ORGANIC AGRICULTURE IN ASSAM

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***Abstract* – The advancement of technology and development in agriculture has enabled our country to provide food security. But every coin has two sides; this all advancement in agriculture has directed to imbalance our ecosystem. Under such condition, serious concerns have been expressed regarding the use of heavy chemicals, pesticides and fertilizers in agriculture in terms of their negative impact on the human health and the environment. The phenomenon of 'Organic Agriculture' is the only solution to nurture the land and to regenerate the soil by going back to our traditional method of farming *i.e.*, free from chemicals, pesticides and fertilizers. This is a possible step for sustainable development by choosing not to use chemicals, synthetic materials, pesticides and growth hormones to produce high nutritional quality food and in adequate quantity. This article provides an overview of organic agriculture, its present scenario in Assam, the main principles of organic agriculture and constraints faced in practicing organic agriculture in Assam.**

***Keywords* – Development, Fertilizers, Heavy Chemicals, Organic Agriculture and Pesticides.**

I.INTRODUCTION

Agriculture facilitates to meet the indispensable needs of human civilization by providing food, clothing, shelter, medicine and recreation. Hence, agriculture is the most important venture in the world. India's agricultural sector is still very important and considered to be the backbone of Indian economy. India has made significant advances in agricultural production in recent decades, including the introduction of high-yield seed varieties and increased use of fertilizers [1]. In the 1960s, the Green Revolution allowed developing countries, like India, to overcome continual food scarcity by producing more food and other agricultural products by using high-yielding varieties of seeds, modifying farm equipment, and substantially increasing use of chemical fertilizers. As the accessibility of land is declining day by day, application of fertilizers and pesticides has become essential to continue the production of major crops to meet the food grain demand. This allowed growth and sustainability of food grains but at the same time leads to increase in the use of chemical fertilizers and pesticides which cause serious damage to the environment and human health.

Reference [2] also reported that Indians take about 40 times more pesticides through food items than the average American intake, although the small amounts of pesticides that remain in the food supply will cause no immediate reaction but could cause health problems if routinely consumed over a long period. The commercialization of agriculture led to three kinds of changes, namely: economic changes, socio-cultural changes and environmental changes. All these changes have profound effects on human health such that the people are battling health problems, including a noticeable rise in cancer cases, reproductive health problems, mental retardation and kidney ailments [3]. An answer to this havoc is the organic agriculture, an environmentally friendly agricultural approach which ultimately leads to proper human health.

II. ORGANIC AGRICULTURE

Organic agriculture is a holistic production and management system which is supportive of the environment, health and sustainability [4]. Organic agriculture is developing rapidly and today 172 countries of the world produce organic food. As per the estimates in 2014, there were 43.7 million hectares of organic agricultural land and the countries with the most organic agricultural land are Australia (17.2 million hectares), Argentina (3.1 million hectares), and the United States (2.2 million

hectares) [5]. The Organic farming system in India is not new and is being followed from ancient time. As per the definition of the United States Department of Agriculture (USDA) *"organic farming is a system which avoids or largely excludes the use of synthetic inputs (such as fertilizers, pesticides, hormones, feed additives etc.) and to the maximum extent feasible rely upon crop rotations, crop residues, animal manures, off-farm organic waste, mineral grade rock additives and biological system of nutrient mobilization and plant protection"* [6]. The recognition of organic farming is progressively increasing and is now practiced in almost all countries of the world. Further, they also mentioned that the fast changing trend from chemical based agriculture to organic and eco-friendly system of farming is being a major concern at the national and global levels. According to the latest survey, India accounts 5.2 million hectares of organic land and 6,50,000 organic producers. India has the largest number of organic producers in the world [7].

