



Prospects and Challenges of Organic Farming with Special Reference to Nagaland- A Review

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ABSTRACT

Organic farming helps in maintaining environmental health, reduces human ensuring optimum utilization of natural resources and sustainable production in long run. Nagaland, known for its rich biodiversity and is gradually making its entry into the organic farming market and towards efforts are being made to promote organic farming in the state. Nagaland has potential for promotion of organic farming as farmers has been practicing traditional system of agricultural without the use of external inputs since its inception. Naga farmers adopt an age-old traditional cultivation system called shifting cultivation. The present agricultural practice of Nagaland is organic by default, as the state and the region did not make impact by the wave of green revolution across India. Nagaland state has very low consumption of agro chemical pesticides and fertilizers which is only about 1.5 kg per hectare. Owing to these facts the state has a comparative advantage to emerge as a center hub for development and promotion of organic cultivation. Thus, the needs to state take measures with appropriate policy measure to convert the 'organic by default' areas into 'organic by design'.

1. Introduction

Organic farming system in India has long traditionally history since the beginning of agriculture. Organic farming is being treated as a measure to restore sustainability of agricultural production and maintaining environmental quality at the same time. It is a method of farming which primarily aimed at cultivating of crops maintaining system productivity and ecological balance by use of organic wastes (crop, animal and farm wastes, aquatic wastes) and bio origin along for increased sustainable production. As per the definition of the United States FAO suggested that "Organic agriculture is a unique production management system which promotes and enhances agro-ecosystem health, including biodiversity, biological cycles and soil biological activity, and this is accomplished by using on-farm agronomic, biological and mechanical methods in exclusion of all synthetic off farm

inputs". About 73% of the people in Nagaland are dependent on agriculture and most of them are involved in shifting cultivation and farmers adopt an age-old traditional cultivation system called jhum/shifting cultivation. Average cycle of jhum, in the state between 6-10 years, which allow significant amount of time for the soil to re-generation of biomass and add nutrients for next cycle of jhuming. Adopting integrated organic farming system model may be the best for saving the environment. Issuing certificate as 'organic like' agriculture to those who wish to practice improved shifting cultivation with minimum impact in the ecosystem may alter this environmentally harmful system into less harmful and the poor farmers can fetch a premium price over the conventional products (Rukuosietuo *et al.* 2014). The organic inputs used in organic and integrated farming includes, Farm Yard Manure (FYM), Compost, poultry manures, Biogas slurry, Animal droppings, Crop residue management, oil cakes, Sewage and sludges, Vermicompost, Green manuring crops, Biofertilizers

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(Rhizobium, Azotobacter, Azospirillum, BGA, PSM, VAM) and different formulations of bio pesticides. Nagaland envisions to, gradually transform from “organic by default” state to “organic by design” state.

2. Need of Organic Farming

It is necessary strategies sustainable agricultural production system to meet demand of food for the growing population. Due to wide variation in altitude, agro-ecological patterns and farming systems including shifting cultivation are predominant in this state having a large number of ethnic groups and several sub-ethnic groups with intricate lifestyle. A total of 73% of the people in Nagaland are dependent on agriculture (Nakro, 2009). Nagaland possessed the second highest acreage under shifting cultivation next to Manipur. Land use pattern of Nagaland revealed that almost 16% of the total geographical area is under net sown area. About 1, 23,909 ha area is under shifting cultivation, which accounts for almost 7.5% of total area, 42% of total cropped area and 47.5% of net sown area. Naga farmers practice organic farming like system over generations mostly on hill slopes through a primitive land use system, *i.e.* shifting cultivation. The nutrient requirements of crops are fulfilled mainly by natural resources from the dung of cow, mithu, pig and other animals. Even in many villages, farmers are instructed by the elders not to apply any chemical fertilizers as they believe that, these will degrade soil fertility in the long run. This attitude creates negative impact on fertilizer use and perhaps because of this the state is one of the lowest consumers of chemical fertilizers per hectare (1.5 kg/ ha) in the country (FAI 2004). Organic manures not only as a source of nutrients but also increase size biodiversity and activity of the microbial population in soil, influence structure nutrients turnover and many other related physiological chemical and biological processes of the soil (Kennedy and Papendick, 1995)

In another recent estimate, it is reported that land under shifting cultivation is covering an area of 7,000 sq km out of the total state geographical area of 16,579 sq km (Rathore *et al.* 2010). Excessive applications of pesticides and fertilizers have caused damage to the soil and environment besides affecting the crop production. Pesticides residue is the second largest agent causing cancer next to cigarettes. Besides the pesticides and fertilizers persists in the soil are harmful to the beneficial soil microorganisms and earthworms and thereby resulting in degradation of soil fertility. In the name of growing more to feed the earth, we have taken the wrong roads of unsustainability.

