WHERE HAVE ALL THE SMALL FARMERS GONE!

The Story of Agriculture and Indian Farmer

By
Focus on the Global South, India

Supported by
Rosa Luxemburg Stiftung, South Asia

Focus on Smallholder Agro-ecology Series-1

WHERE HAVE ALL THE SMALL FARMERS GONE!

The Story of Agriculture and Indian Farmer

FOCUS ON THE GLOBAL SOUTH

Focus on Smallholder Agro-ecology Series-1

WHERE HAVE ALL THE SMALL FARMERS GONE!
The Story of Agriculture and the Small Indian Farmer

Author : **Vijay Singh Negi (alias Biju Negi)**

Published in : **March 2014**

Edited by : **Rimli Borooah**

Published by : **Focus on the Global South, India**
33-D, 3rd Floor, Vijay Mandel Enclave,
DDA SFS Flats, Kalu Sarai, Hauz Khas,
New Delhi – 110016. India
Tel: +91-11-26563588; 41049021
www.focusweb.org

Supported by : **Rosa Luxemburg Stiftung, South Asia**
Centre for International Co-operation
C-15, 2nd Floor, Safdarjung Development Area Market,
New Delhi - 110016
www.rosalux-southasia.org

Cover Image : Raigarh, www.raigarh.gov.in

Design & Printed by : **Pullshoppe,** 9810213737

Contents

Foreword

Agriculture is an important sector of the Indian economy, accounting for 13.7% of the nation's GDP in 2012–13 (down from 30% in 1990–91), and about 11% of its exports, and serving as the principal source of income for about half the country's population. At 179.9 million hectares, India holds the second largest agricultural land in the world and 4% of the world's water resources, but has to support about 17% of the world's human population and 15% of the livestock. With 20 agri-climatic regions, all 15 major climates in the world exist in India. The country also possesses 46 of the 60 soil types in the world. In the crop year 2011–12 (July–June), India had a record food grain production of 259.29 million tonnes. It is the largest producer of pulses, milk, tea, cashew, jute and jute-like fibres; the second largest producer of rice, wheat, sugarcane, groundnut, vegetables, fruits and cotton production; and a leading producer of spices and plantation crops as well as livestock, fisheries and poultry.

Despite all this, the plight of Indian farmers, especially of small and marginal ones, is worsening with each passing year. Since 1995, more than 290,000 farmers have committed suicide and around 2358 farmers are quitting agriculture daily. With the average monthly income of farm households (Rs 2115) now lower than their average monthly expenditure (Rs 2700), it is not surprising that the food producers or *annadata*s who feed our entire nation are dying of hunger and malnutrition. Even as the contribution of agriculture in India's GDP has declined, the number of agricultural labourers has surpassed the actual producers, with more than 52% of the labour force now dependent on agriculture. With hardly any job opportunities left in the rural areas, huge numbers of farmers or farm labourers are migrating to urban/industrial centres. The self-sustaining model of Indian agriculture is today seen as non-viable, suicide-prone and debt-ridden, an unattractive avenue of employment for the younger generation in farming households. Indian agriculture is witnessing the largest displacement in human history, a shift mainly caused by the distress conditions created through adverse public policies that are pitted against farmers' interests. The neoliberal policy push for the input-intensive, export-led, industrial agricultural model has polluted the very foundations of our agriculture – soil, water and climate – causing serious damage to seed and agro biodiversity, and making farming unsustainable and unremunerative for millions of India's small and marginal farmers.

Small and marginal farms, however, are still crucial for India's food security and sustainable agricultural growth. As per the Agriculture Census 2010–11, about 85% of the operational

holdings (as against 83% in 2005–06), accounting for about 44% of the total cultivated area in the country, are held by small and marginal farmers. The India Rural Development Report 2012–13 reports that the small farmers have proven to be more efficient than large farmers in using land and resources. The future of agriculture in India thus depends on the performance of small and marginal farmers. But it is also a fact that they are the key victims of the neoliberal policies being pushed through the promotion of export-led industrial agriculture, or the second green revolution. The policies seek to corporatize Indian agriculture at the cost of small and marginal farmers, who are targeted to force them quit agriculture and serve as cheap labour for the real estate and infrastructure industry. These farmers must be protected and promoted to ensure the livelihoods of millions of small farmers.

In India and elsewhere in the world, there is a growing movement to usher in change in the agriculture system to save small and marginal farmers from the onslaught of the second green revolution. Using hard numbers and data, particularly the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) report, it has been proved that small-scale sustainable agriculture can out-produce industrial farming and is by far much better for our planet. In the midst of a gloomy scenario of agrarian distress, several examples exist in India where small farmers, in small pockets, have continued to deliver extremely encouraging results. In Nalanda district of Bihar, farmers have obtained record yields (224 quintals) of paddy in Darveshpura village and potato (1,088 quintal) in Sohdih village in a hectare (in 2010–11), using sustainable agriculture techniques, and proved that smallholding agriculture can be viable and profitable. In Madhya Pradesh, some farmers in Alirajpur district have harvested, through multi-dropping, about 2.9 tonnes of maize and 0.4 tonnes of soyabean from a hectare and 150 papaya fruits per plant from 100 plants when the average production in district was 1,497 kg/ha for maize and 720 kg/ha for soyabean. In Gorakhpur, the district administration as well as the Confederation of Indian Industry (CII), declared a woman farmer (of Sarpataha village) a model farmer (in 2011) for growing 32 different crops (cash and food) every year in her one-acre small farm which produces enough to support a family of 12. Even the United Nations Special Rapporteur on the Right to Food, Olivier De Schutter, has compiled evidences demonstrating not only that sustainable or agro-ecological multi-cropping farming approaches can provide enough food for all, but also that small-scale farmers can double food production within 10 years in critical regions by using agro-ecological methods.

Focus on the Global South, with the support of the Rosa Luxemburg Stiftung (RLS), has started a

collaborative programme to bring out educational materials and other publications focusing on the small and marginal farmers. These will highlight their concerns, and attempt to grasp the various governance issues that have made their survival precarious. The publications will also feature the different aspects of the present neoliberal model of agrarian reforms in India, exploring how it impacts the viability of small-scale agriculture. Given the impending threats in Indian agriculture in the form of corporatization of agriculture, genetically engineered crops, patenting of seeds, land grabbing, privatization of irrigation water, FDI in retail, climate change and so on, the central aim of these materials is to highlight the importance of self-reliance in farming: how are farmers to retain their self-respect and remain their own masters, living by the life-values implicit in Indian agriculture, rather than as slaves in a capital-intensive agriculture? We will also make special efforts to highlight the alternative technologies and mechanisms based on sustainable and agro-ecological principles that can make these small farms not only viable and self-reliant but also profitable economic units. There is an urgent need to instill confidence among the small and marginal farmers that small farms can be viable and sustain their livelihood. It is also important to debunk, for the benefit of small and marginal farmers, the myth that only big farms are viable.

This booklet on 'Where have all the Small Farmers Gone' is first in the series, and it traces the broad history of the rich agriculture system in India which was ruined by the British colonial policies.

We hope that these educational materials will help initiate conscious dialogue and interaction with and among small farmers, helping them realize their strengths, retrieve their sense of dignity in agriculture, and overcome the obstacles through their own initiatives, by enabling them to take decisions regarding agriculture.

Afsar Jafri
Coordinator
Focus on the Global South, India

A Word on the Series

Focus on Global South, with the support of Rosa Luxemburg Stiftung, is bringing out a Focus on Smallholder Agro-ecology Series of booklets and related publications addressing the small farmers and the small farming issues in India.

The objective of this series is to initiate conscious dialogue and interaction with and among small farmers and enable them to take decisions to strengthen their agriculture. This objective rests on the premise that despite the serious challenges facing this sector or community, which forms the majority population in the country, small farmers and small farming continue to remain inherently strong, resilient and viable despite the macro forces ranged against them. This series then hopes for small farmers to realize their strengths, retrieve their sense of dignity in agriculture, and overcome the obstacles through their own initiatives. In other words, seeking to underline the need to have flourishing small farmer agriculture for the country's overall food, nutrition and livelihood security, this series would be about small farmers exercising their sovereignty.

Through these booklets, to be brought out in Hindi and English, we are primarily seeking to address grassroots organizations and movements, mid-level development workers, the CBOs and, of course, the farmers themselves. The topics to be covered by the proposed booklet series have been carefully identified in close consultations with and by small farmers themselves from several states. The first of such consultations was an interactive workshop in Delhi in October 2013. This was with the farmers from the regions where Hindi is spoken or more easily understood. We hope to conduct similar consultations with small farmers from other regions as well. The process of having the small farmers determine the course of these publications will hopefully add to the topicality, immediacy and relevance of the subjects to be raised and dealt with. The farmers will expectedly also form a proactive part of post-publication initiatives.

This first booklet in the series – 'Where Have all the Small Farmers gone?' – traces the broad path that agriculture took in India, to see where and how the small farmers are placed in it. It notes the major milestones en route, and underlines the major ups and downs, in particular the general decline of small farmers from their once position of strength. The booklet presents the larger background to the issues and concerns of small farmers, for them to grasp their heritage and realize their losses. Thereby, it hopes to initiate a process of reflection and discussions to be generated in the course of the entire dialogue.

Biju Negi

Introduction

Planet Earth is going through one of its most critical phases, where its very existence is under threat. While part of this crisis may be attributable to the earth's historical evolution and movement, human inadequacies and failures are definitely responsible for its major share. These failures have emanated from a lack of deeper understanding of how life is shaped and governed on earth and consequently our conscious and unconscious inability to live in accordance with the natural laws and norms which have endangered the ecosystem, and perpetuated and enlarged the socio-economic disparities in the society.

This is most apparent in the arena of agriculture, the most primary occupation in the human society, which directly impacts our food and well-being. It would neither be wrong nor an overstatement to say that agriculture is at the centre of our being.

