

ENVIRONMENT AND SUSTAINABLE DEVELOPMENT IN ANDHRA PRADESH

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Abstract:

Andhra Pradesh is a leading agrarian state in India. The state is made up two major regions of Rayalaseema and Coastal Andhra Pradesh and has a total twenty six administrative districts. Paddy is the major food crop and staple food in the state, besides farmers also grow groundnut, cotton, jowar, bajra, minor millet, coarse grain and many varieties of pulses, oilseeds, sugarcane, chilli, pepper and tobacco. On the other hand the state is the largest producer of fruits and vegetables. Climate Resilient Zero Budget Natural Farming (CRZBNF) was undertaken. In 2014, the Government of Andhra Pradesh, Department of Agriculture with the establishment of Rythu Sadhikara Samastha (RySS), a fully government owned not for profit organization to scale up ZBNF practices, proposes to cover all 6 million farmers and eight million hectares of agricultural land in the state by 2024. The Programme aims to promote Climate-Resilient, Chemical free, ecological agriculture and provide small and marginal farmers with profitable livelihoods from agriculture. Since then there has been no farm suicides reported from areas where Agro-ecological farming practices are being followed in the state. Hence, in this background the present study has been examine to study the progress of Zero Budget Natural Farming (ZBNF) scheme in the state during 2015-16 to 2021-2022. To supply traditional seeds to the ZBNF farmers at subsidy prices through Seed Corporation. Strengthening of agriculture market infrastructure, extend the procurement mechanism and fixing higher MSP for the organic production than in-organic production. To extend more training camps at village and mandal level for extension of ZBNF area and production through ZBNF experts. They help farmers enrol into the ZBNF programme, adopt the right practices at right time by providing information and knowledge

Keywords: Climate-Resilient, Farming, Chemica, Environment, Sustainable, ZBNF)

1.Introduction:

United Nations Environment's Executive Director ERIK SOLHELM stated that the Zero Budget Natural Farming (ZBNF) is an unprecedented step towards sustainable agriculture on massive scale and the "kind of bold change we need to protect the climate, bio-diversity and food security". He noted that it is a better deal for farmer's consumers and the planet". SUNNY VERGHESE, Chair World Business Council for Sustainable Development said that ZBNF creates the social capital, which is necessary for a vibrant and inclusive agricultural production by establishing farmers federations and Self-Help Groups (SHGs) and placing farmers at the fore front of knowledge creation and dissemination. According to the study team of the United States Department of Agriculture (USDA) reported organic farming is a system which avoids or largely excludes the use of synthetic inputs (such as fertilizers, pesticides, hormones, feed additives etc.,) to the maximum extent feasible. Organic farming systems rely upon crop rotations, crop residues, animal manure, off-farm organic wastes.

The Prime Minister Shri Narendra Modi addressed to the UN 14th conference of parties (COP14) in greater NOIDA. This key message was to reduce consumption of chemical

fertilizers, and promote Zero Budget Natural Farming (ZBNF). The main objective of ZBNF is to make agriculture viable, sustain agrarian livelihoods and reduce agrarian distress through cost reduction and sustainable agricultural practice that are climate resilient. It aims to reduce costs of cultivation and climate risks, enhance yields and soil fertility through adoption of agro-ecology framework. The India Council of Agricultural Research (ICAR), studied the possible impact of ZBNF on yield of major crops like wheat and rice, in comparison of chemical fertilizer-based farming. It needs to do large scale testing in different regions to see the nationwide implications of ZBNF on overall production of major crops. Andhra Pradesh is a leading agrarian state in India. The state is made up two major regions of Rayalaseema and Coastal Andhra Pradesh and has a total twenty-six administrative districts. Paddy is the major food crop and staple food in the state, besides farmers also grow groundnut, cotton, jowar, bajra, minor millet, coarse grain and many varieties of pulses, oilseeds, sugarcane, chilli, pepper and tobacco. On the other hand the state is the largest producer of fruits and vegetables. Climate Resilient Zero Budget Natural Farming (CRZBNF) was undertaken. In 2014, the Government of Andhra Pradesh, Department of Agriculture with the establishment of Rythu Sadhikara Samastha (RySS), a fully government owned not for profit organization to scale up ZBNF practices, proposes to cover all 6 million farmers and eight million hectares of agricultural land in the state by 2024. The Programme aims to promote Climate-Resilient, Chemical free, ecological agriculture and provide small and marginal farmers with profitable livelihoods from agriculture. Since then there has been no farm suicides reported from areas where Agro-ecological farming practices are being followed in the state. Hence, in this background the present study has been examine to study the progress of Zero Budget Natural Farming (ZBNF) scheme in the state during 2015-16 to 2021-2022.

