

## A Need for Organic Farming in India

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### ABSTRACT

*India is one of the agricultural based Nation with more than 58% of the population out of 1150 million, pertaining to agricultural sector. Before 1960, in India only OF practice was followed without chemical fertilizers and pesticides. During late 1960s, there was threaten to food security due to population raise and frequent draughts. Government of India had entered collaboration with USA for reforming farming practices by adding chemical products for cultivation, diseases and weed management. There was increase in production and productivity in chemical or conventional farming and our country was able to satisfy partly the food security. After 30-40 years, production and productivity reduced drastically with abnormal input costs and the farming sector turned to be unfavorable occupation to all concerned. Soil degradation, more diseases, uncontrollable weeds, high water consumption, unfavorable price and with several natural and manmade issues, conventional farming turned to be unworthy for farmers. A study on need for OF practice which is an emerging practice in several countries upto 20% all over the world for the last 15 years, is taken.*

*In this article, study is done about types, present status, productivity, management of diseases, weeds, manures, harvesting, post harvesting, marketing and advantages of organic farm practices which will overcome the current issues of the CF. It is concluded that OF practice, our own indigenous technology is to be reintroduced from the current 1 to 2% to the possible extend to get rid off difficulties in conventional farming. OF will solve the food shortage and crisis in our country permanently and can encash heavily by exporting to needy countries of having severe food shortages.*

## Introduction

India is one of the agricultural based nation, with more than 58% of the population out of 1150 million pertains to agricultural sector. The share of agriculture in the Gross Domestic product (GDP) registered a steady decline from 50% in 1950-51, 36.4% in 1982-83, 18.5% in 2006-07, 13% in 2008-09. Even though large number of farmers and farm labours are migrating from this sector, survey indicates that 52% of the people are still in farming contributing only 13% to GDP.<sup>[7]</sup> This reveals clearly that there is no chance to have growth in income of farmers and farm labours. The existing farming practice is called conventional farming CF (chemical farming) using chemical fertilizers, pesticides, weedicides, mechanical implements for various processes and modern agricultural science and holds 98% of share in farming. Prior to 1965, our country followed 100% natural farming or organic farming (OF) practice without chemical fertilizers and pesticides.

Due to various severe problems arise in conventional farming, most of developed countries and few developing countries are returning to harmless OF practice during the last 15 years or more. It is found in developed countries, the growth of OF practice is fast and upto 10 to 15 percent already converted. But in India, OF practice is less than 2 percent since government, Agricultural Universities and Research Institutes are not

prepared to support OF in whole heartedly. A study is made about the history of agriculture, concepts of CF and OF, the existing issues in the CF and how the issues could be solved in the OF in detailed manner. The details are collected from various research articles of reputed journals, newspaper reports, statements of various experts, scholars, researchers and field study of agricultural sector.

## Conventional farming: (CF)

This is the existing farming practice adopted by more than 98% of our Indian farmers. In this system, chemical fertilizers and pesticides are applied in addition to the farmyard manure. Agriculture Universities are involving to develop new products and process designs to increase productivity in a scientific way. Various tools and techniques are being developed and put in practice in the farming to improve the production as well as productivity. Our Indian farming sector was practicing OF upto 1960. A stage had come during 1960s due to draught and ever expanding population, the country was suffering for want required food and famine was severe throughout our nation in early sixties. Government had approached developed countries especially USA to overcome the food shortage. USA was practicing inorganic farming practice with chemical fertilizers, pesticides in scientific manner and their productivity in all their crops were very high upto 2 to 3 times than of India. Government of India

and USA made agreements to import wheat immediately to meet the shortage of food as well as technology continuously to implement in India to meet the ever growing demand for food. The production of food crops had increased upto 220 million tonnes from 70 million tonnes in 1970s. This increased performance of agriculture was called as Green Revolution in India. For the last 40 years, our indigenous OF slowly step by step was forgotten and converted into conventional farming to increase agricultural products especially wheat and rice to fulfill the requirements of food to our total population.

In the CF, farmers are guided to increase production with increased use of fertilizers and pesticides. These have affected soil health and fertility. Further due to the effect of privatization, globalization and liberalization, agriculture turned to be loss making sector requiring huge subsidies and support from the government. The present status of CF in our nation is alarming with several issues of man made like threatening food security, contaminated food, mal-nutrition, injury to health of all living beings, decreasing production of important crops, decreasing productivity, polluted water, shortage of water cultivation, more failures of crops, increased input costs, more weeds, more diseases, severe shortage of farm labour and natural calamity like draught, flood etc.<sup>[12]</sup> Recent National Sample survey found that 40% of farmers wanted to quit agriculture because it was proving

to be unviable occupation. In actual, none of the farmer is willing to develop their wards to prolong his occupation. Most of the youngsters prefer occupation other than farming only.

