Food First

What's Smart About Climate-smart Agriculture?

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Cover: An industrial farm looms behind an old family farm in Mondota, Illinois. Photo by Chumlee10/ CC BYP.

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What's Smart About Climate-smart Agriculture?

Marcus Taylor[1]

Over the past seven years, leading international institutions involved in the design of food and agriculture policy on a global scale have increasingly turned to the rubric of 'climate-smart agriculture' (CSA) to coordinate their activities. Proponents of this new term include the World Bank, the Food and Agriculture Organization (FAO) and the Consultative Group for International Agricultural Research (CGIAR). For such institutions, CSA provides an appropriate set of goals and governance mechanisms to create a new global food system that is not only more productive in the quantity and variety of food it can provide, but also more resilient to climate change impacts while producing fewer greenhouse gas emissions. When we examine these proposed objectives of CSA – increased productivity, greater resilience, and a reduction in emissions – these would all appear to be goals we share and strive towards. On this basis, CSA appears, at first blush, to be a highly appropriate way to think about the intersections of food, agriculture and development for the coming decade.

In this policy brief, however, I nonetheless raise strong questions about CSA's suitability as a governance mechanism for the promotion of a sustainable and equitable food system. As I set out below, the problem with climate-smart agriculture is not the abstract goals it lauds. Agriculture that is more productive, resilient, and less polluting is indeed a worthy ambition. Rather, the important questions are (1) what do those goals mean substantively, (2) which ones should be prioritized, and (3) how should they be realized in practice? My central concern with the CSA rubric is that, despite its calls for a new approach to global agriculture, CSA provides little indication of how any substantive change could, or should, occur. It establishes no clear principles by which to judge what kinds of productivity and resilience are desirable, nor how to deal with the inevitable tensions and trade-offs that emerge between those goals. This inherent vagueness creates the grounds under which a heavily commercialized and chemicalized input-intensive model remains the dominant driving force of global agriculture despite its problematic relationship to environmental degradation and climate change.

What is Climate-Smart Agriculture?

The argument for a new approach to the global food system emerges out of a widely shared claim that humanity is threatened by an emergent Malthusian crisis. Named after the 18th century British economist Thomas Malthus, a Malthusian crisis is one in which population growth will tend to outstrip food supply. International institutions currently argue that, when climate change stresses are added to population pressures, humanity will struggle to put enough food on the plates of a projected nine billion people by 2050. As the World Bank states:

> With yields flattening, the demand for animal protein growing, the population increasing and incomes improving, and an increasing rate of land degradation, the headwinds against the food system reaching its critical goal [of feeding 9 billion] are almost insurmountable. In the face of climate change and considering the negative impacts the food system currently has on the climate, there is no doubt that a new approach to managing the food system is desperately needed.[2]

The solution, they propose, is to adopt CSA as a framework for rethinking the production of food at a global scale. In this view, CSA is not a specific agricultural technology or practice, but rather a set of guiding norms and governance processes under which 'smart' agricultural practices can be pinpointed and promoted. The basic premise of smart thinking is that it is possible to find 'win-win' solutions to complex problems in which multiple objectives can be tackled simultaneously without undermining one another. The three key objectives for CSA, as noted above, are to increase productivity while simultaneously strengthening resilience and reducing greenhouse gas emissions. A climate-smart solution is therefore an agricultural innovation or production technique that—in comparison to existing methods—advances one or more of these 'triple win' objectives without undermining others. Those techniques that improve two or all three measures of smartness can be considered as exemplary practices suitable for emulation elsewhere.

Having identified these improved agricultural techniques, the goal of international institutions is then to provide the governance infrastructure to invest in them, scale them up so that they become standard practice across a region, and then potentially diffuse them outward to other regions. At the same time, these international institutions seek to establish the CSA priorities at other governmental levels by

encouraging national and regional governments to think explicitly in triple-win terms as a way to orientate their own agricultural policies and practices.

