaign. Enhancing consumption in the urban areas would be possible

through price rationalization and better retailing to reduce losses and preventing decline in the quality. Social marketing techniques should be promoted.

20. Lately, the corporate sector is showing interest in horticultural farming – production, processing and marketing and is undertaking contract farming arrangements, including tie-up with small farmers' groups. Explicit codes of conduct for all the partners involved in contract farming arrangements should be developed. The government should enact necessary regulations on contract farming, keeping in view the interest of the weaker partner – the farmer. It should ultimately be a win-win situation for all stakeholders.

21. **Risk Coverage:** The National Agriculture Insurance Scheme (NAIS) which has the coverage of all food crops, oilseeds and annual horticultural/commercial crops – sugarcane, cotton , potato, onion, chilly, turmeric, ginger, jute, tapioca, annual banana and annual pineapple is in operation since 1999-2000. The Scheme does not cover perennial horticulture crops which suffer from the wide fluctuation in yield, proving to be a major source of distress to the farmers.

22. In the year 2000, a Committee was constituted under the Chairmanship of the Economic and Statistical Adviser, Govt. of India comprising Joint Secretary (CR), Director (IASRI), GM (GIC) as members to examine the scope of coverage of perennial horticultural crops under the NAIS. The Committee deliberated upon the range of issues concerning insurance scheme of perennial horticultural crops and recommended for insurance of horticultural crops on pilot basis in selected districts of some States. Accordingly, the operational modalities of pilot projects were worked out and a pilot project was put in operation since 2002-03 season. As the production of perennial horticultural crops is cyclical in nature, it suffers from low yield once in 3-4 years. This fluctuation in yield needs a high rate of premium. The actuarial premium rates are given in the following table:

| Crop | State | District | APR |
|---|---|---|---|
| Mango | Andhra Pradesh | Chittoor | 20.40% |
| Mango | Uttar Pradesh | Lucknow | 15.90% |
| Apple | Himachal Pradesh | Shimla | 14.65% |
| Banana | Tamil Nadu | Kanyakumari | 2.40% |
| Orange | Maharashtra | Amrawati | 13.75% |

23. As per the Scheme, it was voluntary for all farmers with subsidy of 50% to small and marginal farmers. Despite 50% subsidy, the premium rates payable by farmers are high and the pilot project remained virtually a nonstarter. Experiences of other countries should be analyzed and the pilot programme needs to be carried out more systematically to reach satisfactory conclusion and action plan.

**B. Public Action**

24. **Ensuring Convergence, Synergy and Effectiveness of the National Horticulture Mission*:*** The sectoral Missions of the NHM, proposed to be executed by different ministries/departments should be designed and implemented in an integrated and synergistic manner, headed and coordinated by one **National Director**. The pitfalls of the NER Horticulture Technology Mission must be avoided. There should be a greater sense of accountability at all levels.

25. The Mission's success is not to be judged by the amount of the budget spent but should be measured in terms of verifiable outputs such as technologies, services, human skill and resources, infrastructure, institutions, networks, linkages, knowledge and awareness geared towards achieving the goal of enhanced productivity, quality, income, profitability, competitiveness and inclusiveness consistent with ecological and livelihood security of the poor. Using a set of powerful socio-economic and agro-ecological indicators, the Mission should regularly monitor the outcomes and progress and undertake mid-course corrections, if needed. The NHM document should be redesigned in a participatory mode with built-in strong mechanisms of monitoring, evaluation, outcome assessment and mid-course corrections.

26. Horticulture enterprise covers a large number of commodities and encompasses an equally large number of problems / constraints of diverse nature and magnitude. Hence, putting all these into one Mission would be too much to handle, given the type of management set up we have in the States. The Mission should either cover a few major and commercially important commodities, or separate Missions should be launched for (i) Fruits & Vegetables, (ii) Floriculture, (iii) Medicinal and Aromatic Plants, (iv) Plantation Crops, and (v) Spices with well defined mandates. Each of these Missions should be highly selective and cover selected crops and specific activities.

27. **Focus On Post Harvest Management (PHM), Processing And Marketing -- Bridging The Disconnect Between Production And Profit *:*** Emphasis under each commodity should start with investments in infrastructure for PHM, regulated markets, Agri-export zones, processing and modernized retail outlets to be owned by growers' cooperatives or associations, SHGs, Farm Management Committees, private sector etc in a participatory approach, with government interventions directed mainly to streamlining the policy framework including food safety regulations and monitoring roles. Experience has shown that NDDB's model of fruit and vegetable retailing with backward and forward linkages has been quite effective in Delhi. This could be expanded to cover all metros to begin with and extended to other urban areas subsequently. In order to promote social marketing, cost effective modes of storage and distribution of horticultural products, such as making fruit juices available through dispenser units may be adopted. Mother Dairy Units can also add the sale of fruit juices. Successful models of group and producer centred marketing such as Mahagrapes, Apni Mandi, Hopcom and others should be actively promoted by the NHB. Processing and marketing of India's unique horticultural blessings, such as seabuckthorn from Ladakh (popularly known as Leh berry) should receive special attention.

28. Planning for infrastructure for PHM should be done for each production zone, adopting the well known concept of 'Packing House' successfully adopted by the Grape Growers' Association, NDDB etc. It would mean setting up of a chain of Packing Houses in each production zone, equipped with facilities for collection, cleaning, grading, packing, pre-cooling,

storage and transportation to the modernised wholesale markets such as the one coming up in Bangalore through NDDB. Adoption of this strategy would call for immediate amendment to the APMC Act by each State to decentralize the system and permit marketing by other players for achieving the ultimate goal of ensuring better returns to the growers and reasonably good quality products to the consumers.

29. Appropriate regulatory mechanisms, including SPS, would be required for trade and export promotion, multiplication and distribution of quality seed/planting material, quality control of inputs being used, operation of 'contract farming', packing houses, exports, etc. With free trade there are chances of the introduction of invasive alien species of insect pests, pathogens and weeds which may threaten the livelihood security of the people. Therefore, States should initiate steps along with the Ministries of Agriculture and Commerce and ICAR to create necessary infrastructure for preventing the unintended introduction of serious threats to our crops. The Mission should promote human resource development in horticulture for generating skilled manpower trained in different horticultural enterprises, enrolling educated rural youth for gainful employment and for promoting precision and knowledge-based horticulture. Farm Schools can play a valuable role in skill empowerment.

30. Training and skill development in processing of fruits and vegetables and organizing cooperatives for production and marketing of processed products need to be undertaken on a large scale. Similarly, organized high-tech processing industries should be set up both in cooperative and private sectors for domestic and export markets. To achieve this, the emphasis should be on strengthening of existing processing facilities, development of cultivars suitable for processing, promotion of private/cooperative processing units and demonstration of processing techniques for cottage level industries.

31. **Creating Reliable Databases*:*** The Mission must address on priority basis the issue of strengthening databases for all horticulture crops and their products, market arrivals, price trends, etc. This would call for a multi-agency approach for standardizing methodology, including use of satellite imagery and other innovative methods for data collection, compilation and interpretation including yield forecasting, and devising a viable system at block, district and State levels. A reliable database becomes essential for efficient trading, including exports.

32**. Regionally Differentiated Approach*:*** Agro-ecological and socio-economic specifications and endowments of different regions should be matched with the most appropriate crop and farming systems leading to enhanced productivity and sustainability. For regulating support for production related activities, demarcating "Production Zones' for each commodity covering contiguous areas already under these crops and that targeted for expansion through diversification of the land use should form the basis for planning in each State. The arid, semi-arid and temperate zones apart from the NER should receive priority attention due to large concentration of small holdings, low per capita income from agricultural enterprises and large untapped potential for horticulture development. For example, the cold desert region of Ladakh offers great potential for the production of apricot, sea buckthorn, etc. Each zone should have a long term plan for the crops and their varieties to be promoted so as to back it up with appropriate PHM infrastructure and systems.

33. **Research and Technology Development Thrusts Including Flow of Quality Planting Material*:*** The R&D efforts did not keep pace with the rise in demand for improved technology which rose phenomenally since the VIII Plan. The National Agricultural Research System (NARS) was neither ready for it nor fully equipped in the initial stages, forcing entrepreneurs to depend on imported technologies. Further, the research in horticulture has to be reoriented to make it need-based or demand-driven to provide immediate relief to the farmers / stakeholders, reduce the cost of production and make Indian horticulture globally competitive. The ICAR / SAUs would need to undertake major reforms in research planning, prioritize the needs for new technologies, overhaul the research agenda in horticulture accordingly, actively involving other research institutions both in public and private sectors. The need-based technologies would be in the areas of improved varieties / hybrids resistant to biotic and abiotic stresses, faster and cheaper propagation techniques, IPM, INM, organic farming, resolution of chronic plant health problems, soil fertility and water management, rejuvenation of old plantations, high density plantings, PHM for domestic and export markets, new products etc. The Mission should trigger such a change and provide substantial support to technology generation, refinement and adoption.

34. The fruit industry is plagued with some perennial disease problems viz. malformation, alternate bearing, spongy tissue of mango, decline in citrus, wilt in pomegranate, sapota seed borer, coconut wilt and sigatoka in banana. Need-based evaluation of genetic resources, use of

indigenous nutrition-rich fruit species, conservation and use of rich indigenous knowledge are priority areas. Rejuvenation of old and senile orchards and establishment of an effective system to ensure timely flow of quality planting material of desired varieties in desired quantity should be among the top development priorities.

**C. Small Farmers' Horticulture EStates: Integrated Institutional Structure for Production, Processing and Marketing**

35. Generally, small and marginal farmers have not benefited particularly from the fruit revolution in the country. This is primarily due to their poor competitiveness both at the production and post harvest phases. However, it is now well established that small and marginal horticulture farmers in particular will excel in improving productivity once they are assured of quick and easy disposal of their produce at reasonable returns. In clusters, specially in villages adjoining large consumption centres, small farmers should be helped to organize themselves as **Small Farmers' Horticulture EStates** in the form of SHGs covering an area of 200-500 hectares. SHGs may undertake specialized activities like seed production, tissue culture propagation, vermiculture, biofertiliser, biopesticides and e-commerce. These should be duly empowered through enhanced access to modern technologies, formal credit and marketing. Since horticultural commodities are mostly perishable, these need effective infrastructure support in the areas not only of production, but much more for processing, storage, transportation and marketing. The group action will confer on the small farmers the power of scale both at the production and post harvest phases of the horticultural enterprises.

36. The National Horticulture Board (NHB) and the proposed National Horticulture Mission should give high priority to the establishment and effective functioning of the eStates. Horticulture is a proven technology for empowering even resource poor farmers who could produce high value crops at low cost. The Mission should actively promote this technology for enhancing rural livelihoods. In order to ensure right quality and yield, fertigation techniques should be promoted along with the low cost green houses. The Small Farmers Horticultural EStates should be assisted by the Mission in creating common facilities for post harvest handling, storage and marketing assistance. The market yards could also house agri clinics and agri business centres, including ICT based Knowledge Centres to enhance awareness for

increased consumption of fruits and vegetables as well as to have access to reliable inputs and distribution channels. Effective local SHGs should be promoted to ensure supply of genuine and healthy planting material. Also seeds and planting materials of such varieties which are suitable for processing will have to be provided to farmers in areas where production and processing are linked. The expertise of CFTRI should be fully mobilized in PHM.

37. The Small Farmers' Horticulture EStates should receive special assistance for rejuvenation of old plantations on high priority. In addition, development of water resources, on farm water management, drip irrigation, training and demonstration of improved technology should be emphasized. Wherever possible, the public sector extension services should be supplemented or join hands with private sector extension services to improve the overhaul access on the part of the small and marginal farmers to modern technologies and appropriate knowledge. The Krishi Vigyan Kendras of the ICAR may suitably be transformed into **Krishi and Udyog Vigyan Kendras** and likewise the ATMAs should also give due emphasis to the promotion of group processing and marketing in their extension activities. Since the role of precision horticulture will increase in the globalized world, the role of value added information (knowledge) to all the stakeholders in the production- processing – marketing – utilization chain can hardly be overemphasized. A quality literacy movement should be launched to sensitise farm women and men on issues relating to pesticide residues and *Codex Aalimentarius* standards of food safety.

38. Use of IT for horticulture development is yet to receive due support. Its usefulness for creating databases cannot be overemphasized. Besides, its scope should be exploited for assisting in the implementation and monitoring of the progress in each district. Major use should be for faster transfer of information on improved technologies, sources of supply and market outlets. Pest and disease diagnosis for which the technologies are already available in hard copies would need to be digitized and transmitted to the Community Information Centres being or to be set up in each block and these should be linked with Village Knowledge Centres.

39**.** **Spreading the successful experience of Maharashtra:** Horticultural progress in the State of Maharashtra has been truly revolutionary. The area under fruit crops in the State

increased from 2.42 lakhs in 1990 to nearby 13 lakh ha. in 2002 and the yield has almost doubled to about 15 tons per ha. This was essentially due to the steps taken by the then Chief Minister of the State (Shri Sharad Pawar) to link horticultural development with the Employment Guarantee Scheme. Creation of various infrastructure facilities like horticulture nurseries, micro irrigation, cooperative institutions and strengthening of research and institutional support were instrumental in achieving the success. In particular, the experience of Baramati in Pune District is worthy of emulation. In this area, end-to-end connections have been established in improving productivity and quality through technology transfer, post harvest management, prevention of losses, processing facilities, market information and finally export.

40. Learning from successes will help to purchase time. Therefore, we recommend the following steps:

40.1 Organise visits by women and men taking to horticulture to other horticultural "bright spots" like Baramati. **Farm Schools** may be established in the fields of horticultural pioneers. Farmer to farmer learning is the most effective method of confidence and competence building.

40.2 Link horticulture with the National Food for Work and National Rural Employment Guarantee Schemes.

40.3 Revitalise the National Horticulture Board in order to enable it to function like the National Dairy Development Board, providing critical support to small growers, empowering them in relation to the economies of scale through the Small Farmers' Horticulture EStates movement as well as in access to good seeds and planting material and in post harvest processing and marketing.

40.4 The proposed National Horticulture Council (NHC) may monitor progress not merely in terms of money spent, but more importantly in terms of progress made in enhancing productivity, quality, value addition and prevention of post harvest

losses. The NHC should also ensure that all the research and development programmes in horticulture are engendered.

**Financial Resources**

41. Rs. 21,699 crore is already proposed under the NHM for the next seven years. The resources may be reallocated according to the priorities suggested in this Report, especially the following areas:

41.1 Organization of Small Farmers' Horticulture Estates

41.2 Post harvest management, processing and marketing

41.3 Production and distribution of quality seeds and planting materials

41.4 Imparting quality literacy.

# CHAPTER-VI

## ENHANCING COTTON PRODUCTIVITY, QUALITY AND GLOBAL COMPETITIVENESS

### Uncommon Opportunities and Challenges for Cotton-Based Livelihood and Income Security

1. Over four million farmers in India grow cotton as the main source of their income and livelihood. The textiles sector, which is primarily based on cotton fibre, is the largest employer and income provider in India, second only to agriculture. It employs close to 82 million people - 35 million in textiles and 47 million in allied sector. The total employment by 2010 is expected to reach 94 million people.

2. With the coming to an end of the multi-fibre arrangement on 1st January, 2005, our cotton producers, weavers and the textile industry will encounter both new opportunities and threats. The Vision Statement of the Indian Cotton Mills Federation (ICMF) for the textiles sector released in August, 2004, States that by the year 2006, the Indian textiles and apparel industry, can achieve a potential size of US$ 85 billion from the current size of US$36 billion, of which the domestic market potential would be US$ 45 billion and the exports would comprise the remaining US $ 40 billion. Consequently, over 35 percent of India's exports would be from textiles. This leap will thus be fuelled both by rise in domestic consumption and almost quadrupling of exports primarily due to discontinuing of the quota system.