Several scientists, experts, agriculturists realizing the above dangerous situation developed alternative method of farming practices from our own indigenous technology namely OF, a good old practice of our forefathers, with some improvement in processes. Most of the problem in the CF can be solved. Already thousands of farmers throughout our nation had demonstrated OF in practice for the last 5 to 10 years.<sup>[3]</sup>

In the following paragraphs the details of OF, how it over comes the difficulties faced by CF, advantages and the need of OF are explained.

## **Organic Farming**

OF is a production system that avoids or largely excludes the use of synthetically compounded fertilizers, pesticides, growth regulators, livestock feed additive and genetically modified organisms. As far as possible, organic farmers rely on crop rotation, green manures, compost, biological pest control, and mechanical cultivation to maintain soil productivity and control pests. Organic agricultural methods are internationally regulated and legally enforced by many nations, based in large part on the standards set by the International Federation of Organic Agriculture Movements

(IFOAM), an international umbrella organization for organic organizations established in 1972. The overarching goal of OF is defined as follows :

“The role of organic culture, whether in farming, processing, distribution, or consumption, is to sustain and enhance the health of eco systems and organisms from the smallest in the soil to human beings.”

-International Federation of Organic Agriculture Movement (IFOAM) – the Principles of Organic Agriculture – Principles of health.<sup>[4]</sup>

It is a remarkable thing to note that prior to Green Revolution agriculture, in India our fore fathers followed OF with additional features like Integrated farming system (IFS), cover cropping, multicropping, mulching, green manure , crop rotation, self content with required infrastructure facilities in villages and value addition after harvesting. Leading agricultural scientists from developed countries remarked that the farming system followed in India was superior, most efficient and effective one, prior to Green Revolution. Wendell Berry in his book “ The Gift of Good land” writes as given below.

“An Organic farm, properly speaking is not one that uses certain methods and substances and avoids others; it is farm whose structure is formed in imitation of the structure of a natural system that

has the integrity, the independence and the benign dependence of an organism”.<sup>[4]</sup>

In this article, about 16 major factors are considered which poses challenging problems in the existing CF. In the left hand column; the ill effect of CF is described. In the right hand column, remedial solutions of with supporting facts and figures in the OF is explained.

## 01. Growth of Agriculture

**Conventional Farming :** Recent National sample survey found that 40 percent of India farmers wanted to quit agriculture because it was proving that agriculture is unviable occupation, Mr. Abhijit Sen, member, planning commission, Government of India said while well over half the Indian population still depends on agriculture. GDP of agriculture is currently only 18 percent of the total GDP; down from 56 percent of the GDP 1950-51. The chronic neglect in the past has meant that 30 percent of our people continue in extreme poverty. There are evidence to believe that the stagnant agricultural sector has adversely affected the livelihood of marginal and small farmers and agricultural labourers. The total central plan spending on agricultural and allied activities, as a proportion of Indian GDP projected to decline from 1.42 percent in 2007-08 to 1.3 percent in 2008-09.<sup>[8]</sup>

**Organic Farming** : OF generates full time employment for farmers and agricultural labourers since no unemployment or under employment could not be there in IFS. <sup>[1]</sup>

## 02. Soil

**Conventional Farming** : Land exhaustion, Soil erosion, Soil compaction, Soil becomes impotent with loss of all bacterias.

About 50% of land soil, 17 ½ crore acres is affected)

Poisonous pesticides and weedicides killed useful insects and germs living in the soil, making the soil unfertile and created environment imbalance. <sup>[12]</sup>

**Organic Farming** : Soil is restored to its natural porous state. Organic manures improve physical, chemical and biological perspective of the soil. Addition of organic manures improve structure, aeration, water holding capacity of soils. <sup>[2]</sup>

## 03. Seeds

Many indigenous variety of seeds lost and hybrid seeds of imported one with very high cost are introduced resulting less in yield, failure of crops and higher input cost.

**Organic Farming** : Only suitable indigenous seeds for specific location are used minimizing the loss. Draught resisted seeds are available to overcome irregular seasonal rain and considerably more climate friendly.

