



Hybrid maize in a policy maze

An innovative tribal welfare programme focusing on hybrid maize showed Modi can be pro-big business without neglecting the poor. But the initiative is now floundering and needs to be put back on track

Vivian Fernandes

Those who cherish India's constitutional values will find Narendra Modi's boast to build a statue of Sardar Patel taller than the Statue of Liberty disturbing. By prizing nationalism over individual freedom, Gujarat's chief minister has once again flashed his illiberal nature.

Those who dislike Modi's authoritarian streak, and his version of nationhood, give vent to their disapproval by dismissing his development record as pro-big business. "A leader from humble beginnings should feel the pain of the people and not corporates that impoverish them," Bihar chief minister Nitish Kumar said referring to Modi. Modi is certainly pro-business, and he may be indifferent to Muslims and Christians but to accuse him of being uncaring of the poor would be wrong.

The case of tribal welfare

Seven years ago Modi backed an officer who had innovative ideas for tribal welfare. This reportedly is Modi's style. He gives doers a long tenure and a free hand. Anand Mohan Tiwari (now principal secretary, education) is an earnest and entrepreneurial IAS officer. The posting to the tribal development department was not a coveted one, but Tiwari took it up with zeal. Upon taking charge in 2006, Tiwari decided, after much debate and discussion, that low-yield, low-income agriculture was the root cause of tribal poverty.

There are 7.5 million tribals in Gujarat, or a sixth of the state's population, distributed among 29 tribes, among whom the Bhils are the largest. They are spread over 43 talukas in 12 districts. While they are better off than tribals in other states, they are the most deprived within the state. A study by Amita Shah of Gujarat Institute of Development Research (GIDR), a think-tank, shows that though more of them own farms, albeit kerchief-sized ones, they spend less than other

Gujaratis on food, education and health. During the 10 years up to the middle of the last decade, poverty among them actually increased when it declined in rural Gujarat.

Spending has not been wanting. Since 1974, every state is supposed to devote a slice of its budget for the welfare of tribals equal to their share in the population. From the 1990s, local tribal civic bodies in Gujarat have been getting more pots of lard for small infrastructure. With none of this making a dent, the Gujarati tribal had low expectations of the government. Tiwari found that his department did not have high ambitions for them either. Science colleges for tribals were not considered a necessity. Providing running-water connections was regarded as impractical, despite Himachal Pradesh showing the way. Green Revolution technologies had bypassed the tribals, while the dams that submerged their habitats were watering high-yielding crops in the plains. The tribal was supposed to settle for less.

For the Gujarati tribals to catch up with the rest, they had to break the shackles of poverty, caused primarily by low incomes from low-yielding agriculture. So a principal aspect of Modi's 10-point programme for their uplift, called Van-bandhu Kalyan Yojana, was income enhancement through a shift to high-value vegetables, dairying, acquisition of employable skills, and a hop from low-yielding desi maize, the staple, to smart hybrids.

But the switch was not easy. Tribals produce their own desi seed. Hybrids have to be bought, are costly and a recurring seasonal expense as they cannot be reused. Private seed companies did not have the distribution network, while the state-owned ones would not scale up. Hybrids need high doses of fertiliser, which was seldom available when most needed. Farmers, mostly illiterate, had to be coached in practices like spacing plants for smart hybrids to deliver their potential. High-cost agriculture dependent on unreliable monsoon can ruin farmers. There was also a cultural barrier to cross: tribals prefer the taste of the white desi variety to the industrial-use starch-rich yellow hybrids.

To work up enthusiasm, the tribal department set itself the goal of doubling



Sena, wife of Babubhai Mohania, said hybrid maize had let them down. It turned out that the plants had not been given adequate fertiliser.

tribals' income in five years. To achieve that, the hybrid habit had to spread rapidly. It could not be business as usual. Rather than bank on the babu's bio-rhythm, Tiwari decided to tap into the profit motive of private enterprises. "If the private sector can create wealth in non-tribal areas, why ignore them in tribal areas?" he reckoned.

Gujarat believes in public-private partnerships (PPPs). In the early 1990s, when Chimanbhai Patel was the chief minister, the state's maritime board encouraged entrepreneurs like Nikhil Gandhi to set up private ports like Pipavav. Some of these so-called minor ports now vie for the top national spot in cargo handled. To overcome the shortage of gynaecologists and obstetricians in state hospitals, the government roped in private ones under the Chiranjeevi Yojana. The public sector Gujarat Green Revolution Company has pushed water-saving drips and sprinklers through private companies

like Jain Irrigation and Plastro.