CSA is therefore presented as a global process through which 'smart' practices can be identified and generalized, transforming agriculture from the bottom up. Given the extremely broad criteria for what counts as CSA, however, the practices identified in the glossy compendiums produced by international organizations tend to be extremely diverse and often portray major contrasts in scale, objectives and outcomes. From small-scale initiatives to promote agro-forestry using broadly agroecological principles through to industrial-scale canola monocultures using mechanized no-till technologies reliant on GMO crops and intensive use of glyphosate herbicide—all can and have been labeled as 'climate-smart.'[3]

At first glance, this eclecticism might seem to be positive. After all, international organizations, such as the World Bank, have rarely shown any interest in small-scale agriculture. While a small step forward, the appearance of some conservation agriculture techniques in CSA brochures must be placed in a wider context. While CSA provides room for selective examples of localized alternative practices, the underlying drive of CSA at a global level remains continuity with longstanding models of agriculture in an industrial mold. The World Bank's *Agriculture Action Plan* 2013-15, for instance, explicitly sets out that CSA must build upon established priorities for making agriculture more input-intensive, driven by biotechnological advances, and by linking smallholders into global value chains.[4] Similarly, in its 2016 *Climate Action Plan*, the Bank further develops its priorities for technologically driven fixes noting that climate-smart agriculture programs will be delivered at scale "with a focus on hybrid seeds and carbon capture practices; high-efficiency/low-energy use irrigation programs; livestock productivity; energy solutions for agribusiness; and mainstreaming of risk management."[5]

Such an agenda is a familiar one. It reflects a longstanding prescription to make global agriculture more intensive through technological advancement and integration with value-chains headed by Western food companies and supermarkets.[6] Consider, for example, the CSA profile for Argentina produced by the World Bank. In this document the World Bank argues that the country has widely adopted key climate-smart practices, making it an exemplary case of CSA in action. Argentina's high CSA rating rests first and foremost on the transformation of the *pampas* into vast monocultures of soy, maize, and wheat production under the extensive usage of no-till agriculture. The latter is where farmers reject ploughing the land – which accentuates soil erosion – and instead directly insert seeds into the soil with large, mechanized drilling technologies. The immediate trouble with no-till practices, however, is that the absence of ploughing allows for vigorous weed growth. The solution adopted in Argentina is to use GMO technologies by planting soybeans seeds that have been genetically engineered to have resistance to the herbicide called glyphosate as produced by Monsanto. With the seeds having built-in resistance, farmers can apply heavy levels of glyphosate during and after the planting process to eradicate all competitor plants in a 'scorched earth' style of application.

This expression of industrial agriculture is argued to be a key example of CSA's triple-win goals because (1) ever-increasing economies of scale lead to reductions in farm machinery emissions; (2) no-till practices lead to better soil health and less erosion than ploughing; and (3) the replacement of potentially more virulent herbicides with the relatively more benign glyphosate creates less toxicity in the environment.[7] To designate Argentina as a model case of CSA on these grounds, however, rests on two troubling arguments. First, by judging 'smartness' in terms of the relative change between previous and present methods, the Bank lauds chemical-intensive monocropping as an exemplary technology on the basis that it represents an improvement over the even-more ecologically inefficient form of industrial agriculture that immediately preceded it. This framing of the issue, however, ignores that this slightly more efficient form of petro-chemical agriculture is still carbon- and chemical-intensive and remains predicated upon the destruction of biodiversity through the extension of cropland into forested areas; the intensive consolidation of land ownership and the associated evictions of smallholders; and the escalating environmental contradictions in the form of glyphosate-resistant weeds, soil degradation, and groundwater contamination.[8]

Second, by focusing on technical changes only at the point of production – i.e. farm-level technologies – this narrative of climate-smartness refuses to look beyond production itself to see what its products are used for. This is important because agricultural production must be understood as one moment of a larger flow of materials and energy that stretches across national boundaries. The output of Argentinean soy plantations—which account for some 45 percent of the country's cropland—is

A feedlot in Colorado, USA. Photo by *Kent Kanhouse*

directed towards the feeding of industrial livestock in North America, Asia, and Europe that has sharply negative environmental implications and is a major producer of greenhouse gases.[9] Put simply, Argentine soy production underscores the factory production of livestock, including massive industrial pig farms in the US and China. Such industrial meat production is (1) rampantly inefficient in terms of nutrient use; (2) a major contributor to climate change; and (3) has incredibly poor local environmental impacts.[10] As such, 'climate-smart agriculture' in Argentina stands as the foundation for 'climate-stupid consumption.'

Given this level of continuity with existing approaches, it is little surprise that the CSA agenda has received significant approval from the private sector, including the formation of a Climate-smart Agriculture working group chaired by PepsiCo, Monsanto, Olam and the Kellogg Company, and featuring key corporate interests from supermarket giant Walmart to agrochemical firms such as Syngenta and Monsanto.[11] In these hands, CSA is presented as simply a more environmentally efficient version of current practices. Their emphasis is placed upon new biotechnologies as the means to safeguard yields from encroaching climatic stresses while enabling a gradual reduction in inputs. On these lines, CSA appears not as an entry point through which to begin to reconceptualize the foundations of the global food system, but rather as a technical supplement to an existing agenda.