3. Value-addition along the entire chain, starting from the production of quality cotton to ginning, spinning, weaving, knitting, processing and garmenting must be the key strategy for achieving the Vision. Production of cotton fibre would need to be increased by 75 percent, from the current level of about 200 lakh bales to 350 lakh bales in 2010. Productivity, quality, value addition and marketing revolution through synergistic interaction among all stakeholders is thus urgently needed to enhance efficiency of cotton production, processing and marketing to benefit from the opportunity and to obviate the threat.

4. Oscillating around 300 kg/ha (lint yield), India's average yield of cotton has remained one of the lowest in the world, being less than half of the world's average and less than one-third of China's average. Moreover, our lint quality is poor and often, due to one or the other reason, including those due to SPS concerns, it fails to meet the international standards. Thus, India's cotton productivity and cotton-based textiles competitiveness is low. With a "business as usual" approach, our competitiveness will further decline in the liberalized cotton market, thus threatening the collapse of this vital sector of our economy and employment.

**The Problems Needing Urgent Attention**

5. **Low Cotton Yields and Wide Yield Gaps:** As mentioned earlier, India's cotton yield has remained stubbornly low. Moreover, primarily due to the monsoon and market (prices) uncertainties, the yield has fluctuated widely from year to year. Even in the predominantly irrigated tracts, such as the North Zone, the yield hovers around only 400 kg/ha, resulting in one of the lowest water productivity. Consequently, even though the country accounts for about 25 percent of the world's area, its share in the world production is only 13 percent. On the other hand, China, with half the area under cotton cultivation produces 1.5 times the amount of cotton and has 1.5 times the world market share. Moreover, the gaps between farmers' average yields and realizable yields and between the realizable and potential yield in the three major cotton-growing zones of the country are rather large.

6. **Deteriorating soil health, poor productivity, declining factor productivity and profitability**: Due to increasing mismatch between the agro-ecological capacity and intensification of cotton production, increasing soil fertility imbalance, especially micronutrient deficiencies and decreasing efficiency of water and nutrient use, the productivity and growth rates of total and partial factor productivities have been declining. Methods of cultivation and irrigation presently employed also result in a very high consumption of water in cotton cultivation, which can be reduced by more than 50 percent by adopting appropriate technologies. Being a rainfed and highly sensitive crop to biotic and abiotic stresses, coupled with the gamble in the market place, the risk factor is extremely high, at times causing extreme distress to the

cotton farmers, especially in Andhra Pradesh and Karnataka (cotton farmers constitute the majority of the suicide-committing farmers).

7. **High biotic stresses and excessive use of pesticides:** Cotton is an attractive host for several pests. Although the pest scenario changes from year to year, depending on weather conditions, bollworms remain the most important yield limiting factors and American bollworm takes the prime position. If not protected, yield losses may be as high as 40 to 100 percent, depending on the pest intensity. In order to minimize the losses caused due to insect pests, the farmers resort to calendar sprayings of highly toxic insecticides, accounting for about 50 percent of the total cost of production. Cotton consumes over 40% of the total quantity of pesticides used in the country. More importantly, the practice has resulted in the emergence of resistance to the frequently used pesticides, besides causing serious environmental pollution and creating health hazards.

8. **Uncertainty about cotton production and trade:** India's cotton production fluctuates widely from year to year. Until the last year (2003-04), the all time high was at 178 lakh bales in 1996-97, rising from 139 lakh bales in 1994-95 and again dipping to 136 lakh bales in 2002-03. On the other hand, the country's cotton consumption has been increasing annually by 4%. In most years, the consumption has outstripped the production, necessitating an annual average import of about 20 lakh bales, costing over Rs 2000 crore, during the past few years.

9. However, fortunately, during the last year and this year, primarily due to yield increase, from around 300 kg/ha for several years to 384 kg/ha in 2003-04 and to 402 kg/ha in 2004-05, the domestic production correspondingly increased to 177 lakh bales and 213 lakh bales (estimated) respectively in the two years. Consequently, the imports in 2003-04 declined to 8 lakh bales and, more importantly during the same period, India exported 8 lakh bales of cotton, whereas our exports had not reached even one lakh bales for several years in the past.

10. In the context of the abolition of quotas by the end of this month (December, 2004), various segments of the textile industry in India and abroad are reported to be undertaking expansion and modernization of their production facilities. This is bound to expand the domestic

consumption as well as exports. A substantial proportion of the expanded cotton production will be used domestically to meet this encouraging trend. During this year, 2004-05, the domestic consumption is expected to reach 190 lakh bales and the production is likely to reach 213 lakh bales, necessitating a vigorous push for achieving remunerative net export of about 20 lakh bales, a quantity which India has never exported in the past. Unfortunately, international prices are falling.

11. Low availability of quality seeds and other inputs: Non-availability of adequate quantity of quality seeds and other inputs at the appropriate time is the foremost constraint. Nearly 50% of the total cotton area is under hybrid varieties and the remaining 50% under "open" pollinated varieties. While the private sector is able to meet the requirement of the hybrid varieties, the availability of seed of cotton varieties is limited to about 80,000 to 90,000 quintals only against the total requirement of 4.2 lakh quintals. Moreover, often the purchased seeds, fertilizers, biofertilizers, pesticides, biopesticides and bioagents are spurious, uncertified and nonstandard, thus creating economic, social and environmental crisis. In irrigated areas, the farmers invariably complain of the untimeliness of canal and electricity dependent water availability causing uncertainties.

12. Poor lint quality and high contamination: Poor fibre attributes, rapid deterioration of fibre quality of hybrids with successive pickings, high trash content (4 to 7%) and contamination have seriously been depressing the lint and yarn quality. India is capable of eliminating these bottlenecks and must ensure supply of quality cotton to its mills. Unnecessarily high multiplicity of varieties comprising nearly 300 varieties of highly variable fibre qualities predisposes the cotton system to contamination and non uniform yarn quality from the field to the ginning and pressing factory levels. The rapidly modernizing textile industry, such as increase in the speed of spindles, demands significant changes in the qualitative requirements of raw cotton. Today in addition to fibre length, the industry needs fibres with higher strength and better micronaire to withstand the high RPM.

13. **Unsatisfactory extension services and linkages:** The persisting and widening yield gaps point to the poor extension services for transfer of proven technologies and knowledge. High

cotton yield countries, such as Brazil, China, Turkey, etc. have dedicated cotton extension staff with clearly defined coverage of area and activities. In China, contract extension services are extremely effective and a close interaction and contact is maintained between the farmer and the extension agent. None of these arrangements exist in India. The extension workers are not adequately trained in the practices, approaches and strategies for their transfer and adoption of new technologies such as Integrated Pest Management (IPM), International Nutrient Management (INM), Insecticide Resistance Management (IRM) and Genetically Modified Organisms (GMOs). Specifically tailored training programmes are missing. Proven successful experiences such as Farmers' Field Schools are operational only in patches.

14. Besides the poor quality, the points of distribution of the inputs are rather scattered. The role of cooperatives, SHGs, agriclinics and information centers have been negligible in promoting efficient production and distribution of cotton. Barring a few recent initiatives, the public-private (including NGO) - farmer linkage in technology transfer, information sharing and overall extension activities has been unsatisfactory. The monitoring, evaluation and mid-course corrections need to be improved.

15. **Highly inadequate credit and other institutional support:** Most cotton farmers are small and marginal and generally resource-poor. On the other hand, cost of production of cotton, especially the costs of hybrid and Bt. Cotton seeds and of pesticides, are very high and beyond the capacity of majority of the farmers. The formal credit availability is highly inadequate and the arrangements to access it are quite cumbersome and time-consuming. Therefore, most farmers turn to easily accessible non-formal sources of credit, but at high rates of interest and with other associated unfriendly agreements. As over 70% of the crop is grown under rainfed and monsoonal uncertainties, cotton production is highly risk-prone. In the absence of satisfactory crop insurance mechanisms, the growers' vulnerability is exacerbated and they generally land into traps of layers of debts. So much so that sometimes the economic and social burdens become unbearable and the farmers resort to the extreme step of committing suicide.

16. **Unsatisfactory Pricing and Marketing:** The current slump in cotton prices both in the domestic and international markets has caused serious concern and distress in the minds of

Indian cotton farmers as their increased production holds little promise for their income and profitability. The situation is tricky also for the cotton mills as with globalisation and with the abolition of the quota restriction from January 1, 2005, they would be free to procure their raw materials at competitive prices from anywhere in the world, which is already happening and is further depressing the domestic prices. However, realizing that the farmers and the industry are interdependent and neither can prosper at the expense of the other, short and long term mutually supportive interventions and measures are required for the mutual benefit of farmers, industry and the consumers.

**The Way Ahead: Critical Interventions**

**A. Public Policy:**

17. **Establishing a National Cotton Council: an apex coordinating mechanism**: The Centrally Sponsored Scheme of Technology Mission on Cotton (TMC), comprising four Mini Missions (MM) and operational since 2000-2001 in all the 13 cotton growing States seeks to address the various issues by integrating different aspects of cotton, namely research, extension and development for production; development of market infrastructure/yards; and modernization of ginning/pressing factories respectively through MM-I, II, III and IV. Mini Mission I is implemented by ICAR, MM-II by the Department of Agriculture and Cooperation and MM-III and MM-IV by the Ministry of Textiles.

18. The performance of the TMC has been a mixed one. Mini Missions III and IV, seem to be on track to achieve their physical targets of renovation and modernization. The outcomes and impacts of MM-I and MM-II are not quite discernible, although during 2003-04 and 2004-05 yield and production had increased, it is attributed mainly to good prices, good weather, increased area under Bt. Hybrids and increasing involvement of cotton mills and the private sector in technology transfer. There was little perceptible increase in the supply of quality seeds of open-pollinated varieties and in the adoption of the INM, IRM and IPM technologies beyond the "project areas."

19. Unfortunately, the four Mini Missions are tending to operate in isolation of each other, with no integration of efforts and approaches. As a result, the expected positive interaction

effects are being missed out. Some of the participating State Governments have neither allocated the apportioned 25% of the budget nor have they spent any Central Government Fund, especially under MM-II which accounts for about 75 percent of the TMC funds. Yet, the production in these States has moved up. The "Mission spirit" of partnership and leveraging interactions is missing and the programme is generally running in the longstanding Intensive Cotton Development Programme (ICDP) mode.

20. The TMC at the Central level is supposed to receive its direction, control and integration from its National Steering Committee constituted for the purpose. At State level, a counterpart State Steering Committee is to be in place. Although well intended, the committees have not been effective in providing the necessary integration of Mini Missions and drive to the TMC, as a whole. In order to overcome this problem, on the lines of the International Cotton Council, a **National Cotton Council** comprising representatives of farmers, textile industry, NGOs, public sector and other major stakeholders, should be set up under the Chairmanship of the Union Minister for Agriculture, with the Union Ministers of Textiles and Commerce serving as Co-chairs. The Council will guide the Mission in taking the right steps at the right time and place. Among other things, the Council should suggest as to how productivity and quality can be improved and the cost of production brought down through enhancing the pace of progress in factor productivity and guide the nation's cotton economy to remain buoyant in the globalised world, with special consideration of the needs and aspirations of millions of small cotton farmers, weavers and their families.

21. Remunerative prices to the farmers and farmer-centred marketing: The cotton production during 2004-05 is estimated to be 213 lakh bales. The carry forward stock from 2003-04 is 24.5 lakh bales. Thus, total availability of cotton is placed at 237.5 lakh bales during 2004-05. As against this, the total demand including both mill and non-mill consumption even if placed at about 200 lakh bales will leave a stock of 37 lakh bales. Maintaining a cushion of about 17 lakh bales, the exportable surplus stands at 20 lakh bales. This domestic glut is further aggravated by the glut in the international cotton market. As per the International Cotton Advisory Council, the world cotton production is estimated at 24.14 million tonnes during 2004-05 against demand of around 21.97 million tonnes leaving a stock of 9.87 million tonnes. The resultant effect is the fall

in cotton prices in world (Cotlook Index) from 70 cents per pound (454 gms) in 2003-04 to 45 cents per pound in December, 2004. The price of cotton in India also decreased from about Rs 2500 per quintal at the beginning of the season to less than the MSP of Rs 1760 - Rs 1960.

22. The landed price of cotton (lint) is somewhat lower than the price prevailing in the domestic market. In order to protect the cotton farmers throughout the country, Import Duty, which is 10% at present, needs to be enhanced to at least 30% to restrict the cheap import, particularly of the category most produced and used domestically. The import duty for the extra long fine cotton may be maintained at the current level of 10% so that India's competitiveness in yarn export may not be jeopardized. The mills in collaboration with CCI and APEDA need to assess the count-wise requirement and consumption to facilitate national policies and action required in cotton sector and should proactively buy domestic cottons. In this context, the Intensive Cotton Cultivation initiatives steered by cotton mills and ginning factories will help stabilize prices and ensure availability of desired quality required by our spinning mills. But, all this should be geared to urgently reduce the cost of production and increase India’s competitiveness.

23. In order to promote exports at prices which may provide remunerative returns to the farmers, export tariff, consistent with WTO provisions, may have to be provided to maintain the farmers' income and the overall cotton economy. Based on external demand and market situation, suitable level of export tariff may be fixed which may at least obviate the income depression due to low prices. The national system should, therefore, vigorously move to ensure export of the entire surplus produce. In order to circumvent the unrealistic non-tariff barriers imposed by the importing countries, mostly on SPS grounds, India should establish a credible SPS capacity to promote unhindered trade (Ref. Chapter VII of the Report).

**B. Public Action:**

**B.1 Convergence and Synergy among Mini Missions:**

24. It is strongly recommended that in order to revitalize the Cotton Technology Mission and to operate it in a true "Mission" mode, an eminent cotton professional be appointed as the **overall full-time Mission Director**. He/She will together with the four Mini Mission

Coordinators function as an apex management team with appropriate responsibility, authority and accountability to fully synergise the activities towards achieving the goal within the stipulated timeframe. The programme should be suitably redesigned involving a participatory approach and all the stakeholders, particularly the State Governments, internalizing the social engineering aspects with built-in mechanisms of monitoring, evaluation and dynamic adjustments.

**B.2 Enlarging the Role of Cotton Corporation of India (CCI):**

25. With the abolition of the quota system, CCI should play a greater role in insulating the farmers from the international price dips and in maximizing their profits when the prices go up. For this, it should be fully equipped to undertake market research and intelligence and position itself in time to meet the fluctuations. As the country's cotton production increases, its capacity to procure, store and export cotton should be strengthened. In collaboration with APEDA and other concerned agencies, it should proactively advise the farmers on the quality and varieties of cotton to be grown.

**B.3 Reorienting Research Priorities and Technology Transfer Strategies:**

26. Notwithstanding the research priorities already identified under Mini Mission I, greater focus should be given to:

26.1 quality aspects, namely, fibre strength, better micronaire, length, high maturity, high extensibility, uniformity, low strength of attachment and short fibre content

26.2 development of broad-based Bt Cotton hybrids with desired fibre quality; use of MAS for pyramiding yield, quality and resistance genes, especially against abiotic stresses such as drought and creation of wide gene pools through inter specific hybridization; the undue delay in release of the transgenics should be avoided without compromising with transparency and biosecurity requirements

26.3 development of effective and stable bio-pesticides and biocontrol agents and to develop new IPM, IRM and INM techniques around the fast expanding Bt Hybrid system to

ensure greater sustainability, productivity and profitability.

