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Organic Farming: A Sustainable Option for Farmers and Natural Resources

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Abstract : The Green revolution in Haryana that started in the 1960s reached to maturity during the 1990s and since then has been exhibiting signs of unsustainable practices in agriculture. The high use of synthetic inputs like chemical fertilisers, pesticides, HYV seeds, etc. not only caused the degradation of the soil health and nutrition but adversely affected the health of the consumers as well. There is a growing concern of the ill-effects of the current agriculture practices and a solution had always been on the active agenda of the statesman, environmentalists and the researchers. The search for solution ends with the advent of the organic farming that avoids or largely excludes the use of synthetic inputs and relies upon crop rotations, crop residues, animal manures, off-farm wastes etc. that restores the soil health.

The option of organic farming is equally beneficial for the farmers in terms of commercial value of his produce. Worldwide, including India, the demand of organic food has been on the rise and Haryana, for being close to the national capital of India, has immense opportunities to capitalise the situation for increasing the income of the farmers. Besides, the organic farming shall be requiring minimum use of chemical fertilisers and pesticides etc. that will prevent the high cost of inputs which, again, shall reduce the financial burden on the farmers. So, in terms of income and expenditure, the organic farming can prove a highly beneficial option for the farmers.

The present paper shall look into existing agriculture practices, the policy framework in Haryana for the growth of organic farming along with the evaluation of the current market conditions prevalent in the state.

Keywords: Green revolution, organic farming, sustainability, commercial agriculture.

Introduction - During the twentieth century, agriculture along with other key areas of human development has made long strides, achieving remarkable feats resulting into dispelling the fears of food insecurity. All this was made possible by the industry-based modernization of agriculture that provided a wider range of modern inputs from fertilizers to pesticides to mechanical implements. More production from less area was the major consideration behind modernization of agriculture that received a favourable response the governments, non-government agencies and the farmers. To derive maximum benefits from modern agriculture, the state extended heavy subsidies on the use of modern inputs by the farmers. The green revolution in Indian agriculture is manifestation and outcome of the coordinated efforts of the government, industry and the farmers.

In the long run, the agricultural practices under green revolution proved disadvantageous mainly due to overuse of modern inputs that inflicted mainly the negative ecological consequences. The task of attaining the goal of food security to feed the growing population was accomplished to greater satisfaction in India but it fell heavily on the soil health. A number of adverse ecological consequences cropped up to embarrass not only the environmentalists, the governments and the farmers but the land and soil health as well beyond the level of recovery.

Methodology: The paper aims to look into evaluating the current agricultural practices in Haryana and its ecological implications. This evaluation becomes essential in order to understand the side-effects of green revolution and the growing incidence of unsustainable character of the state agriculture. The paper further examines the scope of organic farming in the state along with falling farm income of the farmers from agriculture. It has been observed in developed countries that organic farming can be beneficial for the soil health and it can push up the economic profits from agriculture also which is a highly beneficial situation for the farmers of the state.

This framework requires the use of secondary data available in the form of statistical abstracts of Haryana, agriculture department Reports and other secondary materials in the form of articles in the journals and books.

For proper understanding of the ecological implications of wheat-rice cultivation, certain areas are identified on the basis of area and production of rice and wheat which can be described as the concentration zone of wheat-rice cultivation in the state. The ecological impacts in these areas are the subject of investigation. There appears a direct correlation between the increase in production and consumption of agricultural inputs. There exist negative ecological complications in the area which consume higher degree of modern inputs.

Agricultural practices in Haryana: It is now established that the green revolution in the state which, at one time, led to the economic prosperity of the rural areas now demands a serious review of the ongoing agricultural practices in the state. The agriculture development in Haryana see the establishment of a cropping pattern, which shows dominance of food crops over the non-food crops and that too of the rice-wheat combination (Amita, 2001). The trend that marks its beginning in the 1960s becomes stabilized by the 1990s and occupies a serious concern for its negative impacts during the early part of 21st century. In the entire discussion on ecological implications of green revolution in Haryana, the focus is primarily on the rice-wheat cultivation – the combination which exhibits greater consumption of modern inputs in comparison to other crops. Due to the food security factor and market considerations, the duo of rice and wheat receives favour from the government as well as the farmers.

