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# Zero budgets Natural Farming: Myth and Reality

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## **Abstract**

*India is one of the largest agrarian economy in the world, where, about 44 per cent of the workforce are employed in agriculture contributing 14 percent of the GDP and about 10 percent of the country's exports. However, the productivity of the labour force engage in agriculture has continuously decline. The conventional farming method has become unfeasible due to ever raising input prices. This has led to increase in rural indebtedness and serious agrarian crisis in India. The Zero Budget Natural Farming (ZBNF) can help to eliminating rural indebtedness and degradation of natural resources in India. This paper presents some empirical evidence on ZBNF and its related myth and reality.*

**Key words:** Zero Budget Natural Farming, Rural Indebtedness, Agrarian Crisis

**JEL Classification:** Q14, Q16

## **Introduction:**

In India agriculture remains the key sector of Indian economy, where half of the country's population depends it's for their livelihood. Agriculture and allied activity contribute 17 percent to Grass Value Added (GAV) of National Income (MOA, 2017). After 1977, a major transition has been seen in Indian agriculture sector and shifted from subsistence to commercial farming. This transition helps country to attain self-sufficiency and nutritional security of growing population. Although, the conventional farming helped to attain self-sufficiency in food grains production, but at the same time it imposes significant negative impact on natural resources.

Why there is need for alternative farming method, which reduces the cost production as well as external negative externalities. The Zero Budget Nature Farming (ZBNF) presents solution for reducing cost of agriculture production and environmental negative externalities. The movement of Zero Budget Natural Farming is initiated by Subhash Palekar a farmer and supported by NGOs in Karnataka. This movement is primarily rural movement and supported

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by medium, small and marginal farmers (Khadse et al., 2017). The above concept of ZBNF is based on the Neo-Gandhian Philosophy of self-reliance and autonomy, which promote indigenous sustainable farming practices.

The origin of Zero budget natural farming movement is rooted in social movement occurs in 2002 to 2015 in Karnataka. It spread in across the state due to collective efforts of member of NGOs and farmers and subsequently in other states of India. Andhra Pradesh is the leading southern states have taken initiative to formulate policy on ZBNF and after that other state government are also showing keen interest in budgetary allocation for ZBNF. The central Government in 2019 budget also made finical provision for ZBNF at central schemes.

#### **Four-Wheel Approach and Input Management under ZBNF:**

Across the world agriculture scientists, philosophers, and farmers are busy to invent low-input alternative farming practices, which reduce the input costs and higher yields for farmers. The Invention of natural farming is practiced in pockets of area in world and focused to provide chemical free food for consumers and improved soil fertility. Zero Budget Natural Farming is one of the practicing low cost climate-resilient type farming method that encourage farmers to use locally sourced inputs, eliminating the use of chemical fertiliser and pesticides. Natural faring was developed by Japanese scientist and philosopher, Masanobu Fukuoka, who practiced in his own family farmland in the island of Shikoku.

In India after 1990's It has been noticed that Organic farming or natural farming getting space along with many practices related to sustainable agriculture farming. The agriculturist Subhash Palekar has helped to popularise ZBNF in Karnataka and across the country. He has developed four-wheel approach for input management under ZBNF. The first wheel is *Bijamrita*, which means seeds treatment using cow dung and urine-based formulation. It helps to protect young plants from fungus and seed and soil borne diseases. In this process beneficial bacteria which have plant protective qualities and stimulate plant growth (Sreenivasa, Naik, and Bhat, 2009).

The second wheel is *Jivamrita*, which means soil inoculants, the application of concoction made with cow dung, cow urine, jaggery, pulse flour, water and soil to multiply soil microbes. Jivamrita are microbial mixtures which are ready for use under 48 hours of preparation. For those farmers, who do not have access to water or lanor can made a dry version of Jivanrita is called Ghanajivamrita and it can be prepared once and stored for a year (Khadse and Rosset, 2019).

Subhash Palekar established that soil has inherent all necessary nutrients for growth of plants, and there is no need of external inputs. But farmer need to “unlocked” existing nutrients and made bio available through jiwamruta, this method is also called Annaputnas (Palekar 2005).

Subhash Palekar further claims that one cow is enough for the urine and cow dung to supply input for cultivating 30 acres of land. So, the owning of is not necessary condition for adopting ZBNF. He has also suggested when the local cows are not available, other animals like buffalos or even human urine can be used. But the best outcome is only possible if farmers are using indigenous cow breeds which have best microbes. The Native cow breeds are less input intensive and easier to manage for resource-poor farmers, but their populations have dropped significantly (Balaraju, Tripathi, and Yadav 2017).The field survey result on owning type of cow in Karnataka it had rarely found native cows. The similar filed study conducted by Munster (2016) in Kerala and found that dome farmers were purchasing the cow dung and urine from other farmers or landless herders. In Andhra Pradesh, the state government has provided financial support to farmers to access dung and urine of cows. The traditional pastoralist who had a special urine collection shed constructed via support of Andhra Pradesh Government under ZBNF. The local people are collecting the dung and urine and selling these to neighbouring ZBNF farmer groups (Khadse and Rosset, 2019).