27. The ongoing effort of the ICAR, Universities and private sector research systems should be assessed in terms of their degree of involvement both in terms of the human and financial resources deployed for the purpose and the intensity and the quality of the work. Additional resources and directed focus should be provided to the identified critical gaps through reallocation from the existing resources. *Prima facie*, no additional funds will be required but the need could be kept under continuing review. The Director, Central Cotton Research Institute, in close collaboration with Director, CIRCOT and other participating institutions, should be made responsible to follow up the work and regularly report the progress to the Mission Director.

28. Large-scale adoption of high yielding and superior quality *arboreum* varieties: Several high promising *arboreum* varieties, such as, PA-255, PA-402, DLSA-17, MDL-2463 have out-performed commonly grown *hirsutum* varieties by margins ranging from 35 to 50%, specially under water stress conditions. Besides yield, these varieties, particularly PA-255, possess excellent fibre quality which are comparable in all respects (length, fineness and micronaire, etc.) to LRA-5166, a leading *hirsutum* variety. By growing these excellent *arboreum* varieties, farmers had saved considerably on cost of cultivation (Rs.4900/ha. as against Rs.10,000 for *hirsutum* hybrids). The *arboreum* varieties were particularly outstanding under water stress conditions and in upper toposequence. Further, these *arboreums* have performed extremely well when intercropped with cereals, pulses, and oilseeds. Inspite of outstanding performance of new *arboreum* varieties, their commercial popularization has been extremely poor, depriving the farmers as well as the nation of a new opportunity of income growth as well as of environmental friendliness. It is strongly recommended that a focused extension and technology transfer programme involving all the stakeholders, particularly mills and the corporate sector, be vigorously pursued to saturate the cotton areas where the newly developed *arboreum* varieties hold distinct advantage over the *hirsutum* varieties or hybrids.

29**.** **Investing in the Soil Health:** Quantum jump in cotton yield can be obtained by addressing issues relating to the micronutrients status of the soils. Through pricing and policy instruments (input support) the nutrient balance should be corrected in the deficient soils. Zinc,

Boron and Sulphur deficiencies, in that order, were most common and the deficiency was greater in Maharastra, Tamil Nadu, Haryana and Andhra Pradesh. Based on soil test, the imbalances should be corrected not only for recovering the potential yields but also for arresting further deterioration. Fertilizer industry should be encouraged to produce new and cost-effective fertilizer formulations (customized fertilizers) and participate in technology transfer. Any subsidy given on fertilizers must not ignore the vital role of and the urgency of promotion of the adequate use of critical micronutrients and a suitable measure should be put in place. The Ministry of Agriculture and the Fertiliser Industries should critically examine the suggestions and come up with a mutually acceptable action plan to restore and enhance the fertility and productivity of cotton fields to help promote INM. The TMC Director and Coordinator of MM-II should jointly chalk out detailed action plan with their counterparts in the deficient cotton-growing States and organize about 30,000 large scale demonstrations (atleast 1 ha. each) for mass impact and adoption.

30. Each farmer should be issued soil health card and trained to use the technology. Agriclinic and agro-business centers should be established strategically and rendered functional to undertake the necessary soil test. Despite all efforts and the declared policy and instructions to the banks, especially NABARD, to help establish agriclinics and agribusiness centers, so far hardly 200 units have been established during the past three years and these are operating with varying degrees of success. Serious mismatches exist in the attitude, mode of support and priorities of different partners, namely the entrepreneur, the bank, the farmer and the public sector. Thus, the move has so far not been as successful as initially conjectured. The situation has been analysed sporadically, but a more comprehensive analysis involving the different partners is called for which should come up with a new road map for improving the prospects of agriclinics and agro-business centers. There is a tendency to emphasise the business component and profit to the owner of the center at the cost of extension and knowledge services to the farmers.

31**.** **Enhancing Water Productivity and Saving Water and Soil Erosion:** Large tracts of cotton soils, particularly in the Central Zone, are shallow with hard pan at about 8 to 10" depth causing several interdependent soil, water and plant nutrition problems. Breaking the hard pan

will obviate the problems in many ways. Rain water is stored deep, down wherefrom it will not easily evaporate and is available to plants for a prolonged period and a much healthier and larger crop is produced. These reduce the need for irrigation particularly to deep rooted crops like cotton to as low as 20% of that normally required, and thus the water productivity will increase manifold. But, despite this knowledge and knowhow this water conservation technology has generally not been adapted in India. Chiseling (1 m interval) in rainfed areas would need high power prime movers such as 50 hp tractors because of larger draft requirements. Such tractors were not available until few years ago. Presently, both high power tractors and chisel plough are available to do the job. Traditionally, lack of high power tractors, research efforts, and extension efforts did not permit large-scale adoption of the chiseling operation. The cost of chiseling is estimated to be Rs 1000/ha. However, large scale demonstrations of about 100 ha. each in about 200 watersheds in 40 districts should be undertaken to assess the efficacy of the approach in terms of energy, economics and environment. Based on the results, a national plan should be prepared to benefit from the technology.

32. Other water harvesting, conservation and use techniques such as zero tillage, ridge-furrow planting, micro irrigation and plastic sheet mulching are used singly or conjointly. But these are restricted to limited sites and have not impacted cotton productivity in India. Toposequence based rain water management, rainwater harvesting and use, should be adopted by all rainfed cotton farmers as the technique is extremely useful in stabilizing and increasing the yield (on an average by 20%) on farmers' field. Awareness campaign and initial financial support will prove stimulatory in popularizing the approach. Likewise, ridges and furrow system not only saves soil and water erosion but gives about 30% higher yield across all the toposequences and different cotton-based cropping systems. It also enhances nutrient use efficiency. An extensive drive and service support to promote these technologies should constitute a priority activity in all the rainfed cotton areas.

33. The high subsidy on micro irrigation equipments had encouraged the widespread sale of poor quality equipment and brought bad name to this highly effective technology. Transparency and good governance thus should underpin the popularization of such techniques. Strict monitoring and quality control of the supply of the subsidized hardwares of the micro irrigation

(drip and sprinkler) system should be ensured.

34. **Ensuring timely flow of adequate quantity of quality seed:** Despite the active involvement of the private sector and several seed production schemes of the public sector, both at national and provincial levels, the supply of quality certified seeds of the approved varieties is rather low and uncertain. Moreover, the multiplicity of the varieties grown further aggravates the situation. Therefore, first of all, the Government should urgently denotify the degraded varieties. The new Seed Act should be enacted and implemented at the earliest so that all the seed available in the market is certified and is distributed only through registered dealers and producers by authenticated systems so that, if needed, the defective link in the flow chain could be traced and corrected. The seed laws must be strictly adhered to and earnestly implemented. The defaulters should be punished to curb the distribution of spurious seeds.

35. The public and private sector together, specially the Cotton Corporation of India and Cotton Mills Federations together should identify the quantity of seed needed of the different varieties recommended for specific zones. The Basu Committee report on the retention of desirable verities and their zonal delineation should be urgently implemented. The Agri-clinic and Agri-business centers should be suitably strengthened to store and distribute quality seeds as a high priority. There should be a suitable arrangement also for either carrying over or disposing off the left over indented seed to protect the agribusiness centers from loss.

36. The National and State Seed Corporations should play a leading role in producing and distributing the quality seeds of open pollinated varieties. For this purpose, central and State seed farms, university farms and corporate sector farms should also be used. Keeping in view the excellent role played by women in the production of hybrid cotton seed, appropriate mechanisms of engendering cotton seed production by leasing out Government lands to women Self Help Groups (SHGs), such as SEWA, should be encouraged. Specialised women SHGs could be created for this purpose with adequate provision of training, skill development and access to financial resources. These specialised SHGs may also be charged with the responsibility of establishing and operating cotton seed banks (a separate note is being prepared on this aspect).

37. **National Movement to Adopt IPM:** A landmark in cotton IPM has been the validation of the cropping system based holistic community approach of IPM at village Ashta (1998-2001), a village in Nanded district, representative of over 2 million ha rainfed cotton in Central India. Large scale pilot demonstrations covering hundreds of villages in all the cotton-growing States have established the fact that the IPM approaches suiting to the regional requirement can drastically reduce the cost of production of this fibre in the country and it is possible to reduce the dependence on chemical pesticides to the tune of 60 percent and increase seed cotton yield by 24 percent. Yet, the technology is not being widely adopted. A national movement for cotton in IPM is called for. A three-year programme covering 5,400 villages, 540,000 ha, and costing Rs.600 crores (Rs 200 crores for one year) deserves priority implementation.

38. IPM approach also includes need-based and efficacious use of selected pesticides, while maintaining the emphasis on effective biopesticides and bioagents. Addition of eco-toxicological perspectives for the management of insect resistance to pesticides and insecticides would help obviate some of the shortcomings of the IPM approach. Further, the IPM and IRM strategies must be dynamically and synergistically evolved in light of the increasing introduction of Bt. Cotton and new insecticides.

39. Like the IPM approach, the results of the farmer participatory approaches in the IRM have been very encouraging and apparently farmer awareness is undergoing massive sweep as evident through the enormous reduction in the usage of pesticides in all the districts implementing the programme. Thus far 26 insecticide resistant monitoring centers have been established under the project and are expected to serve as insecticide resistance information centers to farmers throughout the season, so as to enable farmers take up properly guided decisions on the appropriate choice of insecticides. Currently, the per hectare operational cost (manpower, consumables, travel, etc) comes to about Rs.200. The programme focuses immensely on farmer education and does not provide any material inputs.

40. The IPM and IRM strategies and their proven efficacies and appeal notwithstanding, are unfortunately being pursued in parallel manner with no operational connect in the two separate

Mini-missions, MM-I and MM-II. Given the commonality of the two approaches, the disconnect between the two strategic programmes should be removed and the two programmes must be integrated under one and the same IPM umbrella, and there should be only one line of management and control for preparing, implementing and monitoring village level detailed microplans and their backward and forward linkages. All concerned stakeholders, the Department of Agriculture, ICAR, State Governments, SAUs, private sector, NGOs and farmers must forge the linkage and unify the efforts towards realizing quick and widespread impact.

41. The Report of the Joint Committee on Pesticide Residues in and Safety Standards for Soft Drinks, Fruit Juices and Beverages of the 13th Lok Sabha, under the Chairmanship of Shri Sharad Pawar, presently the Hon'ble Minister of Agriculture, contains some extremely valuable recommendations pertaining to IPM and IRM (paras 3.53 to 3.58), in addition to other important recommendations including those related to implementation of regulations and the punishment for non-compliance. The Report should be implemented soonest in our effort to save the farmers from mounting distresses from the use of spurious pesticides and ill-informed excessive use of prohibited insecticides.

**B.4. Byproduct Utilization:**

42. Byproducts of cotton cultivation and processing wastes should be subjected to value addition to enhance growers income and to develop rural employment and entrepreneurship. Technologies already developed such as utilization of cotton stalk for the manufacture of particle boards, for paper etc. need popularization, demonstration and adoption. Agro residues and byproducts need to be promoted as raw materials for industrial activity to fetch additional income to growers.

43. Scientific processing of cotton seed viz., delinting, dehulling and then crushing for oil to be promoted rather than seed to be directly crushed to oil as is being done right now. Value addition to each of these byproducts of cotton seed viz. linter, hulls, deoiled cake should be encouraged. Strategic linkages among private sector companies, Small Farmers' Cotton EStates and NABARD should be promoted by the National Cotton Council.

## C. Organising Small Farmers' Cotton EStates and Participatory Extension and Technology Transfer

44. Realising that the public sector extension and the service-providing machinery is almost defunct, and recognizing the successful experiences of certain public-private-farmer or private-farmer or farmer-farmer (SHGs) partnerships in transfer of technologies leading to the benefits of all the partners, new models of extension and service-providing mechanisms should be actively promoted and institutionalized. Some of the partnership initiatives such as the ICMF – CDRA project, the Appachi Foundation 60 SHGs, CCI-initiated Intensive Cotton Cultivation and the Vardhman Group's participatory extension programme are bright spots deserving large-scale adoption.

45. **Small Farmers' Cotton EStates** through "Group Farming", linking production and consumption through effective partnership of farmers, service and knowledge providers, formal credit providers viz NABARD, input providers and marketing and product distribution agencies both in public and private sectors should be established. The approach aims to (i) make available cotton of desired quantity and quality to the user industry and an assured market to the producer, (ii) improve productivity and quality of cotton by providing the farmer with authentic inputs such as seed, fertilizers, pesticides and know how, and (iii) bring change from subsistence agriculture to commercial agriculture and thereby increase the profitability of the farmer.

46. Active participation of the cotton mills, NGOs and related sectors can further be promoted and institutionalized by providing incentives to them. Keeping in mind the high impact of the Scheme on the livelihood security of the cotton growers and the competitive advantage to the industry under the post-WTO environment, the Government should provide the needed support. To begin with, the State Governments should waive the market cess and sales tax. Failing that, the Central Government should provide subsidy to the extent of 50% of the cost of market cess and sales tax for a period of five years. Further, the Government of India may bear the cost of supervision of the programme by agricultural experts and also provide cost of

scouts for monitoring the crop under the MM-III. Detailed financial implications of these provisions should be worked out.

47. Recognising the importance of MM-II in enhancing the productivity and competitiveness through efficient transfer of technologies, and appreciating the role that the private enterprises and NGOs can play in supplementing the public sector effort in rapid diffusion and adoption of appropriate technologies, the funds for extension work under MM-II should flow also to the proven nongovernmental partners under analogous terms and conditions. Such efforts should first be intensified in the high yield-gap and low-yield cotton districts, selected preferably from the list of districts identified by the Planning Commission. This decision should be made widely known and private enterprises, especially those related with cotton industry, and NGOs should be invited to participate in the programme.

48. To begin with, 100 **Small Farmers' Cotton EStates**, each covering about 1000 ha., may be launched by the National Cotton Council in close collaboration with the TMC, ICMF, NABARD and CCI. These Cotton EStates will function on the principle of decentralized production by small farmers and supported by key centralized services at the production and post-harvest phases. Each EState can be supported by an Agri-clinic and Agri-business Centre operated by Farm Graduates. The Small Farmers' Cotton EStates can each host a Rural Knowledge Centre based on modern information communication technology (ICT).

49. Credit, insurance, marketing may all be included in the EState. The design of the Small Farmers' Cotton EStates should be such that it represnts a win-win situation for all participatory farmers. Production – processing – marketing can be dealt with in an integrated manner.

50. Based on the initial experience and the response of the partners, it is proposed to cover within the next three years about 5000 villages throughout the cotton growing States in the country, but with greater concentration in Maharashtra, Gujarat, Andhra Pradesh and Madhya Pradesh, covering an area of about 1 million hectares with an yield advantage of about 50 percent above the present level. This yield gain is estimated to provide additional net income of Rs 5,000 per ha. to nearly 500,000 farmers, valued at Rs 500 crore.

51. **Credit, insurance and institutional support:** As mentioned earlier, since cotton production is highly risk prone and is largely in the domain of small and resource-poor farmers whose risk taking capacity is extremely low, the importance of smooth and timely access to formal credit and insurance can hardly be over-emphasised. The recommendations made in Chapter-II to address this issue is equally applicable to the cotton farmers and cotton productivity.

**Financial Resources**

52. Factor oriented interventions such as micro-nutrients, quality seeds, bioagents, biopesticides, integrating with system oriented demonstrations, namely, IPM, IRM and INM need to be provided for intensifying these demonstrations in resource poor farmers' fields in the low-yield cotton districts. Development of Bt. and other biosafe new seeds, new biocontrol agents, popularization of new arboreum seeds especially in drought prone areas and establishment of Small Cotton Holder EStates are other priority critical interventions for increasing productivity and competitiveness. The TMC and ICAR should provide part of the funds needed through reordering of priorities. An additional sum of Rs 250 crore may be provided in the budget for 2005-06 to launch an integrated technology transfer and development programme geared especially to meet the needs of the small farmers and to capture the opportunity arising from the ending of the multifibre agreement.

