

In partial fulfillment of the requirements of ENSC 501

The Organic Farming Movement in India: Problems and Potential

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Over the past ten years, the organic farming movement has rapidly expanded in India and worldwide. Throughout the twentieth century, organic farming movements developed in various places around the world in response to the ecological and social destruction caused by industrial agriculture. Primarily, increasing consumer demand in Europe and North America has fuelled the recent consolidation of a global organic farming movement and encouraged its rapid growth. In light of its increasing popularity, organic farming requires further policy attention and research. In particular, it is important that organic farming be considered for its potential as a rural development strategy. In examining the role of the organic farming movement in India, this paper argues that organic farming in India has the potential to improve livelihoods, provide food security and food sovereignty, and serve as part of a climate change mitigation and adaptation strategy. However, there are many obstacles and limitations to be overcome before organic farming can become a powerful force for change in India. Poor agricultural investment and government support for conventional agriculture, undeveloped domestic markets, and costly and complicated certification processes all pose significant obstacles for organic farmers. The success of the movement hinges on further institutional support, in which the government must play a key role. The conclusions in this paper are drawn from a review of the relevant literature, as well as from correspondence with nine Indian organic farmers, two organizations, and an alternative education centre.

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1 Introduction

Organic agriculture has been one of the fastest growing sectors in the global food industry for over two decades. The most recent international statistics report that in ten years the area of certified organic agricultural land has more than tripled, from 10.5 million hectares (ha) in 2000 to 37 million ha in 2010. The number of organic farms appears to have increased in step from an estimated 398 804 in 2003 to 1.6 million in 2010.¹ Nevertheless, organic agriculture still only accounts for 0.9 percent of the total agricultural land area worldwide. It should also be noted that approximately two-thirds of global organic agricultural land is used for pasture (Willer and Kilcher 2012).

Curiously, the area of organically managed land as well as the number of farms both decreased slightly between 2009 and 2010. Global organic agricultural land declined by 50 000 ha, and the number of producers declined by an estimated 200 000. This is the first recorded setback in a ten-year history of steady growth. These figures reflect a significant loss of organic farmland in China and India, which was partially offset by an expansion in Europe (notably France, Poland and Spain). Despite an overall decline, the international market for organic products has continued to grow, from 54.1 billion US dollars in 2009 to 59.1 billion US dollars in 2010 (Willer and Kilcher 2012).

The driving forces behind the international growth of organic movements as well as the movements themselves are diverse and context-specific (Vogl *et al.* 2005). However, one of the main reasons for the recent increase in organic production and rising consumer demand is a growing recognition of the environmental degradation caused by

¹ All of the above statistics are published in the 2000, 2003 and 2012 editions of *The World of Organic Agriculture: Statistics and Emerging Trends*, which are available to download at www.organic-world.net.

conventional agricultural practices. The form of agriculture most widely practiced today was first introduced in the 1960s during the Green Revolution. Green Revolution methods include the use of high-yielding crop varieties combined with chemical inputs such as synthetic pesticides, herbicides and fertilizers, mechanized tillage, and large-scale irrigation projects. While these methods have been adopted in varying degrees, the Green Revolution heralded a radical shift in the mode of agricultural production worldwide. Green Revolution technology greatly increased global agricultural production. However, the achievements of the Green Revolution have come at an environmental price, throwing into question the long-term sustainability of these methods. In particular, conventional agricultural practices have led to soil degradation and erosion, loss of biodiversity, pollution and depletion of ground and surface water, and increasing greenhouse gas emissions. Approximately 1.5 million ha of agricultural land is lost each year due to salinization (Foley *et al.* 2005, 46). In this context, organic farming is seen as one means to realize agricultural sustainability.

In the early twentieth century, organic farming movements began to emerge in different areas around the world in response to agricultural industrialization. The various types of farming systems grouped under the term ‘organic farming’ include Rudolf Steiner’s biodynamic farming developed in Germany in the 1920s, the organic movement in England in the 1940s founded by Sir Albert Howard and Lady Eve Belfour, Japanese farmer Masanobu Fukuoka’s natural farming in the 1970s and permaculture developed by Australians Bill Mollison and David Holmgren also in the 1970s (Eyhorn 2007, 21-22). The concept of organic farming arose out of a desire to develop agricultural practices that work in harmony with nature, rather than against it. In an effort to consolidate these

developments, the International Federation of Organic Agriculture Movements (IFOAM) was established in 1972 (Luttikolt 2007). While the concept of organic farming emerged in the West, organic farming is not solely a Western practice. Rather, it is an attempt to learn from and enhance traditional agricultural practices that have been used for centuries around the world. Sir Albert Howard, for example, derived his inspiration from observing traditional farming practices in India (Parrott and Marsden 2002, 47). Indeed, there are many agricultural systems in the world that have not been touched by the organic movements and are still considered organic.

The market for organic products is principally concentrated in Europe and North America, which account for an overwhelming 96 percent of global sales. In these regions in particular, consumer demand has expanded alongside recent health and safety concerns regarding the effects of genetically modified (GM) crops. While domestic markets in developing countries are growing as well, it is generally at a much slower pace (Willer and Kilcher 2012). Partly as a result of expanding consumer demand in North America and Europe, organic farming is increasingly positioned as a rural development strategy for developing countries (Parrott and Marsden 2002). Currently around one third (12.5 million ha) of global organic agricultural land is in developing countries (Willer and Kilcher 2012).

The agricultural land area and the number of organic producers in India have increased considerably in the past decade. In fact, India now has by far the largest number of organic producers worldwide. From an estimated 304 in 1999, the number of organic producers in India has expanded dramatically to 400 551 in 2010 (Willer and Kilcher 2000; 2012). Notably, most of this growth occurred after 2007, when India had

an estimated 195 741 organic producers (Willer and Kilcher 2011). According to most recent statistics,² organic agriculture declined significantly in India between 2009 and 2010. However, it is worth emphasizing that this runs contrary to the general pattern of steady growth over the past ten years, and should not necessarily be taken as an indication of future declines. Possible explanations for this finding will be explored in later sections.

In this paper, I provide a critical assessment of the rise of the organic farming movement in India, its problems, and its potential. I conclude that the movement has incredible potential for improving livelihoods, contributing towards food security and food sovereignty, ensuring environmental sustainability, and as a strategy for mitigating and adapting to climate change. However, the organic farming movement is no panacea for sustainability. There are many limitations and obstacles yet to be overcome in order for organic farming to become a positive force in India.

2 Theoretical Frameworks

For the purpose of this discussion, I will work within the framework established by IFOAM's definition of organic agriculture. This definition is widely accepted within the organic farming community. It attempts to capture the founding values of the original organic movements and to guide the globalization of organic agriculture. Most importantly, it was created through a worldwide and truly participatory process. Between 2003 and 2005, the IFOAM World Board appointed a task force of eight people and a consultative group of over forty to articulate the basic principles. The group members were chosen to represent the diversity of organic farming in background, gender, region

² These statistics are published in the 2012 edition of *The World of Organic Agriculture: Statistics and Emerging Trends*, which was released February 12, 2012.

and history. After review and input both by IFOAM's member organizations and outside voices, the current definition was adopted in 2008 (Luttikolt 2007). IFOAM now has over 870 members in more than 120 countries around the world (Willer and Kilcher 2012).

According to IFOAM's (2009) definition,

Organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved.

This definition embodies the four key principles of organic agriculture according to IFOAM: health, ecology, fairness and care.

The Principle of Health: "Organic agriculture should sustain and enhance the health of soil, plant, animal, human and planet as one and indivisible."

The Principle of Ecology: "Organic agriculture should be based on living ecological systems and cycles, work with them, emulate them, and help sustain them."

The Principle of Fairness: "Organic agriculture should build on relationships that ensure fairness with regard to common environment and life opportunities."

The Principle of Care: "Organic agriculture should be managed in a precautionary and responsible manner to protect the health and well-being of current and future generations and the environment" (IFOAM 2009).

These principles are meant to form the basis of organic agriculture worldwide. Organic agriculture thus encompasses a diversity of practices that are context-specific by definition, but abide by certain universal principles. In accordance with these principles, organic agriculture does not permit the use of synthetic inputs. Moreover, the principles of ecology and care forbid the use of GM seeds, as they are manufactured without regard

for the specific context in which they are implemented (Scialabba and Hattam 2002) and violate the call for scientific precaution (IFOAM 2009).

It is clear from these principles that organic agriculture is not simply a negative concept. Rather, organic production requires that farmers actively work to enhance the health and biological functioning of the farm ecosystem. In India, there are numerous traditional farming systems that accord with this definition. However, many farmers are also considered “organic by default” simply because they cannot afford the use of Green Revolution inputs and technologies. Thus farmers who are “organic by default” will not be considered as organic for the purpose of this paper.

Moreover, the understanding of sustainability in this paper is based on the notion that sustainability rests on three equally fundamental pillars: environmental, social and economic. Thus in order for an agricultural practice to be sustainable, it must uphold or improve, rather than degrade, long-term environmental, social and economic conditions.

