

Andhra Pradesh Zero Budget Natural Farming

- a concept note (4th March, 2019)

1. The Government of Andhra Pradesh (GoAP), Department of Agriculture (DoA) is implementing Andhra Pradesh ‘Zero-Budget’ Natural Farming (APZBNF) Programme, through Rythu Sadhikara Samstha (RySS) (corporation for farmers’ empowerment), a not-for-profit organization established by GoAP. The programme has been initiated in 2015-16 with multiple objectives of enhancing farmers’ welfare, consumer welfare and the conservation of the environment.

2. Zero-Budget Natural Farming (ZBNF) is a holistic alternative to the present paradigm of high-cost chemical inputs-based agriculture. It is very effective in addressing the uncertainties of climate change. ZBNF principles are in harmony with the principles of Agroecology. Its uniqueness is that it is based on the latest scientific discoveries in Agriculture, and, at the same time it is rooted in Indian tradition. UN-FAO in April 2018 urged all countries to move towards the adoption of Agroecology to meet the twin goals of global food security and conservation of the environment.

Four Wheels of ZBNF

3. ZBNF is pioneered by Padma Shri Awardee Dr Subhash Palekar, who is regarded as the “Father of Zero-Budget Natural Farming” in India. ZBNF practices are built on four core principles:

1. BEEJAMRUTHAM

Microbial seed coating through cow urine and dung-based formulation

2. JEEVAMRUTHAM

Enhance soil microbiome through an ‘inoculum’ of fermented cow dung, cow urine and other local ingredients

3. ACHHADANA

(COVER CROPS and MULCHING): Ground to be kept covered with crops and crop residues

4. WAAPHASA

Fast buildup of soil humus through ZBNF leading to soil aeration, soil structure, and water harnessing

1. Microbial seed coating



2. Bio Inoculants



3. Mulch and crop residues

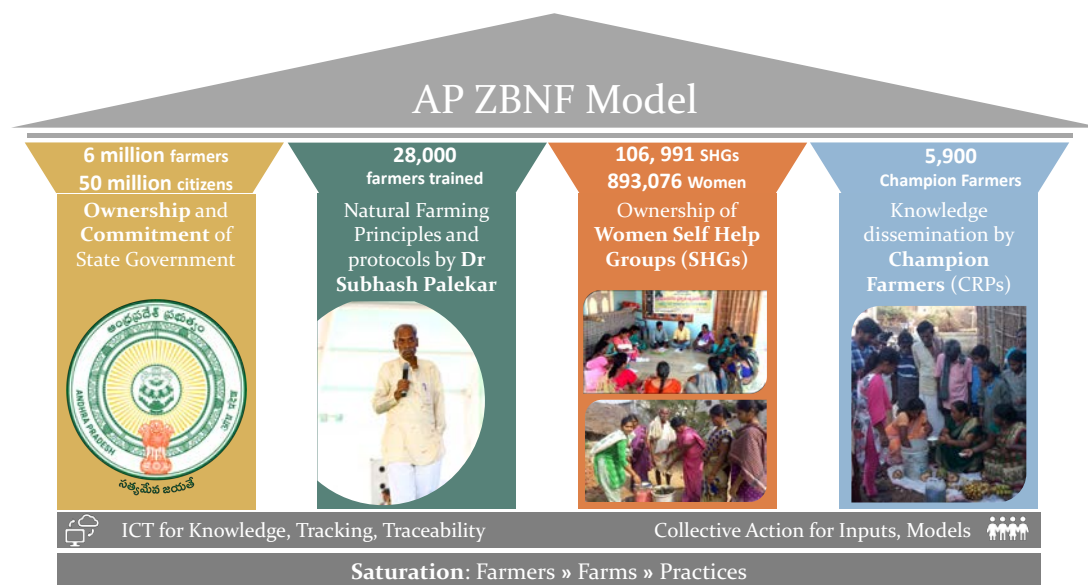


Zero Chemicals – no synthetic fertilisers and pesticides; minimal tillage

Pillars of APZBNF Programme

I. Farmer to farmer extension

4. The programme invests heavily in building the capacities of farmers and in their continuous handholding. The crucial innovation and the strength of the programme is the farmer-to-farmer knowledge dissemination strategy. The trainers are the best practicing ZBNF farmers, called Community Resource Persons (CRPs). **CRPs form the key pillar of ZBNF Extension.** They are highly motivated and strongly committed to ZBNF, as they have experienced the transformation in their lives by the practice of ZBNF in their own fields. It is their dedicated work that has resulted in new farmers in the programme villages switching over to, and, persisting with ZBNF. They are the **true heroes** of this unique movement.