2. Need and Scope of the Study:

Overall the cost of cultivation has increased due to excess use of chemical fertilizers, payment of debts from private money lenders, labour intensive methods of cultivation, low level of productivity due to irregular rainfall, cyclones, lack of regulated markets and minimum support price (MSP). All these lead to declined farmers income and contributed to unprecedented suicides among farmers in the state. In addition farm lands are reporting high soil toxicity due to excess use of pesticides and fertilizers, thus jeopardizing public health. Therefore shifting to natural farming is a welcome move. The newly introduced technique among farmers was Zero Budget Natural Farming (ZBNF). Which was originally promoted by noted agriculturist Dr.Subash Palekar, who developed it in the mid-1990s. It has attained wide success in south India, now it has been spreading all over India.

3. Methodology:

The study is based on secondary data. The secondary data was collected from the office of Zero Budget Natural Farming (ZBNF) and various issues of statistical abstracts of Andhra Pradesh, RYSS Publications, District Hand Books of statistics, web: apzbnf.in.

4. Review of Literature:

Palekar's speeches initially received a mixed response from farmers, until early adopters began show casing success to peers. Training workshops increased in number and size with an estimated 200 work shops having been organized over the last 15 years in Karnataka state (Khadre&Rossat, 2019) The state government of Himachal Pradesh and Karnataka have since allocated funds to support the spread of ZBNF and the state government of Rajasthan, Meghalaya and Gujarat have all expressed an interest in setting up programmes for ZBNF. The

accurate number of farmers who adopted ZBNF is not available. In Karnataka for example, an estimated 60,000 to 1,00,000 farmers have attended 60 training camps organized over the last decade (ZBNF leader cited in Khadre et.al 2017). Mahendra Dev, Director, Indira Gandhi Institute of Development Research (IGIDR) – expressed that the Natural farming could be difficult to replicate the income model on a large scale. It can be one of the models to double farmers income but not the only solution, as yield grows through ZBNF over a long period in comparison to conventional methods. More tests and studies in various Agro-climatic zones need to be done before any firm plan is made for a nation wide push”, else it could be counter productive he said” Ram Koundinya, Director General of the Federation of Seed Industry in India sated that there need to be a scientific evaluation of the sustainability of ZBNF, on its impact on yields and whether it can be scaled up to cover 140 million farmers. He expressed that every technology has its own place where it gives best results. ZBNF has its own place but it needs to be evaluated first, where it can be scaled up. Also, if this technique is so attractive, why it is confined to a few farmers for so long he asked. (Business, July30, 2019).

According to Economic Survey Reports 2018-19, more than 1.6 lakh farmers are practicing the ZBNF in almost 1000 villages using some sort of state support. The original pioneer was Karnataka RajyaRaithaSangha. Large scale training camps were organized to educate farmers in the method. A survey carried out in those early years showed that ZBNF farmers all owned small plots of land, had some access to irrigation and owned at least one cow of their own. Andhra Pradesh, Himachal Pradesh, Chhattisgarh, Kerala and Uttar Pradesh have also invited Dr.Palekar to train their farmers. In June 2018, Andhra Pradesh rolled out an ambitious plan to become India’s first state to practice 100% Natural Farming by 2024. It aims to phase out chemical farming over 80 lakh hectares of land, converting the states 60 lakhs farmers to ZBNF methods. (Hindu daily July 28, 2019.)

According to National Sample Survey Office (NSSO) almost 70% of agricultural households spend more than they earn and more than half of all farmers are in debt. In states such as Andhra Pradesh and Telangana, levels of indebtedness are around 90%, where each household bears an average debt of 1 lakh. In order to achieve the Central government’s promise to double farmers income by 2022, one aspect being considered is natural farming methods such as the Zero Budget Natural Farming (ZBNF) which reduce farmers dependence on loans to purchase inputs. Meanwhile, inter cropping allows for increased returns. A limited 2017 survey in Andhra Pradesh claimed a sharp decline in input costs and improvement in yields. (The Hindu, July 28, 2019.)

NABARD chairman H.K. Bhanwalasaid that the Zero Budget Natural Farming (ZBNF) can help ease rural distance. The movement will help millions of farmers cut down their input costs and practice sustainable agriculture. The proposal to revive Zero budget farming is a well thought out plan as it can help millions of farmers bring down their input costs and follow sustainable farming. This initiative will help mitigate the rural distress to a great extent. The Bhanwala said NABARD has been propagating collectivisation of farmers through farmer producer organizations, as it allows them to get collective bargaining power in buying inputs and selling their produce.

5. Objectives:

To study the progress of Zero Budget Natural Farming (ZBNF) scheme in the state during 2015-16 to 2021-2022, and To focussing on crop yields, costs of cultivation and farmers income of both ZBNF and Non-ZBNF farmers in the state.