In India, almost every school social science textbook starts with the sentence, 'India is an agriculture-predominant country'", and which also – in a tone of grave respect – refers to the farmer as the annadata (the provider of grain). This is because in India, agriculture has been the life and the means of sustenance for the majority of the people. Indeed, agriculture was always accorded a pre-eminent position in our society. Even today, as much as 70% of the country's population is, directly and indirectly, dependent on agriculture – and about 80% or more of this agriculture-dependent community consists of small and marginal farmers holding 1–5 ha of land. Agricultural Census data shows that in 2000–01 there were about 121 million agricultural holdings in India of which around 99 million (around 82%) were held by small and marginal farmers.(1)

Through the centuries, these farmers have been the backbone of the country, and yet today, in spite of being in the majority, the small farmers in India are in dire straits. What's more, their living options and conditions are getting from bad to worse. Today, they are at the very bottom of the scio-economic ladder and are largely looked down upon. They no longer get the respect that the term annadata should command. Political rhetoric and compulsions do not forget to mention them every now and then, but they find no

dignified or even adequate space in the country's policies and plans.

In fact, the country's development planning in general, and food and agriculture planning in particular, has grievously failed this major population group. Government policies and programmes have directly and indirectly ended up marginalizing the small farmers. Even Prime Minister Dr Man Mohan Singh blames them for the country's poverty when he says that "the only way we can raise our heads above poverty is for more people to be taken out of agriculture." (2)

Denied adequate support, encouragement and respect, it is no surprise that, given the option, nearly 40% farmers would like to quit farming, according to the National Sample Survey (NSS) report of July 2005. Since 1995, over 150 lakh farmers have left agriculture. And the most tragic consequence of their ever-deteriorating state and status is that since 1995 over 3 lakh farmers have committed suicide.

The increasingly worsening state of small farmers in an 'agriculture-predominant' India is most tragic and a matter of grave injustice.

This state of affairs is tragic also from the larger perspective of the farmers' historic contribution to the country's development, and the direct as well as snowball impact of their decline on the well-being of the entire country. Ever since small farming and the small farmers have been marginalized in the country's development scenario, the country's food security has been seriously compromised and endangered – both in terms of holistic and nutritional quality and sustainability – and the number of hungry and malnourished in the country has continually increased. Today, we have the second largest number of people in the world affected by hunger and malnutrition.

The decline of small farming has added to the problem of increasing unemployment in the country. Exodus from farming and rural areas has led to overpopulation of urban areas, thereby creating urban slums and ghettos, and heightening other social ills. It has widened social inequities and further deepened gender problems generally and in agriculture particularly.

If we wish to address these wider social concerns, we need to attend to agricultural issues

and concerns of the small farmers and small farming. These issues hold the key to holistic and sustainable development of the society. At the same time, small farmer agriculture – its principles and practices, grounded in local geography and climatic conditions – is being increasingly attested as scientifically appropriate. Despite its grave marginalization, small farmer agriculture still remains viable.

Agriculture : At the Centre of Our Being

It is important to take a brief look at the history of agriculture in our country and try to understand how we have come to such a pass where a small farmer – on whose shoulders the well-being of the entire country rested – today sees no future in agriculture and either gives it up or considers suicide as the only available option.

Agriculture has been and remains the most defining factor in the development of the human society, and small farmers have been critical actors in shaping that history. Through history, the development of agriculture – and consequently of society – has occurred through the brain and brawn of small farmers. But for their genius and intimate observation and understanding of their environs, and their dogged perseverance in the fields, the world would not have survived nor progressed. It would also not have had the tremendous inter- and intra-diversity of food – grains, grams, pulses, fruits, vegetables, et. al; diversity that not only allows us choice but also provides us insurance against disasters such as floods and drought, against disease and hunger.

Agriculture is believed to be over 10,000 years old. Geological studies as well as our ancient literature – the Ved, Puraan, Upanishad, Ramayan, Mahabharat, among others. – contain ample information regarding agriculture of those times, including types of land, monsoon forecasts, farm implements used, manure, irrigation, seeds and sowing, pests and their management, horticulture, etc.

The domestication of plants and animals is reported in the subcontinent by 9000 BCE. During the Neolithic age (7500–6500 BCE) humans began to settle in villages, which was a major social watershed and boosted agricultural learning and practices. Sheep, goat, cattle, pigs, horse, donkey were domesticated; cattle dung was used for manure; and the sickle was invented for harvesting crops.

The Indus Valley Civilization (3300–1900 BCE), also known as the Harappan Civilization, saw the use of animal-drawn plough, the cultivation of rice (rain-fed), wheat, barley, cotton, etc. and the construction of granaries. Subsequently, irrigation and water storage systems were developed. This period also saw one of the greatest human inventions – the wheel! The granaries of Harappa and Mohenjodaro were immense, which suggests bountiful agricultural production.

In the later Vedic texts (1000–500 BCE), the cultivation of a wide range of cereals, vegetables, and fruits is described. In fact, Rigved says that agriculture is the best occupation. The importance of

seeds is emphasized and a certain sequence of cropping is recommended.

During the Mauryan rule (322–185 BCE), the soil was categorized and meteorological observations were taken for use in agriculture. The Greek diplomat Megasthenes writes in his book Indika (300 BCE), "India has …. many vast plains of great fertility. The greater part of the soil is under irrigation, and consequently bears two crops in the course of the year. In addition to cereals, there grows millet, and different sorts of pulse and rice throughout India." (3, 4,5, 6)

By the early medieval times (500 to 1300 CE), agriculture had spread rapidly and widely, and a great diversity of crops and fruits was being grown, including what may be considered cash crops. (7) Systematic ploughing, manuring, weeding, irrigation and crop protection were practiced. Water storage systems were designed during this period. Spices native to India – including cinnamon and black pepper – began to be exported. (8) During the Chola Empire (875–1279 CE), transference of land ownership began, and collective holding of land by a group of people slowly gave way to individual plots of land. (9)

Born of Toil and Experience

This cursory delineation of ancient agricultural history underlines the fact that agriculture has not simply appeared from thin air, but has been built 'brick by brick' by succeeding generations through the millennia. It has not been imposed but has been learnt through rigorous observation, toil and experience. Farmers have looked closely at nature, internalized it and worked in tandem with it. As their learning and experience grew, so did agriculture. Perhaps some may have also tried to work outside the realm of nature and its laws, we do not know; but if they did, it did not last and they soon learnt better or the entire civilization, sooner than later, died.

For the large part, the societies that survived imbibed their own immediate natural surrounding, learnt from it and made judicious use of their natural resources. They tried and tested a few things, practiced it, persevered and retained what held good in the long run – and the next generation picked up from their experience and knowledge. The next generation, like the earlier one, added to the accumulated experience, and took agricultural knowledge and practices two steps further.

This is not to say that everything in history was just fine and without blemish. Since agriculture, so to say, was in the making, the farmers obviously must have faced tremendous mental, physical and material hardships, which they could have overcome only by dint of disciplined and diligent toil in the field. At the same time, the social structures were deeply class- and/or caste-ridden, and

the small farmers, among others, would have also faced social and cultural oppression. This would have deeply impacted their livelihood and even survival.

Yet, even in the worst of social situations, the basic essentials of agriculture, its knowledge, understanding and practices were not overtly tampered with, and continued to remain and develop in the realm of natural laws. Whatever the other threats to the farming community and their agricultural produce or output, people's practices in agriculture remained what in today's language we call sustainable.

The Farmer – A Scientist Par Excellence

At their own levels, farmers continued to investigate, experiment, learn, practice and develop in a natural progression and in accordance with the local geography and sociology, ever observing and following nature's guidelines and climatic cycles. It is their adherence to the local natural laws and conditions, working together with fellow farmers, the extreme care and labour spent in working the fields and tending to the crops that have helped keep their occupation meaningful and have (or rather, had) given our country its robust agricultural practices and a tremendously rich agro-biodiversity in every sense. Dharampal writes in Rediscovering India, "The aspects, which have been specially noted, are the variety of seeds available to the Indian peasant, the sophistication and simplicity of his tools, and the extreme care and labor he expended in tending to his fields and crops."(10) He also mentions that the Ain-i-Akbari records wheat productivity from middling lands which compares well with the highest productivity obtained in post-Green Revolution Indian agriculture. (11)

It is perhaps because of the careful and detailed attention that the Indian farmers paid to every aspect of their fields and crops that they were able to discover or invent, develop and perfect techniques and technologies that resulted in a rich, productive and balanced agriculture. Even as the British Empire conspired to effect a major decline in Indian agriculture and bring about the peasantry's deprivation, many eighteenth-century western observers have often referred to the high standards of the Indian agricultural technology of the time.

In 1832, while testifying before a Committee of the British House of Commons, Dr Wallick, the Superintendent of the Royal Botanical Gardens in India, was asked "Whether Indian agriculture was susceptible of any great improvement?" His reply was: "Certainly, but not to so great an extent as is generally imagined; for instance, the rice cultivation, I should think, if we were to live for another thousand years, we should hardly see any improvement in that branch of cultivation."(12)

In 1889, Dr John Augustus Voelcker, Consulting Chemist to the Royal Agricultural Society of England, was deputed by the British government to enquire and advise upon the improvement of Indian agriculture in general and through scientific means. Voelcker toured the country extensively from December 1889 to January 1891. In the abstract to his report, which was published in 1893, he wrote: "I explain that I do not share the opinions which have been expressed as to Indian Agriculture being, as a whole, primitive and backward, but I believe that in many parts there is little or nothing that can be improved, whilst where agriculture is manifestly inferior, it is more generally the result of the absence of facilities which exist in the better districts than from inherent bad systems of cultivation."(13) At another point, responding to the question whether agriculture in India is capable of improvement, he writes, "I make bold to say that it is a much easier task to propose improvements in English agriculture than to make really valuable suggestions for that of India." Voelcker further adds, "Certain it is that I, at least, have never seen a more perfect picture of careful cultivation, combined with hard labour, perseverance, and fertility of resource, than I have seen at many of the halting places in my tour."(14)

There are many evidences and other such authoritative reports to show that agriculture in pre-British India and even until the mid-19th century was productive, rich and prosperous. It was during the British rule that Indian agriculture saw a sharp decline, which impoverished the Indian peasantry. In a classic case of the exploiters and the exploited, the British rulers engineered a series of laws and rules which decimated the rich heritage of Indian agriculture and pauperized its farmers; and the country suffered famines, calamities and hunger, and also saw agrarian protests and movements.

