

# What is Zero Budget Natural Farming

Writer- Priscilla Jebaraj (Editor)

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## "Will This form of chemical-free agriculture increase farmers' incomes? Where are pitfalls?"

The story so far: Finance Minister Nirmala Sitharaman thrust zero budget farming into the spotlight in the first Budget speech of the 17th Lok Sabha earlier this month, calling for a "back to the basics" approach. She said, "We need to replicate this innovative model through which in a few States, farmers are already being trained in this practice. Steps such as this can help in doubling our farmers' income in time for our 75th year of Independence." Several States, including Andhra Pradesh and Himachal Pradesh, have been aggressively driving a shift towards this model.

### What is it and how did it come about?

Zero budget natural farming (ZBNF) is a method of chemical-free agriculture drawing from traditional Indian practices.

It was originally promoted by Maharashtrian agriculturist and Padma Shri recipient Subhash Palekar, who developed it in the mid-1990s as an alternative to the Green Revolution's methods driven by chemical fertilizers and pesticides and intensive irrigation. He argued that the rising cost of these external inputs was a leading cause of indebtedness and suicide among farmers, while the impact of chemicals on the environment and on long-term fertility was devastating. Without the need to spend money on these inputs — or take loans to buy them — the cost of production could be reduced and farming made into a "zero budget" exercise, breaking the debt cycle for many small farmers.

Instead of commercially produced chemical inputs, the ZBNF promotes the application of jeevamrutha — a mixture of fresh desi cow dung and aged desi cow urine, jaggery, pulse flour, water and soil — on farmland. This is a fermented microbial culture that adds nutrients to the soil, and acts as a catalytic agent to promote the activity of microorganisms and earthworms in the soil. About 200 litres of jeevamrutha should be sprayed twice a month per acre of land; after three years, the system is supposed to become self-sustaining. Only one cow is needed for 30 acres of land, according to Mr. Palekar, with the caveat that it must be a local Indian breed — not an imported Jersey or Holstein.

A similar mixture, called bijamrita, is used to treat seeds, while concoctions using neem leaves and pulp, tobacco and green chillis are prepared for insect and pest management.

The ZBNF method also promotes soil aeration, minimal watering, intercropping, bunds and topsoil mulching and discourages intensive irrigation and deep ploughing. Mr. Palekar is against vermicomposting, which is the mainstay of typical organic farming, as it introduces the most common composting worm, the European red wiggler (*Eisenia fetida*) to Indian soils. He claims these worms absorb toxic metals and poison groundwater and soil.

### Why does it matter?

According to 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. In States such as Andhra Pradesh and Telangana, levels of indebtedness are around 90%, where each household bears an average debt of ₹1 lakh. In order to achieve the Central government's promise to double farmers income by 2022, one aspect being considered is natural farming methods such as the ZBNF which reduce farmers' dependence on loans to purchase inputs they cannot afford. Meanwhile, inter-cropping allows for increased returns.

The Economic Survey has also highlighted the ecological advantages.

### Is it effective?

A limited 2017 study in Andhra Pradesh claimed a sharp decline in input costs and improvement in yields. However, reports also suggest that many farmers, including in Mr. Palekar's native Maharashtra, have reverted to conventional farming after seeing their ZBNF returns drop after a few years, in turn raising doubts about the method's efficacy in increasing farmers' incomes.

ZBNF critics, including some experts within the Central policy and planning think tank NITI Aayog, note that India needed the Green Revolution in order to become self-sufficient and ensure food security. They warn against a wholesale move away from that model without sufficient proof that yields will not be affected. Sikkim, which has seen some decline in yields following a conversion to organic farming, is used as a cautionary tale regarding the pitfalls of abandoning chemical fertilizers.

### **Which are the States with big plans?**

According to the Economic Survey, more than 1.6 lakh farmers are practising the ZBNF in almost 1,000 villages using some form of state support, although the method's advocates claim more than 30 lakh practitioners overall. The original pioneer was Karnataka, where the ZBNF was adopted as a movement by a State farmers' association, the Karnataka Rajya Raitha Sangha. Large-scale training camps were organised to educate farmers in the method. According to a survey carried out in those early years, ZBNF farmers all owned small plots of land, had some access to irrigation and owned at least one cow of their own.

In June 2018, Andhra Pradesh rolled out an ambitious plan to become India's first State to practise 100% natural farming by 2024. It aims to phase out chemical farming over 80 lakh hectares of land, converting the State's 60 lakh farmers to ZBNF methods.

### **Is the budgetary support enough?**

Despite the ZBNF buzz caused by the Budget speech, the Finance Minister did not actually announce any new funding to promote it. Last year, the Centre revised the norms for the Rashtriya Krishi Vikas Yojana- Remunerative Approaches for Agriculture and Allied sector Rejuvenation (RKVY-RAFTAAR), a flagship Green Revolution scheme with an allocation of ₹3,745 crore this year, and the Paramparagat Krishi Vikas Yojana, which has an allocation of ₹325 crore and is meant to promote organic farming and soil health. Under the revised guidelines, both Centrally-sponsored schemes now allow States to use their funds to promote the ZBNF, vedic farming, natural farming, cow farming and a host of other traditional methods.

