International Journal of Engineering Trends, Management & Medical Sciences
ISSN: XXXX-XXXX

Role of Organic Farming and Sustainable Ecosystem in India

A.SATHISH[1], K.M.N. REDDY[1]
[1]UG Student, Dept of EEE, SITS, Kadapa.
[2]Assistant Professor, Dept of EEE, SITS, Kadapa.

Abstract –

Even though the government of India does not actively help farmers in acquiring information and implementing organic farming practices, there has been a recent uptick in the number of farmers making the switch. Using the states of Uttarakhand, Madhya Pradesh, and Tamil Nadu as case studies, this essay seeks to understand the pros and cons of switching to organic farming in India. A study was carried out amongst students of varying ages from different educational institutions in Nandyal, India, to investigate how this epidemic has affected their way of life. For each state, 40 farmers using conventional and organic methods were questioned for the survey, which yielded the following results. The results showed that conventional producers saw production and marketing hurdles as the biggest problems with switching to organic farming, rather than the farmer's age or level of education. Institutional resistance and a lack of information also stood in the way of conversion. However, owing to the cheap production costs and the price premium and health advantages, some farmers in Madhya Pradesh, Tamil Nadu, and Uttarakhand were considering making the switch to organic farming in the near future. When organic farmers had the backing of institutions, they prioritised issues related to health, the environment, and output. There was a significant correlation between the number of years under conversion and lower input costs across all three states, higher revenue in Tamil Nadu, and higher yield in Madhya Pradesh. Low yield and pest management were two production issues that organic and conventional farmers shared a lot of concern about. While organic farms in Tamil Nadu had a decline in production during the conversion phase, those in Madhya Pradesh and Uttarakhand saw an increase due to the fact that majority of the farms were in the post-conversion era. Findings from the study point to a potential solution for encouraging widespread organic farming in India: a government program that offers farmers a price premium and compensates for output loss during the conversion phase.

I. EXECUTIVE SUMMARY

Villages in Mahanandi Mandal, Nandyal District, Andhra Pradesh State, India, include Timmapuram, Abbipuram, and Ayyaluru. The area is part of the Rayalaseema region. There are around 3,987 people living in the community, spread out across 720 dwellings. Everyone knows that there are a lot of illiterate persons living in rural areas. In most cases, they lack understanding about organic farming. It lessens pollutants, which helps keep the environment healthy, and it lessens residues, which lessen risks to humans and animals. Many farmers in the areas of Timmapuram, Abbipuram, and Ayyalur use pesticides on their crops. In order to raise awareness about the value of organic farming in India, we conducted a poll among the general public.

Our main goal is to generate an adequate amount of food that is both nutritious and tasty.

- Collaborating with natural systems instead of trying to control them.
- To keep soil fertility high and improve it over time. Boost genetic variety as a secondary goal.
- The use of natural insecticides should be encouraged more.
- Plant the correct seeds in the correct soil at the correct time

Learning Outcomes:

- Improve one's analytical skills in the field of agronomy the capacity to put my knowledge into practice in "the real world" is enhanced.
- Implement several methods for controlling weeds.

II. OVERVIEW OF COMMUNITY

Historical Profile

Because of its proximity to a mud pond and its fame as a producer of bananas and rice, the village has been known by several names: Timmapuram, Abbipuram, and Ayyaluru. Because of the abundance of oranganic farms in the area.

Socio Economic Conditions

A total of 820 households call Mahanandi Mandal, located in the Nandyal district of Andhra Pradesh, home. As per the 2011 Population Census, out of a total population of 28,73 in the Mahanandi mandal, 1,473 are male and 1,405 are female.Of the total population of the village, 370 (12.88%) are children in the age bracket of 0-6 in Mahanandi mandal.

