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IMPACT OF FRONT LINE DEMONSTRATION ON KNOWLEDGE LEVEL OF ROSE GROWERS ABOUT INTEGRATED NUTRIENT MANAGEMENT

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ABSTRACT

The present study was conducted to access the impact of Front Line Demonstrations on knowledge level of rose growers about Integrated Nutrient Management Practices in rose in two purposively selected Taluka of Anand district of Gujarat State. Purposively Five villages (Tranol, Rasnol, Kunjarav, Zakhala, Badhipura) from Anand taluka and three villages (Rinza, Nabhoi, Pachegam) from Tarapur taluka were selected. From each village, five respondents who benefited by FLD and five respondents who not benefited by FLD from KVK were selected. Thus total 40 FLD beneficiaries were selected purposively and 40 FLD non-beneficiaries respondents were selected randomly from selected eight villages of two talukas. The data revealed that great majority (85 %) of the beneficiaries had high to very high level of knowledge whereas exactly half (50 %) percent of the FLD non beneficiaries had medium to very high level of knowledge about INM, respectively and mean score of Knowledge index of beneficiaries was 74.23 and mean score of Knowledge Index of non-beneficiaries was 43.34. The "t"- test is performed to compare both mean and t-test found highly significant at 0.01 level of significance.

Keywords: *impact, rose growers, knowledge, INM*

INTRODUCTION

The rose is one of the most important commercial flower crop growing in our country. The loose flowers are used in worship, making garlands, button holes and bouquets. It is also used for preparation of rose attar, rose oil, rose water and gulkand. The total area under rose cultivation in Gujarat is about 4000.04 ha, with production of 36000.75 MT of loose flowers (Anon. 2015-16). In Gujarat major growing districts are Anand, Vadodara, Kheda, Ahmedabad, Mehsana, Rajkot, Surat, Valsad and Navsari. The total area under rose cultivation in Anand district is about 250 ha, with production of 2488 MT of loose flowers (Anon. 2015-16). In Anand major rose growing talukas are Anand (Villages : Tranol, Rasnol, Kunjarav, Zakhala, Badhipura etc.) and Tarapur (Villages: Rinza, Nabhoi, Pachegam etc.). The costs of chemical fertilizers are increasing day by day. Hence, for reducing expanses of the same the biofertilizers may serve as substitute of chemical fertilizers. In the Year: 2011-12 Dept. of Horticulture, BACA, AAU, Anand gave recommendation to the farmers of middle Gujarat Agro Climatic Zone-III (AES-II) growing deshi rose (*Rosa damascena* L.) are advised to apply 40 g nitrogen (87 g urea), 40 g phosphorus (250 g single super phosphate) and 25 g K_2O (42 g murate of potash) per plant in three equal splits from third year onward in June, October and January and after two days of fertilizers application 1 ml/plant each of Azospirillum and PSB (*Bacillus coagulans*) should be applied as soil treatment mixing in 200 ml of water for getting higher flower yield, maximum shelf life of flowers as well as higher net realization. Therefore, the present investigation was conducted for Anand district.

OBJECTIVES

(1) To study the profile of FLD beneficiaries of rose growers

(2) To study the impact of FLD on knowledge level of rose growers about INM in rose farming

METHODOLOGY

Anand district of Gujarat state comprise of eight talukas and among these eight talukas, Anand and Tarapur talukas were purposively selected as number of rose growers were higher as compared to other talukas. Front line demonstrations were conducted by KVK, Anand in these talukas. A list of the villages having rose cultivation was obtained from horticulture department and five villages (Tranol, Rasnol, Kunjarav, Zakhala, Badhipura) from Anand taluka and three villages (Rinza, Nabhoi, Pachegam) from Tarapur taluka were selected.

A list of FLD beneficiary and FLD non-beneficiary deshi rose growers were prepared from selected villages. From each villages five respondent who benefited by FLD and five respondent who not benefited by FLD from KVK

were selected. Thus total 40 FLD beneficiaries were selected purposively and 40 FLD non beneficiaries respondents were selected randomly from selected eight villages of two talukas. The Interview schedule was prepared in accordance with the objectives of the study. Data were collected through personal interviews and questionnaires data were analyzed.

