

The Present Day Prospects of Organic Farming

M. Sudhakar^{1*}, M. Ram Prasad², S. Madhusudhan Reddy³, I.V.Srinivasa Reddy⁴

¹B.Sc (Hons.), Agriculture,

²Assistant Professor,

Dept. of. Soil Science,

³Assistant Professor, Dept. of Genetics and Plant Breeding,

⁴Associate Professor, Dept. of

Horticulture,

Agricultural College,

Aswaraopet

Professor Jayashankar

Telangana State Agricultural

University



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*Corresponding Author

M. Sudhakar*

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INTRODUCTION

Our nation has pursued the policies of intensive use of agro-chemicals in the last 30-40 years to meet the challenges of increasing the agricultural production. Level of consumption of agro-chemicals is sometimes held as yardstick of agricultural development. Use of agro-chemicals along with other technologies like improved hybrids/varieties and irrigation has indeed elevated our country to self-sufficiency in food production from the stage of *shp* to mouth.

But, in the journey of ever challenging agricultural development, India reached a stage –where the basis of production itself is in perilous situation. Because, the use of agro-chemicals has damaged our eco-system and delicate balance between various components of eco-system. The biological basis of fertility imparts self-supporting feature in soil. Treating soil as mere physical medium to supply the nutrients on other hand –have ignored the biological basis of soil fertility. Similarly, the pest control by pesticides alone is akin to chemical invasion on eco-system. A pest is a part of biological equilibrium in an eco-system and killing the pest by pesticides is not only damages the eco-system but also kills predators and natural enemies of pest. These truths are undermined by advocacy of increases pesticide use.

Use of fertilizers and pesticides had their designated aims of increased productivity and reduced damage due to pests respectively. But, the productivity of many crops has not shown proportionate improvement in the last 10-15 years-despite the increased use of fertilizers. Similarly, extensive use of pesticides has not reduced the losses due to pests. With these two facts in background-a stage has now reached to review whether promoting the use of agro-chemicals is appropriate strategy or not. The use of agro-chemicals has left us with unsustainable production systems.

Unsustainability factors are so pervasive and profound that urgent imperatives need lies to achieve sustainable production-lest the food security will be in jeopardy in populous countries like India and China.

Therefore, the present day challenges in agricultural research include important and formidable aspects to attaining sustainability in various agro-ecosystems. The essential feature of sustainability and food security for our Indian conditions are more appropriately satisfied by principles and concepts of integrated farming or partial organic farming.

It is appropriately surmised-with profuse justification and technical evaluation of facts- in this paper that sustainability and food security could be achieved by partly

organic farming or integrated farming systems in phased manner, without experiencing the negative impact of indiscriminate use of agro-chemicals.

General Issues

Modern agriculture was conceptualized in the past 5-6 decades with the sole objective of increasing the crop yields. Increase in the crop yields was achieved by the introduction of various inputs like newcrops/ their varieties, evolution of new photo insensitive varieties/ hybrids use of fertilizers, pesticides irrigation and many other cultivation practices. As the yield potentiality of the crops was improved by various breeding methods, the crops demanded the use of more agro-chemicals.

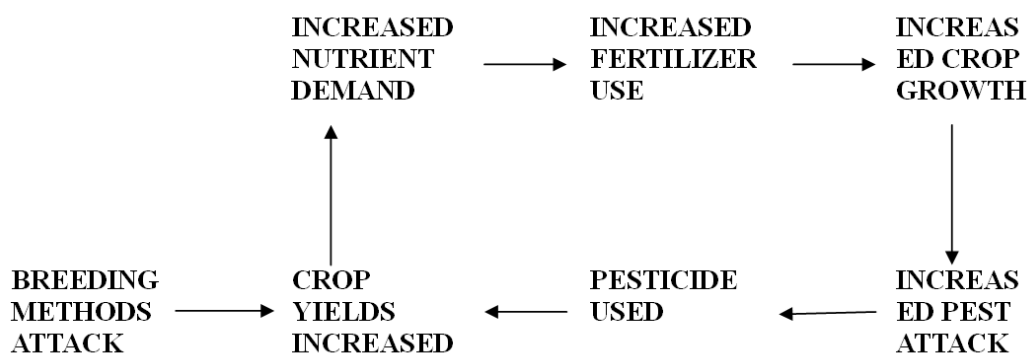


Fig. 1. Diagrammatic representation showing the necessities using agro-chemicals

Thus the chemicals were needed in modern agriculture both to increase the crop yields and to protect the crop from damages by pests and diseases. The use of agro-chemicals demolishing the basis of well-balanced natural systems has led to the questions of

sustainability in agriculture. An introspective rethinking is necessary to verify whether there is any need of so many toxic chemicals, causing series of health hazards, to improve the crop yields.

