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Perceptual behaviour of farmers towards Biodynamic farming technology in distress Vidarbha

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Abstract

The Centre for Organic Agriculture Research and Training (COART), Department of Agronomy, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, Maharashtra, India has conducted Study-cum-Survey project on Biodynamic organic agriculture practices demonstration on farmers' field in six distress districts of Vidarbha region during the year 2015-16 under Convergence of Agriculture in Maharashtra (CAIM) project. University's Organic Agriculture scientists had taken an adoption study on scientific parameters of low cost sustainable Biodynamic technology on farmer's field. Majority of farmers have medium level of knowledge and perception as well as favourable attitude towards Biodynamic technology. Overall this study enforced that there is great potential to improve soil health and crop yield upon these aspects for greater adoption of technology at grassroots level. Findings have showed the scope of improvement for shifting the sizable number of respondent from medium category to high category.

Keywords: Organic agriculture, biodynamic, B.D. compost, knowledge, perception

1. Introduction

Biodynamic agriculture is a form of alternative agriculture very similar to organic farming, but it includes various esoteric concepts drawn from the ideas of Rudolf Steiner (1861–1925) [2]. Initially developed in 1924, it was the first of the organic agriculture movements [4]. It treats soil fertility, plant growth, and livestock care as ecologically interrelated tasks, emphasizing spiritual and mystical perspectives [1]. No difference in beneficial outcomes has been scientifically established between certified biodynamic agricultural techniques and similar organic and integrated farming practices. Biodynamic agriculture lacks strong scientific evidence for its efficacy and has been labeled a pseudoscience because of its reliance upon esoteric knowledge and mystical beliefs [3].

Biodynamic technology has propagated by SARG Vikas Samitee in Vidarbha region with conducting training programs of the farmers. Under this training, farmers acknowledged with Biodynamic compost making method, seed treatment with S-9 Biodynamic Poly culture prior to sowing and non-chemical pest/disease control i.e. Biodynamic Pest Control Solution sprays to cotton and soybean crop. The major objectives of the survey are to study the profile of organic farmer's field of Vidarbha region and to know the perception of farmers towards Biodynamic organic agriculture.

2. Methodology

The Centre for Organic Agriculture Research and Training (COART), Department of Agronomy, Dr. Panjabrao Deshmukh Krishi Vidyapeeth Akola has conducted Study-cum-Survey project on Biodynamic organic agriculture practices demonstration on farmers' field in six distress districts of Vidarbha during the year 2015-16 under CAIM. University Organic Agriculture scientists had taken an impact study on scientific parameters of low cost sustainable Biodynamic technology on farmers field (Table 1).

Amongst these demonstrations, 116 sample farmers were selected randomly from six districts (Table 2). The individual interview has been recorded with prescribed questionnaire scientifically designed by Centre for Organic Agriculture Research and Training (COART), Department of Agronomy, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola.

Table 1: Demonstrations conducted in six districts in Vidarbha by CAIM

Sl. No.	Name of District	Soybean (LEISA)	Cotton (BCI)	Total
1	Amaravati	382	296	678
2	Yeotamal	422	239	661
3	Wardha	382	199	581
4	Akola	206	135	341
5	Washim	224	0	224
6	Buldhana	328	191	519
	Total	1944	1060	3004

Table 2: Number of farmers randomly selected for study in six districts

Sl. No.	District	Selected farmers
1	Amaravati	11
2	Yeotmal	10
3	Wardha	10
4	Akola	55
5	Washim	13
6	Buldhana	17
	Total	116

3. Result and discussion

The different categories and data of the farmers in this project recorded with prescribed questionnaire scientifically designed by Centre for Organic Agriculture Research and Training (COART), Department of Agronomy, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola by conducting individual interview and presented in the following concerned variable.

3.1 Profile of Biodynamic organic farmers

1. Age

Age has been operationally defined as the chronological age of the organic farmer in the completed years at the time of data collection. The completed year of age was considered as score. One score was assigned to each completed year of age. On the basis of age, the respondents were grouped under following categories.

Table 3: Distribution of the farmers according to their age

Sl. No.	Category	Range %	Frequency	Percent
1	Young	Upto 35	34	29.00
2	Middle age	36 to 50	60	52.00
3	Old age	Above 50	22	19.00
	Total		116	100.00
	Mean = 46.52		SD = 11.01	

It is evident from the findings presented in Table 3 that success of any training programme depends upon the age acquired by the trainee and subsequent adoption of skills or technology in actual field condition. It is observed from the table below that 52.00 per cent of the trainee farmers are in middle age group (36 to 50 years), whereas 29.00 per cent and 19.00 per cent trainee farmers are in young and old age group respectively. It is inferred that there is scope to involve farmers trainee in young and middle age group, increases the adoption rate for Biodynamic technology.