# CHAPTER VII

## SUSTAINING AND EXPANDING FARM COMMODITIES TRADE: SANITARY AND PHYTOSANITARY MEASURES

### Towards a Biosecure Trade: Urgent Steps Needed

1. Producer-centred assured and remunerative marketing holds the key to ensuring sustained agricultural progress. Enhanced trade in farm commodities is essential for promoting agrarian and rural prosperity. Trade also generates downstream non-farm employment opportunities. In its next report, the National Commission on Farmers will be presenting recommendations for developing a dynamic farmer-centric Indian Common Market. A few suggestions for safeguarding and expanding international trade in agricultural products are given here.

2. Our facilities for sanitary and phytosanitary measures (SPS) are inadequate. According to Financial Express (India) 16 Feb, 2004, several consignments of Indian farm exports were rejected on grounds of mycotoxin, salmonella, pesticide residues etc. during last two years (Annexure I). The situation is likely to get serious in the coming years since health safety standards as presented by *Codex Alimentarius* are getting increasingly stringent and the goal posts in developed countries have been shifting fast. Food safety standards will become the most important non-tariff barrier. Therefore, we must not lose any further time in launching a quality and food safety literacy movement in villages. At the same time, our SPS infrastructure should be vastly strengthened. Suggestions are given in this Chapter on urgent steps and investment needed.

3. We should also strengthen our quarantine facilities, since according to National Bureau of Plant Genetic Resources (NBPGR), several invasive alien species have been introduced into the country along with grain seed and planting material imports. These introduced pests include bunchy top of banana, potato wart, sunflower downy mildew, coffee pod borer, apple San. Jose scale, Biotype B of white fly and invasive weeds like *Lantana camara* and *Phalaris minor*. Such

invasive alien species will further threaten our agriculturte, including poultry and dairying. The Asian Flu disease of chicken in southeast Asia is a case in point.

4. In the wake of implementation of WTO-SPS Agreement we are faced with the following challenges :

4.1 Designate a single Central Government authority as responsible for implementation of SPS measures.

4.2 Review and updating of legislation and regulations related to SPS to give effect to international agreement and establishing a nodal point for enquiries and information exchange

4.3 Establishment of national standards on SPS measures in line with international standards

4.4 Establishing a notification procedure

4.5 Undertake pest risk analysis and identify and maintain pest-free areas for plants and animals as per international standards and safety assessment for food

4.6 Scientific justification of high level protection in the absence of pest risk assessment

4.7 Recognition of equivalence of specific measures through bilateral or multilateral agreements

4.8 Identifying researchable issues and strengthening back-up research

4.9 Capacity building in terms of infrastructure and expertise

4.10 Awareness building and catalyzing attitude change

4.11 Develop functional public-private-NGO partnerships

**The Road Ahead:**

5. In view of the urgency of the steps needed both to safeguard our agricultural exports and to capture new markets, the following steps are suggested.

**A. Policy Actions :**

6. **Food Safety Council of India:** It is suggested to establish a Food Safety Council of India chaired by the Union Minister for Food and Agriculture with the Union Commerce Minister as co-Chairman. The Food Safety Council of India should have as members, representatives of farm and fisher women and men, particularly from States with a large volume of agricultural exports. The producers' representatives should cover all aspects of crops and animal husbandry and fisheries.

**B. Public Actions:**

7**.** **Upgrading the Quarantine Stations:** The five major quarantine stations at New Delhi, Mumbai, Koltata, Chennai and Amritsar have been modernized with sophisticated equipments and Post Entry Quarantine facilities under a UNDP project. However, there are other 24 plant quarantine stations for the upgrading of which an initial effort has been made for need assessment in terms of laboratory and green house facilities required under an FAO-TCP project recently. The 24 stations were classified into three broad categories in the said project based on nature and volume of material received in each of the stations. The output of the project can be a starting point to initiate upgrading of these stations. It may however be noted that apart from equipping these stations with modern instruments and facilities, the means of communication (telephone , fax, email, vehicle) need special attention for efficient functioning of these stations.

8. **Development of National Standards on Sanitary and Phytosanitary Measures:** The establishment of national standards on phytosanitary measures in line with international standards is of critical concern to meet the stiff challenges under the international agreements. There are 21 such international standards developed as on today. For this purpose, the Food Safety Council may constitute a **National Committee on SPS Standards** and suitable standard setting procedure need to be developed. The National Committee may assist in developing the standards and the draft standards may be circulated among the functionaries for their comments and the finalized standards may be duly approved and signed for issue to concerned Central/State level functionaries for adaptation.

9. **Survey and Surveillance Programmes:** So far no systematic efforts are being made for survey and surveillance of endemic pests, of new and emerging pests and of the exotic pests which have been introduced and are being spread. An effective integrated pest surveillance system and organization devoted to performing field inspection and pest survey activities for the detection, delimitation or monitoring of established pests as well as system and organization devoted to the detection of new pests needs be introduced. Specific systems may be required for identification, establishment and maintenance of pest-free areas as per the international standards. Similarly, systematically designed survey, surveillance and monitoring studies for the toxin incidence in food and agricultural commodities are required to identify less risk-prone areas for export and domestic use. For this, need-based additional support is needed to strengthen containment facilities, pest risk analysis capacity, pest diagnostic laboratories, residue and toxic laboratory, referral laboratories, emergency control and treatment facilities and accreditation laboratories.

10. **Generating Awareness abroad and Linkages with National and International Programmes:** In order to have complete understanding of the SPS measures of our target markets, there is a need to have direct technical contact with the concerned authorities in those countries. This could be achieved if the country posts a technically qualified Agricultural Attache at our diplomatic offices in the countries of interest. ICT must be effectively used to enhance awareness abroad on the steps taken in India to ensure the highest standard regarding food safety and biosecurity.

11. At present the staff of Directorate of Plant Protection, Quarantine and Storage (DPPQS) works largely in isolation and are not taking benefit of the various research organizations of ICAR and State Agricultural Universities for detection and identification of pests and for the control strategies. There is a need for an active linkage between All India Coordinated Research Projects (AICRPs) and the activities of the DPPQS in order to have comprehensive survey and surveillance programmes. There is an urgent need to develop a network system of information through the following means: (i) linkage with WTO, Cotton Advisory Council (CAC) , IOE, International Plant Protection Convention (IPPC) , FAO, WHO, International Standards

Organization (ISO) and related organizations, (ii) coordination mechanism involving planning and network system, (iii) dissemination of information on standards and code of practices and (iv) forging networks to implement contract farming.

12. **Researchable Issues :** The diverse areas requiring research input for preparing an authentic and accurate Pest Risk Analysis (PRA) such as pest status information to establish phytosanitary regulations, risk identification through development of more sophisticated bioassay, chemical or genetic analysis based on molecular or serological tests apart from morphological characteristics, evaluation of introduction/establishment and spread potential on the basis of risk of entry and establishment of the target pests and epidemiological data on a potential pest correlated with meteorological data, economic impact data in the form of national and global pest database depending upon the information on pathogenicity, etiology and control. For identifying PFAs authentic, extensive survey and surveillance is a must for authentic mapping of endemic pests present in localized pockets. Also, research is needed on suitable pest risk management practices to increase export potential of commodities/material in areas where the pest is within tolerance limits.

13. Research needs to be carried out to develop detection techniques for diagnosis of destructive pests especially to test samples of bulk consignments in batches. Alternative salvaging techniques to reduce the dependence on chemicals for control of pests and use of physical treatments like heat/cold, physico-chemical or ionizing radiations as alternatives to fumigation needs to be worked out.

14. Research on toxins with special reference to mycotoxins such as tolerance limits for the aflatoxins based on the regional diets and mean daily estimated intake of aflatoxins and its role as a immunosuppressant and carcinogen is needed.

15. **Human Resource Development - Launching a Trade Literacy Movement**: To meet requirements and challenges of SPS Agreement, the country needs specially trained manpower

as under the Agreement, PRA, a mandatory requirement to be carried out by all importing countries requires input from a team of scientists of all plant and animal protection scientists, database managers, weather forecasters, environment experts and agricultural economists. Research scientists who could strengthen pest identification through modern molecular techniques and make the imports pest free through efficient salvaging treatments/ techniques need to be internationally trained.

16. The database on prevailing pests in the country needs to be updated through not only literature survey but also survey and surveillance of land under agriculture, forests and wild fauna. This being a huge task requires networking and suitably training of plant and animal protection scientists of ICAR and SAU within the country. Such accumulated data on pest distribution can also be exploited to meet the requirement under the Agreement and to boost up our exports of agricultural commodities from certified and notified pest free areas. Trained man power is also required for maintaining pest free areas as pest free through suitable phytosanitary measures.

17. With more and more speculated exchange of transgenics in plants, animals and fisheries during the coming years, disciplines like biosafety needs to be upgraded to international levels. For this, the biotechnology laboratories need to be equipped with suitable manpower and equipments to detect transgenes and terminator genes in the suspected agricultural produce (in bulk) and processed products. Trained man power is required to study and compile information on adverse effects of the transgenics on environment, human beings, biodiversity, wild flora and fauna.

18. At present there are a large number of cases of dispute related to technical aspects of import and export of agricultural products that are lying pending for settlement of both developing as well as developed country members before the Dispute Settlement Committee of WTO. Looking at the number of such cases being addressed, there is a need for developing legal expertise in this field.

## C. Quality Literacy Programme: Sensitization and Awareness Building:

19. Awareness about SPS measures has to percolate down to the producer and processor levels so that the significance of these issues in enhanced global trade could be highlighted. Such an efforts needs development of tailor-made training programmes for different clientele groups and targeting the field-level awareness-building. 'Hands on' training should be imparted to selected clientele groups who can help in horizontal dissemination of technology especially for mycotoxin estimation, pest-diagnosis etc. ICT based Village knowledge centres must play a major role in creating the awareness among producers and consumers alike in rural areas ( Ref Chapter VIII). The use of existing technical systems such as the Virtual Academy for Semi - Arid Tropics (VASAT) could be used as a platform for quick dissemination of Good Agricultural Practices (GAPs) and Good Manufacturing Practices (GMPs) for different production systems.

20. The State governments need to be sensitized and supported to develop mechanisms for ensuring compliance to legislative measures and SPS standards through local stakeholders. They need to ensure funding and establishment of facilities such as post-entry quarantine glasshouses, well-equipped laboratories for diagnostics and determination of residual toxicities and should encourage human resource development in the relevant areas. All stakeholders must be sensitized of the need for adherence to biosecurity provisions.

**Financial Resources**

21**.** In order to meet our SPS commitments, the country should urgently strengthen the operation system at all strategic points, diagnostic surveillance and accreditation system, science-based pest risk assessment and management, audit and quality control system and information and literacy campaign. To attain these outputs, additional investments are needed for creating infrastructure missing at strategic sites, for improving laboratory facilities, for augmenting trained human resources, for undertaking emergency actions and for creating databases. An additional sum of Rs. 100 crore is required for the next two years to achieve the goal. An allocation of Rs. 60 crore is recommended during 2005-06.

**Annexure-I**

# REJECTED TRADE CONSIGNMENTS

| Sl. No. | COMMODITIES | REJECTED BY | REASON OF REJECTION |
|---|---|---|---|
| 1. | Indian Soft drinks | The United Kingdom | Presence of colour Sunset Yellow –E 110 |
| 2. | Chilli products including curry powders, sauce & spices mix (hotChilli powder, red chilli crushed, hot chilli peppers, ground chilli, curry powder, south Indian curry powder. tandoori masala, spice mix, chilli sauce, spices containing chilli powder. | European Union | Presence of colour Sudan 1 and aflotoxins |
| 3. | Dried apricot | European Union | Presence of sulphur dioxide |
| 4. | Grapes (Thompson seedless grapes, sunripened seedless grapes, white seedless grapes) | European Union | Containing methomyl, monocrotophos Acephate, methomidophos and monocrolophos |
| 5. | Prawns, Cuttlefish and squids (frozen prawns, whole washed cuttlefish, frozen squid tentacles, squids and strips of squids, frozen raw peeled, black tiger shrimps, black shrimps skewer, black tiger shrimps (pealed and deveined) | European Union | Containing cadmium, Salmonelia, Furazolidone, Nitrofuran, Nitrofurazone, Mesophiles, Cadmium and Vibrie Cholerae |
| 6. | Fish and meat seasoning | European Union | Presence of colour Sudan 1 |
| 7. | Frozen baby octopus | European Union | Aerobic mesophiles |
| 8. | Egg and yolk powder (Pasteurized spray dried hen whole egg powder) | European Union | Nitrofuran, Nitrofurozone, Furazolidone |
| 9. | Honey | European Union | Containing Nitrofuran |
| 10. | Marine products | European Union | Presence of Micro organism, vibrio cholerae and bacterial inhibitors. |

Source: Sharma, Ashok B, India Hits Back At US, EU with stringent Laws on Food Imports, Financial Express (India) 16 Feb, 2004.

# CHAPTER VIII

## TOWARDS AN ERA OF KNOWLEDGE INTENSIVE AGRICULTURE MISSION 2007: EVERY VILLAGE A KNOWLEDGE CENTRE

Ecologically sound agriculture is knowledge intensive. Farm women and men need dynamic information relating to meteorological, management and marketing factors as related to crops and animal husbandry, fisheries, agro-forestry and agro-processing. The new approach to productivity improvement and employment generation is also information and knowledge intensive. In the context of globalization of trade, there is need for launching a genetic (i.e. relating to genetically modified farm products), legal (i.e. IPR and Farmers' and Breeders' Rights), quality (i.e. sanitary and phytosanitary measures and codex alimentarius standards), and trade (i.e. prices in home and external markets) literacy movement. There is presently a disconnect between what farm families need by way of generic and dynamic information and what the conventional extension agencies are able to provide.

It is also important to address the need for demand driven and value added information which is time and location specific. There is also need for knowledge transfers between and across rural communities, scientists, educators, administrators, healthcare providers, technology enablers on local agro-ecological and socio-cultural conditions of each village, and also relating to various farming methods and techniques. This can be effectively done through a network of Rural Knowledge Centres (RKCs) across the country. The principles of social inclusion, gender equity, reaching remote areas and remedying regional imbalances should be inbuilt prerequisites in the design of the RKCs. With a system of rural Knowledge Centres in place, families in rain-fed and dryland areas can access their information needs with facilitation from a district level consortium, and can raise their queries. This arrangement can be used in skill building at the local level and information empowerment with the help of contemporary Information and Communication Technology (ICT) methods, using the practice of just-in-time instruction.

2. Apart from information related to farming, rural women and men urgently need access to healthcare information. Increased health expenditure is an important cause of farmers' indebtedness, leading occasionally to suicides. Information on the health status of

livestock and poultry, on-farm and off-farm livelihoods and market-led entrepreneurship opportunities for the poor and the marginalised in rural India need attention. There is also need for promoting functional literacy among the adult illiterate and making learning joyful for the young through interactive pedagogic methodologies.

3. Fortunately, the country is now in a position to take the benefits of the internet, community radio, cable TV and vernacular press to all the 600,000 villages within the next few years. A National Alliance for **MISSION 2007: Every Village a Knowledge Centre** has been formed to mobilize the power of partnership among the public and private sectors, academia, mass media and civil society organizations. Article 243 G of Schedule 11 of the Constitution 73rd Amendment Act 1992 on Panchayats, lists agriculture including agricultural education, animal husbandry, fisheries, forestry, education, technical training and vocational education, adult and non-formal education among the responsibilities of the Panchayats. The Rural Knowledge Centres can be located either in Panchayat buildings or rural schools or Study Centres of Open Universities, so that there is social inclusion in access. These Rural / Village Knowledge Centres (VKCs) can be run by self-help groups (SHGs), after the members of the SHGs are thoroughly trained. NABARD could develop a special scheme for supporting ICT SHGs. The community owned VKC will connect to the Internet and use a variety of local methods (e.g. notice boards, loud speakers, local daily etc.) for dissemination. The VKC will provide access to key local information on entitlements, governance and infrastructure, while supporting access to dynamic information on weather, markets and online public services. The centre will also be a retail outlet for a host of online learning, skill building, and training services that are fast coming up in the country, providing information on employment opportunities, and will link to new and emerging extension services.