Many of the indigenous species are draught resistant and best suited for the land and will give farmers good yield.

## 04. Water Table

Needs more water for irrigation. Ground water level gone down upto 300 metres depth. According to survey every year water level in the ground is lowering by one foot. Well and borewell water are mixed with acids and requires purification for drinking purpose

**Organic Farming** : Reduced water use, reduced water contamination. Many of the indigenous species are draught resistant and best suited for the land and will give farmers good yield.

## 05. Crops Management

CF focused only mono cropping of few crops like rice, wheat, sugarcane, banana, maize, edible oil seeds, fiber crops and the production of millets pulses reduced, with non affordable high price by the poor and below poverty line population, resulting 25% children with nutrition deficiency.

**Organic Farming** : Multi cropping system is followed It involves integrated nutrient management and integrated pest management and also IFM.

A judicious mix of agricultural enterprise like dairy, poultry, piggery, fishery, sericulture, etc suited to

the given agro-climatic conditions and socio-economic status of the farmers would bring prosperity in the OF. [11]

### 06. Manure Management

Reduction of spices like livestock, birds trees, small plants, producing organic manures and depends upon only chemical fertilizers.

**Organic Farming :** Pure OF uses organic manures and bio-pesticides with complete avoidance of inorganic chemicals and pesticides. In IFS of OF local resources are effectively recycled by involving other components such as poultry, fish pond, mushroom goat rearing etc., apart from crop components.

### 07. Vermi composting

Lost all vermin composting due to chemical fertilizers and pesticides.

**Organic Farming :** Earthworms are restored which are aerator, crusher mixer, chemically a degrader and biologically a stimulator in the decomposition system. Plant residues, animal wastes, rural and urban wastes are fragmented and degraded during passage through earthworm gut. The bulk volume of waste materials is reduced and the availability of nutrients to plant growth is brought into a balanced state. The pollution hazards also got minimized.

### 08. Weed Management

Normally farmers apply more fertilizers than required by crops. The excess of fertilizers increase weed abnormally. Expensive weedicides are recommended and cost increases.

**Organic Farming :** No excess nutrients are available for more weeds. Weeds will be eliminated totally by manual or by mechanical device.

### 09. Live Stock

Introduction of paddy with short straw of 50% reduction affects livestock growth. Lot of fodder crops lost and affected rearing of friendly animals

**Organic Farming :** The role of OF whether processing, distribution, or consumption is to sustain and enhance the health of ecosystem and organisms from the smallest in the soil to human beings.

### 10. Productivity

From the following table, it is found that productivity in CF is almost stagnant and there are crops decreasing productivity in India compared to other nations.

Wheat; MT/hectare

| Country/<br>Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|------------------|------|------|------|------|------|------|
| India            | 2.71 | 2.77 | 2.62 | 2.71 | 2.59 | 2.63 |
| China            | 3.81 | 3.78 | 3.93 | 4.25 | 4.28 | 4.55 |

China is able to increase productivity of wheat year after year from 3.81mt/ hectare in 2001 to 4.55mt / hectare in 2007 but in India productivity decreased from 2.7mt/ hectare in 2001 to 2.63mt/ hector in 2007. <sup>[8]</sup>

Rice; MT/ha

| Country/Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|--------------|------|------|------|------|------|------|
| India        | 3.14 | 2.67 | 3.13 | 2.95 | 3.17 | 3.18 |
| China        | 6.16 | 6.19 | 6.06 | 6.31 | 6.26 | 6.23 |
| Brazil       | 3.30 | 3.25 | 3.43 | 3.37 | 3.86 | 3.81 |

In case of rice also our productivity is almost 50% of China only. Our productivity is not improving whereas Brazil productivity was increased about 15 percent. <sup>[8]</sup> According to the Food and Agricultural Organization (FAO)

|   | India      | China      |
|---|------------|------------|
| Average yield of rice between 2003 and 2005             | 3034 kg/ha | 6233 kg/ha |
| Average yield of wheat between 2003 and 2005            | 2688 kg/ha | 4155 kg/ha |
| Average yield of rape and mustard between 2003 and 2005 | 909 kg/ha  | 1778 kg/ha |

|  |                                      |                                      |
|--|--------------------------------------|--------------------------------------|
| The trend rise in yields in the 15 years leading up to 2005 – for rice | 1%                                   | 2.1%                                 |
| Rice production in 2004  | 124 million tonnes for 42 million ha | 186 million tonnes for 28 million ha |
| Fruits and Vegetables 1980   | 50 million tonnes                    | 60 million tonnes                    |
| 2003   | 55 million tonnes                    | 450 million tonnes                   |

