

Zero Budget Natural Farming in India: Aiming Back to the Basics

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Abstract

As the name implies, ZBNF is a completely organic method of farming. In essence, it returns to the sole utilisation of abundant natural resources, which ancient agriculture completely depended on. In this method, expenditure on purchased inputs is entirely disregarded. Any costs incurred accidentally are made up for by the successful output. ZBNF is gaining momentum as it restores soil health for sustainable crop production through diversification, microbial activities, nutrient recycling, and advantageous biological interactions in the current context of sharp increases in production costs and stagnation in production rate along with environmental footprints associated with chemical fertilizers/pesticides. Furthermore, in rain-fed regions where the green revolution is less significant, ZBNF can be a viable choice when the weather is unpredictable. It is an extreme form of low external input sustainable agriculture (LEISA), where all the inputs are locally available and output of one farming system is mostly used as input in other farming system.

Keywords: system, beneficial, sustainable, external, microbial

Introduction

On June 26, 2018, the New York Times ran the headline "Bringing farming back to nature" and pointed out the dire consequences for agriculture if nature is disregarded. A real-world example is the green revolution, which is no longer relevant because its artificial techniques did not increase yield and had negative effects on the environment. In terms of its impact on issues like the food crisis, climate change, natural resource depletion, migration, and farmer suicides, ZBNF may be the most successful agricultural movement in the entire globe. A "back to the basics" approach to modern agriculture through natural farming on a zero budget has many advantages. ZBNF completely relies on using internal inputs, which reduces the need to get loans for farming activities. Consequently, it may be a step to reduce debt and suicide in the farming community (particularly of the small and marginal

categories). Additionally, by removing chemicals (such as pesticides and fertilisers) from farming operations, ZBNF can prevent further deterioration and successfully restore the health of the ecosystem and soil. Additionally, it promotes soil aeration, bunding and topsoil mulching, intercropping, and less water application, all of which, while not immediately increasing production, can enhance farmers' income by creating self-sustaining systems after at least three years of the conversion period. There have also been reports of ZBNF's ecological advantages. Furthermore, ZBNF can be a good choice given the current labour shortage because it discourages the use of hired manual labourers and other intercultural operations. Due to the diverse cultures, there is no peak season in ZBNF models, therefore hiring labour during a specific period can be minimised. As a result, ZBNF may be able to lower the amount of energy used per unit of gross domestic product. Additionally, by lowering external inputs and promoting waste recycling rather than trash disposal or waste burning, ZBNF can lower the material footprint per population and per unit value added in agriculture.

Fundamental Practices of ZBNF

In the early 1990s, Mr. Palekar, who was also a victim of chemical-assisted agriculture on his own property, earned the title "Guru" (master) among ZBNF farmers. He proposed the following 4 ZBNF essential practises.

Jivamrita/Jeevamrutha

It is essentially a type of bio-fertilizer that enriches the soil with nutrients so that plants can absorb them. Additionally, this fermented microbial culture catalyses soil microbial and earth worm activity to cause them to accomplish all the beneficial things when put to the soil. During the fermentation process, bacterial inoculums present in cow faeces as well as in the first of native soil receive food from organic sources of nutrients and grow. Even so, other helpful microorganisms already present in the soil are drawn to and have their activities boosted by the applied fermented culture. Upon application, these microbes begin to function and enhance the crop's access to nutrients. According to Palekar, there is truly no need for external fertiliser application because the soil is a treasure trove of all nutrients that microorganisms can access when their activities are boosted by the application of Jivamrita/Jeevamrutha (or "nectar of life") It is also known to test for many soil-borne illnesses.

Bijamrita/Beejamrutha

Palekar claims that soil is a rich source of nutrients that microorganisms can access when their activities are stimulated by the use of Jivamrita/Jeevamrutha (or "nectar of life") It is also known to test for several soil-borne ailments. In times of labour and water shortages, the dry Jivamrita/Jeevamrutha version known as Ghanajivamrita is produced and may be stored for a year.

Acchadana/mulching

The practise of mulching the soil with plant matter or dust has many advantages. It prevents erosion of the top soil. Additionally, it increases soil aeration and protects soil moisture by reducing water loss through evaporation. Mulching helps to some extent control weed emergence. Additionally, organic mulches like dried plants produce humus during decomposition, which feeds the crop with nutrients. Labor shortages can be made up for since mulching minimises the need for tillage (Deep ploughing is generally discouraged in ZBNF). Live mulch is advantageous because it allows the soil to be amended with a variety of nutrients.