Table – 1: Trends In Rice Cultivation In Haryana

Year	Area (in '000 hectares)	Production) ('000 tons)	Yield/Hectares (in Kgms.)
1970-71	269.2	460	1697
1975-76	303.5	625	2063
1980-81	483.9	1259	2606
1985-86	584.0	1633	2797
1990-91	661.2	1834	2775
1995-96	830.0	1847	2225
2000-01	1054.3	2695	2557
2005-06	1046.6	3194	3051
2010-11	1243.3	3465	2788
2017-18	1422.0	4880	3432

Compiled from Statistical Abstract of Haryana

The trends indicate the increase in the area under rice cultivation showing an increase of 428 per cent in 2017-18 over 1970-71. Likewise, the production increases by 960.8 per cent during the same period. One of the major reasons for this is the increase in the yield per hectare that can mainly be attributed to modern agricultural inputs.

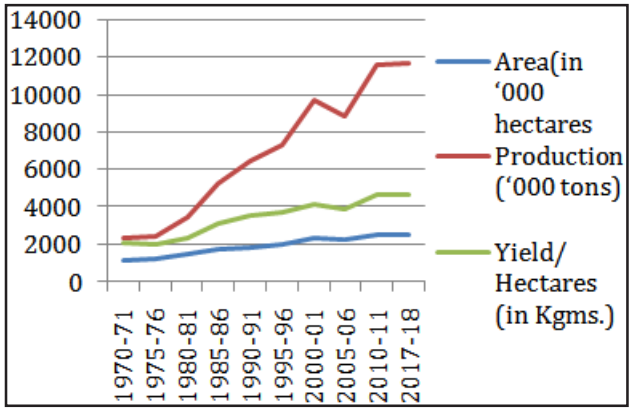

Fig. 1: Trends in Rice Cultivation in Haryana

The cropping pattern, besides rice cultivation during the Kharif season, sees the presence of Wheat during the rabi season that holds the dominating edge over other crops. Both the crops are preferred over other crops by the government because of their profit potential. The trends in the wheat cultivation are shown in the Table – 2.

Year	Area (in '000 hectares)	Production) ('000 tons)	Yield/Hectares (in Kgms.)
1970-71	1129.3	2342	2074
1975-76	1226.0	2428	1980
1980-81	1479.0	3490	2360
1985-86	1701.3	5260	3094
1990-91	1850.1	6436	3479
1995-96	1972.1	7291	3697
2000-01	2354.8	9669	4106
2005-06	2302.7	8853	3844
2010-11	2504.0	11578	4624
2017-18	2526.0	11680	4624

Compiled from Statistical Abstract of Haryana

The wheat cultivation shows an increase of 123.7 per cent in terms of area between the period from 1970-71 to 2017-18. The increase in the wheat production for the same period is 398.7 per cent which can be attributed to the increase in the yield per hectare. Again, as in the case of rice, the high consumption of modern inputs can be seen as responsible for high yield per hectare and overall wheat production. The trend can be better observed in the figure 2.

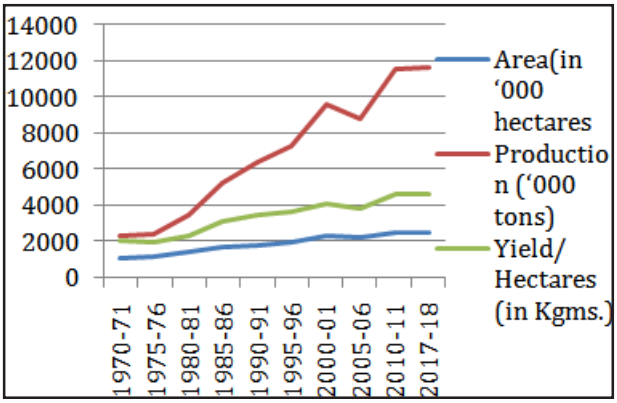

Fig. 2 : Trends in the Wheat cultivation

The presentation of data on trends in rice and wheat cultivation demonstrates the larger share of both the crops and which continues to grow. For example, the combined share of wheat-rice combine of the total cropped area was 28.21per cent in 1970-71 which increased to 63.26 per cent in 2017-18. This increase in the share can be described as the marking of a pattern where other crops – other than wheat and rice, are not showing impressive upward trends. The areas that emerge as intensive rice-wheat cultivation areas are the districts of Ambala, Yamunanagar, Kurukshetra, Kaithal, Karnal, Sonepat, Jind, Hisar and Fatehabad which provides for nearly 75 per cent of the total Rice area. Similarly, these areas account for more than 60 per cent of the total wheat areas. These are the areas which consume larger share of the modern inputs like High Yield varieties of seeds, chemical fertilizers, pesticides, high water consumption, tractorization, machination etc. And it is in these areas mainly where the negative environmental impacts are discernible.