4. The public policy support and public investment needed for this initiative are indicated in this chapter. We should lose no further time in improving our agricultural efficiency and competitiveness through rural knowledge connectivity. Hence, the recommendations made herein may be examined speedily and appropriate provision made in the Union Budget for 2005-06.

It is important to emphasize that Connectivity, Content, Capacity building and Management should receive concurrent attention. The institutions that can undertake these tasks should be identified and their roles and responsibilities clearly defined. An effective

combination of these enabling agents will help us achieve improved quality of life and sustainable rural livelihoods for millions in rural India, as envisaged under the Common Minimum Programme of the Government.

**5. Immediate Thrust Areas:**

**A. Universal Service Opportunity**

ICT based growth of the service sector and concurrent economic growth have been impressive but largely urban centred. 70% of India is rural and dependent on agriculture and allied activities. But rural India is yet to be brought to the forefront of ICT-led knowledge economy. This segment living in rural and semi-urban areas is however the nation's core strength and would determine the demand and supply base for a range of goods and services. Consumer goods companies, automobile manufacturers, TV and radio producers have proven the strength of this segment by expanding into rural areas. Mobile telephony has followed this trend and proved that the rural markets have a great opportunity to take advantage of ICT tools if the prices are right.

The Universal Service Obligation (USO) Fund offers opportunity to connect the unconnected to the national mainstream by broadband and internet telephony. The goal of reaching all the 600,000 villages can be achieved if the 30,000 BSNL exchanges are extended to rural areas through wireless technologies. Wireless technologies have the potential to develop rural networks on IP to provide unlimited bandwidth on demand and at minimal expenditure. The USO Fund policy must encourage higher bandwidth connections and support developing more innovative bandwidth price fixation formulae. Bandwidth prices may be reduced by reducing International Private Leased Circuit (IPLC) half-circuit prices for international connectivity and domestic lease lines. Telecom Regulatory Authority of India (TRAI) has completed consultations with regard to domestic lease line ceiling tariff as well as IPLC tariff[3]. Their recommendations should address the unused national resource and recognise the need for providing incentives for connectivity projects to reach out to rural areas.

[3] TRAI has recently presented consultation papers on Spectrum Policy, Pricing of IPLC Half-circuit, Domestic Leased Lines, Unified Licensing Policy, and on Rural Connectivity.

**B. Need for Rural ICT Policy**

A rural-friendly ICT policy that recognises the government's fibre network as a national asset and offers concession to those who extend the network to rural India will certainly prove to be a big boost to the rural GDP in the coming years. Out of the 16 terabits of international connectivity, only 0.35 terabits have been lit and less than 0.20 terabits are being used. Most of the corporate and government fibre network combined is now dark. Fibre optic network of Bharat Sanchar Nigam Limited's (BSNL) 30,000 exchanges covers all the 6,000 blocks of India. If only each exchange is extended to 20 villages, the entire country will be covered, and a nationwide e-connectivity network will be a ground reality.

Complementing the new ICT revolution, it is important for the government to recognise the need for the establishment of **community radio stations** at both village and block levels that have the potential to reach out to rural communities. The Supreme Court's ruling in 1995 stipulates that airwaves are public property. The government has recognised the technical feasibility of establishing 4000 community radio stations at no cost. These establishments will extend the government's audiovisual and publicity efforts on various entitlements and programmes and information on technical, socio-economic and health related issues, while empowering the rural community to communicate and develop structures for a knowledge-intensive rural production system.

Community radio, locally owned and managed within a limited range, would offer an inclusive medium to communities, literate and illiterate, men and women, rich and poor, to access locally relevant knowledge, raise concerns and participate in decision making. However, Government policy on Community Radio has opened up licensing only to educational institutions. This excludes Community Radio as an option for the vast majority of village communities. **There is an urgent need to review the existing policy on Community radio with a view to making it more inclusive.** To make this a viable option for local communities there is also a need to revisit the licensing and spectrum fee structures. We should not deny ourselves the power of the community radio in maximising the reach of the internet.

The recent announcement to declare 90% concession on domestic leased lines used for e-Governance service, needs to be extended to the entire country. While this decision will prove useful in reaching government's e-Governance services to rural areas, the same

network will help content providers to provide information services and useful ICT-enabled applications to farming families.

The emergence of Rural Knowledge Centres and info-kiosk movement in our country, promoted by NGOs and corporate sector, have demonstrated that the local panchayats and self-help groups can take advantage of appropriate information and communication technologies and with this facility, they can easily access the scientific and technical knowledge they need, to solve local problems with greater precision.

**6. Rural Knowledge Centres in 600,000 villages in India**

The aim of **Mission 2007: Every Village a Knowledge Centre** is to trigger a knowledge revolution in rural India by setting up ICT based village Knowledge Centres (VKC) in each of the 600,000 villages in the country by the 60th anniversary of India's independence. Success of the initiative requires cooperative mobilisation of resources by concerned departments of government, private sector organisations and civil society groups.

The exercise can commence on a priority basis in 2005-2006 in the 150 districts identified by the Planning Commission for the Rural Employment Guarantee Programme. To start with, 20,000 tele-centres can be set up to cater to 100,000 villages in the 150 districts, with each centre servicing 5 villages. A business plan for the budgetary support required is attached as Annexure I.

**7. Rural Virtual Academicians – the one million Change Agents**

It is important that the knowledge centre in each of 600,000 villages is owned and run by local community members thereby creating a stake in ownership and management. Atleast one woman and one man can be selected from each village as Fellows of the National Virtual Academy (NVA). (The M S Swaminathan Research Foundation with support from the Tata Trusts has established the Jamsetji Tata National Virtual Academy for Rural Prosperity). There is need to select one million Fellows of NVA by 15th August 2007 - the sixtieth anniversary of our independence, through a peer review process. They will serve as the torchbearers of the Knowledge Revolution in Rural India. Several agencies have agreed to support the training of this cadre. These rural academicians affiliated to Panchayati Raj institutions, will be the information providers for the local community and will help to reach the unreached and voice the voiceless.

Government policy must encourage outsourcing of government functions such as digitisation of land records, data entry operations, collation of local data and local resource mapping to the ICT-SHGs and community interest groups that run the Knowledge Centres. This will encourage the Panchayati Raj Institutions and local government structures to utilise these Knowledge Centres for providing accountable and transparent services to citizens. Panchayats can effectively use the VKC as a service provider and revenue earner. Outsourcing from urban to rural India will be a powerful method of bridging the rural-urban digital divide. The active participation of elected women and men members of local bodies is crucial for the success of this movement.

In recent years, the rapid maturity of self-help groups in many parts of India, and the evolution of distance education from postal tuition into IT-mediated learning provide unprecedented opportunities to extend information support to the rural families. SHGs have been linked to the village Knowledge Centres successfully in TN, AP and Pondicherry for micro-enterprise training and marketing of products, while in Maharashtra, considerable progress has been achieved in linking rural IT initiatives to non-formal, non-degree learning.

**8. Support systems for rural knowledge revolution - Recognition of Rural Service Providers and their role in creating and sustaining rural micro-enterprises**

It is important for the government to support pockets of excellence in content streams and offer assistance to those who handhold rural academicians and the Rural Service Providers (RSPs). The community groups that manage the VKC have to be supported by a range of RSPs. These RSPs could include those who extend the national asset of BSNL's fibre network and government's eGovernance programme into rural areas; and those who offer content services to rural people on education, health, and livelihood opportunities. Appropriate incentives to these RSPs would enable employment growth in the form of rural information entrepreneurs. A low or no interest rate lending to rural entrepreneurs, ICT-SHGs and Community Interest Groups with support from Panchayati Raj Institutions can spearhead a rural knowledge movement. Credit institutions such as NABARD and SBI are increasingly interested in rural lending that is founded on knowledge and sound information, and authentication of data; information and training by the established institutions will strengthen the capacity of rural families in credit-seeking efforts. A **venture capital fund** can also be established to support RSPs and VKCs.

The RSPs are vital for creating sustainable rural micro-enterprises in the area of agriculture, food processing, animal husbandry, fisheries, sericulture, handicrafts, rural industry and even in IT-based services (which rural India could provide to urban areas). The RSPs are all the more vital in developing a rural to urban e-Commerce service network. As a part of the government's eGovernance rollout, ICT entrepreneurship workshops could be initiated.

The viability, sustainability and scalability of the rural knowledge revolution movement will ultimately depend upon the relevance of ICT to the lives of rural families. Private sector industry can play a major role in linking rural products with markets. This will help in mitigating farmers' distress. The rural economy can flourish if ICTs are leveraged to create new livelihood opportunities in the areas indicated through training and capacity building. Private sector and civil society organisations should be encouraged to develop ICT-based supply-chain management systems to sell rural products.

**9. Establishment of National Digital Gateway for Rural Livelihood Security**

The support system for a rural knowledge revolution should be complemented, by establishing a **National Digital Gateway for Rural Livelihood Security**. There is need for investment in creating databases relevant to rural needs. For example, a decade ago, a National Agricultural Drought Assessment and Monitoring System was set up under the National Remote Sensing Agency (NRSA) to facilitate improved decision making by farmers in the *kharif* and *rabi* seasons. The potential of this system needs to be harnessed for giving proactive advice to farm families on land and water use planning. The architecture of such a gateway should be based on currently available digital content from diverse agencies, ranging from the ICAR to the NRSA and ICRISAT, with a focus on improving livelihood security in rural India. Every participant agency should be encouraged to create well-adapted and annotated digital content (maps, numeric data or documents etc.) in a manner accessible to non-specialists. About 20 such web servers can be linked by a gateway computing platform through which a user can access the information.

**10. Farmers' Distress Call Centres**

Livelihood opportunities in rural areas can be safeguarded by setting up **Farmers' Distress Call Centres** in every State of the country. This is especially important in the context of farmers' suicides. These distress centres will mediate on behalf of the farmers and

enable the experts and those who can offer solutions to the problems faced by the farmers. Application of ICT tools such as telephone and voice mail would enable farmers to obtain timely advice.

**11. The role of Civil Society in eGovernance Programme**

Civil society groups can provide inputs for the government's eGovernance policies. Such groups can advise the government on appropriate methods of automating government processes and offering ICT-enabled services and applications for rural communities. Such groups can also ensure sponsoring civil society and professional organisations involved in building capacity among the ICT-SHGs and community interest groups in rural areas.

**12. Principal components of Mission 2007 and methods of implementation.**

There are four major components to Mission 2007. These are:

(a) **Connectivity**: As already mentioned, India is in the fortunate position of being able to connect all the 600,000 villages speedily. BSNL and all the other agencies working on connectivity, including educational institutions like IIT, Chennai, should join together in fostering the rural connectivity movement.

(b) **Content**: This has to be location specific and need based. Education, health, water, weather, market and technological empowerment should all receive priority attention. A wide range of agencies will have to be involved for creation of relevant content. A blend of non-formal training approaches, content creation in a virtual mode and its use at Village Knowledge Centre is necessary for making a mass impact. A multi-institutional and multi-disciplinary **Content Consortium** can be formed in every district.

(c) **Capacity Building**: This is a very important component of the Action Plan and again a District level **Capacity Building Consortium** can help to organise capacity building programmes using the pedagogic methodology of learning by doing. The Academicians of the Jamsetji Tata National Virtual Academy can become master trainers.

(d) **Care and Management**: The care of the equipment and management of the Knowledge Centre can be undertaken by trained ICT-SHGs linked to Panchayats.

In this manner, an integrated self-sustaining and self-replicating system of Village Knowledge Centres can be built up. These Centres will be powerful instruments for making the Right to Information (at the correct time and place) a reality.

| Sl No | **Government Support**<br><br>**Policy Initiatives and Public Investment** | **Rationale / Benefits** | **Department concerned** |
|---|---|---|---|
| 1. | A **Rural ICT policy** | Reaching the unreached in rural areas through ICT revolution | Ministry of Communications and Information Technology |
| 2 | Declaration of BSNL's 30,000 exchanges as a national asset | Enhanced usage of unused national resource of India; Revenue for BSNL from the usage | |
| 3. | The USO Fund as a powerful instrument for rural connectivity | Extension of private sector and government's efforts in providing rural connectivity; Involvement of civil society in administering the Fund; A definite plan for reaching the unreached using this Fund | |
| 4. | Establishment of innovation fund for rural connectivity (allocation of Rupees 100 crore) | Fast tracking rural connectivity and extension of BSNL's fibre network through wireless connectivity; Such an effort could be supported by a range of IT companies and Civil Society groups | |
| 5. | Incentives and tax holiday for Rural Service Providers from the USO Fund (Investment of about Rupees 100 crore) | Support system to Rural Knowledge Centres; establishment of rural connectivity; extending BSNL's network into rural India and extension of eGovernment services to rural communities | |
| 6. | 90% reduction in telecom tariff for RSPs from the USO Fund (allocation of Rupees 300 crore) | Support system to rural Knowledge Centres; establishment of rural connectivity; extending BSNL's network into rural India and extension of eGovernment services to rural communities. | |

| | | | |
|---|---|---|---|
| 7. | Establishment of **National Digital Gateway for Rural Livelihood Security** (allocation of Rupees 100 crore @ Rs.10 crore each by concerned ministries) | Development of databases to meet the rural needs in the area of primary and vocational education, agriculture, food processing, horticulture, animal husbandry, micro credit, micro enterprises, etc; Application and content support to the 600,000 Knowledge Centres by providing appropriate content packages based on the rural needs; | All departments of Government to mainstream ICTs; develop digital libraries of data/ information based on rural needs and outsource digitisation work to RKCs |
| 8. | Outsourcing Government services to rural Knowledge Centres (cost saving options to the Government) | Sustainability of rural Knowledge Centres run by ICT-SHGs/ Community Interest Groups/Representatives of Panchayati Raj Institutions; Greater incentives to initiate Rural Knowledge Centres; wage employment in the 150 districts identified by the Planning Commission | |
| 9. | A **Community Radio Policy** in India | A people-friendly government policy honouring the Supreme Court Ruling in 1995 that airwaves are public property and taking into account the needs of rural India | Ministry of Information and Broadcasting |
| 10. | Issuing licences to 4000 community radio stations in India (no cost to government; revenue collection in the form of nominal licence fee) | A rural knowledge revolution enabled through community radio; a major benefit of ICT revolution as an additional channel to create awareness about eGovernment and public services to people; a free and fair and relevant community-led information service to users | |
| 11. | Financial support to establish Rural Knowledge Centres (allocation of Rupees 50 crore) | Support for set-up cost of Rural Knowledge Centres in each Panchayat and village in the country; Bright possibilities of setting up **a Knowledge Centre in each Panchayat** run by ICT-SHGS/ Community Interest Groups with support from local Panchayats | Ministry of Panchayati Raj |

| | | | |
|---|---|---|---|
| 12. | Incentives and support to information entrepreneurs (Rupees 100 crore) | Establishment of one million rural academicians as the torch bearers of knowledge society and the facilitators of enhanced rural GDP; Possibilities of setting up **50,000** Knowledge Centres and building capacity among 100,000 rural entrepreneurs. | Ministry of Panchayati Raj |
| 13. | Setting up of 20000 VKCs in the 150 districts – (Rupees 500 crore in the first year and support for operational costs over a five-year period on tapering basis as per Annexure I) | Incentives to one million resource persons/rural academicians from the ICT-SHG, Community Interest Groups and Panchayat Raj Institutions who run the Rural Knowledge Centres; Set up 20,000 centres in 2005 | Ministry of Panchayati Raj or USO Fund under Ministry of Communications and Information Technology |
| 14 | Establishment of Farmers' Distress Call Centres in each State (Rupees 100 crore)<br>Setting up of 30 Centres | Information advice to farmers living under stress in drought and suicide hot spots in the identified 150 wage employment districts; Such an effort will save lives of the thousands of farmers in distress; also save these farming communities from accessing credit from unauthorised sources while at the same time offer appropriate advice and support for accessing resources. | Ministry of Agriculture |
| 15. | Low Interest Loan for VKC Operation (Rupees 100 crore) | Incentives to one million resource persons/rural academicians from ICT-SHG, Community Interest Groups and Panchayat Raj Institutions who run the Rural Knowledge Centres; ICT entrepreneurship and employment opportunities for 100,000 people in rural areas. | NABARD and Banking Institutions |

**Annexure I**

# Setting up a Village Knowledge Centre

VKC space provided by: Panchayat.

