

Food Sovereignty: A Critical Dialogue

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Food Sovereignty: How it turns the growing corporate global food system upside down

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Abstract

This article first documents the forces that made necessary the development of the concept of Food Sovereignty and why it remains essential in the present world political economy. Food Sovereignty as an ideology is a tool used by people (peasants, small and even medium size family farmers, small organic farmers, all kinds of local farmers (especially but not only in the US and EU) to fight a very wealthy organized attempt to take over the entire world food supply by the MNCs. I then discuss the "green revolution" approach, including a brief discussion of how it was introduced into India and the reactions of the South Indian farmers I knew at the time, and how it temporarily did lead to significant increases in crop yields in some areas (at the same time that the pesticides used were destroying the soil biota.) Successful alternatives to industrial agriculture are then discussed, especially SRI/SCI which do not need any artificial fertilizers, pesticides, or herbicides, and use one-tenth the amount of seeds used by conventional farming in India. SRI/SCI is hardly known about in the US and EU. Methods for organizing grassroots farmers, both women and men in places like Andhra Pradesh, are also discussed. (India is now an exporter of rice, with world record yields from states previously considered backward, such as Bihar.) I conclude by noting the looming confrontation between the MNCs working to increase the profits of their investors, and the movements from the bottom up by people the world over. Control over food is control over people. And at no time in history have the wealthy voluntarily given up this or other powers.

1. Introduction

As an anthropologist who has worked for over 50 years in rural India, I begin this paper with two stories that in some ways tell more than many theoretical statements might do, since I believe they highlight the real-world issues (as opposed to those of the academic or policy worlds) involved in Food Security and Food Sovereignty. Example 1:

. . . in eastern India when the devastating typhoon struck the Sunderbans in 2009, thousands of hectares of rice were ruined overnight and the area was submerged in salt water...a handful of traditional rice farmers had sown three salt-tolerant rice varieties. These farmers were the only ones who harvested some rice the following winter.¹

¹ (KPPNair, <u>sriindia@googlegroups.com</u>)

Nair notes that these were not the "miracle" high-yielding hybrid rice varieties touted by the rice experts, since those were all devastated by the typhoon. Instead, they were the result of painstaking work of one person working in a remote village in Odisha.²

This story involves a small group of extremely devoted scientists working with the rarest of traditional rice germ-plasmas in the world, in order to preserve species from poachers from the West–such as those who had taken earlier varieties in the 1960s when some of India's scientists were persuaded to give them away to the CGIAR, neglecting the local farmers who had previously used the seeds. Having worked in rural parts of south India starting in Kerala at the end of 1958, and continuing through February of 2012, I can understand their concerns and very reasonable fears. Even fairly recently Monsanto, through an Indian collaborator Mahyco, "clandestinely used the native 'Gullai Badnekal'... to bring out its genetically modified Bt Brinjal. However, with the moratorium on Bt brinjal in place, the company had to put on hold its commercial production" (*ibid*.).

Example 2: While working in a village in Tamilnadu in 1966-7, I observed that most of the highcaste villagers who kept cows had been persuaded by the agricultural extension workers to purchase hybrid cows, while the lower-caste people continued using their "desi" (local) cows. While the hybrid cows may have sometimes produced somewhat more milk, they were a disaster in other respects: very few were able to reproduce, and they were constantly afflicted with various diseases. In addition, the hybrid cows required special feed which had to be purchased. The desi cows continued producing calves every three or four years, were rarely subject to disease, and foraged for their feed in the countryside. Nevertheless, latest reports from the area indicate that desi cows have now been completely phased out under pressure from the state.

These examples illustrate two major effects of the imposition of western models of agriculture in India: first, the neglect of time-tested seed varieties, livestock, and farming methods which are more adaptable to local conditions (including some of the extreme manifestations of climate change), and which can, when combined with new ecologically sound approaches, produce yields comparable to those of the latest hybrids and GM products (see SRI/SCI below); secondly, the extent to which many groups of people, especially the poorest–including the majority of scheduled castes (untouchables) and scheduled tribes (tribals or semi-tribal communities all over India)–have suffered or lost out as the US model of agriculture has come in.

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² (See "A Potful of Rice for the Future", <u>sriindia@googlegroups.com</u>.)

2. Historical Context

I find it useful to start out by discussing the historical context in which the concept of Food Sovereignty first arose, even though most readers will be familiar with this, because it cannot be emphasized too much. Prior to the attempts by multinational corporations to take complete control of the world food system as well as all local food systems, farmers small or large, thirdworld or US-based, did not need this concept. There was relatively free trading of seeds, and farmers that I worked with in South India were eager to exchange seeds with neighbors and even with farmers in far distant places.

Numerous articles have been written describing grassroots NGOs which promote agricultural exchanges. One NGO, described in *Grain* in 2007, conducted a type of exhibition of many different seeds, and explained that hundreds of communities in many different parts of the country use the seeds every season, keep them safe in their homesteads, and have a complex exchange and monitoring network. I have seen this kind of seed fair (or "seed mela", as it is called) in both Kerala and Tamil Nadu. Despite all the influence of US commodity-based seeds, these activities still continue today in some of the places where I have worked. Similar festival exchanges of seeds or even cuttings that can be grafted onto trees, etc. take place among heritage farmers in the US and EU, and sometimes catalogues sent out by small local organizations offer wide varieties of these heritage seeds or cuttings. People not only learn from one another, but enjoy these exchanges as a meaningful event in their lives.

Free exchange of seeds and even information about management techniques were the rule throughout most of the last 10,000 years (since the beginnings of agriculture). It was primarily through this free exchange of seeds and techniques of growing things in the period between the 15th and mid to late 20th centuries, that the massive western/eastern-hemispheric food exchanges occurred, despite a few striking exceptions such as chinchona trees. I refer to maize in the eastern hemisphere, rice in the western, etc. Today these issues have grown more and more complex due to two factors: 1. The patenting of life-forms supported by the US and other western nations as well as the WTO, and 2. The rise of powerful multi-national corporations and their work on gene modification. Indeed the centralized wealth and power of large corporations and their protections under various US as well as international laws has totally changed the world food system in only a short number of years. This is not accidental, but developed out of corporate planning and influence including the use of Corporate sponsored charitable Foundations such as Rockefeller and Ford, and a select group of wealthy elites, especially in the US which helped to found ans subsidize the CGIAR system, along with the growth of the chemical and related companies such as Dupont and Monsanto. The concept of Food Sovereignty has become necessary to enable peasants, family farmers and small organic farmers to organize to combat the corporations' growing political and economic domination of the world food system.

