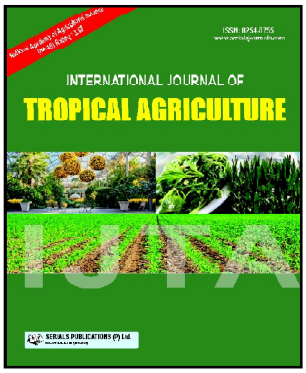

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Adoption Level and Constraints Experienced by the Farmers in Adoption of Recommended Practices of Oilseeds

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Abstract: Oilseeds form the second largest agricultural commodity in India after cereals sharing 14 % of gross cropped area and accounting for nearly 3 % of the gross national product and 10% of value of all agricultural products. Indian Council of Agricultural Research (ICAR), in order to boost the production and productivity by using the latest technologies introduced the concept of Front Line Demonstrations (FLDs). The study revealed that the possible reason behind big farmer's adoption level to medium extent might be due to medium level of scientific orientation and risk bearing ability. Low adoption level was found in small farmer's category (45.68 per cent) as compared to medium and big farmer's category.

In the practices like, recommended improved/hybrid variety, FYM application, fertilizer application, intercultural operations and weed/water management, the demonstrator farmers had more adoption level. Frequency of constraints related to technological and extension category was relatively less as compared to other constraints like availability of inputs and financial. Emphasis should be given on conduct of off campus training and field demonstrations on recommended agricultural technologies. Still there is a need for greater attention on the part of officials involved at the grass root levels and need to strengthen the staffing pattern and infrastructures of various technology transfer organizations.

Key words: adoption, constraints, oilseeds

INTRODUCTION

Oilseeds are among the priority crops of the Asia Pacific and Asia Pacific Association of Agriculture Research Institutions (APAARI) has been given a high priority to this group in regional context. Over 10 annual oilseed crops of food and industrial value are grown in the region, with higher diversity in the South, the Southeast and the East Asia. Oilseeds

form the second largest agricultural commodity in India after cereals sharing 14% of gross cropped area and accounting for nearly 3% of the gross national product and 10% of value of all agricultural products. The population is increasing, the demand for agricultural produce is increasing rapidly and the scope of bringing more land under cultivation is receding fast. Thus, increasing production per unit of available land is the only answer to the problem. Therefore, the Indian Council of Agricultural Research (ICAR), in order to boost the production and productivity by using the latest technologies introduced the concept of Front Line Demonstrations (FLDs).

In order to bring production to the forefront and to achieve even higher level of production, FLDs play the most pivotal role in terms of providing viable technological inputs. These demonstrations will also provide scientists with an opportunity to demonstrate the technology under actual farmer's conditions and get direct feedback from the field so that the performance of the new technology could be further modified and improved.

In spite of the technology breakthrough in the field of agriculture in India which has resulted in increasing productivity, there are ample observations to show that not even 25 per cent of the available technology is adopted in the farmer's field. Though the front line demonstrations are conducted by the scientist themselves, only critical inputs and training are provided from the scheme budget, remaining inputs are supplied by the farmers themselves. There areconstraints like availability of inputs, financial, technological and extension etc. Therefore, there is every possibility of yield gap, technology gap, extension gap and adoption gap even in the demonstrations fields.

The study was initiated in order to study adoption level and constraints with the following specific objectives.

1. To study the adoption level of oilseed production technology
2. To understand the nature of constraints in adoption of oilseed technologies

METHODOLOGY

The study was conducted four districts viz. Thane, Raigad, Ratnagiri and Sindhudurg from Konkan region of Maharashtra. The study was conducted in 30 villages from ten tahasilswhich were selected by KVKs for implementation of mandatory activities of KVK i.e. Front Line Demonstration. By adopting systematic sampling design 250 respondents who had actually undertaken the demonstration with control trial were selected for the study. The data were collected personally with the help of interview schedule.

The scale developed by Sengupta (1967) was used with little modification. The package of practices recommended by the AgriculturalUniversity was considered for the study. After thorough deliberations with the specialist, 10 items were considered for adoption. A score of zero was given for non-adoption, a score of one was given for partial adoption and a score of 2 was given for full adoption. The maximum score that a respondent can obtain was 20. Based on total score the adoption level was worked out as low, medium and high.

$$\text{Adoption level} = \frac{\text{Adoption score of the respondent}}{\text{Maximum adoption score one could get}} \times 100$$

RESULTS AND DISCUSSION

Adoption level of recommended practices of oilseeds among different category of demonstrator farmers

The adoption level of recommended practices of oilseeds among different category i.e. small, medium and big farmers is presented hereunder in Table 1.