3 Methods

The conclusions drawn in this paper are based on a review of relevant literature. In addition, I conducted email interviews with nine organic farmers in states across India, two Indian organizations, and an alternative education centre. These contacts were chosen from a list of Indian organic farmers and other relevant actors in the organic farming movement provided by the Organic Farming Association of India (OFAI).³ The principal debates and concerns raised in the literature will be discussed with regards to the experiences of these farmers and organizations.

³ The directory is available on the OFAI website at www.ofai.org, or in *The Organic Farming Sourcebook* (1996) by Claude Alvares.

4 Literature Review

4.1 Yields and Organic Matter Availability

The 2006 Food and Agriculture Organization (FAO) report *World Agriculture: Towards 2030/2050* estimates that global food production needs to increase by 70 percent to feed a population of 8.9 billion in 2050 – assuming the continuation of current dietary trends and patterns of global production and trade (FAO 2006). In this regard, a frequent critique of organic agriculture is that it will not be able to produce the necessary increase in yields to meet the nutritional and dietary requirements of a growing human population. However, an emerging body of research disputes this claim. The work of Badgely *et al.* is the centerpiece of this research. In their study, Badgely *et al.* (2007) compiles the results of 293 comparative studies of organic and non-organic agriculture around the world. This includes 160 cases where production shifted from conventional to organic and 133 cases where production shifted from low-intensive (often subsistence farming) to organic. They found that upon conversion to organic agriculture, yields tend to increase slightly in developing countries, while they tend to decrease slightly in developed countries (87-8).

This pattern can be explained by the fact that most of the cases where production shifted from low-intensive to organic were in developing countries, where synthetic inputs are either unavailable or inaccessible to a large percentage of the population. The increase in developing countries thus reflects a tendency for yields to increase when production shifts from low-intensive to organic. When production shifts from conventional to organic, the results become more difficult to predict. In these cases, yields often decline in the first two to three years of organic management while the overall health of the farm is restored and the farmer adapts to organic practices.

Afterwards, whether yields stabilize at levels that are lower or higher depends on the types of organic methods that are used, which is contingent on the farmer's knowledge (Das 2007). Significantly, Badgely *et al.* (2007) include comparisons between organic and non-organic systems regardless of the duration of the study, and the time-span for these comparative studies ranges from a single year to over twenty years.

From their findings, Badgely *et al.* (2007) develop two models for the amount of food that could be produced by worldwide organic production. Based on the current population, the first model suggests that organic farming could produce enough to provide 2641 kcal/person/day. This is slightly under the current production of 2786 kcal, but over the average requirement of 2000 to 2500 kcal/person/day. The second model estimates that organic farming could produce enough to provide 4381 kcal/person/day, which far exceeds current food production. This suggests that organic farming could potentially feed a substantially larger global population (Badgely *et al.* 2007, 88-92).

It is important to bear in mind that an adequate comparison between the productive capacity of organic and conventional farming systems cannot be made on the basis of a short-term analysis of a single crop alone. The advantages of organic farming are in its ability to increase total farm productivity, and to sustain this productivity over the long-term by optimizing the health of the farm ecosystem (Scialabba and Hattam, 2002). Proper research on the true potential of organic farming is scarce, and appropriate research is urgently needed. It is clear from Badgely *et al.*'s findings that the potential for organic farming to be a viable alternative to conventional methods cannot be so easily dismissed.

Another critique of organic farming follows that the global land area devoted to agriculture would have to be much larger in order to produce the necessary amounts of organic fertilizers to sustain organic production systems. Organic farmers engage in a variety of practices to maintain and improve soil fertility and optimize crop nutrient uptake, including intercropping with leguminous nitrogen-fixing crops, agroforestry, using farmyard manure (FYM), green manures and weeds, using mixtures prepared from recycled on-farm materials such as biodynamic compost preparations and Armut Mitti⁴, and the application of purchased bio-fertilizers (Rupela 2011; Parrot and Marsden 2002). Plant growth requires macronutrients nitrogen (N), phosphorus (P), potassium (K), and a host of micronutrients. Lack of sufficient biologically available N is a serious limitation to plant growth in many areas (Badgley *et al.* 2007).

To address this critique, Badgley *et al.* (2007) evaluates the potential amount of N that could be fixed by fertilizing with green manures. The results of their research suggests that on a global scale, the amount of N potentially available through the use of green manure alone exceeds the current global use of synthetic N fertilizers (92-4). Moreover, several studies have revealed that the need for N on organic farms decreases over-time as the ecological capacities of the farm are enhanced and the farm becomes more efficient (Parrot and Marsden 2002). These findings call for more research on the potential for organic sources and practices to replace the use of synthetic N fertilizers.

Another potential source of fertilizer that has received insufficient attention to date is human waste and urban food waste. Fiona Nunan (2000) documented an informal market practice of selling urban organic wastes used for agriculture in and around Hubli-

⁴ This is a technique used in Nauteco farming, which will be expanded upon later.

Dharwad, Karnataka. More research is needed to develop sound policies for promoting such practices. The use of urban waste also requires stringent and often costly measures to ensure that toxins are safely eliminated before use (Manna *et al.* 2003; Nunan 2000; Parrot and Marsden 2002).

4.2 Climate Change Mitigation and Adaptation

Organic farming could prove to be a significant and viable strategy for mitigating and adapting to climate change, especially for developing countries. Organic production methods could mitigate climate change by reducing agricultural greenhouse gas (GHG) emissions, and increasing carbon (C) sequestration or curtailing further C loss into the atmosphere. The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) estimates that 10-12 percent of global annual GHG emissions come from agriculture (Solomon *et al.* 2007). Nitrous oxide (N₂O) accounts for 38 percent of global GHG emissions from agriculture (ADB 2009, 175). Excessive N₂O emissions from the soil are due to high concentrations of mobile N from fertilizers and inefficient fertilizer application. The efficiency of synthetic fertilizers in conventional farming systems has steadily declined over time and increasing amounts of fertilizers are needed to maintain previous levels of productivity. According to Niggli *et al.* (2009), synthetic N fertilizer efficiency for cereal production declined by 50 percent between 1960 and 2000 (3). Organic farming could reduce N₂O emissions from agriculture by enhancing soil structure and microbial activity to increase N efficiency, and by encouraging the appropriate timing of N application to reduce leaching (ITC and FiBL 2007; ADB 2009; Niggli *et al.* 2009). Practices such as intercropping with leguminous N-fixing crops and using green manures can be managed by crop rotations to control timing and optimize N

availability and efficiency. Organically managed soils are also more aerated and have lower concentrations of mobile N, which further reduces N₂O emissions (ITC and FiBL 2007; Niggli *et al.* 2009). In 2007, production and application of synthetic fertilizers accounted for 1-2 percent of total GHG emissions (Niggli *et al.* 2009, 3). Organic farming practices encourage the maximum recycling of on-farm nutrients. As a result, application rates of N bio-fertilizers, when they are used, are often 60-70 percent less than in conventional systems (Niggli *et al.* 2009, 4). Organic farming also has the potential to reduce methane (CH₄) emissions through more efficient recycling of FYM (Niggli *et al.* 2009, 7-8).

In addition to reducing on-farm agricultural N₂O and CH₄ emissions, organic farming could reduce CO₂ emissions. Two long-term (over 20-year) comparative studies, one in the United States and one in Switzerland, both had similar results regarding energy use on organic farms. In their 30-year Farming Systems Trial (FST), the Rodale Institute found that organic farms used 45 percent less energy than their conventional counterparts (Rodale Institute 2011). Likewise, the 25-year DOK field experiment in Switzerland found that energy use on organic farms was 20-56 percent less per crop, and 36-53 percent less per land area (Mader *et al.* 2002).

Organic farming also has the potential to mitigate climate change by increasing soil C sequestration. This is the process whereby C is removed from the atmosphere and stored in the soil (ADB 2009, 180). C sequestration increases with soil organic matter (SOM) content (Muller 2009). Soil degradation caused by the use of synthetic fertilizers greatly impairs the accumulation of soil organic carbon (SOC). The potential for C sequestration is highly dependent on soil type and climate (Manna *et al.* 2003) and the

results of long-term studies are variable (Niggli *et al.* 2009). However, organic farming practices have been shown to increase SOM and thus the potential for C sequestration, especially no-till organic farming systems (LaSalle *et al.* 2008). Moreover, organic farming is highly compatible with agroforestry, which also assists in removing CO₂ from the atmosphere (ITC and FiBL 2007).

