

Zero Budget Natural Farming: A Current Substantial for Indian Agriculture

C. S. Chaudhary^{1*} and S. N. Makwana²

¹Ph. D. Scholar, Department of Agronomy, C. P. College of Agriculture, Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar-385 506, Gujarat, India

²Research Associate, Agricultural Research Station, College of Agriculture, Anand Agricultural University, Jabugam-391 155, Gujarat, India

*Corresponding Author: chaudharychinki21@gmail.com

Zero budget farming, also known as "Subsistence Farming" or "Zero Budget Natural Farming (ZBNF)," is an agricultural practice that aims to minimize the use of external inputs such as chemical fertilizers and pesticides, thereby reducing the overall cost of farming. This method emphasizes the use of natural resources and traditional farming practices to achieve sustainable and eco-friendly agriculture. Zero budget farming emphasizes self-sufficiency and sustainability, reducing dependence on external inputs and promoting ecological balance. It's important to note that successful implementation may vary based on local conditions and ecosystems.

How Natural farming is different from other methods

- Modern agriculture is based on the principle that the soil has to be replenished by chemical nutrients such as nitrogen and phosphorous, depending on the intake by the crop. Using chemical inputs reduces the microbe population and hinders this natural process.
- In organic farming, similarly, the soil is replenished by applying organic manure like cow dung. But since cow dung contains very little nitrogen, massive amounts have to be applied, which may be difficult for a farmer to arrange.
- Natural farming works on the principle that there is no shortage of nutrients in soil, air and water, and healthy soil biology can unlock these nutrients.

Principles of Natural farming

According to National Mission on Natural Farming Management and Knowledge Portal, Government of India, Natural farming encompasses following principles:

- Implementation of diversified cropping system-based agriculture

- Recycling of naturally available nutrients in fields
- Reuse and recycle of on-farm generated biomass
- Use of locally developed and refined practices based on plant, animal and microbial source as raw materials
- Farmers employ innovative techniques that are always evolving in response to cropping patterns, regional climates, altitude, soil quality, insect and pest intensity and variability, etc.

Components of natural farming

1. Jivamrit: Made by fermenting well-rotted cow dung, cow urine, jaggery, and water for around 48 hours, it is a healthy organic biostimulant. By lowering the need for synthetic inputs, this nutrient-rich liquid fertilizer promotes soil fertility, microbial activity, and plant nutrient absorption, all of which support sustainable agriculture.

2. Bijamrit: Bijamrita is a naturally occurring seed treatment solution that is made by soaking seeds in a solution made of water, lime, cow dung, and cow urine. The seeds are soaked, dried, and then planted. This age-old method is said to improve seed germination, guard against illness, and encourage robust plant development in an organic and long-lasting way.

3. Acchadana – Mulching: Subhash Palekar suggests the following types of mulching:

a) Soil Mulch: avoids tilling topsoil and instead preserves it for farming purposes. Moreover, it aids in the aeration and water retention of the soil. Palekar has advised against plowing deeply.

b) Straw Mulch: The straw particles hint at the dried biomass waste from previous crops. Palekar suggests that this might include the rotting remnants of any living organism, including plants, animals, and so on.

4. Live Mulch (symbiotic intercrops and mixed crops): Palekar says that it is essential to design different cropping patterns of monocotyledons and dicotyledons planted in the same region in order to supply the necessary components to the soil and crops.

5. Whapasa - Moisture: Palekar refutes the popular belief that plant roots need a lot of moisture. In this approach, he criticizes the green revolution farmer's over-reliance on irrigation. He is adamant that water vapor is essential to roots. This is what he calls the condition of air and water molecules in the soil, or whapasa. He encourages reducing the amount of irrigation and emphasizes utilizing it just at noon.

