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STIRRING UP THE TRUTH ABOUT ZERO BUDGET NATURAL FARMING

Relevant for: Indian Economy | Topic: Agriculture Issues and related constraints

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).

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.

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.

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.

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