

**RESEARCH ARTICLE :**

# Constraints faced by *Kharif* sorghum growers in adoption of recommended technology

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**SUMMARY :** The study was conducted in purposively selected three talukas viz., Kandhar, Mukhed and Loha of Nanded District of Marathwada region of Maharashtra state during the year 2014-15. From each taluka, four villages selected purposively and from each village 10 respondents were selected randomly, there by constituting a total sample size of 120 respondents and the constraints faced by *Kharif* sorghum growers in adoption of recommended technology were studied. The result of the study depicted that high cost of chemical fertilizer, high cost of tractor charges for tillage, non-availability seed at proper time, high cost of FYM, non-availability of labour at the time of harvesting, high cost of pesticide or insecticide, inadequate knowledge about scientific plant protection, inadequate knowledge about the proper NPK does, while the major suggestions offered by them were crop loan should be provided on time, improved seed should be provided in time and sufficient in quantity, cost of seeds, fertilizers and pesticides should be reduced, supply of inputs should be provided in time, provide the information about seed treatment and short duration and draught resistant varieties be developed.

**KEY WORDS :**

Constraints, Sorghum and technology

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## BACKGROUND AND OBJECTIVES

Sorghum is an important food grain crop widely grown in India. Maharashtra is the largest sorghum growing state and alone contributes 7.27 lakh tonnes production from 6.18 lakh hectare area. The total sorghum production of India is 2.39 million tonnes (Anonymous, 2014-15). There is an urgent need to increase the production of *Kharif* sorghum. One of the major reasons for such situation is lower adoption of the recommended *Kharif* sorghum cultivation technology. This demands careful analysis of the constraints faced by the *Kharif* sorghum

growers which hinder the adoption of new technology.

**Objectives :**

- To study the profile of the respondent.
- To identify the constraint faced by the respondent and obtain their suggestions in *Kharif* sorghum production technology.

## RESOURCES AND METHODS

The present study was purposively undertaken in the three talukas viz., Kandhar, Mukhed and Loha talukas of Nanded district of Maharashtra state. Four villages were

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purposely selected from each taluka on the basis of maximum area under *Kharif* sorghum. Thus, total twelve villages were purposely selected. From each selected village, 10 respondents were selected randomly by making a sample of 120 respondents. The present study was confined to ex-post-facto research design. The independent variables were measured by using suitable scale and procedure adopted by various researchers in past with due modification. An interview schedule was developed according to objectives of study and the data were collected by arranging personal interview with 120 respondents. The data collected were then tabulated and analyzed by using suitable statistical measures. A simple ranking technique applied to measure the constraints and suggestions to overcome problems of adoption of improved cultivation practices *Kharif* sorghum. The statistical tools used to analyze the data were percentage, mean score and standard deviation.

## OBSERVATIONS AND ANALYSIS

The results obtained from the present investigation have been presented in the following sub heads:

### Profile of the respondents:

The data in Table 1 that 75.00 per cent of the respondents were found in middle age category (32 to 50 years) followed by 14.16 per cent and 10.84 per cent in young (up to 31 years) and old (51 and above years) age category, respectively. The data further reveal that 25.83 per cent of the respondents were educated up to primary school level and 11.16 per cent were illiterates. It was found that 32.50 per cent of the respondents semi medium farmers (2.01 to 4.00 ha) and 6.68 per cent of the sorghum growers were found in big land holding category (10.01 and above ha). It was found that majority 83.33 per cent of the respondents had medium annual income (Rs. 34663 to 532988) followed by 15.00 and 1.67 per cent had high (Rs. 532989 and above) and low annual income (Up to Rs. 34662), respectively.

The data in Table 1 further reveal that most 66.67 per cent of the sorghum growers had medium social participation. It was found that majority of the respondents (70.00 %) had medium extension contact followed by 15.83 per cent having low extension contact and 14.17 per cent respondents were having high extension contact. The data further reveal that majority 68.33 per cent of farmers had medium level sources of

information and 15.83 per cent of farmers had low sources of information. It was found that 60.00 per cent of the respondents had medium level economic motivation, and 20.83 per cent exhibited high economic motivation. It was found that 64.17 per cent respondent medium level of risk orientation followed by 20.83 per cent with low risk orientation and 15.00 per cent of respondents were having high risk orientation.

### Constraint faced by the respondent in *Kharif* sorghum production technology :

*Constraint faced by Kharif sorghum growers in adoption of recommended tillage practices :*

Table 2 depicts the data regarding constraints leading to adoption of recommended tillage practices. It can be concluded that the high cost of tractor for preparatory tillage was expressed by 85.00 per cent whereas, in case of non-availability of plough and harrow for preparation of land was expressed by 56.66 per cent, Inadequate knowledge about land requirement was expressed by 33.33 per cent and 28.33 per cent experienced the problem of non-availability of bullock pair for preparation of land.