Organic Farming’ is possible partially, more specifically crops having high export potential in International markets (Swaminathan *et al.* 2007) and will become less relevant in the future (Pickett, 2013). Organic farming is being treated as a measure to restore sustainability of agricultural production and maintaining environmental quality at the same time (Hazarika 2013). Improved soil biological activity, as influenced by organic farming, is also known to play a key role in suppressing weeds, pests and diseases (IFOAM, 1998). There is scientific evidence that organic agriculture can sequester more carbon than conventional agricultural practices. Studies showed that higher carbon accumulated in organic systems as compared to the conventional systems (Niggli *et al.* 2009).

Prospects of Organic Farming in Nagaland

The concepts of organic agriculture were developed in the early 1900s by Sir Albert Howard, F.H. King, Rudolf Steiner and others who believed that the use of animal manures, cover crops, crop rotation, and biologically based pest controls resulted in a better farming system. Such practices were further promoted by various advocates—such as J.I. Rodale and his son Robert, in the 1940s and onward, who published *Organic Gardening and Farming* magazine and a number of texts on organic farming. The demand for organic food was stimulated in the 1960s by the publication of *Silent Spring*, by Rachel Carson, which documented the extent of environmental damage caused by insecticides.

Nagaland, with a total land area of 16,579 sq km, is one of the hill States located in the extreme North- Eastern part of India. The State is mostly mountainous, except those areas bordering Assam valley. Due to its strategic location, the State has a huge potential to develop into an international business and trade hub in the East Asian region. The average rainfall is between 175cm and 250 cm. Nagaland Economy is mainly based on agriculture as more than 60% of the population is engaged in this sector. The Economy in the state of Nagaland is dependent mainly on agriculture. The various kinds of crops cultivated in Nagaland are cereals and millets, pulses, oilseeds, fibers, sugarcane, potatoes, tobacco *etc.* and many other high value horticultural and plantation crops. The scope and prospects of potential organic farming in India is signified by the fact that the farm sector has abundant organic resources like livestock, crop residue, water, aquatic weeds, forest litter, urban, rural solid wastes and agro industries, bio-products (Bhattacharya and Chakraborty, 2005), this too applies to state of Nagaland as well. Since 2006, the State Department of Agriculture has been implementing various programmes

functionaries and farmers on organic farming, demonstration on organic inputs and setting up of five Model Organic Farms located at Medziphema, Kohima, Wokha, Yisemyong and Pfüterero under National Project on Organic Farming, Government of India. During 2008-2009, Organic Certificate was awarded to the Tuensang Organic Farmers by the SGS India Pvt. Ltd. benefiting 32 villages in Shamator and Chessore circle comprising 3423 farmers covering 3002 hectares for crops such as kholar, maize, ginger, large cardamom, passion fruit and chilli. Kholar produced from the belt of Tuensang district is being certified as 'organic' by the Certification Authority. Another significant achievement is obtaining Geographical Indication Registration in 2008 for Naga King Chilli, the hottest chilli in the world. Nagaland has achieved the unique distinction of branding its pineapples with the tag "Naga Pineapple", which is also the first crop to be branded in the whole of North-East states owing to its distinctive flavour and High Total Soluble Solids (TSS) ranging from 16.5 to 18%. Molvom village under Dimapur district has often been nicknamed the 'Pineapple Village'. At present about 206 households are engaged in Pineapple cultivation covering a total area of nearly 200 ha, with an average production of 14 MT/Ha. The estimated net profit is reportedly about Rs. 50 lakhs per season at an average of Rs 2500/Ha. Cardamom cultivation Mon district may well be dubbed the "Large cardamom Paradise" of the state. The farmers from the district recorded a total income of more than Rs. 2.00 crores from large cardamom cultivation during the last season. About 450 households were involved in large cardamom cultivation for 550 hectares.