6. Progress of ZBNF programme in the Andhra Pradesh state:

Andhra Pradesh is the leading state in the adoption of Zero Budget Natural Farming (ZBNF). The state has been receiving funds from Rastra Krishi VikasYojana (RKVY) and Pamparagath Krishi Vikas Yojana (PKVY) schemes in 2015-16 through department of Agriculture, Government of Andhra Pradesh and Ministry of Agriculture, Government of India. Table 7 summarizes the funds from 2015-16 and the total funds received Rs.52.58 crores, from RKVY Rs.34.04 crore (64.99%) and PKVY Rs.18.34 crores (35.01%) of the total funds in the state. The year 2016-17 the total ZBNF funds were slightly increased Rs.45.91(77.54%) crore, and Rs. 13.30 (22.46%) crore total Rs.59.21 crore received from RKVY and PKVY. From 2017 onwards RythuSadhikaraSamstha has been receiving the funds directly and is implementing the ZBNF scheme in the state.

The year 2017-18 total funds were slightly declined Rs.49.31crore from RKVY Rs.38.38 (77.83%) crore and PKVY Rs.10.99 crore (22.17%). In 2018-19 the ZBNF scheme maximum funds were received Rs.153.32 crore and it is the highest amount over the past three years (2015-16, 2016-17 and 2017-18) in the state. The year 2017-18 and 2018-19 the RythuSadhikara Samstha, Department of Agriculture Government of Andhra Pradesh made discussions with AZIM PREMJI, Philanthropic Institute (APPI) and the APPI has granted Rs.100 crore for technical support and 22.88 crore has been released out of Rs.100 crore committed for technical support in Andhra Pradesh over 5 years.

The government of Andhra Pradesh has prepared a plan to get funds Rs.321.29 and Rs.454.65 crores for promotion under ZBNF scheme in the state. The past two years the ZBNF has been under implementation with German assistance and signed MOU between Andhra Pradesh government with representatives of German Firm KFW. In Amaravathi as a part of the agreement that plan to extend the on-going ZBNF project with the German firm. The government has taken loan of Rs.711 crores out of estimated amount of Rs.1015 crores earmarked to be spending towards the Climate Resilient Zero Budget Natural Farming (APCRZBNF). The state government will spend Rs.304 crore on the project, which is aimed to cover 2.39 lakh farmers in around 600 village panchayats and promote Natural Farming in the state.

The states of Karnataka and Andhra Pradesh have adopted ZBNF prominently studies show that a variety of social and economic benefits follow from ZBNF and a majority of respondents reported that by adopting ZBNF, over time they saw improvements in yield, soil conservation, seed diversity and quality of produce, household food autonomy, income and health, besides reduced farm expenses and reduced need for credit. Table 1 presents the progress of Zero Budget Natural Farming (ZBNF) in the state and indicates the number of Gram Panchayats (GP), number of farmers, mandals, Self Help Groups (SHGs) that are part of ZBNF. In kharif 2016, 704 villages were selected on pilot basis with funding of Government of India (GOI) through Rashtriya Krishi Vikas Yojana (RKVY). From 2016 onwards Department Agriculture has mandated Rythu Sadhikara Samastha (RySS) to spearhead the implementation of ZBNF programme in the state. The programme has been extended to additional 268 villages with a total of 972 villages, in kharif 2017 with funding support from GOI and GOAP through Paramparagat Krishi VikasYojana (PKVY). The number of ZBNF farmers increased from 40,650 to 1,63,000 (4.88%). Out of 664 mandals in the state 343 (50.74%) mandals and 66,088 (0.89%) hectares of area were covered in the state during the year 2017-18. By 2018, the ZBNF programme has reached to 3015 villages reaching out to 5,23,000 farmers and 1,41,361 Self Help Groups (SHGs) covered in addition 662 (98.22%) mandals and 2,00,000 (2.69%) hectares of land across 26 districts in state. Further in the year 2021-22 the ZBNF programme targeted to cover 6,034 villages and 5,80,000 farmers and around 2,50,000 women SHGs. The landless poor are being motivated to grow kitchen gardens also in the state.

Table 1. Andhra Pradesh State Zero Budget Natural Farming (APZBNF) at a Glance (2016-17 to 2019-20)

Year	ZBNF Gram Panchayats	% of ZBNF villages covered into total villages	Total ZBNF Farmers	% of ZBNF Farmers covered into total Farmers	No. of Women SHGs	% of ZBNF covered into total SHGs	No. of Mandals covered into ZBNF	% of ZBNF Mandals covered into total Mandals	Total ZBNF Area in hectares	% of ZBNF area covered into total Hectares
2016-17	704	4.05	40650	1.22	--	--	--	--	17656	0.24
2017-18	972	5.60	163000	4.88	--	--	343	50.74	66088	0.89
2018-19	3015	17.36	523000	15.66	141361	19.37	662	98.22	200000	2.69
2021-22 Target	6034	34.75	580000	--	250000	34.25	664	100.00	--	--

Source: Andhra Pradesh Zero Budget Natural Farming (APZBNF) programme (RySS).