So why does this happen? Why does a rubric that seems, at first glance, to be well intentioned quickly become assimilated into a business-as-usual approach? Part of the reason is that the content of CSA simply reflects the concentrated balance of power that shapes the global agricultural system. Research funds, technological capacity and political influence are strongly concentrated in the hands of corporations and philanthropic enterprises such as the Gates Foundation that pursue a 'neo-Green Revolution' model based on technological advance. The private sector evidently sees a strong opportunity in CSA, particularly as it provides a gateway for further commodification of biotechnologies and their state-supported promotion in the developing world. Another part of the problem, however, is also conceptual. Put simply, the way that CSA frames its objectives is too vague and too complicit with older forms of thinking about agriculture. Further, CSA

does not adequately shift the categories that shape how we think about agriculture and food production. Prime among these are the ideas of productivity and resilience – both of which lie at the heart of climate-smart thinking and which I now address in turn.

The Productivity Question

In the CSA literature, the pursuit of productivity is lauded as a self-evident goal in need of no further explanation. The underlying assumption is the simple logic that population growth – 9 billion by 2050 – impels us to produce more food. That, in turn, requires continual productivity gains so that production can keep up with consumption. At a superficial level, the compulsion to produce greater quantities of nutritious food is a sound one, so long as we can ensure that such food reaches all those who need it – something that flatly does not occur at present. By privileging productivity, however, we fall back into ways of thinking about agriculture that have failed to ensure its future sustainability. As a recent United Nations Convention to Combat Desertification report notes, the drive to increase productivity has led to a persistent trend toward resource degradation in at least a fifth of global agricultural lands, mainly as a result of land and water management practices.[12]

On this basis, if we want to get serious about the sustainability of agriculture, rethinking productivity is a good place to start, because it cuts to the heart of what an agricultural system does and whom it benefits. For agriculture organized along input-intensive lines, the pursuit of productivity requires the simplification of the agroecosystem so as to promote economies of scale focused on a minimal number of crops (monocultures) that are bred to be highly responsive to chemical inputs. The farmers outside my home here in Ontario, like those in Argentina, are almost exclusively following a mechanized and chemical-dependent form of industrial farming based around monocultures grown from commercial seeds, both commercially-produced hybrids and GMOs. The high productivity of these crops is sustained through the intensive application of fertilizers coupled with the extensive use of pesticides and herbicides, all of which are necessary to counteract the loss of natural soil fertility and the presence of concentrated pest species that readily afflict monocultures.

Such a reliance on external inputs, however, is no longer exclusive to Western countries. With the reforms to developing-world agriculture that accompanied the Green Revolution from the late 1960s onwards, the input-intensive model has been globalized. Most farmers in the semi-arid areas of southern India that I research, for instance, have increasingly specialized in the production of a limited number of crops, buying rice, cotton, corn and other seeds from commercial operators, and intensively using commercial fertilizers, herbicides and pesticides.

Whether operating in Ontario or India, the input-intensive model holds a very narrow idea of productivity focused upon the maximization of output per hectare. Despite its wide usage within the CSA narrative, this concept of productivity is increasingly unsuited for the challenges we face. This is because agriculture produces far more than an immediate yield of food, fuel or fiber. It also produces localised agro-ecosystems that may either contribute to or impede renewable natural resources management, landscape and biodiversity conservation, and the socio-economic viability of rural areas. To expand our understanding of productivity to include these holistic elements is to consider the 'multifunctionality' of agriculture. The latter is a term that seeks to capture the wide range of good and bad products of farming at local, regional, and global levels.