Infrastructure Required:

| | (amt in Rupees) |
|---|---|
| Computer (Multimedia) | 50,000 |
| Printer | 7,000 |
| Modem | 3,000 |
| Scanner | 8,000 |
| Web Camera | 6,000 |
| UPS | 3,000 |
| Telephone Set | 3,000 |
| Software License | 10,000 |
| Electrical Equipments | 8,000 |
| Internet Package | 2,000 |
| | **Rs. 100,000** |
| Wireless Connectivity | |
| Two phones | Rs. 20,000 |
| **Total** | **Rs.1,20,000** |

(Government should facilitate providing connectivity through BSNL, ISRO and MIT).

Basic Cost of setting up a Knowledge Centre is Rs.120,000

Additional Cost
Power Supply through Generator Rs.30,000
or
Solar Power Rs.1,25,000 (possible subsidy from Ministry of Non-Conventional Energy Sources)

Assuming use of generator, **Rs.1,50,000** (Rs.1,20,000 + Rs.30,000) is the **basic cost** for setting up the infrastructure of a VKC.

Minimum Running Cost
Salaries for two - Rs. 6000/- per month = Rs.72,000 per annum
Telephone, Maintenance, Adminstration @ Rs.2500 per month = Rs.30,000 per annum
Total: Rs.72,000 + Rs.30,000 = Rs.102,000 per annum

**Basic Cost + Running Cost** = Rs.252,000 (Rs.1,50,000 + Rs.1,02,000) in the first year, say **Rs.2,50,000**

Therefore Cost of Setting up and operating a VKC will be Rs.250,000 in the first year.

From the second year there will only be the recurrent cost of Rs.1,00,000 per year.

A provision may be made under the USO Fund or Ministry of Panchayati Raj for setting up 20,000 VKCs in Panchayats in the 150 districts, each VKC catering to a cluster of five villages (population served 10,000 – 12,000).

This will require a one-time allocation of **Rs.500 crore** in the first year. Subsequently the running cost maybe met on a tapering basis over a four-year period from the second year onwards, with 20% of the cost being self generated cumulatively in each successive year and the centre being fully self-supporting from the 6th year onwards

The Centres will be powerful instrument for making the right to information (at the correct time and place) a reality. Content Creation and Capacity building of trainers and users will be additional costs over and above this basic cost. This will have to be met by a pool of agencies (Government, Private Sector, Civil Society Groups) in the initial years and may be coordinated by the District Level Content and Capacity Building Consortia.

(Amounts in Rupees)

| | 1st yr | 2nd Yr | 3rd Yr | 4th Yr | 5th Yr |
|---|---|---|---|---|---|
| Per VKC | | | | | |
| Capital Cost | 150000 | | | | |
| Operating Cost | 100000 | 80000 | 60000 | 40000 | 20000 |
| | | 20000* | 40000* | 60000* | 80000* |
| | 250000 | 100000 | 100000 | 100000 | 100000 |

*self-generation through fee-based training programmes and services

| | | | | | |
|---|---|---|---|---|---|
| Total Allocation for 20,000 centres | | | | | |
| | **500 cr** | **160 cr** | **120 cr** | **80 cr** | **40 cr** |

# CHAPTER IX

## FOOD AND NUTURITION SECURITY

The terms of reference to the National Commission on Farmers call upon the Commission to work out a comprehensive medium-term strategy for food and nutrition security in the country. Based on widespread consultations and on the findings reported in the Food Insecurity Atlases of Rural and Urban India prepared by the M.S.Swaminathan Research Foundation and the U.N.World Food Programme, the following 7-point Action Plan is recommended for inclusion in the Union Budget for 2005-06, under the title "Mission 2007: A Nutrition Secure India". The Tenth Plan calls for a paradigm shift from food security at the national level to nutrition security at the level of every child, woman and man. NCF suggests the following definition of Nutrition Security: "to ensure physical, economic, social and environmental access to balanced diet and clean drinking water for all and for ever".

Physical access is a function of production, while economic access is a function of purchasing power based on sustainable livelihood opportunities. Social access calls for gender equity in access to food, while environmental access involves the impact of drought and floods on food availability as well as sanitation and environmental hygiene. Balanced diet demands concurrent attention to protein calorie under-nutrition and to hidden hunger caused by the deficiency of micronutrients like iron, zinc, iodine and Vitamin A in the diet. Adequate nutrition and education are two basic requirements for a healthy and productive life. Malnutrition leads to significant macroeconomic costs. **It has been estimated that malnutrition is reducing national GDP by more than 3** percent**.** Maternal and foetal undernutrition resulting in the birth of babies with low birth weight (2.2 Kgs or below) represents the cruellest form of inequity, since it denies a child even at birth an opportunity for the full expression of the child's innate genetic potential for physical and mental development. According to the surveys of the National Nutrition Monitoring Bureau, at least 200 million children, women and men suffer from protein-calorie malnutrition. The extent of malnutrition varies among and within States, but is

higher in rural India as well as among women and girl children. There is a close correlation between hunger and poverty and that is why the eradication of hunger and poverty occupies the first place among the U.N. Millennium Development Goals.

Nutrition Security Action Plan

a) Adopt a life cycle approach in the delivery of Nutrition Safety-net programmes under the aegis of Panchayati Raj institutions.

The principal safety-net programmes currently in operation are the following.

- The targeted PDS designed to provide subsidized foodgrains to all households below the poverty line.
- The ICDS aimed at supplementary nutrition, growth monitoring, nutritional education for pre-school children and expectant/nursing mothers.
- The National Programme of Nutritional Support to Primary Education.
- The National Food for Work Programme in 150 rain-fed districts and the Rural Employment Guarantee Scheme aimed at providing 100 days of employment per household per year.
- The Annapurna Scheme aimed at providing relief for the aged poor (10 Kg. of foodgrains per month per person free of cost)
- The Antyodaya Anna Yojana aimed at the poorest of the poor.

There are also special schemes to promote breast feeding and complementary feeding in the case of infants and to address micronutrient deficiencies like iron, iodine and Vitamin A. Kishori Shakti Yojana is a special intervention designed for adolescent girls in the age group 11-18 years using the ICDS infrastructure. A Nutrition Monitoring, Mapping and Surveillance System has been established through ICDS. A National Nutrition Mission has been initiated under the Department of Women and Child Development of the Ministry of Human Resource Development.

Inspite of all these initiatives, endemic hunger arising from poverty is widespread and seems to be on the rise. The incidence of Low Birth Weight babies is also very high. Hence, there is need to streamline the delivery mechanisms by introducing a horizontal dimension to the numerous vertically structured programmes. The whole life cycle approach will cover the vulnerable sections from birth to death in a holistic manner. Such an integrated nutrition delivery system is best established under the Panchayati Raj institutions. Transaction costs can be reduced by adopting a whole life cycle approach.

b) Fill gaps in on-going programmes.

It is widely recognized that young infants in the age group 0-2 are not reached through ICDS. Yet, this is the stage when brain development is proceeding at a fast pace. Additional support will have to be provided to pregnant and nursing mothers to ensure both adequate foetal nutrition and later, infant nutrition. Another gap which needs to be filled up is the provision of nutrition support to HIV/AIDS-Tuberculosis infected women and men in rural areas. A drug based approach alone is not adequate to help farmers and farm labour regain the necessary strength for working efficiently on the farms. It is suggested that during 2005-06, the following provisions may be made to fill these critical gaps:

- Supplementary nutrition for adolescent girls, pregnant women and infants (0 to 2 years) – 250,000 tons of foodgrains.

- Nutrition support for HIV/AIDS-Tuberculosis affected persons in rural areas – 100,000 tons of foodgrains

c) Provide Household Entitlement Cards to all eligible persons.

Information empowerment is vital for ensuring that entitlements reach the poor. Access to entitlements can be improved by issuing to all eligible families Household Entitlement Cards which provide precise information on their entitlements to social and nutritional safety net programmes and on methods of accessing them.

d) Introduce an Integrated Food Guarantee Programme, combining the features of the National Rural Employment and Food for Work schemes. Such a programme should be gender sensitive and should enlarge the scope of work in the case of women to include items like organizing and managing crèches and child care centres for working mothers, assisting the Anganwadi Centres in implementing the immunization, health and supplementary nutrition programmes, the management of Food and Fodder Banks, etc. Using foodgrains as cash has the additional advantage of stimulating increased production, since farmers will produce more if the consumption capacity goes up.

e) Promote the establishment of Community Food and Fodder Banks by SHGs, to enable the needy to borrow grain when required and repay soon after harvest. Community Food Banks will also help to widen the food basket by including locally grown millets, legumes and other food crops. Such underutilized or "orphan" crops are also often rich in protein, minerals and vitamins.

An allocation of Rs. 75 crore is recommended for setting up 10000 Food Banks on priority basis in 38 of the 150 districts where the SC/ST population is more than 50 percent, in 2005-06 as discussed in detail in Chapter II. In addition, an allocation of Rs. 25 crore is recommended for setting up Community Fodder banks. Livestock and livelihoods are intimately related and therefore it is equally important to provide for setting up fodder and feed banks in the 150 districts and other arid and semiarid areas. Landless labourers have to essentially depend on stall-fed animal husbandry due to lack of grazing land. Fodder Banks are very crucial in such areas for sustenance of livestock. The limited experience of the M S Swaminathan Research Foundation in setting up community managed Fodder banks in Ladakh shows that they are of great relevance and use to communities in these areas.

f) Launch a home nutrition garden movement for the cultivation and consumption of fruits and vegetables and also link the Horticulture and Dairy Missions with the Nutrition Security programme. High value dairy, fruit and vegetable production and marketing will also lead to an increase in the income of farmers.

g) Fighting Hidden Hunger

More than a third of the country's population, particularly women and children suffer from micronutrient deficiencies, especially Iron, Vitamin A and Zinc. Along with a frontal attack on poverty induced endemic hunger, a movement to eradicate hidden hunger caused by the deficiency of micronutrients in the diet should be launched. All Antyodaya households may be supplied with either a Vitamin premix or multiple fortified salt. The annual cost of such support will be about Rs.200 per family of 5 persons per year. **A provision of Rs.200 crore may be made in the budget for fighting iron deficiency anaemia among pregnant women and other micronutrient deficiencies like zinc, iodine and Vitamin A.** The hidden hunger elimination programme can be implemented through Panchayats and local bodies.

h) Drinking Water and environmental hygiene

Clean drinking water is becoming a luxury. It is important that the programmes of the Rajiv Gandhi Drinking Water Mission are implemented with speed, with the active involvement of Panchayati Raj institutions. Provision of toilets and improvement of environmental hygiene and sanitation require utmost priority.

i) Hunger Free India

**Set up a National Committee for a Hunger Free India** under the Chairmanship of the Prime Minister , with the Union Minister for Food and Agriculture and Co-Chair, for preparing a road map for launching a **National Food Guarantee Programme**, combining the features of Employment Guarantee and Food for Work Programmes. The National Committee should include in its membership Chief Ministers of States characterized by the high incidence of hunger hot spots.

The aim of the **National Food Guarantee Programme** is to enable every child, woman and man to have an opportunity for a healthy and productive life. While nutritional safety net programmes are a must at present, ultimately, every one should be enabled to earn his or her daily bread. This will call for a revolution in sustainable livelihood opportunities.

If the above programme is implemented with dedication, it should be possible to achieve a substantial freedom from endemic and hidden hunger by 15th August 2007 which marks the 60th anniversary of our independence.

# CHAPTER X

## LIVESTOCK AND LIVELIHOODS

The livestock sector plays a vital role in the rural economy of India. Also, the ownership of livestock is more egalitarian. Unlike land, the poor own nearly 80% of the livestock. Therefore, livestock and livelihoods have an intimate relationship particularly in arid and semi-arid areas. The most important sector is dairy, which alone contributes approximately Rs 100,000 crore to GDP. Relative to this huge contribution, investment in the dairy sector has been extremely low. The dairy industry provides employment to 18 million people (9.8 million primary and 8.6 million subsidiary employment), not including persons employed in sale, re-processing and transport of animal products at secondary market level. Of these, 70% are women and 67% have no access to land, credit or technology. Of the 70% of rural households that own livestock, the vast majority are either landless or marginal farmers. Therefore, economic development of the dairy industry can be a powerful lever for increasing rural income and employment as well as eradication of poverty.

2. The dairy sector is also vital for abolishing malnutrition and achieving food security. In a country where 42% of the population consume only a lacto-vegetarian diet and most of the rest of the population consume comparatively low levels of animal protein, milk products constitute a major source of protein required for a balanced diet. Per capita milk consumption in India has risen dramatically over the past three decades but still remains 25% below the world average. This figure appears even less adequate in view of the low levels of consumption of non-dairy protein.

The growth of the dairy industry has largely been achieved by the organization of producers processing and marketing cooperatives, the promotion of crossbred stock and delivery of veterinary services. Yet, only 35% of milk production is in the organized sector, which means that most dairy farmers lack access to these critical services. At the same time 70% of India’s milk production is generated by only seven States, indicating

that there is still substantial scope for extending the White Revolution to low production regions.

While India's total milk production is the highest in the world, productivity per animal is extremely low by international standards. Milk yields of indigenous animals range from a high of 7.5 kg per day in Gujarat to 5 kg or less in some areas. Yields of breedable cows remain more than 60% below world averages and a third to two-thirds lower than average yields in most developed countries. The most important factors contributing to the low yields are the poor genetic stock of the milch cows and the lack of nutritious fodder and feed. In spite of an extensive breeding programme, out of approximately 220 million cattle in the country, only about 10% are cross-bred.

The most significant deficiency in the dairy industry is what the Planning Commission's Working Group on Animal Husbandry & Dairying termed the "alarming gap between supply and demand" for fodder. It is estimated that current levels of fodder production are sufficient to meet the needs of only 47% of India's animal population. Total production of dry and green fodder in the country is approximately 900 million tonnes. Even assuming that the entire quantity is used for feeding the cattle population, it works to only 10 kg per animal per day, as against a requirement of 35-40 kg for optimal milk production. **Put simply, India's animal population is grossly underfed.**

3. The primary cause for this deficit is the lack of a well-organized system for production and distribution of nutritious fodder crops. Crop residues such as paddy straw, which constitute the major portion of animal feed, lack the nutritional content required for healthy growth and high productivity. The portion of harvested crop residues is also declining with the spread of mechanized harvesting. These are however opportunities for enriching rice straw and other cellulosic material with urea and molasses.

