

## 1. Stirring up the truth about Zero Budget Natural Farming

### Context:

- ▶ Recently, the criticisms levelled against Green Revolution technologies were criticisms of the **increasing “Chemicalisation” of agriculture**. In this context, Claims were made that alternative, non-chemical agricultures were possible.

### Organic Farming:

- ▶ 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.

### Zero Budget Natural Farming:

- ▶ Zero Budget Natural Farming (ZBNF), popularised by **Subhash Palekar**. His premise is that soil has all the nutrients plants need. To make these nutrients available to plants, we need the intermediation of microorganisms.

### “Four wheels of ZBNF”:

1. **Bijamrit** is the microbial coating of seeds with formulations of cow urine and cow dung.
  2. **Jivamrit** is the enhancement of soil microbes using an inoculum of cow dung, cow urine, and jaggery.
  3. **Mulching** is the covering of soil with crops or crop residues.
  4. **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).

### Unsubstantiated claims on ZBNF:

- ▶ Firstly, **ZBNF is hardly zero budgets**. Many ingredients of ZBNF 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 and Karnataka have a report based on accounts of practitioners and not field trials. Preliminary observations of these field trials have recorded a yield shortfall of **about 30% in ZBNF plots when compared with non-ZBNF plots.**

### Challenges in applicability of ZBNF to India:

- ▶▶ **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.

### Need to focus on:

- ▶▶ Thus the above challenges are tackled by adopting the following measures:
- ▶▶ **Location-specific solutions** to nurture soil health and sustain increases in soil fertility.
- ▶▶ **Soil test-based balanced fertilisation and integrated nutrient management methods combining organic manures** (i.e., Farm Yard Manure, Compost, Crop Residues, Bio Fertilizers, Green Manure) with chemical fertilizers.

### Way Forward:

- ▶▶ 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 water logging, flooding and crusting.
- ▶▶ We need to **improve the fertility of saline, acidic, alkaline** and toxic soils by reclaiming them. 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.