The Colonial Deceit

Accusing traditional Indian agriculture of being backward and unscientific, and claiming that it could be saved only through modern science and technology, the British uprooted the local agrarian social system and put in place an alien system based on alien knowledge, largely inappropriate to the local conditions. They introduced commercial agriculture, which suited the interests of the empire, at high cost to the local populace. The villages lost their autonomy and self-reliance, while the people lost their land rights and were subjected to numerous constraints. The introduction of a highly centralized administrative system, which appropriated all local and natural resources, and the imposition of extremely high land revenue reduced the Indian peasants to a state of utmost deprivation.(15) No wonder that, upon his return to India from South Africa, the first satyagrah that Mahatma Gandhi led against the British was directly related to agriculture and the farmers. This was the Teen Kathiya Andolan in Champaran district of Bihar in 1917, where the farmers were forced to cultivate indigo (for use in British textile mills). Indeed, agriculture was no longer seen as being a provider of food but as a source of raw materials for the British.

The land revenue policy of the British started by Warner Hastings was based on the principle that all land belongs to the crown. It promoted private land acquisition and gave rise to a feudalistic zamindar class with hereditary status. Ownership of land was vested with non-cultivators (zamindars) who acquired more and more land; the small farmers were increasingly reduced to being tenants – nothing better than serfs working for this minority landed class. The government became the rent receiver; the zamindars were rent collectors; and the peasants were mere rent payers, sharing the major burden of tax payment.(16) The government and the landlords were merely interested in the rent. Agricultural productivity, yield and income dropped, leading to severe loss of returns from agriculture. Because of the increasing government dues and exploitation by the unscrupulous zamindars, the farmers had neither the resources nor the heart to invest further in agriculture on land that was not theirs. The rising debts among farmers also gave rise to yet another intermediary and a more vicious class – the moneylenders, who increasingly came to control the land and its produce. The consequence of farmers' impoverishment was that Indian agriculture became stagnant and then declined.

There was further pressure as a result of some other sectors like handicrafts (particularly weaving) too facing decline in the face of discouragement from the government. Weaving had provided

ample livelihood to the people, more so as many families did agriculture and handicrafts in tandem. With the marginalization of weaving, a widespread 'domestic' industry collapsed and also forced large-scale exodus of those craftsmen to agriculture.

Famines during the British Period

BM Bhatia writes in his Famines in India: "From about the beginning of the eleventh century to the end of the eighteenth there were 14 major famines in India."(17) This is roughly two per century. Under the period of East India Company rule, from 1765 to 1858, there occurred 16 major famines, a rate eight times higher than what had been common before. Then, under the period of British Colonial Office rule, from 1859 to 1914, there was a major famine in India at an average of every two years, or 25 times the historical rate before British rule!(18)

This very high rate of occurrence of famines calls for a close look at the issue. Lakhs of people have perished in these famines and this had a debilitating impact on the country's population in general, and the farmers and agriculture in particular since they faced the brunt of the disasters.

Many experts have concluded that most of the famines during the British period, and certainly their impact in terms of death and destruction, are largely attributable to British policies and governance of the country. These included the government's insistence on farmers cultivating cash crops (raw materials for value-added productions in England), 'unemployed' weavers and craftsmen crowding agriculture and competing for diminished land, and money draining from the peasant to the landlord and moneylender, making it impossible for the peasant to access food. However, despite agriculture's declining trend, these famines were not caused by shortage of food. In fact, during the year of the Great Bengal Famine (1943–44), which consumed over 35 lakh people, India exported over 70,000 tons of rice for use by British troops and the British civilians in the first seven months of the year.(19) Not just that! In her book Churchill's Secret Wars, Madhushree Mukherjee says that in that year, Winston Churchill, Britain's wartime leader, could have stopped and diverted a ship full of grains sailing from Australia but did not, allowing it to bypass India and move on to the Mediterranean where stocks were already aplenty. "It wasn't a question of Churchill being inept: sending relief to Bengal was raised repeatedly and he and his close associates thwarted every effort," she writes.(20) The Famine Commission of 1948 and economist Amartya Sen found that there was enough rice in Bengal to feed all of Bengal for most of 1943.(21) Export crops displaced millions of acres that could have been used for domestic subsistence and increased the vulnerability of Indians to food crises.(22)

In the aftermath of the Orissa famine (1865–66), the then Viceroy Lytton resisted policy reforms and famine relief to the extent of ordering that "there is to be no interference of any kind on the part of Government with the object of reducing the price of food," and instructing district officers to "discourage relief works in every possible way.... Mere distress is not a sufficient reason for opening a relief work."(23) Keeping famine relief as cheap as possible, with minimum cost to the colonial exchequer, was indeed an important factor in determining famine policy.(24)

The Famine Commission of 1880 developed the Famine Code, a series of government guidelines and regulations on how to respond to famines and food shortages. These had to wait until Lytton left, and were finally passed in 1883 under the more liberal-minded Viceroy Ripon. However, despite the codes, mortality from famine was highest in the last 25 years of the 19th century.(25)

Agrarian Movements and Uprisings

There were many small and big uprisings by tribals and peasants in various parts of the country during the British period. The issues at stake may not have been strictly agrarian in nature but the discontent usually had a deep agrarian basis. These mobilizations were against feudalistic exploitation by the ruling classes (the British and their intermediaries – zamindars, moneylenders, etc.). Even the first battle of independence in 1857, called the Sepoy Mutiny by the British, was built on the foundation of the struggles by various tribal and peasant groups. Thousands of spontaneous peasants' revolts all over North India formed an important component of the uprising.(26)

The rebellion against indigo cultivation first erupted in the 1860s and 1870s in Bihar and Bengal, with farmers going on strike. There were partial, local victories achieved but the last of it was only heard when Gandhiji launched the Champaran satyagrah in Bihar in 1917 and the indigo cultivation was abolished.(27)

The Permanent Settlement of Bengal (in 1793) had handed over the land cultivated for centuries by the Santhal people in Bengal to the zamindars, who even followed them to claim ownership of their new settlements in Rajmahal hills. In 1855 the Santhals organized and declared a rebellion that swept across Bihar, Orissa and Bengal, and became violent.

In 1874, the peasants of East Bengal formed an Agrarian League, possibly the first ever formal and unified movement of small farmers in the country, and revolted against fraudulent occupation of their land by the zamindars. The revolted lasted for around a decade, involved pitched legal battles, and ended with the passing of the Bengal Tenancy Act of 1885, which offered some

limited protection to the tenants from the worst oppressions by zamindars.(28)

In 1875, Maharashtra saw a rebellion in Pune and Ahmednagar (Deccan Riots) against high rents amidst a scenario of depression in cotton exports and related decline in agriculture. The farmers had no choice but to seek out moneylenders who exploited the situation and obtained mortgage of a very large portion of land against loans. Eventually the peasants started a social boycott of the moneylenders, and seized their debt bonds and set them on fire. They were arrested. The government set up a commission, on whose recommendations the Agriculturists Relief Act 1879 was passed, imposing restrictions on peasants' alienation from their land.(29)

Post-1857, with the government increasing land revenue and on other similar issues, there were protests in eastern India as well – in Assam, Nagaland, Mizoram and Meghalaya.

On the very eve of Independence, in 1946, the Tebhaga Movement in Bengal became a path-breaking struggle in the country. At the time, customarily, the harvest was shared equally between the sharecropper and the landowner. The farmers were now demanding that the equation be changed and the farmer's share be two-thirds of the produce, reducing the landowner share to one-third of the produce. The peasants wanted this to also become the law. In 1940, the Land and Revenue Commission had found this demand to be just and a draft bill to that effect was even prepared. However, the proposal was sabotaged and the law did not come into being. The Communist Party of India in Bengal took up the issue through its Kisan Sabha and agitations, which collectively came to be known as the Tebhaga (one-third) Movement, occurred from 1946 to 1951. As the movement grew, it evolved and widened its scope to even voice the demand of 'land to the tiller' – a rather radical concept at the time.

At the time the movement did not succeed in achieving its most immediate demand, but it addressed and underlined two critical aspects – it reflected the small peasants' political awakening on agrarian issues and, importantly, also helped to halt the communal divide that was engulfing the country on the eve of its independence.(30) Today, the Tebhaga Movement is seen as a watershed in agrarian struggles, which brought into focus the fundamental issues of small farmers across the country and has since provided a higher ground for articulating the deeper concerns in people's struggles for survival and a more dignified existence.

Throughout the British period in India, from the rule of the East India Company to that of sovereign Britain, there have thus been many movements, struggles and revolts involving and impacting marginalized farmers and agricultural labourers. Most of these uprisings were

violently crushed, involving the deaths of hundreds of thousands of peasants across the country. The uprisings also led to more stringent laws and more rigid control over the country by the British and their cohorts.

But these struggles also brought to the fore the grave social disquiet and sufferings of the larger rural society in colonial India. Importantly, these movements underlined the exemplary courage of and resistance by the peasantry. Exploitation was not taken lying down, which in many ways was a precursor to the people's larger participation in the country's freedom struggle, and the continuing struggles for people's food security and sovereignty.

