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ZERO BUDGET NATURAL FARMING: THE FUTURE OF SUSTAINABLE AGRICULTURE

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Introduction:

Conventional agriculture has started after green revolution, though it increases the yield and meet the requirement of increasing population but the continuous use of chemicals in crop production results in deterioration of soil health and overall environment due to toxic residues. To ensure the environment safety without loss of crop productivity and eco- friendly alternatives to chemical farming is Natural farming. Natural farming or Zero budget natural farming philosophy is working with nature to produce healthy food, to keep ourselves healthy and to keep the land healthy. Everything in Nature is useful and serves a purpose in the web of life. Natural farming also referred as 'the Fukuoka method', 'the natural way of farming', 'Do Nothing Farming', because the farmer is considered only to be a facilitator - the real work is done by Nature herself. No tillage and farming without the application of herbicides, inorganic fertilizers and pesticides is practiced. Here, actual physical work and labor has been seen to reduce by up to 80% compared to other farming systems.

Padma Shri recipient Mr. Subhash Palekar 1st time adapted this zero budget natural farming system in the Indian 1990s which is an alternative to the Green revolution. Palekar has converted over 50 lakh farmers into practicing what he prefers to call 'Zero Budget Natural Farming (ZBNF) in various states of India. This method promotes soil aeration, minimal watering, intercropping, bunds, and topsoil mulching with crop residue and strictly prohibited intensive irrigation like flooding and deep plowing tillage practices. Mr. Palekar is against vermicomposting, because of its main component of organic farming and these composting worms like *Eisenia fetida* commonly called as European red wiggler introduced to India these worms absorb toxic metals and pollute groundwater and soil. In the ZBNF nothing has to be purchased from the outside. The word zero budgets means no credits or no expenses, without any credit and without spending any money on purchased agricultural inputs. It is a holistic agriculture practice that counters commercial expenditure and market dependency of farmers for inputs.

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All things requires for the growth of the plant are available around the root zone of the plant.

ZBNF is a resource efficient as it minimises the use of financial and natural resources while increasing crop yield.

difficult to codify them but they all can be grouped under generic name “Natural Farming”. Based on the principles of natural farming, different methods of farming are prevalent in India.

The important methods of natural and indigenous methods of farming practiced in India		
S.No.	METHODS	CONSTITUENTS
1	Biodynamic Farming (Rudolf Steiner 1861- 1925)	Emphasizes spiritual and mystical perspectives Cow horn manure and quartz (silica)- forces in the soil Astrological sowing and planting calendar
2	Natuecoculture (Dabholkar, 1967)	Mulching, No plowing, Amrut Mitti, Amrut- Jal
3	Rishi- Krishi (Deshpande, 1970)	Angara, Amrut Pani, Beej samskara, Achhadana
4	Agnihotra/ Homa Farming (Potdar and Paranjpe, 1970 – 2000)	Ghee, grains, milk, dried cow dung burnt in copper pyramid. Smoke purifies the air around
5	Permaculture (Bill Mollison and David Holmgren, 1978)	Aims to maximize the functional connection of its elements It integrates crops and animals with careful water management
6	Compost tea & Bokashi tea (Elaine Ingham, 1990)	Liquid extraction of nutrients and microbes from finished compost, molasses added
7	Panchagavya (K Natrajan, 2003)	Mixing 5 product of cow, coconut water and cane jaggery fermented for 30 days.
8	Zero budget natural farming (Palekar, 2005 – 2006)	Beejamrita, Jevamrita, Achhadana, Waaphasa

By restoring the quality of soil and water-related ecosystems, it decouples agricultural productivity and growth from ecosystem degradation and biodiversity loss. This decoupling of growth and resource-use provides a sustainable livelihood to farmers and allied value chain actors. It might help to reduce the leaching of nitrogen and phosphorous from the soil.

Farmers practice different kinds of local methods, traditional practices and indigenous inputs in natural farming which differ from region to region and it is very

These methods have different constituents, slope and implementation in the present context of promotion of chemical free low-cost environment friendly agriculture.