Tiwari was persuaded by the American multinational Monsanto, whose genetically-modified Bt cotton approved for commercial use in 2002 now covers 93 percent of the crop's area and has made India the second largest producer (and exporter). There has been a maize revolution in the past decade triggered by hybrids released by private seed companies as well as government research institutes. Annual production has increased by 66 percent to 20 million tonnes, and productivity is up 33 percent. Monsanto is a key player. To get Gujarat's tribals to join in, it provided 15,000 of them with seed, fertiliser and agronomic coaching free of cost in 2006. The tribal department supported that pilot called Project Rainbow. A doubling of yield encouraged it to scale up.

Under the successor Project Sunshine, the government decided to ease the entry of seed companies by providing eight kg

of smart seed and 150 kg of fertiliser to every below-poverty-line (BPL) tribal, enough to cover an acre each. The package costing ₹2,600 was sold at a deep discount, not given free. Farmers paid a graded fee, starting with ₹500 in 2008 and ₹1,100 this year. Eventually the subsidy would go. By then there would be enough tribal converts to pull in the seed companies in. Apart from United Phosphorous and Shriram Bioseeds, American multinationals Pioneer Hi-Bred International (a DuPont subsidiary) and Monsanto qualified. Their bids were accepted without ideological hang-ups. "We used to issue public tenders, there was a rigorous selection process and if multinational corporations get the tender, so be it, we did not have any value judgment," Tiwari said.

Non-governmental organisations were chosen for the content of their character, based on quality and cost parameters adopted by the World Bank. Substituting

for the government's stretched agriculture extension workers, they had to ensure that those officially certified as poor got their entitlements of seed and fertiliser, on time, and followed agronomic prescriptions. Among these was Harnath Jagawat's Sadguru Foundation, founded by the Mafatlals in the 1970s, now supported by the Tatas, and with a record of efforts in water conservation. The Shroffs Foundation Trust, headed by Shruti Shroff (related to the promoters of United Phosphorous and Transpek Industries) was selected for its work in tribal areas and in the belief that wifely do-gooders from reputed industrial houses would strive for goodwill rather than pecuniary gain – an assumption sunbaked *jholawalas* might scoff at. Gramin Vikas Trust of the cooperative fertiliser company Kribhco was also enlisted.

A third innovation was the creation of a compact group of professionals who were hired for the duration of Vanbandhu's various projects. Called Development Support Agency of Gujarat or D-Sag, it had to pull in funds scattered in various schemes, cut through the compartmentalised activities of government agencies, and drive the progress of core projects.

Five years later, how has the maize project fared? The latest evaluation study by GIDR in Vadodara and Sabarkantha districts shows that almost all BPL cardholders got their entitlement of seeds and fertiliser in the right quantities and on time. Some farmers had to spend two to three days at taluka distribution centres but these are small gripes compared to the diversion and corruption rampant in welfare programmes in general. An earlier evaluation in Dahod and Panchmahal districts showed that almost all the farmers had got their entitlement of smart corn seed, but not the full complement of fertiliser, in time and without having to pay extra.

The studies show that hybrid maize yields indeed doubled but the savings for farmers did not keep pace. One study said the profit was 46 percent of revenue and another, recent study, said it was 73 percent (around ₹4,700 in both cases). Apart from fertiliser, whose cost is globally dictated, the high cost of seed was a reason.

Rainbow and Sunshine

Modi's tribal welfare initiative

The last man: the tribal in Gujarat

- There are 7.5 million tribals in Gujarat, or a sixth of the state's population.
- Though they are better off than tribals in other states, they are the most deprived within the state.
- A study by Amita Shah of Gujarat Institute of Development Research shows that though more of them own farms, albeit small in size, they spend less than other Gujaratis on food, education and health.
- During the 10 years up to the middle of the last decade, poverty among them increased when it declined in rural Gujarat.
- To improve their lot, Narendra Modi charted out a 10-point programme for the tribal welfare department.

Project Rainbow

- A chief element of the 10-point programme is Vanbandhu Kalyan Yojana, a scheme aiming at income enhancement through a shift to high-value vegetables, dairying, acquisition of employable skills, and a hop from the staple low-yielding desi maize to smart hybrids.
- As for smart hybrids, there has been a maize revolution in the past decade triggered by hybrids released by private seed companies as well as government research institutes. Annual production has increased by 66 percent to 20 million tonnes, and productivity is up 33 percent.
- The American multinational Monsanto is a key player. To get Gujarat's tribals to join in, it provided 15,000 of them with seed, fertiliser and agronomic coaching free of cost in 2006. The tribal department supported that pilot called Project Rainbow. A doubling of yield encouraged it to scale up.

