



Revolutionizing Agriculture in India: Assessing the Current Status of Natural Farming and Zero Budget Natural Farming in India

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INTRODUCTION

In India, the dominant agricultural approach for over 40 years has been the Green Revolution, which has significantly impacted the economy by increasing agricultural production and productivity. However, the reliance on conventional agricultural techniques is now leading to adverse effects on human health and soil condition. The Green Revolution's ability to meet social, economic, and ecological needs is being questioned as it falls short in addressing these concerns (Patel, 2013). In response to these challenges, natural farming has emerged as a holistic and ecological approach that embraces and works in harmony with natural conditions to establish a mutually beneficial relationship between farmers and nature (Altieri, 2002). One of the primary focuses of natural farming is on soil fertility, achieved by enhancing beneficial and effective microorganisms that play a crucial role in maintaining the soil's biological, chemical, and physical properties (Fukuoka, 2009). Also known as "Do-nothing farming," "Fukuoka farming," or "Regenerative agriculture," natural farming was pioneered by Masanobu Fukuoka, a Japanese farmer and philosopher, during the 20th century. It is a sustainable agricultural practice that prioritizes minimal intervention and emphasizes the overall health of the ecosystem. At the core of natural farming lies the philosophy of "non-doing" or "non-action," whereby natural processes are allowed to unfold without unnecessary human interference. According to Fukuoka, understanding and observing nature enables farmers to harness its inherent wisdom in cultivating crops and raising livestock while maintaining ecological balance. The principles of natural farming are applicable to a wide range of agricultural scales, from small family gardens to large-scale farming operations (Kremen, 2012). The main aim is to work in unison with nature to produce nutritious food that sustains human health and promotes the well-being of the soil.

Natural farming represents a transformative approach to agriculture in India, seeking to address the limitations of the Green Revolution and promote the coexistence of human beings and a healthy soil through harmonious engagement with nature. By embracing the principles of natural farming, Indian agriculture can move towards a more sustainable, nutritious, and ecologically balanced future.

2. HISTORICAL BACK GROUND

It is an ecological farming approach established by Mosanobu Fukuoka (1913-2008). He introduced the term in his book *THE ONE STRAW REVOLUTION* in 1975. Natural farming is related to fertility farming, organic farming, sustainable agriculture, agro ecology, agro forestry, perma agriculture & eco agriculture. *'Natural farming is not just for growing crops, it is for cultivation and perfection of human beings'* Natural farming, neither chemical nor organic fertilizer is added to the soil. No external fertilizer are added in soil or given to plant. In natural farming decomposition of organic matter by microbes and earthworms is encouraged in the soil, which gradually adds nutrition in the soil, over the period of time. In natural farming, no need of external input in the form of cultivation practices.

3. NATURAL FARMING IN INDIA

It was originally promoted by Maharashtrian agriculturist and Padma Shri recipient Subhash Palekar, who developed it in the mid -1990s as an alternative to the Green Revolutions method driven by chemical fertilizer, intensive irrigation and pesticides.

PALEKAR'S VISION: This model eliminates the cost of fertilizers, pesticides and seeds and greatly reduces the incentive to borrow, one of the chief causes for farmer's suicides in our country. Hence its evocative titles ZERO BUDGET NATURAL FARMING. In the Zero Budget Natural Farming is nothing has to be purchased from the outside. All things required for the growth of the plant are available around the root zone of the plant. 98

to 98.5% nutrients are taken from air, water & solar energy. Remaining 1.5% nutrients taken from the soil are also available free of cost as it is taken from the prosperous soil which is enriched with these nutrients.

4. PRINCIPLES OF NATURAL FARMING

Low Input Farming: As 1.5 to 2.0% of the nutrients are taken from the soil by the plant, there is no need to add fertilizers. These nutrients provided by nature (as in the forest) are totally free of cost.

Natural Input: Natural farming does not require chemicals inputs or organic compost like vermi-culture but promotes a natural catalyst of biological activity in the soil and natural protection from diseases.

Soil Mulching: It is necessary to create the micro climate under which microorganisms can well develop. Its conserves humidity of the soil cools it and protects its microorganisms. Mulching protects top soil and promotes humus formation and suppresses weeds and maintains water holding capacity in soil.

Multi cropping: Multiple cropping is a good way for minimize the risk of crop loss for the farmers throughout the year. In case of a crops failure farmers can also rely on the other crops.

No-till farming: In natural farming, the soil is left undisturbed to preserve its structure and prevent erosion. Instead of plowing or tilling, farmers use mulching and cover crops to enhance soil fertility and prevent weed growth.

