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Women in Natural and Organic Farming: ICAR-CIWA Initiatives

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FIGURE 1: (Woman transplanting rice (Image Courtesy:greengrants.org, 2013)

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SUMMARY

Natural farming follows the application of traditional knowledge which is chemical free for sustainability of agriculture. It is also known as Bharatiya Prakritik Krishi Paddhati Programme (BPKP). Mostly, compost, vermi-compost, cow dung manure, etc. are used here as organic fertilizer and manures. The natural farming has better impact on soil, air, water, etc. which ensures safe environment and safe food. By realizing the importance of natural and organic farming, ICAR-CIWA, Bhubaneswar had sensitized the selected farm women in Puri district of Odisha about utilization of farm bi-products, use of green manure and vermi-compost, etc. For the reason, enhanced the capacity of farm women in production of vermi-compost to use in farm lands, cultivation of mushroom by using paddy straw (paddy bi-product) for family nutrition and economic security and also growing azolla in indigenous earthen pots to feed backyard poultry for reducing feed cost. Nevertheless, the challenges are many in natural farming. However, it's need is badly felt by the researchers for healthy maintenance of farm lands as well as environment.

INTRODUCTION

Natural farming is a sustainable farming practice through the application of ancient Indian knowledge. It is also known as Bharatiya Prakritik Krishi Paddhati Programme (BPKP). It is known by various names like; Zero Budget Natural Farming, Prakrithik Krishi, Cow Based Natural Farming, Shashwat Kheti, Chemical Free Agriculture, etc. BPKP is aimed at promoting traditional indigenous practices by reducing externally purchased inputs. It relates to the best practices of organic farming, sustainable agriculture, agroecology, etc. In the long run, this aims to reduce dependence on external inputs, thereby contributing to the autonomy of food producing families and communities. In natural farming, neither chemical nor organic fertilizers are added to the soil. Rather, organic fertilizers and manures like compost, vermin-compost, cow dung manure, etc. are used to farmlands. Zero Budget Natural Farming (ZBNF) is a set of farming methods which has taken the shape of a grassroots peasant movement in India. Natural farming follows the principle of health of soil, plant, animal, human and planet. The method involves mulching, intercropping and the use of several formulations which include cow dung. In this system, cows play an important role in village economy and high socio-economic value. The formulations made from cow dung generated on-site are central to the practice, and said to promote microbial and earthworm activity in the soil. The efficient microbes to soils can enhance the carbon content of the soil, thus soil regeneration can be accelerated beyond the typical rates seen in nature. States that 95% of the bio-fertility of soils is about these microbial processes, not the actual nutrient content in the soil or how much we put as fertilizer. To access the nutrients, plants are dependent on the growth of soil microbes such as bacteria and fungi, which possess the metabolic machinery to depolymerize and mineralize organic forms of N, P, and S.

Commencement of natural farming

Lord Northbourne coined to the term 'organic farming'. The Ministry of Agriculture and Farmers Welfare (MoAFW) is implementing 'Bhartiya Prakritik Krishi Padhati' (BPKP) as a new sub-mission under Paramparagat Krishi Vikas Yojna (PKVY). Based on the report of 17th Loksabha Standing Committee on Agriculture (March, 2020). Paramparagat Krishi Vikas Yojna is a sub-component of Soil Health Management scheme under National Mission of Sustainable Agriculture (NMSA). The government has been advocating to reduce chemical fertilizers and to promote organic and natural farming at various forums, including the United Nations convention.

Need for natural farming

- **Reduces the cost of cultivation and gives more profit**

The Economic Survey (2019) emphasized the importance of Zero Budget Natural Farming (ZBNF) as one of the alternative farming practices for improving farmers' income, in the backdrop of declining fertilizer response and farm income.

- **Reduces water requirement of crops**

Supporters claim that organically-managed soil has higher quality and higher water retention.

- **Sustainability of environment (soil, air, water, flora and fauna**

Argued that organically farmed food has a better impact on climate than conventionally farmed food.

- **Livestock sustainability**

Found that many cow dung micro-organisms have shown natural ability to increase soil fertility through phosphate solubilization.

- **Utilising the cattle as a valuable resource**

Cow dung has antifungal substance that inhibits the growth of coprophilous fungi.