Ecological Implications

i) Increasing demand of Water: The increasing use of HYV seeds necessitated the high need of water. There is a tremendous pressure on the state's sources of irrigation mainly the canals and tube wells. The wheat intensive areas like Hisar, Sirsa, Fatehabad and Jind meet their water needs mainly through the canal system formed by the Ghaggar basin whereas the rice-intensive area meet their water needs mainly from the tube wells. The fall in the ground water table in Haryana is more noticeable in these areas.

ii) Depleting Soil Nutrition: The soil nutrition signifies the presence of nutrients in the soil mainly the nitrogen, phosphorous, potash, manganese, copper, zinc, iron, sulphur etc. Due to over cultivation, the soil has become so deficient in nutrition that it all the time needs chemical fertilizers to supplement the loss. The over use of chemical fertilizers is causing increase in the incidence of acidity in the soil that adversely affects the fertility of the soil.

iii) Soil Bacteria falling Prey to pesticides: The bacteria in the soil constitute the natural agents responsible for the fertility of the soil. The heavy use of pesticides to refrain the weeds and alike from damaging the crops is proving very costly for the land fertility. The bacteria which are found in the upper layer of the soil are the direct victims of the killing pesticides.

iv) Contamination of ground water: The high use of chemical fertilizers and pesticides seeps deep into soil and ends up in the contamination of the ground water. Even the human beings are not free from the ill-effects of this contaminated water and cause a number of serious ailments like cancer etc.

Organic Farming as Ecologically Sustainable Option :

Organic farming rests on the traditional agricultural practices and is practised in number of villages in India. Organic farming enhances ago-ecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted system. India is endowed with various types of naturally available organic form of nutrients in different parts of the country and it will help for organic cultivation of crops substantially (Deshmukh, Babar, 2015).

Organic farming was practiced in India since thousands of years and had been an integral part of the rural economy particularly agriculture. The Indian society from very early times grew on organic farming and was acknowledged worldwide for such practices. In traditional India, the entire agriculture was practiced using organic techniques, where the fertilizers, pesticides, etc., were obtained from plant and animal products. Organic agriculture in India was initiated in 1900 by Albert Howard, a British agronomist in North India. The traditional farming system was characterized mainly by small and marginal farmers producing food and basic animal products for their families and local village communities. After this qualification was drastically changed during the green revolution period but organic farming is seen today as the best option to attain sustainability in the crop production. Therefore organic farming appears to be one of the options for sustainability.

The demand for organic food products is growing in the world markets mainly in the developed countries. This is mainly due to high purchasing power and huge presence of health conscious consumers. The organic food consumption in India is very low as compared to western markets. Organic food market in India is highly unorganized and fragmented, which offers immense growth opportunities for domestic as well as international players. India mainly exports organic processed food products, organic rice, beverages and other cereals and millets to US, Canada, Europe, and South East Asian countries (Deshmukh, Babar, 2015).

Organic farming has attracted considerable attention in Haryana in the recent years. In their search for a more sustainable agriculture, producers, consumers and policymakers attempt to rediscover organic farming. Haryana government believes that producer concerns to organic products and therefore market development should be stimulated. Currently, the greater part of the agricultural budget for stimulating organic farming is allocated to research, education and information dissemination. An Agricultural and Processed Food Products Export Development Authority (APEDA) approved internationally reputed organic certification agency, OneCert, has been appointed for certification purpose in the state. It pays the certification fee of the fields being organic (Ohlan. 2016). According to the information available on the official website of the Haryana State Co-operative Supply and Marketing Federation Limited (HAFED), an area of around 1,000 acres has been earmarked for organic farming of basmati rice in

three districts of Kaithal, Kurukshetra and Karnal. The desi wheat would be cultivated in an area of around 805 acres in Mewat and Jhajjar region. Apart from these two crops, Sirsa district has been shortlisted for the cultivation of gram crop (Ohlan. 2016).

Conclusion: The organic farming is the need of the hour and needs policy support for the benefit of the soil health, the farmers and the consumers as well. Haryana, being a leader in the agriculture production in the country cannot afford to ignore the multiple adverse ecological consequences of green revolution. The state needs to awake this harsh reality and requires mending its approach towards agriculture and agriculture practices in the state. The present agricultural practices in the state not only falls heavily on the soil health but, at the same time, growing as an uneconomic pursuit. The cost of production is increasing more and more and the returns are shrinking making agriculture in the state economically non-viable. So, the organic farming offers a sustainable option to the state agriculture and at the same time, fills the empty coffers of the farmers who, at the moment, is under immense distress.

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