Madras Agric. J., 2020; doi:10.29321/MAJ 2020.000349

RESEARCH ARTICLE

A Study on Knowledge Level of Sugarcane Growers in Zero Budget Natural Farming Practices

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Received : 22nd January, 2020
Revised : 07th February, 2020
Revised : 25th February, 2020
Accepted : 09th March, 2020

ABSTRACT

A study was conducted in Chittoor district of Andhra Pradesh covering two blocks with 128 selected sample respondents with the primary objective to find out the knowledge level of sugarcane growers in Zero Budget Natural Farming practices. Zero Budget Natural Farming is a recent approach widely being followed in Andhra Pradesh among major crops like paddy, groundnut, sugarcane, and vegetable crops. Sugarcane is a major commercial crop in which maximum farmers were enrolled under this' programme. The study revealed that a vast of the respondents were found to possess medium level of knowledge followed by low and high levels of knowledge on the recommended Zero Budget Natural Farming practices in sugarcane.

Keywords: Knowledge, sugarcane, farmers, zero budget natural farming.

INTRODUCTION

Across the world, agriculture is facing multiple setbacks in the form of extreme weather events like floods and drought or factors such as soil degradation, soil salinity, and water shortage. Indian farmers increasingly find themselves in a vicious cycle of debt, high production costs, high-interest rates for credit, and volatile market prices of crops. Zero Budget Natural Farming promises to end a reliance on loans and drastically cut production costs, ending the debt cycle for desperate farmers (Mural, 2016). Zero Budget Natural Farming (ZBNF) is one such low-input, climate-resilient type of farming that encourages farmers to use low-cost locally-sourced inputs, eliminating the use of artificial fertilizers, and industrial pesticides. *Subhash Palekar* has helped to popularize ZBNF practices across the country (Tripathi et al., 2018). ZBNF encourages the use of various *kashayam*s (decoctions) made with cow dung, cow urine, lilac, and green chillies (*Palekar*, 2015). These practices have been shown to have a positive effect on the quality of the soil, improving its fertility and water retention capacity (Iraianbu, 2017). In 2015, the Government of Andhra Pradesh (GoAP) instituted the *Rythu Sadhikara Samstha* (RySS), a state-owned, non-profit organization to introduce ZBNF practices to all farmers in the Indian state of Andhra Pradesh (Amitendu and Paraparakath, 2019).

Zero Budget Natural Farming is a recent approach widely being followed in Andhra Pradesh among major crops like paddy, groundnut, sugarcane, and vegetable crops.

Sugarcane is the major commercial crop in which more farmers are enrolled under this programme, and hence the present study has been conducted among sugarcane farmers. The farmer's level of knowledge on the recommended Zero Budget Natural Farming practices in sugarcane would help in developing appropriate strategies to strengthen the programme further. Keeping this in mind, as a pioneering effect, the present investigation has been taken up in the Chittoor district of Andhra Pradesh in order to assess the knowledge level of the sugarcane farmers on the recommended ZBNF practices.

MATERIAL AND METHODS

The ex-post facto research design was used in this study to suit the objective and type of information needed. The study was conducted in the Chittoor district of Andhra Pradesh, which has more number of sugarcane farmers enrolled under the programme of Zero Budget Natural Farming. Among the 66 Blocks, Nagari and Gangadhara Nellore Blocks were selected for the study, considering the maximum number of sugarcane farmers enrolled under the programme of Zero budget natural farming. Considering the same criteria, among the 19 villages of Nagari Block, 2 villages viz., Mangadu and M.Kothuru were selected, and among the 34 villages of the block Gangadhara Nellore, 2 villages viz., Velkuru and GD Nellore were selected for the study.

A sample of 128 farmers actively cultivating sugarcane under the Zero Budget Natural Farming Programme was selected from the above four villages by employing a proportionate random

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sampling method. Data were collected by using a well-structured interview schedule.

There were fifteen recommended ZBNF practices in sugarcane. All fifteen practices were considered for assessing the knowledge level of the sample respondents. Accordingly, a 'Teacher made Test' was developed and adopted as advocated by Deepika (2018). The scoring pattern adopted is given in Table 1.

Percentage analysis was done to get a meaningful interpretation of the results. Cumulative frequency method was also adopted to categorize the respondents in to low, medium, and high on their knowledge level.

RESULTS AND DISCUSSION

Knowledge level of sugarcane growers on Zero Budget Natural Farming practices

Fifteen knowledge items were selected for assessing the knowledge level of the respondents (Palekar, 2015). The results regarding the knowledge level of sugarcane farmers on the Zero Budget Natural Farming practices are furnished in Table 2.The findings of Table 2.

Table 1. The following is the scoring pattern adopted

S.No	Respondents	Score
1.	Correct	2
2.	Incorrect	1

revealed that cent per cent of the farmers possessed knowledge about profitable intercrops recommended in sugarcane under ZBNF. This clearly shows that the respondents have well understood the importance of the practice of growing intercrops in sugarcane as it protects the soil from the exhaustion of moisture and nutrients and also provides remunerative income throughout the year. An overwhelming majority of the respondents (96.90 per cent) had correct knowledge about the practices like setts spacing between rows and plants and the use of pheromone traps (@ 5 / acre). This may be due to their high farming experience.