RESULTS AND DISCUSSION

Table 1 : Distribution of deshi rose growers according to characteristics (n=80)

Sr. No.	Category	FLD beneficiaries (n=40)		FLD non beneficiaries (n= 40)	
		No	Per cent	No	Per cent
1	**Age**				
	Young (Up to 35 years)	16	40.00	12	30.00
	Middle age (36 to 50 years)	21	52.50	21	52.50
	Old age (above 51 years)	03	07.50	07	17.50
2	**Education**				
	Illiterate	02	05.00	01	2.50
	Primary level	03	07.50	14	35.00
	Secondary	15	37.50	11	27.50
	Higher secondary	11	27.50	08	20.00
	Graduate and above	09	22.50	06	15.00
3	**Farming experience**				
	Very low (Up to 5 years)	03	7.50	04	10.00
	Low (6 to 10 years)	12	30.00	15	37.50
	Medium (11 to 15 years)	10	25.00	10	25.00
	High (16 to 20 years)	10	25.00	05	12.50
	Very high (21 and more)	05	12.50	06	15.00
4	**Experience in rose cultivation**				
	Very low (Up to 3 years)	07	17.50	14	35.00
	Low (4 to 6 years)	09	22.50	06	15.00
	Medium (7 to 9 years)	15	37.50	04	10.00
	High (10 to 12 years)	04	10.00	07	17.50
	Very high (13 and more)	05	12.50	09	22.50
5	**Social participation**				
	No membership	00	0.00	00	0.00
	Membership in one organization	29	72.50	22	55.00
	Membership in two organization	09	22.50	12	30.00
	Membership in more than two organization	01	2.50	04	10.00
	Membership along with positional holder	01	2.50	02	5.00
6	**Size of total land holding**				
	Marginal (up to 1.0 ha)	05	12.50	10	25.00
	Small (1.01 to 2.0 ha)	18	45.00	12	30.00
	Medium (2.01 to 4.0 ha)	12	30.00	13	32.50
	Large (4.01 & above)	05	12.50	05	12.50
7	**Land under deshi rose cultivation**				
	Marginal (up to 1.00 ha)	12	30.00	16	40.00
	Small (1.1 ha to 2.00 ha)	15	37.50	12	30.00
	Medium (2.1 ha to 4.00 ha)	08	20.00	09	22.50
	Large (above to 4.00 ha)	05	12.50	03	07.50

Sr. No.	Category	FLD beneficiaries (n=40)		FLD non beneficiaries (n= 40)	
		No	Per cent	No	Per cent
8	**Family annual income**				
	Very low (Up to ₹ 50,000)	02	5.00	07	17.50
	Low (₹ 50,001 to 1,00,000)	14	35.00	16	40.00
	Medium (₹1,00,001 to 1,50,000)	12	30.00	10	25.00
	High (₹ 1,50,001 to 2,00,000)	05	12.50	04	10.00
	Very high (Above ₹ 2,00,001)	07	17.50	03	7.50
9	**Income from deshi rose cultivation**				
	Very low (Up to ₹ 50,000)	05	12.50	14	35.00
	Low (₹ 50,001 to 1,00,000)	21	52.50	19	47.50
	Medium (₹ 1,00,001 to 1,50,000)	10	25.00	06	15.00
	High (₹ 1,50,001 to 2,00,000)	03	7.50	01	2.50
	Very high (Above ₹ 2,00,001)	01	2.50	00	0.00
10	**Extension contact**				
	Very low (up to 3 score)	01	2.50	05	12.50
	Low (4 to 6 score)	15	37.50	21	52.50
	Medium (7 to 9 score)	12	30.00	08	20.00
	High (10 to 12 score))	08	20.00	04	10.00
	Very high (13 & above score)	04	10.00	02	5.00
11	**Mass media exposure**				
	Very low (up to 3 score)	01	2.50	00	0.00
	Low (4 to 6 score)	04	10.00	12	30.00
	Medium (7 to 9 score)	09	22.50	15	37.50
	High (10 to 12 score)	12	30.00	08	20.00
	Very high (13 & above score)	14	35.00	05	12.50
12	**Economic motivation**				
	Very low (6 to 10.80 score)	02	5.00	01	2.50
	Low (10.9 to 15.60 score)	03	7.50	03	7.50
	Medium (15.70 to 20.40 score)	12	30.00	16	40.00
	High (20.50 to 25.20)	11	27.50	12	30.00
	Very high (25.30 & above)	12	30.00	08	20.00

