1. Jeevamrit

Jeevamrit is a fermented microbial culture prepared using indigenous cow dung, cow urine, jaggery, pulse flour, and a small quantity of soil collected from the farm bund. This formulation acts as a powerful bio-stimulant that multiplies beneficial microorganisms in the soil. These microbes decompose organic matter and convert unavailable nutrients into plant-available forms. Regular application of Jeevamrit enhances nutrient availability, improves soil structure, and increases overall biological activity, leading to better root development and plant growth.

2. Beejamrit

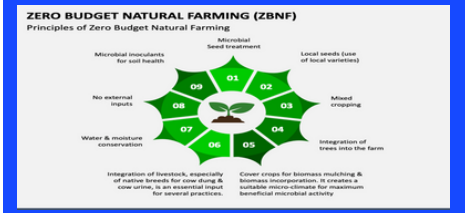
Beejamrit is a natural seed treatment solution prepared using cow dung, cow urine, lime, and soil. It protects seeds from soil-borne and seed-borne pathogens and improves germination percentage. Beejamrit strengthens young seedlings and promotes early root growth, helping crops establish quickly in the field. By preventing initial infections, it reduces the need for chemical seed treatments and ensures healthier crop stands.

3. Acchadana (Mulching)

Acchadana refers to covering the soil surface using crop residues, dry leaves, straw, or live mulches through intercropping. Mulching reduces evaporation losses and helps maintain optimum soil temperature, especially during extreme weather conditions. It suppresses weed growth and gradually adds organic matter to the soil as residues decompose. Mulching also protects soil from erosion and provides food for earthworms and microorganisms, improving soil fertility over time.

4. Whapasa (Soil Aeration and Moisture Balance)

Whapasa means maintaining a balanced condition of air and moisture in the soil. ZBNF discourages heavy and frequent irrigation and promotes light, need-based watering. This practice improves root respiration, prevents waterlogging, and supports microbial activity. Proper soil aeration ensures better nutrient uptake and healthier plant growth, making crops more resilient to stress.



Source: https://rajras.in/ras/mains

3. Cropping systems and practices in ZBNF

Zero Budget Natural Farming (ZBNF) promotes diversified and ecologically balanced cropping systems instead of monocropping. Diversification helps in efficient use of natural resources, reduces pest and disease problems, and improves overall farm sustainability.

Intercropping and Mixed Cropping

Intercropping and mixed cropping involve growing two or more crops simultaneously in the same field. These systems improve nutrient cycling, as different crops utilize and contribute nutrients in different ways. Leguminous crops fix atmospheric nitrogen, benefiting companion crops. Crop diversity also confuses pests and reduces the chances of severe infestations. Moreover, farmers obtain multiple products from the same land, reducing the risk of complete crop failure.

Crop Rotation

Crop rotation is the practice of growing different crops in sequence on the same land. It prevents continuous removal of the same nutrients from soil and helps maintain soil fertility. Rotating crops also breaks the life cycles of pests, diseases, and weeds, thereby reducing their buildup. Inclusion of legumes and deep-rooted crops further improves soil structure and nutrient availability.

INTRODUCTION

Zero Budget Natural Farming (ZBNF) is a sustainable and eco-friendly agricultural system that completely avoids the use of chemical fertilizers, pesticides, and other synthetic inputs. Instead, it depends on natural biological processes and farm-based resources to maintain soil fertility and crop productivity. The term "Zero Budget" refers to the elimination of expenditure on external agricultural inputs, meaning that farmers can cultivate crops without purchasing costly fertilizers and pesticides from the market. As a result, the overall cost of cultivation is reduced to almost zero, improving profitability even when yields are moderate.

The concept of ZBNF was developed and widely promoted by Subhash Palekar, an Indian agricultural scientist, who emphasized the importance of indigenous cow-based formulations and natural soil rejuvenation practices. According to ZBNF philosophy, soil is a living system rich in microorganisms that can supply nutrients to plants if properly activated. Natural inputs such as Jeevamrit and Beejamrit stimulate microbial activity, which enhances nutrient availability and improves soil structure without chemical intervention.