A climate change adaptation strategy for agriculture must be able to keep up with production while supporting long-term environmental and social resilience to changing climactic conditions. Organic farming merits serious consideration in this regard. Organic farming practices build up the health and resilience of the farm, enhancing soil chemical, biological⁵ and physical properties. Chemical fertilization and unsustainable land-use practices have degraded the world's agricultural soils. Conventional farming practices have caused extensive salinization and acidification. Topsoil loss due to soil erosion is one of the greatest threats to the future of agriculture (Rupela 2011). Organic farming builds up SOM, which helps to avoid acidification, increases soil aggregate stability, and prevents erosion (Manna *et al.* 2003). Greater soil stability also increases water retention capacity, which reduces water logging and runoff. This lessens the need for irrigation (Muller 2009; Niggli *et al.* 2009; Padmavathy and Poyyamoli 2011). As a result, organic farms are shown to fare better than conventional farms during extreme weather events such as floods and droughts (Muller 2009; Niggli *et al.* 2009). The Rodale Institute's (2011) FST found that water percolation in their organically managed soils was 15-20 percent higher than in their conventionally managed soils. Notably, this study also found

⁵ Biological soil properties refer to the ability of the soil to sustain biological life, such as bacteria, fungi, anthropoids and earthworms.

that organic corn yields were significantly higher (31 percent) than conventional corn yields in years of drought. These results suggest that enhancing total ecosystem productivity through organic farming could be a more effective tool for drought resistance than GM drought-resistant crop varieties, which perform 6.7-13.3 percent better than regular conventionally managed varieties in conditions of drought (Rodale 2011). Clearly, more research in this regard would be highly valuable.

Stable soils with high amounts of SOM also increase microbial and earthworm populations (Padmavathy and Poyyamoli 2011). Microbial activity is essential for nutrient cycling, enhancing plant-nutrient availability and acquisition. Microbial activity also increases soil aggregate stability, aeration and water percolation and helps protect plants against pathogens (Singh *et al.* 2011). Recent studies have found that microbial activity is higher on organic farms than conventional farms, and that microorganisms perform all of these functions crucial for maintaining soil fertility (Nautiyal *et al.* 2010; Padmavathy and Poyyamoli 2011; Singh *et al.* 2011).

By working with nature, rather than working to suppress nature, organic farming enhances the overall biodiversity of the farm. The Green Revolution achieved significant success in increasing the yield of a small number of crops. As a result, agricultural crop diversity has declined significantly. Organic farming, at it was intended by IFOAM, does not permit monocultures, and encourages the cultivation and breeding of indigenous varieties of crops and livestock. Crop diversification is also an important means for reducing the risks associated with crop failure and vulnerability to climate change (ADB 2009). By its very definition, organic farming is not a one-size-fits-all solution. Rather, organic farming practices should vary depending on the context. Organic farming is often

described as knowledge-intensive rather than input-intensive, and it has the potential to build up and expand on local knowledge. Investing in local knowledge is truly the best climate change adaptation strategy to safeguard the future of farming.

4.3 Rural Development

In recent years, the economic viability of organic farming has become apparent. Increasingly, governments and corporations in developing countries have adopted organic farming to take advantage of the growing export market due to demand in North America and Europe. At the same time, although slightly contradictory, another side of the organic movement is using organic farming as a bottom-up strategy for rural economic and social development. Largely driven by local governments and grassroots Non-Governmental Organizations (NGOs), this side of the movements seeks to use organic farming to improve livelihoods and revitalize rural economies. A more stable and reliable crop yield, income diversification, the chance to receive higher prices for organic products, minimal reliance on external inputs and the encouragement of local knowledge all indicate that organic farming has this potential (Parrot and Marsden 2002; Eyhorn 2007). However, there are barriers to realizing these benefits for small farmers, particularly with regards to expensive certification processes, undeveloped domestic markets for organic products and the recent conventionalization of the organic industry (Parrot and Marsden 2002).

Gender equality is essential for sustainable rural development. Green Revolution technology and agricultural commercialization often serve to increase the share of female agricultural labourers, while constraining their opportunities for gainful employment. Agricultural mechanization has had the effect of pushing women out of economically productive tasks. At the same time, rising input costs increase the need for women to help

on the farm as unpaid labourers. Moreover, women often lack access to land rights. Thus, although women play an essential role in agricultural production, they are often excluded from decision-making (Satyavathi *et al.* 2010). Organic farming that adheres to the principle of fairness would promote gender equality (Subrahmanyeswari and Chander 2011). Notably, observations from a study of agroecology in Cuba indicate that a diversified organic farming system could balance power relations by providing women with more meaningful tasks, therefore increasing income-earning opportunities and giving them a voice in production-related decisions (Rosset *et al.* 2011, 183-4). Unfortunately, the question of gender relations in organic farming has been largely overlooked in the existing research (Subrahmanyeswari and Chander 2011; Summer and Llewelyn 2011).

4.4 Organic Standards and Certification

The globalization of organic agriculture has set in motion an alarming trend towards conventionalization. The term “conventionalization” describes the process whereby organic farming becomes increasingly similar to conventional farming. Notably, the organic sector is showing signs of intensification and specialization, which are traits that typify conventional production (De Wit and Verhoog 2007). While this trend is far from universal, it does give cause for concern. De Wit and Verhoog (2007) documented a trend towards conventionalization on organic poultry and pig farms in the Netherlands. In this case, conventionalization was characterized by increasing corporate influence, high animal densities and a reliance on off-farm sources for 90 percent of feed, with 70 percent imported from abroad. This is done in compliance with existing EU regulations, which do not specify sources of feed for organic pig and poultry production. Not only

does this jeopardize the values and credibility of the organic movement, it is in direct opposition to IFOAM's basic principles. Heavy reliance on external inputs, inefficient management of livestock manure, and high animal densities leading to insufficient attention to individual animal welfare compromise the principles of ecology and health (De Wit and Verhoog 2007). One way to stop this trend would be to impose stricter standards. However, more detailed and stricter standards could constrain innovation, which is crucial for organic farming, and could lead towards "recipe" organic farming. Moreover, L.W.M Luttikholt (2007) argues that stricter standards could disadvantage small organic producers and undermine IFOAM's principle of fairness.

Certification is necessary for farmers to access organic export markets and to ensure that they receive a higher price for their products on domestic markets. However, third-party certification can be a complicated and costly process for farmers. In order to access European organic markets, an exporting country must either have equivalent government-regulated standards and certification processes, or receive certification from a European organization (Vogl *et al.* 2005, 11-13). Unfortunately, European certification agents are not often equipped to judge what the appropriate environmental and social practices are for a particular exporting country, and thus the concept of 'equivalence' is only used in principle. In practice, exporting countries are often made to comply with the exact EU standards, which may not be appropriate (Vogl *et al.*, 2005). Ernstman and Wals (2009) document how an NGO's attempt to replace shifting cultivation with organic farming has negatively affected the Naga tribes in Northeastern India. In this case, it would have been more appropriate to compliment and reinforce sustainable aspects of the existing farming system and to establish a local certification body based on local

standards. For this purpose, IFOAM is supporting the development of Participatory Guarantee Systems (PGS). As defined by IFOAM, “Participatory Guarantee Systems are locally focused quality assurance systems. They certify producers based on active participation of stakeholders and are built on a foundation of trust, social networks and knowledge exchange.” PGS is an approach based on the honour system, whereby standards and compliance are set and monitored by local consumers and organic producers. Products are intended for local and domestic markets. PGS standards are context-specific, varying with the local cultural practices, ecologies, markets and politics. Nevertheless, without coercion, it has been observed that standards around the world adhere to the guiding principles of organic agriculture with remarkable consistency. Currently there are over 10 000 PGS-certified organic producers in over 20 countries around the world (IFOAM 2008). By returning decision-making power to the hands of organic producers, these initiatives indicate that there is still a way in which organic farming could be a means to empower small farmers.

4.5 Food Security and Food Sovereignty

The global emergence of organic agriculture and the key debates highlighted in the preceding discussion raise a question of critical importance: in what ways can organic farming contribute towards food security? According to the 1996 World Food Summit, “food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life” (FAO 1996). This comprises four dimensions: availability, accessibility, stability, and utilization, where:

Food availability, “refers to having sufficient quantities of food of appropriate quality, supplied through domestic production or inputs, food aid and net imports.”

Food accessibility “refers to the access, by individuals, to adequate resources and entitlements for acquiring appropriate foods for a nutritious diet.”

Food utilization “refers to ways in which food contributes to an adequate diet, clean water, sanitation and health care, and in turn, to a state of nutritional well-being where all physiological needs are met.”

Food stability requires accessibility “without the risk of losing access to food as a consequence of sudden shocks (e.g. an economic or climatic crisis) or cyclical events (e.g. seasonal food insecurity)” (Scialabba 2007).

The role of organic agriculture in food security was the focus of the International Conference on Organic Agriculture and Food Security in 2007. The conference notes that organic agriculture could contribute substantially to each of these areas. Referring to the work of Badgely *et al.*, the conference notes that organic agriculture has the potential to increase food availability in areas that need it most. In terms of accessibility, organic farming could increase purchasing power as well as producer self-sufficiency. While it cannot be said that organic foods are inherently more nutritious, the benefits of organic farming for food utilization come from a more diversified diet. Finally, in terms of food stability, the conference noted that organic farming could reduce risks of crop failure and increase water-use efficiency (Scialabba 2007). However, organic farming does not safeguard against market price volatility and does not address inequalities in the global food system.