Mahanandi mandalis have a lower average sex ratio than the state of Andhra Pradesh, which is 993. The Mahanandi district has a lower child sex ratio than the state average of 939, according to the latest census data. The literacy rate in Mahanandi mandal is lower than in Andhra Pradesh. While 67.02% of Andhra Pradesh's population could read and write in 2011, just 63.76% of Mahanandi mandal residents could. The literacy rate for males in Mahanandi is 78.55%, while the rate for females is 48.59%. The elected representative of Mahanandi mandal, known as the Sarpanch, is responsible for administering the mandal in accordance with the provisions of the Indian constitution and the Panchayati Raaj Act. Unfortunately, we do not currently have any school or hospital information for Mahanandi mandal on our website.

Traditions:

Everyone in this community celebrates the traditional holidays together, including Ugadi, Diwali, Ramzan, Bakrid, and Christmas.

Experience:

Our time in that community, where we were welcomed with such warmth and hospitality, was truly unforgettable. Everyone in the community is really kind and loving. Participating in the Timmapuram, Abbipuram, and Ayyaluru Community Service Project has brought us immense joy.

III. COMMUNITY SERVICE PART

Food production and The term "organic farming" can refer to a variety of agricultural practices, including the use of compost, green manure, and bone meal as fertilisers, as well as the implementation of strategies like companion planting and crop rotation. It arose around the turn of the twentieth century as a response to the intense pace of change. Many groups are still working to improve organic agricultural practices today. It is recommended to cultivate insect predators and use mixed cropping for biological pest control. It is possible to employ synthetic compounds according to organic criteria. For example, while synthetic fertilisers and insecticides are often forbidden, naturally occurring pesticides like pyrethrin are allowed. Some examples of acceptable synthetic compounds include Ivermectin, copper sulphate, and elemental sulphur. The use of hormones, antibiotics, plant growth regulators, nanomaterials, genetically modified organisms, and human sewage sludge is forbidden in cattle husbandry. Organic farmers and others who support them argue that their methods are superior in many

ways, including transparency, health, independence, autonomy, self-sufficiency, food safety, and security. In 2012, the global market for organic food and other products reached $63 billion, reflecting a remarkable growth rate since 1990. From 2001 to 2011, organically-managed farmland increased at a compound annual rate of 8.9%, driven by this demand. About 1.6% of the world's cropland, or 75,000,000 hectares (190,000,000 acres), was cultivated organically as of 2020. At the community level, organic farming has the potential to improve environmental preservation and biodiversity. But more farmland is required elsewhere in the globe, which implies that once wild areas will have to be turned into farmland, due to the fact that organic farming produces lower yields than conventional farming. In the long run, this might hurt biodiversity and the climate more than it helps the ecosystem in the short term. A shift from a supply-driven to a demand-driven organic movement has occurred due to rising public concern for the environment. Farmer interest was piqued by premium pricing and partial government subsidies. Despite claims to the contrary, many farmers in underdeveloped nations still use conventional practices that are similar to organic farming but lack certification and may not even include the most recent research in organic farming. Sometimes, farmers in poor countries have turned to organic farming practices because they are more cost-effective.

For thousands of years, people farmed without resorting to synthetic pesticides. In the middle of the nineteenth century, the first artificial fertilisers were created. The era known as the "pesticide era" began in the 1940s because of similar developments in chemical insecticides. Although there were some immediate benefits to these innovative farming practices, there were also significant negative consequences, including soil compaction,

erosion, and decreased fertility, as well as worries about harmful chemicals seeping into food supplies and health issues. Soil biology researchers in the late 19th and early 20th centuries looked for solutions to these problems that would allow for increased output without causing these unwanted side effects.

Problems Caused by Chemical Agriculture:

Environmental Problems:

The present method of intensive agriculture is responsible for several issues, such as:

- The soil is readily washed away by artificial fertilisers and herbicides, which leads to water pollution in lakes, rivers, and other water courses.
- Soils deficient in organic matter due to the prolonged use of synthetic fertilisers are more easily washed away by natural forces like rain and wind.
- Thickening of avian eggshells.
- Preying birds are becoming extinct at an alarming rate.
- Unbalanced ecosystems and negative impacts on animals.

