Zero Budget Natural Farming: Farming Without External Inputs

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Introduction

Zero Budget Natural Farming (ZBNF) is an innovative and sustainable agricultural approach that emphasizes growing crops without chemical fertilizers, pesticides or costly external inputs. The concept was popularized by Subhash Palekar, an Indian agriculturist, as an alternative to conventional chemical-based farming systems. Andhra Pradesh was the first state to introduce the ZBNF. The term "Zero Budget" refers to zero net cost of production, meaning that farmers can cultivate crops at minimal expense by utilizing natural resources available on their farms.

Why it is required?

- **Green revolution** transformed the country to the state of self-sufficiency in early 1970s by adopting various modern technologies.
- During the last 70 years starting from 1950, Food production has increase by more than 5 times (from 50.5 Mt in 1950-51 to 295.7 Mt – 2019-20).
- The nutrient (NPK) consumption increased to about 26.7 Mt in the year 2019-20 from 65.6 thousand tons in the year 1951-52 (fertilizer statistics FAI 2020-21)
- The estimates for the Year 2025 that India may need nearly 45 Mt of plant nutrients of chemical fertilizer & 10 Mt of FYM, organic sources & biofertilizers.
- Rising cost of inputs
- High labour wages
- Volatile market price
- Large suicide of farmers
- Change in consumers preference towards the safety food

3. Subash palekar: Pioneer of Zero Budget Natural Farming (ZBNF)

Padma Shri awardee Subash palekar, who innovated Zero Budget Natural farming

- He popularly called as Krishi Ka Rishi by many farming communities in India.

He also awarded by:

- Basava Shri Award (2005)
- Gopal Gaurav Award (2007)
- Padma Shri (2016)

Mr. Subash Palekar studied natural system and verified natural processes of the forest on his farm for six years, since 1989 to 1995. There were about 154 research projects during these six years of research work. After six years of verified research work, he got the package of technique about Zero Budget Natural Farming; which he is giving to the farmers throughout India.

4. Core Principles of ZBNF

a. No Chemical Inputs

ZBNF completely avoids synthetic fertilizers, pesticides, and herbicides, which harm soil health and the environment.

b. Soil as a Living Organism

The approach treats soil as a living entity, rich in microorganisms and earthworms that naturally enhance soil fertility.

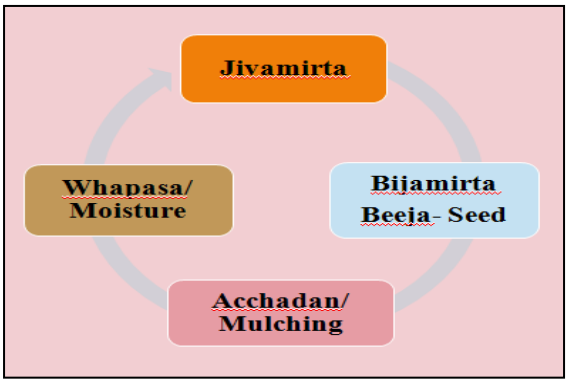
c. Self-Sustaining Farming

Inputs like Jeevamrutha, Beejamrutha are prepared from cow dung, urine, and other farm-based materials to enrich the soil.

d. Minimal Cost

Farmers do not depend on costly external inputs. They use resources like native cow dung and urine, crop residues and natural mulches.

5. Four Pillars of ZBNF



6. Key Practices in ZBNF

(a) Jeevamrutham

A microbial culture prepared by fermenting cow dung, cow urine, jaggery, pulse flour, and soil. It promotes beneficial soil microorganisms.

Procedure to prepare jeevamurtham

- It is prepared by mixing 10 kg local cow dung with 10 litres cow urine
- Add 2 kg local jaggery
- Add 2 kg pulse flour
- Handful of garden soil then volume made up to 200 litres.
- Keep the drum in shade covering with wet gunny bag and stir the mixture clockwise thrice a day and incubate.

(b) Beejamrutha

A natural seed treatment using cow dung, cow urine, and lime to protect seeds from pests and diseases.