Jeevamrutham acts as a catalytic agent that increases earthworm activity in the soil, and also helps to prevent fungal and bacterial plant diseases, as well as the *Acchadana* mulching improves the fertility and moisture retention capacity of the soil. Here an equal percentage of the respondents (95.30 per cent) possessed correct knowledge on these practices.

Cutting the cane at ground level is an important recommendation followed by the respondents mainly for getting high recovery rate and reduced incidence of early shoot borer. Hence 94.50 per cent of the respondents had correct knowledge of these practices. A similar percentage of the respondents also had correct knowledge of the recommended setts rate. About ninety per cent of the respondents (90.60 per cent) had correct knowledge about organic manures, which improve the nitrogen content of the soil. It is observed that 89.10 per cent of the respondents had correct knowledge on the recommended prominent leaf extracts to control leaf curl virus and sucking pests in sugarcane. This may be due to their high farming experience. Nearly three fourth (76.60 %) of the respondents had correct knowledge regarding sett treatment with *Bijamrita* in sugarcane, which helps in protecting young roots from fungus as well as from soil-borne and seed-borne diseases. The findings of the above table also revealed that 71.10 per cent of the respondents had correct knowledge regarding the recommended organic solution to control mealybugs in sugarcane by using *Neemastra*.

Table 2. Knowledge level of sugarcane growers on the recommended Zero Budget Natural Farming Practices (n=128)

Recommended practices	Number	Per cent
Jeevamrutham is recommended for field preparation under ZBNF	122	95.3
Setts rate @ 15,000 two budded setts / acre under ZBNF	121	94.5
Maintaining 6 2 ft and 8 2 ft (rows and plants) spacing between setts under ZBNF	124	96.9
Beejamrutham organic solution is recommended for setts treatment under ZBNF	98	76.6
Green gram, cow pea, and potato are the profitable intercrops recommended in sugarcane under ZBNF	128	100.0
Green manure application is the main practice for enriching the soil nutrient status	116	90.6
Applying FYM @ 5 tonnes/acre in sugarcane under ZBNF as a basal application	41	32.0
Pillipesara, Sunnhemp, and Diancha are prominently used green manure crops for sugarcane under ZBNF	46	35.9
Use of pheromone traps (Chilo infuscatellus) @ 5/acre under ZBNF for pest management	124	96.9
Acchadana mulching and Trash mulching are the prominent weed management practices in sugarcane under ZBNF	122	95.3
Agniastra used for the control of Borers	80	62.5
Brahmastra @ 2-3 liters / 100 liters of water to one acre for the control of sucking pests	63	49.2
Neemastra used to control mealybugs under ZBNF	91	71.1
Neem, Vitex and Datura leaf extracts are useful to control leaf curl virus and sucking pests in sugarcane under ZBNF	114	89.1
Manual harvesting is a profitable method	121	94.5

*Multiple responses

Little more than sixty per cent of the respondents (62.50 per cent) had knowledge about the application of *Agniastra* for the control of Borers. It is also observed that about half (49.20 per cent) of the respondents had correct knowledge about the right dose of *Brahmastra* (@ 2-3 liters / 100 liters of water per acre) to control sucking pests. Further, it is observed about one third (35.9 %) of the respondents had correct knowledge about the prominently used green manure crops for sugarcane under ZBNF. Regarding the recommended dose of FYM (@ 10 tonnes/ha under ZBNF) as a basal dose 32.00 per cent of the respondents had correct knowledge. The above findings are in conformity with the findings of Naresh *et al.,* 2018.

Table 3. Overall knowledge level of sugarcane growers on the recommended Zero Budget Natural Farming practices (n=128)

Category	Number	Per cent
Low	20	15.60
Medium	95	74.20
High	13	10.20
Total	128	100.00

Overall knowledge level of sugarcane growers on the recommended Zero Budget Natural Farming practices

The overall knowledge level of sugarcane farmers on the recommended Zero Budget Natural Farming practices was assessed, and the findings are given in Table 3. About three-fourth of the respondents (74.2%) were found to possess a medium level of knowledge, and 15.6 per cent of them had a low level of knowledge. The remaining respondents (10.2 per cent) had a high level of knowledge on the recommended Zero Budget Natural Farming practices in sugarcane. These results may be due to more number of training attended, vast experience in ZBNF, and their higher perception towards ZBNF. Here the intensive teaching efforts of the officials of the ZBNF programme also could have contributed to such results. The findings of the study are in line with the results obtained by Prabhu and Jahanara (2018).

CONCLUSION

It is concluded that a vast majority of the sugarcane farmers had a medium level of knowledge regarding recommended Zero Budget Natural Farming practices. In the practices viz., growing intercrops, maintaining setts spacing between rows and plants, use of pheromone traps, application of *jeevamrutham*, *acchadana* as well as trash mulching, manual harvesting, setts rate, leaf extracts to control leaf curl and sucking pests, sett treatment with *bijamrita* and organic solution to control mealybugs by using *neemastra* they possessed with higher knowledge level. In the practices viz., use *agniastra* for the control of borers, the right dose of *brahmastra* to control sucking pests, prominently used green manures and recommended basal dose of FYM they possessed a lower level of knowledge. Necessary systematic and periodic extension efforts, such as conducting method demonstrations, field visits, periodic training programmes and providing appropriate extension literature on the above practices in which the respondents were seen with lower knowledge, would help in bridging the existing knowledge gap.

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