Data in Table-1 shows that majority of the FLD beneficiary and FLD non beneficiary rose growers were belonged to middle age (52.50 per cent). 37.50 and 27.50 per cent FLD beneficiary and non beneficiary deshi rose growers had up to secondary level of education, respectively. In case of farming experience 30.00 and 37.50 per cent FLD beneficiary and non-beneficiary had low level of farming experience, respectively. More than one third (37.50 per cent) of the FLD beneficiary farmer had medium level of rose cultivation experience and non beneficiary farmer had very low level (35.00 per cent) of rose cultivation experience. 72.50 and 55.00 per cent FLD beneficiaries and non-beneficiaries had membership in only one organization. More than two fifth (45.00 per cent) of the FLD beneficiaries had small size of total land holding and 32.50 per cent FLD non beneficiaries had medium size of total land holding. 37.50 per cent FLD beneficiaries had small land under deshi rose cultivation whereas 30.50 per cent FLD non beneficiaries had medium land under deshi rose cultivation.

Nearly half (52.50 and 47.50 per cent) of the FLD beneficiaries and non beneficiaries had low income from deshi rose cultivation. 37.50 and 52.50 per cent of the FLD beneficiaries and non beneficiaries had low level of extension contact, respectively. Thirty five per cent of FLD beneficiaries had very high level of mass media exposure whereas 37.50 per cent of FLD non beneficiaries had medium level of mass media exposure. 60.00 per cent of the FLD beneficiaries had medium to high level of economic motivation whereas, 40.00 per cent of the FLD non beneficiaries had medium level of economic motivation.

Table 2 : Knowledge of the deshi rose growers about INM technology in deshi rose (n=80)

Sr. No.	Deshi rose INM technologies	FLD Beneficiaries (n=40)		FLD non beneficiaries (n=40)	
		Frequency	Per cent	Frequency	Per cent
1	Recommended dose of F.Y.M required at the time of planting per peat (8-10 kg)	40	100.00	18	45.00
2	Recommended dose of FYM required every year/ plant (3-4 kg)	36	90.00	16	40.00
3	Proper Time of fertilizers application (June- October- January)	37	93.00	26	65.00
4	Proper methods to apply fertilizer (Ring application per plant)	40	100.00	32	80.00
5	Recommended dose of nitrogen/plant (40-50 g/plant)	34	85.00	21	53.00
6	Form of nitrogenous fertilizer application (Urea or Ammonium sulphate)	40	100.00	40	100.00
7	Quantity of nitrogenous fertilizer application (Urea 87 g/plant or Ammonium sulphate 200 g/plant)	37	93.00	14	35.00
8	Recommended dose of phosphorous/plant (40-50 g/plant)	38	95.00	23	58.00
9	Form of phosphatic fertilizer application (DAP or SSP)	40	100.00	38	95.00
10	Quantity of phosphatic fertilizer application (DAP 87 g/plant or SSP 250 g/plant)	35	88.00	19	48.00
11	Recommended dose of potash/plant (25 g/plant)	31	78.00	19	48.00
12	Form of potashic fertilizer application (Murat of Potash)	35	88.00	17	43.00
13	Quantity of potashic fertilizer application (Murat of Potash 42 g/plant)	31	78.00	12	30.00
14	Different types of Biofertilizers (Rhizobium, Azotobactor, Azospirilium, PSB culture, NPK bio consortium)	37	93.00	26	65.00
15	Recommended types of bio fertilizers for desi rose (Azospirilium, PSB culture)	35	88.00	18	45.00
16	recommended dose of bio fertilizer (1 m.l Azospirilium +1 m.l. P.S.B in 200 m.l. water)	34	85.00	15	38.00
17	Different methods of bio fertilizer application (Through Drip irrigation,Through flood irrigation method, Mixing with FYM and broadcasting in field, Drenching per plant)	38	95.00	29	73.00
18	Recommended method to apply bio fertilizer in deshi rose (Drenching per plant)	32	80.00	19	48.00

Table 2 revealed that cent percent of the FLD beneficiary Deshi rose growers possess knowledge about Recommended dose of F.Y.M required at the time of planting per peat, Proper methods to apply fertilizer, Form of nitrogenous fertilizer application, Form of phosphatic fertilizer application. Whereas, FLD non beneficiary deshi rose growers possess 45.00, 80.00, 100.00 and 95.00 per cent knowledge about above technologies, respectively.