Table 2 shows a detailed report on landless poor and tenant farmers practicing ZBNF with targets and achievements district wise up to September, 2021 in the state. Among 26 districts Kurnool district maximum having 38,145 farmers doing ZBNF practices in the state. The state is target of ZBNF farmers was 5,80,453 but the achievement as on 30th September 2021 was 3,06,878 farmers. In the case of the landless poor practicing kitchen garden, the target was 3,84,730 ha but the achievement was 12,702 hectares in the state.

Table 2. Land less poor Tenant Farmer practicing under ZBNF with targets and achievements in the state

S.No	District	Farmers doing ZBNF		Land less poor practising Kitchen Gardens		Cumulative
		Target	Achievement as on 30 th Sep-2021	Target	Achievement as on 30 th Sep-2021	
1	Srikakulam	42,309	22,209	32,319	1448	4,935
2	Vizianagaram	37,036	28,693	14,952	100	11,304
3	Visakhapatnam	48,583	37,389	19,020	818	9,406
4	East Godavari	51,210	28,970	41,257	121	40,389
5	West Godavari	42,371	31,170	42,137	2423	18,693
6	Krishna	48,363	22,809	28,758	1133	7,438
7	Guntur	37,085	24,810	42,848	1543	28,734
8	Prakasam	38,384	13,482	50,360	744	7,265
9	Kurnool	55,840	38,145	37,279	930	4,496
10	Nellore	40,870	7,530	13,013	927	9,678
11	Kadapa	48,743	25,338	30,610	1485	9,484
12	Kadapa	43,349	14,471	11,139	870	5,797
13	Ananthapur	46,310	12,042	21,018	160	5,420

	Total	5,80,453	3,06,878	3,84,730	12,702	1,68,039
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Source: Andhra Pradesh Zero Budget Natural Farming (APZBNF) programme

7. Major Findings of the study:

Zero Budget Natural Farming (ZBNF) integrates the sustainable farm intensification practices with a focus on minimising the costs. The RYSS conducted the survey (Kharif 2016 and Rabi 2017) found that the average yield of ZBNF farmer per hectare is reported higher yield in all study crops than Non-ZBNF crops. Among the study crops ZBNF farmer yield of Tomato crop had maximum yield 131% while paddy and cotton yield increased at 6% and 10% over the Non-ZBNF farmer in the state.

Further in 2018 (kharif) the assessments made by RySS stated that the costs came down drastically under ZBNF farming. The study found that the cotton crop cost per hectare reduced by 30% followed by ragi 32%, Maize 29%, paddy 18% and groundnut 15% in Kharif compared to non-ZBNF farmer. The net income per hectare increased maximum 197% under cotton crop followed by 125% groundnut, 83% paddy and 46% maize under ZBNF farmer over Non-ZBNF farmer in the state. Therefore, ZBNF farm earned maximum income 227% under cotton crop due to increasing yield and declined cost over the Non-ZBNF farmer.

The budgetary support for implementation of ZBNF scheme increased from Rs.52.52 crore to 153.32 crore during 2015-16 to 2021-22. The AZIM PREMJI Philanthropic Institute (APPI) has granted 100 crore for technical support. Recently German assistance of Rs.304 crore will be spent on this project, which is aimed to cover 2.39 lakh farmers in around 600 village Panchayats to promote natural farming announced by state Government. The Andhra Pradesh state government estimates that it will need 1700 crores to convert 60 lakh farmers to the ZBNF over the next 10 years.

8. Suggestions:

- Ensure cheap and easily accessible certification for organic products to ZBNF farmers by the government and establish organic markets in urban areas.
- Adoption of ZBNF model can reduce heavy credit, chemicals expenditure and prevent farmer suicides. There fore, the government should extend the ZBNF scheme with co-ordination of NGO's, FPO's and SHG's in the state.
- To supply traditional seeds to the ZBNF farmers at subsidy prices through Seed Corporation.
- Strengthening of agriculture market infrastructure, extend the procurement mechanism and fixing higher MSP for the organic production than in-organic production.
- To extend more training camps at village and mandal level for extension of ZBNF area and production through ZBNF experts. They help farmers enrol into the ZBNF programme, adopt the right practices at right time by providing information and knowledge.
- MGNREGS mustbe linked with farm work in order to reduce the cost of cultivation.
- The government should protect higher price support to organic production whenever price falls compared to non-organic production.
- Government should facilitate supply of organic inputs (ZBNF inputs) to the farmers at subsidy prices or free through SHG's, NGO's and FPO's at village level, while thenatural fertilizers are very low cost, so the government has no financial burden.
- The government should allocate separate fund from the budget to promote ZBNF farmers in the state.

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