



Climate and Agriculture

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Women at the Center of Climate-friendly Approaches to Agriculture and Water Use

Global warming has already affected the world's climate, and changed the type, timing, duration and intensity of water precipitation, resulting in major and minor weather events. These events have been playing havoc with the agriculture-dependent livelihoods and food security of about 70 percent of the world's poor. This is particularly true for arid and semi-arid areas in the global south.

The strategies adopted by vulnerable households in the face of these events, to help achieve water and food security, are not only influenced by their traditional knowledge and immediate environment, but also by opportunities available to them within the household and community. Successful efforts to confront climate change will require a wide diversity of strategies. It is important to create a conducive environment to strengthen approaches that already address climate change, food and water security simultaneously.

Yet, most current climate proposals largely focus on developing new technological interventions, without adequate attention to precautionary principles. Thus, there are increased investments towards developing new climate-ready seeds to deal with water scarcity; "soil carbon sequestration" through large-scale use of bio-char is proposed as a means for reducing the carbon levels, and soil-quality enhancement. However, these approaches are based on still-unproven claims and do not address their impact on our natural world, and may worsen the overall crisis. A case study on proven methods and practices by women in arid areas of India provides lessons for more immediate and sustainable alternatives.

This summary identifies three principles and a set of policy-level interventions necessary to enhance water and food security for marginal communities by drawing on the experiences of Tamilnadu Women's Collective (WC), a federation of village-level women's groups, from 1,500 villages, with a membership of over 150,000 spread over 16 districts in the state of Tamilnadu, India.¹ The majority of the members belong to the Dalit community (the lowest in terms of socio-economic and caste hierarchy) and tend to be subsistence agriculturists or landless laborers.

Three principles for food security

Over the last 10 years, members of the Women's Collective have been engaged in joint and individual efforts (at local, state and national levels) for fair and sustainable food systems to ensure local food and water security as part of their broader mission.² In developing this, the women have trusted their traditional knowledge, but have also built on it to enhance productivity and sustainability by selectively and carefully reintroducing both traditional and modern practices. From the perspective of climate change policy, their interventions are synergistic, bringing together an "adaptation strategy" and a "mitigation strategy," even as they try to ensure food security for women at an individual level. The WC's work on food security appears to be organized around three principles: empowerment, participation and the promotion of multifunctional agriculture.³

PRINCIPLE 1: EMPOWERMENT OF WOMEN WITHIN THE HOUSEHOLD Women play a major role in food production, especially in developing countries. They also play a main role in accessing food for their family members and in preparing food for household-level consumption. Access to safe water for domestic use becomes a necessity for ensuring household-level food security. For poor women, food preparation entails the collection of firewood and water, an increasingly difficult task in degraded environments. Thus, realization of the right to water becomes a prerequisite for rural food security, especially in degraded environments.

Despite women's role in ensuring food security at the household level, when it comes to consumption, they usually have the least access to food. When household-level food security is impacted seasonally, or through catastrophic events such as those caused by climate change, women not only have to work harder to access food and water for their family but also for themselves.

In order to address this food insecurity that women face more acutely, even in relation to other marginalized groups in their region, the Women's Collective recognizes that it is necessary to focus on the empowerment of women. It did this by initiating campaigns that challenged the violence that women face both from upper castes, and within the household. More than anything else, the assurance that women have the ability to act secures their decision-making role within family and society.

PRINCIPLE 2: PARTICIPATION IN DEMOCRATIC LOCAL GOVERNANCE SYSTEMS The experiences of the Women's Collective in the early years, including local caste-based land conflict, convinced its members that in order to ensure that their concerns were addressed in a just manner, they needed political representation in the local governance systems. Making use of a legal provision that stipulates 33 percent of the seats for women in Panchayat (local self-government) institutions, Women's Collective members have been running for office since 1996. Their participation has increased over four-fold since then: currently 402 Women's Collective members are elected representatives, 78 of them as presidents of local government bodies who support the WC's agenda on democratic local governance in the villages that come under their Panchayats.

Many problems worldwide result from failures of local governance. At the same time, having fair, local solutions is harder without effective, accountable and democratic governance systems at higher—regional, national and global—levels. Thus even as members of the Women's Collective focus on participating in local governance structures, their campaigns to help address local issues also focus on transparent, accountable and responsive governance at the state, national and global levels.

PRINCIPLE 3: PROMOTION OF MULTIFUNCTIONAL AGRICULTURE In India, as in other parts of the world, the Women's Collective has inherited an agro-ecological crisis of unprecedented dimensions.

The replacement in the early 20th century of village-level management of tank irrigation systems with centralized water management paved the way for the collapse of the system, leading to the proliferation of private wells. These were later replaced by deep tube wells that resulted in the further lowering water levels. Chemical-intensive agriculture was promoted through incentives for shifting to cash crops (e.g., sugar cane and cotton) and by providing subsidies for establishing the irrigation system, including subsidized electricity to operate it. The spread of tube-well irrigation to areas where shallow wells were the norm has resulted in the cultivation of thirsty crops, even in water-scarce regions where most of the Women's Collective members hail from.