Cover crops: Farmers plant cover crops, also known as green manure, during fallow periods or alongside main crops. Cover crops help fix nitrogen in the soil, prevent nutrient leaching, and enhance biodiversity.

No chemical fertilizers and pesticides: Natural farming rejects the use of synthetic fertilizers and pesticides. Instead, it promotes the use of organic and natural alternatives to manage pests and enrich soil fertility.

Biodiversity: Encouraging biodiversity is a core principle of natural farming. By fostering

a diverse ecosystem, including beneficial insects, birds, and other wildlife, farmers can maintain a natural balance and reduce the need for external interventions.

Respect for natural cycles: Natural farmers align their planting and harvesting schedules with natural cycles, such as lunar phases and seasonal changes, to optimize crop growth and yield.

Integration of livestock: Natural farming integrates livestock into the agricultural system to support the recycling of nutrients and improve soil health. Livestock help graze cover crops, provide manure for fertilization, and contribute to the overall sustainability of the farm.

5. FOUR PILLARS OF NATURAL FARMING

- a) **Jeevamrutha:** Jeevamrutha is a mixture of fresh desi cow dung and aged desi cow urine, jaggery, pulse flour, water and soil to be applied on farmland. This is a fermented microbial culture that adds nutrients to the soil, and acts as a catalytic agent to promote the activity of microorganisms and earthworms in the soil. About 200 liters of jeevamrutha should be sprayed twice a month per acre of land. Only one cow is needed for 30 acres of land.



- b) **Bijamrita/beejamrutha:** Bijamrita is used to treat seeds and any plant materials. A concoction using neem leaves and pulp, tobacco, & green chilies is used. Bijamrita is effective in protecting young roots from fungus as well as from soil borne and seed borne diseases that commonly affect plants after the monsoon period. **Ingredients:** local cow dung, cow urine, lime, hand full soil and butter milk. **Application:** add bijamrita to the seeds of any crop, mix by hand, dry them well and use them sowing. For leguminous seeds, just dip them quickly and let them dry.

- c) **Acchadana (Mulching):** According to palekar, there are 3 types of mulching *Soil*

Mulch: It protects top soil during cultivation and does not destroy soil by tilling. *Straw Mulch:* straw material usually refers to the dried biomass waste of previous crops. *Lives Mulch (symbiotic intercrops and mixed crops):* In live mulching it is essential to develop multiple cropping patterns of monocotyledons and dicotyledons grown in the same field. *Example:* legumes help to fix N element in soil (dicots) and Rice and Wheat (monocots) supply other elements like potash, phosphate and sulphur.

- d) **Whapasa:** In the common belief is plant needs lot of water, but palekars point of view is plant roots only need water in

vapor. *Whapasa* is the condition where there are both air molecules (50%) and water molecules (50%) present in the soil, it encourages reducing irrigation, irrigating only at noon, in alternate furrows.

6. PRODUCTION PRACTICES

- 1) **Crop rotation:** Crop rotation means having times where the fertility of soil is being built up and times where crops are grown which remove nutrients. Crop rotation also helps a variety of natural predators to survive on the farm.
- 2) **No tillage:** Annual tillage, chemical fertilization and pesticides use consistently affect populations of earthworms. Seeds are scattered and covered by straw before harvesting the previous crops. Seeds are germinated by the arrival of next favorable season.
- 3) **Seed quality:** In ZBNF, Traditional / desi seeds are taken as planting materials for next season crop and so on, to reduce input of seeds.
- 4) **Crop residue management:** The crop residue is the material left after the harvesting of crop. Farmers have been burning large quantities of crop residues, particularly in areas with high yield potential. As the crop residues may interfere with tillage and seeding operations for the next crop, many farmers prefer to burn the residues left in the field that lead to air pollution and wastage of nutrients.

7. WHY ZBNF EFFECTIVE?

- ❖ ZBNF will eliminate cost of external input and it can help in breaking debt cycle for many small farmers (Bishnoi & Bhati, 2017).
- ❖ Natural farming will help to promoting environmental friendly farming methods.
- ❖ ZBNF method promote soil aeration, topsoil mulching, minimal watering (ZBNF only use 10% of water for crops), intercropping

- ❖ ZBNF is said that it is suitable for all crops and all agro climatic zones condition.
- ❖ A limited study in 2017 in Andhra Pradesh claimed a sharp decline in input cost improvement in yield. However many farmers inverted to conventional farming after seeing their ZBNF returns drops.
- ❖ In 2021, Researchers at bengaluru think-tank center for study of science, technology and policy conducted an exploratory study in Andhra Pradesh to compare ZBNF techniques farming, and the results were encouraging.
- ❖ Agri experts warn that multi location studies are needed to scientifically validate the long term impact and viability of the ZBNF model before it can be scaled up and promoted country –wide.
- ❖ Indian council of Agricultural Research already studying the ZBNF methods on various crops in different regions its data will help the committee to give a direction to ZBNF.