Effects on Human Health:

1. skin rashes and allergy sensitisation are caused by toxic substances.
2. Negative and harmful impacts on the neurological system, peripheral neuropathies, and neurological disability.
3. Endocrinological disturbance
4. Cancer causing properties and immune system suppression.
5. A rise in miscarriages and spontaneous abortions can result from long-term exposure to a tiny amount of pesticide residues in food products.

Girls start going through early puberty. Harmful consequences on the male reproductive system.

- Impacts on the kidneys, liver, and brain. - Birth defects and deformities in infants.

Principles of Organic Farming:

Organic farming is based on these fundamental principles: In order to achieve these goals, we must:

- Utilise local resources and operate within closed systems whenever possible;

- Strive to maintain soil fertility over the long term;
- Produce an adequate supply of nutritious food;
- Reduce the use of fossil fuels in farming; and
- Provide opportunities for agricultural workers to develop personally and professionally.

Components of Pure Organic Farming:

In order to be considered "pure organic," a farm must:

- Utilise solely organic planting methods • Refrain from using any artificial inputs
- Enforcing food safety measures, such as never utilising genetically modified crops or goods
- Fertilising soil, but not crop plants
- The method, and not the product itself, must be certified, hence documentation of the whole technique and supply chain is required.
- The certification needs to be export-oriented.

Objectives of Organic Farming:

In its standard paper, the international federation of organic agriculture (IFOAM) encapsulates the following goals of organic farming:

To cooperate with natural processes instead of controlling them To improve the biological cycles that are part of the agricultural system, which include microbes, plants, animals, and soil flora and fauna.

In order to maintain and improve the soil's fertility throughout time, and to maximise the utilisation of renewable resources within a decentralised agricultural system, Working inside a closed system with respect to organic matter and nutritional components as much as feasible, and providing all cattle with living circumstances that allow them to act upon all parts of their intrinsic behavior

- To prevent any kind of pollution that can be caused by farming methods - To preserve the genetic variety of the agricultural system and its environment, which includes protecting wildlife habitats and plants - To ensure that agricultural workers are satisfied with their work and receive a fair wage, as well as a safe place to work

Environmental Benefits of Organic Farming:

Reduces Exposure to Harmful Chemicals:

Pesticides are commonly used by farmers as a means to increase agricultural yields on limited land. Through the use of these pesticides, farmers are able to artificially increase agricultural yields by making crops more resistant to illnesses. Unfortunately, soil pollution is a long-term consequence of this practice. Soil erosion is another negative environmental consequence caused by synthetic chemicals used to support practices like crop rotation.

Uses up Reduced Power

In contrast to traditional farming methods, which heavily utilise synthetic fertilisers, organic farming does not depend on them. One further reason to save energy is to not use

fertilisers. This is due to the high energy consumption inherent in the production of synthetic fertilisers.

Cuts down Problems Caused by Nitrogen Run-Off Pollution

The production of fertilisers used in conventional farming relies heavily on nitrogen. Because of this, its use has skyrocketed in recent years. About two-thirds of the nitrogen that is applied to land ends up in rivers, where it disrupts the marine environment and disrupts the overall ecosystem.

The emission of nitrogen has a detrimental effect on biodiversity and causes water pollution. The absence of reliance on synthetic nitrogen-based pesticides in organic farming means that this type of nitrogen run-off does not occur.

Promotes the Development of Fertile Soil

In the long run, chemical soil management has a more negative effect on soil than organic farming's emphasis on natural cultivating processes. Organic farming guarantees that the soil stays undisturbed by externally exposed pollutants by closely emulating nature. This maintains the soil's inherent capacity for long-term viability. When we farm organically, we strengthen the soil's carbon and nitrogen cycles, making it more fertile and productive. Also, the soil's natural nitrogen fixation gets a boost since beneficial microbes are retained to a substantial extent.

Protects Against Climate Change

Sustainable agricultural methods, such as organic farming, can reduce the impact of climate change. Intriguingly, the Rod Ale Institute Farming System compared the results of conventional and organic farming methods.