The organic inputs used in organic and integrated farming includes, Farm Yard Manure (FYM), Compost, poultry manures, Biogas slurry, Animal droppings, Crop residue management, oil cakes, Sewage and sludges, Vermicompost, Green manuring crops, Biofertilizers (Rhizobium, Azotobacter, Azospirillum, BGA, PSM, VAM) and different formulations of bio pesticides. The adherence of huge population of the farmer to the natural law in ancient India has helped in maintaining the soil fertility over a relatively longer period of time (Chandra, 2004). Inherent advantages such as its varied agro-climatic regions, local self-sustaining agri-systems, sizeable number of progressive farmers and ready availability of inexpensive manpower translate into the potential to cultivate organically a vast basket of products. In fact, North Eastern Region (NER) is considered as home to some niche crops like Assam lemon, Joha rice, medicinal rice and passion fruits which has high market demands and accounts for 45 per cent of total pineapple production in (Munda, 2006). Uttaranchal and Northeast states have declared themselves "organic-

farming states" whereas Mizoram and Sikkim declared their intentions to move to in the state which include training of field total organic farming (Mitra and Devi, 2016). Sikkim has become India's first fully organic state by implementing organic practices on approximately 75,000 ha of agricultural land. In Nagaland, 3000 ha area is under organic farming while as Meghalaya has committed to certifying 200,000 hectares of land as organic by 2020 (Hill, 2016). These regions receive very high rainfall (2000 mm to 11000 mm per annum) and thus lead to abundant production of biomass including weeds, shrubs and herbs when a large part of the falls under pastures, forests, wastelands *etc.*

Challenges for promotion of Organic Farming in Nagaland

The following are the major challenges facing by the farmers for adoption of organic farming in the state:

- i. Promotion of organic farming for export as well as for domestic consumption, needs appropriate agriculture policy of India and guidance. There is an absence of an appropriate policy or framework for organic cultivation.
- ii. Remoteness of the region is one of the challenges as the farmers do not get easy access to advance technologies, transportation, market *etc.* Non-availability of organic inputs on time and in required quantity as need by the farmers.
- iii. Despite the much acclaimed potential for organic fruits and vegetables, Nagaland still continues to consume large quantities of imported vegetables and fruits that are treated with pesticides and chemical. There is a lack of marketing and distribution network for organic inputs as well as produce in the state.
- iv. Lack of Infrastructure facilities for undertaking organic farming in the state. There are very few agencies/ NGOs for accreditation and promotion of organic farming.
- v. Majority of the farmers in the state do not possess awareness and knowledge organic farming and its potential over the conventional farming. Use of bio-fertilizers and bio pesticides, organic manures and preparation of various composts requires awareness and willingness on the part of the farming community.
- vi. Lack of financial support discourages farmers to shift to conventional farming as. Regulatory adoption and certification process appears to be burdensome for the small and marginal farmers. Therefore Government should provide the financial support for adoption.
- vii. There is no assured pricing policy for organic produce in the state. Thus lack of price advantage discourages the farmers to adopt organic farming.

Role of government agencies for promotion of Organic Farming in Nagaland

With the increasing demand for organic commodities, the Department of Agriculture, Government of Nagaland has initiated several programmes to strengthen the organic farming system in Nagaland. Schemes on promotion of organic Nagaland has being taken up under National Project on Organic Farming (NPOF). Apart from this, Agricultural and Processed Food Products Export Development Authority (APEDA) is implementing National Programme for Organic Production (NPOP) in Nagaland. Under the NPOP, documents like National Standards, accreditation criteria for accrediting inspection and certification agencies, are prepared and approved by the National Steering Committee. In recent years, a number of national certifiers are also engaged in certification activity in Nagaland. The organic activities taken up by the Department of Agriculture, Nagaland includes: Field demonstration on organic inputs such as Bio-fertilizers, green manures *etc.* and distribution of organic inputs to the farmers, training of farmers in Organic Cluster Project area- Mokochung, Wokha, Peren and Zunheboto District in collaboration with International Competence Centre for Organic Farming (ICCOA), Bangalore, 1000 ha Organic certification for growers group is under conversion. Consumers' demand for organically produced food products and society's demand for more sustainable development provide new opportunities for farming and business around the world, the state Department of Horticulture has introduced the concept of organic farming with certification for horticultural crops in the state since 2011-12, during which 2000 ha area was taken up covering all the districts for crops like large cardamon, ginger, turmeric, vegetables, pineapples *etc.* which have a high market value. The organic programme is for three years with Registration and ICS system is done from accredited companies/ NGOs recognised by the government of India, Agriculture Produce Marketing Committee (APMC), under Nagaland State Agriculture Marketing Board (NSAMB) has built a marketing shed for organic farmers of Various district of Nagaland for facilitating the organic farmers, Daily organic market in Dimapur was inaugurated in the year 2018, which display and sale organic produce including various locally and organically products with the motto ' Work And Eat' at Supermarket (Naga Shopping Arcade), organic horticultural products have been given significant attention, as it commands a premium which would translate into better income for farmers. The State Department of Horticulture has entered into a memorandum of understanding (MoU) with the International Competence Centre for Organic Agriculture, to draw up a comprehensive project for development of organic horticultural crops in the State.