Making the leap to thinking in terms of multifunctionality is important because when we limit our conceptualization of productivity to the question of yields, we risk subordinating and devaluing the wide-ranging impacts of agriculture – both local and global – under a monolithic pursuit of short-term efficiency aimed at profit maximization. Such a reduction, of course, is precisely what has occurred over wide tracts of industrial agriculture and stands at the root of many of the sustainability problems associated with industrial farming.[13] Input-intensive efforts to improve the output productivity of a given crop by further simplifying production and increasing economies of scale, for example, often have negative implications at a landscape level through biodiversity loss, interruption of nutrient or water cycling, degradation or contamination of neighboring fields, and the foreclosing of common property resources. This creates a vicious cycle of dependence on increased external inputs to counteract the negative impacts of the previous intensification strategies. Many agricultural regions that are presently most strained in terms of their sustainability and most vulnerable to climate change impacts are those that historically have been at the center of intensification initiatives, most notably the epicenter of the Asian Green Revolution in the Indian Punjab where land degradation, soil toxification, water depletion, and the growing incidence of farmer suicides now haunt this success-story of the original Green Revolution.[14]

When we broaden our understanding of what productivity means to incorporate the multifunctionality of agriculture, we begin to think in agroecological terms. In contrast to input-intensive agriculture, agroecological farming avoids the simplified cropping patterns of input-intensive agriculture. Instead, it seeks to intensify agriculture by harnessing localized biological processes based on the interaction of different types of crops and other organisms in the immediate environment. The aim is to use biological processes to regulate nutrient cycles, biomass production, pest control, water cycling, and so forth with limited external inputs. This model of farming is explicitly a knowledge-intensive process in which a holistic understanding of the multifunctionality of an agroecosystem is pivotal to success. Farmers working in this manner know that, to be successful, they need to consider how their farming produces interacting biological processes that allow the farm to persist on a day-to-day, season-to-season level. From this perspective, a short-term vision of productivity in terms of yields simply does not work because it produces biologically impoverished agroecosystems.[15]

The question of productivity, therefore, is not simply a technical issue but a political one. It asks us to articulate a set of values about what we expect agriculture to produce, in terms of both physical outputs but also the kinds of ecosystems it reproduces. Within climate-smart agriculture, however, this pivotal question is typically marginalized. Consider the climate-smart profile for Peru produced by the World Bank in collaboration with the International Center for Tropical Agriculture (CIAT).[16] In this document, the authors laud Peruvian farmers for using a number of 'climate-smart' practices including the rotation of native crops and livestock in traditional systems, efficient water management, effective soil conservation, and local communal crop associations. This reflects the tendency to include strategically placed acknowledgements of agroecological farming methods within CSA documents that I noted above.

Despite commending these practices, however, the Bank immediately proceeds to lament that one of the biggest challenges facing the country is the absence of "a critical agent for transforming subsistence farming into a modern and competitive agriculture system."[17] The latter, they claim, is to be achieved through greater market integration on both the input side—i.e. the use of appropriate commercial biotechnologies—and the output side—i.e. the incorporation of peasant producers in agricultural value chains that are national or global in scope. How these two contrasting priorities are to be reconciled is left the reader's imagination. The implication is that the broader multifunctionality of agriculture inherent to the indigenous model is to be sacrificed on the altar of short-term productivity goals.[18]

The Resilience Question

These same questions about the multi-functionality of agriculture return when we consider the second pillar of CSA: resilience. While CSA documents repeatedly assert the need to increase resilience, the latter term is rarely defined. Instead, it is left deliberately vague. In broad terms, resilience designates the ability of a system to better withstand external shocks such as climatic shifts. While this objective seems reasonable in the abstract, it nonetheless raises new questions once we begin to think of it in more substantive contexts. Should resilience be considered at the level of a crop, a farm, a landscape, a bioregion, or at a global level? And should the pursuit of resilience project stability for a season, a year, a decade, or further ahead? These are not academic questions because there are inevitably strong trade-offs to be made between resilience at different scales and/or timelines. For example, what if the introduction of a new hybrid rice seed improves immediate crop resilience to drought at a farm level, but at the cost of reducing biodiversity and increasing dependence on expensive external inputs, therefore reducing resilience at a landscape level over a longer time period? Within the CSA narrative, such key questions are simply ignored under the guise of 'triple-win' scenarios in which everyone gains.

Such conceptual omissions have important political implications. In many agrarian regions the resilience of an agricultural system is predicated upon the ability of relatively privileged actors to push the costs of maintaining stability onto subordinate groups. In southern India, for example, the resilience of farms in times of water scarcity is often predicated on the ability of male farmers to increase the laboring burdens of female household workers. Women spend extra time locating water or are required to take low-paying off-farm jobs to compensate for declining on-farm yields. While the household and farm therefore persist through the external shock of drought, this has repercussions for women who see a marked increase in their already considerable working burdens. We must ask pointed questions about the resilience of what, for what purposes, and at whose potential gain and expense. These kinds of critical considerations, however, are entirely absent from CSA rhetoric, which prefers to assume they do not exist.