Andhra Pradesh says it has utilised ₹249 crore from these schemes to promote the ZBNF over a two-and-a-half year period. The State estimates it will need ₹17,000 crore to convert all of its 60 lakh farmers to the ZBNF over the next 10 years.

However, this is only a fraction of the spending on Central government subsidies for fertilizers, pesticides and mass irrigation that has driven the Green Revolution model.

### **What lies ahead?**

NITI Aayog has been among the foremost promoters of Mr. Palekar and the ZBNF method. However, its experts have also warned that multi-location studies are needed to scientifically validate the long-term impact and viability of the model before it can be scaled up and promoted country-wide.

The Indian Council of Agricultural Research is studying the ZBNF methods practised by basmati and wheat farmers in Modipuram (Uttar Pradesh), Ludhiana (Punjab), Pantnagar (Uttarakhand) and Kurukshetra (Haryana), evaluating the impact on productivity, economics and soil health including soil organic carbon and soil fertility.

If found to be successful, an enabling institutional mechanism could be set up to promote the technology, NITI Aayog vice-chairman Rajiv Kumar has said. The Andhra Pradesh experience is also being monitored closely to judge the need for further public funding support.



## Zero Budget Natural Farming

### What is it?

- This is an agricultural practice in which crops are grown without using fertilizers and pesticides or other chemical elements. Under this technique, natural manure is used instead of chemical to develop the crops that are cultivated and this compost is prepared by itself.
- Hybrid seeds, insecticides and chemical fertilizers are not used in this type of farming system.
- Zero budget is based on natural farming cow dung and cow urine. You would be surprised to know that a farmer can cultivate zero budget on thirty acres of land from the dung and urine of a single cow.
- Jivamrit, Dhanjivamrit and Jaman Vijamrit are made from cow dung and urine of indigenous species. It would be even more interesting to know that by utilizing them in the field, there is also an expansion of organic activities along with the increase of nutrients in the soil.
- There are innumerable micro-organisms in one gram cow dung that fulfill the 16 elements required for any crop. Under this method 90 percent of the water and fertilizer is saved.

### The objective

- High yield on low cost, protection from climate change and better health, zero budget is the basic purpose of natural agriculture.

### Related facts

- Subhash Palekar of Maharashtra is the father of zero budget farming. In different parts of the country, farmers are being trained in this agricultural system.
- Andhra Pradesh is the first state to adopt Zero Budget Natural Farming, while Himachal Pradesh is the second state.
- In place of chemical fertilizers, farmers use their composted compost in the cultivation. This compost is called 'Dhan Jivamrit'.
- Dhan Jivamrit uses cow dung, cow urine, gram

flour, clay, jaggery and water.

- Neemast, made of neem, dung and gaumutra, is used in place of chemical pesticides.
- In place of hybrid seeds of the market, indigenous seeds are used for crop production.
- Irrigation, rooting and plowing of fields is done by domestic animals.
- Zero Budget Natural Farming was started initially in September 2015 under the National Agricultural Development Plan of the Central Government.
- Zero Budget Natural Farming method drives good agricultural practices by discouraging the use of chemical pesticides.
- The farmer's cost is very low in this farming system, because the items used in the form of organic fertilizers such as cow dung, trees and vegetation, stool-urine, earthworm are available for free and in large quantity in villages.

### Agriculture and Food Management in Economic Survey

- Gross Value Added (GVA) in 2014-15, the country's agricultural sector has achieved a growth of 6.3 per cent from the negative growth of 0.2 per cent in 2016-17, but it declined to 2.9 per cent in 2018-19.
- Gross capital formation in agriculture sector decreased by 15.2 percent in the year 2017-18. It was 15.6 percent in 2016-17.
- During the year 2016-17, agriculture has increased by 2.7 percent as the percentage of GCF GVA. In 2013-14, it was at 2.1 percent level.
- The participation of women in the agricultural sector increased to 13.9 percent in 2015-16, compared to 11.7 percent in the period 2005-06.
- The number of such women in the small and marginal farmers is 28 percent. 89 percent of ground water has been used for irrigation works.
- Promoting dairy sector in India, the largest producer of milk in the world.

Expected Questions (Prelims Exams)

1. Consider the following statements regarding Zero Budget Natural Farming (ZBNF)-

1. It is a chemical free agriculture method.
2. It promotes the use of jeevamrutha in farms.
3. In this method, mainly the forntier state is Karnataka where Zero Budget Natural Farming was adopted as movement.

Which of the above statements is/are correct?

- (a) Only 1                      (b) Only 2  
(c) Only 3                      (d) All of the above

Expected Questions (Mains Exams)

Q. What is Zero Budget Natural Farming and how can it prove to be helpful in doubling income of farmers of India. Discuss the different aspects of it.

(250 Words)

**Note:** Answer of Prelims Expected Question given on 27 July. is 1(d).