The area under permanent pastures is declining and productivity is falling due to overgrazing. The greatest potential for increasing the availability of nutritious fodder is by intensive cultivation of hybrid fodder crops. Few farmers recognize that the cultivation of enriched fodder grasses can be as remunerative as sugarcane cultivation and not subject to the same vagaries and fluctuations as the sugar industry. High yielding

varieties of fodder such as Bajra-Napier Hybrids and Lucerne in combination can yield about 400 tonnes per ha. under irrigated cultivation and return a net profit of Rs 35,000 per ha. or more on a cultivation cost of Rs 10,000 to 12,000. Since even small areas can be cultivated, even marginal farmers can generate high incomes from this crop. Fodder grasses can also be cultivated as an intercrop with jatropha or as a dryland crop, returning a net income of Rs 7500 per ha. Dairying and fodder production combined offer enormous potential for raising farm incomes on irrigated lands. Sylie-pastoral systems are ideal in many semi-arid areas.

The enormous economic potential of cultivated fodder production has been obscured by the fact that the buyers for fodder are among the poorest section of the population. The absence of an organized market for bulk quantities of fodder grass has been a significant deterrent to widespread commercial cultivation of fodder crops. This can be remedied by utilizing the dairy cooperatives as marketing and distribution organizations for fodder crops. A contract farming model can be developed by the dairy industry similar to the system of registered crops adopted by the sugar industry. This can provide access to bank credit, quality inputs, an assured floor price and guaranteed market for fodder growers. At the same time, the dairy cooperatives can agree to supply fodder grasses to their members in exchange for milk supplied, ensuring a ready channel for distribution and a means for impoverished dairy farmers to finance the increased dietary inputs required to raise their milk production and incomes. Loans for procurement of milch animals can also include a allocation for supply of fodder in kind and in exchange for milk through the local dairy cooperative.

Landless agricultural labour families can take to stall-fed animal enterprises, provided they are helped through Fodder and Feed Banks. In the cold desert area of Ladakh, fodder is a major constraint for Pashmina sheep. The establishment of Fodder and Feed Banks can help to promote higher productivity of sheep.

4. Business Plan for Fodder Development

1. Objective:

    a. Increase productivity of milch cows through improved nutrition.

b. Raise the incomes of dairy farmers.

c. Introduce leguminous fodder crops like berseem and lucerne in the rotation.

d. Raise the production of fodder in the country by 50 percent.

2. Strategy:

a. Introduce a contract farming system for fodder production by which dairy cooperatives and private dairies register cultivation of fodder crop lands in the same manner that sugar factories register sugarcane.

b. A tie-up between the dairies, the growers, financial institutions and input suppliers can ensure timely access to credit, quality inputs provided in kind and an assured market at remunerative prices.

c. Dairies can also be required to operate nurseries for the production of fodder seeds.

d. Veterinary and Animal Science Universities should help to establish Farm Schools for providing integrated training on breeding, feeding, management of diseases and marketing.

3. Actions Required by Government:

a. Field level demonstration plots should be established in all dairy regions to demonstrate the productivity and profitability of hybrid green fodder crops and fodder legumes and popularize their cultivation.

b. Establish a mandatory requirement for all dairy cooperatives to contract with farmers for production of fodder equivalent to 25% of the estimated total consumption of fodder by cooperative members.

c. **A Livestock Food Corporation** may be set up jointly with NDDB, SFAC and NABARD to stimulate and support SHGs in the production and consumption of nutritious fodder and feed by large and small ruminants.

d. The production of quality fodder seed could be outsourced to private growers on a buy-back arrangement, subject to quality certification of the seed by appropriate government agencies.

e. Special bank credit schemes should be made available to dairy farmers whereby they can obtain loans for fodder in kind on a daily or weekly basis in exchange for payment or delivery of milk.

f. NDDB can help to organise Farm Schools for Dairying in the farms of outstanding farm women and men who have mastered the science and dairy farming.

5. **Poultry Farming**

In the past, several small-scale, rural poultry units, promoted under the Integrated Rural Development Programme (IRDP) and other employment - oriented schemes have not been so successful, mainly due to :-

a. Uneconomical size of the farms

b. Lack of training

c. Inadequate technical support

d. Inadequate marketing support

e. Absence of proper financial/managerial guidance

To overcome these deficiencies and to help the small scale rural poultry units operate successfully, we propose the concept of **Poultry Estates**.

The salient features of this concept are as under:

a. There would be a Central Unit – a Mother Unit – located in a cluster of villages.

b. Under the umbrella of this mother unit, there would be several small Production units, each owned and managed by an individual farmer or a single family or a self-help group.

c. The mother unit would take care of all the critical aspects of the operations like, brooding and rearing upto point of lay, vaccination etc. and then supply the ready – to – lay birds to the individual entrepreneurs.

d. The participants would then take care of the simple aspects of the operation like feeding and watering of the birds, and collection of eggs.

e. The mother unit would also prepare and supply balanced feed; provide technical assistance; and marketing support.

f. The mother unit would also handle the finance i.e. it collects the eggs, markets them; and out of the proceeds, after deducting the cost of birds, feed, etc., and repayment to the bank, would pay the balance to the concerned small scale poultry farmers.

The concept of Poultry Estate thus involves decentralised production supported by key centralised services in such areas as breeding, feed production, disease management and marketing.

## 6. General Recommendations

There is urgent need for launching a **Sanitation Literacy** programme among all engaged in farm animal rearing (cows, buffalos, sheep, poultry) to avoid infection of milk or eggs with Salmonella or other mycotoxin producing organisms. If the sanitary conditions under which farm animals are reared are not improved, it will not be possible for us to capture or retain external markets.

Eternal vigilance is the price of a stable and successful livestock industry. It is important to screen rigorously imported animal products for pathogens which could spell disaster to our farm animals including poultry. SPS measures should be such that invasive alien species of pests and pathogens do not get entry into India.

# CHAPTER-XI

# BEYOND TSUNAMI: SAVING LIVES AND LIVELIHOODS

## Recommendations for Alleviating Fisher and Farm Families' Distress and for Rehabilitation

1. The Prime Minister has rightly stressed that every calamity presents also an opportunity for equipping ourselves to face with greater confidence and competence similar calamities in the future. The Government of India has announced that a Tsunami Early Warning System as well as a National Disaster Management Authority will be set up soon.

2. Relief measures are in progress on an unprecedented scale, thanks to intensive and extensive efforts by the Central and State Governments, national and international Civil Society Organisations (NGOs), Private and Public Sector Industry, academia, the mass media and bilateral and multilateral donors.

3. Fifteen days after the titanic Tsunami hit our coast and islands, we are in a position to begin rehabilitation efforts in three time dimensions.

A. **Immediate (January – March, 2005)**

- Water, shelter, sanitation, health and revival of livelihoods.
- Psychological rehabilitation
- Repair of catamarans
- Achieving convergence and synergy among all on-going programmes with similar objectives (**this is an urgent task**)

B. **Medium Term (2005-07):**

- Ecological rehabilitation

- Agronomic rehabilitation
- Economic rehabilitation
- Disaster preparedness, mitigation and management

C. **Long Term (2005-10):**

- Strengthening environmental defense systems
- Enlarging opportunities for sustainable livelihoods based on a pro-nature, pro-poor, pro-women orientation to technology development and dissemination.
- Improving the productivity, profitability and sustainability of agriculture and fisheries.

A. **Immediate:**

Psychological Rehabilitation:

It will be necessary to form teams of men and women psychiatrists and trauma counsellors who can cover the severely affected areas during the next few weeks to bring comfort and confidence to those who have lost their dear and near ones. Fishermen will have to be assisted in overcoming their fear of the sea. Farmers also need technical help and moral support. The professional / counseling sessions could be organized by appropriate civil society organizations in association with Panchayats. Those living in relief camps need particular attention. To the extent possible, destitute women and orphaned children should be rehabilitated in their own community and should not be herded in destitute homes, either old or new.

Livelihood Rehabilitation:

*A Special Food for Livelihood Revival and Eco-protection programme* should be initiated immediately in all the affected areas. Such an open-ended Food for Work Programme, which can be sanctioned for a year in the first instance, **should aim to create assets for the Tsunami ravaged families**, and should not solely be community centred, as in the

case of normal Food for Work programmes. The concept of work under this special programme should include items such as:

a. Rebuilding houses

b. Repairing and building fishing boats and vessels

c. Rebuilding jetties, access roads and market yards

d. Rebuilding schools

e. Rebuilding health care centres

f. Establishing day care centres and crèches for children

g. Eco-restoration programmes like rehabilitation of mangrove wetlands and reclamation of soils inundated with sea water.

The precise priorities can be developed for each village in consultation with local Panchayats and affected families. **It is suggested that about 300,000 tonnes of food grains may be allotted immediately for this special programme,** which will allow Tsunami affected families to have access to food while they are rebuilding their lives and livelihoods, as well as essential infrastructure for human resource development.

B. **Medium and Long-term:**

These programmes should cover all families along the coast – both fisher and farming families, including the families of those who have no assets like land, livestock or fish pond. They fall under three broad groups.

i. <u>Strengthening the ecological foundations of sustainable human security:</u>

This programme will include the following:

a. Initiating a coastal *Bio-shield* movement along coastal areas, involving the raising of mangrove forests, plantations of *casuarina, salicornia, laucaena, atriplex,*

palms, bamboo and other tree species and halophytes which can grow near the sea. They will serve as speed-breakers under conditions of coastal storms, cyclones and Tsunami. They will in addition serve as carbon sinks, since they will help to enhance carbon sequestration and thereby contribute to reducing the growing imbalance between carbon emissions and absorption. Mangroves are very efficient in carbon sequestration. They also promote sustainable fisheries by releasing nutrients in the water. In addition, they will provide additional income and make coastal communities eligible for *carbon credit*.

The *Coastal Bio-shield* can also involve agro-forestry programmes, like the intercropping of casuarina with hybrid pigeon pea (*cajanus cajan*) or Red gram, to be undertaken by farming families. Thus, the Bio-shield movement will confer multiple benefits to local communities as well as to the country as a whole.

b. *Promote Peoples' Participation* in the conservation and enhancement of mangrove and other coastal wetlands, as well as coral reefs and coastal and marine biodiversity.

*A Participatory Mangrove Forest Management Programme* on the basis of the guidelines already developed by the M S Swaminathan Research Foundation (MSSRF) should be introduced. The Joint Mangrove Forest Management is based on the successful model of Joint Forest Management already in progress in most parts of India. The super cyclone havoc in Orissa and the current Tsunami tragedy have created widespread awareness among the people on the role Mangrove forests play in reducing the fury of cyclonic storms and tidal waves.

c. Promote the organization of *Community nurseries* of Mangrove species and other appropriate tree species chosen under the coastal Bio-shield and agro-forestry programmes. Techniques for raising such nurseries have been standardized by MSSRF. Community nurseries can be raised under the auspices of both Forest Departments and Panchayats. Where appropriate, such nurseries can be raised on

the basis of a buy-back arrangement. Farm families can raise nurseries / produce seeds of crops chosen for the agro-forestry programme.

d. *Regeneration of Fisheries and fostering a sustainable fisheries programme:*

The new fishing vessels and nets should be designed in a manner that they do not disrupt the fish life cycle by catching young ones and also do not destroy sea grass beds, which serve as habitats for dugongs. The calamity provides an opportunity for achieving a paradigm shift from unsustainable to sustainable fisheries.

e. *Raising artificial coral reefs:*

The work done in the Gulf of Mannar area indicates that artificial reefs can stimulate fish breeding and revival. These can be laid and managed by fisher self-help groups (SHGs). NABARD can develop a special programme to promote the growth of such SHGs.

f. *Managing Marine Biosphere Reserves in a Trusteeship Mode:*

A trusteeship pattern of management of coastal bio-resources should be fostered. This will help local communities and government departments to manage unique biological resources in a trusteeship mode, *i.e.* people considering themselves as trustees of such assets with a commitment to conserve them for posterity. A beginning has been made in the Gulf of Mannar Marine Biosphere Reserve, but this system needs to get institutionalized all along the coast as well as in the Andaman and Nicobar and Lakshadweep group of islands.

g. *Housing for Fisher families:*

The new houses should respect the 500 meter restriction and should be cologically designed. If all fisher folk had their housing sites on the landward side of coastal roads, the death toll as a result of Tsunami would have been much lower. Anticipatory action against sea level rise also demands a human security driven design of coastal habitations. A group of architects should be assembled for this purpose immediately.

h. *Construction of sea walls and dykes:*

The construction of permanent sea walls can be taken up in places where there is sea erosion due to heavy anthropogenic pressures. The locations for such non-living barriers should be determined on the basis of a carefully conducted erosion vulnerability analysis.

i. *Agronomic rehabilitation : Reclamation of salinised soils:*

Sea water ingression has led to soil salinisation in some areas. A scientific Team consisting of representatives of Agricultural Universities, ICAR (Central Soil Salinity Research Institute) and CSIR may be set up to survey the areas, study the nature and severity of the problem and suggest remedial measures. **This should be done within the next two months, so that farmers are able to resume normal farm operations without losing a crop season**.

j. *Code of Conduct for Coastal Ecological Security:*

The serious loss of life and property caused by Tsunami highlights the vision and wisdom of Smt Indira Gandhi when nearly 24 years ago, she took steps to ensure that no permanent construction is permitted within 500 meters of the high tide. We should not only strengthen this national resolve, but also **develop a code of conduct for construction beyond 500 meters.** Such a code can consist of a

package of rewards for initiatives in the areas of sunward oriented buildings, energy efficient construction, use of wind / tidal / solar energy, rainwater harvesting, use of local construction material, effluent treatment and use of biodegradable material. The coastal ecological security literacy programme should bring to the attention of builders the opportunities now available for mainstreaming ecology in building design and construction.

k. *Vulnerability Mapping:*

Based on an analysis of 100-year data, the areas prone to cyclones and other natural disasters can be mapped. Priority may be given to such areas in erecting bio-shields and in undertaking eco-restoration and erosion prevention measures. Human and agricultural vulnerability to potential changes in sea level should also be mapped. A Consortium of R & D institutions set up by the Department of Ocean Development, Department of Science and Technology, and the Indian Meteorological Department, Government of India, should take up this task immediately.

k. *Sustainable Management of Coastal Land and Water Resources:*

Scientific land and water use planning will have to be done to prevent salinisation of ground water. Land and water use patterns based on principles of ecology, economics and social and gender equity will have to be prepared by Panchayats with the help of ICAR (National Bureau of Soil Survey and Land Use Planning), the concerned Farm University and the Forest, Fisheries and Agriculture Departments of State Governments.

ii. Rehabilitation of Livelihoods and fostering sustainable livelihood security:

The sustainable livelihood security strategy should be based on the principles of *social inclusion and gender equity*. They should cover both fisher and land based farming communities as well as landless labour families. The following steps are needed:

a. *Aquarian Reform:*

This is essential to foster harmony in the use of living aquatic resources by artesenal fishermen operating catamarans, and commercial families operating mechanized fishing boats and trawlers. The major aim of the Aquarian policy should be:

- Conservation of living aquatic resources
- Sustainable use
- Equitable sharing of benefits
- Harmony between artesenal and mechanized fishing.

b. *Integrated capture and culture fisheries : Sea Water Farming:*

Fisher families, particularly women, can take to the rearing of prawns and suitable salt tolerant fish species in canals along the sea coast, using low external input sustainable aquaculture (LEISA) techniques. Agro-aqua farms involving the concurrent cultivation of tree species and rearing of fish and prawns can be promoted to enhance income and employment opportunities. The Tsunami tragedy should lead to the emergence of new sea farming communities, well versed in both production and post-harvest technologies, quality management and value addition.

c. *Establishment of Coastal Biovillages:*

The economy of coastal villages can be strengthened through the biovillage model of rural development. This involves the sustainable use of natural resources and introduction of market driven non-farm enterprises as well as value addition to primary products. It also involves a paradigm shift from unskilled to skilled work, resulting in the addition of economic value to time and labour. The micro-enterprises chosen for being undertaken by SHGs with micro-credit support should be based on both value addition to under-utilised resources and market demand. The coastal Biovillage movement to be fostered by Panchayati raj institutions should be based on a pro-nature, pro-poor and pro-women orientation to enterprise development and adoption. An important component of coastal biovillages should be the establishment of **Aquaculture Estates** which can help to confer the power of scale to fisher families in the production, processing and marketing of fish.

d. *Establishment of a coastal grid of Farm Schools and Demonstration Centres:*

Farm and Fisher families practising the use of natural resources based on principles of ecological economics can be chosen for establishing Farm Schools. Lateral learning among farmers and fisher families will be more effective than formal institutional learning. Both can go together. Demonstration of environmentally sound sea farming techniques should also be organized.

iii. Network of Rural Knowledge Centres (RKC):

The crucial importance of timely information is now widely recognized in minimizing the loss of life caused by disasters like Tsunami. *It is therefore essential that a network of Rural Knowledge Centres is established all along the coast as soon as possible*. Such RKCs will use in an integrated way the internet, community (FM) radio, cable TV and the vernacular press. They will provide

both generic and dynamic information and will help to disseminate locale-specific and demand driven information. They will also serve as an integral part of the National Early Warning system. They can empower fisher, farm and other coastal inhabitants with information on their entitlements to government programmes and attend to other essential needs relating to education, health, weather and market.