Emaciated Golden Bird at Independence

It is clear, as a popular phrase goes, that India was a 'golden bird'. It was largely skilled and prosperous. Its riches sparked off, in pre-medieval times, inter-kingdom rivalries and annexations. Its riches also attracted interest from outside the country – Muslims invaders who came but then settled here to become part of this land. Legendary seafarers like Columbus and Vasco de Gama sought new trade routes to it. And a host of European countries reached its shores for trade but subsequently established their own colonies here. While the English became the rulers of the country for around two hundred years, the Portuguese, Dutch and the French had their minor colonies for different periods of time. The objective of all these foreign occupants was maximum extraction, extortion and exploitation of the country's wealth and natural resources, mainly as raw material for their own countries. The English did this with extreme ruthlessness and canny precision – by putting in place rules, laws and social structures to benefit themselves, and by playing the communities against one another on caste and class lines. They dismantled the country's established systems and structures, rubbished its knowledge, traditions, beliefs and practices, and established and spread their own norms, practices and plans. And since Indian societies were agriculture predominant, the English decimated the rich and diverse agricultural wealth of the country.

That was the only way it could have exploitatively ruled over the country and its people for such a long period.

Thus, the 'golden bird', which brought the British here and greeted them on arrival, was not the one they gifted back on return; it was a famished and dying golden bird! The British left a pauperized India by the time of their departure – a divided country with a feudalistic social system; a society mired in poverty, hunger and disease. The India at Independence was a country with a ramshackle agriculture structure, unable to feed itself and holding – as it came to be phrased – 'a begging bowl'.

Following in the Colonial Rulers' Footsteps

Mahatma Gandhi had long foreseen and clearly understood the wider dimensions of colonial exploitation and its tragic consequences. It was why the struggle he led for the country's independence from the British was rooted in a strong rural approach. He believed that the true India is to be found not in its cities, but in its seven hundred thousand villages, and that if the villages perished, India would perish too. And so the country's independence would be

worthwhile only if these villages became independent in their own right and capacity. For him India's swaraj (self-rule) was gramswaraj – village self-rule. His vision of India was of village republics, with their own governance system of gram panchayat and self-reliant in all ways possible. In his concept of swaraj, agriculture was the cornerstone of all development.

Without doubt, the challenges the country faced on Independence were huge and daunting, to say the least. But come Independence, Gandhi and his beliefs, ideals and ideas were quickly sidelined. The country, received from the British in tatters, needed a thorough overhaul but government at the helm lacked his vision and courage. True, India now had self-rule but ultimately the change proved to be limited and more cosmetic than material. True, our own government was not the exploiter and extortionist that the British government was, but we continued to uphold, adhere to and work by the structures and systems of governance that the erstwhile rulers had established and left behind. These became the guideline, yardstick, premise and method of our own governance and functioning as well. For the leaders of free India, Britain and Europe were still the impetus to follow towards modernization and development. Rural India and its genius were not to be considered. The British ruled for around two hundred years by divisive methods and created various classes of interest to serve them. Knowingly or unknowingly, for the new Indian government of the day, the chasm seemed too big to eliminate or restructure. Ultimately, the government 'became the unwitting agents of economic colonization'.(31)

How could the system that formed the basis for serving imperial interests provide for native interests in a democracy? So, even with the best of intentions, self-rule could not have delivered the emancipation of the majority – the peasantry. And it didn't.

In the lead-up to India's independence, a Constituent Assembly was set up to facilitate the transfer of power. The members of the Constituent Assembly were not chosen by the masses of the country but by an elite electorate of the educated and the rich, dominant class. One of the tasks of the Assembly was to see through the writing of the country's own Constitution. There was an air of hurriedness, and it seemed as if the leaders were overwhelmed by the freedom in hand or impatient to get down to the task of rebuilding and modernizing the country, and 'catching up' with the West. For the new ruling collective, the poverty and backwardness of the country needed to be tackled with alacrity and speed. Gandhiji now suddenly seemed old and slow, perhaps even a hurdle, in the pursuit of taking the country forward. The lessons from history were not entirely imbibed and internalized.

But Gandhiji was still a force – certainly a moral force – who could not have been completely sidelined. And so, not entirely ironically, when the draft of the new Constitution was readied, the leaders of the Constituent Assembly felt it needed to be seen and approved by him. Dr Rajendra Prasad, as the Chairman of the Constituent Assembly, personally took the draft to him. Gandhiji did not go through the draft immediately but simply posed a few questions on it. Subsequently, he rejected the draft on the basis that it did not reflect the reality of the country – it had absolutely no reference to the farmers and their well-being, nor any plans for the country's seven lakh villages regaining their erstwhile eminence as self-sustaining, self-regulating units. In fact, just prior to his death, Gandhiji drew up an alternative draft Constitution, but with his death overtaking the country, it remained consigned to the backrooms of his legacy. And we had a Constitution that did not represent the entire people.

Dependence on Aid

The country's birth pangs were painful. Already impoverished, it also suffered from the division of the country and the resultant violent communal conflicts. The state of agriculture, as was received from the British, was in tatters and continued to remain critical for some time. Soon after Independence, the country was importing some food grains, particularly from the USA, as part of the PL-480 agreement in 1956. At the time, the arrival of USA PL-480 ships was so desperately awaited that a phrase was coined to describe the country's food situation: a 'ship to mouth existence'!

Initial efforts in agricultural planning were directed towards increasing the agricultural area under irrigation and fertilizer production. But the efforts did not prove very successful and the situation further worsened in the 1960s with two wars and two drought years, which led to a sharp increase in the import of food grains. In 1965 during the Indo-Pakistan war, the USA proposed to send food aid, but the then Prime Minister Lal Bahadur Shastri, aware of the bitterness over similar food aid and loans in 1949–50 when drought conditions had prevailed and food availability was very poor, refused the American gesture. Instead, in a remarkable call, he asked the people of the country to fast once a week and lessen the burden on food grains. Unfortunately for the country, Shastriji died soon after and along with him effectively died the hope of prioritizing rural development on Gandhian precepts.

The Green Revolution

With the country's population growing rapidly and its food production not keeping pace, the

government's efforts were now aimed at growing more and increasing production. The Rockefeller and Ford Foundations in the USA took the lead in establishing an international agricultural research system to help transfer and adapt scientific advances to the conditions in developing countries.(32) In 1959, the Ford Foundation's report 'India's Food Crisis and Steps to Meet It', and the efforts of the Rockefeller Foundation in breeding fertilizer-responsive food grain varieties for semi-tropical, tropical and monsoon climates(33), laid the ground for a major intervention and change in India's agriculture system.

Elsewhere, there were some efforts at rice hybridization by the International Rice Research Institute in the Philippines, and in 1963 field trials conducted with the semi-dwarf wheat varieties developed by Dr Norman Borlaug (by crossing Japanese semi-dwarf varieties with wheat of Mexican origin) yielded very encouraging results. These came to be termed HYV (high yielding varieties). The same year, 1963, the National Seeds Corporation was established with the objective of quality control and training in seed production. In this it was assisted by the Rockefeller Foundation and USAID.(34)

The early years of these experimentation produced very good results in rice and millets as well, besides wheat. And so, in 1967, the government launched a High-yielding Varieties Programme, otherwise known as the Green Revolution. A special stamp, 'Wheat Revolution', was even released in 1968, to mark the hope that emerged from these initiatives.

Writing on the developments in agriculture in the country, Dr MS Swaminathan stated, "It became clear that India had the tools with which to shape its agricultural destiny."(35) He further writes, "In July 1964, C. Subramanian became Union Minister for Food and Agriculture and he gave his whole-hearted support to spreading high-yielding varieties on a large scale, together with irrigation water and mineral fertilizer."(36)

The technology came to be considered manna, a gift from heaven! It was the Green Revolution that was believed to have reduced the percentage of the rural population living below the poverty line – this had fluctuated between 50% and 65% before the mid-1960s but then declined steadily to about one-third of the total rural population by 1993.(37)

The Green Revolution was a full-fledged programme that included strong and dedicated research and extension inputs. This helped and resulted in a record grain output of 131 million tonnes in 1978–79. Yield per unit of farmland improved by more than 30% between 1947 and 1979.(38) The dramatic increase in wheat and rice yields during the Green Revolution saw the crop area under

these high yielding varieties (HYV) grow considerably. In 1969, the GB Pant Agriculture University in Uttar Pradesh (now in Uttarakhand) and the World Bank jointly set up the Terai Seed Corporation, with the latter providing a loan of US$13 million. The World Bank also financed National Seeds Project (NSP) loans to the tune of US$41 million, which led to the homogenization and corporatization of India's agricultural system.(39)

The projects were intended to develop state institutions and create a new infrastructure for increasing the production of Green Revolution seed varieties.(40) In 1988, the World Bank gave India's seed sector a fourth loan – a whopping US$150 million! – to make it more 'market responsive'.(41) Undoubtedly, the World Bank's role has been critical to the spread of the Green Revolution, and in promoting the privatization of the seed industry and opening India to multinational seed corporations. And not just them! The World Bank has been an equally vehement supporter, to this day, of the agrochemical industry.

Higher yields and profitability also led farmers to increase the area under rice and wheat.(42) Besides, as these varieties had shorter growing periods and because of improved availability of irrigation, the farmers started growing more crops on their lands and were able to cultivate a combination of cash crops and non-cash (self-consumption) crops as well. The Green Revolution also gave a tremendous boost to mechanization in agriculture. Overall, the Green Revolution led to higher returns from the farm sector, which in turn created greater demand for farm goods and services, provided greater employment opportunities and higher wages in the agricultural and non-farm sectors, and generally boosted the rural economy.

From being a food deficient country, which had received the maximum food aid under PL-480, India became grain self-sufficient. This turnaround helped the country eradicate its tag of living a 'ship to mouth existence'.

The wonder yields of HYV helped the Green Revolution rapidly spread across the country and capture everyone's psyche and imagination, so much so that for quite some time, in official circles, no other technology or practice seemed worthy of comparison or even consideration. The Green Revolution came to be touted as the answer to every agricultural question and problem.

Unfortunately, that claim and the hope that the Green Revolution generated did not last much beyond a decade.