Whapasa/moisture

Since only a little amount of water (in the form of vapour) is required for crop growth, Whapasa/moisture focuses on increasing water use efficiency by reducing the quantity and frequency of irrigation water delivered. It offers drought resistance as a result. When air and water molecules are mixed properly, the soil is adequately aerated and 90% less water is used, which is beneficial for rain-fed agriculture.

Other Practices of ZBNF**Intercropping and Crop Rotation**

Intercropping is the simultaneous cultivation of two or more distinct crops on the same plot of land. Some of the main goals of intercropping include improving solar radiation harvesting, making better use of land and other resources, and reducing evaporation and erosion. Additionally, it contributes to farmers' revenue growth or provides food in the event that their primary crop fails. The intercropping system's component crops include legumes, millets, cereals, vegetables, fruit trees, and medicinal plants, among others. Cropping system diversification is another crucial ZBNF technique because it disrupts the environment, which, in turn, prevents the accumulation of illnesses and pests.

Plant Protection

Only during outbreaks of pest and disease are bio-pesticides (Neemastra, Agniastra, Bramhastra, etc.) derived from natural, organic, or bio-products allowed to be used in ZBNF to protect the plants from reaching economic harm levels. Insects including aphids, jassids, mealy bugs, white flies, etc., as well as various seed, soil, and air borne illnesses, are effectively controlled by them.

Bunds and Contours

Bunds and contours are constructed with the aim to reduce water borne erosion of land and conserve rain water for crop production.

Indigenous Earth Worm Species

Vermicomposting of the soil is not encouraged in ZBNF. Palekar claims that deeper soil has its own native species of earthworms that may effectively increase soil fertility when any organic matter is put to the soil and that there is no special need to utilise external vermicompost. He said that rare kinds of earthworms, in particular Eiseniafoetida, are harmful because they contaminate soil and ground water by absorbing hazardous metals.

Cow Dung

Only local Indian cows (*Bosindicus*) faeces are advised for use in ZBNF activities since these animals have 3-5 crores more helpful microorganisms than foreign breeds. Palekar claims that the faeces of foreign breeds contains numerous dangerous germs, fungi, and other pathogens, while Indian breeds are only found to be effective for crop cultivation. 30 acres of land can be farmed by one breed of indigenous cattle in the area. Therefore, proponents of ZBNF advise farmers to use the dung and urine of their local Indian cows for ZBNF and those of foreign breeds for the production of biogas or fuel rather than mixing the faeces of Indian and foreign bovine breeds.

ZBNF Movement

The ZBNF is a rural Indian movement for sustainable agriculture that is mostly made up of and administered independently by small and marginal farmers. Although it began as a collective or social movement in 2002 in Karnataka and then spread to other states (particularly in South India), it did not attract the attention of public or commercial organisations, policymakers, or scientists until recently. Since its inception, the ZBNF movement has severely questioned the relevance of what is now referred to as "techno-



scientific" or "mainstream" agriculture. The ZBNF movement spreads among farmers informally at the local level. The other farmers are trained by a community resource person or a group's master farmer. The ZBNF movement has networks of volunteers (leaders, officials from political parties, independents, Palekar and his followers), who arrange training camps at the state level. Ecology, principles, philosophy, success stories, etc. are covered in the training. Farmers were sceptical of Palekar's technology's effectiveness at first, which is clear given his small following. Only a small number of farmers were motivated by him to embrace ZBNF. Others were persuaded by their ZBNF fields' positive results, and as a result, an increasing number of farmers began to use this method. ZBNF gained pace starting in 2006 as a result of the influx of new supporters and volunteers who joined the cause. They also organised numerous training camps to propagate ZBNF across the farming community. Farmers from many regions of Kerala and even from other states, who were losing faith in chemical-based agriculture, took part in that initiative in the hope of a green revolution alternative (rather, suicide revolution).