Project Sunshine

- Under the successor Project Sunshine, the government decided to

ease the entry of seed companies by providing eight kg of smart seeds and 150 kg of fertiliser to every BPL tribal, enough to cover an acre each. The package costing ₹2,600 was sold at a deep discount, not given free. Farmers paid a graded fee, starting with ₹500 in 2008 and ₹1,100 this year. Eventually the subsidy would go. By then there would be enough tribal converts to pull the seed companies in.

Performance

- Five years later, how has the maize project fared? The latest evaluation study by GIDR in Vadodara and Sabarkantha districts shows that almost all BPL cardholders got their entitlement of seeds and fertiliser in right quantities and on time. Some farmers had to spend two to three days at taluka distribution centres but these are small gripes compared to the diversion and corruption rampant in welfare programmes in general.

Criticism and opposition

- Environmental activists and farmer groups have carried on a relentless campaign against the involvement of multinationals, the private sector and the propagation of hybrids (seen as a blow to 'seed sovereignty').
- Monsanto's seeds were vilified as toxic, soil degrading and gene mutating. The company has been the target of activists opposed to its genetically-modified maize (undergoing field trials in India but not approved for use yet).
- Critics also question its large footprint under Project Sunshine – it supplied 70 percent of the seeds under the programme.

Review and second thoughts

- Bowing to pressure, the Modi government passed a cabinet resolution in 2012 to keep Monsanto out of the project though it was allowed back this year.

Situation on ground

An extensive tour of the tribal areas showed awareness about the benefits of hybrid maize, but the rate of conversion was as uneven as the terrain they inhabited. In Chhota Udepur, farmers were less resistant to change. Proof came from yellow cobs drying in the courtyards. Vithalbhai Jemta, a Rathva tribal of Achheta village, claimed a yield of 30 quintals an acre (the average in this area was 11 quintals. Monsanto says its seeds can produce 36 to 45 quintals an acre). He seemed conversant with spacing and the right application of fertiliser.

Prem Singhbhai Rathva, a panchayat chairman, said with a gleam that his four acres of maize had fetched him over ₹1 lakh. Monsanto's *Dekalb Prabal* seeds and those of Shriram Bioseeds had not let him down; no mean thing for farmers often put to grief by spurious seeds and sly dealers. Shugriben Rathva's house had empty packets of Monsanto and Shriram hybrids. She was serving rotis made of yellow maize, which, being sweeter, is less preferred to the white staple. But yellow maize fetches a higher price owing to its starch content and Shugriben had made a compromise that was kinder on her wallet than to her palate.

Gaurang Patel, a distributor of MNC seeds in the nearby town of Bodeli, injected a sense of realism. He said the ground was indeed shifting – but slowly. Tribal farmers still preferred traditional varieties, owing to cultural reasons and the small scale of operations. They could profit by selling yellow and buying white, but commercial orientation had not seeped in. Karsanbhai Rathva, a farmer, blamed dealers for not educating them. Patel admitted that private seed companies relied on fat dealer margins and benefits like foreign trips to push their seeds, but large seed companies, including MNCs, tried to create the 'pull' factor by holding harvest festivals where the crop was cut and weighed before a large group of farmers to demonstrate that claims of high yield were not chaff.

Shroffs Foundation's own (independent) study showed that in the areas entrusted to it (Chhota Udepur and Jetpur Pavi in Vadodara district), the number of farmers participating in the seeds change

There has been a maize revolution in the past decade triggered by hybrids released by private seed companies as well as government research institutes. Annual production has increased by 66 percent to 20 million tonnes, and productivity is up 33 percent. Monsanto is a key player. To get Gujarat's tribals to join in, it provided 15,000 of them with seed, fertiliser and agronomic coaching free of cost in 2006. The tribal department supported that pilot called Project Rainbow. A doubling of yield encouraged it to scale up.

programme had doubled over three years. Nearly all the farmers sowing the desi variety had sowed hybrid yellow maize as well, which was quite a change from the earlier exclusive use of native seeds. Eighty percent of them said they had learnt new farming practices. Average yields had doubled. Farmers were eating better but the surplus available for sale was not such as to make a dent in their lifestyles.