2. Education

Education referred to the number of years of formal schooling and was taken as the number of classes passed by the respondent in formal school. A numerical score of one was assigned for each year of the formal schooling of the organic

farmer. Following categories were formed by classifying the respondents on the basis of their education.

Table 4: Distribution of the farmers according to their education

Sl. No.	Category	Standard	Frequency	Percent
1	Illiterate	No schooling	13	11.00
2	Primary school	1 to 4	7	06.00
3	Middle school	5 to 7	7	06.00
4	High school	8 to 10	37	32.00
5	HSSC & above	Above 10	52	45.00
	Total		116	100.00
	Mean = 8.14		SD = 4.12	

It is noticed from the Table 4 that amongst the 116 trainee farmers 45.00 per cent completed their education up to college level and 32.00 per cent trainee farmers completed their education up to high school level. It indicates that education is the most important factor for adoption of any technology.

3. Land Holding

Land holding refers to the total land possessed by an individual head of the family for cultivation of crops. The total number of hectares of land possessed by the respondent for cultivation of crops was taken as the individual score. Considering the size of land holding, the respondents were categorised under following groups.

Table 5: Distribution of the farmers according to their land holding

Sl. No.	Category	Land holding (ha.)	Frequency	Percent
1	Marginal	Up to 1.0	16	14.00
2	Small	1.01 to 2.0	54	46.00
3	Semi-medium	2.01 to 4.0	39	34.00
4	Medium	4.01 to 10.0	07	06.00
5	Big	Above 10.0	00	00.00
	Total		116	100.00
	Mean = 4.86		SD = 4.78	

It is observed from the Table 5 that amongst 116 farmers, 94.00 per cent farmers having land holding up to 10 acre are very much interested in adopting Biodynamic technology on their farm.

4. Animal possession

In organic agriculture system livestock and other animal are important factor to complete energy cycle. It gives supplementary as well as complementary benefits in different enterprises combination for sustainable agriculture. Manure is the main source of nutrient management in Biodynamic practice.

Table 6: Distribution of the farmers according to their animal possession

Sl. No.	Category	score	Frequency	Percent
1	None	1	6	05.00
2	One animal	2	1	01.00
3	Two farm animals	3	7	06.00
4	Three farm animals	4	13	11.00
5	Four farm animals	5	20	17.00
6	Five to ten farm animals	6	58	50.00
7	More than ten farm animals	7	11	10.00
	Total		116	100.00
	Mean = 4.0		SD = 2.16	

It is observed from the Table 6 that amongst the 116 trainee farmers 50.00per cent have five to ten animals and 17.00 per

cent have four farm animals and remaining farmers' possess one to three animals. It indicates that more than 90.00 per cent farmers having animals. Farmers having more than five farm animals are more interested in Biodynamic technology.

5. Knowledge of Farmers about Biodynamic Technology

To evaluate the impact on Knowledge of Farmers about Biodynamic Technology, 17 questions were asked to them. On the basis of their reply the result is analysed and reported in Table 7.

Table 7: Distribution of the farmers according to their knowledge

Sl. No.	Category	Range	Frequency	Percent
1	Low	≤ 69	16	14.00
2	Medium	70 to 91	81	70.00
3	High	≥ 92	19	16.00
Total			116	100.00
Mean = 80.54			SD = 11.35	

It was reviewed from the data that majority of the more farmers' undergone training on Biodynamic technology possessed medium to high level of knowledge i.e. 70 and 16 per cent respectively. However, less number of farmers are scattered in low level of knowledge (14.00 %).

6. Attitude of farmers towards Biodynamic Technology

The attitude of farmers is assessed towards Biodynamic Technology after attending the training, 14 questions were asked to them.

Table 8: Distribution of the farmers according to their attitude

Sl. No.	Category	Range	Frequency	Percent
1	Unfavourable	≤ 77	17	15.00
2	Favourable	78 to 96	88	76.00
3	Highly Favourable	≥ 97	11	09.00
Total			116	100.00
Mean = 87.32			SD = 09.94	

It is noticed from above Table 8 that nearly three fourth of farmers (76.00 %) and nine per cent bears highly favourable attitude towards the Biodynamic technology whereas meagre percentage of respondents recorded unfavourable attitude towards this technology (15.00 %).

4. Perception of farmers towards Biodynamic Technology

1. Perception of farmers towards relative benefits of Biodynamic Technology

The data in Table 9 indicates the perception of training farmers about the relative benefit of Biodynamic technology as perceived by the farmers. Five questions were asked to respondents after Biodynamic trainings to know about their adoption of technology on their farms.

