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Role of Natural Farming in Indian Agriculture

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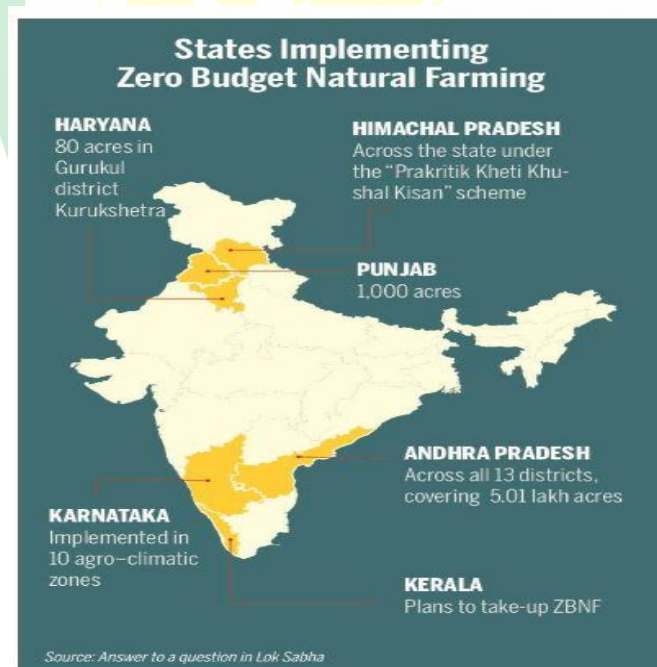
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Introduction:

In Natural Farming there are many working models of natural farming all over the world, the [Zero Budget Natural Farming \(ZBNF\)](#) is the most popular model in India. Zero Budget Natural Farming (ZBNF) is a set of farming methods. This comprehensive, natural, and spiritual farming system was developed by [Padma Shri](#) Subhash Palekar. It has attained wide success in southern India, especially the southern Indian state of Karnataka where it first evolved. The movement in Karnataka state was born out of collaboration between Mr. Subhash Palekar, who put together the ZBNF practices, and the state farmers association Karnataka Rajya Raitha Sangha (KRRS), a member of La Via Campesina (LVC). Privatized seeds, inputs, and markets are inaccessible and expensive for peasants. Indian farmers increasingly find themselves in a vicious cycle of debt, because of the high production costs, high interest rates for credit, the volatile market prices of crops, the rising costs of fossil fuel based inputs, and private seeds. Debt is a problem for farmers of all sizes in India. Under such conditions, 'zero budget' farming promises to end a reliance on loans and drastically cut

production costs, ending the debt cycle for desperate farmers. 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. 'Natural farming' means farming *with* Nature and *without* chemicals.

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. Zero budget natural farming (ZBNF) is a grassroots movement that aims to improve farm viability by reducing costs. In Andhra Pradesh alone, 523,000 farmers have converted 13% of productive agricultural area to ZBNF. However, even with maximum potential nitrogen fixation and release, only 52–80% of the national average nitrogen applied as fertilizer is expected to be supplied.



Importance of Natural farming:

It can be defined as a “chemical free farming and livestock based”. Soundly grounded in agro-ecology, it is a diversified farming system that integrates crops, trees and livestock, allowing the optimum use of functional biodiversity. It holds the promise of enhancing farmers income while delivering many other benefits, such as restoration of soil fertility and environmental health, mitigating and reducing green house gas emissions. It builds on natural processes that exist in or around farms. Internationally, Natural Farming is considered a form of regenerative agriculture a prominent strategy to save the planet. It has the potential to manage land practices and sequester carbon from the atmosphere in soils and plants, where it is actually useful instead of being detrimental. In India, Natural farming is promoted as Bhartiya Prakritik Krishi Paddhati Programme (BPKP) under [Paramparagat Krishi Vikas Yojana \(PKVY\)](#). BPKP is aimed at promoting traditional indigenous practices which reduce externally purchased inputs. Natural Farming, as the name suggests, is the art, practice and, increasingly, the science of working with nature to achieve much more with less.