In Dahod, we met Gamanbhai of Vashiya village, a retired schoolteacher and progressive farmer, who was embroiled in a rural employment guarantee embezzlement scandal (falsely, he claims). He grows mushrooms, uses drip irrigation, raises vegetables on trellises and has a small fruit orchard. He admitted to getting a good crop from Monsanto seeds but being deterred by the health scare (more about which later). His poorer neighbours, he said, knew about high-yielding varieties but being lean on cash did not stock in advance. When the first showers signal time to sow, there is a scramble and prices shoot, so they revert

to the traditional seed.

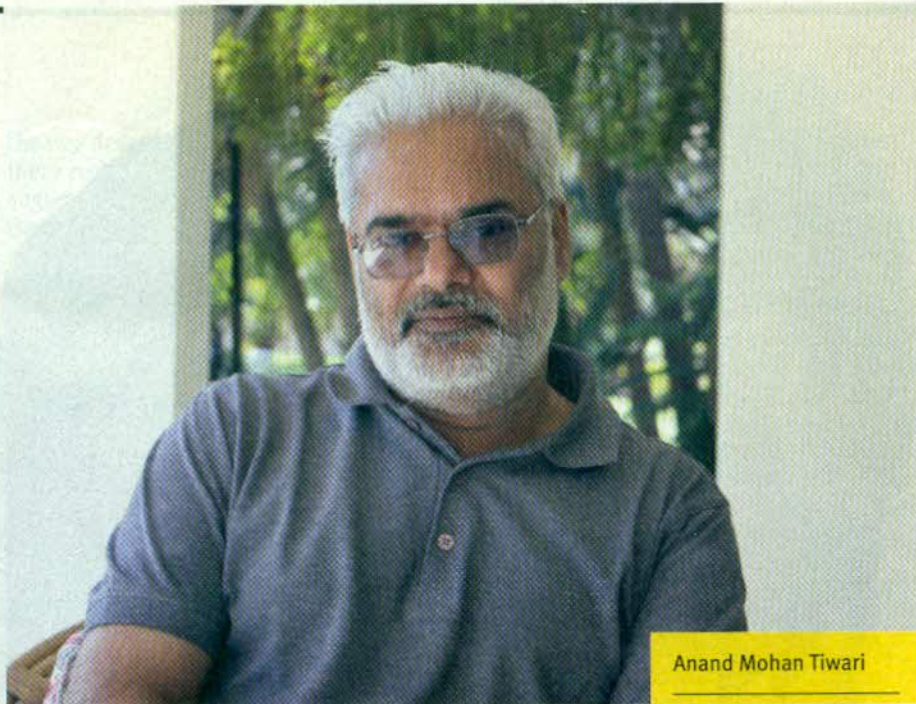
Lalubhai Varjibhai Pargi, a schoolteacher of Nani Dadeli village in Fatehpura taluka of Dahod district, had not heard of Vanbandhu or of the smart seeds scheme. It is quite likely that being above the poverty line, he did not qualify. Fatehpura was also identified as a problem taluka in an evaluation study; many farmers had complained of not getting their entitlement of fertiliser. None in his village of 1,200 people used high-yielding seeds, he asserted.

There were converts to smart maize like Bapubhai Silot, sarpanch of Bambori village. He claimed all the 200 households of his village were adoptees. Bhav Singhbhai Roz, the former sarpanch of Barodi Sarkari village had been persuaded too. They are certainly not the poorest – and therefore not entitled to subsidised seed – but why hold that against them? If village leaders can be won over, there will be a demonstrative effect on the others. The small subsidy they wrongly claim will produce effective advertising. But the village leaders said they sowed hybrids only if they got it before the monsoon (by June), else, like Udaysingh Meda it was back to desi maize despite being weaned on state-supplied hybrids for three years.

All these farmers seemed to be hooked to subsidies and were unwilling (or perhaps unable) to pay for seed.

One also came across people willingly courting change. Meda's neighbour Prakashbhai Ditabhai is a schoolteacher of the Labana caste (non-tribal). A post-graduate, he grew hybrids on advice from a relative working for farm inputs dealer, Milapsingh Padwal, in Dahod's main bazaar. This indicates that private companies are not ringing the bell hard enough to be heard and NGOs are not making enough noise either as Prakashbhai was unaware of Meda's experience with hybrids.