5. The CRPs' speciality is that they don't just educate the farmers about the ZBNF practices but also help them to make the ZBNF inputs and apply them in the field. They provide continuous handholding support as they stay in the village, and any farmer can approach them at any time for any concerns and queries related to his crop. The CRPs are intensively trained in all aspects of their work.

They are trained in video dissemination and are provided handheld video projectors, called pico-projectors. As far as content is concerned, APZBNF has produced in partnership with Digital Green Foundation, almost 300 videos, of 8 to 12 minutes duration, on various ZBNF practices, crop wise recommendations and case studies of successful ZBNF farmers. The CRPs conduct video dissemination every evening in one of the villages in the cluster and follow it up by discussions with farmers. This has greatly helped in accelerating the ZBNF adoption rates. The CRPs are trained in using smartphones for tracking farmer and farm practices.

6. Around 900 senior-level CRPs are in the programme across the state. 3,500 new CRPs called Internal CRPs (ICRPs) have been added in 2018. These 'Heroes' have emerged from the programme villages. They are ready to work in their own villages or in adjoining villages for ZBNF knowledge dissemination. They work closely with the women Self-Help Groups (SHGs). They provide technical assistance to farmers in preparing inputs. The ICRPs are

directly responsible for taking ZBNF to the farmers. The initial set of senior-level CRPs have taken the role of mentoring ICRPs.

7. A statewide ZBNF farmer verification was conducted in late 2018. In this exercise, 254,000 farmers were verified on the extent of ZBNF principles practiced and adopted. Champion farmers were identified among the best practitioners from the villages to be utilized as future ICRPs. Around 4,000 new ICRPs are identified through this elaborate exercise and will be deployed in 2019.

8. A further social innovation in knowledge dissemination is the identification of one best practicing farmer in a women Self-Help Group (SHG – a 10-member group) as a Lead Farmer. They are being trained by the I - CRPs to provide leadership in knowledge dissemination at the group level. It is planned to have one lead woman farmer, for each woman SHG, and one lead male farmer to guide the spouses of the SHG members. This ensures dissemination of relevant and high-quality knowledge, to men and women. The ZBNF knowledge is shared in their group meetings, and the ICRP/CRPs supplement the knowledge and address the concerns of farmers.

9. Along with the CRPs, young agriculture graduates have been recruited under a Fellowship programme. At present, 274 Natural Farming Fellows (NFFs) have joined the programme. Their role is to be a model farmer by practicing ZBNF in a leased land in the village where they will be staying during the entire fellowship period of three years. They are being groomed to become trainers, researchers and integrators of ZBNF programme in their cluster of villages.

II. Women power

10. Existing women SHGs and their federations form the second key pillar of APZBNF model and play a central role in programme management, ZBNF knowledge dissemination and extension with farm families, farm-wise planning for each family in Kharif and Rabi campaigns, meeting working capital requirements and handling community funds, and tracking the progress. Men SHGs and federations are emerging as well. Women SHG-centric extension is accelerating the ZBNF expansion. To facilitate this process, 400 Project Resource Persons for Social Mobilization (PRP) have been working with women Self-help Groups and men Self-help Groups of Farmers. The women SHGs and men farmer SHG s and their federations gradually take over the programme management from the APZBNF and ensure its self-sustenance.



11. The APZBNF approach is to **saturate each village** in 3 years from the year of entry into that village.

Whole Village Approach			A typical farmer's adoption pattern		
Year 1	Year 2	Year 3	Year 1	Year 2	Year 3
25%	60%	> 80%	1/4 th	½	Full area

Within a village, each farmer takes 3 years to cover the entire holding into ZBNF. Thus in 5 years, a village becomes a bio-village.