The Burden Escalates

The fundamentals of the Green Revolution were the use of high-yielding dwarf varieties together with heavy doses of fertilizers and pesticides in irrigated conditions. As such, it was essentially a technology that was limited in scope, as it was based on just two or three factors (whereas farming is an amalgam of innumerable factors), and that too only in irrigated areas (whereas the larger part of agriculture in the country has always been on non-irrigated or rain-fed fields). At the same time, because it came in a package, it suited only the big and rich farmers, and did not address the overwhelming majority of small farmers.

However, due to various factors – the country's agricultural stagnancy and food deprivation in the first two decades of Independence, and possibly the government's consequent state of desperation at the time as well – the technology was seen as a boon and seemed almost like magic, a miracle (indeed, the hybrid seeds were often referred to as the miracle seeds!).

If the Green Revolution was a miracle, we need to remember that miracles happen only rarely and don't often repeat, continue and last!

Within a decade or little more, as the cost that the technology was demanding and extracting began to show up, the euphoria that had surrounded the Green Revolution and its achievements began to dissipate. Obviously, a balloon can inflate only up to a limit!

A High Price to Pay

It was the small farmers on the ground first and then civil society and researchers working on agrarian issues who began to notice that the achievements of the Green Revolution and the positives it achieved for the country were coming at a high cost. With each cropping season, the realization set in deeper and deeper that every advantage claimed by the Green Revolution came with or ultimately resulted in a negative impact. These negatives did not appear all at once, but each discovery and realization dawned and unfolded slowly, gathering speed with time and thereafter increasing incrementally, like cumulative interest. Realization dawned on many fronts that :

- Increasing acreage for wheat and rice came with decrease in acreage for and availability of other crops, mainly grams, pulses, oilseeds and millets. With the overwhelming stress on growing wheat and rice, there was a fall in the cultivation of coarse cereals. Rice and particularly wheat cornered most of the irrigation available and had higher fertilizer usage as

well. Also, the government's price support and procurement policies benefited mainly wheat and rice. Among other impacts, this led to an overall decline in people's food and nutrition security. In 1966, the per capita availability of cereals was 359.9 gm/day, which increased to 417.6 gm/day in 1971 and 434.3 gm/day by 1986. The comparative figures for pulses were 48.2 gm/day in 1966 before the Green Revolution, increasing marginally to 51.2 gm/day after its advent in 1971, but falling below pre-Green Revolution levels to 44 gm/day by 1986.(43)

- Increase in usage of chemical fertilizers drained the soil of its natural mineral contents. It is has long been realized that the high-yielding varieties, which became the flag bearers for the Green Revolution, were actually 'high responsive' varieties – responsive to chemical fertilizers, pesticides and irrigation. That was the only way these varieties were able to deliver bumper crops. But the usage and excessive usage of chemicals in agriculture has depleted the soil's natural fertility, which is why farmers all over the country have experienced that every year they have to use more and more of these chemicals just to maintain their yield levels – and even that is not working now.

  As a result of chemical usage, the soils and the underground water are poisoned, which in turn has rendered the entire food chain – for both humans and animals – highly unhealthy.

  Punjab is an exemplary case of Green Revolution becoming filial cannibal – devouring its own progeny! The factors behind its prosperity have today become a curse and cause of its despair. There are cases regularly reported from Punjab of deaths due to cancer, or of genetic defects, stillborn babies and various other serious ailments such as renal failure, which researchers have attributed to the overuse and misuse of pesticides and herbicides. A study by Punjabi University (Patiala) found DNA damage affecting a third of the sample group of 210 farmers spraying pesticides and herbicides, a level apparently unaffected by other factors such as age, smoking and dietary habits.(44) It is found that villages using more pesticides are also the ones with higher rates of cancer.

  Part of the problem is also inadequate laws governing the pesticide industry, and their weak implementation and regulation. In 2011, India's Agriculture Minister Sharad Pawar acknowledged that 67 pesticides prohibited in other parts of the world were widely being used in India.(45) Umendra Dutt of Kheti Virasat Mission, an NGO working on agrarian issues in Punjab, says, "What is strange and shocking is that farmers are making a cocktail of different pesticides. This dangerous combination is sprayed almost every second or third day. The extension officers and the dealer agents of pesticide companies do not even discourage the

farmers from doing so."(46) Indeed, in many cases, rural farmers don't know proper usage and disposal techniques, with few using protective clothing or equipment when handling highly toxic chemicals. In farming villages, pesticide containers are sometimes reused as kitchen containers.(47)

This only reveals that 'Extension', which was identified as a key component in the spread of the Green Revolution, has either failed in its job responsibility or no longer has the capacity to address the issue. At the same time, this means that the greed (in case of big farmers) and desperation or lack of information (in case of small and marginal farmers) regarding 'more and more production' has overtaken agriculture in Punjab. The state represents only 1.5% of India's geography but accounts for nearly a 20% share of its pesticide consumption.(48)

The use and abuse of chemical inputs in agriculture have already taken a considerably heavy toll of humans, animals, birds, insects and the environment. The spraying of chemical pesticides has killed benign or friendly insects as well. At the same time, with repeated use, the pests too have developed resistance to pesticides and returned to affect the crops and their yields more venomously.

Many recent studies and surveys have been reporting the death of honeybees – extermination of entire colonies. As a majority of plants or plant products consumed by humans and animals are directly or indirectly dependent on pollination, and the bees are among the most versatile pollinators, their loss affects both the quality and quantity of crop yields. Bee deaths are attributed to use of chemicals in agriculture and horticulture, particularly spraying of pesticides, insecticides and fungicides. Bee deaths, if not checked early, could pose a serious problem for our food production.

- Irrigation, which often actually ended up being over-irrigation, salinized the soil and depleted underground water reserves and progressively lowered the water table. In India, almost half of the water used for irrigation comes from aquifers. According to a 2010 World Bank report, groundwater is a critical resource in India, accounting for over 65% of irrigation water and 85% of drinking water supplies. The report also warns that at the current level, 60% of groundwater sources will be in a critical state of degradation within the next twenty years.(49) In the most seriously affected north-western states, recent satellite measurements indicate an average decline of 33 cm per year from 2002 to 2008.(50)

  Another study in Punjab has found that the rice-wheat cropping system has aggravated the

problem of groundwater depletion and the supply of free electricity to agriculture particularly for irrigation purposes has led to injudicious use of irrigation water.(51) The study also states that lack of regulation on water use has led to overexploitation of groundwater by the well-off farmers, depriving the poorer farmers of accessibility to groundwater.(52) All this because the use of high-yielding and hybrid varieties demands increasing use of water. Over-extraction of underground water for irrigation has greatly lowered the underground water table, and this has only led to farmers digging deeper and deeper underground in search of water.

Besides depletion of underground water and the water table, there are two additional problems arising from irrigation and over-extraction of groundwater. One, it invariably leads to salinization of soil and water, which stunts crop growth; and two, the water which is extracted frequently displays higher levels of arsenic, fluoride and other harmful chemicals.(53)

Apart from the above, there are adverse impacts of the Green Revolution practices which go far beyond its technology and have long-term implications for the small farmers and others at the cultural, social and economic levels.

The Death Knell of Diversity

The Green Revolution relied almost entirely on wheat and rice for its success, which cost the farming communities their cultivation of other crops. Such monoculture cultivation has been neither good for the crop and land nor for human nutrition. While it may have streamlined the use of chemical fertilizers and pesticides, it ultimately led to more loss through pest attacks. Pest attacks in monoculture fields either destroy the entire crop or force greater use of pesticides and in increasingly higher doses, which further escalates all the problems associated with chemical use in agriculture. In mixed farming, pests attack specific species and do not wipe out the entire crops growing in the field, leaving a considerable proportion of crops unaffected at the end of the harvest to carry home.

Monoculture cultivation also means that you sow or plant all at once and then at the end of the prescribed period collect the harvest, also all at the same time. Mixed cropping, on the other hand, means that you stagger the sowing according to the crop being sown and collect the harvest at varying intervals, according to the respective fruiting or ripening periods of the different crops. For example, baranaja is a highly evolved form of traditional mixed farming (kharif

or summer) in Uttarakhand, wherein more or less a dozen different crops are grown in the field. It ensures that after the initial growing period, the household collects some or the other food from the field virtually every month, for both human and animal consumption. This is a critical aspect of people's food security that monoculture farming has deeply undermined. Diverse crops and varieties cater to the diverse tastes and nutritional needs of the human body.

India has been a home to both inter- and intra-species diversity of crops and other plants. At the intra-species level, in rice, each geographical region boasts hundreds of original and distinct varieties, which together amount to over thousands of varieties for the entire country. And over centuries, communities have determined the consumption of different rice varieties for different seasons, occasions and needs. Local and traditional wheat varieties too are plentiful, though in comparatively fewer number than rice. The Green Revolution has sounded the death knell of agro-biodiversity at both inter-species and intra-species levels. It is estimated that 75% of the world's crop diversity has been lost. At the inter-species level, as noted earlier, it has promoted wheat and rice but has ignored or marginalized other crops, many of which have steadily gone out of circulation. At the intra-species level, the tremendous diversity in varieties of wheat and rice too has been effectively sidelined and more or less decimated. When we look at the range of wheat and rice varieties promoted and used under the Green Revolution, we find these are barely a handful from an extremely narrow genetic base. More than half of global calories eaten now come from just three plant species.(54) When farmers, particularly smallholder farmers, cultivate with such a narrow genetic base, they make their agriculture and food security extremely vulnerable.

This loss in agro-biodiversity includes the loss of traditional food recipes and, importantly, local seeds, of which the communities, regions and the country had a great repository. And so, more serious than the absence of crop diversity, the loss of seed diversity has undermined the authority, economy and self-reliance of small farmers and their communities, and pushed them into becoming virtual slaves to market forces.