Organic agriculture thus encounters more difficulties when examined through the lens of food sovereignty. Food sovereignty is a concept that was originally articulated by the international peasant movement La Via Campesina in 1996. It is defined as:

The right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food

and agriculture systems. It puts those who produce, distribute and consume food at the heart of food systems and policies rather than the demands of markets and corporations. It defends the interests and inclusion of the next generation. It offers a strategy to resist and dismantle the current corporate trade and food regime, and directions for food, farming, pastoral and fisheries systems determined by local producers. Food sovereignty prioritizes local and national economies and markets and empowers peasant and family farmer-driven agriculture, artisanal fishing, pastoralist-led grazing, and food production, distribution and consumption based on environmental, social and economic sustainability. Food sovereignty promotes transparent trade that guarantees just income to all peoples and the rights of consumers to control their food and nutrition. It ensures that the rights to use and manage our lands, territories, waters, seeds, livestock and biodiversity are in the hands of those of us who produce food. Food sovereignty implies new social relations free of oppression and inequality between men and women, peoples, racial groups, social classes and generations (La Via Campesina 2007).

The concept of food sovereignty stresses the need to address the inequalities in the global food system. These inequalities have resulted in the expansion of export-oriented commercial monocultures dominated by large corporations at the expense of small peasants, who are increasingly subjected to market flooding and the volatility of global food prices with the removal of trade protection policies. Organic farming has been shown to provide healthy and culturally appropriate food that is produced in an environmentally sustainable manner. Unfortunately, the trend towards conventionalization threatens the potential for organic agriculture to provide food security and sovereignty. As Miguel Altieri (2009) aptly remarks,

Organic farming systems that do not challenge the monoculture nature of plantations and rely on external inputs as well as foreign and expensive certification seals, or fair-trade systems destined only for agro-export, offer very little to small farmers that become dependent on external inputs and foreign and volatile markets (111).

5 Case Studies

The farmers interviewed for this project are not a representative sample of organic farmers in India. They have all been farming organically for at least three years. These

farmers tend to have larger landholdings than average, since I could only contact those who understand English and own a computer. Nor do they speak to the overarching nature of the movement, which is overwhelmingly export-oriented. The organization that I obtained my contact list from is itself a grassroots NGO, dedicated to supporting other grassroots organic farmers and NGOs.⁶ As such, the directory does not contain contact information for corporate-driven export-oriented operations. Rather, the organic farmers interviewed for this project are largely self-starting independent farmers producing for local and domestic markets. These farmers thus shed light on a particular and significant producer-driven side of the movement. These case studies help identify areas where improvements can be made to help organic farming in India become a more viable, sustainable and empowering endeavour.

5.1 Farmer Profiles

5.1.1 The First Madhya Pradesh Farmer

This farmer operates a 5 ha family farm following Masnabu Fukuoka's natural farming principles. Natural farming uses no-tillage and no weeding. Rather than removing weeds, these plants are crushed and spread over the farm as fertilizer. Seeds are sown with particular care and covered with mud and dry grass to build up farm biomass. The natural increase in earthworms also plays a key role in maintaining soil fertility. This is a closed cycle, where no external organic matter is added or removed. This farmer was using chemical-intensive methods for fifteen years before converting to organic farming.

⁶ Detailed state-by-state information on specific stores, NGOs and farmers are available in *The Organic Farming Sourcebook* (2009) by Claude Alvarez or on the OFAI website at www.ofai.org.

His decision was inspired and guided by reading “The One Straw Revolution”. He is not a commercial farmer, although he sells milk to his neighbours at half-price.

5.1.2 The Tamil Nadu Farmers

This 55 ha farm is managed by three brothers. It is the largest of several organic farms that supply food for Auroville, an experimental village designed to realize human unity. With the help of 17 regular workers, these farmers grow indigenous varieties of paddy, roselle, kodo millet, barnyard millet, sesame, mustard, salad greens and basil, as well as coconuts, tamarinds, limes and ramphal fruit. They also produce firewood and fodder. The farm uses 15-20 indigenous Gir cows for manure, milk and cheese. Soil fertility is maintained using FYM, green manure and crop rotations. Bio-pesticides and purchased manure are sometimes used. These farmers use several tractors and other mechanical equipment.

5.1.3 The First Kerala Farmer

The first farmer from Kerala is also a medical doctor who has a marginal organic garden of less than 1 ha in which he mainly grows produce for himself and his family, and for sale at the local market. In addition to a variety of vegetables, he grows coconut, plantain, mango, jackfruit, mangosteen, guava, sapodilla (chikoo) and rice. The organic method that he uses is also mostly natural farming. This small-scale operation does not make use of animals or machinery. Techniques to maintain soil fertility include growing green manure crops in between rows.

5.1.4 The Gujarat Farmer

This farmer practiced chemical-intensive farming for thirty years before adopting organic farming in 1990. His farm is 30 ha and he has a few full-time employees. In order to maintain soil fertility, he uses FYM, green manure and minimal tractor use (although there is a small tractor on the farm). He also buys some manure from neighbours. While he does not own any animals himself, there are around thirty animals on the farm (mainly buffalo and a few cows) that are owned by his employees. He also uses natural pesticides. He mainly grows fruits (lemons, mangos, oranges and amla), which he sells locally.

5.1.5 The Arunachal Pradesh Farmer

This is a 26 ha tea garden in Northern India. In 2004, Swami Valmiki Srinivasa Ayangarya introduced the methods of Vrikshayurveda, an ancient agricultural science, to the tea gardens, which righted the pH balance of the soils and brought under control the many diseases from which the plants were suffering under conventional agriculture. All organic matter is recycled and the farm does not require the addition of external inputs. The farm also has sixty cows of the local (non-hybrid) breed, which are used for manure and urine to fertilize the soils, and provide milk for their employees. The farm is certified and tea is produced for export as well as for domestic markets. In addition to tea, he produces a number of other crops for the local market including ginger, turmeric, rice and mustard.

5.1.6 The Second Kerala Farmer

This farmer has a 2 ha garden in which he produces food for family consumption with the help of his wife and son and another helper. To maintain soil fertility, he applies

a homemade solution of cow dung, cow urine, jiggery and coconut to his field. He is not market oriented.

5.1.7 The Himachal Pradesh Farmer

This is a 10 ha certified biodynamic farm. The owner decided to farm organically ten years ago, and hired a biodynamic consultant with a PhD in biodynamic farming from the Indian Institute of Technology in Delhi to help get him started. He produces different varieties of rice, flour, wheat, soybean, ginger, turmeric, and fruits and vegetables, which he sells all across India.

5.1.8 The Second Madhya Pradesh Farmer

This farmer pioneers a very interesting technique called Nauteco farming that was developed by his Guruji S.A. Dabholkarji. He farms a marginal (0.2 ha) piece of land with the help of his son. He is also looking after a 2.4 ha farm with the help of five other workers. Nauteco farming teaches that a family of five can produce all that they need to be comfortably self-sufficient on a quarter of an acre (0.10 ha), without requiring any external inputs except for 1000 liters of water a day. This is achieved through the use of a mixture called Armut Mitti, which is prepared from on-farm biomass, cow dung, cow urine, jiggery and water. When applied to the farm, this mixture optimizes soil microbial activity. The cow dung and urine come from a Gir breed of cow and her calf that they have on the farm. Weeds are also used to maintain soil fertility. No machinery is used on the land directly. He grows 130 to 150 varieties of crops, including herbs and plants for live fencing. Nauteco is a truly sustainable method of farming that can be practiced on almost any terrain, from rooftops to derelict land, and thus has immeasurable potential.

5.1.9 The Karnataka Farmer

The farmer from Karnataka is a lawyer and part-time farmer with a 24 ha certified organic coffee estate. Most of the coffee is sold to an intermediary and exported. He also grows crops such as pepper, cardamom, pineapple, paddy, areca nut, bananas, ginger, turmeric and flowers. He has few hired labourers from other states. He began farming organically after taking over his father's farm.

5.2 Organization/Institution Profiles

5.2.1 Maharashtra Organic Farming Federation

The Maharashtra Organic Farming Federation (MOFF) is an alliance of 120 small NGOs and 142 000 organic farmers and organic farming promoters in Maharashtra. Founded in 2004 by Vikram Bokey and his colleagues, MOFF is a registered NGO that seeks to unite and guide the state-level organic farming movement and actively promotes organic farming in India as a whole. Its aim is to promote environmental sustainability and food sovereignty through organic farming. One of its main activities is in organic farming education. MOFF recently established the International Institute for Sustainable Agriculture (IISA) in Pune, Maharashtra. In addition, MOFF provides training and PGS certification, establishes marketing channels and seed banks, and facilitates information dissemination through awareness campaigns and publications. Currently, MOFF is in the process of setting up three 100 percent organic farming villages, and recently completed a "Prevent Farmers' Suicides Mission". MOFF obtains its funding from the National Centre of Organic Farming (NCOF) in Delhi.⁷

⁷ More information about MOFF can be found on their website at www.moffindia.org.