*Constraint faced by Kharif sorghum growers in adoption of recommended seed and sowing techniques :*

It is apparent from Table 3 seed and sowing techniques are not available of seed at proper time was major reason expressed by 70.00 per cent of respondent. Whereas, in case of high cost of seed of improved varieties was expressed by 58.33 per cent, Inadequate knowledge about recommended varieties was expressed by 55.83 per cent, Inadequate knowledge about recommended sowing techniques was expressed by 30.83 per cent and not available of sources for sowing was expressed by 28.33 per cent.

*Constraint faced by Kharif sorghum growers in adoption of recommended seed treatment :*

Tables 4 indicate that 70.83 per cent of the respondents expressed lack of confidence about seed treatment is beneficial. Whereas 54.16 per cent of the farmers indicate not available of fungicides or azatobacter culture at proper time, 36.66 per cent of respondents expressed handling of fungicide is risky, 26.66 per cent of the respondents expressed the lack of technical

knowledge about seed treatments.

*Constraint faced by Kharif sorghum growers in adoption of recommended chemical fertilizers :*

It is manifested from Table 5 that 87.50 per cent

respondent expressed that chemical fertilizers are very costly, 61.66 per cent of the respondent experienced the inadequate knowledge about the proper NPK does, 46.66 per cent of the respondent expressed not available of chemical fertilizer at required time and 21.66 per cent of

**Table 1 : Table showing personal socio-economic characteristics of *Kharif* sorghum growers**

Sr. No.	Personal characteristics of <i>Kharif</i> sorghum grower	Frequency (n =120)	Percentage	Mean	S.D.
1.	<b>Age</b>				
	Young (Up to 31 years)	17	14.16		
	Middle (32 to 50 years)	90	75.00	40.58	09.10
	Old (51 and above)	13	10.84		
2.	<b>Education</b>				
	Illiterate	14	11.16		
	Only read and write	20	16.66		
	Primary school level (1 <sup>st</sup> to 4 <sup>th</sup> std.)	31	25.83		
	Secondary school level (5 <sup>th</sup> to 7 <sup>th</sup> std.)	25	20.83		
	Higher school level (8 <sup>th</sup> to 10 <sup>th</sup> std.)	18	15.00		
	College level (above 10 <sup>th</sup> std.)	12	10.00		
3.	<b>Land holding (land in ha.)</b>				
	Marginal farmers (Up to 1.00)	31	17.50		
	Small farmers (1.01 to 2.00)	35	29.16		
	Semi-medium farmers (2.01 to 4.00)	39	32.50		
	Medium farmers (4.01 to 10.00)	17	14.16		
	Big farmers (10.01 and above)	08	6.68		
4.	<b>Annual income</b>				
	Low (Up to Rs 34662)	02	1.67		
	Medium (Rs34663 to 532988)	100	83.33	283825	249162.7
	High (Rs.532989 and above)	18	15.00		
5.	<b>Social participation</b>				
	Low (up to 3)	38	31.67	4.22	1.39
	Medium (4 to 7 )	80	66.67		
	High (8 and above)	02	1.66		
6.	<b>Extension contact</b>				
	Low ( up to 5)	19	15.83	8.16	2.71
	Medium (6 to 11)	84	70.00		
	High (12 and above)	17	14.17		
7.	<b>Source of Information</b>				
	Low (Up to 17 )	19	15.83	20.65	3.82
	Medium (18 to 24)	82	68.33		
	High (25 and above)	19	15.84		
8.	<b>Economic motivation</b>				
	Low ( Up to 16 )	23	19.17	19.68	3.73
	Medium ( 17 to 23)	72	60.00		
	High (24 and above)	25	20.83		
9.	<b>Risk orientation</b>				
	Low (up to 15)	25	20.83	17.90	3.31
	Medium (16 to 21)	77	64.17		
	High (22 and above)	18	15.00		

the respondents chances of deterioration of soil fertility.

