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A NEW APPRAISAL**

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Zero Budget Natural Farming: A New Appraisal

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Before 1940's, when the population was smaller than it is today, it was common for farmers throughout the world to grow organic food and yields were similar to that of prehistoric times. However, as the world's population increased, growing organic food was no longer a feasible way to feed the society. This had led to the introduction of intensive technologies including more efficient ways to feed the population that had almost double in size. Fertilizers, mechanized cultivation, pesticides and herbicides helped in producing greater yields for the larger population.

Green Revolution transformed the country from a food-deficit state to self sufficiency during early 1970s. The green revolution promoted use of new and high yielding varieties of crops that depend on agrochemicals to produce higher yield. Indian farmers increasingly find themselves in a vicious cycle of debt, because of the high production costs, high interest rates for credit, the volatile market prices of crops, the rising costs of fossil fuel based inputs and private seeds. The consequences of green revolution were reviewed and found that it has led to reduced genetic diversity,

increased vulnerability to pests, enhanced soil erosion, reduced soil fertility, water shortage, micronutrient deficiencies, increased soil contamination, reduced availability of nutritious food crops for the local population. Therefore, an alternative agriculture and agro economical methods could apply which can function in an ecosystem friendly while sustaining and increasing the crop productivity and also concerning about health promotion in the community. Re-orienting conventional agriculture to more productive alternative farming systems has now been of the hour, as has been enunciated by Dr. M. S. Swaminathan, "If agriculture goes wrong nothing else goes right" and "younger people will only join agriculture if it is technologically driven". This will require new approaches and innovations as well as increasing collaboration between various stakeholders in the food system.

On the search for eco-friendly and farmer-friendly alternative systems of farming, Government of India has committed to double farmers' income by 2022 and all efforts are being made to execute the pledge. While the country has been planning to revamp its agricultural production system including R&D to meet this formidable challenge, the economic survey of 2018-19 made fervent appeal for adoption of Zero Budget Natural Farming (ZBNF) in a big way to double farmers' income and it was subsequently endorsed by the Hon'ble Finance Minister during her budget speech in the parliament. The ZBNF has attained wide success in southern India, especially Karnataka where it was firstly evolved. Later, it was promoted by the Government of Andhra Pradesh during the last two decades as Community Managed Sustainable Agriculture (CMSA) or Climate Resilient

Zero Budget Natural Farming (CRZBNF). Now, it is spreading all over India, so rapidly and dynamically.

ZBNF is basically a natural farming technique that uses biological pesticides instead of chemical-based fertilizers. Farmers use earthworms, cow dung, urine, plants, human excreta and such biological fertilizers for crop protection. Four aspects that are integral to ZBNF are:

- ♣ **Beejamrut**, or microbial coating of seeds using cow dung and urine based formulations,
- ♣ **Jeevamrut**, or the application of a concoction made with cow dung, cow urine, jaggery, pulse flour, water and soil to multiply soil microbes,
- ♣ **Acchadana**-Mulching, or applying a layer of organic material to the soil surface in order to prevent water evaporation, and to contribute to soil humus formation and
- ♣ **Whapasa**, or soil aeration through a favourable microclimate in the soil.

These practices have been shown to have a positive effect on the quality of the soil, improving its fertility and water retention capacity. This is likely to reduce reliance on resources such as water and electricity for irrigation. Substituting chemical fertilizers and pesticides with natural inputs might reduce input costs and farmers' exposure to credit risks; the increase in net income will improve the cash flow of poor and vulnerable farmers, and may enhance their ability to deal with economic shocks and the reduced resource-dependence and improved soil quality might then help farmers to adapt better to extreme climate events.

ZBNF falls under a larger tradition of farming in India, called natural farming. There are teachers from other parts of India who promote similar principles but not at the same scale. Organic farming, Biodynamic farming, *Homa Jaivik Krishi*, *Rishi Krishi*, *Panchagavya Krishi*, Natural farming, Permaculture, LEISA farming, Natueco farming, Homa Farming, Yogic farming *etc.* are based on nature and implemented to protect soil and environment degradation, protection from the hazardous side effects of chemical methods, such as magnification, pollution, carcinogenic elements, and food poisoning.