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- Reduces risks in farming
- Ensures safe and healthy food and there is improvement of human health
- Rich in nutrients and food security
- Organically grown food tastes better than the mechanically farmed food
- Reduces the subsidy burden
- Have oppertunity of employment generation
- Eliminates application of chemical synthetics
- Low usage of energy

Impacts of natural farming in India

Madhya Pradesh has the highest area under organic agriculture with approximately 1.6 million hectares followed by Rajasthan with over 481 thousand hectares land in 2021. Indian Council of Agricultural Research (ICAR) has also set up a committee to validate the ZBNF results. The concept of ZBNF tested at ICAR- Indian Institute of Farming Systems Research (IIFSR), Modipuram in the rice-wheat system in north India showed reduction in ZBNF yield by up to 40 per cent in the initial years as compared to chemical-based integrated crop management which was undertaken by ICAR-NAARM, Hyderabad in Karnataka and Andhra Pradesh found that ZBNF reduced farming cost, increased farmer's income and had positive ecological and social benefits. Research by CSK Himachal Pradesh Agriculture University, Palampur (2019) indicated that the ZBNF yield of crops increased by up to 22 per cent for crops such as gram, lentil, soybean, black gram and red mash and decreased by up to 2 per cent for crops such as wheat, paddy, ogla and ragi as compared to inorganic farming.

Initiatives by ICAR-CIWA with farm women

ICAR-CIWA focuses on participatory action research involving farm women to attain women perspective in research and development programmes for bringing about a change in socio-economic, institutional, policy and natural environment. As there will be continuous rise in participation of women in agriculture, this institute aims to achieve the twin objectives of women empowerment and sustainable agricultural growth. Under the umbrella of Swachh Bharat Mission, ICAR-CIWA has been sensitizing the farm women about utilization of farm bi-products, recycling of waste, use of green manure and vermi compost for a healthy environment. The capacity of farm women was also enhanced through skill trainings and demonstrations in these areas. The farm women of Nuasahi village in Nimapara block of Puri district produce vermi compost to apply in their farm to get chemical free agri-produces. The long-term studies of residue recycling have indicated improvements in the physical, chemical and biological health of soil. Further, with the intervention of CIWA, 200 women (17 WSHGs) are growing mushroom by using the paddy straw as bi-product of paddy. They take leased plot in SHG name for mushroom cultivation and get 10-12 quintals of mushroom per day from a production unit of 75sft x 35 sft space using 3 tire system for which bank has given loan through APICOL. Now, these SHG members are earning Rs.2.40 lakh per month against an investment of Rs.0.72 lakh with a profit of 1.68 lakh. Similarly, about 50 women in Lokapal village in Kanas block of Puri district having been trained by CIWA, grow azolla in indigenous clay pots and feed their backyard poultry birds to reduce feed cost purchased from market. They also use azolla for homestead plants. Additionally, about 500 SC farm women are organized in Jaguleipadar village in Kanas block of Puri district that keep their village clean and make use of the collected wastes for compost production for use in backyard gardens.

Challenges in organic farming

- Biomass required for covering entire cultivated area may fall short. Supplying enough nitrogen and particularly those required at critical stages is a challenge for organic farmers.
- There is disparity between supply and demand of organic product. Organic produce is demand driven which generally comes from metro cities where no farmlands are available.
- More labor intensive for timely intervention and weed control than chemical/mechanical agriculture.
- Organic items are expensive but, many consumers can not afford the price for it.
- Lack of special transportation of the food from field to plate which is produced organically.
- Decline in yields in initial years.
- Lack of scientific data and evidences to convince different stakeholders for its adoption.
- More time consuming for preparation of huge quantity of organic matter and its application.
- Less scope for mechanization as farmers cultivate several crops together as inter-crop or mixed crops.

2019 NAAS report highlighted that studies initiated by the Indian Council of Agriculture Research-Indian Institute of Farming System Research "clearly indicated that yield levels were drastically reduced in rice-wheat cropping system by 59% in wheat and 32% in basmati rice" when tenets of zero-budget natural farming were followed. It further showed a three-year natural farming experiment which showed "a yield decline" in crops tested which "established that food security will be seriously challenged along with farmers' income, if ZBNF [Zero Budget Natural Farming] is adopted". For long term sustainability of cultivated farm lands tenants of natural farming is reported to be implemented judiciously so that there exist a harmony between the nature and human health and we leave a productive sustainable system for our future generations.

CONCLUSION

Awareness should be created among the farming community to adopt organic and natural farming to produce chemical free food grains and to utilize the farm waste/bi-products in a healthy manner to save environment. Capacity of the farmers should be built through skill training and demonstration to generate wealth from farm wastes.

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