The data clearly indicates that CF fails to be competitive globally and the claim of agricultural universities and government is to be questionable. <sup>[9]</sup>

**Organic Farming** : Dr. K. Natarajan, Siddhar, the inventor of Organic product Panchagavya, Tamil Nadu, proved 1.2 tonnes of kitchidi (rice) yield from one acre land and made profit of Rs. 40,000/ per acre. <sup>[9]</sup>

There is an increase in yield 5-10 percent when compared to CF.

Out put of OF and CF crops

| Particular                | OF  | CF  | Over CF% |
|---------------------------|-----|-----|----------|
| Sugarcane (Tonnes)        | 942 | 817 | 15.26    |
| Rice (Qt)                 | 88  | 78  | 12.82    |
| Ground nut(Qt)            | 18  | 14  | 28.57    |
| Soyabin(Qt)               | 74  | 51  | 45.09    |
| Wheat (Qt)                | 45  | 35  | 28.57    |
| Fruits and Vegetables(QT) | 15  | 14  | 7.14     |

It was observed that the production of OF was more about 25% than CF. <sup>[2]</sup>

## 11. Debt Management

More than two lakh farmers ended their life due to debt problem. Recent National sample survey found 40% of farmers wanted to quit agriculture because it was proving to be unviable occupation.

Every second Indian farmer household is indebted.

In 2003, out of the 89.33 million farmer households in India 43.42 million farmer households were indebted.

Nearly 87,000 farmers in India committed suicides between 2001 and 2005-in a span of four years.

**Organic Farming :** No Loss of life due to least debt.  
[9]

## 12. Profit Generation

Due to high input cost of seed, labour, fertilizers and cultivation cost under price regulating mechanism of Government , most products incur loss only.

**Organic Farming :** The cost incurred for cultivation is reduced upto 30%. The expenses for pesticides and fungicides are also reduced upto 60%. Cost of OF and CF.

| Particular  | OF    | %    | CF     | %    |
|-------------|-------|------|--------|------|
| Seeds       | 7,300 | 9.00 | 11,700 | 11.6 |
| Fertilizers | 8,500 | 10.5 | 19,400 | 18.5 |
| Pesticides  | 1500  | 1.8  | 10,400 | 9.92 |

Farmers have a future only in OF, as it is cheaper, and returns higher yields. [2]

## 13. Food and Health

Food become contaminated due to the indestructible poisonous residues entering human body and others. Diseases are increasing to all human, livestock and crops. Farmers have to spend good portion of their earnings for treatments.

**Organic Farming :** Organically grown food is dramatically superior in mineral content to that of grown by CF methods.

## 14. Production

Between 1950-51 and 2006-07, production of food grain increased at an annual rate – 2.5 %

In the above period population growth – 2.1 %

Hence India was self-sufficient in food gain till 2005-06.

But between 1990 and 2007 production of food grains increased at an annual rate – 1.2 %

In the above period population growth – 1.9 %

Hence the above period per capita consumption of cereals declined from peak 468 grams per day in 1990-91 to 412 grams in 2005-06. The per capita consumption of pulses declined from 42 grams per day to 33 grams. [8]



Plateauing yields of food grain in India

MT/ Hectare

| crop/year | 2002  | 2003  | 2004  | 2005  | 2006  | 2007  |
|-----------|-------|-------|-------|-------|-------|-------|
| Wheat     | 2.71  | 2.77  | 2.62  | 2.71  | 2.59  | 2.63  |
| Rice      | 3.14  | 2.67  | 3.13  | 2.95  | 3.17  | 3.18  |
| Soy       | 0.90  | 0.71  | 1.05  | 0.73  | 0.90  | 0.95  |
| Sugarcane | 67.00 | 66.00 | 58.00 | 63.00 | 66.90 | 71.10 |

Over 60% of India's net sown area still remains at the mercy of the monsoon. About 60% of our farmers, own only 0.4 hectare of land each. Another 20% of farmers hold an average of 1.4 hectares each.

Therefore 80% of our farmers are small and marginal farmers.