Traditionally, farmers selected and retained seeds for the next sowing, or if they needed to, took these from neighbours, relatives or others in their village or neighbouring villages. They were taken and given free or exchanged for other seeds, and rarely bought. The loss of their own seeds and the use of HYVs has meant that the farmers now depend on the government store or the market and the local seed merchant for these. This affects them economically and raises the cost of inputs in farming. More importantly, and particularly for the women, such external

dependence means a loss of their farming skills such as selection, collection, and preservation of good quality seeds; seed propagation; plant breeding; multiple pest-management techniques; and knowledge about local agro-biodiversity. In other words, farmers no longer have the ability to experiment and adapt their techniques.(55) For the women, it has also meant a loss of their bargaining power at the household or community level.(56)

Ultimately, monoculture practices have changed the very perception of food and agriculture. Earlier, diversity of crops meant that it was food that was being grown in the fields, food that was to be honoured and relished. Crops and grains were accorded a certain sanctity and reverence, and disrespect and wastage were discouraged. The Green Revolution and monocultures have changed this approach and stand. With production now becoming the main impetus for agriculture and the large-scale use of chemical inputs, crops growing in the field have become mere grains for consumption. They hold no sanctity.

The Green Revolution has led to the socio-economic and intellectual pauperization of the small farmers.

Inequality and Inequity

It was claimed that the Green Revolution would usher in food sufficiency and end hunger. But its philosophy and approach was based on technology rather than on sociology. It sharpened the inequities and widened the divide in the agricultural society. The big and richer farmers have materially benefitted from it and become bigger and richer, while the small farmers have been pushed down further towards unemployment, poverty and hunger.

It is the bigger farmers who have benefited most from the subsidies available in farming. And whatever land consolidation has occurred has also been in their favour. With more land under agriculture, the rich were quick to go in for mechanization – from ploughing to harvesting – all of which further widened the income disparities, because it meant less and less land for the small farmers. Mechanization also effectively marginalized the landless farmers who were making their living as agricultural labourers. At another level, mechanization led to a decrease in cattle, particularly bullocks, which in turn meant less compost. It is a long chain of cause and effect.

When we evaluate the contribution of the Green Revolution we need to ask the question: How successful has it been in addressing the issue of hunger? Unfortunately, the answer would have to be in the negative. The Green Revolution mainly focused on increasing production whereas hunger essentially involves an individual's or a household's lack of access to food – the inability to

grow or buy food. This inability is largely an outcome of social inequities, because despite enough food being produced in the world, there are still 925 million suffering from hunger and malnutrition. In fact, even a World Bank study on hunger conducted in 1986 confessed: "Problems of food security do not necessarily result from inadequate food supplies, as is widely believed, but from a lack of purchasing power on the part of nations and of households." The report further stated, "Preoccupation with food production is misguided however when it takes priority over other more immediate concerns. One such concern is that many poor countries – and hundreds of millions of poor people – cannot get even a modest share of the world's abundant food supply."(57)

A narrow focus on agricultural production ultimately defeats itself as it destroys the very resource base on which agriculture depends. Without a strategy for change that addresses the powerlessness of the poor, the tragic result will be more food and yet more hunger.(58)

A dismal scenario for the small farmers and rapid profits for the big farmers paved the way for companies and corporations to have a firm control over agriculture and all things associated with it. The quantitative production of crops in the country did increase, but at the same pace, so did hunger. This is what the Green Revolution actually and ultimately achieved.

Green Revolution – or Greed Revolution!

With hindsight, Green Revolution was not so much magic but a sleight of hand, and a dazed audience – the government and its bureaucracy – was hypnotized into simply admiring and applauding it. It is now clear that the introduction of the so-called high-yielding varieties, or the Green Revolution itself, wasn't an entirely innocent strategy for achieving food sufficiency and eradicating hunger that it professed to be. It was, pure and simple, a repeat of the strategy that the British had employed during their reign here, only more canny and vicious. An old strategy of the market – of exploitation and domination, this time under the pretext of scientific development.

The term Green Revolution is a misnomer. It wasn't a green revolution, but a greed revolution! And it wasn't an agriculture strategy or an agricultural system. It was a market system.

The Green Revolution prepared the ground for the market forces to enter in full flow, riding on the backs of international institutions to help them clear the hurdles through various international rules and agreements.

International Agreements

Two prominent international organizations – the World Bank and International Monetary Fund – have played a critical role in advancing the interests of multinational organizations from developed countries to spread and establish their dominance and control over the agricultural agenda the world over. This they did through various international fiats and agreements.

One of the first of these international agreements, the General Agreement on Tariffs and Trade (GATT), was initiated in 1947, the year of India's independence. It became international law in 1948. The Second World War had taken a heavy toll and the economy of the wartime countries was in a shambles. In order to revive their economy, the USA and its Allied Forces decided to work out a new trade arrangement by regulating and liberalizing world trade, with countries reducing their tariffs and subsidies, which were seen as barriers to international trade. To achieve this, GATT was set up. India was one of its 23 founding members. Subsequently, GATT became a key platform and driver for multilateral trade negotiations, agreements and settlement of trade disputes. Its meetings took place periodically in different parts of the world. Over the years, it has conducted a series of multilateral trade negotiations called 'trade rounds'.

The Uruguay Round of GATT meetings from 1986 onwards until 1994 became important milestones, with two major developments occurring during this Round. One, the developing countries began to take an active part in the meetings, and two, agriculture – which until then had been a low-key topic – became a major subject of the discussion agenda. It was in the course of the Uruguay Round that the Agreement on Agriculture (AoA) was also discussed and negotiated.

Despite GATT providing the rules for much of international trade, it was still a provisional agreement and the need was always felt for having a formal organization. Moreover, GATT itself was facing problems in addressing the emerging market scenarios and problems. Accordingly, the Uruguay Round led to the establishment of the World Trade Organization (WTO) in 1995, replacing and subsuming GATT. By then, GATT had 123 countries as its members. GATT, updated at the Uruguay Round, still exists as the WTO umbrella treaty for trade in goods.(59)

The AoA negotiated in the Uruguay Round came into force with the setting up of the WTO. It has since become the most prominent global trade liberalization agreement in agricultural products. It was through the AoA that the path was opened for wider market access to agricultural products of overseas countries through reduction and subsequent elimination of trade barriers such as tariffs and subsidies by member countries.

From the small farmers' point of view and indeed, of sustainable agriculture, the GATT, WTO and AoA have been the prime instruments which, by building up on the foundations laid by the Green Revolution, first categorically turned the basic universal occupation of agriculture into 'trade' and started binding it under the strict control of the developed countries and their agro-chemical multinational corporations. Bringing in the issue of patents and intellectual property rights, they have entirely turned the table on agriculture, which was once the occupation of the people, the farmers, and have handed it over to the traders in the agro-chemical industry. Today, just four firms control 58.2% of seeds; 61.9% of agrochemicals; 24.3% of fertilizers; 53.4% of animal pharmaceuticals; and, in livestock genetics, 97% of poultry and two-thirds of swine and cattle research. These and two more multinationals (Monsanto, DuPont, Syngenta, Bayer, Dow and BASF) control 75% of all private sector plant breeding research; 60% of the commercial seed market; and 76% of global agrochemical sales.(60)

The AoA has made the position of small farmers across the world more vulnerable. In law and in practice, WTO allows international organizations and corporations to monitor, lobby, pressurize and interfere in a country's domestic laws and policies; and this has been done to the detriment of the small farmer masses. For instance, one of the major issues concerning agriculture in WTO is that of subsidies. While developed countries like the USA are allowed to provide considerable and almost unfettered subsidy to their farmers, the developing countries are strictly restrained from increasing or even continuing their own subsidy allocations. This is clearly unprincipled at the first instance itself because it allows the developed countries to sell or push their agricultural products in the international markets at much cheaper rates, so much so that the developing countries are often faced with a deeply ironical situation wherein their domestic agricultural production costs run much higher than import costs.

India's food security law coming in for severe criticism and attack by the developed countries at the WTO conference in Indonesia in early December 2013 is another case in point of how WTO allows moral and economic injustices of the richer countries to dominate the negotiations and bring all kinds of pressures to bear upon the developing countries to forego the interests of its majority people.

Ultimately, as Our World is Not for Sale (OWINFS) states, "The WTO is inherently undemocratic. Its trade tribunals, working behind closed doors, have ruled against a stunning array of national health and safety, labor, human rights and environmental laws, which have been directly challenged as trade barriers by governments acting on behalf of their corporate clients."(61)

It is heartening that the developing countries are putting up a strong resistance at these negotiations to protect their interests. Realization is also setting in – and must set in – that such negotiating platforms are inherently biased towards the rich, and that the developing or underdeveloped countries cannot really compete with the developed countries and their strong export infrastructures. Possibly realizing this awakening of the developing countries, the rich countries have explored other avenues, such as the bilateral trade agreement – a one-to-one negotiation with developing countries – which in the end are not really as mutually benefitting as claimed. These agreements, more or less, work on the same equation of an agreement between a dominant country and a subordinate one.

The problem is not just vis-à-vis the developed foreign countries, but between unequal classes – the rich and the poor – within the same country as well. In India too, the governments and bureaucracy have worked to remove the obstacles from the paths of international and national agro-chemical companies and the big farmers in controlling the reins of agriculture. Successive Indian governments have framed legislations, policies and programmes that seem to be quite in tandem with the formal developments in the international arena.

After the Green Revolution, the most critical watershed in the Indian context was the economic reforms of 1991, which in common parlance meant that the Indian economy was 'liberalized and opened up'. What this spelt was that the vision, principles, rules and the controls and restrictions which had governed the country's economic policies and practices so far were seen as restrictive and regressive from the point of view of international trade; and as such these controls and restrictions were sought to be weakened or removed. Quite clearly, the strong winds from GATT were now blowing in our direction. The economic reforms provided greater play to market forces and encouragement to the private sector to play a larger role, and sought to decrease the role of the government. The hands that were behind the Green Revolution were now pushing the door open more widely and decisively.