On the contrary, the Green revolution has been the greatest success story and has brought a spectacular increase in production and productivity in the country. But after initial success, the scenario has changed today with the quest of short term gains without due consideration of long term sustainability resources, particularly soil, water and the environment have all now overstrained, and are getting increasingly depleted as reported by reference [8]. Now the concern is to sustain the agricultural and particularly crop production and productivity and take this agricultural sector to the frontier without damaging the resources and the environment. This results in an alternative system of an optimal, balanced, efficient and scientific management of land, water, biodiversity and external inputs. Hence, the system organic agriculture comes into the scenario. The significant element can be addressed by the fact that the Prime Minister Shri Narendra Modi declared Sikkim as the India's first fully organic state by implementing organic practices on agricultural land in 2016.

In the current scenario, food consumption practice is changing among the consumers and now they want to opt food which is free of all synthetic chemicals, fertilizers, and pesticides, *i.e.*, they want to consume organic food which is not only sustainable for health but also environmental friendly. But, organic products are not so much popular among consumers, which in turn lead to lower acreage of organic produce by farmers and high market prices of organic food. There is a need to create awareness among producers and buyers regarding promotion of organic agriculture.

III. MAIN PRINCIPLES OF ORGANIC AGRICULTURE

The main principles of organic agriculture are the followings:

- *Principle of Health:* Healthy soil, plants, animals, humans = a healthy planet.
- *Principle of Ecology:* Emulating and sustaining natural systems.
- *Principle of Fairness:* Equity, respect and justice for all living things.
- *Principle of Care:* For the generations to come.

IV. ORGANIC AGRICULTURE IN ASSAM

Organic agriculture in the process has come out to be the viable alternative to address the issues thrown up as the after effects of chemical rich agriculture practiced since 1960. There is a lot of debate between the proponents of organic farming and sections of the community who questioned the scientific validity and feasibility of organic farming particularly in developing countries – with opinions often polarizing between genetic engineering and organic agriculture based solutions. With organic products gaining popularity worldwide in the wake of humanity's devastating experiences with chemical farming, Assam is readying itself for the next phase of the green revolution "organic farming". The land of monsoons and evergreen forests is rediscovering its ancient farming practices along with many nations which are committed to socially responsible, ecologically friendly and economically self-sustainable development. Though Assam and the North East are mostly organic by default – according to government figures, of the net cultivated area of 4.3 million hectares, around 30.92 lakh hectares have never seen the use of chemical or inorganic fertilizers – conscious organic farming has suddenly picked up across Assam, especially among those cultivating ginger, turmeric, oranges, black pepper and pineapples. Farmers living in pockets of hilly tracks, untainted by pollutants and away from the hazards of modernity are now tapping into ancient secrets of sustainable farming. They are rediscovering the benefits of

traditional and holistic farming that maintain soil health and biodiversity. Assam's potential for organic farming is truly enormous. That Assam is "naturally organic by default" can be gauged from the extremely low consumption of fertilizer in the region. While the Indian average is currently around 106 kg of chemical fertilizer, Assam has been using 56 kg of chemical fertilizer per hectare on an average. Again, the state uses 40.46 grams of chemical pesticides per hectare against the all-India average of 0.448 kg. Farmers in these areas often use organic manure as a source of nutrients that are readily available either in their own farm or in their locality. With the sizable acreage under naturally organic/default organic cultivation, Assam has tremendous potential to grow crops organically and emerge as a main supplier of organic products in the world's organic market. The need is for putting up a clear strategy on organic farming and its link with the markets. While the government still puts up a paltry amount of money in organic farming, intensive agriculture receives massive subsidies to pollute the environment. It is the author's opinion that the solution has been with us for a long time– get back to farming, real farming – organic farming! We can live more healthily, enhance our environment, reinvigorate the countryside by increasing employment and produce the food we need, at better quality, by working with nature. If we simply like the idea of our children and grand children being able to visit the countryside and play in the forests and fields just like our ancestors did, we should go organic for the sake of all of our futures.