3. Structured Inequality

While structured inequality existed for around ten thousand years or so, and imperialism of diverse sorts occurred from the formation of the earliest states, it is only at the end of the 20th and the early 21st centuries, under the guise of "neoliberalism", that corporations have acquired the power to control food systems on a global scale. A quote that appeared in *The Economist* in the early 1990s (in an issue which was sent out to some subscribers, and then withdrawn) by a high-ranking official from Monsanto said words to this effect: "When we can control land, water and seeds, we will feed the world." (Note: reference is unavailable). It seems likely that the issue was withdrawn because of Monsanto's realization that these words did not show the corporation in a favorable light.

In their book "Hungry Corporations" Paul and Steinbrecher note the following: The end is control. To properly understand the means one must first understand the end. A farmer who does not borrow money or plant his own seed is difficult to control because he can feed himself and his neighbors. He doesn't have to depend on a banker or a politician in a distant city. While farmers in America today are little more than tenants serving corporate and banking interests, the rural Third World Farmer has remained relatively out of the loop–until now. ('New Technology "Terminates" Food Independence', World Internet News Distribution Source (WINDS), April 1998)

There is no question that, as Pimbert puts it, "the global restructuring of agri-food systems [threatens] 'autonomous spaces' as a few transnational corporations gain monopoly control over different links in the food chain (Pimbert 2009).

Some have stated that the concept of Food Sovereignty arose as a reaction to the use and misuse of the term "food security", though the FAO definition of food security as "a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO 2001, cited in FAO 2003) could be thought to include much of the Food Sovereignty concept, as long as it is not manipulated by corporate interests. In this decade of the 21st century, food summits and high-level conferences talk about everyone having enough good food to eat daily, but pay little attention to where it comes from, who produces it, under what conditions it has been grown, and in general assume that poor farmers must be dependent on external inputs, rather than taking pride in their traditional skills, their capacity for innovation, and benefitting from contact with other farmers who cultivate traditional crops with modern methods, including intercropping and use of natural fertilizers. Little attention is paid to the potentially harmful and addictive properties of modern packaged foods, which are now widely available even in rural areas.

4. What will the future look like?

The vast number of western- trained economists in India have very strong opinions about what the future should look like. It includes an image where very few people work in agriculture, as has been the case in the US in recent times—though interestingly, today more and more people in the US are beginning to look for a chance to return to agriculture (beginning agricultural programs, etc.), and many are turning to growing at least some of their own food. The prevailing image comes out of an extremely limited view of "development" that is based on a worldview found in the US, Canada, Australia, and parts the EU. It also accepts the notion that the world cannot be fed without corporate control of the food system, which requires far fewer farmers who basically work for the corporations.

Even the United Nations tends to be dominated, at least partially, by this view. Pimbert clearly points to some of the assumptions of the Millennium Development Community at the UN which see development the way people in the US were manipulated to see it during the period following WWII. That is to assume that...

small-scale food producers, rural artisans, food workers and many of the rural poor will inevitably migrate to urban areas and find new and better jobs (the ones that many have lost in present-day USA)...Most international and national social, economic and environmental policies envision fewer and fewer people directly dependent on localized food systems. (Pimbert 2009)

Pimbert also notes that rural people were encouraged, often through false propaganda messages in mass media, to move out of the primary sector and seek jobs in the largely urbanbased manufacturing and service sectors, which is seen as both desirable and necessary.

This is happening in India today: young men in their twenties and early thirties are manipulated in numerous ways to want to migrate to urban areas in order to be–or at least look–"smart". One NGO network leader from South India told me the story of meeting some young men from his area during a visit to Pune. The men (in their 20s and early 30s) lived 5 to a room, but had enough money for fancy shirts, food, the cinema, and prostitutes. When they visited their

villages, they came back looking very "smart" but without much to offer, except for often giving their young wives HIV-AIDS. (Conversation with Oswald Quintal, Director of Kudumbum, an organization working with some 100 smaller NGOs in Trichy District, March 2007.)

The issue of Food Sovereignty did not arise until the MNCs began to become ever more powerful, starting in the 1960s. Not because there were no hungry people, but because it was clearer to those making policy that there were socio-economic as well as climatic reasons why hunger occurred. People accepted the fact that structured inequality was an important factor in day-to-day hunger among people, whereas climatic crises, war, or environmental catastrophes were the other main reasons. Most farmers grew food to eat, to sell to their neighbors and the local markets, and to send to nearby urban centers. They grew a vast number of crops which provided variety for their palates, diverse nutrients for their soils, etc. Clearly there were climatic and cultural differences in what was grown, along with issues of climate.

However, there was little concentration of agricultural knowledge, seeds, etc. People were willing to talk about some new approach to agriculture or to spread their seeds, etc. Knowledge was not kept secret, though people relied on word of mouth to spread information. But by the late 20th century and the early 21st this had all changed and what is called mainstream economic thinking about agriculture and food production had changed drastically, especially in the United States and Canada led by MNCs, the CGIAR system, and the rapid consolidation of factory farms both for what is today called "commodity" production (a few grains) and meat production–all items sold on commodity markets, traded and handled by food speculators: investment banks, pension funds (including TIAA-CREF), hedge funds, grain traders and wealthy individual traders. Several critics of this system have raised the question, "Is food for eating, or for indexing and leveraging or 'betting'?" This is the type of question raised by people supporting the concept of Food Sovereignty. A related question is: How did investors get their hands on our food supply, and how can they be stopped? I hope some of the other papers in this symposium will have answers to this question.

5. Food Sovereignty

Food Sovereignty is a solid alternative to the current mainstream thinking on food production. The struggle for Food Sovereignty incorporates such wide ranging issues as land reform, debt, health, and many other issues that are of central importance to be able to produce food locally. Food Sovereignty also brings together peasants and farmers from the North and South and allows different movements to come together in their struggles. (*Grain* 2005)

This concept is a clear response to a process set in motion by the greed and avarice of the wealthy investors in the food-related multinational corporations (MNCs). The idea of Food Security, while accepting people's need for food, tends to ignore the fundamental concept of human rights. It neglects to mention what rights people have to maintain their own cultural heritage and to the free spread of ideas, as well as the right to seeds (as varied as possible), water, and land on which to grow food.

An important and relevant set of questions was asked in 2008-9 in a Norwegian report on Viable futures. They ask what kind of food production can:

- 1. Drastically reduce poverty,
- 2. Reduce climate change and cool the planet,
- 3. Restore biodiversity, soil fertility and water resources,
- 4. Improve livelihoods and provide employment for billions of people,
- 5 produce enough, good and nutritious food for 9 billion people or more?

Clearly the type of mainstream agriculture that exists in the US cannot do this. The MNCs have come to dominate (though not completely) the control of the world food system, ignoring agroecology in every way possible. What is noteworthy is that at the same time that the MNC's are attempting to expand their control from North America to other parts of the world, numerous alternative methodologies are appearing that give higher yields with less ecological damage. Until about 6 or 7 years ago, the number of small farms in the US was decreasing, but in the last 2 or 3 years it has started increasing as more and more people are turning to growing their own food either along with other paid work, or as their only occupation. The book Foodopoly gives an excellent description of this.