Many legislations, initiatives and developments in the country have had a direct or indirect impact on food and agriculture, and on the lives of small farmers. Land is one such concern that has been and remains a major issue in agrarian struggles. Land acquisition by successive governments has mostly been arbitrary, which has marginalized the peasants and indigenous communities, and primarily benefited real estate developers, industrialists and dam builders. The issue of water is no less critical – people's water is often diverted for commercial use and to fill dam

reservoirs. Likewise with the forests. There are a whole lot of orders, rules and regulations governing various sectors which have an important bearing on a farmer's well-being.

Our own Legislations

Here we take a brief look at some of the major legislations – Protection of Plant Varieties and Farmers' Rights (PPVFR) Act 2001, Biological Diversity Act 2002, Seed Bill 2004, etc. – which are inevitably going to have far-reaching and varied impacts on small farmers and other small producers. Interestingly, or ironically, most of these purport to emerge from a concern for the poor in the country, including the small farmers, but obliquely benefit the rich farmers and the corporate sectors.

The PPVFR Act states that its objective is to protect the rights of farmers in recognition of their historical role in conserving plant genetic resources. However, by including or rather emphasizing plant breeders' rights, the Act gives precedence to the seeds bred by companies, which the farmers may ultimately end up paying for or be prohibited from using their own seeds. This is a sacrilege since whatever new seeds the companies may breed will have mother seeds that can undoubtedly be traced back to the farmers' fields and repositories.

The Biological Diversity Act 2002 had its genesis in the Convention on Biological Diversity (CBD) at the Rio Summit in 1992, which recommended the conservation of biodiversity, sustainable use of biological resources, and equitable sharing of benefits arising from the use of biological resources and related knowledge. The Biological Diversity Act prescribed an institutional framework in order to implement those objectives of the CBD. While some of the provisions in the Act are progressive, there are many areas for concern. Writing in the Economic and Political Weekly, Shalini Bhutani and Kanchi Kohli state, "By the time, the Act came into force, trade imperatives had begun to influence environmental law and policy making both at the national and global level. The final shape of the Act and its manner of implementation through the Biological Diversity rules issued by the Ministry of Environment and Forests in 2004 reflect that bent."(62)

As with most other laws and rules, here too there is a wide gap between what is stated in theory and what gets implemented in practice. In these laws, more than conservation, 'access' has become the major imperative and that too, 'access' for trade. Small farmers, other small producers or the communities that have been the custodians of the country's biodiversity through the ages are nowhere in the picture, neither consulted nor provided any benefits.

The Seed Bill

Seeds are key to life and sustainable agriculture, and historically, farming communities have been their keepers and owners. Until the early 1950s, most farmers used to be largely independent in respect of seeds. With the advent of hybrid technology, the seed scenario changed quickly, and the traditional system of seed production and distribution was destroyed, with seeds becoming a product for business and companies getting into this business.

It started with the agreement between the Indian Council for Agricultural Research (ICAR) and the Rockfeller Foundation to establish the All India Coordinated Crop Improvement Projects in 1957, and rapidly grew with the adoption of the High Yielding Varieties Programme by the government in 1965, ushering in the Green Revolution. Meanwhile a National Seeds Corporation was also established in 1963 for undertaking systematic seed production and guiding the seed industry.

Then came the Seeds Act 1966 and the adoption of Seed Rules 1968. A year later, in 1969, a Central Seed Certification Board was set up. In 1983, the Seed (Control) Order was promulgated and was to come into effect from 1994. In 1998, the government introduced a New Policy on Seed Development, and in 2002, the National Seed Policy was effected.

Together, these law and initiatives became the guiding principles for the country's activities on seeds, particularly for the promotion and regulation of the seed industry in the country. Mostly, even as these stated the need to safeguard the interests of farmers and conserve agro-biodiversity, they really pushed the door wide open for the seed industry to utilize available and future opportunities, and stimulated a rapid and tremendous growth of seed companies.

Due to various factors, including the WTO requirements of protecting the small-scale farmers from monopolistic activities of commercial seed producers and seed suppliers, in 1998, the Seed Policy Review Group recommended a new seed law to replace the 1966 Seeds Act. Accordingly, the Seed Bill 2004 was introduced in the Rajya Sabha in December 2004.

Among the notable features of the Bill was the requirement for all varieties of seeds to be registered and certified. And although it exempted the farmers from this restriction and allowed them to 'save, use, exchange, share or sell his farm seeds and planting material', in the same breath, the Bill added, 'except that he shall not sell such seed or planting material under a brand name or which does not conform to the minimum limit of germination, physical purity, genetic purity prescribed …'

So, there you are! The real beneficiaries of the Bill are clearly the companies (Indian or in partnership with foreign companies) in the seed business, who with the small farmers having been effectively prevented from selling their seeds, can now hope to capture an increasingly larger share of this huge market.

But with the farmers, the civil society and others now much wiser to the official doublespeak on agrarian issues, the National Seeds Bill 2004 provoked great discussion and controversy, and was referred to the Standing Parliamentary Committee on Agriculture. With many amendments, the draft legislation, now named Seed Bill 2010, was tabled again in the Parliament. This reworked Bill too has invited strong criticism, because it ignores the major suggestions made by the Standing Parliamentary Committee on Agriculture, and also by several civil society groups and farmer unions. It provides no relief to the farmers and, in fact, at their expense, continues to favour the seed industry.

There is a whole range of legislations and orders which have a direct bearing on our agriculture - the Essential Commodities Act 1955, Seeds Act 1966, Environment Protection Act 1986, Consumer Protection Act 1986, The Plants, Fruits and Seeds (Regulation of Import into India) Order 1989, Geographical Indication of Goods Act 1999, Plant Varieties Protection and Farmers' Rights Act 2001, Biological Diversity Act 2002, Patents Amendment Act 2005, National Food Security Act 2013 and so on. When we look at this maze of legalities that agriculture and seeds are trapped in – seeds in Indian agriculture are governed by nearly 30 legislations – we realize that on that front, it is never going to be easy for the small farmers. As such it becomes important for small farmers, civil society and others working on small farmer issues, to stress on the positives in our various legislations, which continue to struggle and protest against their negative aspects.

The quick riches that the Green Revolution brought to the big farmers in the country, and the subsequent developments at the national and international levels, have encouraged companies and corporations in India, either independently or in collaboration with national and international partners, to get into agriculture in a big way – both farming and trading. There is thus a supreme irony in that where small farmers are incurring losses year in and year out, and are leaving agriculture, the companies are finding it convenient to enter, and profit from, the same sector – agriculture.

So, Where Do The Small Farmers Go?

It is a bleak situation for the smallholder farmers.

First the policies of the British, then the Green Revolution, and thereafter the international trade agreements have all stealthily conspired and are now openly doing so to bring down the small farmers to their knees.

With agriculture having been turned into an international trade and food a trading commodity, the farmers – once the annadata, the giver and producer of food – are now seen as mere but perennial consumers. As a consumer of seeds, the farmers must unlearn their own generational knowledge and experience and depend entirely on the advice of a seed merchant; as a consumer of chemical fertilizers and pesticides, the local chemical dealer becomes his philosopher and guide. And since a poor consumer is not what a trader would want, the small farmer is steadily being eliminated. Addressing a meeting of the National Development Council in 2012, Prime Minister Manmohan Singh said, "per capita income of farmers would rise only when fewer people engage in farming."(63)

Agricultural policies and programmes are being planned accordingly to see that big farmers prosper and the small farmers leave. And sure, they are leaving. Since 1995, close to three lakh (three hundred thousand) small farmers have chosen to leave by committing suicide, which has been termed 'the largest recorded rate of suicides in human history',(64) by P Sainath, a leading journalist writing on agricultural issues. The majority of these desperate farmers, who have left their wives and children behind in an even more despairing situation, were essentially small farmers from the most 'developed' states in the country, the states that are in the forefront of new, Green Revolution-inspired, fossil fuel-driven, cash crop agriculture. And the farmers committing suicide were those who had in hope by choice or force of circumstance given up their subsistence farming to cultivate cash crops: crops that demanded buying costly seeds over and over again, crops that depended upon a good rainfall or irrigation, crops that required heavy doses of chemical fertilizers and pesticides, crops that a small farmer could only grow by no way other than taking loans. Small farmers were thus trapped in a vicious circle, which eventually they could not get out of in any way other than by committing suicide.

In July 2005, the NSS report disclosed that given the option, nearly 40% farmers would like to quit farming. Since 1995, over 150 lakh farmers have left agriculture. The government is probably upset as to why the figure isn't higher!

In 1950–51, at the time the country became a Republic, with food and hunger high on the agenda, the share of agriculture in the GDP was 53.1%. In 2011–12 it has decreased to 13.9%. According to the Planning Commission's Vision 2020 paper, the aim is to bring down agriculture's share in GDP to 6%.(65) Successive governments have decided to steadily but surely shift agriculture out of its frame of focus.

The small farmers' costs of inputs in farming are increasing with the season. The end products for the consumers are getting more and more expensive. But the farmers are not getting their just share of the profits; they're not even retrieving their cost of inputs. Their sweat and back-breaking labour, in rain, cold and sunshine, is barely counted towards the minimum support price, which according to Dr MS Swaminathan is calculated as 80% cost of inputs and 20% labour.

What is more tragic is that even the society no longer acknowledges its debt to these crusaders of the soil, who have tended the earth to bring us live-giving food from times immemorial and are continuing to do so to this day. The small farmers are at the lowest rung of the society – there has been no other fall as steep as that of the annadata of the country.

Environmental degradation, depleting water resources and now, climate change – problems the small farmers are not responsible for creating – are making their lives and work more and more difficult and challenging. And these conditions are only going to get worse. It is undeniable that the most severe impacts of these ecological disasters and rapid degradation are on agriculture; and its worst sufferers are the small, marginal and landless farmers and other small food producers.

Is agriculture, then, becoming a thankless, senseless job for the small farmers? Is there no hope?

Agriculture is over ten thousand years old. And there have been many periods in history which were testing, challenging and desperate. The farmers saw off those worst of times and emerged enriched by their experience, learning and application.