Table 1
Adoption level of recommended practices of oilseedsamong different category of demonstrator farmers

Sr. No.	*Category of the farmers*	*Adoption level*					
		Low		*Medium*		*High*	
		No.	*%*	*No.*	*%*	*No.*	*%*
1.	Small farmers (81)	42	51.85	29	35.80	10	12.34
2.	Medium farmers (126)	13	10.31	101	80.15	12	9.52
3.	Big farmers (43)	07	11.62	20	46.51	16	37.21
	Total (250)	62	24.80	150	60.00	38	15.20

In the present study the adoption level of Front Line Demonstrator farmers after one year from Front Line Demonstration programme was studied. From the data presented in Table 1 revealed that small farmer's adoption level was found low (51.85 per cent) as compared to medium and big farmers, while maximum number (101 respondents) of medium farmers adoption level was found 80.15 per cent. Also, the big farmers adoption level was found medium extent i.e. 46.51 per cent followed by high extent (37.21 per cent). Low adoption level was found in small farmer's category (51.85 per cent) as compared to medium and big farmer's category. The possible reason might be low level of scientific orientation and low risk bearing ability of small farmers.

These finding are supported with the findings of Jaiswal*et al.*(1987) and Nagaraj and Katteppa (2002).

Extent of adoption level of demonstrator farmers about recommended practices of oilseeds

From Table 2, it is evident that overall 73.20 per cent demonstrator farmers adopted the recommended variety/hybrid of oilseed. In case of seed rate, 47.20 per cent and 32.80 per cent farmers adopted fully and partially respectively, whereas, 20.00 per cent farmers belong to non-adoption category. Majority (62.00 per cent) of *rabi-summer* groundnut growers adopted proper seed rate.However, proper seed rate was not followed by majority (46.00 per cent) of niger growers. In case of spacing more than half (59.20 per cent) number of respondents partially adopted recommended spacing, while, only 17.60 per cent farmers adopted fully.

With respect to seed treatment 38.00 per cent demonstrator farmers belongs to non-adoption, whereas, 35.20 per cent and 26.80 per cent farmers belong to full adoption and partial adoption category respectively. Regarding application of FYM, 26.00, 40.00 and 34.00 per cent of demonstrator farmers belongs to full adoption, partial adoption and non-adoption category respectively. As of fertilizer application, 32.40 per cent demonstrator farmers belong to full adoption and 47.60 per cent in partial adoption category.

In case of intercultural operations,nearly fifty per cent (48.40 per cent) farmers belongs to partial adoption category followed by full adoption (31.60 per cent) category. With respect to plant protection measures 48.40 per cent farmers belongs to non-adoption category. The percentage of farmers belongs to full adoption of plant protection measures was only 19.60 per cent. Further, 44.40 per cent and 35.60 per cent farmers belong to partial adoption and full adoption category regarding weed/water management respectively. In case of harvesting and threshing majority (61.20 per cent) of oilseed growers adopted improved practices partially.

In the practices like, recommended improved/ hybrid variety, FYM application, fertilizer application, intercultural operations and weed/water management, the demonstrator farmers had more adoption level. The probable reason might be that, the demonstrator farmers had gained higher knowledge regarding these operations during training programmes, demonstrations, field visit etc. Also, the farmers may possess good socio-economic status, high scientific orientation and high risk bearing ability.

Table 2
Extent of adoption level of demonstrator farmers about recommended practices of oilseeds

Sr. No.	Practices	Selected oilseeds Kharifgroundnut (N=50)		Rabi-summer groundnut (N=100)		Niger (N=50)		Sunflower (N=50)		Total oilseeds (N=250)	
		Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	2	3	4	5	6	7	8	9	10	11	12
1	Improved Variety/Hybrid										
	Full adoption	42	84	87	87	30	60	24	48	183	73.2
	Partial adoption	-	-	-	-	-	-	-	-	-	-
	Non-adoption	8	16	13	13	20	40	26	52	67	26.8
2	Seed rate										
	Full adoption	25	50	62	62	11	22	26	52	118	47.2
	Partial adoption	17	34	31	31	23	46	4	8	82	32.8
	Non-adoption	8	16	7	7	16	32	19	40	50	20
3	Spacing										
	Full adoption	4	8	12	12	10	20	18	36	44	17.6
	Partial adoption	38	76	81	81	16	32	13	26	148	59.2
	Non-adoption	8	16	7	14	24	48	19	38	58	23.2
4	Seed treatment										
	Full adoption	20	40	40	40	10	20	18	36	88	35.2
	Partial adoption	8	16	36	36	10	20	13	26	67	26.8
	Non-adoption	22	44	24	24	30	60	19	38	95	38
5	Application of FYM										
	Full adoption	11	22	35	35	3	6	16	32	65	26
	Partial adoption	27	54	51	51	14	28	8	16	100	40
	Non-adoption	12	24	14	14	33	66	26	52	85	34
6	Fertilizer application										
	Full adoption	14	28	44	44	9	18	14	28	81	32.4
	Partial adoption	28	56	49	49	25	50	7	14	119	47.6
	Non-adoption	8	16	7	7	16	32	19	38	50	20
7	Intercultural operations										
	Full adoption	22	44	25	25	10	20	22	44	79	31.6
	Partial adoption	20	40	68	68	24	48	9	18	121	48.4
	Non-adoption	8	16	7	7	16	32	19	38	50	20
8	Plant protection measures										
	Full adoption	17	34	22	22	-	-	10	20	49	19.6
	Partial adoption	8	16	58	58	2	4	12	24	80	32
	Non-adoption	25	50	20	20	48	96	28	56	121	48.4
9	Weed/Water management										
	Full adoption	20	40	40	40	15	30	14	28	89	35.6
	Partial adoption	22	44	53	53	19	38	17	34	111	44.4
	Non-adoption	8	16	7	7	16	32	19	38	50	20
10	Harvesting and Threshing										
	Full adoption	5	10	8	8	34	68	-	-	47	18.8
	Partial adoption	37	74	85	85	-	-	31	31	153	61.2
	Non-adoption	8	16	7	7	16	32	19	19	50	20