There has also been, in many parts of the world, a growing interest in numerous alternative ways of growing food combining modern eco-science with traditional biodiversity. Below, I discuss one of them in some detail: namely SRI/SCI (the systems of rice intensification and crop (referring to numerous other crops) intensification) because my own research and knowledge is primarily devoted to this alternative, though I also mention other alternatives as well.

6. Globalization and its alternatives

Today, we all talk about globalization as if it is uncontrollable, as though a totally homogenized planet is inevitable, with the exact same malls in the US, Turkey, India or Peru selling the same things to people who dress the same way and eat the same foods and have the same aspirations, etc. Certainly if this were to happen it would give tremendous power to the

multinational corporations that would like to control planet earth–even as they do their best to destroy it.

However, not all people are passively accepting this onslaught. There have been citizens' responses to the multiple social and environmental crises induced by modern food systems everywhere, including various people's caravans (see Mencher 2011?), and critiques of the World Trade Organization and the framework on the Agreement on Agriculture (AoA). In 2005, a document put out by a significant number of NGOs from all over the planet, as well as numerous research organizations basically stated that the WTO had no business in either food or agriculture (the IAASTD Report). However, such statements have all been largely ignored because of the power of the MNCs supported by the governments of the US, Canada and Australia plus some EU members. What is clear is that the issue of control over food is the route to control of all human beings, since food is necessary for life. These are political and power issues, not merely issues of food production.

The episode described below is another example of how the globalization of the food system enriches investors while disenfranchising local people. Following this is a description of a project which exemplifies a viable alternative to agricultural globalization.

Devlin Kuyek, a researcher for the Barcelona-based nonprofit GRAIN, pointed to one relevant example: in 2007, Swiss agribusiness giant giant Nestlé joined with the Gates Foundation to make a major investment in the Kenyan dairy industry. According to a statement from Nestlé, the company chose the project's Rift Valley site because of its potential for production growth. They weren't the only ones to see an opportunity: The following year, Land O'Lakes followed Nestlé to Kenya and introduced a USAID-backed program to modernize the country's dairy industry. In the words of Michael Yost, a manager for USDA's Foreign Agriculture Service, the project was part of an effort to help poor countries "participate in world trade" and "bring their agricultural economies into the 21st century."

But Kenya was self-sufficient in milk well before agribusiness came onto the scene, according to a 2003 report by the UN's Food and Agriculture Organization. Moreover, the low-tech dairy industry provided income for an estimated 625,000 people. But by 2010, as production soared on the heels of new large-scale production, Kenya was overloaded with dairy. The price of milk dropped, and rather than sell their product at a loss, farmers began dumping it.

But a glut in production was not the only problem for Kenya's small milk producers. In January 2013, Kenya banned the sale of raw milk, citing both safety concerns, and the need to protect the investments of large milk processors, according to media accounts. Far from supporting an existing (and functional) dairy industry, foreign agribusiness had only helped to undermine it.

In other words, this was a disaster for the poor Kenyan dairy farmers, many of whom ended up losing their farms and livelihoods, though it of course benefitted the corporations. This is a pattern that has been duplicated with different kinds of foods world-wide. Interestingly, the above account comes from an article in *Mother Jones* critiquing USAID's impact on Kenya's dairy industry (Park 2013).

The Community Managed Sustainable Agriculture program (CMSA) in Andhra Pradesh, India, offers an approach that according to reports is growing and offering a meaningful alternative to Green Revolution technology (see Amita Bhaduri 5/15/11 at India Waterportal). Workers in this program have shown how replacing chemical pesticides with a combination of "eco-friendly" bio-pesticides, complemented with biological and agronomic soil fertility improvement measures, reduced the cost of cultivation without any reduction in productivity for participating farmers. CMSA uses an institutional platform of community organizations which are organized into federations. This framework is potentially capable of being scaled up, even possibly to the whole of India, as CMSA is both ecologically and economically viable and continues to expand. Today over 300,000 small farmers in 3,000 villages in 21 out of 23 Districts are flourishing because of this program, which functions from the ground up using input from local farmers, mostly through women's self-help groups, with both outside funding as well as local women's small contributions.

Page 7 in the Appendix (from CMSA Report) shows production expenses of conventional farming, indicating that chemical inputs account for about 35% of the cost of production in this kind of agriculture. In contrast, the CMSA farmers are replacing chemical pesticides with low-tech methods such as pheromone traps and bio-pesticides, which require some labor time but very little cash outlay as they use available natural products. They also use natural manure–animal dung and biomass–instead of chemical fertilizers, and they do not purchase seeds on a routine basis.

CMSA is managed entirely by community institutions, with knowledge and capacity-building services supplied by SERP (Society for Eradication of Rural Poverty, a state-affiliated NGO). CMSA is organized into 850,675 women's self-help groups. They first concentrated on the elimination of artificial pesticides, affiliating with the existing Andhra Pradesh non-pesticide

management (NPM) program, and now are looking at other sustainable agricultural practices. They are also making use of the synergy found in sustainable methods that combine polyculture and crop rotation with an awareness of the interaction of soil biota with plant roots.

Time and space do not permit me to discuss more of the effects of this program, but it clearly has the potential to expand the area of sustainable farming, both in Andhra Pradesh and possibly other parts of India. Farmers using NPM have been totally free of pesticide-related hospitalizations. Now they are attempting to make this a statewide program, though clearly they have to fight the MNCs and the national Government's attempts to glamorize and push costly inputs. This description, based on CMSA reports, is taken from Mencher (2012 b). There are other alternatives developing elsewhere in the world, but beyond the scope of this paper.

Most of these projects involve associations made up of numerous small farmers. In spite of the widespread belief, held even by many agricultural economists, that large farms are more "efficient" than small farms, small farms are clearly more productive. They are also more economically viable when the farmers are not obliged to use costly and unnecessary chemical inputs. As George Monbiot pointed out in 2008:

It has been known since the 1960's that small farms produce greater yields per acre than large farms, sometimes as much as 20 times greater... in Turkey farms of less than one hectare are twenty times as productive as farms over ten acres³

7. Food Sovereignty

To me, Food Sovereignty is a set of principles and ideas that envisage a whole new approach to knowledge production and dissemination as well as implementation when it is formalized this way, though it may be based in part on the way people have been living for thousands of years. Above all else, it promotes a sense of open communication about methodology used, seeds planted, ways of combining tree cultivation with field crops, and hundreds of diverse bits of information. It challenges the minds of farmers, in that it is not just a rote method, either based on tradition or on any foreign model. In that sense it can be thought of as being in some ways related to "open source" computer programs.

