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# Zero Budget Natural Farming: Nurturing Agriculture and Ecology in Harmony

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In a world grappling with the challenges of climate change, soil degradation and ever-increasing input costs, a paradigm shift in agriculture is gaining popularity. In recent years, the global agricultural community has been grappling with the urgent need to transition towards sustainable and ecologically friendly farming practices. Zero Budget Natural Farming (ZBNF), a revolutionary farming approach, has gained significant attention for its potential to address both the challenges of food security and environmental conservation. The method of ZBNF in present-day agriculture enlightened several ideas, concepts, and processes to be effectively utilized for the long-term sustainability of Indian farming. The word 'budget' refers to credit and expenses, thus the phrase 'Zero Budget' means without using any credit, and without spending any money on purchased inputs. There are, most popular, 4 pillars of ZBNF *i.e.*, Jivamrita, Bijamrita, Acchadana and Whapasa, which we will discuss later.

**Keywords:** Climate change, Environmental conservation, Sustainable, ZBNF

## Introduction

Agriculture is the main occupation and contributing significantly to the Indian economy for centuries. About 54% population depends on agriculture and allied services for their livelihoods. Agriculture constitutes 17.4 per cent of the gross value added (GVA) to the national economy. Modern agriculture has made significant strides in increasing food production and feeding the growing global population. However, it has also brought about unintended consequences, such as soil degradation, water pollution, loss of biodiversity, and greenhouse gas emissions. Under current trends, 60% of India's population (>10% of people on Earth) will experience severe food deficiencies by 2050. Increased production is urgently needed, but high costs and volatile prices are driving farmers into debt. In the face of these challenges, alternative and sustainable farming practices are gaining momentum. Zero Budget Natural Farming (ZBNF) is one such low-input, climate-resilient type of farming that attracts farmers to use low-cost locally-sourced inputs, eradicating the use of artificial fertilizers, and industrial pesticides. Zero Budget Natural Farming, often abbreviated as ZBNF, is an innovative agricultural approach that emphasizes the elimination of external inputs, such as synthetic fertilizers and pesticides, and instead relies on the integration of natural processes to maintain soil fertility and crop health. The methodology was developed by Subhash Palekar, an Indian agriculturist, and has gained popularity across India and beyond. The core philosophy of ZBNF is to work in harmony with nature, utilizing traditional farming techniques and modern scientific understanding to create a balanced and self-sustaining agroecosystem.

## Key Principles of Zero Budget Natural Farming

ZBNF is based on 4 pillars viz. (i) *Jeevamrit*- nectar of life (consisting of microbes) that is prepared from dung and urine of indigenous, (ii) *Beejamrit*- the seed treatment, (iii) *Acchadana (mulching)* and (iv) *Waaphasa (soil aeration/ moisture).* Plant protection measures include a mixture of butter milk, cow milk, pepper powder, neem seed and green chilli.

More importantly, the proponents of ZBNF ban the use of modern varieties with high yield potential and recommend the use of only traditional varieties/land races with inherently low yield potential. This is an obvious recognition that the traditional varieties respond to low level of soil-bound nutrients and in case higher quantity of nutrients are made available they tend to lodge resulting in poor translocation of nutrients that ultimately causes yield reduction. Natural farming means farming with Nature and without chemicals. It is presumed that it encourages the natural symbiosis of soil microflora and crop plants. It is, thus, expected to have no or least side effects on the health of soil and environment. ZBNF promises to end a reliance on loans and drastically cut production costs, ending the debt cycle for desperate farmers.


| Methods | Preparation | Benefits |
|---|---|---|
| **Jivamrita/Jeevamrutha** | It is composed of the cow-dung (20 kg), urine (5-10 l), jaggery (20 kg) and dicot flour (2 kg) and is applied to the crops with each Irrigation cycle OR directly to the crops. | 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. Jeevamrutha also helps to prevent fungal and bacterial plant diseases. That Jeevamrutha is only needed for the first 3 years of the transition, after which the system becomes self-sustaining. |

| | | |
|---|---|---|
| **Bijamrita** | It is basically made up of water (20l), cow dung (5kg), urine (5l), lime (50gm) and just a handful of soil | Bijamrita is a seed treatment, equipped in protecting young roots from fungus as well as from soil-borne and seed-borne diseases |
| **Acchadana (Mulching)** | It could be done by soil mulch, straw mulch or live mulch | It conserves soil moisture, by reducing evaporation. |
| **Whapasa (Moisture)** | The irrigation should be reduced and irrigation should be practiced only at noon, in alternate furrows. | 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. |

## Benefits of Zero Budget Natural Farming

1. **Environmental Sustainability**: ZBNF is a holistic approach that promotes soil health, conserves water, and mitigates climate change by sequestering carbon in the soil. It reduces the use of synthetic chemicals, thereby minimizes chemical use, reducing pollution and greenhouse gas emissions and reducing harm to beneficial organisms.
2. **Improved Soil Fertility**: Natural inputs and practices in ZBNF enhance soil fertility, soil structure and nutrient availability over time, leading to better crop yields and reduced dependency on external inputs.
3. **Economic Viability**: By reducing input costs, farmers practicing ZBNF can potentially improve their economic viability and resilience to market fluctuations. Additionally, increased yield and better crop quality can lead to higher income. It empowers farmers to become self-sufficient and independent in their practices.
4. **Biodiversity Conservation**: The emphasis on mixed cropping and diverse agroecosystems in ZBNF supports the preservation of plant and animal diversity, contributing to ecosystem stability. It supports the preservation of traditional seeds and promotes diverse cropping systems.
5. **Health Benefits**: ZBNF-produced crops are often free from harmful chemical residues, promoting healthier food choices and reducing health risks for consumers.
6. **Waste to wealth**: Cow dung from local cows has proven to be a miraculous cure to revive the fertility and nutrient value of soil. One gram of cow dung is believed to have anywhere between 300 to 500 crore beneficial micro-organisms. These micro-organisms decompose the dried biomass on the soil and convert it into ready-to-use nutrients for plants.
7. **Efficient Energy Consumption**: ZBNF requires only 10 per cent water and 10 per cent electricity than what is required under chemical and organic farming.
8. **Climate Resilient features**: ZBNF can improve the potential of crops to adapt to and be produced for rising climatic stressful conditions.