Table 1. Levels of pesticide use in selected countries

Country/area	Pesticide use (kg ha ⁻¹ yr ⁻¹)
CHINA	13.1
USA	2.5
BRAZIL	6.00
ARGENTINA	4.9
INDIA	0.3
MALAYSIA	8.1
EUCADOR	13.9
JAPAN	11.8

FAOSTAT - Food and agriculture data by FAO (Food and Agriculture Organization of the United Nations)

- The State of Food Insecurity in the World - FAO
- World Population Prospects: The 2019 Revision - United Nations Population Division
- United Nations Statistics Division
- World Bank

While the population pressures are mounting on limited agricultural lands demanding the increase in the productivity, the increase in awareness of hazards of agro-chemicals is discouraging their usage, which in turn may reduce the present level of productivity in short run. Indeed, it is a formidable technical question to the agricultural scientists to solve this vexed problem of increasing the crop yields without deterioration of soil health and environments.

Adverse effects of indiscriminate use of modern agricultural inputs.

- Soil degradation
- Environmental pollution
- Salinization
- Reduction in productivity
- Genetic erosion
- Reduction in productivity
- Pesticide residues in crop produce
- Nutrient imbalance in soil
- Increase in micronutrient deficiencies
- Imbalance in social and economic status

Present Needs of Organic Farming

Organic farming is the pathway that leads us to live in harmony with nature. Organic agriculture is the key to a sound development and a sustainable environment. It minimizes environmental pollution and the use of non-renewable natural resources. It conserves soil fertility and soil erosion through implementation of appropriate conservation

principles. Current market trends, according to natural marketing institute reveals that organically produced products are becoming widely accepted throughout the world. Again, the institute underscores that over the past few years, the annual sales of organic products have increased three-fold with the increased establishment of natural food stores selling varieties of organic products.

What is Organic Farming . . . ?

Organic farming is defined as production system which favors maximum use of organic material (crop residues, animal excreta, legumes, on and off farm organic wastes, growth regulators, bio pesticides etc...) and discourage use of synthetically produced agro-inputs, for maintaining soil productivity and soil fertility and pest management under conditions of sustainable natural resources and healthy environment.

Postulations of Organic Farming

The basic concepts behind Organic farming are -

1. It concentrates on building up the biological fertility of the soil so that the crops take the nutrients they need from the steady turnover within the soil nutrients produced in this way and are released in harmony with the needs of the plants.
2. Control of pests, diseases, and weeds is achieved largely by the development of an ecological balance within the system and by the use of bio-pesticides and various cultural techniques such as crop rotation, mixed cropping, and cultivation.
3. Organic farmers recycle all wastes and manures within a farm but the export of the products from the farm results in a steady drain of nutrients.

In a situation, where conservation of energy and resources is considered to be important,

community or country would make every effort to recycle to all urban and industrial wastes back up to agriculture and thus the system would be requiring only a smaller input of new resources to 'top up' soil fertility.

Objectives of Organic Farming

1. To develop a sustainable farming system, which maintains and / or improves soil fertility so as to ensure adequate food production and relies as much as possible upon resources from within its own area.
2. A sustainable farming system, which maintains and improve soil fertility such as to generate adequate food production into the foreseeable future.
3. A self-sufficient or more realistically, a self sustaining agriculture, i.e., a system which relies as much as possible upon resources from within its own area and which is not reliant upon large quantities of imported resources.
4. An agriculture, which takes as its guide, the working of biological process as in natural ecosystem. It must always be remembered that agriculture is primarily applied biology and is most likely to be successful when it accepts and follows biological principles.