8. SUCCESS STORIES OF ZBNF

One of the early success stories (Khadse *et al.*, 2018). of Zero Budget Natural Farming (ZBNF) comes from Mr. Annadurai, a paddy farmer in Musiri, Tamil Nadu. He decided to adopt ZBNF on his 2-acre land and witnessed remarkable results. The yields per acre were significantly higher, giving him the confidence to expand the practice to 10 acres. His success became an inspiration for other farmers in the region. Another successful practitioner of ZBNF is Mr. Kudankavil, who resides in Ooty. He applied ZBNF techniques to cultivate plantation crops, and over time, he observed a gradual increase in yields. Notably, his produce also fetched excellent market value. Mr. Kudankavil attributes his success to following the guidelines laid out by Mr. Palekar, the pioneer of ZBNF. According to him, adhering to these guidelines is key to achieving the best results in terms of crop yields. Moving to Andhra Pradesh, we find the success story of Mr. T. Suryanarayana in East Godavari. He is a ZBNF farmer engaged in cultivating paddy and oil palm. Implementing

ZBNF practices enabled him to obtain high yields in both crops, which brought him considerable profits. These success stories highlight that Zero Budget Natural Farming is an excellent technique for Indian farmers seeking to achieve high productivity while keeping input costs low. ZBNF's emphasis on natural methods and minimal reliance on external inputs has proven beneficial for farmers across different regions and crop types. As more farmers embrace ZBNF, it has the potential to transform the Indian agricultural landscape towards sustainable and economically viable practices..

9. GOVERNMENT INITIATIVES TO SUPPORT ZBNF

Government schemes like PARAMPARAGAT KRISHI VIKAS YOGANA since 2015-16 and also through RASHTRIYA KRISHI VIKAS YOGANA. In June 2018, Andhra Pradesh government rolled out an plan to become India's first state to practice 100%. Union Finance Minister Nirmala Sitharaman also announced a proposal of zero budget farming in the first budget speech that “We need to replicate this innovative model to help farmers doubling the income by 2022.

10. ZBNF CURRENT STATUS IN INDIA

- ❖ One of the biggest announcements in budget 2019 was to promote zero budget natural farming (ZBNF) on a massive scale.
- ❖ Terming means ‘going back to basics’.
- ❖ The finance minister made a strong pitch for the implementation of ZBNF.
- ❖ Last year, NITI Aayog Vice- chairman stated that ZBNF is one of the most potent methods to double farmers’ income by 2022.
- ❖ Welcoming the proposal, NABARD chairman said that the move will help millions of farmers cut down their input cost and practice sustainable agriculture.
- ❖ At a time when chemical – intensive farming is resulting in soil and water

environmental degradation, water depletion and pushing up cost of farm inputs, a zero-cost environmentally-friendly farming method is definitely a timely initiative.

- ❖ The economic survey 2018-19 reports that about 1.6 lakh farmers follow ZBNF. While ZBNF seems to have hit the right chord when it comes to environmental sustainability, enough data needs to be generated to conclusively prove that ZBNF is a potential solution and is scalable.
- ❖ There has not been any independent evaluation of the income growth it can result in or its impact growth it can result in or its impact on productivity.

CONSTRAINTS

- ❖ Cost of labor in field work.
- ❖ Natural farming is adopted but challenges about modern agricultural farming are remain unsolved.
- ❖ Marketing.
- ❖ In ZBNF there is no official policies given by government.
- ❖ Health expenses of cattle and cost of cattle feed is also quite high.
- ❖ Due to reduced grazing lands vanishing small water bodies, fodder cost in recent years has skyrocketed making it as costly as milk.

CONCLUSION

It is a holistic ecological farming approach to convert conventional farming to chemical free farming. it is environmentally sustainable and has emerged as farming model for small and marginal farmers to overcome the farming distress. Natural farming can also satisfy socio- economic and ecological condition of nature. As well as it will provide food and nutritional security and maintain soil ecosystem by using natural resources. Overall natural farming is better to compare with other farming techniques for animals, humans, the environmentally, and even the whole earth.