## How is ZBNF better than Organic Farming?

- Natural farming is described as "**the natural way of farming**" or "**do nothing farming**". Organic Farming on the other hand is a holistic system designed to optimize the productivity of diverse communities (plants, livestock) within the agroecosystem.
- Organic farming doesn't discourage basic practices like ploughing, tilting, applying bulk organic manures (compost, vermicompost, etc.), weeding, etc. In natural farming,

the natural agroecosystem is preserved by avoiding ploughing, tilling of the soil, weeding, application of bulk organic manures, etc.

- Organic farming can be capital-intensive due to the requirement of bulk organic manures, modified agroecosystems etc. it requires large amounts of manure, vermicompost and other materials. Thus, organic turns out to be expensive for most small farm holders. In contrast, natural farming is extremely low-cost (in the case of ZBNF it is almost zero) with locally made preparations.

## Schemes introduced by Government of India to promote ZBNF

- **Paramparagat Krishi Vikas Yojana (PKVY):** PKVY is a sub-component of the Soil Health Management (SHM) scheme. It is a centrally sponsored scheme that was launched in 2015. It aims at the development & promotion of organic farming by cluster approach & PGS Certification.
- **Bharatiya Prakritik Krishi Paddhati (BPKP) Scheme for Natural Farming:** BPKP Scheme is launched by the Ministry of Agriculture & Farmers Welfare in 2020-21. It is a sub-scheme of Paramparagat Krishi Vikas Yojana (PKVY), launched for the promotion of traditional indigenous practices. It mainly emphasizes on:
  - Exclusion of all synthetic chemical inputs
  - On-farm biomass recycling with significant stress on biomass mulching
  - Use of cow dung-urine formulations
  - Plant-based preparations
  - Time to time working of soil for aeration
- **Mission Organic Value Chain Development for North Eastern Region (MOVCDNER):** This scheme aims to promote organic farming in the north-eastern states of India.
- **National Mission for Sustainable Agriculture (NMSA):** It focuses on conservation agriculture, organic farming, water-use efficiency, and climate-resilient practices.

## Limitations of Zero Budget Natural Farming

**1. Initial Transition Period:** Transitioning from conventional farming to ZBNF can be challenging, especially for farmers who are accustomed to using synthetic inputs. It may take time for farmers to adapt to new techniques and practices.

**2. Labor-Intensive:** ZBNF often relies on labor-intensive practices such as manual weeding and preparation of natural inputs like cow dung and urine. This can be demanding and time-consuming for farmers, especially those with limited labor availability.

**3. Yield Variability:** ZBNF techniques may result in variable yields due to reliance on natural processes and minimal external inputs. Farmers might experience fluctuations in crop production, which could affect their income and livelihoods.

**4. Limited Nutrient Availability**: ZBNF relies on organic sources of nutrients like cow dung and urine. Depending solely on these sources could potentially limit nutrient availability for crops, especially in regions with poor livestock resources.

**5. Scale and Commercial Viability**: ZBNF might be more suitable for small-scale or subsistence farming. Scaling up ZBNF to larger commercial operations could pose challenges in terms of resource availability, input management, and productivity.

**6. Pest and Disease Management:** While ZBNF emphasizes natural pest control methods, it might not provide as rapid and effective pest and disease management as some conventional approaches that use synthetic chemicals.

**7. Knowledge and Training:** Implementing ZBNF effectively requires knowledge of specific practices and techniques. Farmers need proper training and education to ensure they can apply ZBNF principles correctly.

**8. Market Access and Demand**: The market demand for organic or ZBNF-produced crops can be variable and may not always match production levels. Farmers might face challenges in accessing markets that are willing to pay premium prices for organic produce.
**9. Research and Adaptation**: The effectiveness of ZBNF practices can vary depending on factors like climate, soil type, and crop variety. There might be a need for ongoing research and adaptation to optimize ZBNF practices for different regions.

## Summary

ZBNF presents a promising alternative to conventional farming, offering a pathway towards sustainable agriculture that is economically viable, environmentally friendly and financially empowering for farmers. By embracing ZBNF, we can contribute to the promotion of healthy ecosystems, resilient farming communities and a more sustainable future for agriculture. Zero Budget Natural Farming presents a revolutionary approach to agriculture that harmonizes traditional wisdom with modern scientific insights. By embracing natural processes, reducing external inputs, and prioritizing ecological balance, ZBNF offers a pathway to address pressing challenges such as food security, soil degradation, and climate change. While challenges remain, the potential benefits of ZBNF extend beyond individual farms, impacting the larger agricultural and ecological landscape. As the world seeks sustainable solutions to feed a growing population while safeguarding the planet, Zero Budget Natural Farming stands out as a beacon of hope and possibility.