The four pillars of ZNBF:**Jivamrita/jeevamrutha:**

It is a fermented microbial culture. 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; During the 48 hour fermentation process, the aerobic and anaerobic bacteria present in the cow dung and urine multiply as they eat up organic ingredients (like pulse flour). A handful of undisturbed soil is also added to the preparation, as inoculate of native species of microbes and organisms. Jeevamrutha also helps to prevent fungal and



bacterial plant diseases. Palekar suggests that Jeevamrutha is only needed for the first 3 years of the transition, after which the system becomes self-sustaining.

How to prepare jeevamrutha: Put 200 liters of water in a barrel; Add 10 Kg fresh local cow dung and 5 to 10 liters aged cow urine; Add 2 Kg of Jaggery (a local type of brown sugar), 2 Kg of pulse flour and a handful of soil from the bund of the farm. Stir the solution well and let it ferment for 48 hours in the shade. Now jeevamrutha is ready for application. 200 liters of jeevamrutha is sufficient for one acre of land. Jeevamrutha Application Apply the jeevamrutha to the crops twice a month in the irrigation water or as a 10% foliar spray.

Bijamrita/beejamrutha:

It is a treatment used for seeds, seedlings or any planting material. Bijamrita is effective in protecting young roots from fungus as well as from soil-borne and seedborne diseases that commonly affect plants after the monsoon period. It is composed of similar ingredients as jeevamrutha local cow dung, a powerful natural fungicide, and cow urine, a strong anti-bacterial liquid, lime, soil.

Bijamrita Application as a seed treatment: Add Bijamrita to the seeds of any crop: coat them, mixing by hand; dry them well and use them for sowing. For leguminous seeds, just dip them quickly and let them dry.

Acchadana- Mulching: According to Palekar, there are three types of mulching:

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

Straw Mulch:

Straw material usually refers to the dried biomass waste of previous crops, but as Palekar suggests, it can be composed of the dead material of any living being (plants, animals, 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.

Live Mulch (symbiotic intercrops and mixed crops):

According to Palekar, it is essential to develop multiple cropping patterns of monocotyledons (monocots; Monocotyledons seedlings have one seed leaf) and dicotyledons (dicots; Dicotyledons seedlings have two seed leaves) grown in the same field, to supply all essential elements to the soil and crops. For instance, legumes are of the dicot group and are nitrogen-fixing plants. Monocots such as rice and wheat supply other elements like potash, phosphate and sulphur.

Whapasa - moisture:

Palekar challenges the idea that plant roots need a lot of water, thus countering the over reliance on irrigation in green revolution farming. According to him, what roots need is water vapor. Whapasa is the condition where there are both air molecules and water molecules present in the soil, and he encourages reducing irrigation, irrigating only at noon, in alternate furrows ZBNF farmers report a significant decline in need for irrigation in ZBNF.



COMPONENTS OF NATURAL FARMING



Beejamrit

The process includes treatment of seed using cow dung, urine and lime based formulations.

Whapasa

The process involves activating earthworms in the soil in order to create water vapor condensation.

Jivamrit

The process enhances the fertility of soil using cow urine, dung, flour of pulses and jaggery concoction.

Mulching

The process involves creating micro climate using different mulches with trees, crop biomass to conserve soil moisture.

Plant Protection

The process involves spraying of biological concoctions which prevents pest, disease and weed problems and protects the plant and improves their soil fertility.

Other important principles of ZBNF:

Intercropping: This is primarily how ZBNF gets its “Zero Budget” name. It doesn’t mean that the farmer is going to have no costs at all, but rather that any costs will be compensated for by income from intercrops, making farming a close to zero budget activity.

Contours and bunds: To preserve rain water, Palekar explains in detail how to make the contours and bunds, which promote maximum efficacy for different crops.

Using local species earthworms: Palekar opposes the use of vermicompost. He claims that the revival of local deep soil earthworms through increased organic matter is most recommended.