Table 9: Distribution of the farmers according to their perception towards relative benefits of Biodynamic Technology

Sl. No.	Category	Range	Frequency	Percent
1	Low	≤ 73	13	12.00
2	Medium	74 to 88	91	78.00
3	High	≥ 89	12	10.00
Total			116	100.00
Mean = 80.90			SD = 07.72	

It is noticed that over whelming majority of trainee farmers have perceived the benefits of Biodynamic technology to the extent of medium and high level i.e. 88.00 per cent. One tenth of the respondent perceived low benefits to the extent of 12.00 per cent. It is inferred that trainee farmers should be made aware of various indirect benefits obtained to Biodynamic compost making.

2. Perception of farmers towards compatibility of Biodynamic Technology

Four questions were asked to respondents after Biodynamic trainings to know about compatibility of technology with their regular farm work.

Table 10: Distribution of the farmers according to their perception towards compatibility of Biodynamic Technology

Sl. No.	Category	Range	Frequency	Percent
1	Low compatible	≤ 76	17	15.00
2	Compatible	78 to 92	88	76.00
3	Highly compatible	≥ 93	11	09.00
Total			116	100.00
Mean = 84.40			SD = 08.83	

It is observed from the data of Table 10 that many of the trainee farmers professed that the Biodynamic technology is highly compatible to use in on farm condition (85.00%) which includes medium and highly group. A small percentage of trainee farmers perceived it as less compatible (15.00%). This is very good indicator towards adoption of Biodynamic technology. Compatibility of an innovation tends to greater adoption by the farmers.

3. Perception of farmers towards complexity of Biodynamic Technology

The evaluation of perception of farmers towards complexity of Biodynamic technology, the reply of four questions were analysed in three categories in Table 11.

Table 11: Distribution of the farmers according to their perception towards complexity of Biodynamic Technology

Sl. No.	Category	Range	Frequency	Percent
1	Less complex	≤ 76	19	16.00
2	Not complex	74 to 88	75	65.00
3	Not all complex	≥ 90	22	19.00
Total			116	100.00
Mean = 82.50			SD = 06.99	

It is noticed from data above that 65.00 per cent of trainee farmers' perceived Biodynamic technology not so complex and perceived and easy to understand. Further 19.00 per cent trainees reported this technology is not all complex. However, nearly 16.00 per cent farmers perceived technology as less difficult. Among the important parameters in adoption of any technology, the easy use of technology in field situation is essential. In this perspective result shows the positive trends for sustainable use of technology.

4. Perception of farmers towards practicability of Biodynamic Technology

The evaluation of perception of farmers towards practicability of Biodynamic technology, the reply of five questions were analysed in three categories in Table 12.

Table 12: Distribution of the farmers according to their perception towards practicability of Biodynamic Technology

Sl. No.	Category	Range	Frequency	Percent
1	Less practicable	≤ 63	12	10.00
2	Practicable	64 to 73	87	75.00
3	Highly practicable	≥ 75	17	15.00
Total			116	100.00
Mean =68.90			SD = 05.88	

As per data received in the interview questionnaire to evaluate practicability of Biodynamic technology, the reply of five questions were reviewed and presented in above Table. The data reviewed the perception of farmers about the practicability of Biodynamic technology after availing the training in actual field condition. The result indicated that most of the respondent farmers perceived Biodynamic technology as practicable (90.00%). A small group of farmers perceived it as less practicable. Farmers in general perception are that this technology is highly practicable on farm condition.

5. Perception of farmers towards advantages of Biodynamic Technology over Conventional farming

As per review of data obtained after eight questions asked in interview to evaluate perception of farmers towards advantages of Biodynamic Technology over Conventional farming is depicted in Table 13.

Table 13: Distribution of the farmers according to their perception towards advantages of Biodynamic Technology over Conventional farming

Sl. No.	Category	Range	Frequency	Percent
1	Less advantageous	≤ 87	12	10.00
2	advantageous	89 to 99	76	66.00
3	Highly advantageous	≥ 97	28	24.00
Total			116	100.00
Mean =92.00			SD = 5.25	

It could be inferred from data that most of the farmers perceived Biodynamic Technology as advantageous over conventional farming (66.00%). Nearly one fourth respondents perceived as highly advantageous whereas only 10.00 percent trainee farmers perceived Biodynamic technology as less advantageous over the conventional farming.

5. Conclusion

Majority of farmers have medium level of knowledge and perception as well as favourable attitude towards Biodynamic technology. Overall this study enforced that there is great potential to improve soil health and crop yield upon these aspects for greater adoption of technology at grassroots level. Findings have showed the scope of improvement for shifting the sizable number of respondent from medium category to high category. Based on the one year study undertaken on farmers' field, it can be enforced that the Biodynamic farming a part of organic farming has potential to improve soil health and crop productivity. Further, to come on conclusion, there is need to continue study for two more years so as to popularise this technology among the farmers.

6. References

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