Recognizing the importance for institutional support for development of horticulture in the Northeast, the Government of India approved the establishment of a Central Institute of Horticulture at Medziphema, Nagaland in January 2006, with a financial outlay of ` 20 crore spread over a period of five years.

Conclusion

Scientific systems of cultivation envisaging on organic production of high value crops in the state has high potential for growth of agriculture sector in Nagaland. Although, farmers state of Nagaland continues to practice old traditional shifting cultivation, because of hilly topography of this practice can be minimised with integrated organic farming system model for long run productivity and economic gain. Organic Farming in Nagaland has very promising opportunity and advantages as the state has, large tract of virgin land and there is a negative attitude of farmers and consumers across the state towards the use agrochemical in agricultural production. In the state of Nagaland, use of inorganic fertilizers and chemicals is negligible, majority of the households maintain livestock which provide sufficient manures. Production of superior high value crops in the state like Pineapple, cardamom, gingers, passion fruits, tea, coffee, which are internationally accepted world-wide. Issuing certificate as 'organic like' to the traditional framers who grows organically has been initiated, so that the farmers can fetch a premium price. In Nagaland, there is a consumer preference for organic produce grown locally and the farmers get better price for the produce in the market.

References

- Bhattacharya P, and G Chakraborty (2005). Current status of organic farming in India and other countries. *Indian Journal of Fertilizers*. 1(9): 111-123
- Chandra R. (2014). Sustainability through Organic Agro-Biotechnology with special reference to Jammu & Kashmir scenario. *International Journal of Genetic Engineering and Biotechnology*. 5(2): 169-178
- Hazarika S, Manoj K, Thakuria D, and LJ Bordoloi (2013). Organic Farming: reality and concerns. *Indian Journal of Hill Farming*. 26(2): 88-97.
- Hill JKW (2016). Organic Agriculture in India and Participatory Guarantee Systems (Pgs): A Case Study from West Bengal. *Jharkhand Journal of Development and Management Studies*. 14: 7037-7055.
- IFOAM (1998). IFOAM basic standards for organic production and processing. IFOAM Publications, Tholey- Tholey, Germany.

- Kennedy AC, and RI Papendick (1995). Microbial characteristics of soil quality. *Journal of Soil and Water Conservation*. 50(3): 243-248.
- Munda GC (2006) Problems and prospects of Organic farming in NER. Paper presented in the Seminar on “Organic farming – Status and Road Map” during the North East Agri. Expo on March 06 at Dimapur, Nagaland.
- Nakro V (2009). Traditional agricultural practices and sustainable livelihood: A thematic report. Published by: Nagaland Empowerment of People through Economic Development (NEPED) & Members of the Project Operations Unit (POU) NEPED Department of Planning and Coordination, Government of Nagaland, Nagaland, Kohima 797 001.
- Niggli U, Fliessbach A, Hepperly P, and N Scialabba (2009). Low greenhouse gas agriculture: mitigation and adaptation potential of sustainable farming systems. FAO, April 2009,
- Rathore SS, Karunakaran K, and B Prakash (2010). Alder based farming system a traditional practices in Nagaland for amelioration of shifting land. *Indian Journal of Traditional Knowledge*. 9: 677-680.
- Swaminathan C, Swaminathan V, and K Vijaylakshmi (2007). Panchagavya–Boon to organic farming. International Book Distributing Co. Lucknow (UP).