Similarities Between Organic and Natural Farming

Both are chemical-free and to a large extent, poison free. Farmers are encouraged to use local seeds and native cultivars of vegetables, cereals, legumes, as well as other crops in both farming methods. Nonchemical and homemade pest control solutions are

promoted by organic and natural farming methods.

Produces humus, conserves top soil, increases water retention, encourages soil

Difference between natural farming and organic farming	
NATURAL FRAMING	ORGANIC FARMING
No external fertilizer is used	Organic manures, such as compost, vermicompost and cow dung manure is used
No ploughing, no soil tilting, no fertilizers, and no weeding in natural farming, precisely as it would be in natural ecosystems.	Ploughing, mixing manure, weeding, and other fundamental agro activities are still required
Natural agriculture is an extremely low-cost farming method that completely molds with local wildlife.	Organic farming is still costlier due to the necessity of bulk manures, and it has an ecological footprint on the surrounding.
No need for certificates to grow and sell natural farming products	Certification is mandatory when selling organic products

Four pillars of Natural farming

- Jeevamrutham:** A fermented microbial culture derived from cow dung and urine, jaggery, pulse flour, and soil. It Stimulate microbial activity to make nutrients bioavailable and to protect the seedlings against pathogens. It contributing to sustainable agriculture by reducing the need for synthetic inputs.
- Beejamrit:** A fermented microbial solution, with loads of plant-beneficial microbes and is applied as seed treatment. It is expected that the beneficial microbes would colonize the roots and leaves of the germinating seeds and help in the healthy growth of the plants. It Protects young roots from fungus and seed borne or soil borne diseases.
- Acchadana- mulching:** Covering the top soil with cover crops and crop residues. It

fauna, prevents weeds.

Soil mulch: This protects topsoil during cultivation and does not destroy it by tilling. It promotes aeration and water retention in the soil. Therefore, deep ploughing should be avoided.

Straw mulch: Straw material usually refers to the dried biomass waste of previous crops. Any type of dry organic material will decompose and form humus through the activity of the soil biota which is activated by microbial cultures.

Live mulch: It is essential to develop multiple cropping patterns of monocotyledons and dicotyledons grown in the same field, to supply all essential elements to the soil and crops. Dicot group such as pulses are nitrogen-fixing plants. Monocots such as rice and wheat supply other elements like potash, phosphate and Sulphur.

4. **Whapaasa:** It means the mixture of 50% air and 50% water vapour in the cavity between two soil particles. It is the soil's microclimate on which soil organisms and roots depend for most of their moisture and some of their nutrients. It increases water availability, enhances water-use efficiency and builds resilience against drought

Plant Protection

1. **Brahmastra-** This is a natural insecticide prepared from leaves which have specific alkaloids to repel pests. It controls all sucking pests and hidden caterpillars that are present in pods and fruits.
2. **Neemastra-** It is used to prevent or cure diseases and kill insects or larvae that eat plant foliage and suck plant sap. This also helps in controlling the reproduction of harmful insects.
3. **Agniastra-** A natural pesticide is made by combining neem leaf pulp, tobacco powder, green chili powder, garlic paste, and turmeric powder. It controls all sucking pests and caterpillars, including Fruit Borer, Leaf Roller, Stem Borer, and Pod Borer.
4. **Dashaparni ark** acts as substitute for Neemastra, Bramhastra, and Agniastra. It is used to control all types of pests and used depending on the level of infestation.

Advantages of Natural farming

- ✓ Natural farming reduces the initial cost of farmers and hence increased income.
- ✓ The soil ecosystem improves.
- ✓ Cow dung adds soil nutrients value and available locally.
- ✓ Micro-organisms in cow dung decompose the organic matter in soil and make soil healthy for the plants.
- ✓ It required less electricity and water.
- ✓ It improves the productivity of the soil.
- ✓ It decreases the disease attack risk on the crop.

