REVIEW ARTICLE

SWOT Analysis of Organic Farming with Special Reference to Nagaland

Nchumthung Murry

10.18805/ag.D-4974

Abstract

In India, the north-eastern state of Sikkim achieved its goal of converting to 100% organic farming. Other states, including Nagaland, Mizoram, Goa, Kerala, and Meghalaya, have also declared their intentions to shift to fully organic cultivation. Nagaland farmers rely heavily on traditional knowledge which advocates the use of commonly available organic materials such as cattle manure, leaf litter, and crop residues for the enrichment of soil. These attributes put the region in a rather comfortable position to convert to fully organic agricultural production without major shifts in the prevailing farming paradigm. Studies has shown that there are inherent advantages for adoption and conversion of farming in Nagaland as the state has very less and negligible use of the chemical in farming as well as the traditional system of farming model suits the principle of organic farming. It is noteworthy to point out the long age traditional shifting cultivation without the use of chemical although has negative externalities but has a scope to reinvent this model in a more sustainable mode of farming. Nagaland has rich biodiversity and is gradually making its entry into the organic farming market. Nagaland has the potential for promotion of organic farming as farmers have been practicing a traditional system of agricultural without the use of external inputs since its inception. Another farming practices adopted in Nagaland is the Alder based farming system and the Zabo arming system, which has shown significantly self-sustaining based on natural input management.

Keywords: Organic farming, Traditional knowledge, Shifting cultivation, Zabo farming.

Agricultural Reviews (2019)

Introduction

Organic farming is socially acceptable, economically sound, and environmentally benign than conventional agriculture. Organic farming favors animal welfare preserves biodiversity (Rahmann, 2011), and reduces resource consumption. It also emphasizes sustainability in theory and practice and has attracted many environmentalists and health-conscious consumers. 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). The rising number of organic consumers, in turn, has triggered further growth of organic agricultural land and the organic market (Seufert *et al.* 2012). Nagaland State is a hilly state endowed with rich forest and biodiversity with favorable agro-climatic conditions varying from sub-tropical to temperate. It is an agrarian State with over 71% of its population dependent on agriculture and its allied sectors. In another recent estimate, it is reported that land under shifting cultivation is covering an area of 7,000 km^2 out of the total state geographical area of 16,579 km^2 Rathore *et al.,* 2010). In order to bring agriculture development sustainably, it is necessary to utilize its diverse and rich available resources and locally suitable modern technologies to achieve the goal of self-sufficiency and food security in the state. Organic manures not only as a source of nutrients but also increase biodiversity and activity of the microbial population in the soil, influence nutrients turnover and many other related physiological, chemical and biological processes of the soil (Kennedy and Papendick, 1995). The dual advantage of organic farming being the positive effects on the environment as well as to make the farmer self-sufficient as far as his requirements regarding agro-inputs is concerned (Prasad and Gill, 2009) that too at a reduced price or attractive source of rural income generation (Reddy, 2010 and Shukla *et al*., 2013). The cultures and traditions of different tribes in the state are reflected in farming. The knowledge inherited by the tribal people for farm management which is the product of over centuries of experience, skill, and information being threatened at this age of globalization. It revealed that the traditional knowledge is deteriorating at an alarming rate due to the impact of globalization (Keneikhoto and Lanusosang, 2013). To meet the challenges achieving self-sufficiency and food security,

School of Agriculture and Rural Development, SASRD, Nagaland University

Corresponding Author: Nchumthung Murry, School of Agriculture and Rural Development, SASRD, Nagaland University, Email: nch.murry@gmail.com

How to cite this article: Murry N. (2019). SWOT Analysis of Organic Farming with Special Reference to Nagaland. Agricultural Reviews, 40(3): 243-246.

Source of support: Nil

Conflict of interest: There is no conflicts of interest associated with this publication.

Author statement: This manuscript has not been published or submitted in any other journal.

Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.

Submitted: 21-06-2019 **Accepted:** 12-09-2019 **Published:** 25-09-2019

it must to adopt sustainability approaches of farming in the state by harnessing, conserving and developing degraded natural resources such as forest, soil, vegetative cover, and water.

