

# Zero-budget natural farming may provide sustainable future for agriculture

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‘Back to basics’ is the mantra of Zero-Budget Natural Farming (ZBNF), a radical indigenous farming technique gaining mass acceptance in some parts of India. Even the Union Budget 2019-20 referred to it as a practice to "double farmers’ incomes". States such as Andhra Pradesh, Karnataka, and Himachal Pradesh have already jumped on the bandwagon. While the practice is gaining momentum, the question is: can ZBNF really be the way forward for sustainable agriculture?

## **What is ZBNF?**

ZBNF is known to be a climate-resilient, low-cost, natural, and sustainable agricultural practice. It utilises locally-sourced inputs such as cow dung, cow urine, and plant organic matter, totally avoiding the use of inorganic fertilisers and pesticides. An exploratory study conducted in Andhra Pradesh by research-based think tank Center for Study of Science, Technology and Policy (CSTEP) reveals that ZBNF’s prescribed means of irrigation, nutrient, and pest-management systems has the potential to significantly reduce water and energy consumption as well as emissions from the agriculture sector (compared with conventional farming). Furthermore, the study suggests that the practice is not only environment-friendly but also cost-effective, owing primarily to the use of easily available low-cost farm inputs.

With Andhra Pradesh scaling up ZBNF across the state, it is essential to assess the sustainability of the practice. With about 86% of the state’s farming community constituting small and marginal farmers, the repercussions of the transition could be immense. When scaling up ZBNF, it would be prudent for the state to recall Sikkim’s tryst with organic farming.

## **Lessons from Sikkim**

Though Sikkim is regarded as the first 100% organic state in the country, it is yet to witness any significant success since the 2003 rollout. This is mainly because the state’s transition to organic fertilisers and manure was not adequately supported by a robust supply chain. Also, with the soil taking time to adjust to the new methods, the yield was relatively low in the initial years. The produce was more expensive on account of the cost-intensive organic inputs, need for special training in new techniques, higher labour cost, and the initial reduction in yield. This adversely affected the farmers, their families, consumers, and in turn, the state’s economy. This emphasises the overriding need for policy initiatives to be constantly monitored and supported by the government.

## **Doing the Math**

One of the core practices of ZBNF involves the use of indigenous cows. However, with lower milk productivity in indigenous cows compared to foreign cows, farmers prefer the latter. We need to keep in mind that not all marginal or small farmers can afford to own an indigenous cow. This, coupled with the costs involved in procuring certain ingredients for the suggested natural solutions, is bound to increase the input costs for farmers.

Additionally, there are impediments to farmers practising ZBNF in sporadic patches amidst fields of conventional-farmed crops (replete with factory-produced fertilisers and pesticides). Pests from neighbouring fertiliser-treated fields could infest the ZBNF fields, affecting the yield. Given that most farmers currently involved in ZBNF belong to the ‘marginal farmer’ category, such losses in yield can be financially devastating. The losses can further deepen due to the reduced rate of community buy-in—as seen in Sikkim.

## **Transition planner**

A recent study in Nature Sustainability states that while the nutrient value of the natural inputs is similar to the chemical ones used in low-input farms (farms using lower quantities of fertilisers and pesticides), it is less in high-input farms. When such nutrient deficiencies are aggregated at a large scale, it might hamper the yield over the years, potentially leading to food security concerns.

To overcome such challenges and ensure a smooth transition, a geographically-phased upscaling of ZBNF would be ideal. Based on the observations of the above study, marginal farms are at an advantage of minimal or no loss of yield. Initially, these can be transitioned into ZBNF followed by a gradual transition in larger farms. The observations from the study by CSTEP suggest that crops like paddy and chilli have lesser variations in yield with transition to ZBNF, and hence can be scaled up in the initial phases. More in-depth studies on other crops is recommended before a complete transition.

While harnessing the advantages of the prescribed natural inputs, it is also important to explore the feasibility of alternatives in case of inaccessibility to critical inputs. Considering the Government’s interest in promoting ZBNF at the national level, the extent of its sustainability needs to be critically monitored in the next few years.

An extensive study with a larger sample size and a few demonstration units in small pockets of monitored agricultural land is recommended. As the prescribed guidelines for ZBNF are similar for all crops and agro-climatic conditions, the single-solution applicability of natural ingredients needs to be tested for all crops and soil types. Close monitoring of the soil health during and after transition would allow us to understand the long-term impact of the practice. That said, any policy endorsement of ZBNF should be backed by adequate scientific research.

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