Assam is embracing organic farming in a big way with the help of the central government. In a historic move, two companies, to promote organic cultivation in Assam's hilly Karbi Anglong district have been launched recently. The main aim of the companies is to help tribal people belonging to the Karbi tribe realize better returns from their land. This initiative is designed to promote organic cultivation of turmeric, ginger and chilli in the district on a large-scale and also to promote processing and export. The State Agricultural Department initiated a pilot scheme jointly with the Government of India in 2004 for organic farming in the districts of Udalguri, Sonitpur and North Lakhimpur covering an area of 91 hectares and involving 154 farmers. The Geneva-based SGS India certified the products of the scheme and with the help of the Haryana based Sunstar Overseas Limited export process of this aromatic rice to Germany, Switzerland and the UK has started.

V. CONSTRAINTS IN PRACTICING ORGANIC AGRICULTURE

The major problems faced while practicing organic agriculture is:

a) *Lack of Awareness*: Lack of awareness among the government policy makers and the practicing farmers is the major cause of restricting the growth of organic agriculture. The lack of awareness among the consumers about organic food products also holds back the growth.
b) *Marketing Problems:* It is found that before the beginning of the cultivation of organic crops, their marketability and that too at a premium over the conventional produce has to be assured. Inability to obtain a premium price, at least during the period required to achieve the productivity levels of the conventional crop will be a setback. It was found that the farmers of organic wheat in Rajasthan got lower prices than those of the conventional wheat [13].
c) *Shortage of Manure:* Organic manure (Biomass) availability is less than the required quantity also the available nutrient is less than the conventional manure.
d) *Less Yield Production:* The production availability of organic farms is less as compared with farm producing products by using conventional methods.
e) *High Input Cost:* The costs of the organic inputs are higher than those of industrially produced chemical fertilizers and pesticides, including other inputs used in the conventional farming system.
f) *Inadequate Supporting Infrastructure:* In spite of the adoption of the NPOP (National Programme on Organic Production) during 2000, the state governments are yet to formulate policies and a credible mechanism to implement them. There are only four agencies for accreditation and their expertise is limited to fruits and vegetables, tea, coffee and spices. The certifying agencies are inadequate.

VI. SUGGESTIONS AND RECOMMENDATION

- The farmers' should be made aware with the scientific information about organic agriculture.

- Government should provide subsidies in organic produce to the farmers and facility of easy credit with lower rate of interest.
- Higher prices should be determined by the government for organic produce than the conventional produce.
- Agriculture universities should encourage the research in the field of organic farming.
- Government, NGO's and extension workers should organize various workshops, seminars, conferences, etc. with the help of subject matter specialist for farmers.
- Private companies should invest in the project of producing organic food products free from harmful chemicals.
- At an individual level, should promote the use of organic produce by going for organic agriculture in their kitchen garden, buying organic products available in the market.

VII. CONCLUSION

No agriculture can continue to feed a growing population if it depletes or fouls up its resource base. The path undertaken by conventional agriculture is ultimately a dead end in this regard, though there is an almost mystical faith that genetic engineering and other complex technologies will always triumph. Agriculture needs to be sustainable. Unless, Assam makes a rapid shift towards organic farming, the cost in terms of environmental degradation and health costs arising from agriculture could rise sharply. Organic farming is therefore, a welcome alternative from three angles, i.e., saving in finance draining by small farmers, eco-friendly and helps in improvement of soil fertility and will facilitate the government on trimming gradually the subsidy on fertilizers. The environmental sustainable advances in the productivity and profitability of organic production system will help to generate both livelihood and income. Whatever be the reasons, it appears as a welcome step that would help benefit farmers by increasing their earnings from the same land holdings while cutting down on the cost of pesticides and chemicals. However there are a few hurdles that have to be surmounted. It is important for the government to first carry out a study to ensure how best farmers can make a transition from today's farming practice to the organic mode because the shift would have to be carried out without any gap in farming activities. There is also a need for the government to identify which particular crops would be most suitable for which region of the state. Keeping in view the information needs of the farming community, the government must also train its personnel, without which the right knowledge would not be available to the needy. No less importantly, the government has to set up a mechanism to market the organic produce. It would be a dangerous proposition if the farmers, and especially the marginal farmers, find themselves without reliable channels to sell their produce with no government support by their side. Further the government could do well if certification and branding of produce could be done to identify them as genuine organic produce from Assam.

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