The per capita availability of food grains in India has declined from about 500 grams per day person to less than 400 grams per day over the last two decades.<sup>[8]</sup>

**Organic Farming :** In this system, all the resources are effectively recycled by involving other components such as poultry, fish pond, mushroom, goat rearing etc apart from crop components in the IFS.

## 15. Technology – Management

Green Revolution and other latest technology in agriculture is mismatching for most of the farmers. Excess apply of fertilizers, pesticides and difficulties to follow the modern processes developed affected the land and reduced income. It is estimated that the actual acceptance of recommended agricultural production technologies is only 30 percent in India. The major reasons for low acceptance of technologies are

- i) They are not operationally feasible
- ii) Economically not viable.<sup>[2]</sup>

**Organic Farming :** Mr. Sen member, planning commission, Government of India said that 80 percent of the farmers are small and marginal and women participation in agriculture is increasing.

OF is operationally feasible economically viable.

OF has been proved to be low investment technology for growing crops

Recent data reveal an increasing feminization of agriculture over 70% of the farm workforce. OF is only best suitable for women.

Farmers have a future only in OF as it is cheaper, easier to practice friendlier to environment and above all returns higher yield. <sup>[3]</sup>

## 16. Labour

Farmer is facing several problems in his occupation for the last several years and they are not able to get required earnings since the price for their products are decided by government, traders and consumers. This is serious factor why farmers are neglecting and leaving agriculture to other sectors. Since the profit is meager, farmer is not able pay enough to farm labours to meet for their basic needs as well as not able to provide employment throughout year for farm labours. Survey reveals farm labour gets employment only less than 200 days per year. Food habit of farm labour is changed and they are unable to do manual work in the hot sun due to undernourished food habit and migrate to other sectors for employment. <sup>[1]</sup>

**Organic Farming :** In this system, farm labour is guaranteed job throughout year as the IFS provides several type continuous jobs. Further labour will get energetic food since varieties of pulses, cereals, fruits, vegetables, meat nutrient green leaves, balanced diet food items are produced in OF.

OF is labour and knowledge-intensive where as CF is capital intensive, requiring more energy and manufactured inputs.

### Suggestions and Recommendations.

- The farmers are to be provided with scientific information about organic farming.

- Govt. has to provide proper and scientific information in less cost to farmers.
- Public sector and private sector have to establish the research institutes for the research of OF.
- Govt. has to determine higher prices for organic products than for inorganic products.
- Govt. and private authorities have to simplify certification facility to OF products for exports.
- Govt. has to encourage OF through subsidies and easy credit facilities in lower rate of interest.
- Agriculture Universities, colleges and private institutions have to play important role in research in OF.
- Govt, and NGOS have to organize conferences, workshops, seminars, and study tours to farmers on OF method.

### Concluding Remarks

The OF method is found to be superior than CF method on account of increased human labour employment, lower cost of cultivation, higher profits, better input use efficiency and reduced risk leading to increased income, enhanced self reliance and livelihood security of the farmers.

Further OF has positive impact on soil, human health improvements, conservation and water use efficiency demonstrating substantial potential for sustenance of soil and water resources.

Hence, it is found that need for OF is important and found to be fit in all respect in agriculture. OF is to be encouraged for growth immediately in India by all stakeholders.

## Controversy

Subash Palekar, promoter of the concept Zero Budget Farming eliminated the labour shortage problem and reduced the input cost to the bear minimum. He claims that "Green revolution had poisoned air water and food because of the application of fertilizers and pesticides. It also polluted the soil forcing the farmer to add more and more fertilizer and had finally denuded the land to the extent that productivity has started coming down. The repeated use of fertilizer and pesticide pushed farmers into debt trap, and, unable to come out of the clutches of money lenders, many farmers committed suicide .

The only alternative for farmers is to reduce the cost of input and also zero it. The external input cost and the cost of cultivation will come down. Soil, water, crops and the produce turn healthy, making agriculture a profitable occupation for farmers.

Indian agriculture for long remained sustainable only because of the low external input factor and that it turned bad only after the advent of foreign companies which sold "poisons" by marketing them as medicines.<sup>[9]</sup>

According to Subhas Palekar OF is more dangerous than CF and OF is more exploitory of farmers economy and soil fertility than CF.<sup>[10]</sup>

Zero budget farming appears to be superior to both conventional farming and organic farming since it solves the problem of labour shortage and marketing which are perennial problem in agriculture . Further study can be undertaken comparing all the three types of farming practices to arrive the best one for India.<sup>[6]</sup>

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