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Zero Budget Natural Farming

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Zero budget natural farming (ZBNF) is a method of chemical free agriculture. It was originally promoted by agriculturist Subhash Palekar, who developed it in the mid-1990s as an alternative to the green revolutions methods that are driven by chemical fertilizers and pesticides and intensive irrigation. He considered it as 'Krishi Ka Rishi'. It is a unique modal that relies on agro-ecology.

The term 'Zero Budget' means the zero cost of production of all crops. ZBNF guides the farmers in practising sustainable farming that helps in retaining soil fertility to ensure chemical-free agriculture and ensure low cost of production (zero cost). This climate-resilient agricultural method, which is different from organic farming, aims at promoting agro-ecology and adopting low-cost agriculture practice wherein all critical inputs are gathered from the field and nothing is introduced from outside. Under ZBNF, neither fertilizer nor pesticide is used and only 10% of water is to be utilised for irrigation as compared to traditional farming techniques.

Its aim to bring down the cost of production to nearly zero and return to a pre-green revolution style of farming.

Its claims that there is no need for expensive inputs such as fertilizers, pesticides and intensive irrigation.

Palekar's vision

- His model eliminates the cost of fertilizers, pesticides and seeds. Hence he titled it as Zero Budget Natural Farming.
- He believes in a method of cultivation which make use of already existing nutrients in the soil such as phosphate, potash, zinc and calcium available in absorbable form to the plants.
- In the Zero Budget Natural Farming nothing has to be purchased from the outside. All things required for the growth of the plant are available around the root zone of the plants.
- About 98 to 98.5% nutrients are taken from air, water and solar energy. Remaining 1.5% nutrients taken from the soil are also available free of coat as it is taken from the prosperous soil which is enriched with these nutrients.

Four pillars of Zero Budget Natural Farming:

1. **Jeevamrutha:** Jeevamrutha is the first and important pillar of ZBNF. It is a blend of aged cow urine and fresh cow dung from India'sindigenous jiggery, water, pulse flour, soil, and cow breed. This mixture is one type of natural fertilizer which applied to farmland.

Soil is saturated with all the nutrients, but these are in the non-available form to the roots of the plants. Beneficial micro-organism in Jeevamrutha convert the nutrients in non-available form into dissolved form, when it is inoculated to the soil. Jeevamrutha is either sprayed/sprinkled on the crop field or added to the irrigation tank in regular interval of 15 days until the soil is enriched.

2. Bijamrita: It is a concoction of neem leaves and pulp, tobacco and green chillies prepared for insect and pest management that can be used to treat seed. Naturally occurring beneficial microorganism are found in cow dung. These micro-organism are cultured in the form of bijamrita and applied to the seeds as inoculum. It is reported that seed treatment with bijamrita protects the crop from harmful soil-borne pathogens and also helpful in producing IAA and GA3.

3. Acchadana (mulching): (soil mulch, straw mulch and live mulch) it protects topsoil during cultivation and does not destroy it by tilling.

A. Soil mulch: This protects topsoil during cultivation and does not destroy it by tilling. It promotes aeration and water retention in the soil. Palekar suggest avoiding deep ploughing.

B. Straw mulch: Straw material usually refers to the dried biomass waste of previous crops, but as Palekar suggest, it can be composed of the dead material of any living being (plants, animal etc.). Palekar's approach to soil fertility is very simple- provide dry organic material which will decompose and form humus through the activity of the soil biota which is activated by microbial cultures.

C. Live mulch (symbiotic intercrops and mixed crops): According to Palekar, 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.

4. Whapasa: Is is the condition where there are both air molecules and water molecules present in the soil. Thereby helping in reducing irrigation requirement. Whapasa means the mixture of 50% air and 50% water vapour in the cavities between two soil particles.

Different Asthras for pest management:

1) Agniastra: This primarily is the mixture of chilli, garlic, neem and cow urine and used to control the insects (leaf roller, stem borer, fruit corer and pod borer).

2) Bramhastra: Mixture of several locally available plants like neem, guava, custard apple, pomegranate etc. with cow urine and isused to spray over the leaves of the plant.

3) Neemastra: Mixture of cow dung, urine, neem etc. and used against leaf sucking insects and mealy bugs.

Universal Principles of Natural Farming

- Soil to be covered with crops 365 days (living roots)
- Minimal disturbance of soil
- Biostimulants as necessary catalysts
- Use indigenous seed
- Diverse crops
- Integrate animals in to farming
- Increase organic residue on the soil
- Pest management through botanical extracts
- No synthetic fertilizers, pesticides and herbicides

Benefits of Zero Budget Natural Farming

With the rising cost of external inputs (fertilizers and pesticides), which is the leading cause of indebtedness and suicide among farmers.

According to the National Sample Survey Office (NSSO) data, almost 70% of agricultural households spend more than they earn and more than half of all farmers are in debt.

Since in ZERO (Zero Budget Natural Farming) there is the need to spend money or take loans for external inputs, the cost of production could be reduced and farming made into a "Zero Budget" exercise.

This would break the debt cycle for many small farmers and help to envisage the doubling of farmer's income by 2022.

- At a time when chemical- intensive farming is resulting in soil and environmental degradation, a zero-cost environmentally friendly farming method is definitely a timely initiative.
- The ZBNF method promoted soil aeration, minimal watering, intercropping, bunds and topsoil mulching and discourages intensive irrigation and deep ploughing.
- It suits all crops in all agro-climatic zones.
- Improve the quality of groundwater aquifers as no chemicals are used which leads to leaching and contamination.
- Citing the benefits of ZBNF, in June 2018, Andhra Pradesh rolled out an ambitious plan to become India's first state to practices 100% natural farming by 2024.

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