Concept and Need of organic farming in Nagaland

The scientists have realized that the 'green revolution' with high input use has reached a plateau and is now sustained with diminishing return of falling dividends. Thus, a natural balance needs to be maintained at all cost for the existence of life and property. The essential concept remains the same, i.e., to go back to the arms of nature and take up organic farming to restore the loss. The organic farming approach involves, conversion of land from conventional management to organic management, management biodiversity and sustainability of the system, crop production with use of alternative sources of nutrients such as crop rotation, residue management, organic manures are biological inputs, maintenance of livestock, (Sowmya, 2014). Use of organic source of nutrients like *Sesbania aculeata* @ 6.25 t/ha and Azotobacter @ 20 g/kg seed significantly recorded maximum no of grains/ panicle, no of panicles and grain yield, giving highest gross and net return (Ovung and Sarkar, 2013). Organic agriculture is productive and sustainable it, improve food security by diversifying on-farm crop and livestock operations, which diversifies income sources, and improves variety in diets (Wani *et al*., 2013). 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). Naga farmers adopt an age-old traditional cultivation system called shifting cultivation, where land is selected for cultivation for one or two years and thereafter left it abandoned for several years. About 73% of the people in Nagaland are dependent on agriculture and most of them are involved in shifting cultivation. It is a known fact that shifting cultivation has a negative impact on soil health and ecosystem. 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).

Organic farming is possible partially, more specifically crops having high export potential in International markets and will become less relevant in the future (Swaminathan *et al.,* 2007). Organic farming is being treated as a measure to restore the sustainability of agricultural production and maintaining environmental quality at the same time (Hazarika 2013). Organic farming is growing rapidly among Indian farmers and entrepreneurs, especially in low productivity areas, rain-fed zones, hilly areas and the north-eastern states where fertilizer consumption is less than 25 kg/ha/year (Mitra and Devi, 2016). In rainfed areas, particularly north-eastern regions where least or no utilization of chemical inputs due to poor resources provides considerable opportunity for promotion of organic farming thereby reflecting, its vast but unexplored scope. However, significant barriers like yield reduction, soil fertility enhancement, integration of livestock, marketing and policy, etc., arise at both macroscopic and microscopic levels. As of 2019, approximately 70,000,000 hectares (170,000,000 acres) worldwide were farmed organically, representing approximately 1.4% of total world farmland. While in developed countries, organic systems on average produce 92% of the yield produced by conventional agriculture, organic systems produce 80% more than conventional farms in developing countries, because the materials needed for organic farming are more accessible than synthetic farming materials to farmers in some poor countries, (Badgley *et al*., 2007). India experienced good growth in the organic business sector, with exports reportedly growing between 25 and 30% and domestic markets growing at about 40% (Hill, 2016).

SWOT Analysis of Organic Farming in Nagaland

SWOT analysis is a strategic planning method used to evaluate the Strengths, Weaknesses, Opportunities, and Threats involved in any venture. SWOT analysis, on the prospect of organic farming with special reference to Nagaland are discussed:

Strengths

Organic farming ensures environmental sustainability and sustainable agriculture with respect to health, soil, environment and wealth. As organic farming devoid of chemicals results in safe environment preservation of biodiversity in the form of soil microorganisms, flora and fauna and different beneficial insects.

Organic farming results in nutritive food and food security by enhancing the production and productivity of the natural system.

The vast majority of farmers agree that the principles of organic farming and strong political will as well, which is viewed as a strength for the promotion of organic farming in the state.

Organic farming is felt to be compatible with the local farming knowledge, which suggests the greater likelihood of Nagaland farmers to accept the idea and promotion of organic farming without marked changes in the traditional farming practices.

Reduces risk of exposure to harmful pesticides as organic farming avoid use of agro chemical pesticide and fertilizers.

Farmers fetch a premium price for organic produce, and the price of recovery of organic agricultural products is higher than conventional farming.

Philosophy of organic farming aligns to traditional farming practiced of farmers. Here, Preservation of traditional varieties/species and conserve local crops which are common for farmers in their localities.

Weaknesses

Lack of regulated markets for organic products which ensure premium price for organic produce as well as registration and certification process which the small and marginal farmers find it burdensome.