Food Sovereignty can be thought of as a concept having implicit roots in the life and struggles of peasant farmers, and even small and medium-sized family farmers in the west for many years. But today its political implications can be seen as part of the politics of knowledge. Those

³ in (*The Guardian*, London, 10 June; see <u>http://policyinnovations.org/ideas/policy_library/data/01382; also Goldschmidt 1978).</u>

promoting Food Sovereignty include traditional farmers, indigenous peoples, heritage farmers and organic farmers, in places as different from one another in many ways as the so-called "developed" countries like the USA or Japan or France, and places where small, medium and even marginal farmers still dominate, as in India, Southeast Asia, and most of Africa–as well as organizations like the IIED in the UK (See Pimbert, *Towards Food Sovereignty*). It is clear that the concept needed to be made explicit as corporations began to have more and more power over first the US and UK food systems, and slowly over time, in other places and under diverse conditions.

The concept of Food Sovereignty was first brought into wider awareness by La Via Campesina at the World Food Summit in 1996. But there were many local movements earlier and many new ones since then all over the globe, some of which focus on the rights of smallholder farmers to produce food and not to have it undermined by global agricultural trade policies. The Food Sovereignty approach has been contrasted with the current US dominant model by P. Rosset in 2003. The term is closely related to issues of "human rights", as I have discussed elsewhere (Mencher 2009). As I noted there, the human right to eat is deeply connected to the rights to land, water and seeds. These rights to survival obviously begin with air, water and food. Shelter is also critical, but without access to oxygen we can only live a few minutes, without water only a few days, and a slightly longer period of time without food. The right to land is perhaps the most complex because of the long history of people losing land to "development".⁴ Here is a relevant comment from an indigenous woman of Panama: "My land is for my children and my grandchildren. I need to save it for them. The company has sent the police to threaten me to sign their papers, but I won't sign." (This is a quote from Señora Abrego from Panama, quoted in Cultural Survival (Winter Issue 2007) in relation to the struggle by several communities against a dam being built in their country after the new United Nations Declaration on the **Rights of Indigenous Peoples.**

⁴ While many of us would consider the right to food to be a fundamental human right, the concept of "rights" has paradoxically been appropriated by multinational corporations, as well as governments, to expand the philosophy of neoliberalism. For example, recent changes in Mexican law have elevated the "right" of private ownership over the communal ownership of common lands, water resources, etc., traditionally observed by indigenous communities (Seedling, Oct. 2007, pages 6-7.) And we are all familiar with the use of the "right" to individual (or corporate) ownership to steal products of nature from local traditional societies, including not only indigenous tribal groups but also many preparations used by our own grandmothers, by patenting them in a slightly modified form. *Seedling* quotes a Canadian farmer saying: "farmers all over the world need to start thinking once again of food as a source of nutrition and sustenance and to re-connect with old ideas about fertility, knowledge, labor and community. . . awareness that the corporate strategy for world domination is unsustainable and ultimately selfdefeating." Not only in some parts of rural India, but the world over, people's "rights" and their advocates are increasingly being heard, and people are beginning to look to a new pattern of agriculture that will be directed toward feeding people rather than toward profit.

Thus Food Sovereignty includes paying greater attention to the conditions under which food is produced, the distance it has to travel, and the protection of traditional food producers who cannot compete with subsidized corporate farmers from far away whose transportation costs and ecological effects are often left out of the costs to the producers, the consumers, and planet Earth itself.

Historically, from the beginning of stratified pre-state societies, some people had more rights to land than others. There is a long history of the process by which this inequality came about. And just as there has been a history of such unequal access, there has been a history of struggle by those who are disenfranchised. Rebellions to reclaim land have occurred on all continents from the earliest days. Groups of people who felt that they were dominated by other groups often struggled to take over the other groups' land, homes and wives, often using extreme brutality in the process. (I first dealt with this question in an article on untouchable landless laborers written in the early 1970s: see Mencher 1972, 1974.)

Unequal access and rights to land have fluctuated over time, but they came to be more strictly enforced from around the end of the 15th century AD as western European nations, believing that they had a "superior civilization" and a more God-sanctioned right to land, found increasingly sophisticated justifications for appropriating the property of other nations and for subjugating native populations–a process which culminated in the modern multinationals and the WTO, which are in part the successors to earlier organizations like the British East India Company.

The contemporary US food system as it developed after WWII is quite monolithic. The chemical companies that had fueled our fight against Germany and Japan were looking for new markets. In addition, there was a very negative cultural attitude towards food production and rural life among elites, who saw it as messy, unpleasant, and intellectually unchallenging. As a result the US food system is now primarily controlled by the MNCs that year after year gain in power not only over our food system, but over our government itself–as higher-level employees move back and forth between the Department of Agriculture and other government offices, the Agricultural Universities and the MNCs. The vast majority of large farms, both individually owned and corporate owned, are essentially controlled by MNCs. It is beyond the scope of this paper to go into the history of how all of this came about; see Allen 2007 for a useful overview. Note also that Walter Goldschmidt's (1978 [1947]) book comparing corporate farms with smaller operations, as well as the political reaction to it, made it clear that industrial agriculture is less a matter of efficiency (productivity, energy, or capital usage) than of political power.

8. The Green Revolution and its technological approach

The Green Revolution in India was in large part an attempt to bring the US corporate approach to bear on Indian agriculture. There were numerous unexamined premises involved. (See Mencher, *Greed or Human Survival* (in preparation) for further discussion.) One critical factor was the desire of the US government to replace the UK which had recently departed from India, the "jewel in the crown" of its colonial empire. Furthermore, there was a sense of superiority in the belief that the US agricultural scientists knew all there was to know about agriculture, and that no third-world country–or even any native American group, or rural community in the US or Europe–knew as much.

In this context, it must be noted the late 1950s and the 1960s was the time when many currently developing countries were just beginning to get on their feet as they emerged from being colonies of western countries. There was a strong belief among western economists, and even people involved with agricultural science, that most traditional farmers were backward and had no useful knowledge; if they resisted what outsiders came to tell them, it was because of their backwardness. This was a convenient belief for those working on the consolidation of US farms in the 1950s and 60s, since blaming the victim is often an effective strategy.

The Green Revolution brought a paradigm shift to thinking about an agriculture which excluded all natural factors, such as soil nutrients and organisms, the effects of crop rotation and intercropping, and plant-insect symbiosis. It replaced traditional crop varieties with hybrid varieties—which had to be bought each season, and thus increased profits for the producers of the hybrids) and required intensive irrigation, chemical fertilizers, insecticides, and herbicides, and where possible increasingly intensive mechanization in order to produce a good harvest. All of these meant profits for the investors in the MNCs. Using the specter of world hunger along with a wide range of other rationales, most of what was brought in by the Green Revolution led to profits for the well-to-do investors.