Yet change is percolating. Padwal feared that subsidised seed would drive him out of business; instead it has boosted it. The better-off farmers were seeking out hybrids, he said. Last year, a delay in government supplies meant a sale of seven tonnes of hybrid seeds in just two months (five of Monsanto's and two of Kanchan Ganga), enough to cover over



Anand Mohan Tiwari

800 acres. Sales of pesticide and non-urea fertiliser are rising. Padwal wants the tribals to be initiated into profitable soyabean as well, and the subsidies to continue. "Otherwise they will become Naxalites." He recalled the lot of the Dahod tribals in 1988 when he set up shop: they regarded lowly *parathas* as a delicacy to be relished only at festivals. Their lot has improved, but comfort eludes.

At Dahod mandi, maize arrivals have been declining over the past four years – from 4.68 lakh quintals in 2008-09 to 4.17 lakh quintals in the last financial year. Does this suggest a failure of the government programme?

Manoj Shah, secretary of the mandi, said factories making breakfast cereal have sprung up in Dahod, and farmers supply directly to them and to the starch companies. Not all the arrivals may be local produce, but smart maize seems to have caught on. According to the state government's Vibrant Gujarat website, in 2006-07 Dahod's maize production was just 1.35 lakh quintals.

There might have been better adoption of hybrids if left-leaning environmental activists and xenophobic farmer groups aligned to the Sangh Parivar had not carried on a relentless campaign against the involvement of multinationals, the private sector and the propagation of hybrids (seen as a blow to 'seed sovereignty'). Monsanto's seeds were vilified as toxic, soil degrading and gene

mutating. It has been the target of activists opposed to its genetically-modified maize (undergoing field trials in India but not approved for use yet). They have also questioned its large footprint under Project Sunshine – it supplied 70 percent of the seeds under the programme. The barrage of negative news and attacks by the government's fault-finding agencies sapped the morale of the project executors at D-Sag.

Tiwari himself opted out. Bowing to pressure, Modi's government passed a cabinet resolution in 2012 to keep Monsanto out of the project though it was allowed back this year. Modi may be pro-business but is he pro-market?

Between Tiwari's departure in mid-2011 and May this year, the tribal development department did not have a full-time secretary. Rajnikant M Patel, the official who was given additional charge, was not aligned to Tiwari's philosophy and the project floundered. He has since resigned and been elected an MLA on the BJP ticket from Asarva in Ahmedabad.

Sources in D-Sag say the project could be back on track under the new secretary, Arvind Agrawal. Modern agriculture, including hybrid maize, can be the route to prosperity for tribal Gujarat. While the government has its job cut out, private seed companies can help by setting up a distribution network. Despite being out of the programme, Monsanto claims it sold 12 tonnes of seed in the

tribal districts last year. Its India region CEO Gyanendra Shukla said the company cannot make headway as subsidised supplies stand in the way. But it must also rethink aggressive pricing. In its 2007 pilot, nearly half the cost of cultivation was of seed. By 2009, the seed cost had doubled. Since the government has opened up a virgin market for private seed companies, they must trim the price of seed to tempt farmers with bigger gains and be active on the field with advice that can bring out the best from the seeds they sell. They must learn from McCain, the supplier of potatoes to McDonald's, whose work since 2004 in enhancing yields in Banaskantha district has come in for praise from farmers there.

Government institutes must compete and not whine that private companies are being favoured at public expense. The Anand Agriculture University's maize research department must step up the production of seed. Its Gujarat Makkai-6 hybrid is said to be as good as – if not better than – Monsanto's, and takes a shorter time too. Tiwari said Anand University could supply only 4,000 kg when a few thousand tonnes were required. Under the Central India Initiative, sponsored by the Tata trusts, Sadguru Foundation, for instance, reproduced the university's proprietary seed (called Gujarat Makkai 6) and supplied it to 71,000 farmers without government subsidy this year.

Jagawat said the yields are as good as Monsanto's and the crop duration 25 days shorter. When weather is whimsical, a month shaved is a crop saved.

Ramanjeet Gupta, consultant for the maize project at D-Sag, said the plan is to abolish subsidies over the next three years. Farmers will then buy from the government only for the extension services that come along. But without the earnest problem-solving leadership that the programme began with, success will not be guaranteed, though Vanbandhu Kalyan Yojana has been extended by five years with a much bigger budget.

(This report was made possible by a fellowship from the Centre for Study of Developing Societies, Delhi.) ■

Fernandes is a veteran journalist