Constraints faced by demonstrator farmers in adoption of oilseed technologies

In the present study the efforts were also made to assess or to identify the constraints faced by demonstrator farmers in use of improved oilseed technology. The constraints in adoption of oilseed technology are classified into five different groups viz. constraints related to inputs, economic and financial constraints, technical constraints, extension constraints and general constraints.

An appraisal of the Table 3 clearly reflects the constraints experienced by the demonstrator farmers. In this study the constraints regarding improved technology adoption, extension services and general localized constraints were identified and accordingly

Table 3
Constraints experienced by the demonstrator farmers in adoption of improved oilseed technologies

Sr. No.	*Constraints*	*N=250*	
		Frequency	*Percentage*
1	2	3	4
I	**Constraints related to the availability of inputs**		
1	Non-availability of quality seed in time.	170	68.00
2	Non-availability of proper chemical fertilizers	106	42.40
3	Non-availability of proper fungicides and pesticides.	90	36.00
4	Lack of availability of ample irrigation water(shortage of irrigation)	92	36.80
5	Non –availability of skilled labour at proper time.	102	40.80
II	**Economic and Financial Constraints**		
1	High cost of fertilizers and pesticides	208	83.20
2	High rates of labour wages	184	73.60
3	Poor economic condition of Farmers.	85	34.00
4	Insufficient credit	92	36.80
5	Inadequate guidance on credit availability to farmers	75	30.00
6.	Complex, lengthy and rigid procedure of bank finance	116	46.40
III	**Technical Constraints**		
1	Lack of awareness about improved varieties.	42	16.80
2	Lack of adequate training programmes	37	14.80
3	Inadequate on-farm guidance regarding improved cultivation practices	50	20.00
4	Lack of knowledge about pest and disease management	54	21.60
5	Lack of knowledge about post harvest management	50	20.00
IV	**Extension Constraints**		
1	Lack of timely visit of KVK scientists	54	21.60
2	Result / method demonstration are not conducted.	40	16.00
3	Audio-visual Aids are not used by scientist during Training Programme.	36	14.40
4	Lack of availability of crop wise literature in local language.	48	19.20
V	**General Constraints**		
1	Damage due to birds and wild animals(crow, monkey, pigs)	188	75.20
2	Occurrence of natural calamities (unseasonal rains)	160	64.00
3	Stray cattle's menace	54	21.60
4	Unavailability of oil mill at village level	70	30.00
5	Poor participation of young family members in farming	102	40.80

the possible solutions to overcome the constraints are suggested.

Constraints related to the availability of inputs

Non-availability of quality seed in time was expressed as the prime constraint by majority (68.00 per cent) of the demonstrator farmers. Further, 42.40 per cent and 40.80 per cent of farmers expressed non-availability of proper chemical fertilizers and non – availability of skilled labour at proper time respectively. The other constraint s related to inputs were lack of availability of ample irrigation water (shortage of irrigation) expressed by 36.80 per cent farmers and non availability of fungicides/pesticides expresses by 36.00 per cent farmers. Similar findings were reported by Dalvi(1995) and Venkataramana*et al.* (2005).

To solve the constraint of unavailability of seed, village level coordinated seed production programme should be conducted under various developmental projects like ATMA, Rashtriya Krishi Vikas Yojana (RKVY), etc.