The third wheel is *Acchadana Mulching*, which means covering the topsoil with cover crop and crop residues or applying a layer of organic material to the soil surface in order to prevent water evaporation, and to contribute to soil humus formation. Mulching in ZBNF takes various forms. “Live mulching” is promoted with cover crops of a mix of monocotyledons (like millets) and leguminous dichotyledons (like beans). The monocots provide nutrients like potash or phosphate, while the dicots help in nitrogen-fixing. Straw mulching is also promoted, using dry crop residue (Palekar, 2006; Khadse and Rosset, 2019).

And forth wheel is *Waaphasa*, which means soil aeration through a favourable microclimate in the soil. For insect and pest management, ZBNF encourage farmers to use various kashayams (decoctions) made with cow dung, cow urine lilac and green chillies. In the process of Waaphasathe roots absorb water vapor and not water. Palekar promotes a microclimatic condition around the roots, where there is a mix of air and water molecules and rejects overwatering. He suggested watering of plant only helpful when the sun is high at noon for optimum whaaphasa formation. He has also found that up to 90percent of water use

can be reduced through ZBNF method which is ideal for rain-fed farming and water scarce areas (Palekar, 2006; Khadse and Rosset, 2019).

Input management is crucial for reducing cost of cultivation under ZBNF. The use of external pesticide and external fertiliser increase the cost of cultivation. Subhash Palekar has suggested natural methods to control fungicides and pesticides via using locally sourced ingredients like neem leaves, chilies, garlic, tobacco, sour buttermilk, etc. Increasing functional diversity is a critical principle of ZBNF; several crop combinations, with a view of increasing functional biodiversity is proposed by Palekar. He rejects any external additions, including vermin-compost made by exotic worm species and instead supports the growth of local earthworms in situ.

Palekar's most popular model on farm management is called as five-layer model. It is a type of agro forestry model which combines trees and canopies of various plants in each layer at optimal level to harvest the required sunlight. He has proposed the combination of various crop and tree components, including ghanajiwari, jiwamritas in dry farm. The requirement of labour falls under ZBNF over a time as compare to non-ZBNF. The empirical study conducted based on farmers Interview found that the labour requirement is depends on the size of land and type of crop cultivated. The crops like; sugarcane and paddy are labour intensive and required more labour force than other crops. The small farm and marginal farm can be managed via using family members and extended family support. The medium and large land holdings need to hire labour from locally (Khadse and Rosset, 2019).

### **Derivers of ZBNF:**

There are various economic, social and environmental factors that having driving force behind the make production and consumption sustainable. In case of movement and growth ZBNF in India have many positive factors, which are seen in organic place at Karnataka. The origin of ZBNF is begun with individual effort and its demonstration effect helps to fallow by other farmers. The initial growth of the ZBNF is begin from Karnataka and fallowed by other neighbouring states Andhra Pradesh, Maharashtra and Tamil Nadu. The key deriving force in growth of ZBNF in Karnataka and neighbouring states are drown from social movement theories like frame theory, resource mobilization theory, political opportunity framework, empirical evidence from successful cases and emerging literature on agro ecology (Altieri and Nicholls 2008; Varghese and Hansen Kuhn 2013; Parmentier 2014; Khadse et al. 2017; Wijeratna 2018).

Further Miery Teran et al. (2018) have identified eight key drivers and five emblematic cases of agro ecology related to ZBNF movement in India. These drivers are, i) crises that drive the search for alternatives; ii) social organization; iii) constructivist teaching-learning processes; iv) effective agrological practices; v) mobilizing discourse; vi) external allies; vii) favourable markets; and viii) political opportunity and favourable public policies.

### **Empirical Evidence on Cost Compression:**

In India many empirical and case studies have conducted on the practices of ZBNF and found that the NGOs and farmers society are playing crucial role in promoting ZBNF. Here presented the result of empirical data of economic compression of ZBNF and non-ZBNF in during Kharif session in Karnatakain 2017. This data is barrowed from the APZBNF official website Rythu Sadhikara Samstha, Government of Andhra Pradesh. A total of 1,614 crop cutting experiments conducted by Ry. S. Son both type farmers. The result shows that 88 percent experiment have increase in net incomes due to increase in yield and decrease in cost of cultivation and 10 percent have indicated increase in net incomes Only in 2 percent cases, was recorded to decrease in net incomes and the cost reduction was not compensated by reduction in the yields.

Table 1 presented the cost of cultivation and net income earnings from food crops namely; Blackgram, paddy, GuliRagi and Ragi under ZBNF and Non-ZBNF. In case of paddy crop the cost, difference is highest but for other crops the cost different is low. The earn income of ZBNF is higher than Non-ZBNF.