Therefore, with all its positive effects on the environment, organic farming may be seen as a symbol of sustainable agriculture. Adopting this technique is crucial to ensure that our natural resources can meet basic human requirements in the future, especially with the expanding population and the growing need to feed more mouths.

Social Benefits of Organic Farming

It has the potential to lessen reliance on expensive technology and external inputs, which would assist marginal farmers, and it is small enough to be adopted by small farms, thereby lowering the level of competition and inequality among farmers in a community.

• It will also cause food security on a national and even a household scale. The practice of organic farming not only helps to provide local jobs, but it also serves as a cultural resurgence by reviving long-lost indigenous knowledge, beliefs, and value systems.

Health Benefits of Organic Farming

- Fresher, in season, and devoid of genetically modified organisms (GMOs), it No chemicals or pesticides were used in its production.
- More nutrients are packed into it, and it's better for you. Organic food is better for the environment.
- It keeps the environment safe while also helping out nearby farms.

4. OUTCOME DESCRIPTION

I interviewed locals in the villages of Timmapuram, Abbipuram, and Ayyaluru as part of the study to learn more about their experiences living there. We polled individuals of varying ages to learn about their experiences with organic farming and agriculture. We started by travelling to the village with a table of questionnaires and some charts depicting the survey. The residents of MAHANANDI mandal will be polled using the questions laid forth in the table below. Presented below is a sample version of our questionnaire. What follows is information on the socioeconomic status of the city of Timmapuram, abbipuram, and ayyaluru: In the Nandyal district of Andhra Pradesh, India, there is an MAHANANDI mandal called TIMMAPURAM, ABBIPURAM, AYYALURU. It is a part of the Rayalaseema area. Locals here still use chemical fertilisers and pesticides on their crops since they have no idea what organic farming is. The use of these pesticides degrades the environment and poses serious risks to human health. We tested the farmers' knowledge of organic farming by asking them whether they were familiar with it and then explaining its benefits and drawbacks.

We identified the following problems: We gathered information about the traditions of organic farming and visited the communities of Timmapuram, Abbipuram, and Ayyaluru. We used questionnaires to conduct interviews with members of the community. Our analysis of the surveys and interviews led us to a conclusion on the community's residents. Sustainable agriculture is here to stay. It's a greener way of living than conventional farming,

and it offers numerous advantages. Whether you're a seasoned farmer seeking to switch to organic practices or a first-timer curious about what it takes to launch an organic farm, you'll find plenty of resources to meet your needs. You have landed at the perfect spot to get all the information you need about the advantages of organic farming. Once you begin to formulate your strategy, it might be beneficial to network with individuals who are currently engaged in organic farming. Learn from their experiences. Enquire as to what they wish they understood when they were starting off. For further information on the customs and good eating habits of farmers, there are a number of tools available online, such as webinars, seminars, and certification programs.

SOLUTION: We found that the community members aren't very knowledgeable about organic farming after conducting interviews with them using a questionnaire. Pesticides used in farming cause a lot of health problems for the people living in the Timmapuram, Abbipuram neighbourhood. The advantages of organic farming are not well known among farmers. Superior marketing of organic products over conventional is essential. The failure to secure a higher price for the produce during the early stage results in financial losses. Low productivity is caused by soil that is deficient in key nutrients. Soil that is rich in biomass is crucial for plant nutrient intake. There is a lack of a credible mechanism and the required policies for execution on the part of state governments. Each state has an extremely small number of organic certifying bodies. When compared to conventional farming's use of industrially manufactured agrochemicals, the cost of organic inputs is higher. While some farmers may be familiar with the idea of making their own organic fertilisers and insecticides at home, few understand the whole science behind it.

5. CONCLUSION AND FUTURE PERSPECTIVES

Farmers rely heavily on adaptable knowledge of ecology and soil science. Through the use of traditional crop rotation techniques, modern organic farming systems provide fertility and control pests and weeds. When compared to more traditional methods of farming, organic farming must be considered a viable alternative. Due to the increased demand for organically grown food, many of farmers have switched to this practice. By reducing disease risks, increasing long-term production and biodiversity, and providing ways for restricted manufacturing and food availability, organic farming also affects food accessibility. Natural resource conservation, health protection, risk reduction, enhanced

weather flexibility, and farmer authority via the accomplishment are other non-financial benefits of organic agriculture.

