

Zero Budget Natural Farming (ZBNF): An Eco-friendly Approach for Sustainable Agriculture

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INTRODUCTION

The neo-liberalization of the Indian economy led to a deep agrarian crisis that is making small-scale farming an unviable vocation. Privatized seeds, inputs, and markets are inaccessible and expensive for peasants. The high cost of inputs often compels farmers to take loans from money lenders and non-institutional sources and in the event of crop failure, they will be forced into a debt trap. Therefore, restoring soil health by reverting to non-chemical agriculture has assumed great importance in attaining sustainability in production. In this search for eco-friendly and farmer-friendly alternate systems of farming, Subhash Palekar's Zero Budget Natural Farming is increasingly becoming popular among the farming community.

Zero Budget Natural Farming (ZBNF) means raising crops without using any fertilizers and pesticides or any other external materials. The word Zero Budget refers to the zero cost of production of all crops. ZBNF guides the farmers towards sustainable farming practices thus helps in retaining soil fertility, to ensure a chemical free agriculture and ensure low cost of production (zero cost) and thereby enhancing the farmer's income.

ZBNF, *is a farming method that believes in growing crops in tune with nature*. Thus, the general overview on Zero Budget Natural Farming (ZBNF) is a new approach for sustainable agricultural productivity. Many professionals in India and abroad like engineers, doctors, and lawyers have taken up ZBNF leaving their lucrative jobs. This symbolizes the rapid acceptance of the changing system.

Concept of Zero Budget Natural Farming (ZBNF):

The father of ZBNF and Padma Shri Awardee, Mr. Subhash Palekar's Zero Budget Natural Farming is a unique method of farming that requires absolutely no monetary investment for the purchase of key inputs like seeds, fertilizers and plant protection chemicals from the market.

The farmer can grow hardy local varieties of crops without the application of fertilizers and pesticides. Since it is a zero budget farming no institutional credit would be required and dependence on hired labour is also reduced to a bare minimum.

Meaning of Zero Budget Natural Farming (ZBNF):

ZBNF, is a farming approach that believes in growing crops in harmony with nature. Crops are grown without adding any synthetic fertilizers and pesticides, or other products/inputs from outside the farming system. The ZBNF farm model is based on poly-cropping. The expenditure on the main crop is recovered from the income from the short-duration intercrops, hence the net expenditure on the main crop is 'zero'.

Need of Zero Budget Natural Farming (ZBNF):

National Sample Survey Office (NSSO) data indicates more than 50 percent of all farmers are in debt due to the increased cost of farm inputs like fertilizers and chemical pesticides. To realize the objective of doubling farmers' income, farm expenditure needs to be brought down and natural farming practices like ZBNF have to be encouraged to reduce the dependence of the farmers on external inputs like chemical fertilizers, pesticides, etc. Zero budget farming model brings down farm

expenditure to a great extent and ends dependence on farm loans. It also reduces dependence on purchased inputs as it encourages use of own seeds and locally available natural fertilizers and farming is done in synchronization with nature.

Principles of Zero Budget Natural Farming (ZBNF):

- No external inputs
- Soil to be covered with crops 365 days (Living Root)
- Minimal disturbance of Soil
- Use indigenous seed
- Mixed cropping
- Integration of trees into the farm
- Water and moisture conservation
- Increase organic residues on the soil
- Pest management through botanical extracts
- No synthetic fertilizers, pesticides, herbicides
- Integration of livestock, especially of native cow into the farming system, for cow dung and cow urine as essential and preferred raw materials for several practices.
- Agriculture science rooted in agro-ecology and practices evolved through practice and field innovations.

Main elements and models of ZBNF:

Mr. Subhash Palekar has provided four important non-negotiable guidelines:



Fig. 1: Four pillars of ZBNF

1. Jivamrita (applying inoculation made of local cowdung and cow urine without any fertilizers and pesticides), (Fig.2),
2. Bijamrita (Seed Treatment using local cowdung and cow urine),
3. Mulching (activities to ensure favorable microclimate in the soil), and
4. Whapasa (soil aeration).