As an anthropologist, I found the experience of talking about the insights of rural farmers with any of the large group of "development experts" brought to India in the 60s unpleasant and even humiliating. After all, I was not just a mere anthropologist, but also a female. Purchased inputs had become the norm in the US and many parts of the western world, and this was what was being spread as part of the green revolution. Often it led to farmers, especially in many third world countries such as India, going into serious debt, and in more recent times has led to farmer suicides, especially in the 4 states in India where Bt cotton has been–and continues to be–grown (Mencher 2007 SfAA; Ramanujavelu powerpoint presentation in NYC, June 2013).

The main idea used to legitimate the Green Revolution was that the world did not have enough food to feed its people, and nations had to invest in agriculture. It grew out of a fixation on

growing populations and a fear of the Asian hordes (see Ross 2002). It also was closely related to a deep fear of the Chinese revolution, and all leftist ideology was equated with Soviet and Chinese communism.) Small farmers were dis-empowered, and countries around the world attempted to build national systems of agriculture based on the Green Revolution technologies sold by MNCs in the US and Europe.

The first hybrid seeds were developed in the 1940s in Mexico and spread through Latin America, southeast Asia and the middle-East soon after. Although in each of these places the GR occurred a bit differently, they all had in common a type of thinking that separated people and local ecology from agriculture and tended to favor middle to larger farmers.

The very structure of the agricultural system, as it stands now [in the US], is designed to return the greatest profit possible, not to the farmers but to the producers of the chemicals they use and the seeds they plant. And because these chemicals depend on fossil energy, the entire system is inherently unsustainable. What farmers used to return to the soil in the form of labor and animal manure—not the toxic kind you find in livestock confinement systems they now must purchase, just the way they buy diesel for their tractors. . . As a recent study by agronomists from the department of agriculture, Iowa State University and the University of Minnesota shows, there's nothing obsolete about four-crop rotation. It produces the same yields, it sharply reduces the toxicity of freshwater runoff, and it eliminates many of the problems associated with genetically modified crops, including the emergence of glyphosateresistant-weeds. It is also simply better for the soil. A four-crop rotation using conventional crop varieties, along with much lower applications of fertilizer and herbicide and some animal manure works every bit as well as the prevailing monotony of corn and soybeans. (The New York Times, 4 Nov. 2007, "Daily observer" column).

The author, V. Klinkenborg, goes on to discuss how modern agriculture is driven by diminishing biological diversity and relentless consolidation, and that industrial agriculture has chosen to ignore the value of good soil and an entire set of issues (discussed below) about soil biota and how they interact with the roots of plants. It is unusual that this article appeared in a source available to the general public rather than in a professional journal, since this type of information which goes against the ideology of industrial agriculture is rarely seen in the mainstream US press.

I was working in rural villages in India from late 1958 on. In the early and late 60s I was in Tamil villages when the Green Revolution began, and would like to mention a few of the early consequences I saw. (See Mencher 1974a, 1974b, 1975, also *Greed or Human Survival* (book in preparation) for more details.) Food Sovereignty does not mean going back to "peasant agriculture" as it was in the early 20th century, but it does mean being open to accepting some time-tested methods, which can then be combined with the best of today's eco-agriculture. I first saw SRI in the fields in 2005 when I visited an NGO working in Wayanad District of Kerala. It was the year the NGO first started its own demonstration field of SRI paddy. (See sections 12A-D below.)

The ideology which supports the Green Revolution technology, as well as industrial agriculture in general, includes a set of beliefs which have been accepted by many people, both in the west as well as in urban and rural India and elsewhere, which function to smooth the way toward acceptance of the globalization of industrial agriculture. For example:

- that individualism works best, i.e. that little progress is to be expected through human cooperation and collaboration;
- that all forms of "socialism", including cooperatives, do not work;
- that human nature is fixed and unchanging;
- a pessimistic appraisal of average human potential, which implies that any activity can be best organized by elites from the top down;
- that only "private" industry (euphemism for corporations with their array of investors) can solve today's major food security problems;
- that top-down technological approaches such as synthetic biology can solve everyone's food problems and "save" the world without any testing and without the precautionary principle.

9. Alternative Agriculture

Today there are numerous kinds of alternative agriculture that produce significant yield increases without using artificial inputs or affording profits to the MNCs. This is happening at the same time that new methods of planting, that make use of less water and avoid artificial pesticides or fertilizers, and still produce increasingly large yields, have taken over the stage in many areas. Here I am referring to SRI/SCI methodologies along with a number of other methodologies such as no-till farming. A simple list of these will not do justice to these approaches, but I am less familiar with them than with SRI/SCI, which I focus on below in sections 12A-12D. Some of the other alternative approaches include but are not limited to:

- Planting trees among the fields, and on the borders, etc. either neem trees as a kind of natural pesticide, or fruit and food trees which add to people's diets (note that Niger was redeveloped by the widespread introduction of trees over the past 15 odd years, as discussed at the UN in June 2013);
- Permaculture;
- Choosing to grow crops that can handle the changing climate in a given place, such as legumes or millets;
- Organic or sustainable agriculture;
- Community Managed Sustainable Agriculture (see section 6 above);
- No-till agriculture (especially in colder places);
- Non-pesticide management;
- Use of small tanks etc. to conserve water for the dry season. This can also be included with terracing to provide places where water can be held back to be conserved for dry times in the year;
- Planting on household terraces, etc.;
- Creating numerous oases, as described in Nabhan 2013, and other related approaches;
- The use of sprinklers if a farmer can afford it, or even clay pots with tiny holes in the bottom, as used by the Deccan Development Society among their farmers;
- digging ponds and very small tanks, or the use of step wells in Rajasthan. These ponds were used to conserve water when it fell (even early morning dew) for later use when water was scarce.

10. Climate Change and Food Systems

In the years to come, all farming systems will need to be ecologically sound (causing minimal damage to the environment), socially responsible and economically viable for all farmers regardless of size. Many of the alternative systems of agriculture listed above are more suitable to a planet of changing weather, especially one that is rapidly heating up with concomitant changes in rain and wind patterns and other unpredictable climate fluctuations. They will need to be adaptable to changing conditions, as described in Nabhan's *Growing Food in a Hotter, Drier Land* (2013). Furthermore, even in less dry climes, they will need to function with less water, using trees and other methods to retain soil moisture and regenerate plants. It is well known that the use of compost, trees, aerating the soil and similar techniques which are not part of conventional agriculture are important for improving yields, maintaining the soil biota, and preventing erosion and other forms of ecological damage. In a village area in Trichy District the Director of Kudumbum (a federation of small NGOs) managed to persuade some of the people to plant tree seedlings, paying them to dig small pits to collect water whenever it happened to rain. A significant number of tree seedlings were planted in various parts of the

village including in the school grounds. The people persisted even though many villagers, as well as the Forestry Department, said that the land was barren and predicted that nothing would grow. First a nursery was raised, with a variety of tree saplings and seedlings of drought-resistant varieties. Borewells were dug to provide water. The trees planted included neem, bamboo, Indian gooseberry, jackfruit, casuarina, banyan, papaya, lemon, and others. While at first the people predicted that the project would come to nothing, as the trees prospered and the land became more valuable more and more villagers came to Kudumbum asking for seedlings, and the area began to blossom. (Kolunji Annual Report, 2004-5).