5.2.2 Rishi Valley Education Centre

The Rishi Valley Education Centre (RVEC) is an alternative boarding school in Andhra Pradesh that is run by the Krishnamurti Foundation. J. Krishnamurti himself founded the school in 1926. The school is active in providing rural education and health services and in environmental conservation. There is a 16 ha farm on the property where they grow organic fruits and vegetables, paddy, and maize. They cultivate using biodynamic and natural farming practices, including soil fertility preparations made from cow urine, dung, and other recycled by-products, mulching, minimal tillage, and water conservation through micro-irrigation. Its produce goes towards feeding the students and staff. RVEC also runs a resource centre that assists and encourages neighbouring farmers to adopt organic farming. As it is situated in a drought-prone area, RVEC emphasizes the importance of farming practices that conserve water, and has built numerous percolation tanks in the area. RVEC also manages an organic dairy operation that meets all of the school's dairy needs. The dairy has 74 cattle, 14 of which are of the endangered Ongole breed. RVEC uses renewable energy through an on-site biogas plant and solar panels.⁸

5.2.3 Kheti Virasat Mission

The Kheti Virasat Mission (KVM) is a non-profit organization (NPO) in Punjab that was established in 2002. It was registered as a charitable trust in 2005, although it is more accurately described as a civil society movement. Since it was founded, KVM has encouraged and assisted thousands of Punjabi farmers to convert to organic farming

⁸ More information about the Rishi Valley Education Centre, as well as J. Krishnamurti and his teachings, can be found at www.rishivalley.org

through workshops, training, and research. In essence, KVM promotes organic farming as a remedy to the social and environmental destruction caused by the Green Revolution. KVM has led several prominent campaigns, including a successful campaign against Bt Brinjal, and an ongoing campaign against crop residue burning. It has also collaborated with Greenpeace India on their 2010 Living Soils campaign. Notably, KVM has initiated Vatavaran Panchayats in most districts across Punjab as a forum for ecological farming, where farmers can share and build on each other's knowledge. Vatavaran Panchayats can rightly be described as "a people's initiative for [the] environment, running with the peoples' resources, voluntary participation and thoughts." KVM has undertaken a broad range of projects for the promotion of ecological farming, including the establishment of community seed banks, and Women Action for Ecology (WAE), which encourages women to cultivate organic vegetables in their household plots.⁹

6. Discussion

Organic farming in India has truly taken off over the past ten years. According to the first annual survey by IFOAM and the Research Institute of Organic Agriculture (FiBL), in 1999 India had around 304 organic farms on 1711 hectares of organic land, comprising 0.001 percent of the total agricultural land area (Willer and Kilcher 2000). Now, only a decade later, India has the most organic producers in the world, with around 400 551 organic farms on 780 000 hectares of land, accounting for 0.43 percent of the total agricultural land area (Willer and Kilcher 2012). The area of organic land in India is quite small for the amount of producers compared with other countries, indicating that the

⁹ More information about KVM can be found at www.khetivirasatmission.org. To learn more about the campaign against Bt Brinjal visit <http://www.iamnolabrat.com/>.

average Indian organic farmer is small.¹⁰ This is consistent with average farm size in India, which has been steadily declining from 2.28 ha in 1970-71 to 1.23 ha in 2005-06 (GOI 2012). The number of organic farming NGOs has also grown considerably, as well as the number of Green Shops selling domestic organic products (OFAI 2012). India currently has 50 IFAOM affiliates, consisting mainly of NGOs and certification bodies. This is the second-largest IFOAM membership in the world¹¹ (Willer and Kilcher 2012).

However, as previously mentioned, the area of organic farmland and the number of producers both declined significantly in 2009-10. This year alone reportedly witnessed an exodus of approximately 276 706 organic farmers.¹² While actual causes are unclear, there are a number of possible explanations for such a decline. First of all, 2009-10 was a year of poor overall agricultural performance. Reduced productivity was largely due to less-than-normal monsoon rainfall levels. A rainfall deficit affected almost 60 percent of the country in 2009-10, with total rainfall averaging 22 percent below normal levels. Indian agriculture is highly dependent on the quality of the monsoon, as 56 percent of the total cultivated area is rainfed (GOI 2012). Therefore, the drought conditions likely resulted in a general decline in cultivated area, including land under organic production.¹³

¹⁰ According to the Government of India (2011), a farmer with a land holding of less than 1 ha is classified as marginal, a small farmer has 1-2 ha, a semi-medium farmer has 2-4 ha, a medium farmer has 4-10 ha, and a large farmer has over 10 ha.

¹¹ The number of IFOAM affiliates in India is surpassed only by Germany, which has 105 members.

¹² 2009 data from the 2011 edition of *The World of Organic Agriculture: Statistics and Emerging Trends* reported 677 257 organic farms in India on 1.18 million hectares of land, accounting for 0.66 percent of the total agricultural land area.

¹³ While in the report the percentage of organic agricultural land also declined from 0.66 to 0.43, it is unclear whether this was measured from any changes in total cultivated area, or simply correlated from previous data.

In addition, the 2009-10 findings could reflect the decision by many farmers to ‘default’ by choosing to use GM crops or synthetic inputs. It is worth noting that the only other year in which the survey reported a decline in Indian organic agricultural land and producers, 2003-04, was following another year of severe drought and poor agricultural performance.¹⁴ Possible reasons for defaulting include low actual yields, fears of potential low yields, and hopes to increase yields. These last two were noted by Frank Eyhorn *et al.* (2005) as major factors behind defaulting in their study on organic cotton farming in Madhya Pradesh, as the majority of defaulters in that case were large, wealthy and productive farmers (56). It is plausible that all three factors contributed to the 2009-10 declines, alongside a slight reduction in cultivated area. Given past trends, it is highly unlikely that this reported decline should continue. Rather, it is important to regard the organic farming movement in India in terms of its remarkable expansion over the past ten years.

Interestingly, India’s organic exports have continued to grow despite the loss of producers. During 2009-10, the same survey reported a 20 percent increase in export volumes (Willer and Kilcher 2012). The vast majority (estimates of 75-85 percent) of Indian organic products are exported. According to the Agricultural and Processed Food Products Export Authority (APEDA), in 2010-11 India exported around 69837 metric tones of organic products worth 157.22 million US dollars (APEDA 2012). This apparent inconsistency could indicate that more organic farmers have begun producing for export.

India did not have any national organic standards or export certification bodies prior to 2001. In 2001, the Government of India established a National Steering

¹⁴ Between 2003 and 2004, the number of Indian organic producers declined approximately 10 percent, from 41 000 to 37 050 (Willer and Kilcher 2003; 2004).

Committee for Organic Production (NSCOP) under the Department of Commerce, which launched the National Program on Organic Production (NPOP). The NPOP has since established the National Standards for Organic Production (NSOP), which was recognized as equivalent to US and EU standards in 2006. The NPOP has also set up a certification accreditation program in accordance with these standards (FAO 2011). There are currently 22 accredited certification bodies under the NPOP (APEDA 2012). The NPOP offers extension services to provide technical and financial support for organic farmers during conversion; however these services are quite limited in size and scope (FAO 2011). India also has a well-established PGS certification program. In 2006, the Ministry of Agriculture developed a PGS model in collaboration with the FAO. Since then, the PGS Organic India Council has been established to manage and promote PGS certification. Eleven NGOs are on the Council, including MOFF and OFAI. In 2009, an estimated 2500 Indian farmers were certified through PGS. PGS are realistic, simple and affordable certification options for small farmers (IFOAM 2009).

When asked to describe the difficulties of being an organic farmer, three of the participants¹⁵ replied that their greatest challenge was a lack of support in starting their organic farming operation (see Appendix Table 2). The Madhya Pradesh farmer's greatest obstacle was that he is self-taught. In particular, the Karnataka farmer mentioned that he faced ridicule from his family, neighbours and former employees when he began to manage his father's farm organically. Four of the farmers responded that they did not

¹⁵ These are the first Madhya Pradesh farmer, the Karnataka farmer and the Himachal Pradesh farmer.

receive any assistance at all.¹⁶ For the farmers who did receive assistance or training, their sources include: a hired consultant, an NGO, other farmers, taking classes, and online research. It is important to note that two farmers mentioned that they sought advice from other organic farmers, and two farmers also mentioned that they are now giving advice themselves. Given the limited support that is available from other sources and the knowledge-intensive nature of organic farming, knowledge sharing between farmers is an incredibly important process.