6. Plant protection measures: The application of conventional, organic, and plant-based methods for controlling pests and diseases is emphasized in natural farming. Plant protection involves the use of several botanical concoctions, or "astras":

a) Neemastra: It is used to prevent or treat infections, as well as to get rid of insects or larvae that eat plant leaves and sip plant sap. Furthermore, this helps stop harmful insects from spreading. Neemastra is a very easy-to-manufacture bioinsecticide and pest deterrent for natural farming.

b) Agniastra: Neem leaf pulp, tobacco powder, green chilli powder, garlic paste, and turmeric powder are mixed to form a natural pesticide. All sucking pests and caterpillars, such as Leaf Roller, Stem Borer, Fruit Borer, and Pod Borer, are managed using it.

c) Brahmastra: The leaves of neem, karanj, custard apple, and daphnia, which contain specific alkaloids that repel pests, are used to make this all-natural pesticide. It controls all sucking pests and hidden caterpillars found in fruit pods.

d) Dashaparni ark: It acts as a substitute for Neemastra, Bramhastra, and Agniastra. It is prepared using tobacco powder, ginger paste, turmeric powder, Asafoetida, chilli pulp, garlic paste, and any 10 leaves, depending on what's available. Many plants, including neem, pogoamia pinnata, Annona squamosa, Castor, Datura, Rui, Hibiscus, mango, lantana camara, and guava, have leaves that we may use. It is used to manage a variety of pests, depending on how bad the infestation is.

e) Fungicide: It is created from curd and cow's milk, which is particularly effective at regulating and controlling fungal infections.

Features of zero budget natural farming

1. Nutrient uptake from air and sunlight: According to natural farming methods, plants get 98% of their nutrients from the air, water, and sunshine and just 2% from the soil. This highlights the significance of having good soil that is home to helpful bacteria.

2. Organic mulch for soil health: Organic mulch must be applied to the soil continuously in natural farming. This process produces humus and encourages the growth of beneficial microorganisms.

3. Bio-cultures instead of fertilizers: To improve the microflora in the soil, natural farming uses farm-made bio-cultures like Jeevamrit and Beejamrit, which are created from the urine and dung of native cow breeds, in place of commercial fertilizers.

4. Environmental and economic benefits: Natural farming has several benefits, such as lowering greenhouse gas emissions, improving soil fertility, and enhancing environmental health, and it also has the potential to raise farmers' revenue.

5. Dependence on Indian breed Cows: The method depends on cow dung and cow urine (Gomutra) from Indian varieties of cows, especially Desi cows, whose composition is favorable to microbes.

6. Exclusion of exogenous fertilizers: Organic or chemical external fertilizers are not used in natural farming, either on the crops or in the soil.

7. Encouragement of soil Microbes and earthworms: By promoting the decomposition of organic waste on the soil's surface by earthworms and bacteria, natural farming progressively enriches the soil with nutrients.

8. Natural weeding Practices: Natural farming minimizes the use of fertilizers, plowing, and soil disturbance while simulating the processes of weeding seen in natural ecosystems.

9. Natural pest control: Natural farming uses natural pesticides like Dashparni Ark and Neem astra to fight illnesses and pests.

10. Role of weeds as mulch: Weeds are seen as necessary for preserving the ecological balance and are purposefully used as layers of living or dead mulch.

11. Emphasis on multiple cropping: Multiple cropping is preferred over monoculture in natural farming because it increases biodiversity and improves soil health.

Constraints

Some major constraints of natural farming are as follows:

- Limitations in managing pests and diseases
- Reduced crop yields in comparison to traditional techniques
- Labor-intensive weed control
- Transition phase marked by lower yields and increased expenses
- Costs and conditions for certification
- Knowledge and training requirements
- Susceptibility to weather variations
- Competition from traditional agriculture

Future thrust

Natural farming has a bright future ahead of it as global agriculture struggles with environmental

issues and sustainability. The market for pesticide-free, organic vegetables is expanding as customers place a higher priority on making decisions that benefit their health and the environment. Natural farming is a sustainable approach since it may improve soil fertility, reduce greenhouse gas emissions, and support ecological health. It is also economically attractive because of its ability to raise farmers' revenue through lower input costs and higher pricing for organic products. The use of natural farming approaches is expected to increase with further study and information exchange, providing a route towards a future in agriculture that is more ecologically friendly and sustainable.

Conclusion

Sustainable agriculture may heavily rely on natural farming. It fits perfectly in the people, planet and profit philosophy. The goal of natural farming is to produce food that is safe and healthful for everyone to eat while lowering overhead costs and making a healthy profit for the farmers.

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