11. India and the US

There is an urgent need to prevent further expansion of the US food system into India beyond what has already occurred. Fortunately, on 23 July 2013, the Indian Supreme Court technical expert committee recommended an indefinite moratorium on field trials of GM crops. Yet the Prime Minister and numerous politicians of most political parties, especially those with economics degrees from the US, are pushing policies that are quite disastrous for Indian farmers, ignoring the growing evidence of harm to both the ecology and human health. At present there are plans calling for moving over 400,000 farming families off the land in two states, Tamil Nadu and Uttar Pradesh, in order to set up Special Economic Zones (SEZ's). Yet a recent case study of a similar project in Rajasthan (Levine 2012) shows that for small farmers it leads to a significant decrease in quality of diet, including more malnutrition. Only a few larger landowners are benefitting. Just as family farmers are fighting for their role in the current and future US farm bills, so are advocates for Indian small farms fighting government plans.

Meanwhile, there was a massive March for Land Justice in the summer of 2012, with 50,000 of India's poorest walking in worn sandals or bare feet 350 miles from Gwalior to Delhi. The numbers were growing toward 100,000 when the Central Government offered to meet their demands. However, a similar march in 2007 led to the government setting up a commission which did nothing. This time the demand for action is intense. As some stated: we need to "make sure India's rise as a global economy isn't achieved on the backs of its poorest!" (reported in *The New York Times* and *The Hindu*)

My question is: will corporate pressure undermine promises made by the Government, unless people are persistent? Access to land for the poor goes against the plans of the central government and some state governments. It is being fought hard, even-perhaps unexpectedly-by many of the educated elite, including some former leftists. Yet with elections coming up, and a two-day strike in February of 2013 (the first such action since the Independence Movement), poorer people are determined to make their needs known and to demand action.

It remains to be seen what will happen in the next six months or so. I have worked on issues of land reform in India for a very long time—see Mencher 1973a, 1975, 1977, 1978, 2002—and have been struck by the clever manipulations used to prevent it or undermine it, even in the so-called Communist strongholds of West Bengal and Kerala. I have collected land ownership statistics for several villages in Kerala and Tamil Nadu, and learned how people used various subterfuges to get around land ceilings. In the case of Kerala, even members of the Communist Party of India (Marxist) were involved in such practices.

12A. Why SRI/SCI?

Uphoff has noted that a challenge that we must meet for 21st century agriculture is to produce *more* with *less*, not with added inputs. This is necessary to achieve sustainable development. Though this may sound impossible or improbable, it may be achieved by working more successfully within the realm of biology, which operates differently from the realms of chemistry and engineering, the fields that dominated the Green Revolution. This is potentially a large 'win-win' approach (Uphoff, Powerpoint presentations 2012, 2013). Solving these problems is not a matter of complex, futuristic food production methods, because a solution already exists. SRI/SCI is a very simple set of techniques of growing food which help absorb carbon, prevent CO² and methane release into the atmosphere, and save water, thus proving highly beneficial to small and medium-sized rural farmers and small urban farmers. While it is spreading like wildfire in some parts of the world, very little is known about it in the US. *Outlook Business*, a leading Indian business magazine, selected SRI as one of its "25 ideas that will change our world" (2011).

12B. What is SRI/SCI?⁵

According to Uphoff, SRI/SCI is about raising the productivity of land (more output per unit of land), labor (more output per day of work), water (more crop per drop), and capital (higher returns from investment). SRI is based on 5 fundamental ideas though they can be modified in practice:

- When transplanting, use young seedlings (younger than in traditional practice);
- Use wider spacing and single seedling/seed per hill;

⁵ For more information on SRI/SCI:SRI International Network and Resources Center (SRIRice): Website http://sri.ciifad.cornell.edu, based at Cornell International Institute for Food, Agriculture and Development (CIIFAD), Cornell University.

- Keep the soil moist but not flooded–unsaturated (though even in case of heavy rainfall, the crop can survive once root systems are established);
- Add organic matter to soil (compost, manure, and above all so-called weeds);
- Actively aerate the soil as much as possible. (See Appendix for more details.)

Uphoff contrasts the SRI/SCI approach with that of the Green Revolution, noting that the latter approach focused on: 1. Changing the genetic potential of plants, and 2. An increased use of manufactured external inputs, fertilizers, insecticides and herbicides and also used more water, whereas the SRI approach (which is a technique of agroecology) changes the way plants, soil, water and nutrients are managed to: 1. Promote the growth of root systems, and 2. Increase the abundance and diversity of soil organisms so as to better enlist their benefits. On the whole it uses more labor when learning the method, but can later become labor-saving. Water control, i.e. regular draining of the fields, is needed for best results. It is a method that depends for its success on farmer innovations which adapt the techniques optimally to local conditions. New and better implements, some very simply constructed, are reducing SRI labor requirements. Furthermore, where it is successful, farmer-to-farmer dissemination, along with help from NGOs or the state governments, has been the main method of transmission. In some areas farmer field schools (involving a groups of farmers gathering in a field to observe and learn the techniques) have helped to spread the methods. It is noteworthy that 2012-13 is the first agricultural year since the late 1990s that India is again a net exporter of rice, though this may go down if the monsoon continues to be weak in West Bengal and Odisha. It has been called a "work in progress" since it keeps changing all the time. Regular email bulletins appear several times per day on the *sriindia* network with new information.

Even unimproved (not hybrid) varieties of rice, supplemented by vermi-compost, green manure and other organic inputs, can give very high yields with SRI/SCI management techniques—at a minimum up to 6-12 tonnes per hectare—at lower cost, and often with higher market price, since the taste meets local preferences. Noting the importance of attending to soil organisms, Uphoff points out that the orthodoxy of modern agriculture—that the only or best way to "feed the world" is through modified genetic and increased agrochemical inputs—is not the only game in town. The performance of SRI (and SWI for wheat, SSI for sugarcane, STI for teff, etc., all using a similar set of techniques) plus the advances made in microbiology should bring these new ways of thinking and farming into the mainstream in the coming decades.

