

Stirring up the truth about Zero Budget Natural Farming

Writer - R. Ramakumar (NABARD Chair Professor) & Arjun S.V.
(student at the Tata Institute of Social Sciences, Mumbai)

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"Zero Budget Natural Farming has no scientific validation and its inclusion into agricultural policy appears unwise"

Most criticisms of modern agricultural practices are criticisms of post-Liebig developments in agricultural science. It was after the pioneering work of Justus von Liebig and Friedrich Wöhler in organic chemistry in the 19th century that chemical fertilizers began to be used in agriculture. In the 20th century, the criticisms levelled against Green Revolution technologies were criticisms of the increasing "chemicalisation" of agriculture.

Claims were made that alternative, non-chemical agricultures were possible. Organic farming became an umbrella term that represented a variety of non-chemical and less-chemical oriented methods of farming. Rudolf Steiner's biodynamics, Masanobu Fukuoka's one-straw revolution and Madagascar's System of Rice Intensification (SRI) were examples of specific alternatives proposed. In India, such alternatives and their variants included, among others, homoeo-farming, Vedic farming, Natu-eco farming, Agnihotra farming and Amrutpani farming. Zero Budget Natural Farming (ZBNF), popularised by Subhash Palekar, is the most recent entry into this group.

According to Mr. Palekar, all knowledge created by agricultural universities is false. He calls Liebig as "Mr. Lie Big". He labels chemical fertilizers and pesticides as "demonic substances", cross-bred cows as "demonic species" and biotechnology and tractors as "demonic technologies". At the same time, Mr. Palekar is also critical of organic farming. For him, "organic farming" is "more dangerous than chemical farming", and "worse than [an] atom bomb". He calls vermicomposting a "scandal" and Eiseniafoetida, the red worm used to make vermicompost, as the "destructor beast". He also calls Steiner's biodynamic farming "bio-dynamite farming". His own alternative of ZBNF is, thus, posed against both inorganic farming and organic farming.

Mr. Palekar's premise is that soil has all the nutrients plants need. To make these nutrients available to plants, we need the intermediation of microorganisms. For this, he recommends the "four wheels of ZBNF": Bijamrit, Jivamrit, Mulching and Waaphasa. Bijamrit is the microbial coating of seeds with formulations of cow urine and cow dung. Jivamrit is the enhancement of soil microbes using an inoculum of cow dung, cow urine, and jaggery.

Mulching is the covering of soil with crops or crop residues. Waaphasa is the building up of soil humus to increase soil aeration. In addition, ZBNF includes three methods of insect and pest management: Agniastra, Brahmastra and Neemastra (all different preparations using cow urine, cow dung, tobacco, fruits, green chilli, garlic and neem).

States Implementing Zero Budget Natural Farming

HARYANA

80 acres in Gurukul district Kurukshetra

HIMACHAL PRADESH

Across the state under the "Prakritik Kheti Khushal Kisan" scheme

PUNJAB

1,000 acres

ANDHRA PRADESH

Across all 13 districts, covering 5.01 lakh acres

KARNATAKA

Implemented in 10 agro-climatic zones

KERALA

Plans to take-up ZBNF

Source: Answer to a question in Lok Sabha

Unsubstantiated claims

To begin with, ZBNF is hardly zero budget. Many ingredients of Mr. Palekar's formulations have to be purchased. These apart, wages of hired labour, imputed value of family labour, imputed rent over owned land, costs of maintaining cows and paid-out costs on electricity and pump sets are all costs that ZBNF proponents conveniently ignore.

Second, there are no independent studies to validate the claims that ZBNF plots have a higher yield than non-ZBNF plots. The Government of Andhra Pradesh has a report, but it appears to be a self-appraisal by the implementing agency; independent studies based on field trials are not available. There is a report from the La Via Campesina for Karnataka, but it is based on accounts of practitioners and not field trials. One field trial is ongoing at the G.B. Pant University of Agriculture and Technology, but its full results will be available only after five years. According to reliable sources, preliminary observations of these field trials have recorded a yield shortfall of about 30% in ZBNF plots when compared with non-ZBNF plots.