Using of cow dung: According to Palekar, dung from the Bos indicus (humped cow) is most beneficial and has the highest concentrations of micro-organisms as compared to

European cow breeds such as Holstein. The entire ZBNF method is centred on the Indian cow, which historically has been part of Indian rural life.

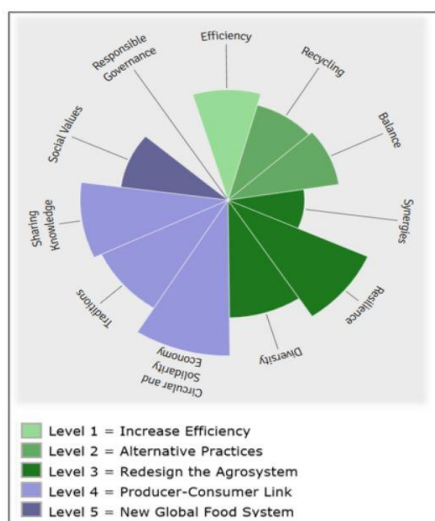
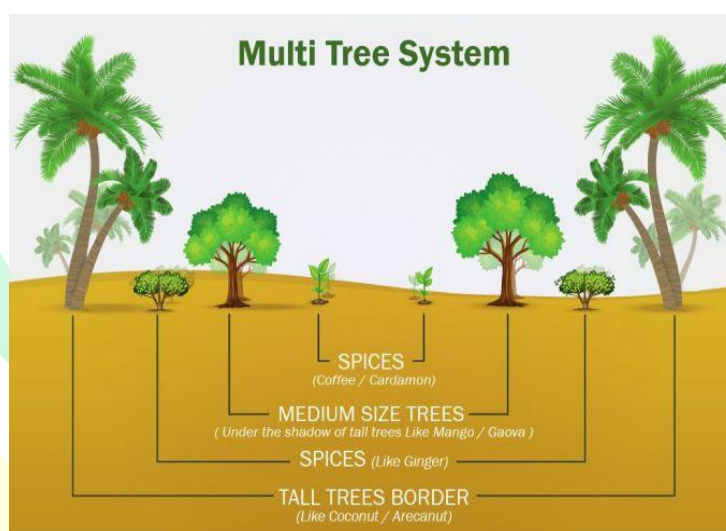


Figure: Assessment of ZBNF based on FAO Elements of Agroecology and Gliessman's five levels of food system change



Aim of natural farming: To make farming viable and aspirational by increasing net incomes of farmers on account of cost reduction, reduced risks, similar yields, incomes from intercropping. To drastically cut down production costs by encouraging farmers to prepare essential biological inputs using on farm, natural and home grown resources.

Significance:

Minimized Cost Of Production: It is considered as a cost effective farming practice with scope for raising employment and rural development.

Ensures Better Health: As Natural Farming does not use any synthetic chemicals, health risks and hazards are eliminated. The food has higher nutrition density and therefore offers better health benefits.



Employment Generation: It generates employment on account of natural farming input enterprises, value addition, marketing in local areas, etc. The surplus from natural farming is invested in the village itself. As it has the potential to generate employment, thereby stemming the migration of rural youth.

Environment Conservation: It ensures better soil biology, improved agrobiodiversity and a more judicious usage of water with much smaller carbon and nitrogen.

Reduced Water Consumption: By working with diverse crops that help each other and cover the soil to prevent unnecessary water loss through evaporation.

Rejuvenates Soil Health: The most immediate impact of Natural Farming is on the biology of soil on microbes and other living organisms such as earthworms. Soil health depends entirely on the living organisms in it.

Livestock Sustainability: The integration of livestock in the farming system plays an important role in Natural farming and helps in restoring the ecosystem. Eco Friendly bio-inputs, such as Jivamrit and Beejamrit, are prepared from cow dung and urine, and other natural products.

Resilience: The changes in soil structure with the help of organic carbon, low/no tillage practices and plant diversity are supporting plant growth even under extreme situations like severe [droughts](#) and withstanding severe [flood](#) and wind damage during [cyclones](#). Natural farming impacts many farmers positively by imparting resilience to the crops against weather extremities.