SRI improves farm household resilience and climate change adaptability. Using SRI, many farmers are able to obtain higher premiums in domestic and import markets for their "surplus" rice, especially for traditional varieties (ones I saw in the 1960s and very early 70s which most people prefer to eat, though they were bypassed by the Green Revolution and are now coming

back). It also tends to promote the conservation of rice biodiversity. (Note that a California company, Lotus Foods, is importing rice from SRI farmers in Cambodia, Indonesia and Madagascar, and possibly by now from India.)

Using this new management approach, with droughts becoming more frequent, weather fluctuations and monsoon irregularities, plants grow larger and deeper root systems, which enable them to survive droughts and provide more resistance to other biotic and abiotic stresses. After a heavy typhoon one AP farmer, who had grown one-half of her fields using SRI technology and the other half conventionally, found she had lost all of her conventional rice but was shocked to find the SRI plants coming back to life after a few days. They could survive severe storms and withstand lodging because of their strong roots. They can also withstand cold spells in places where cold can come unexpectedly.

In a recent email, Uphoff suggests that comparative research should be done in West Bengal between SRI fields and similar ones using the traditional methods to see how SRI works when there is less rainfall. Certainly more and more research on how well it does under partial drought conditions would be significant. Both in India and in China, farmers have found a decrease in pests with SRI. Millers prefer rice and wheat grown this way because it gives less chaff and there is less shattering. Furthermore, the number of days for a crop from beginning to harvest is often as much as 10-15 days shorter.

SRI has had many social and even psychological dimensions, as farmers who have grown rice for years get excited by it. Mostly it is spreading by example. At RASTA, an NGO I work with in Wayanad District of Kerala, the first year only the NGO grew one-half an acre of SRI rice. The next year one of the local farmers, who had watched it grow, decided to try it. The following year 27 farmers started to use the method, mostly the semi-tribal farmers in the area, including a few women farmers. We need much more on-the-ground research on where SRI is successful and where there are problems, in order to find out how to mitigate them. In some cases, it has been less successful because of gender issues related to what women were traditionally allowed to do. These need to be solved, since there is no reason why a woman in Indonesia or parts of India cannot do the work a woman in Mali can do (see section 15 below). This is a matter of cultural attitudes and training.

12C. How is SRI/SCI different?

These approaches capitalize on potentials that have long existed in various plants' genetic endowment. For rice, these potentials have been inhibited by the standard practices for growing flooded rice. SRI manages plants, soil, water and traditional nutrients in new ways. These produce a different phenotype from the existing rice genome. One striking different between SRI/SCI and conventional farming is that it pays greater attention to soil biota, whereas the entire MNC approach kills all of these soil biota, substituting artificial chemicals. When SRI was first tried (without great success) at the International Rice Research Institute (IRRI), it was most likely on land that had been exposed to pesticides for a long time, and was biologically dead. SRI/SCI does not work unless the soil biota have been regenerated.

12D. SRI/SCI and its successes

Now found widely in more than 50 countries, SRI has been extended to numerous other crops since I first saw it in the field in 2005. It is something that truly challenges the paradigm for agriculture that the US and its corporations (along with Indian corporations and Indian branches of foreign corporations) have been pushing. In some areas farmers who had migrated to urban areas for manual work are now finding themselves able to stay back in their villages and make a decent living. One of the examples quoted in several SRI articles mentions Shiv Singh, a landless laborer from Madhya Pradesh who used to migrate to Delhi to earn a living as a construction worker. This year with Rs. 8,000 (\$160) saved from his Delhi earnings, he rented 3 acres to grow SRI rice. The harvest fetched him \$1,500 *in addition to* enough rice to feed his family for the year.

Agro-ecological methods can give significant increases in yield, by multiples rather than increments, for resource-limited households using reduced inputs (seeds, water, fertilizer). According to Uphoff, "*Intensification* is of farmers' knowledge, skill and management—rather than of purchased inputs—though with *mechanization* it is possible to save labor" (Uphoff 2012). Changes that are made in the management of plants, soil, water and nutrients affect both the population and activity of soil biota. SRI practices are being used beyond rice, including:

- Wheat (SWI) India, Nepal, Ethiopia, Mali
- Sugarcane (SSI) India, Cuba
- Finger millet (SFMI) India, Ethiopia
- Mustard/rapeseed/canola (SMI) India
- Teff (STI) Ethiopia
- Sorghum (SSI²) Ethiopia
- Turmeric (STI²) India
- Also for: maize, black gram, green gram, red gram, tomatoes, chilis, eggplant, sesame, in India and Ethiopia.

Uphoff notes that SRI/SCI shows us the importance of abundance, diversity and activity of beneficial soil organisms promoted by soil organic matter and by exudates from large, functioning root systems that support plant growth and health. "We are just starting to understand better the contributions of <u>symbiotic endophytes</u> to mobilizing the services of <u>plant</u> <u>microbiomes</u> that aid crops. Fortunately, <u>opportunities for a paradigm shift</u> are available -- but they will require significant changes in our crop and soil sciences, with work in disciplines of *microbiology, physiology, soil ecology,* and *epigenetics* becoming more central" (Uphoff slide presentations 2012, 2013).

13. Opposition to SRI/SCI

Indian Government policies have been very mixed on SRI/SCI. On the one hand, it has been incorporated into the Twelfth Five-Year Plan, including a program to implement it in 133 districts across the country. The target for 2012-13 was 5 million hectares. On the other hand, informal interviews indicate that many officials of both the central and state governments have ambivalent or negative attitudes toward SRI/SCI. This may be at least partly because of the long history of the use of chemical inputs in India, starting in the 1960s, which involved continuous contact between agricultural officials and sales representatives of the chemical manufacturers.

The non-pesticide management (NPM) in Andhra Pradesh was the result of serendipity, when the state's Chief Minister happened to visit an old friend who had started farming without pesticides. The practices of NPM are now widely used throughout Andhra, one of India's largest states.

Not surprisingly, the MNCs are fighting against these new approaches, using their influence on important Indian politicians. How this evolves is a matter of politics not agronomy. It clearly is a struggle between Food Sovereignty for the majority of people and food control by the corporations.

14. India and the New Food Bill

It is essential that Indian farmers be allowed to save seeds, grow their traditional and on-farm improved varieties and livestock breeds, and that patents of existing seeds be banned. On the other hand, there is a need for both direct and indirect subsidies that support smaller-scale producers and food workers in countries like India. Today, India is again growing enough rice to feed its population and have a sizeable export crop—but it remains to be seen if the new food bill recently passed in the lower House of Parliament carries with it meaningful subsidies for small farmers growing grain. If not, it will undercut all small farmer agriculture because they cannot compete with US farmers who receive substantial subsidies from the US Government.