Table 1 Cost comparison of food Crops ZBNF and Non-ZBNF

<b>Crops</b>	<b>Cost of Cultivation (Rs/ha)</b>		<b>Net Income (Rs/ha)</b>	
	<b>ZBNF</b>	<b>Non-ZBNF</b>	<b>ZBNF</b>	<b>Non-ZBNF</b>
Blackgram	15775	18595	39034	27243
Paddy	30983	43839	60743	40335
GuliRagi	7375	8125	42789	27717
Ragi	6875	7625	31590	25195

Source :( APZBNF, 2018)

Table 2 presented economic comparison of both type farmers for cash crops and the cost defences is nearly same for all chosen crops which is Rs 1000 to Rs 2000 per hectare. The difference in earned income is varies from crop to crop and highest more than 1 lakh per

hectare earn income differences found in case of Chillies. Other cash crops have greater also income earning differences than food crops.

Table 2 Cost comparison of Cash Crops ZBNF and Non-ZBNF

Crops	Cost of Cultivation (Rs/ha)		Net Income (Rs/ha)	
	ZBNF	Non-ZBNF	ZBNF	Non-ZBNF
Groundnut rainfed	23253	31072	41820	17791
Groundnut-irrigated	45866	59800	97383	60303
Cotton	40368	58658	63522	34036
Chillies	32883	48215	241390	157337

Source :( APZBNF, 2018)

The similar result also found in Karnataka, out of 97 farmers surveyed 85 percent reported improved income, 90 percent reported reduced production costs, 92 percent reported reduced need for credit, 91 percent reported improved quality of produce, 78 percent reported improved yields. The ZBNF farmers have reported ecological benefits, but no comprehensive study has been found yet. However, there is ample scientific evidence on the ecological benefits of the particular practices promoted by ZBNF-such as cow based microbial mixtures, mulching, improving functional on farm bio-diversity, enhancing soil microbial activity, agro-forestry systems, on-farm water conservation, and cover cropping among others (Altieri 2018; Asha2015)

### **Myth and Reality of ZBNF**

The Zero Budget Natural Farming is nothing but a kind of organic farming where, the use of chemical fertiliser and pesticides are prohibited. There is only one, deference between organic farming and ZBNF is that it proposed to reduce cultivation cost to zero but organic farming not such provisions. So, all the six myth which are identified by the Soil Association in their project report “Organic Food and Farming: Myth and Reality” in 2001. These are following myth and reality related to organic or natural farming and food quality.

*Myth One:* Food quality and health: organic foods are no healthier than non-organic foods

**Reality:** It is wrong: food produced organically or natural contains fewer contaminants. Some scientific studies have shown that there are more nutrients in organically produced food.

*Myth Two:* Food poisoning: organic farming increases the risk of food poisoning;

**Reality:** It is false: organic or natural farming can reduce the risk.

*Myth Three:* Pesticides: organic or natural farming uses pesticides that damage the environment;

**Reality:** It is not true: organic or natural farming systems rely upon prevention rather than cure, minimising the need for pesticides.

*Myth Four:* Value for money: consumers are paying too much for organic or natural food;

**Reality:** It is not so: crop rotations, in organic or natural farming, animal feed and welfare standards, the use of cow dung and urine instead chemicals, and the preservation of natural habitats all result inorganic food costing more to produce. Non-organic food appears to be cheaper but in fact consumers pay for it three times over.

*Myth Five:* Feeding the world: organic or natural food cannot feed a hungry world;

**Reality:** It is false: intensive farming destroys the fertility of the land and is unsustainable. Organic or natural methods help labour-rich but cash-poor communities to produce food sustainably

*Myth Six:* Animal welfare: organic or natural farming is unkind to animals

**Reality** Far from it: animal welfare and the freedom to behave naturally is central to organic or natural livestock standards.

*Myth Seven:* Zero Budget. The budget of cultivation of natural farming is zero.

**Reality** It is false: the cost of cultivation never be zero, only there is possibility that cost of cultivation can be minimise through use of family labour and home-made organic fertiliser and pesticide prevention products.

The practitioners of ZBNF clarify that 'Zero budget' does not literally mean that costs are 'zero', but rather implies that the need for external credit in cultivation to be zero. Palekar has also faced some resistance because of the usage of the terms 'zero budget,' as many



questioned the accuracy of the term, as some costs are involved. Resultant, he changed the name of ZBNF to Subhash Palekar Natural Farming (SPNF).

### **Conclusion:**

The Zero Budget Natural Farming is kind of organic farming and practicing mainly Sothern, South Eastern, and Middle states of the India. It is based on indigenous knowledge and traditional method of compose preparation, seed management, soil preparation and protection of corps from insects. The cost of cultivation per hectare is lower in ZBNF as compare to non-ZBNF and income earning per hectare under ZBNF is very high in case of cash crops. Similarly, in case of food crops is income earning per hectare also higher under ZBNF but not as per cash crops. The myths related to organic or natural farming, which are proper in society some are found wrong and some are true but can be improved through research and development.

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