These chemical- and water-intensive agricultural systems have deteriorated water quality and decreased water availability for local use. The indiscriminate use of chemical fertilizers has resulted in reduced soil fertility and productivity. Climate-related uncertainties have further worsened the situation. All of these have contributed to an agrarian crisis, with community members unable to eke out a living, migrating out seasonally.

Globally, industrial agricultural practices contribute to severe biodiversity loss and the water crisis, and directly and indirectly account for about 31 percent of anthropogenic greenhouse gas emissions. There is now also an awareness of the social and environmental crises that are inter-linked with this form of agriculture.

In India, as in other parts of the world, national policy makers have embraced a "new green revolution" centered around genetic engineering and water use reduction. While this "new green revolution" may increase national food production of a few crops and partially address water depletion issues, it follows the industrial agriculture model and does not address other aspects of the agro-ecological crisis or agrarian crisis.

Recognizing this, the Women's Collective has moved towards developing truly multifunctional agriculture. The WC's initiatives have especially stressed three elements. First, food security is not only about higher production and productivity, but about food security for the most marginal producers and others for whom agriculture is a livelihood and source of food. Second, such local food security can only be ensured by protecting agricultural and ecological biodiversity, since a richly biodiverse environment can sustain multiple means of achieving food security. Third, agro-ecologically appropriate, healthy and fair multifunctional farming systems are the foundation of rural viability now, and for future generations.

Policy interventions towards food and water security

For the Women's Collective, the agro-ecological crisis has been an opportunity to promote several initiatives that can help them (and other climate challenged regions) move towards local and regional food security. The WC initiatives increase food security while conserving natural resources.

STRENGTHENING LOCAL FOOD SYSTEMS As part of the Millet Network of India, the Women's Collective promotes cultivation and consumption of millets as alternative crops. With global temperatures rising, the production of heat-sensitive crops like wheat, upon which Indian national food security depends, will be affected negatively. Millets offer a climate-resilient alternative in semi-arid regions. Moreover, millets are more cost effective to cultivate since they grow better without synthetic fertilizers, especially under rain-fed conditions.

According to the Women's Collective, the state-level public food distribution system (PDS) also plays a role in undermining the value of millets. Currently, the Tamilnadu PDS system distributes rice using considerable subsidies that make up the single largest component of the state's 2009-10 budget. In the process, Tamilnadu has ignored the important role played by rural communities as producers of food. By rendering them as mere consumers, the state has destroyed the economic viability of rural communities.

Instead, the Women's Collective demands that the state "develop a minimum support price for all the crops including traditional millets. In addition it should support local procurement to ensure that traditional millets can become part of a nutritious basket of foods offered through the public distribution system."⁴

TRANSITIONING TO NATURAL FARMING METHODS Historically, cultivators in these areas would harvest two seasonal crops, Kharif (summer) and Rabi (winter) crops of grains, pulses, oilseeds and vegetables. Well irrigation would supplement the natural moisture available in the soil if the farmer had access. The agronomical practices associated with traditional millet cultivation in the area were very different from those associated with chemical-input agriculture. Use of farmyard manure and inter-cultivation of different varieties of millets with different types of pulses had been a common practice, making it a multiple cropping system. Some of these practices still continue in isolated farms, particularly for crops grown for domestic consumption.

It was clear to the Women's Collective leadership that they needed to build on this foundation to improve food and water security in the face of both the current agro-ecological crisis, and the looming changes in precipitation patterns.

Through Participatory Resource Appraisals (PRA), as well as workshops and networking events, they educated themselves, and enhanced practices that were part of a multifunctional agricultural system. Around 1998-99, they were exposed to natural farming techniques developed through decade-long experiments by Subhash Palekar, an agricultural science graduate turned practitioner of multifunctional agricultural systems.

The concept of natural farming is based on the idea that farm inputs should enable processes of self-replenishment found in nature. Palekar also calls it "zero-budget" farming as all inputs can be derived from the farm itself. For him, this makes it distinct from large-scale commercial organic farming, which does not insist on a principle of minimizing the use of commercially available inputs.

In natural farming, the most important farm inputs are cow dung and cow urine derived from indigenous breeds of cows. Other inputs include leaves with different qualities that are indigenous to different sub-agro-climatic regions. Some of these are used to make solutions in which seeds are dipped for better sprouting (Beejamrutham); others are used as fertilizers (Jeevamrutham, Ghana-jeevamrutham) or pesticides (Puchi).

Natural farming is practiced by Women's Collective both under rain-fed and irrigated conditions. They have access to two model farms that function as training fields where new members of farmers collectives come for training: one in the Cauvery Delta, where irrigated agriculture is practiced; the other in the semi-arid northeastern Tamilnadu, with limited access to irrigation.

According to the women farmers in the collective, natural farming practices have shown exceptional results, especially under rain-fed conditions, where crops were better able to resist pests and dry weather conditions.