Objectives of ZBNF

The primary objective of Zero Budget Natural Farming (ZBNF) is to reduce the cost of cultivation by eliminating the need for expensive chemical fertilizers, pesticides, and other external inputs. By using farm-based natural resources, ZBNF helps farmers achieve financial self-reliance and reduces dependence on loans. Another important objective is to improve soil fertility through natural biological processes, enhancing microbial activity and organic matter content. ZBNF also aims to increase farmers' net income by lowering production costs and ensuring stable yields. Additionally, it focuses on protecting the environment and biodiversity by avoiding harmful chemicals and promoting ecological balance, while producing healthy, safe, and chemical-free food for consumers.

Key Principles of ZBNF

Zero Budget Natural Farming (ZBNF) is based on simple but powerful ecological principles that promote sustainable crop production. The system strictly avoids the use of chemical fertilizers and pesticides, relying instead on natural processes for plant nutrition and pest management. It discourages dependence on external credit and market-purchased inputs, helping farmers become economically self-reliant. ZBNF emphasizes the use of farm-based natural inputs such as cow dung, cow urine, crop residues, and botanical extracts, which are easily available to farmers. A major focus is on promoting beneficial soil microorganisms that enhance nutrient cycling, improve soil structure, and maintain long-term soil fertility through biological activity.

2. Core components of ZBNF

Zero Budget Natural Farming (ZBNF) is built on four major pillars that together improve soil health, crop growth, and ecological balance. These components work by activating natural biological processes rather than supplying nutrients through chemical inputs.

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कोटा, राजस्थान

Zero Budget Natural Farming (ZBNF)

संकलन

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Use of Indigenous Seeds

ZBNF strongly encourages the use of indigenous and locally adapted seed varieties. These seeds are naturally tolerant to local climatic conditions, pests, and diseases. They perform better under low-input natural farming conditions and maintain genetic diversity. Indigenous seeds also help preserve traditional knowledge and reduce dependence on commercial seed markets.

Natural Pest Management

Instead of chemical pesticides, ZBNF uses botanical formulations for pest control. Common preparations include Neemastra made from neem leaves and cow urine, Agniastra prepared using chili, garlic, and tobacco, and Brahmastra made from extracts of multiple medicinal plants. These formulations effectively control insect pests while preserving beneficial insects such as pollinators and natural predators. They also prevent the development of pest resistance, which is a major problem in chemical farming systems.

4. Benefits of ZBNF

Zero Budget Natural Farming (ZBNF) offers multiple benefits that cover economic, environmental, and social dimensions of agriculture. By relying on natural processes and farm-based inputs, ZBNF creates a sustainable and farmer-friendly production system.

Economic Benefits

One of the most significant advantages of ZBNF is the drastic reduction in input costs. Farmers do not need to purchase chemical fertilizers, pesticides, or costly hybrid seeds, which greatly lowers the cost of cultivation. Since most inputs are prepared on the farm, dependence on loans and credit is minimized. Even if crop yields remain moderate, farmers achieve higher net profits due to reduced expenses. Financial stability improves, reducing the risk of debt-related stress among farming communities.

Soil Health Improvement

ZBNF practices enhance soil fertility by increasing organic carbon content and improving soil structure. Continuous use of natural inputs such as Jeevamrit and mulching supports the growth of beneficial soil microorganisms, which play a key role in nutrient cycling and organic matter decomposition. Improved soil aggregation enhances water infiltration and root penetration, making crops more resilient to drought and stress conditions.

Environmental Benefits

ZBNF significantly reduces environmental pollution by eliminating chemical fertilizers and pesticides. This prevents contamination of groundwater, rivers, and soil ecosystems. Increased biodiversity is observed in ZBNF fields, including earthworms, beneficial insects, birds, and soil fauna, which contribute to natural pest control and ecological balance. Additionally, higher organic matter content in soil helps sequester carbon, thereby reducing greenhouse gas emissions and contributing to climate change mitigation.