Principles of Organic Farming

Organic farming system can be found across the world operating in diverse climates, with a range of crop and animal enterprises often-linked together. Strong unifying principles linked the wide range of farming system and management practices and the detailed description of the principles and practices of organic farming are presented below.

Launch of National level Project on Organic Farming

As per suggestions of National steering

Committee on planning commission and recommendations made by the Task force on Organic Farming, DAC has launched a new central sector scheme, "National project on organic farming", which has been approved by planning Commission during Xth plan on pilot basis which an outlay of Rs.57.05 crore. The project is operational since 1st October,2004.The objective of the project is as follows:

1. To facilitate, encourage and promote development of organic agriculture in country
2. To prepare inventory of organic resources available for recycling in agriculture in different agroclimatic conditions
3. To encourage production of organic sources of nutrients like biofertilizers, organic manures, compost etc. and biopesticides, biocontrol agents etc.as certified inputs of organic farming.
4. To act as nodal agency for formulations of standards and mechanism of radiation ion, inspection, regulation, quality control and monitoring.
5. To initiate and encourage research for promotion of organic agriculture practice and the dissemination of know-how through extension.
6. To provide the financial support to State Govt.,organizations, NGOs etc. for production and promotion of organic inputs and market development of organic produce.

The International Federation for Organic Agriculture Movements –

(IFOAM definitions / principles of Organic Farming System (IFOAM, 1998).

1. To produce of high quality in sufficient quantity.
2. To interact in a constructive and life enhancing way with natural systems and cycles.

3. To consider the wider social and ecological impact of the organic production system.
4. To encourage and enhance biological cycles within the farming system, involving microorganisms, soil flora fauna, plants and animals.
5. To develop a valuable and sustainable aquatic ecosystem.
6. To maintain and increase the long term fertility of the soils.
7. To maintain the genetic diversity of the production system and its surroundings including the protection of wild life habitats.
8. To promote the healthy used and proper care of water, water resources and all life therein.
9. To use, as far as possible, renewable resources in locally organized production system.
10. To create a harmonious balance between crop production and animal husbandry.
11. To give all livestock conditions of life with due consideration for the basic aspects of their intake behaviour.
12. To minimize all forms of pollutions.
13. To process organic products using renewable resources.
14. To produce fully biodegradable organic products.
15. To allow everyone involve in organic production and processing a quality life which meets their basic needs and allows an adequate return and satisfaction from their work, including a safe working environment.
16. To progress towards an entire production, processing and distribution chain which is both socially and ecologically responsible.

Scientific feasibility and validity of organic farming in India.

There are many debates regarding the adoption of Organic farming under Indian

context, as follows:

1. Can Organic Farming produce enough food for everybody?
2. Is it possible to meet the nutrient requirement of crops entirely from organic sources?
3. Are there any significant environmental benefits of Organic Farming?
4. Is the food produced by Organic Farming superior quality?
5. Is Organic Farming economically feasible?
6. Is it possible to manage pests and diseases in Organic Farming?
7. Is it possible to protect the soil health and sustained the capacity of the soil to produce desired crop yield?

These aforesaid issues are bound to raise doubt about the capacity of Organic Farming as a means to resolve the conflicting demand on the system.

Can Organic Farming produce enough food for everybody?

Food security is not only a question of the ability to produce food, but also of the ability to access food. Global food production is more than enough to feed the global population, the problem is getting it to the people who need it. In market-marginalized areas, organic farmers can increase food production by managing local resources without having to rely on external inputs or food distribution systems over which they have little control and/or access. It is to be noted that although external agricultural inputs can be substituted by organic management of natural resources, land tenure remains a main constraint to the labour investments needed for organic agriculture. Organic farms grow a variety of crops and livestock in order to optimize competition for nutrients and space between species: this results in less chance of low production or yield failure in all of these

simultaneously. This can have an important impact on local food security and resilience. In rain-fed systems, organic agriculture has demonstrated to outperform conventional agricultural systems under environmental

stress conditions. Under the right circumstances, the market returns from organic agriculture can potentially contribute to local food security by increasing family incomes. (SOURCE - www.FAO.org)