More than three fourth of the FLD beneficiaries had knowledge about all recommended INM technologies in deshi rose. 30.00 to 73.00 per cent FLD non beneficiaries had knowledge about all recommended INM technologies in deshi rose. This might be due to fact that the respondents had medium level of farm experience, social participation and mass media exposure. These factors might have favourably helped the rose growers in getting more knowledge about Integrated Nutrient Management. This finding was in concurrence with the findings of Mistry et al. (2016), Rathwa et.al. (2021), Yadav and Prajapati (2014); Pokar et al. (2023); Prajapati et al. (2022); Mallappa at al. (2023).

Table 3 : Overall Knowledge of the deshi rose growers about INM technology in deshi rose

(n=80)

Sr. No.	Category of knowledge	FLD beneficiaries (n=40)		FLD non beneficiaries (n=40)	
		Frequency	Per cent	Frequency	Per cent
1	**Very low** (upto20 %)	00	00.00	06	15.00
2	**Low** (21% to 40%)	01	03.00	14	35.00
3	**Medium** (41% to 60%)	05	13.00	10	25.00
4	**High** (61% to 80%)	20	50.00	08	20.00
5	**Very high** (more than 80%)	14	35.00	02	05.00

Table 3 revealed that half of FLD beneficiaries had high level of knowledge whereas 35.00 per cent of the FLD non beneficiaries had low level of knowledge.

Table 3 : Impact on Knowledge of FLD beneficiaries and non-beneficiaries using t-test (n=80)

Knowledge Index	Frequency	Mean score	t-value
Beneficiaries	40	74.23	8.11**
Non-beneficiaries	40	43.34	

Data presented in Table-3 revealed that the mean score of Knowledge index of beneficiaries was 74.23 and the mean score of Knowledge Index of non-beneficiaries was 43.34 The "t"- test is performed to compare both mean and t-test found highly significant at 0.05 level of significance. So, there was a great impact of FLD on increasing knowledge level of INM technologies on FLD beneficiary rose growers as compared to **non-beneficiary** rose growers.

CONCLUSION

From the study it is concluded that majority of the FLD beneficiary and FLD non beneficiary rose growers were belonged to middle age. More than one third of the FLD beneficiary farmer had medium level of rose cultivation experience and non beneficiary farmer had very low level of rose cultivation experience. Nearly half of the FLD beneficiaries and non beneficiaries had low income from deshi rose cultivation. Cent percent of the FLD beneficiary deshi rose growers possess knowledge about various INM technologies in deshi rose. Whereas, FLD non beneficiary deshi rose growers possess low level of knowledge about different INM technologies in rose. More than three fourth of the FLD beneficiaries had knowledge about all recommended INM technologies in deshi rose.

POLICY IMPLICATIONS

(1) Strengthening FLD programs

Expand the Front Line Demonstration (FLD) programs to cover a larger number of rose growers, especially non-beneficiaries, as the study shows FLD participants have significantly higher knowledge and adoption of INM technologies.

(2) Focused training on INM technologies

Develop and implement structured training modules on INM specifically for non-beneficiary farmers to bridge the knowledge gap. These modules should be practical, local language-based, and demonstration-oriented.

(3) Extension services enhancement

Improve the reach and effectiveness of agricultural extension services by deploying trained extension workers in regions where rose cultivation is common but technical knowledge is low.

(4) Targeted awareness campaigns

Conduct awareness drives using mass media, farmer field schools, and local events to highlight the benefits of INM in Deshi rose cultivation, aimed particularly at small and marginal farmers.

(5) Incentives for INM adoption

Provide subsidies or incentives (such as input kits or certification) for adopting INM practices, especially for low-income and less experienced rose growers to encourage sustainable practices.

(6) Promote market linkages

Support policies that link rose growers to better markets and value chains, thereby potentially increasing income and motivating further adoption of good agricultural practices like INM

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CONFLICT OF INTEREST

This is to declare that there is "No conflict of interest" among researchers.

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