Procedure to prepare Beejamrutham

- ❖ Beejamrutha was prepared using the ingredients *viz.*, cow dung, cow urine, water and lime (Beeja- seed)
- ❖ Cow dung (5 kg) tied in a cloth was dipped in a bucket containing 50 liters of water overnight.
- ❖ Next day morning, the tied dung is frequently squeezed and dipped in the water.
- ❖ Five liters of cow urine, a handful of soil and 50g of calcium chloride was added to this extract (for 100 kg seed)

(c) Achhadana (Mulching)

It is the process of covering the soil with organic residues to maintain moisture, control weeds, and improve fertility.

Benefits

- ✓ Mulching materials decomposes and produces humus which conserves top soil
- ✓ Increases water retention capacity of the soil
- ✓ Decreases evaporation loss
- ✓ Encourages soil fauna besides enriching soil nutrient status
- ✓ Controlling weed growth

(d) Whapasa (Moisture Management)

Enhances soil aeration and reduces irrigation needs, promoting crop growth without excess water.

- For plants to grow and thrive, the soil must have adequate aeration.
- The presence of both water and air molecule in soil reduces the need of irrigation.

Benefits

Applying Jeevamrutha and mulching promotes soil aeration, humus content and availability of water, water retention capacity, and soil structure, all of which are essential for crop growth, particularly during dry spells.

(e) Other Practices followed in ZBNF

Crop Rotation

- It is the practice of growing two or more different crops in regular succession in the same field within a year. This practice controls insects and diseases, increases soil fertility, and decreases soil erosion.
- Continuous monocropping should be avoided.

Sowing a leguminous crop (e.g., green gram) as a rotational crop is very useful because legumes enhance

nitrogen levels in the soil and reduce the need for chemical nitrogen fertilizer

Mixed cropping:

- Mixed cropping helps to improvement in the fertility of the soil
- Mixed cropping is an insurance against crop failure due to abnormal weather condition.
- Mixed farming involves mixed crops along with livestock operations.
- It will reduce soil erosion.
- Pasture and leguminous forage crops in rotation enhance soil quality and reduce erosion; livestock manure, in turn, contributes to soil fertility.

Tillage

- Annual tillage, chemical fertilizers & pesticides use consistently affect population of earthworms.
- When tillage is avoided, soil moisture is increased, augmentation the propagation of earthworms.
- Earthworms make the soil porous & enrich the soil with their castings.
- Seeds are scattered and covered by straw before harvesting the previous crop. Seeds are germinated by the arrival of next favourable season.

Importance of Desi cow in ZBNF	**Local species of earth worms**
1g of desi cow dung contains 300 to 500 crores of beneficial effective microbes. These microorganisms decompose the dried biomass on the soil and make available the nutrients to the plants. Dung and urine from 1 desi cow are sufficient to cultivate 30 acres of land in ZBNF Cross bred like jersey & Holstein Friesian cows are not suitable- more pathogens in their urine and dung.	*Eisenia Foetida* (red worm) – surface feeder & lives only on the organic matter available on the surface soil, and decomposes dried vegetation, compost or manure They do not burrow into the soil like local worms and thus cannot convert the deep soil into casting, which is the richest stock of minerals necessary for plant growth.

7. Challenges of ZBNF

- There is **no special market** to retail
- A growing population with rising expectations demands increased agricultural productivity.
- It is practiced in lesser parts of India
- Takes longer conversion period
- No awareness among farmers
- Appropriate policy framework
- The farming type is still under dispute and not much scientific research is done still under appraisal.

8. Pest management in ZBNF

01.	Agniastra	Mixture of chilli, cow dung and neem, Garlic
02.	Brahmastra	Mixture of locally available plants like custard apple leaves, neem leaves, pomegranate leaves, papaya leaves and white dhatura leaves crushed and boiled in urine
03.	Neemastra	Mixture of cowdung, urine, neem

9. Benefits of ZBNF

- ✓ **Cost-Effective**: Eliminates the need for expensive chemical fertilizers and pesticides.
- ✓ **Improves Soil Health:** Increases soil fertility and microbial activity.
- ✓ **Environment-Friendly**: Reduces chemical pollution and conserves biodiversity.
- ✓ **Resilient Farming:** Crops become more tolerant to drought and pests.
- ✓ **Higher Profit Margins**: Farmers save input costs and often get premium prices for chemical-free produce.

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