Specifically, the Himachal Pradesh farmer responded that his greatest obstacle is government apathy and support for conventional farming. ‘Government propaganda’ and synthetic fertilizer subsidies were also suggested as potential deterrents for other farmers. The Government of India has been heavily subsidizing synthetic fertilizers for years. From Rs. 60 crore in 1976-77, fertilizer subsidies have increased astonishingly to Rs. 61 264 crore in 2009-10 (GOI 2012). This is juxtaposed against the budget allocation for the National Project on Organic Farming (NPOF), which was a mere Rs. 30 crore that same year (Rupela 2011). These policies have facilitated a steady increase in synthetic fertilizer use in India. Fertilizer use has increased remarkably, from 70 kg/ha in 1991-92, to 95 kg/ha in 2004-05, to 144 kg/ha in 2010-11. Imports of all macronutrient (N, P and K) fertilizers have also been increasing to feed this deepening chemical dependence. This is despite the fact that India is the second largest producer of synthetic N fertilizer and the third largest producer of synthetic P fertilizer (GOI 2012). While the 11th Five Year Plan (2007-11) recognizes that “the present unbalanced and irrational system of fertilizer subsidy is an important cause of deteriorating soil quality,” the government intends to

¹⁶ These are the first Madhya Pradesh farmer, the Karnataka farmer, the Kerala farmer and the Gujarat farmer.

address this by “rationalizing fertilizer subsidies across nutrients” rather than curtailing subsidy expenditure (GOI 2008, 35-6). The main problem is thought to be the fact that N fertilizers are more subsidized than P or K fertilizers, which results in unbalanced chemical application and privileges soil regions and crops that are more responsive to nitrogen (GOI 2008). In order to address this concern, the government introduced the Nutrient Based Subsidy (NBS) in April 2010 to set fixed subsidies for specific synthetic fertilizers (Rupela 2011).

In 2010, Greenpeace India launched a Living Soils campaign to petition the government to divert some of its funding for synthetic fertilizer subsidies into supporting bio-fertilizers and organic practices (Rupela 2011). While the 11th Five Year Plan makes no mention of organic farming (GOI 2008), this campaign appears to have been somewhat successful in influencing the 12th Five Year Plan (2012-17). In the Approach Paper for the 12th Five Year Plan, the Planning Commission mentions the need to encourage organic practices such as cultivating green manures, integrating livestock, recycling waste and using bio-fertilizers. The document states that, “support for soil amelioration and ecological/organic fertilization is now scattered under various schemes and will require a clearer focus” (GOI 2011, 70). Another promising new development is in the government’s policy towards pesticides. The Planning Commission acknowledges the value and efficiency of organic and bio-pesticides, and states that “there is a need to substantially step up investments” in research and technology, education, and facilitating bio-pesticide accessibility. In particular, the government plans to invest in Integrated Pest Management (IPM) and Non-Pesticidal Management (NPM) (GOI 2011, 74). It remains

to be seen whether and in what form this acknowledgement of the importance of organic practices will be translated into official government policy under the 12th Five Year Plan.

It is striking that while fertilizer subsidies have been increasing, total agricultural expenditure has been decreasing. Notably, investment in agriculture and allied sectors¹⁷ has declined from an average of 18.4 percent of gross domestic investment during the 6th Five Year Plan (1980-85) to an average of 8.2 percent during the 10th Five Year Plan (2002-07). Moreover, the share of public relative to private expenditure has also been declining. Since the late 1990s, public sector investment has only accounted for around 20 percent of yearly agricultural investment, while the private sector is responsible for the remaining 80 percent. Furthermore, around 80 percent of public investment is allocated for irrigation projects (GOI 2012). As a result, investment in agricultural research as well as rural public services and infrastructure is far from sufficient. For the present 12th Five Year Plan period, the government intends to “play a more proactive role as coordinator, facilitator, and also as a regulator” of the private sector (GOI 2012, 18).

As agriculture is managed primarily at the state level, some states are more supportive of organic farming than others. Although the central government is heavily biased in favour of conventional agriculture, several states in India have made organic farming a priority. In total, twenty-six out of the twenty-eight Indian states have initiated at least one project on organic farming in the past five years (RKVY 2012). Uttarakhand is a state leader in the Indian organic farming movement. In 2003, the Government of Uttarakhand established the Uttarakhand Organic Commodity Board (UOCB) to promote organic agriculture, with the goal of becoming the Organic Capital of India (UOCB

¹⁷ Agriculture and allied sectors comprise agriculture and livestock, forestry, and fishing.

2012). In Karnataka, the Organic Farming Mission has been actively promoting organic farming and the creation of organic villages since its inception in 2009. Several other states that have taken significant initiatives are Uttar Pradesh, Himachal Pradesh, Kerala, and Bihar (RKVY 2012). On the other hand, my contacts from KVM in Punjab, RVEC in Andhra Pradesh, and MOFF in Maharashtra all note that their states provide relatively scant support for organic farming. Fertilizer and pesticide use also varies widely by state, ranging from 237.1 kg/ha in Punjab, to 81.37 in Madhya Pradesh, to 3 kg/ha in Arunachal Pradesh (GOI 2012). Likewise, five states (Gujarat, Punjab, Andhra Pradesh, Karnataka, and Maharashtra) account for nearly 40 percent of total pesticide use (GOI 2011). In this context, the executive director of KVM, Umendra Dutt, describes the organic farming movement as a “war of independence”.

Despite limited central and state government support, the Indian organic farming movement has been able to grow with the help of dedicated NGOs, farmers and other passionate organic farming promoters. These have been the primary actors behind the organic farming movement in India thus far. As my MOFF correspondent explains, “[The government] is under pressure [from] multinational companies producing seed, fertilizers and pesticides. Therefore, the movement is initiated and is in progress by only innovative organic farmer groups and NGOs.” However, limited funding and research bars further expansion of organic farming in India. A supportive government policy is necessary in order for the organic farming movement to continue to flourish (Das 2007).

In addition to declining agricultural investment and government bias towards conventional agriculture, farmers also face obstacles connected with an undeveloped domestic market. The second Kerala farmer and the Gujarat farmer both mention that

their products do not sell properly because of a lack of consumer awareness. The Tamil Nadu farmer also suggests marketing problems as the main deterrent for other farmers. MOFF especially highlights a lack of consumer awareness and a lack of sufficient market linkages between producers and consumers as two main obstacles. While the domestic market has been growing, more work needs to be done in this regard. This requires government attention and investment into creating consumer awareness and strengthening marketing channels.

The third major difficulty brought up by the respondents is the hard work and dedication that organic farming requires. This is asserted specifically by the Karnataka farmer and the Arunachal Pradesh farmer, and is also put forth as a potential deterrent for others. In this regard, the Karnataka farmer spoke in detail about the shortage of quality labour. However, the Arunachal Pradesh farmer notes that organic farming has improved the health of his labourers. The labour intensive nature of organic farming raises the concern that organic farming could increase labour exploitation.

The two other reasons put forth to explain why more farmers do not convert to organic are ignorance and a lack of concern for the environment.¹⁸ Conventional farmers often practice many of the same methods for maintaining soil fertility that are used in organic farming. In 2010, Greenpeace India interviewed 1000 farmers from six different states for their Living Soils campaign. This survey contained a number of important insights. Notably, 79 percent of the survey respondents were aware that leguminous plants fix nitrogen, and 36 percent of the respondents cultivated crops for green manure. Furthermore, 96 percent held the opinion that chemical fertilizers cause soil degradation,

¹⁸ These are suggested by the first Kerala farmer and the second Madhya Pradesh farmer respectively.

and 88.8 percent attributed a loss of living organisms in the soil to chemical fertilizers and pesticides. When asked why they use chemical fertilizers, 69.7 percent replied that it was because they have no other option, 34 percent replied that they are easy to use, 6 percent replied that they are recommended by experts and 2.7 percent replied that they are cheap (Rupela 2011).

While these farmers did not mention it, land tenancy is another major barrier. Organic farming requires a lot of work and due to the conversion period rewards may not come for several years. If the farmers do not own the land, it may not be worthwhile for them to put in this effort. Moreover, there is evidence to suggest that this is applicable within households as well. While women comprise 40 percent of the agricultural workforce (Agarwal 2003), the 2000-01 agricultural census reported that a mere 10.83 percent of operational landholders in India are female (GOI 2012). Strikingly, 86 percent of all rural female workers in India are employed in agriculture. The nature of this agricultural work is often informal, and women are often paid less than men, if at all. While women perform a large share of agricultural labour in India, they are often excluded from production-related decisions (Satyavathi *et al.* 2010). Many of India's organic farming organizations actively promote gender equality, including MOFF and KVM. Notably, the UOCB supports gender equality in organic farming through gender sensitization training. In their survey of 111 male and 69 female organic farmers in Uttarakhand, Subrahmanyeswari and Chander (2011) find that, while men still own the land in the vast majority (80.6 percent) of cases, women have greater control over income from livestock as well as decisions related to livestock management than men, and many important production decisions are taken jointly (16-18).

The organic farming movement in India is composed of a variety of actors with different motives for pursuing or promoting organic agriculture. One of these motives is profit, which was mentioned by the Gujarat farmer. Another motive is moral/ideological, stemming from concern for the environment and human health. This was the explanation given by four of the farmers¹⁹ when asked to explain the reason behind their decision to farm organically. Significantly, the Karnataka farmer replied that his “conscience would not permit [him] to pollute the environment.” This has been an important driving force behind the organic movement since its foundations.