WATER HARVESTING, SYSTEM OF RICE INTENSIFICATION Individual members of the Women's Collective tend to complement natural farming with water harvesting practices. Over the last two decades, rainwater harvesting has been popularized in India through national- and state-level initiatives. In their 2002 annual meeting, the Women's Collective resolved that, as an organization, they would facilitate this activity by helping members access interest free loans made available by the collective on the basis of their own savings. About 10,000 members took advantage of these loans to undertake groundwater recharge-related activities that increased the water availability in their wells.

Also, Women's Collective members practice inter-cultivation and multiple cropping systems, and if they have access to irrigation, they often include a patch of land for growing paddy rice. Tamilnadu is the seventh biggest producer of rice in India,

though it is second poorest in terms of water availability. Thus the main problem affecting rice cultivation is the lack of water. Even though the Cauvery Delta region of the Tanjavur district is known as the Rice Bowl of South India, the farmers there can no longer rely on a supply of irrigation water. The proliferation of tube wells combined with water scarcity has led the state to look for alternatives, including rehabilitating the almost defunct tank irrigation systems. Thus, Tamilnadu has been one of the states in the forefront of adopting a System of Rice Intensification (SRI), a system of agronomic practices where water use in paddy cultivation can be reduced between 30 to 40 percent. SRI involves a series of practices—including fewer plants per acre and alternatively keeping the land barely moist and wet—that help increase root growth. Tamilnadu State promotes SRI as an alternative to conventional paddy cultivation where plants are submerged in several inches in standing water. Today SRI is often promoted as a method to reduce water use while increasing yields. Most farmers continue to use fertilizers and pesticides that are required when cultivating high-yielding varieties.

The Tamilnadu Women's Collective promotes SRI with a difference: through natural farming practices. Preliminary reports suggest that output from their SRI cultivation with natural farming practices is higher than that in traditional paddy cultivation using conventional planting methods. While in the first year the output from SRI method using agrochemicals was higher than that from SRI method using natural methods, the latter was more profitable once costs associated with the chemical inputs were accounted for. This difference kept steadily increasing in the second and third years as the output from the SRI system using natural methods kept increasing. Output from SRI using traditional paddy varieties with natural methods—rather than high-yielding varieties (HYV) normally included in SRI—resulted in net profits almost four times greater than traditional paddy cultivation using conventional irrigation. The net profit from SRI using traditional paddy varieties was almost twice that of HYV seeds.

PROTECTION FROM AGRO-CHEMICAL POLLUTION

Water pollution is one of the major reasons for water insecurity in many parts of the world. This is either due to discharge of untreated industrial effluents or anthropogenic wastes into water ways, or non-point pollutants such as agricultural runoffs that pollute both groundwater and surface water.

Concentrated animal feeding operations (CAFO) in feedlots, or application of more fertilizer than a crop can absorb, also cause runoffs rich in nitrogen and phosphorus that find their way into rivers and estuaries. On a global scale, agricultural runoff is the most important source of eutrophication (caused by high levels of nitrogen and phosphorus in surface water, promoting excessive growth of plants, small and large) which can lead to hypoxia (depleted oxygen levels) and impact the water ecosystem.

In India, pesticide contamination has been affecting groundwater in many farming regions, lowering the quality of drinking water. Traces of pesticides have been discovered in breast milk and dairy milk. Indiscriminate use of fertilizers, especially urea, has been a problem in many parts of India, damaging soil and contaminating water, the latter affecting human health. A main contributing factor is excessive state subsidies to the fertilizer sector that ensure easy access for farmers. The Women's Collective and other proponents of natural farming argue that these policy changes are soil-centered rather than farmer-centered. They argue that the fertilizer industry should not get subsidies in the name of farmers, food security and agriculture. According to them, a level playing field for ecologically appropriate agriculture would mean removal of subsidies for fertilizer and pesticide companies, and providing a direct payment to farmers to help practice their choice of agricultural methods and technology. With these changes in policy, the current crisis could become even more of an opportunity for small farmers to embrace an agro-ecological approach to farming.

Conclusion

The climate adaptation strategies being pursued in national and international policymaking circles in relation to food and water security tend to look at each of these issues in isolation, and often continue with the same policies that have led to the current crisis in food and water security, as well as in rural livelihoods. Strategies to address food security focus almost exclusively on increasing agricultural production, while ignoring health and cultural aspects of the food being produced, and the role of agriculture as a means for rural viability.

Similarly, mitigation is primarily seen as a technological problem. Some of these technological solutions have tremendous negative implications not only for food security, but also for the global water situation. An environmental impact assessment with special attention to water quantity and quality could help ensure that proposed adaptation and mitigation projects are not false solutions that end up passing the buck to future generations.

Climate policies should pay attention to synergetic efforts that are selectively and carefully built on firm foundations of traditional knowledge, such as the Women's Collective, that offer effective, just and people-centered solutions to the food and water crises.

References

1. This paper is a summary of a forthcoming, fully cited, report of the same title from IATP.
2. For the vision and mission of Women's Collective, visit http://www.womenscollective.net/vision_mission.php.
3. For a detailed qualitative discussion of these three points, please read the longer paper at iatp.org.
4. Women's Collective 16th Annual Conference, Resolution numbers eight and nine, July 31, 2010, Ranipet, Vellore.