Alongside considering who pays for resilience, we also need to consider the inherent trade-offs between resilience and productivity. Unlike in the 'triple-win' rubric, within the paradigm of socio-ecological thinking, resilience and productivity have an uneasy relationship. This is because a socio-ecological resilience perspective values agroecosystems that are diverse (rather than simplified monocultures) and manifest what is termed 'redundancy'. The latter refers to the maintenance of elements of an agroecosystem that are not engineered for maximum productivity and, indeed, may seem to have little direct association with immediate productivity goals at all. The importance of retaining such elements, despite their seeming inefficiency, is that they may assume important functions for social and/or ecological stability under changed circumstances in an uncertain future.[19] We might consider, as an example, traditional mixed farming systems – such as "Barah Anaaj," the twelve food grains cropping system practiced across parts of the Himalayas – that purposefully cultivate both diversity and redundancy as a means to cope with the uncertainties of seasonal climate variations.[20] Although less productive in terms of immediate yield than specialized monocultures, even if one or more crop fails, others will persist and this can guarantee the survival of the farming household.

On this basis, there are strong reasons for thinking that the goals of resilience and productivity are not quite the happy bedfellows that the CSA pretends in its 'triple win' formula. If so, despite their political expedience, simplistic 'triple-win' technical fixes are not an adequate way to conceptualize the difficult trade-offs that must be made between productivity and resilience. Such critical questions, however, are left off the table by the climate-smart agenda's insistence that tensions and trade-offs are simply wished away.

The Emissions Question

The third goal of CSA is that of emissions reductions. When focusing on developing countries, this issue typically receives less attention within CSA documents. In part, this is because it seems ethically problematic to claim that countries that have very low aggregate emissions should take further responsibility for reductions. At the same time, however, given their keen propagation of 'New Green Revolution' technologies across sub-Saharan Africa and other least developed regions, there is also reluctance within international organizations to rule out the possibility of agricultural emissions increases in some sectors. This ambiguity stems from the underlying rationale that agriculture in these regions will need to be modernized through the use of greater synthetic inputs and machinery in order to raise yields and tied much more firmly into global value chains. Such a vision of agricultural modernization implies an increase in emissions connected to agriculture, a process that would have to be compensated for in other ways to maintain the ethos of climate-smartness. The Africa Climate Business Plan – a World Bank produced document aimed to coordinate $10 billion of grants and loans – argues that such emissions reductions may be achieved through a transition to high-efficiency, low-energy irrigation systems; the scaling up of agro-forestry; and more efficient livestock production. Whether such means are sufficient in scope and scale to compensate for a broader industrialization of African agricultural systems – a process that some researchers argue will double emissions[21]– remains to be seen.

Toward a Climate-Wise Food System?

The above sections have set out how, despite its calls for a widespread transition of the global food system, the climate-smart agriculture narrative offers only a vague blueprint that lacks clear underlying principles on which agricultural practices could be fundamentally transformed. Within its narrative, core contradictions between contrasting goals are simply glossed over under the seductive rhetoric of 'triple-win' technologies. This ambivalence of CSA to making firm recommendations about social and ecological sustainability allows the continuation of a business-as-usual corporate agenda of biotechnological advancement and the diffusion of input-intensive production techniques. In this respect, climate-smart agriculture lacks any explicit political content. It projects itself simply as a technical fix for contemporary production techniques. It skirts around the vast inequalities of access to land, inputs, technology, water, and food that stratify food production, distribution, and consumption at global scales. As a result, there is scant recognition that the benefits and costs of transforming agricultural systems can fall unevenly between different social groups.

This raises a key question: where does the vacuous content of climate-smart agriculture leave progressive social movements that foresee the necessity of a far more fundamental shift in the global food system? Pointedly, a number of key agrarian justice groups have officially condemned CSA and refuse to engage the institutional networks that are being constructed around it. *La Via Campesina*, for example, labels CSA as nothing more than a foil to accelerate the corporatization of global agriculture. They, along with numerous other agrarian social movements, signed a joint declaration denouncing CSA and steadfastly

refusing to engage it as an approach to agriculture and climate change.[22] Despite this strong repudiation, however, CSA continues to exert a gravitational pull on the policy environment and is proving difficult for many grassroots organizations to ignore. At both international and national scales, frameworks are being formulated and resources distributed following the CSA approach. Many agrarian organizations feel obliged to engage with CSA as part of their interaction with governmental agencies. Despite their critiques, they often seek to leverage a more progressive politics within its shadows.