Fig. 2: Jivamrita

Table 1: The four pillars of ZBNF

S. N.	Pillars	Preparation	Method of application	Advantages
1.	Jivamrita/ jeevamrut ha	It is a fermented microbial culture. Put 200 liters of water in a barrel; Add 10 Kg fresh local cow dung and 5 to 10 liters aged cow urine; Add 2 Kg of Jaggery (a local type of brown sugar), 2 Kg of pulse flour and a handful of soil from the bund of the farm. Stir the solution well and let it ferment for 48 hours in the shade.	Apply the jeevamrutha to the crops twice a month in the irrigation water or as a 10% foliar spray.	It provides nutrients, but most importantly, acts as a catalytic agent that promotes the activity of microorganisms in the soil, as well as increases earthworm activity. prevent fungal and bacterial plant diseases. Jeevamrutha is only needed for the first 3 years of the transition, after which the system becomes self-sustaining.
2.	Bijamrita /beeamru tha	It is composed of similar ingredients as jeevamrutha – local cow dung, a powerful natural fungicide, and cow urine, a strong anti-bacterial liquid, lime, soil.	Treatment used for seeds, seedlings or any planting material. Add Bijamrita to the seeds of any crop: coat them, mixing by hand; dry them well and use them for sowing. For leguminous seeds, just dip them quickly and let them dry.	Bijamrita is a seed treatment, equipped in protecting young roots from fungus as well as from soil-borne and seed-borne diseases.

3.	Acchadana – Mulching	It could be done by soil mulch, straw mulch and live mulch	<p>1. Soil Mulch it promotes aeration and water retention in the soil.</p> <p>2. Straw mulch composed of the dead material of any living being (plants, animals, etc).</p> <p>3. Live Mulch (symbiotic intercrops and mixed crops)</p>
4.	Whapasa – moisture	Whapasa is the condition where there are both air molecules and water molecules present in the soil, and the encourages reducing irrigation, irrigating only at noon, in alternate furrows ZBNF farmers report a significant decline in need for irrigation in ZBNF.	Palekar challenges the idea that plant roots need a lot of water, in-fact, what roots need is water vapour, and therefore, Whapasa is the condition where there exist both air molecules and water molecules present in the soil.

Advantages of Zero Budget Natural Farming:

ZBNF Main Advantages are-

- Farmer’s income automatically increases.
- Zero budget natural farming reduces the initial cost for farmers.
- ZBNF processes require 50–60 percent less water and less electricity (than non-ZBNF) for all the selected crops.
- The soil ecosystem improves.
- Cow dung adds soil value. It is full of nutrients value and available locally.
- ZBNF improves the productivity of the soil.
- It decreases the disease attack risk on the crop.
- Zero Budget Farming we use utilizing less chemical fertilizer, farming production quality improves.

Government scheme and plans that promotes Zero Budget Natural Farming:

- National Institution for Transforming India (NITI) Aayog is one of the foremost promoters of the ZBNF method.
- The Andhra Pradesh Government experience is also being monitored

closely to judge the need for further public funding support for ZBNF.

- The Indian Council of Agricultural Research (ICAR) is also studying the ZBNF method practiced by basmati and wheat farmers in some parts of India, evaluating the impact on productivity, economics and soil health including soil organic carbon and soil fertility.

CONCLUSION

Zero budget farming is a set of farming methods that involve zero credit for agriculture and no use of chemical fertilizers. This is also an attempt to make small-scale farming a viable vocation across the world promising reduced input costs and higher yields for farmers, chemical-free food for consumers and improved soil fertility. Zero budget farming model promises to cut down farming expenditure drastically and ends dependence on loans. It also reduces dependence on purchased inputs as it encourages the use of its own seeds and locally available natural fertilizers.

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