Specifically, four of the farmers converted to organic farming after noticing social and environmental destruction caused by conventional agriculture, whether on their own field or in the country in general.²⁰ Agricultural intensification and the increasing use of synthetic fertilizers have devastating effects on the Indian environment. These include soil erosion and salinization, groundwater depletion, reduced biodiversity and the loss of SOC (Duboc *et al.* 2011; GOI 2012). Approximately 105 million ha of arable land in India is degraded. Of this, 68 percent is due to water erosion, 21 percent is due to chemical degradation, 10 percent is due to wind erosion and the rest is due to physical degradation. As a result, an estimated 5.3 billion tonnes of soil is lost to erosion each year, at a rate of 16.3 tonnes/ha/year. There are several states in which more than half of the land area is degraded due to soil erosion. Roughly 8 million tonnes of nutrients are lost to soil erosion each year. In addition, an estimated 3.1 million ha is waterlogged, and 4.1 million ha is affected by salinity (GOI 2012). Moreover, the manufacture and use of

¹⁹ These are the first Madhya Pradesh farmer, the Tamil Nadu farmer, the first Kerala farmer and the Karnataka farmer.

²⁰ These are the Arunachal Pradesh farmer, the second Kerala farmer, and the first and second Madhya Pradesh farmers.

N fertilizers account for 6 percent of India's total GHG emissions. This is comparable to emissions from industries such as cement, iron and steel (Rupela 2011). All four of the respondents that previously used conventional methods on their farm have witnessed indicators of improved environmental health. These include a noticeable increase in insects, birds, and other wild animals on the farm, as well as soil quality improvements.²¹

Furthermore, the Gujarat farmer and the Arunachal Pradesh farmer both note that farming organically helps to conserve water. The Gujarat farmer claims to use less water now than he did under chemical-intensive farming, and the Arunachal Pradesh farmer reports that increased groundcover and trees reduces water losses from soil evaporation. The potential for organic farming to reduce water use in India is highly significant. Over 68 percent of the country's cultivated area is prone to drought (Prabhakar and Shaw 2008, 114). Water distribution is an important source of conflict at all levels: between individuals, villages, regions and states. To a large extent, state level politics have encouraged the overexploitation and depletion of groundwater supplies. Although groundwater resources legally fall under state ownership, water property rights are not explicitly defined. As a result, Indian landowners are effectively given full rights to exploit the groundwater under their property. This has resulted in the competitive deepening of the water table and a growing market for the sale and purchase of water, usually between landowners and lower-caste or landless laborers (Janakarajan 2004). While a method of farming that uses less water does not address underlying problems, it is incredibly valuable and necessary nonetheless.

²¹ These are the first Madhya Pradesh farmer, the Gujarat farmer, the Arunachal Pradesh farmer and the Karnataka farmer.

The second Madhya Pradesh farmer replied that he decided to farm organically after he “read [about] the situation of farmers due to [the] Green Revolution in [India] and decided to study a solution for this.” The past decade has seen an appalling increase in farmer suicides across the country. While actual figures are uncertain, between 1997 and 2007 at least 182 936 Indian farmers committed suicide. Most suicides occur in the states of Kerala, Karnataka, Punjab, Maharashtra and Andhra Pradesh (Mishra 2006). Although the issue of farmer suicide is incredibly nuanced, it is clear that indebtedness and poor public investment in agriculture are prominent factors. Significantly, although agricultural investment has declined, agriculture still provides employment for over half of the population (52 percent) (GOI 2012). According to the National Sample Survey Office (NSSO)’s 59th round in 2003, an astonishing 48.6 percent of Indian farmer households are in debt. There are twelve states in which over half of farmers are in debt. In Andhra Pradesh for example, debt affects an estimated 82 percent of farmer households. The average household debt of an Indian farmer is Rs. 12 585. The majority of indebted farmer households operate marginal landholdings (GOI 2012). A large part of the reason behind increased farmer indebtedness is due to crop failure, increased costs of production and declining prices for agricultural commodities (Mishra 2006). A study by Srijit Mishra (2006) on farmer suicide in Maharashtra revealed that in 96 out of 111 cases of suicide the farmer was in debt (1541). Notably, these farmers were also more likely to have taken out loans from private moneylenders (1543). A high reliance on moneylenders was also found by the 59th NSSO round. Declining public agricultural expenditure has resulted in the demise of the formal rural credit market, forcing farmers to borrow from informal moneylenders, often at exorbitant interest rates of 36-60 percent (Assadi 2008,

2). It is tragically symbolic that many farmer suicides are committed by ingesting synthetic pesticides and fertilizers (Mishra 2006).

Converting to organic farming could reduce the burden of debt for many farming households in India. Frank Eyhorn's research on the Maikaal bioRe organic cotton project in Madhya Pradesh affirms one such case in which contract organic farming is improving the livelihoods of Indian farmers. Maikaal bioRe[®] India Ltd. was established in 1991 by the Swiss trading company Remi AG (Eyhorn *et al.* 2005). Since then it has become one of the largest organic cotton projects in India, consisting of more than 1500 organic farmers in 75 villages in the Nimar Valley. It produces approximately 1000 tonnes of cotton fiber per year on 4250 hectares of land (Eyhorn *et al.* 2005). As of 2005, 300 participating farmers had become shareholders and two farmer representatives were on the Board of Directors. Maikaal bioRe provides education, training and advice, as well as inputs of seeds, biopesticides and biofertilizers. The company buys the cotton at market rates with a guaranteed price premium of 20 percent after three years of conversion. It covers certification costs and operates an internal control system (ICS) to monitor compliance. If a farmer defaults by using Bt cotton or synthetic inputs, they are excluded from the project (Eyhorn *et al.* 2005, 13-5). Higher market prices compensate the company for the costs of certification, extension services and price premiums (Eyhorn *et al.* 2007). Organic management practices on these farms include intercropping, recycling organic matter, the use of FYM and bioproducts.

Eyhorn *et al.* (2005; 2007) compares 60 farms that had been with the Maikaal bioRe project for three years or more with 60 conventional farms in 10 villages for the 2003-04 and 2004-05 growing seasons. The greatest production cost for organic farms is

hired labour, while for conventional farms it is inputs. Eyhorn *et al.* (2007) found that labour requirements were not significantly higher on the organic farms. However, this is partly because most farmers were not following the recommended composting practices (29). As a result, total production costs were 13 percent lower in 2003 and 20 percent lower in 2004. Thus, including price premium, organic farmers had 30-40 percent higher incomes from cotton than the conventional cotton farmers. The farmers do not receive a price premium for rotation crops, and the rotation crops had a slightly lower yield than the conventional systems. Nevertheless, the average total incomes of the Maikaal bioRe organic farmers are 10-12 percent higher. Excluding the price premium, the organic farmers would still have higher incomes (33). Over the long run, this allows farmers to invest in strategies to diversify their incomes and break away from the cycle of debt. Moreover, lower total production costs and input investment reduce vulnerability to crop failure and market price fluctuations (Eyhorn 2007).

In order to realize these benefits, farmers must first overcome the 2-3 year conversion hurdle, during which time yields are lower, some infrastructure may need to be established and farmers are not eligible for a price premium (Eyhorn 2007). Thus Eyhorn *et al.* (2007) found that on average Maikaal bioRe organic farmers are of higher socioeconomic status, measured in terms of housing, education, caste and wealth (36). They also have larger average land holdings and greater access to equipment and micro-irrigation systems compared with the conventional farmers (Eyhorn *et al.* 2005). Over time, the average landholding of farmers in the Maikaal bioRe project decreased from 8.7 ha in 1993 to 3.8 ha in 2004, indicating that smaller farmers are becoming more involved (Eyhorn 2007). Eyhorn (2007) surmises that wealthier farmers were the first to enter into

contract with Maikaal bioRe because they were more willing and able to accommodate a temporary income loss during conversion (36).

It is worth noting that although it has diminished, the average landholding of the farmers involved in the Maikaal bioRe project is still above the average for the state of Madhya Pradesh, which is 2.8 hectares (Singh 2006). Singh (2006) discovered a similar trend in his research on another organic cotton project in the Nimar Valley. The Indian textile manufacturing company Pratibha Syntex established the Vasudha organic cotton project in 1998. Vasudha involves 3000 farmers in 108 villages, with a total of 8500 ha under cultivation (Singh 2006, 5362). Although landholdings of participating farmers ranged from less than 1 ha to 24 ha, Singh (2006) noted that 50 percent of the 44 farmers that he interviewed in nine villages were very large farmers, with landholdings of over 10 ha. The average landholding of these 44 farmers was 6.1 ha (5362). Although their findings are similar, Singh (2006) has a different explanation than Frank Eyhorn (2007). He attributes the higher percentage of large farmers involved in Vasudha to the company's bias for working with large farmers. Maikaal bioRe is an example of a more socially responsible company, and in these cases both explanations have merit.