In this respect, an alternative strategy to outright negation may be to steal a little fire from the CSA discourse by supplanting the rubric of 'climate-smart' with a more encompassing and progressive vision of being 'climate-wise.' Such a plan would use the climate-wise[23] label as a means to link the climate question to the concerns that have motivated food sovereignty as a countervailing discourse. The latter foregrounds not technical changes at the production level but, rather, the political dimensions of food production, distribution, and consumption understood as a whole.[24] To draw from food sovereignty would entail directly opposing the technical focus of CSA and, instead, explicitly articulating a holistic vision of a 'climate-wise food system' that combines equity and sustainability concerns.

Becoming climate-wise—in clear opposition to CSA—would be to recognize that in the real world of agriculture, there are sharp trade-offs and conflicts between the goals of productivity, sustainability, and emissions reductions. These trade-offs and conflicts must be considered within an explicit discussion of access and equity so we can better grasp the differentiated impacts of policy measures upon social groups at both production and consumption levels. To this end, the framework of a climate-wise food system could emphasise four key points, well-represented within the literatures on food sovereignty and agroecology, that would form an alternative starting point.

First, climate change amplifies concerns over access to sufficient and nutritious food, and therefore makes the question of food *distribution* equally important as food production. It is notable, for example, that the myriad success stories of CSA produced by institutions such as the World Bank do not incorporate any

Mexican farmer planting beans. Photo by *Eric Holt-Giménez*

public program that supports equitable distribution of food. Rather, the salience of market mechanisms is the unspoken assumption of the CSA model. This question of access, however, must be the critical pivot of a climate-wise food system: in a world that produces more than enough calories to feed everyone, how food is distributed and who has access is paramount.

Second, shifts in consumption patterns are an essential element of a climate-wise food system. The ability of climate-smart agriculture to produce climate-stupid foodstuffs—such as the mass-production of soy and corn for sustaining factory meat production and biodiesel—must be challenged. A climate-wise food system rejects the idea that spending power of more affluent nations and peoples should dictate what gets produced. Rather, there needs to be a determined emphasis on reforming consumption in a climate-wise manner.

Third, a climate-wise food system would be built upon strong preferences for *ecological* intensification, in which biological processes in combination with human labor underscore productivity advances, rather than external, energy-intensive inputs. This would require a degree of localization in which agrarian landscapes can be safeguarded in a regional context by reinvesting in biodiversity as a pre-requisite for present and future sustainability. It is not possible to remain agnostic on this issue – as CSA pretends – because the two approaches of input-intensive agriculture and agroecology are pushing in very different directions. Rather, the kinds of resources that have been provided at-large to the input-intensive model – from research funds, development expertise, extension programs and subsidization at all levels – should be determinedly turned towards agroecological methods in order to scale them up.[25]

And, fourth, at a political level, climate-wise approaches must be both participatory and explicitly challenge the politics of knowledge production in which the concentrated power of agro-corporations—stemming from an increasingly oligarchic hold over agricultural research, input and output markets—to disproportionately influence political debates on agrarian futures in favor of the status quo. Together, these climate-wise norms form a platform on which CSA can be duly challenged.

Further Reading:

This paper is a condensed version of an article published in the Journal of Peasant Studies, an open source version of which can be found here: https://www.researchgate.net/publication/314236475_Climate_Smart_Agriculture_What_is_it_Good_For

There is now a growing critical literature on CSA. A great place to start is the contrast drawn between CSA and agroecology by Michel Pimbert: https://www.ileia.org/2017/06/26/agroecology-alternative-vision-agriculture/

A critical account of the failure of CSA to engage in equity issues was published by European researchers Linus Karlsson, Andrea Nightingale, Lars Otto Naess and John Thompson: https://ccafs.cgiar.org/publications/triple-wins-or-triple-faults-analysing-policy-discourse-climate-smart-agriculture-csa

Endnotes:

[1] Marcus Taylor is an Associate Professor in the Department of Global Development Studies, Queen's University, Canada.
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[22] See the statement by Via Campesina available at http://www.climatesmartagconcerns.info/cop21-statement.html (accessed December 10, 2016).
[23] To clarify: "climate-wise" is not referencing or related to the "wise use" doctrine that promoted the expansion of private property rights and reduction of government regulation of publicly held land.
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