Economic and Financial Constraints

It is evident from Table 3 that, the major economic and financial constraint expressed by groundnut growers was high cost of chemical fertilizers and pesticides (83.20 per cent) and high rates of labour wages (73.60 per cent). Further, complex, lengthy and rigid procedure of bank finance, insufficient credit and poor economic condition of farmers were the constraints expressed by 46.40 per cent, 36.80 per cent and 34.00 per cent farmers respectively. Only, 30.00 per cent respondents expressed constraint of inadequate guidance on credit availability to farmers. The findings are supported by findings of Syed (1993) and Deshpande (1994).

High cost of chemical fertilizers and pesticides was ranked as the first economic constraint and as such economic condition of demonstrator farmers is not much better, also medium number of family members in their family hence they depends on labour for various field operations whose rates are high. The present status of credit facility is not satisfactory as rate of interest is high and the exist tedious procedure in advancing loan. Therefore, these constraints were expressed by many demonstrator farmers.

Issues related to availability, accessibility and affordability of the farm inputs should be addressed by both government and non- government agencies through farm co-operation and farmers organization at village level.

Technical Constraints

The major technical constraint perceived by 21.60 per cent demonstrator farmers was lack of knowledge about pest and disease management. Inadequate on-farm guidance regarding improved cultivation practices and lack of knowledge about post harvest management which were expressed by equal i.e. 20.00 per cent respondents followed by the lack of awareness about improved varieties (16.80 per cent) and lack of adequate training programmes (14.80 per cent).

In this regard skill demonstrations should be organized on the practices of seed treatment and plant protection measures at village level. Emphasis should be given on off campus training and field demonstrations in specific laggard's blocks about recommended agricultural technology to make the people aware and convinced to adopt the technologies in oilseeds, so that the gap can be minimized and ultimately the level of production and potential production is also enhanced.

Extension Constraints

Regarding extension constraints faced by the respondents the data presented in Table 37 shows that 21.60 per cent farmers reported constraint of lack of timely visit of KVK scientists. Besides, 19.20 per cent, 16.00 per cent and 14.40 per cent farmers

reported the constraints of lack of availability of crop wise literature in local language, result / method demonstration are not conducted and audio-visual aids are not used by scientist during training programme,respectively.

Still there is a need for greater attention on the part of officials involved at the grass root levels. Hence, in order to provide technical knowledge up to grass roots level, there is need to strengthen the staffing pattern and infrastructures of KVKs.

General Constraints

It can be seen from Table 3 that, the general constraints faced by the respondents were damage due to birds and wild animals as reported by majority (75.20 per cent) of demonstrator farmers, followed by occurrence of natural calamities i.e. unseasonal rains (64.00 per cent), poor participation of young family members in farming (40.80 per cent), unavailability of oil mill at village level(30.00 per cent) and Stray cattle's menace(21.60 per cent). Similar findings were reported by SatishKumar*et al.*(2004) and Tambade (2007).

In Konkan region constraints of birds and wild animals is common besides heavy rainfall in *kharif* season and pre-monsoon showers in April-May affects the crop yield. Hence, these are two major general constraints reported by the demonstrator farmers. Low participation of young generation in farming is an important factor in agriculture and as such the oilseed growers reported same constraint to the extent of 40.00 per cent.

Thus from Table 3 it is seen that, the respondents are facing the more constraints regarding availability of inputs, general and economic and financial category. Frequency of constraints related to technological and extension category was relatively less in adoption of improved oilseed technologies.

CONCLUSION

The study revealed that the possible reason behind big farmer's adoption level to medium extent might be due to medium level of scientific orientation and risk bearing ability. Low adoption level was found in small farmer's category (45.68 per cent) as compared to medium and big farmer's category. This could be improved by organizing various extension programmes and regular farm advisory services at village level.

In the practices like, recommended improved/ hybrid variety, FYM application, fertilizer application, intercultural operations and weed/water management, the demonstrator farmers had more adoption level. The probable reason might be that, the demonstrator farmers had gained higher knowledge regarding these operations during training programmes, demonstrations, field visit etc. Also, the farmers may possess good socio-economic status, high scientific orientation and high risk bearing ability.

The respondents are facing the constraintslike timely availability of inputsand also finance. Issues related to availability, accessibility and affordability of the farm inputs should be addressed by both government and non- government agencies through farm co-operation and farmers organization at village level. Frequency of constraints related to technological and extension category was relatively less as compared to other category of constraints. Emphasis should be given on conduct of off campus training and field demonstrations on recommended agricultural technologies. Still there is a need for greater attention on the part of officials involved at the grass root levels and need to strengthen the staffing pattern and infrastructures of technology transfer organizations. If these constraints could be solved by the extension agencies/ policy makers working in Konkan region, more adoption of agricultural technologies could be achieved.

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