Singh (2006) analyzed the contract that farmers are made to sign for the Vasudha organic cotton project. Significantly, he finds it to be potentially exploitative, requiring much more commitment on behalf of the farmer than the company. Farmers wishing to participate in the Vasudha project must first submit an application stating the proposed area of land and the availability of organic manure. The annual contract commits the farmer to grow a specific amount of cotton for a specific time, and of a specific quality. The farmer must also follow specific instructions regarding farming practices and the

sharing of material inputs provided by the company. In return, Pratibha Syntex commits to purchasing the cotton that meets its specifications at prevailing market prices plus a 15 percent premium for farmers who have completed the three-year conversion period. It also promises to try and sell other rotation crops. Pratibha Syntex supplies the necessary inputs and seeds for the next growing season on credit against the price premium. As a result, farmers must wait a year to receive the premium. Pratibha Syntex also commits to providing advice and technical training, however it does not specify the nature or extent. The company operates an ICS, and farmers who use synthetic inputs or GM seeds are either excluded from the project or their conversion period is extended. The company does not cover its farmers in case of crop failure (5365).

Interestingly, all of the farmers that were interviewed were satisfied with the company and wished to continue farming under the Vasudha project. Of these, 68 percent believed contract farming to be good for them and 32 percent believed contract farming to be very good for them. In terms of benefits, 73 percent of the farmers interviewed believed that their farming skills and their soil structure both improved, 66 percent cited reliable income as a benefit, with 54 percent noting a higher income, and 47 percent also reported that their vulnerability to crop failure decreased because of lower input costs. However, 61 percent reported that the yearlong delay for the price premium was a problem. As their main reasons for converting to organic cotton farming under the Vasudha project, 80 percent cited lower input costs, 72 percent cited land improvement, 48 percent cited the availability of good technical help, 39 percent cited the inputs and technology supplied by the company, and 36 percent cited assured market access.

Furthermore, 75 percent did not perceive that organic cotton farming reduced the availability of food crops (Singh 2006, 5363-4).

In some instances contract organic farming can provide necessary protection, support and assistance for farmers to successfully undergo conversion. However, farmers seeking to adopt organic farming on their own initiative face greater difficulties. Although the organic market in India is slowly growing due to increasing awareness and dietary changes in urban areas (Parrot and Marsden 2002), it is still in the early stages of development, and often non-existent in rural areas. As a result, farmers producing for local markets may not be able to receive premium prices for their products. As Eyhorn *et al.* (2007) noted this is not necessarily a problem due to lower input costs. I found this in my personal research as well (see Appendix Table 1). Out of the nine farmer case studies, the five farmers who said that they do not receive a price premium all said that they were profitable.²² However, it should be noted that for three of these participants, farming is not their primary source of income and two are not market-oriented. Of the other farmers, two said that they receive premium prices and are profitable and two said that they receive premium prices sometimes and more or less break-even. Significantly, seven out of nine farmers said that they are profitable, and none said that they are not. Nonetheless, in most instances, if an individual farmer would like to be assured of receiving a price premium, then they must export their organic products. This requires them to undergo certification and record-keeping processes that are often costly and complicated. Of the

²² These are the first and second Madhya Pradesh farmers, the first and second Kerala farmers, the Gujarat farmer.

nine farmer participants, four are certified and five are not.²³ The five un-certified farmers are the five that do not receive a price premium. Reasons for not being certified were that it is not necessary,²⁴ the high cost of certification,²⁵ a lack of faith in certification, and a belief that organic farming should be about developing consumer trust.²⁶ Of the four certified farmers, the Arunachal Pradesh farmer and the Karnataka farmer produce for export, the Himachal Pradesh farmer produces for sale in different states across India and the Tamil Nadu farmers produce for the local village.

Problems with certification are compounded by the lack of advice and training that was previously discussed. As a result, adopting organic farming without the aid of an NGO or a contract-farming project entails risks that many are unwilling and often simply unable to take. However, my case studies demonstrate that some are indeed willing to take this risk on their own initiative, and have done so with success. Farmers such as these represent a crucial component of the organic farming movement in India: a side driven by producers rather than corporations. In areas where training and advice by NGOs and the government are hard to come by, these self-starting farmers are passing on their lessons and skills to other local farmers, creating a snowball effect for knowledge dissemination. It is through this process that hope for the future of the Indian organic farming movement continues to grow.

²³ The certified farmers are the Tamil Nadu farmers, the Arunachal Pradesh farmer, the Himachal Pradesh farmer and the Karnataka farmer. The non-certified farmers are the first and second Madhya Pradesh farmers, the first and second Kerala farmers, and the Gujarat farmer.

²⁴ The first Madhya Pradesh farmer and the first Kerala farmer mentioned this.

²⁵ The Gujarat farmer mentioned this, stating that certification is around Rs 30000 to 50000.

²⁶ These are the second Kerala farmer and the second Madhya Pradesh farmer respectively.

7 Conclusions

The organic farming movement is rapidly expanding. Worldwide, the movement holds incredible potential as a dual strategy for climate change mitigation and adaptation, rural development and livelihood improvement, food security, and food sovereignty. Thus there is an urgent need for more research on organic farming practices. While the findings of further research may support organic farming, or discredit it, organic farming must be taken seriously. My research demonstrates that the organic farming movement in India has this potential as well.

Many farmers in India are “organic by default” simply because they cannot afford the inputs required for conventional farming. While these farmers are not necessarily organic, as they still may not use farming techniques that are ecologically sustainable, it is thought to be a smaller step for “organic by default” farmers to make the transition to organic farming (FAO 2002). However, it is not quite so simple. Farming organically requires initial training and capital to establish an organic system. Furthermore, organic farming requires more labour, and production may decline in the first few years. Without assistance, an “organic by default” farmer may not be able to bear the risks involved in converting to organic farming. An undeveloped local market, a complicated certification process and poor rural public investment add to these problems.

Although many organic farming NGOs have sprung up in India in recent years, the responses to my survey clearly indicate that more services and funds need to be made available to raise awareness and to assist farmers in converting to organic farming and marketing their products. Specifically, further institutional support is needed to provide farmers with funding and extension services, raise consumer awareness, establish and

strengthen marketing channels, and invest in organic farming research. In these areas, government support and investment is especially crucial for the success of the Indian organic farming movement.

8 Summary

- Organic farming has rapidly expanded over the past ten years in India and around the world.
- The organic farming movement in India has emerged as a grassroots response to the environmental and social destruction caused by Green Revolution agriculture.
- Organic farming practices that build up soil aggregate stability and soil organic matter content, thereby enhancing microbial activity, can reduce agricultural greenhouse gas emissions and increase resilience to climate change.
- Organic farming has the potential to provide food security in India by enhancing access, availability, stability and utilization.
- As a rural development strategy, organic farming could balance gender relations and increase farmer's incomes.
- The main difficulties that organic farmers face in India are: an undeveloped local market, government apathy, a lack of extension services, a lack of access to livestock and labour-power, and complicated and costly certification.
- The future success of the movement depends on further institutional support and government investment.

9 Acknowledgements

I would like to thank my supervisor Dr. Gary VanLoon for his guidance and support, my examiner Dr. David McDonald, Dr. Paritosh Kumar for sharing his knowledge and advice, and the Queen's University School of Environmental Studies as well as the course coordinator Dr. Brian Cummings for giving me the opportunity to write this paper. Finally, I would like to thank the nine farmers that agreed to help me with my research as well as my correspondents from MOFF, RVEC and KVM for their valuable insights, and for being the inspirational heart and soul behind the Indian organic farming movement.

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11 Appendix

11.1 Table 1 – Farm Characteristics

Farmers	Size	Primary Market Orientation	Certification	Non-Family Employees	Profitable
The First Madhya Pradesh Farmer	Medium (5 ha)	Subsistence/Local	No	No	Yes
The Tamil Nadu Farmers	Large (55 ha)	Local village	Yes	Yes	Breaks even
The First Kerala Farmer	Marginal (2 acres 40 cents)	Subsistence/Local	No	NR*	Yes
The Gujarat Farmer	Large (30 ha)	Local	No	Yes	Yes
The Arunachal Pradesh Farmer	Large (65 ha)	Export/Local	Yes	NR*	Yes
The Second Kerala Farmer	Small (2 ha)	Subsistence	No	Yes	N/A
The Himachal Pradesh Farmer	Medium (10 ha)	Domestic	Yes	NR*	Breaks even
The Second Madhya Pradesh Farmer	Marginal (0.2 ha)	Subsistence/Local	No	No	Yes
The Karnataka Farmer	Large (24 ha)	Export	Yes	Yes	Yes

*NR = No reply

11.2 Table 2 – Deterrents and Difficulties

Farmers	Primary Difficulties	Perceptions of Deterrents
The First Madhya Pradesh Farmer	No support	*NR
The Tamil Nadu Farmers	Economic viability Shortage of quality labour	Undeveloped local market
The First Kerala Farmer	None	Ignorance
The Gujarat Farmer	Undeveloped local market and a lack of consumer awareness	Undeveloped domestic market
The Arunachal Pradesh Farmer	Hard work	*NR
The Second Kerala Farmer	Undeveloped local market	Government and corporate propaganda and subsidies
The Himachal Pradesh Farmer	Government apathy and support for conventional farming	*NR
The Second Madhya Pradesh Farmer	None	No concern for the environment
The Karnataka Farmer	Shortage of quality labour No support Hard work	Government and corporate propaganda Hard work

*NR= No reply