Lack of awareness about benefits of organic farming like nutritive food, premium price, soil health, conservation of biodiversity, pollution free environment as comparison to conventional farming practices.

Weak government policy support regarding financial help and reward to farmers which practiced organic farming and less incentives from Government, are clear signs of the infancy of organic farming in Nagaland.

Lack of research and development on promotion of organic farming. Extensive research in organic farming by central organizations/NGOs and state agricultural universities are still lacking.

Lack of strategy for the development of organic market and consumer and producer association. Limited technical expertise for training to farmers about the techniques of organic farming.

Limited availability and supply chain inputs for organic products such as manures, biopesticides, bio-fertilizers.

Lack of quality planting materials like hybrids and varieties for cultivation in organic farming.

Opportunities

The scope for marketing organic food in India and in Nagaland has immense potential. The growing market potential for the organic product both in domestic as well as in international market. Nagaland has the potential high export earnings or premium prices for organic produce through proper certification and maintaining the quality parameters of organic produces.

Nagaland has many opportunities in organic farming primarily due to growing interest and awareness in organic agriculture and an increasingly regional and global organic market.

It is possible to define location-specific and ecological zones, where organic farming practices can be undertaken in the state, as the state has a large area of virgin soil devoid of chemicals and natural resources.

Organic farming has a better position to achieve food self-sufficiency and security in the state. This is because Organic farming is diversified, robust, and low cost due to the exclusion of external inputs and energy.

Nagaland has high biomass potential to build up soil fertility through various organic practices like green manure, organic manures, crop rotation, bio-fertilizers and incorporation of crop residues in the field, etc. Organic farming will provide an opportunity to boost sustainable use of natural resources and curb dependence on food and input imports.

As the state has low-level inorganic chemicals use, which is lowest among the state of India, conversion of farmland into organic production farm is much more comfortable.

Organic farming provides a better opportunity to address unemployment for Nagaland. There is an employment generation by establishing production units of inputs in organic farming such as manures, vermin composting, bio-fertilizers and bio-pesticides, etc.

Threats

Although organic farming are said to be better adapted and resilient to climate change, the extreme weather and seasonal variations in weather events such as drought, flood, and soil erosion are expected to pose serious threats to traditional methods of crop production, which are feared to compromise food self-sufficiency in the long run.

Organic sources of nutrients promote the profuse proliferation of weeds that compete with the plants for different nutrients, space, light, water, etc. On the other hand, herbicides cannot be used in organic farming, and thus economic weed control remains a challenge in organic farming.

Limited sources of organic manures and fertilizers and their likely decline. Decreasing trends of all organic sources due to decreasing number of livestock and forest area in the state.

Increasing incidences of pests and diseases and availability of organic sources could be the biggest threats. Pest attack and disease outbreaks are important treats, which continue as a constant challenge.

Local or farm renewable organic resources like neem cakes, groundnut cakes, cow dung, earthworms, etc. are becoming costlier day by day than the conventional or industrially produced chemical fertilizers & pesticides. Chemical fertilizers are easier to purchase, given the farmer has purchasing power.

Strategies for the promotion of organic farming in Nagaland

On the basis of the findings from the study on the prospect and scope of organic farming in Nagaland, the following strategies needed to be implemented for the promotion of organic farming in the state:

Quality organic seeds production by strengthening of State seed farms, adoption of seed villages and also procure high yielding varieties from NSC/SFC. Organic Seed Banks should be opened.

Adoption of suitable soil and water conservation practices like terracing, mulching, cover cropping, in–situ residue management and restoration of degraded lands for soil moisture conservation and improved C-sequestration, for improving soil health and soil moisture.

Strengthening of post harvest management by adoption of cool transport chain, pre-cooling units, packing houses, storage unit *etc.* for minimizing the post-harvest losses.

Organic farming systems should be identified for each agro-climatic region, scientifically analyzed and recommend organic package of practices.

Integrated farming systems model with need-based crop diversification like poultry, piggery, fishery, beekeeping and suitable cropping for soil and moisture conservation and nutrient recycling.

Rain water harvesting both *in-situ* and ex-situ for insuring year-round availability of water for crop production. Adoption of conservation irrigation practices like drip, sprinklers, etc. must be employed.