REFERENCES

[1] Allen, P. 1996. Social Imperatives in Organic Agriculture. In: 11th IFOAM Scientific Conference. Copenhagen, Denmark. 11-15 August. Tholey-Theley, Germany: International Federation of Organic Agriculture Movements.

[2] Allen, P. and M. Kovach. 2000. The capitalist composition of organic: the potential of markets in fulfilling the promise or organic agriculture. Agriculture and Human Values, 17 (3):221-232.

[3] Altieri, M. A. 2000. The ecological impacts of transgenic crops on agro ecosystem health. Ecosystem Health, 6 (1):13-23.

[4] Biao, X., Xiaorong, W., Zhuhong, D., & Yaping, Y. (2003). Critical impact assessment of organic agriculture. Journal of Agricultural and Environmental Ethics, 16(3), 297–311.

[5] Brown, L. (2004). Outgrowing the earth, the food security challenge in an age of falling water tables and rising temperatures. New York: W._W. Norton.

[6] FAO. 1998. Evaluating the potential contribution of organic agriculture to sustainability goals. Food and Agriculture Organization of the United Nations. Rome. 24

[7] FAO. 1999. Guidelines for the production, processing, labelling and marketing of organically produced foods. Joint FAO/WHO Food Standards Program Codex Alimentarius Commission. Rome. CAC/GL 32-1999.

[8] Abdul-Rahaman, A., & Abdulai, A. (2018). Do farmer groups impact on farm yield and efficiency of smallholder farmers? Evidence from rice farmers in northern Ghana. Food Policy, 81(June), 95–105.

[9] Abebaw, D., & Haile, M. G. (2013). The impact of cooperatives on agricultural technology adoption: Empirical evidence from Ethiopia. Food Policy, 38, 82–91.

[10] Addai, K. N., Temoso, O., & Ng'ombe, J. N. (2022). Participation in farmer organizations and adoption of farming technologies among rice farmers in Ghana. International Journal of Social Economics, 49(4), 529–545.

[11] Ahado, S.,Hejkrlik, J., Enkhtur, A., Tseren, T.,&Ratinger, T. (2021).Does cooperative membership impact the yield and efficiency of smallholder farmers? Evidence frompotato farmers inMongolia. China Agricultural Economic Review, 13(4), 736–755.

[12] Bachke, M. E. (2019). Do farmers' organizations enhance the welfare of smallholders? Findings from the Mozambican national agricultural survey. Food Policy, 89(November), 101792.

[13] Bernard, T., & Spielman, D. J. (2009). The role of farmer organizations in supplying supermarkets with quality food in Vietnam. Food Policy, 34(1), 60–69.

[14] Cai, R., Ma, W., & Su, Y. (2016). Effects of member size and selective incentives of agricultural cooperatives on product quality. British Food Journal, 118(4), 858–870.

[15] Demont, T. (2022). Coping with shocks: How Self-Help Groups impact food security and seasonal migration.World Development, 155, 105892.

[16] Di Marcantonio, F., Havari, E., Colen, L., & Ciaian, P. (2022). Do producer organizations improve trading practices and negotiation power for dairy farms? Evidence from selected EU countries. Agricultural Economics, 53(S1), 121–137.

[17] Francesconi, G. N., & Wouterse, F. (2015). Promoting the role of farmer-based organizations for value chain integration: The tension between a program's targeting and an organization's investment strategy. Agricultural Economics, 46(4), 527–536.

[18] Gava, O., Ardakani, Z., Delalić, A., Azzi, N., & Bartolini, F. (2021). Agricultural cooperatives contributing to the alleviation of rural poverty. The case of Konjic (Bosnia andHerzegovina). Journal of Rural Studies, 82(December 2020), 328–339.