It is also important that the costs of bringing food long distances and using large amounts of manufactured pesticides and fertilizers and herbicides be included in the cost of food.

The current Indian food bill, unless it provides decent prices to Indian farmers, can be seen as an attempt by the Central Government to force farmers out of agriculture and allow the Indian government to buy US subsidized "commodities", a plan advocated by the US-trained economists in power in most political parties today.

15. Labor and Gender issues

Labor is a critical input in SRI, but research so far has been limited, especially on genderdifferentiated labor. Interestingly, whenever implements are to be used, men in the past and even quite recently in some places have worked to push women out. Some women have been able to override this, but there are deep-seated social pressures that need to be overcomeespecially male attitudes about the use of implements. Food Sovereignty also includes issues of equity and gender inclusion and being willing to allow females to learn to do the things that they have always been told they cannot do. One critical one is plowing. I know of cases where women tried to do plowing, but they had to do it at night (if there was a good moon) because of the laughing and derision of the local men. But now, if men are moving out of agriculture in some areas, it would be useful to allow those women who want to learn how, to actually do the ploughing. I have discussed this issue more in an earlier paper (Mencher 1993). This situation brings to mind the younger women in Tamilnadu who all wanted to go out in boats after the tsunami, because they felt they might not have lost so many women if they understood the sea better.

It is also becoming clear that women's land rights must be taken into account. What has been defined as women's rights to food, to land, and by extension to water and seeds need to be seen as a set of critical human rights which must be taken into account in developing a policy for a sustainable planet. Issues of food security, Food Sovereignty and climate change adaptation must be gender responsive, i.e. a recognition of roles played by women and men in communal activities (agriculture for example) to alleviate poverty and feed people.

16. Conclusion: Why Food Sovereignty?

Food Sovereignty is essentially a democratic concept that allows for local people's involvement in controlling their own lives, and which is both stimulating and challenging even for small and medium farmers, including women. Today the struggles are about control and about political and economic power relations. Achieving Food Sovereignty in practice must also involve local protest movements and other forms of rebellion against the power and greed of the MNCs and their investors. Sustainable agriculture may be a pathway out of poverty for many-even in India, especially if the government can be persuaded to do something about land reform. But fighting the MNCs that control all of the inputs that enable their investors to obtain large profits is not going to be easy. MNC leaders might pretend to be concerned about human hunger, but the nature of corporate structure is such that the bottom line is the first priority.

Most of the MNCs, including those producing seeds (both hybrids and GMOs), pesticides, fertilizers, herbicides as well as those processing their monocrop produce into supermarket foods laden with sugar and corn syrup, along with their friends in the oil industry, have invested large sums of money in hidden seed vaults in northern Norway and elsewhere. They know what the future will be, if they get their way and gain total control over the world food system. To them it is a single system, not a network of concentric circles as envisaged by Pimbert and others who are fighting for sustainable food systems. History shows that the wealthy and powerful elites never give up power and control voluntarily. But neither do people whose livelihoods are threatened. And clearly, the prospect of losing any more control of their food systems is spurring numerous protest movements around the planet. The result of these confrontations may also be affected by climate change.

Appendix – System of Rice Intensification



Cultivate rice in organic way with less water and less seed. Minimize pest and disease incidence, obtain high yields with low investment.

Raising nursery



For one acre, 2 kg seed is sufficient. Plough the field thoroughly and make two raised beds of 4 X 50 feet dimensions. Make irrigation channel all-round the bed and sprinkle well decomposed compost over it. Spread sprouted seed thinly on the bed and apply another layer of compost over the seed. Cover the bed with straw and sprinkle water every day. The seedlings with 3-4 leaves would be ready after 8-12 days for transplantation in the main field.

Preparation of main field

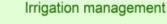
Puddle and level the main field thoroughly as usual. Keep the field wet without any standing water. Make channels at every 2m to drain the excess water. Make crisscross marks on field with rope or marker at 25cm spacing in both directions.





Transplantation

Pick the 8-12 day old seedlings from nursery, along with little soil without damaging their roots and seed. Carry seedling to the main field on metal plates or plastic trays. Only one seedling should be placed at the crisscross junction carefully in the main field.



Maintain soil moisture with adequate irrigation. Remove excess water through drainage channels. It helps in healthy growth of roots and results in profuse tillering.





Fertility management

Build up soil fertility through crop rotation with legumes like sun hemp, dhaincha and incorporation of the same in to the soil 7-10 days before main field preparation. Apply organic amendments like compost @ 4 tons per acre.



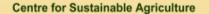
Weed management

Periodically run rotary weeder in between the crop rows and incorporate the weeds into the soil. It would enrich the soil with about one ton organic manure.



Profuse growth of roots help obtain high yields

- More tillers, more panicles
- More grain per panicle and fuller grain



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Food Sovereignty: A Critical Dialogue

NTERNATIONAL CONFERENCE YALE UNIVERSITY SEPTEMBER 14-15, 2013



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FOOD SOVEREIGNTY: A CRITICAL DIALOGUE INTERNATIONAL CONFERENCE PAPER SERIES

A fundamentally contested concept, food sovereignty has — as a political project and campaign, an alternative, a social movement, and an analytical framework barged into global agrarian discourse over the last two decades. Since then, it has inspired and mobilized diverse publics: workers, scholars and public intellectuals, farmers and peasant movements, NGOs and human rights activists in the North and global South. The term has become a challenging subject for social science research, and has been interpreted and reinterpreted in a variety of ways by various groups and individuals. Indeed, it is a concept that is broadly defined as the right of peoples to democratically control or determine the shape of their food system, and to produce sufficient and healthy food in culturally appropriate and ecologically sustainable ways in and near their territory. As such it spans issues such as food politics, agroecology, land reform, biofuels, genetically modified organisms (GMOs), urban gardening, the patenting of life forms, labor migration, the feeding of volatile cities, ecological sustainability, and subsistence rights.

Sponsored by the Program in Agrarian Studies at Yale University and the Journal of Peasant Studies, and co-organized by Food First, Initiatives in Critical Agrarian Studies (ICAS) and the International Institute of Social Studies (ISS) in The Hague, as well as the Amsterdam-based Transnational Institute (TNI), the conference "Food Sovereignty: A Critical Dialogue" will be held at Yale University on September 14–15, 2013. The event will bring together leading scholars and political activists who are advocates of and sympathetic to the idea of food sovereignty, as well as those who are skeptical to the concept of food sovereignty to foster a critical and productive dialogue on the issue. The purpose of the meeting is to examine what food sovereignty might mean, how it might be variously construed, and what policies (e.g. of land use, commodity policy, and food subsidies) it implies. Moreover, such a dialogue aims at exploring whether the subject of food sovereignty has an "intellectual future" in critical agrarian studies and, if so, on what terms.

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