It's important to note that numerous alternative agricultural practises were previously created by many historic names. With the success of the training programme in Wayanad, ZBNF movement has been spread to grass-root level of farmers through collective approach between successful farmers and ZBNF promoters. Training camps in presence of Subhash Palekar as chief speaker have been organised in many states (specially, of South India) and are still going on to spread this 'back to the basics' approach to the farming community. In all the training programmes, Palekar and other ZBNF activists have severely criticised green revolution and its devotees and promoted ZBNF through 'seeing is believing' approach. It should be noted that in addition to Palekar's workshops, farmer-to-farmer communications and local master farmers' practical trainings at the grassroots level have greatly increased awareness of ZBNF. Farmers' participation is thus expanded outside of Palekar's training or demonstration camps and into their own fields, where they often respond successfully. As a result, government and private organisations have recently become interested in the ZBNF approach and a number of initiatives are as a result now being launched. For ZBNF to operate effectively, sufficient policy is still required. However, in terms of the Indian agro-ecological system, Palekar's movement (ZBNF) is arguably the most well-known and widespread movement to date.

Success Stories of ZBNF

The long journey of ZBNF has just only begun. Still, it has been able to show its merit. Farmers tired of chemical farming are already showing interests on this alternative form of agriculture. Six states of India (Andhra Pradesh, Karnataka, Kerala, Himachal Pradesh Uttarakhand and Chhattisgarh) have started to give major thrusts on ZBNF. Bihar and Punjab have expressed their keen interests on it. Rajasthan, Meghalaya and Gujarat are also keeping eye on it. Successful outcomes in states specially, Karnataka and Andhra Pradesh are inspiring the whole nation to give it a try at least once.

Karnataka Story

Karnataka Rajya Raitha Sangha (KRRS), a state farmers organisation, partnered with SubhashPalekar in 2002 to promote ZBNF throughout the state. Through a number of training camps, KRRS was the primary one of many partners that significantly contributed to mobilising farmers in support of ZBNF. Farmers were interested in adopting ZBNF, according to Khadse, for a number of reasons, including: family health (54%), food security (46%), environmental safety (42%) and decreased cultivation costs (38%), decreased reliance on various corporate sectors (33%), decreased debt (30%), and spiritual motivation (30%). According to a rough estimate, almost 1 lakh farm families in Karnataka (mainly from middle-class categories) have already switched from conventional agriculture to ZBNF, and every single one of them has access to their own lands, irrigation systems, and the majority has at least one cow. He discovered that the adoption of ZBNF has successfully achieved all of the goals of Karnataka farmers, including 100% health improvement, income improvement for 85.7% of households, quality of produce improvement for 91.1% of households, yield improvement for 78.7% of households, selling price improvement for 57.9% of households, pest problem mitigation for 84.1% of households, debt reduction for 92.5% of households, decline in cultivation costs for 90.9% of households, and increased soil conservation for 93.6% of households

Maharashtra Story

The primary industry in Maharashtra's Wardha district is agriculture. The district's farmers have long struggled with the issues associated with chemical-based agriculture, including high input costs, low productivity, declines in market prices for the produce, pest and disease issues, soil degradation, threats to the environment and the health of both



producers and consumers, etc. Nearly 10,000 farmers have been inspired to switch to a natural farming method through ZBNF trainings and demonstrations. By implementing the ZBNF techniques, farmers have been able to improve soil health and productivity while reducing spending by 40–45%. By avoiding the involvement of intermediaries, they were able to sell their produce at a great profit. The Indian government's NitiAayog is currently promoting ZBNF as a global model and UNEP in India. The Indian government recently updated the requirements for several programs, including RashtriyaKrishiVikasYojana (RKVY) and ParamaparagatKrishiVikasYojana (PKVY), to include ZBNF.

Conclusion

The ZBNF has been developed with a highly positive philosophy to serve the farming community, regardless of the controversies and critics' points of view. In reality, it has been successful in reviving a lot of the country's small-scale farmers. Prior to making a recommendation, the claim must first be thoroughly evaluated or validated scientifically. In order to research ZBNF's effects on the health of the soil, land, and environment, the socioeconomic condition of farmers, and the nation's food security, multi-locational trials by unbiased, independent bodies like ICAR are urgently required at this time. Regular monitoring, data collecting using different ICT tools, e-tracking techniques, and the unbiased display of information in the public domain are some essential moving forward measures. The ZBNF movement should also adhere to appropriate transparency, objectivity, democratic assessments, opinions, sufficient precautions, and a forward-looking outlook. In reality, the cause of this issue is not the green revolution at all but rather its unscientific, excessive exploitation. Therefore, it would be premature to suggest or reject either ZBNF or chemical farming at this time because both are truly working to ensure the food security of the country.