Extension for sustainable agriculture system should, therefore, emphasize helping individual farmers critically assess their situations and promote local corporation and coordination of common resources. Effective transfer and adoption of appropriate technology through extension services such as training and demonstrations etc.

Acknowledgment/Funding

The Authors heartily express gratitude and thankfulness to the School of Agricultural Sciences and Rural Development (SASRD), Nagaland University for providing all necessary facilities during the course of the research. The authors also indebted to all the participants covered under the study for providing those valuable data and information.

Conclusion

Agriculture imposes negative externalities upon society through, biodiversity loss, erosion, pesticides, nutrient runoff, subsidized water usage, subsidy payments, and other problems. Organic farming offers advantages in sustainability, self-sufficiency, health, food security, and food safety. To bring agriculture development in a sustainable manner, it is necessary to utilize its diverse and rich available resources and locally suitable modern technologies to achieve the goal of self-sufficiency and food security in the state.

References

Badgley, C., Moghtader, J., Quintero, E., Zakem, E., Chappell, M.J., Avilés K., Samulon, A., Perfecto, I., 2007. Organic agriculture and the global food supply. *Renewable Agriculture and Food Systems* 22(2), 86.

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., Bordoloi, L.J., 2013. Organic Farming: reality and concerns. *Indian Journal of Hill Farming* 26(2), 88-97.

Hill, J.K.W., 2016. Organic Agriculture in India and Participatory Guarantee Systems: A Case Study From West Bengal. Jharkhand Journal of Development and Management Studies 14, 7037-7055.

Keneikhoto, Y., Lanusosang, T. 2013. Globalisation and its Impact on Agriculture: an Overview of Kohima District, Nagaland, India. International Journal of Bio-Resource & Stress Management 4(4), 651-654.

Kennedy, A.C., Papendick, R.I., 1995. Microbial characteristics of soil quality. *Journal of Soil and Water Conservation* 50(3), 243-248.

Niggli, U., Fliessbach, A., Hepperly, P., Scialabba, N., 2009. Low greenhouse gas agriculture: mitigation and adaptation potential of sustainable farming systems. FAO, April 2009.

Ovung, Z., Sarkar, N.C., 2013. Effect of Biofertilizer on Productivity of Upland Rice (Oryza sativa L.) in Nagaland, India. *International Journal of Bio-Resource & Stress Management* 4(1), 23-27.

Prasad, K., Gill, M.S., 2009. Developments and strategies perspective for organic farming in India. Indian Journal of Agronomy 54(2), 186-192.

Rahmann, G., 2011. Biodiversity and organic farming: what do we know?. Landbauforschung Volkenrode 61(3), 189–208.

Rathore, S.S., Karunakaran, K., Prakash, B., 2010 Alder based farming system a traditional practices in Nagaland for amelioration of shifting land. *Indian Journal of Traditional Knowledge* 9, 677-680.

Reddy, B.S., 2010. Organic farming: status, issues and prospects – a review. Agriculture Economic Research Revision 23:343-358.

Rukuosietuo, K., Dibyendu, C., Bidyut, C., Rakesh, K., Merasenla, A., Konsam, V., 2014. Shifting Cultivation: An 'Organic Like' Farming in Nagaland. Indian Journal of Hill Farming 27(2), 23-28.

Sartaj, A.W., Muneeb, A., Sheikh, M., Bilal, A.P., Subhash, C., 2017. Organic farming: Present status, scope and prospects in northern India. Journal of Applied and Natural Science 9(4) 2272 –2279.

Seufert, V., Ramankutty, N., Foley, J.A., 2012. Comparing the yields of organic and conventional agriculture. Nature 484(7397), 229–232.

Shukla, U.N., Manju, L.M., Bairwa K.C., 2013. Organic Farming: Current Status in India Popular Kheti, 1(1) 4.

Sowmya, K.S., 2014. Organic farming- scope in india. Global Journal of Advance Research 1(2), 101-102.

Wani, S.A., Chand, S., Najar, G.R., Teli, M.A., 2013. Organic Farming: As a Climate Change Adaptation and Mitigation Strategy. Current Agriculture Research Journal 1(1), 45-50.