Standing reason on its head

Third, most of Mr. Palekar's claims stand agricultural science on its head. Indian soils are poor in organic matter content. About 59% of soils are low in available nitrogen; about 49% are low in available phosphorus; and about 48% are low or medium in available potassium. Indian soils are also varyingly deficient in micronutrients, such as zinc, iron, manganese, copper, molybdenum and boron. Micronutrient deficiencies are not just yield-limiting in themselves; they also disallow the full expression of other nutrients in the soil leading to an overall decline in fertility. In some regions, soils are saline. In other regions, soils are acidic due to nutrient deficiencies or aluminium, manganese and iron toxicities. In certain other regions, soils are toxic due to heavy metal pollution from industrial and municipal wastes or excessive application of fertilizers and pesticides.

On their part, agricultural scientists do identify the improper/imbalanced application of fertilizers, that too with no focus on micronutrients, as a matter of concern. Hence, they recommend location-specific solutions to nurture soil health and sustain increases in soil fertility. They suggest soil test-based balanced fertilisation and integrated nutrient management methods combining organic manures (i.e., farm yard manure, compost, crop residues, biofertilizers, green manure) with chemical fertilizers. But ZBNF practitioners appear to insist on one blanket solution for all the problems of Indian soils. One of Mr. Palekar's favourite remarks is that "soil testing is a conspiracy". Fourth, Mr. Palekar has a totally irrational position on the nutrient requirements of plants. According to him, 98.5% of the nutrients that plants need is obtained from air, water and sunlight; only 1.5% is from the soil. All nutrients are present in adequate quantities in all types of soils. However, they are not in a usable form. Jivamrit, Mr. Palekar's magical concoction, makes these nutrients available to the plants by increasing the population of soil microorganisms. All these are baseless claims. The Jivamrit prescription is essentially the application of 10 kg of cow dung and 10 litres of cow urine per acre per month. For a five-month season, this means 50 kg of cow dung and 50 litres of cow urine. Given nitrogen content of 0.5% in cow dung and 1% in cow urine, this translates to just about 750 g of nitrogen per acre per season. This is totally inadequate considering the nitrogen requirements of Indian soils.

Finally, the spiritual nature of agriculture that Mr. Palekar posits is troublesome. Some of his statements are odd. He has claimed that because of ZBNF's spiritual closeness to nature, its practitioners will stop drinking, gambling, lying, eating non-vegetarian food and wasting resources. For him, only Indian Vedic philosophy is the "absolute truth". By placing cows at the centre of ZBNF, he (wrongly) claims that India's cattle population is falling. From there, he espouses empathy for the activities of gau rakshaks. All of this reeks of a cultural chauvinism that uncritically celebrates indigenous knowledges and reactionary features of the past.

Scientific approach needed

Undoubtedly, improvement of soil health should be a priority agenda in India's agricultural policy. We need steps to check wind and water erosion of soils. We need innovative technologies to minimise physical degradation of soils due to waterlogging, flooding and crusting. We need to improve the fertility of saline, acidic, alkaline and toxic soils by reclaiming them. We need location-specific interventions towards balanced fertilisation and integrated nutrient management. While we try to reduce the use of chemical fertilizers in some locations, we should be open to increasing their use in other locations. But such a comprehensive approach requires a strong embrace of scientific temper and a firm rejection of anti-science postures. In this sense, the inclusion of ZBNF into our agricultural policy by the government appears unwise and imprudent.

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 in the context of Zero Budget Natural Farming (ZBNF):-
 1. This farming is based on dung and urine of indigenous cow.
 2. The term Zero Budget Natural Farming (ZBNF) has been coined by Subhash Palekar.
 3. The government has promoted Zero Budget Natural Farming in this budget to overcome the costs of chemical fertilizer, pesticides, seeds of farmers.

Which of the statements given above are correct?

(a) 1 and 2 (b) 2 and 3
 (c) 1 and 3 (d) None of the above

Expected Questions (Mains Exams)

- Q. 'In the Union Budget, Zero Budget Natural Farming has been described as cost-less and coupled with many benefits, but the various consequences of its application are contrary to the concept.' Critically evaluate Zero Budget Natural Farming in the context of this statement. (250 Words)

Note: Answer of Prelims Expected Question given on 8 Oct., is 1 (b).