There is already a good body of research to prove that the small farmers' ways are the only viable options for the future. There is no other way, if the earth and her humanity are to survive. And we have the most authoritative report on this, of the International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD). By far the most ambitious assessment carried out at the global level through an inter-governmental process, IAASTD involved about 400 scientists and experts and around 900 multi-stakeholders over a period of four years. In this report, released in 2008, IAASTD concludes that current fossil fuel-based

agricultural practices have led to serious degradation of land, water, biodiversity and ecosystems, and called for a radical paradigm shift towards smallholder-based agro-ecology.

The farmers and those working on agrarian issues long began to realize this and so it is not that all changes being forced on the country's peasantry are being taken lying down. Their struggles, in the fields and on the roads, throughout the country are a testimony to their inherent strength to overcome their despair, and to the vitality, viability and possibilities in smallholder farming.

The struggle lives on.

References

1. S. Mahendra Dev, *Small Farmers in India: Challenges and Opportunities*, Indira Gandhi Institute of Development Research, Mumbai; June 2012. *http://www.igidr.ac.in/pdf/ publication/WP-2012-014.pdf. Accessed on 6 December 2013.*
2. Siddharth Vardarajan, *Order on free grain to poor can't be executed, says Manmohan Singh*, The Hindu 7 Sept 2013.
3. *http://www.thisismyindia.com/ancient_india/ancient-india-agriculture.html*. Accessed on 1 November 2013.
4. *http://en.wikipedia.org/wiki/Indus_Valley_Civilization*. Accessed on 3 November 2013
5. *http://www.sscnet.ucla.edu/southasia/History/Ancient/Indus2.html*. Accessed on 3 November 2013.
6. *History of Agriculture in India (up to c.1200 AD)*, edited by Lallanji Gopal and VC Srivastava, Centre for Studies in Civilization, New Delhi, 2008.
7. *http://mhj.sagepub.com/content/11/2/229.abstract*. Accessed on 15 November 2013.
8. *http://en.wikipedia.org/wiki/History_of_agriculture_in_the_Indian_subcontinent*. Accessed on 16 November 2013.
9. Ibid.
10. Dharampal, *Rediscovering India*, Society for Integrated Development of Himalayas, Mussoorie, Uttarakhand, 2003.
11. Ibid.
12. *http://cpsindia.org/index.php/art/114-science-sustainability-and-indian-national-resurgence/d-science-and-technology-under-the-british-rule/158-d1-indian-agriculture-before-modernisation*. Accessed on 6 November 2013.
13. Ibid.
14. Ibid.
15. Ibid.
16. R Jhabbu, *Essay on the Impact of Colonial Rule of British on Indian Agriculture*; *http://www.preservearticles.com/2012010920200/essay-on-the-impact-of-colonial-rule-of-british-on-indian-agriculture.html*. Accessed on 1 October 2013.
17. BM Bhatia, *Famines in India: A Study in Some Aspects of the Economic History of India 1860–1945*, Asia

Publishing House, New Delhi, 1967. Quoted in Paul Glumaz, Then and *Now : British Imperial Policy Means Famine; http://www.larouchepub.com/other/ 2008/3517brit_imperial_famine.html*. Accessed on 1 October 2013.

18. Paul Glumaz, *Then and Now : British Imperial Policy Means Famine.*
19. Kallie Szazepanski, *The Bengal Famine of 1943*; *asianhistory.about.com/od/Modern-India/ss/Bengal-Famine-1943.htm*. Accessed on 3 October 2013.
20. Quoted by Dean Nelson in *http://espressostalinist.wordpress.com/genocide/bengal-famine/*. Accessed on 3 October 2013.
21. Quoted in *http://en.wikipedia.org/wiki/Famine_in_India*. Accessed on 1 October 2013.
22. Ibid.
23. Ibid.
24. Ibid.
25. Ibid.
26. Sumanta Banerjee, *In the Wake of Naxalbari*, Calcutta, 1980. Quoted in http://iref.homestead.com/Peasant.html. Accessed on 3 November 2013.
27. *http://www.kkhsou.in/main/history/company_rule.html*. Accessed on 30 October 2013.
28. Ibid.
29. Ibid.
30. *aakarbooks.com/Content/tebhaga-movement-politics-peasant-protest-bengal-1946-1950*. Accessed on 2 November 2013.
31. Satish Kumar, *Gandhi's Swadeshi: The Economics of Permanence*, in 'The Case Against the Global Economy: And for a Turn Toward the Local', edited by Jerry Mander and Edward Goldsmith, Earthscan, London, 2001.
32. *Green Revolution : Curse or Blessing*, Future Harvest Center, International Food Policy Research Institute, USA, 2002; *http://www.ifpri.org/sites/default/files/pubs/pubs/ib/ib11.pdf*. Accessed on 26 October 2013.
33. *http://planningcommission.nic.in/reports/peoreport/cmpdmpeo/volume2/hyv.pdf*. Accessed on 28 October 2013.
34. *http://base.d-p-h.info/fr/fiches/premierdph/fiche-premierdph-4106.html*. Accessed on 7 November 2013.

35. MS Swaminathan, Food as People's Right, The Hindu, 3 January 2012.

36. Ibid.

37. *Green Revolution : Curse or Blessing.*

38. *http://edugreen.teri.res.in/explore/bio/green.htm. Accessed on 25 October 2013.*

39. *http://www.whirledbank.org/environment/agriculture.html.* Accessed on 4 November 2013.

40. Ibid.

41. Ibid.

42. *Green Revolution: Curse or Blessing.*

43. *http://www.eolss.net/sample-chapters/c19/E1-05-05-04.pdf. Accessed on 10 November 2013.*

44. *www.downtoearth.org.in/node/4628. Accessed on 4 November 2013.*

45. *india.blogs.nytimes.com/2013/07/30/bihar-school-deaths-highlights-indias-struggle-with-pesticides*. Accessed on 3 November 2013.

46. *www.financialexpress.com/story-print/119029*. Accessed on 29 October 2013.

47. Daniel Pepper, *The Toxic Consequences of Green Revolution*; *http://www.usnews.com/news/world/articles/2008/07/07/the-toxic-consequences-of-the-green-revolution*. Accessed on 2 December 2013.

48. Ibid.

49. *Deep Wells and Prudence: Towards Pragmatic Action for Addressing Groundwater Overexploitation in India*, World Bank, 2010.

50. GOI (2010), *Groundwater Scenario of India 2009-10*; Central Ground Water Board, Ministry of Water Resources. *http://www.cgwb.gov.in/documents/Ground Water Year Book%2 02009-10.pdf*. Quoted by Paul Wyrwoll, "India's Groundwater Crisis"; *http://www.globalwaterforum.org/2012/07/30/indias-groundwater-crisis.* Accessed on 6 December 2013.

51. Anupama Jeevandas, RP Singh and Ranjit Kumar, *Concerns of Groundwater Depletion and Irrigation Efficiency in Punjab Agriculture : A Micro Level Study*, Agricultural Economics Research Review, Vol 21 (July–December 2008).

52. Ibid.

53. M Rodell, I Velicogna and J Famiglietti, *Satellite-based Estimates of Groundwater Depletion in India*, Nature, Vol. 460 (2009).

54. *Dimensions of Need: An Atlas of Food and Agriculture*, UN FAO, Rome 1995.

55. Ashok Kumbanu, The *"Gene Revolution" and the Socio-Ecological Sustainability of Agriculture: A Comparative Study of the Adoption of Genetically Modified Crops, http://www.idrc.ca/EN/Funding/WhoCanApply/Pages/GradStudentDetails.aspx?ProfileID=133*. Accessed on 5 December 2013.

56. Ibid.

57. *Poverty and Hunger: Issues and Options for Food Security in Developing Countries*, World Bank Policy Study, Washington DC, USA; 1986. *http://documents.worldbank.org/curated/en/1986/07/440681/poverty-hunger-issues-options-food-security-developing-countries1986. Accessed on 5 January 2014.*

58. Ibid.

59. *Understanding the WTO*, WTO Publications, Switzerland, 2011; *http://www.wto.org/english/thewto_e/whatis_e/tif_e/understanding_e.pdf.* Accessed on 6 January 2014.

60. *Putting the Cartel before the Horse … and Farm, Seeds, Soil, Peasants, etc. – Who will Control Agricultural Inputs*, ETC Group, Ottawa, Canada. 2013. *http://www.etcgroup.org/sites/www.etcgroup.org/files/CartelBeforeHorse11Sep2013.pdf*. Accessed on 6 November 2013.

61. *http://www.ourworldisnotforsale.org/en/node/4*. Accessed on 3 December 2013.

62. Shalini Bhutani and Kanchi Kohli, *Ten Years of the Biological Diversity Act,* Economics and Political Weekly, Vol XLVII, No 39 (29 September 2012).

63. *PM Manmohan Singh for Shifting Farmers to Non-agri jobs to Raise Income*, The Economic Times, 27 December 2012.

64. P. Sainath, *Farmer Suicide is not the crisis, it is the outcome*; The Hindu, 8 March 2011.

65. Jayant Verma, *Kheti ka Atmaghati Sankat*, Sarvodaya Jagat, 16–30 June 2012.

Focus on the Global South

Focus on the Global South is a policy research organisation based in Asia (Thailand, Philippines and India). Focus provides support to social movements and communities in India and the Global South by providing research and analysis on the political economy of globalisation and on the key institutions underlying this process. Focus' goals are the dismantling of oppressive economic and political structures and institutions, the creation of liberating structures and institutions, demilitarization, and the promotion of peace.

Rosa Luxemburg Stiftung (RLS)

The Rosa Luxemburg Stiftung (RLS) is a Germany-based foundation working in South Asia as in other parts of the world on the subjects of critical social analysis and civic education. It promotes a sovereign, socialist, secular and democratic social order, and aims to present alternative approaches to society and decision-makers. Research organisations, groups for self-emancipation and social activists are supported in their initiatives to develop models which have the potential to deliver greater social and economic justice.