Kondabaridi, a village in Vizianagaram district has achieved the unique distinction of becoming the first bio-village in the state. Additionally, there are 124 villages in the state,

where all farmers in the village have adopted ZBNF practices in their land, either fully or in part. In the coming years, we expect more and more villages to become bio villages.

12. Around 20 Natural Farming Health and Nutrition Fellows are also on board with a major focus on improving Health and Nutrition of all the families in the cluster. This is facilitated by a variety of interventions – intensive knowledge dissemination around preventive health, and balanced nutrition, smooth running of the farmer nutrition school, implementation of nutrition garden in their cluster, facilitate nutritious meals in the schools, etc.

13. A Pilot in Community level marketing is being undertaken in 23 clusters by marketing CRPs with focus on local consumption within the villages. Linkages between Farmer Producer Organizations, Women SHGs, and ZBNF entrepreneurs are being strengthened for processing, value addition, selling marketable surplus beyond the clusters. Health and Nutrition CRPs are deployed in 8 districts, 20 clusters and 40 villages working with a focus on institutional linkages of ZBNF products with Anganwadi and mid-day meals in schools.

ZBNF Cluster and Cluster Team

14. A group of 5 Gram Panchayats/Villages, with around 2000 farmers is regarded as a **ZBNF cluster** and it is the unit of implementation. Each cluster has a group of dedicated field functionaries with specific roles to take the ZBNF agenda forward.

Cluster Functionaries	Team
Internal ZBNF CRPs (L3) @ 1 per every 100 farmers	20
GP-level ZBNF CRPs (L2) @ 1 per GP	5
Cluster-level ZBNF CRPs (L1) @ 1 per Cluster	1
Natural Farming Fellows (1 per 2 Clusters)	1
Thematic CRPs (Marketing, Social Mobilization, Health and Nutrition, Digital CRPs, etc.)	2- 4

RySS ZBNF HR Architecture at various levels

15. The programme is implemented and coordinated by 10-15-member District Team led by District Project Managers, at the district level. At the State level, the State team comprising of the State Implementation Unit and Technical Support Unit is providing the overall management support. A band of young professionals is also supporting them.

APZBNF Programme Impacts

16. The programme has been able to reach to reach 523,000 farmers in all 662 mandals, in 3,015 villages of the state in Kharif 2018. Reaching this humungous number of farmers has been possible due to the presence of 5,600 CRPs and field functionaries working with 106,991 women SHGs. The programme is supported by funding from Government of India schemes – Rashtriya Krishi Vikas Yojana (RKVY) and Paramparagat Krishi Vikas Yojana (PKVY). The programme is receiving a Technical Support Grant from Azim Premji Philanthropic Initiatives (APPI).

The results of the programme, both in terms of higher yields and lower costs, have been very encouraging. In all the Crop Cutting Experiments (CCEs) conducted in agriculture seasons in 2017 and 2018, there has been a reduction in the cost of cultivation. Also, 88% of the CCEs in 2017 have reported an increase in yield compared to a Non-ZBNF farm under similar

conditions. The preliminary data from the 2018 Agriculture season has shown a significant increase in yields of major crops grown across the districts.

Yields in ZBNF and Non-ZBNF

Crops	ZBNF (Kg/ha)	Non-ZBNF (Kg/ha)	% change
Paddy (Irrigated)	5643	4932	14%
Groundnut (Rainfed)	2109	1573	34%
Cotton (Rainfed)	995	906	10%
Maize (Irrigated)	5962	4929	21%
Ragi (Rainfed)	2710	2091	30%
Sugarcane (Irrigated) (in tonnes)	147	97	51%

Net Incomes in ZBNF and Non-ZBNF

Crops	ZBNF (USD/ha)	Non-ZBNF (USD/ha)	% change
Paddy (Irrigated)	849	564	14%
Groundnut (Rainfed)	873	478	34%
Cotton (Rainfed)	561	189	10%
Maize (Irrigated)	372	255	21%
Ragi (Rainfed)	846	376	30%
Sugarcane (Irrigated) (in tonnes)	4,328	2,580	51%

Resilience to Climate Shocks (Droughts and Cyclones)

18. ZBNF crops have shown greater resilience to climate shocks than non-ZBNF crops. During 2018, Andhra Pradesh has suffered from two cyclones (Pethai and Titli). Despite heavy winds and devastation in many parts of the state, ZBNF crops have withstood the cyclone due to better health of the plant root system.