Human Health Benefits

ZBNF ensures the production of chemical-free and residue-free food, which is safer and healthier for consumers. Farmers are not exposed to toxic agrochemicals, reducing the risk of occupational health problems. Natural produce often has better taste and nutritional quality, contributing to improved food safety and public health.

5. Role of zbnf in sustainable agriculture

Zero Budget Natural Farming (ZBNF) plays a significant role in promoting sustainable and climate-resilient agricultural systems. By strengthening natural ecological processes, ZBNF helps farmers adapt to changing climatic conditions while conserving natural resources.

Climate Resilience

ZBNF improves soil structure and increases organic matter content, which enhances the soil's water-holding capacity. Soils rich in organic carbon can retain moisture for longer periods, reducing crop stress during dry spells. Healthy soils with active microbial populations also improve root development and nutrient uptake, making crops more tolerant to heat and moisture stress. As a result, ZBNF reduces the risk of crop failure during drought conditions and improves yield stability.

Water Conservation

Water efficiency is a key feature of ZBNF. Practices such as Acchadana (mulching) cover the soil surface and significantly reduce evaporation losses, keeping soil cool and moist. The concept of Whapasa promotes balanced soil moisture and aeration, discouraging excessive irrigation. Light and need-based watering reduces water consumption and improves water-use efficiency. These practices are especially important in water-scarce and rainfed regions.

Biodiversity Conservation

ZBNF promotes on-farm biodiversity by avoiding chemical pesticides and encouraging mixed cropping and natural vegetation. Beneficial insects, pollinators, birds, and natural predators thrive in chemical-free environments and help control pests naturally. Soil fauna such as earthworms and microbes increase in number, improving soil fertility and biological activity. This biodiversity strengthens ecosystem stability and productivity.

Rural Livelihood Improvement

ZBNF empowers small and marginal farmers by reducing dependence on purchased inputs and credit. Low-cost farming increases profitability and supports self-reliant production systems. It also encourages community participation, local input preparation, and knowledge sharing, strengthening rural livelihoods and social sustainability.

6. Challenges, adoption and future scope

Despite its many advantages, Zero Budget Natural Farming (ZBNF) faces several challenges that affect its large-scale adoption. One of the major concerns is the initial reduction in yields observed in some crops during the transition period from chemical to natural farming. This phase requires patience and proper management, which may discourage farmers expecting immediate results. Another major challenge is the lack of adequate training and awareness among farmers regarding preparation and correct application of natural inputs such as Jeevamrit and botanical pest control formulations. Moreover, the preparation of bio-inputs is labor-intensive and time-consuming, which can be difficult for farmers with limited labor availability. In some regions, limited long-term scientific validation under diverse agro-climatic conditions also restricts acceptance among the scientific community and policymakers.

To promote natural farming, the Government of India has launched several initiatives. The Paramparagat Krishi Vikas Yojana (PKVY) supports cluster-based organic and natural farming practices. The Bharatiya Prakritik Krishi Paddhati (BPKP) specifically promotes natural farming systems using traditional inputs. In addition, several states have introduced state-level natural farming missions to encourage farmer participation through training, demonstrations, and financial support.

The future scope of ZBNF is promising if it is integrated with modern technologies. Precision farming tools such as soil testing, moisture sensors, and efficient irrigation systems can enhance the effectiveness of natural farming. Certification and proper market linkages are needed to ensure premium prices for natural produce. Digital advisory platforms and mobile-based services can help farmers access timely technical guidance. Further research is essential to evaluate long-term productivity, soil health benefits, and economic returns across different crops and regions.

To strengthen adoption, capacity building through farmer field schools, strong scientific research support, development of community-level input preparation units, and promotion of consumer awareness about natural produce are highly recommended. With coordinated efforts, ZBNF can become a major pathway toward sustainable agriculture.

CONCLUSION

Zero Budget Natural Farming (ZBNF) offers a sustainable, low-cost, and environmentally safe alternative to chemical-based agriculture. By strengthening natural biological processes and using farm-based inputs, ZBNF improves soil health, conserves water, and enhances farm profitability. With proper training, research support, and market linkages, ZBNF can play a vital role in achieving climate-resilient, self-reliant, and sustainable agricultural development in India.