*Training should be imparted* in disaster preparedness and management, as well as in trade and quality literacy. Food safety issues and codex alimentarius standards should be highlighted in the training programmes. Even if there is an efficient early warning system, the information will have to reach the unreached, particularly fishermen in sea. Therefore, a network of community radio (FM) centres will have to become an integral part of the coastal area knowledge connectivity. The policy support needed for this programme has already been described and spelt out in detail in Chapter VIII of the Report.

iv. Resource Centres for Capacity Building:

There is need for establishing a network of capacity building centres along the coast. A Resource Centre for Mangrove Forest Conservation, rehabilitation and expansion is urgently needed. There is need for preparing training modules in local languages on a wide range of topics relating to both ecological and livelihood security. Training programmes will have to be organized for SHGs who wish to take up work in the areas of raising community nurseries, eco-restoration, reclamation of salt affected soils, market-led enterprise development and managing Rural Knowledge Centres.

Education, social mobilization and regulation will have to become the pillars of the coastal ecological and livelihood security systems. The RKCs will provide an opportunity to professionals for sustained engagement with local communities.

v. Conclusions:

The Tsunami disaster has provided an unique opportunity for launching through public-private sector partnership an integrated psychological, ecological, agronomic and livelihood rehabilitation programme. To succeed, such programmes should be people centred and managed by local communities with appropriate guidance and support from government and panchayati raj institutions. Government agencies, academia, and local communities should jointly develop Integrated Coastal Zone Management plans which would help to transform sustainable development from a desirable objective into a practical reality.

PROF. M S SWAMINATHAN
CHAIRMAN

NATIONAL COMMISSION ON FARMERS
MINISTRY OF AGRICULTURE
GOVERNMENT OF INDIA

MSS/DB/
15 January 2005

Hon.ble Shri Manmohan Singh
Prime Minister of India
Prime Minister's Office
New Delhi 110 001

Dear Dr Manmohan Singhji

Sub: Reports of the National Commission on Farmers (NCF)

The National Commission on Farmers (NCF) submitted last month its first report titled **"Serving Farmers and Saving Farming"** dealing with ten urgent issues. Early this month, NCF also finalised its recommendations for assisting fisher and farm families affected by the Tsunami disaster to regain their livelihoods. This report titled, **"Beyond Tsunami: Saving Lives and Livelihoods"** was forwarded to you last week.

For facilitating speedy decisions on items for which financial provision is needed in the Union Budget for 2005-06, as well as items relating to policy and administrative reforms. I enclose a concise statement. **In my view, the agrarian crisis will get aggravated if action is not taken on these recommendations**. The six basic principles which have guided our recommendations are:

- Affordability.
- Actionability.
- Accelerated agricultural progress through bridging the wide gap between prevailing scientific know-how and field level do-how.
- Assisting Government to maximize the social impact and benefits of its numerous on-going programmes involving large financial outlays through convergence and synergy in delivery systems.
- Assisting farm families to maximise the benefits of their resource endowments in the areas of land, water, labour and capital.

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- Promoting a symbiotic alliance with rural families by implementing the provisions of article 243G of the 11th schedule of Constitution 73rd Amendment Act of 1992.

With warm regards,

Yours sincerely,

M S Swaminathan

Encl: a/a

# National Commission on Farmers (NCF)

## Recommendations needing urgent attention and action in the Union Budget for 2005-06

Details are contained in the Report "Serving Farmers and Saving Farming" submitted in December 2004.

### Chapter-II

1. Assisting local communities to establish 10,000 **Community Grain Banks** in the hunger hot-spots in the 150 districts identified for the National Food for Work Programme – Outlay: Rs. 75 crore.
2. **Parivar Bima and other policies** for healthcare, accidents and loss of property – Outlay: Rs. 260 crore.
3. **Rural Insurance Development Fund** – Outlay: Rs. 50 crore.

   **Recommended total Allocation: Rs. 385 crore.**

### Chapter-III

4. **Water for Agriculture**

   - Implement a **Million Wells Recharge Programme** during 2005-06, by providing a rebate in the rate of interest provided under the enhanced agricultural credit programme.

   - **Restoring water bodies and promoting water harvesting** – Outlay: Rs. 70 crore for fostering a community water saving and sharing movement.

5. **Soil Health Enhancement**

Establish a National Network of advanced soil testing laboratories capable of testing large volumes of soil samples for 16 macro and micronutrients – 1000 laboratories in all parts of the country, with **500 of them being located in dry farming areas, where there is scope for doubling average yields immediately through addressing the deficiencies of micro-nutrients in the soil**, in addition to attending to the needs for N, P & K. Cost Rs. 50 lakhs per laboratory – Outlay: Rs. 500 crore.

**6. Bridging the growing gap between scientific know-how and field level do-how:**

Establish 50,000 **Farm Schools** in the farms of farmer-achievers who have mastered the art and science of enhancing the productivity, profitability and sustainability of crop and animal husbandry, horticulture, fisheries and agro-forestry. Such farmer to farmer learning has the added advantage of mainstreaming cost-risk-return considerations in farming, since the experience of fellow farm men and women has higher creditability. Government contribution will be in the form of support to the construction of hostels in the farms of participating Farmer Trainers and some remuneration for the time and efforts of the farm family. Provision will also have to be made for the travel, boarding and lodging expenses of farmer-trainers. Priority may be given to horticulture, pulses, oilseeds, millets, tuber crops, medicinal plants, cotton, dairy and poultry farming and inland and coastal fisheries – Outlay: Rs. 150 crore.

**7. Capacity building in post-harvest technology and value addition:**

A post-harvest technology wing may be added to the existing Krishi Vigyan Kendras (KVK), in order to bridge the huge gap between production and post-harvest technologies, particularly in horticulture resulting in considerable post-harvest losses as well as loss in opportunities for value-addition – Outlay: Rs 100 crore.

**8. Enhancing yield, income and employment in dryland farming areas**

- 2000 Largescale Farming systems demonstrations.
- 3000 factor demonstrations to introduce new implements, hybrid *arhar* and new agronomic practices, particularly the application of micronutrients.
- 6000 Small holders Estates.
- 1500 Seed Banks

Outlay: - Rs. 230 crore.

**Recommended total Allocation: Rs 1050 crore**

**<u>Chapter-IV</u>**

**9. New Deal for Women in Agriculture**

- Ensuring women's access to credit, including Kisan Credit Cards.
- Gram Panchayat Mahila Fund. Outlay: Rs 200 crore
- Childcare and other support services for women in agriculture.
- Supplementary nutrition for 0-2 years age group children. Outlay: Rs 500 crore
- Support to Women Self-Help Groups. Outlay: Rs 25 crore
- Engendering the curriculum of Agricultural Universities etc. Outlay: Rs 1 crore

**Recommended total Allocation: Rs. 726 crore.**

## Chapter-V

### 10. Strengthening and expanding the Horticulture Revolution

- **Small Farmers' Horticulture Estates**
- Post Harvest Management.
- Production of good quality seeds and planting materials.
- Imparting quality literacy.

Provision for these items will have to be made in the National Horticulture Mission already proposed by the Ministry of Agriculture.

## Chapter-VI

### 11. Enhancing national competitiveness in Cotton

- Organisation of 100 Small Farmers' Cotton Estates, each covering 1000 ha. Outlay: Rs 175 crore
- Integrated Technology. Demonstrations including value addition to cotton biomass. Outlay: Rs 75 crore
- Appointment of an overall Mission Director to coordinate the activities in progress under 4 Mini Missions

**Recommended total Allocation: Rs. 250 crore (in addition to the provision for the Cotton Technology Mission).**

## Chapter-VII

### 12. Strengthening Sanitary and Phyto-sanitary Measures

Imparting quality and trade literacy, meeting **codex alimentarius** standards and preventing the introduction of invasive alien species

**Recommended total Allocation: Rs.60 crore.**

## Chapter-VIII

### 13. Every Village a Knowledge Centre

- Mobilizing Information Communication Technologies (ICT) for the knowledge empowerment of rural families in areas relating to weather, water, health, education, nutrition, agriculture, markets and government entitlements through Village Knowledge Centres. Outlay: Rs 750 crore

- Establishment of a National Digital Highway for Rural Livelihood Security. Outlay: Rs 100 crore

- Establishment of Farmers' Distress Call Centres. Outlay: Rs 100 crore

- Establishment of 20,000 Rural Kowledge Centres. Outlay: Rs 500 crore

**Recommended total Allocation: Rs.1450 crore (most of it from the USO fund)**

## Chapter-IX

### 14. Hunger-free India

- Supplementary nutrition to adolescent girls, pregnant women and 0-2 age group children. Outlay: 2.5 lakh tonnes of foodgrains

- Nutrition support to HIV/AIDS and Tuberculosis affected children, women and men. Outlay: 1.0 lakh tonnes of foodgrains

- Elimination of hidden hunger caused by the deficiency of micro-nutrients. Outlay: Rs 200 crore

- Establishment of Community Food & Fodder Banks. Outlay: Rs 25 crore for fodder Banks

**Recommended total Allocation: Rs.225 crore and 3.5 lakhs tonnes of food grains.**

## Chapter-X

### 15. Livestock and Livelihoods

- Organisation of a Livestock Food Corporation of India. Outlay: Rs 100 crore

- Establishment of Small Farmers' Poultry Estates

**Recommended total Allocation: Rs.100 crore**

## Chapter-XI

### 16. Beyond Tsunami: Saving Lives and Livelihoods

- Food for Livelihood Revival and Eco-protection programme – 300,000 tonnes of food grains.
- Psychological, ecological, agronomic and economic rehabilitation programmes – Fostering a Coastal **Bio-shield** programme for minimising the fury of cyclonic storms and tidal waves.
- Fostering a **Coastal Biovillage Movement** for providing multiple livelihood opportunities.
- Organising a network of Rural Knowledge Centres in Coastal villages.

- Aquarian Reforms for promoting sustainable fisheries (funds to be provided under the various rehabilitation programmes now being planned).

**Recommended total Allocation: Rs 3 lakh tonnes of food grains and funds provided for rehabilitation.**

M S Swaminathan
Chairman, NCF
**15 January 2005**

**Summary of the financial implications (2005-06)**

| Chapter | Action Point | Outlay in crore of rupees |
|---|---|---|
| 2 | a) Community Grain Banks | Rs. 75 crore |
| | b) Parivar Bima Policy | Rs. 260 crore |
| | c) Rural Insurance Development Fund | Rs. 50 crore |
| 3 | a) Million Wells Recharge Programme | Interest rebate on loans |
| | b) Restoring Water Bodies and Promoting Water Harvesting | Rs. 70 crore |
| | c) Soil Health Enhancement | Rs. 500 crore |
| | d) 50,000 Farm Schools in the fields of farmer-achievers | Rs. 150 crore |
| | e) Krishi and Udyog Vigyan Kendras for post-harvest processing and value addition | Rs. 100 crore |
| | f) Largescale demonstrations of dryland farming technologies, overcoming micronutrient deficiencies in the soil, organisation of farmers' groups, establishment of seed banks and popularisation of hybrid *arhar* | Rs. 230 crore |
| 4 | **New Deal for Women in Agriculture**<br>Gram Panchayat Mahila Fund, Childcare and support services and child nutrition | Rs. 726 crore |
| 5. | Strengthening and expanding the **Horticulture Revolution** by organising Small Farmers' Horticulture Estates | Provision to be made in the budget of the National Horticulture Mission |
| 6 | Enhancing National Competitiveness in cotton; formation of small farmers cotton estates | Rs. 250 crore plus funds provided for the Cotton Technology Mission |
| 7 | Strengthening sanitary and phyto-sanitary measures and spreading **codex alimentarius** standards | Rs. 60 crore |
| 8 | Every Village a Knowledge Centre – Taking the benefits of the Digital revolution to farm and rural families | Rs. 1450 crore (largely from USO fund) |
| 9 | Hunger-free India | Rs. 225 crore and 3.5 lakhs tonnes of food grains |
| 10 | Livestock and Livelihoods | Rs. 100 crore |

| | | |
|---|---|---|
| 11 | Beyond Tsunami | 300,000 tonnes of food grains and funds provided for rehabilitation. |

# National Commission on Farmers (NCF)

## Maximising the benefits of ongoing

## Government Programmes

## Summary and Suggestions for Policy and Management Reform

(Details are contained in the Report)

1. Organise a **S&T Alliance** for Rural Livelihood Security for providing technical backstopping to the National Food for Work and Rural Employment Guarantee programme.

2. Form a **National Federation of Farm Technology Missions**, chaired by a **practising farmer** to bring about convergence and synergy among numerous on-going Technology Missions, with a watershed serving as the hub for the fusion of action under diverse programmes.

3. Set up a multi-stakeholder National Steering Committee to oversee the development of rural and agricultural insurance.

4. Set up a **Commission for Sustainable Livelihood Security in Dry Farming Areas**, headed by a farmer-achiever.

5. Establish **a National Board for Women in Agriculture**, chaired by the Union Minister for Food and Agriculture, with Union Ministers for Women and Child Development and Panchayati Raj serving as Co-chairs.

6. Establish a multi-stakeholder **National Horticulture Council** with Union Minister for Agriculture as Chairman.

7. Set up a **National Cotton Council** with the Union Minister for Agriculture as Chairman and the Union Ministers for Textiles and Commerce as Co-chairs.

8. Redefine and enlarge the role of the Cotton Corporation of India.

9. Establish a **Food Safety Council of India** with the Union Minister for Food and Agriculture as Chairman and the Union Ministers for Health and Commerce as Co-chairs.

10. Develop a new policy to encourage the spread of **Community Radio (FM)** in rural areas and organise a **National Digital Gateway for Rural Livelihood Security**.

11. **Set up a National Committee for a Hunger-free India** under the chairmanship of the Prime Minister, with the Union Minister for Food and Agriculture as Co-chair for preparing a road map for launching a **National Food Guarantee Programme**, combining the features of the Employment Guarantee and Food for Work programmes on 15 August 2007, which marks the 60th Anniversary of our Independence. The National Committee for a Hunger-free India should include in its membership Chief Ministers of States characterised by the high incidence of hunger hot spots.

12. Set up a Committee under the chairmanship of Union Home Minister, to monitor progress in the implementation of the integrated rehabilitation strategy suggested by NCF for Tsunami affected regions.

M S Swaminathan
Chairman, NCF
15 January 2005