Pre monsoon dry sowing models are being promoted across the state as one of the drought mitigation strategy. The sowing down by NFFs in drought areas have shown excellent results covering the soil all through the year and helping in water conservation.



Impact on biodiversity, health and nutrition

19. ZBNF crops have demonstrated greater biodiversity in the soil, plants and the tree tops. Earthworms, honeybees, bird nests and beneficiary insects are a common sight at ZBNF fields.

ZBNF is also taking care of Health and Nutrition Security for the farmers and the consumers particularly in rural areas. A pilot study is underway to quantify the impact.

Hon'ble CM's Visionary Guidance

20. Hon'ble Chief Minister of A.P has been the biggest champion of this transformation, right from the inception of the programme.

In January 2018, Hon'ble CM addressed several international delegates at World Economic Forum in Davos about the APZBNF Programme. Department of

Agriculture has been entrusted the work to prepare a comprehensive action plan to scale up the programme to cover all the 6 million farmers and 8 million hectares in AP.

On 2nd June 2018 Hon'ble CM graced the event of signing an MoU between RySS and Sustainable India Finance Facility (SIFF), promoted by UN Environment Programme (UNEP) to help RySS raise resources required for scaling-up and strengthening the programme in scientific research and marketing.



On 24th September 2018, the Hon'ble CM delivered a keynote address at the event 'Financing Sustainable Agriculture: Global Challenges and Opportunities' organized by United Nations Environment Programme as part of the south-south collaboration, coinciding with UN General Assembly (UNGA) in New York. He presented the pioneering work of Government of Andhra Pradesh in promoting ZBNF across the state.

21. Accolades and recognition

- NITI Aayog, India's think-tank of Government of India has recommended all states in India to follow the AP model for implementing ZBNF
- APZBNF was one of the awardees at the Paris Peace Forum held in November 2018
- World Future Council has selected APZBNF as one of the top 30 most promising policies in agroecology
- AP ZBNF programme is being showcased at Beacons of Hope by the Global Alliance for Future of Food.



“Implementation of ZBNF is a top priority of the Agriculture Department and the State Government.”

Shri Somireddy Chandramohan Reddy
Hon’ble Minister for Agriculture

ZBNF Scaling-up Plan

22. In line with the Hon’ble CM’s vision, a comprehensive plan for scaling out has been developed. APZBNF is planning to cover all the 6 million farm-families by 2024, and an estimated 8 million hectares of agricultural land in Andhra Pradesh by 2026 and transform AP into the first natural farming state in the country. Planned milestones in this journey:

Timeline	Milestone
2018 - 19	Reached all 662 rural mandals - <i>500,000 farmers</i>
2019-20	<i>Reach 750,000 farmers</i>
2021-22	Reach all GPs (12,924); <i>3.5 million farmers</i>
2023-24	Reach all farm families; <i>6 million farmers</i>
2025-26	Cover entire cultivable area in AP

RySS as a National Resource Organization

23. As RySS is scaling up ZBNF in AP, it is also emerging as a National Resource Organization. States like Himachal Pradesh, Chhattisgarh, Rajasthan, Karnataka, Madhya Pradesh, and Kerala have been taking inputs from AP in terms of planning, designing and implementation of ZBNF.

24. Partnerships

- Sustainable India Finance Facility set up by UNEP in partnership with ICRAF and BNP Paribas Bank – Availability of resources for scaling up ZBNF programme
- World-Agro forestry (ICRAF) - Socio-economic impact and impact of ZBNF on soil health – soil organic matter, biodiversity, water infiltration, etc.
- Centre for Economic and Social Studies (CESS) - Independent Crop Cutting Experiments
- French Agricultural Research Centre for International Development (CIRAD) and F.A.O – Foresight 2030/50 on the structural socio-economic transformation
- Reading University and ICRAF - Science behind ZBNF
- FAO – Participatory Farmer Field School
- The Sustainable Trade Initiative (IDH) for marketing
- Indian Institute of Soil Science, (IISS) on soil health measurement
- FAO – Participatory Farmer Field School