*Constraint faced by Kharif sorghum growers in adoption of recommended FYM :*

Table 6 reveals that 80.83 per cent of the farmers

expressed that high cost of FYM, 78.33 per cent of the respondent that FYM is not timely available. 63.33 per cent of respondents expressed compost cannot be prepare due to the less number of animal. Lack of technical knowledge about preparation of FYM is also

**Table 2 : Distribution of respondent according to expressed constraint in adoption of recommended tillage practices**

Sr. No.	Constraints	Frequency	Percentage	Rank
1.	Inadequate knowledge about land requirement	40	33.33	III
2.	High cost of tractor for preparatory tillage.	102	85.00	I
3.	Non-availability of plough and harrow for preparation of land	68	56.66	II
4.	Non-availability of bullocks pair for preparation of land	34	28.33	IV

**Table 3 : Distribution of respondents according to expressed constraint in adoption of recommended seed and sowing techniques**

Sr. No.	Constraint	Frequency	Percentage	Rank
1.	Inadequate knowledge about Recommended varieties	67	55.83	III
2.	Non-availability of seed at proper time	84	70.00	I
3.	High cost of seed of improved varieties	70	58.33	II
4.	Inadequate knowledge about recommended sowing techniques	37	30.83	IV
5.	Non-availability of sources for sowing.	34	28.33	V

**Table 4 : Distribution of respondent according to expressed constraints in adoption of recommended seed treatment**

Sr. No.	Constraint	Frequency	Percentage	Rank
1.	Non-availability of fungicides or azatobacter culture at proper time	65	54.16	II
2.	Lack of confidence about seed treatment is beneficial	85	70.83	I
3.	Lack of technical knowledge about seed treatment	32	26.66	IV
4.	Handling of fungicide is risky	44	36.66	III

**Table 5 : Distribution of respondent according to expressed constraints in adoption of recommended chemical fertilizers**

Sr. No.	Constraint	Frequency	Percentage	Rank
1.	High cost of chemical fertilizer	105	87.50	I
2.	Non-availability of chemical fertilizer at required time	56	46.66	III
3.	Inadequate knowledge about the proper NPK does.	74	61.66	II
4.	Due to excess use of chemical fertilizer there is a chances of deterioration of soil fertility	26	21.66	IV

**Table 6 : Distribution of respondents according to expressed constraints in adoption of recommended FYM**

Sr. No.	Constraint	Frequency	Percentage	Rank
1.	High cost of FYM	97	80.83	I
2.	Non-availability of good quality of FYM at required time	94	78.33	II
3.	Lack of technical knowledge about preparation of FYM	65	54.16	IV
4.	Compost cannot be prepare due to the less number of animal	76	63.33	III

**Table 7 : Distribution of respondents according to expressed constraints in adoption of recommended weed management practices**

Sr. No.	Constraint	Frequency	Percentage	Rank
1.	Inadequate knowledge about scientifically use of weedicide	56	46.66	II
2.	Non-availability of labour at proper time for hand weeding	73	60.83	I
3.	Proper time of application of weedicide is not known	45	37.50	III
4.	Inadequate knowledge about scientifically use of weedicide	33	27.50	IV

major cause expressed by 54.16 per cent of the respondents.

*Constraint faced by Kharif sorghum growers in adoption of recommended weed management practices :*

Table 7 reveals that 60.83 per cent of the respondent expressed not available labour at proper time for hand weeding. Whereas 46.66 per cent of the farmers expressed the Inadequate knowledge about scientifically use of weedicide, 37.50 per cent of respondents expressed proper time of weedicide application is not known and 27.50 per cent of the respondent expressed inadequate knowledge about scientifically use of

weedicide.

*Constraint faced by Kharif sorghum growers in adoption of recommended intercultural operation :*

Table 8 revealed that 37.50 per cent of respondents expressed not available of sources for intercultural operation, 27.50 per cent of the respondent expressed inadequate knowledge about intercultural operation and 15.00 per cent of farmers expressed the not known the importance of intercultural operation.

*Constraint faced by Kharif sorghum growers in adoption of recommended plant protection measures:*

Table 9 reveal that high cost of pesticides or

**Table 8 : Distribution of respondents according to expressed constraints in adoption of recommended intercultural operation**

Sr. No.	Constraint	Frequency	Percentage	Rank
1.	Inadequate knowledge about intercultural operation	33	27.50	II
2.	Non-availability of implements for intercultural operations	45	37.50	I
3.	Importance of intercultural operations is not known	18	15.00	III

**Table 9 : Distribution of respondents according to expressed constraints in adoption of recommended plant protection measures**

Sr. No.	Constraint	Frequency	Percentage	Rank
1.	High cost of pesticide or insecticide	78	65.00	I
2.	Non-availability of insecticides or pesticides at proper time	55	45.83	III
3.	Inadequate knowledge about scientific plant protection	63	52.50	II

**Table 10 : Distribution of respondents according to expressed constraints in adoption of recommended harvesting techniques**

Sr. No.	Constraint	Frequency	Percentage	Rank
1.	Non-availability of labours at the time of harvesting	92	76.66	I
2.	Non-availability of threshing machine at proper time	52	43.33	II
3.	High charges for threshing of sorghum	37	30.83	III

**Table 11 : Distribution of the farmers on the basis of suggestions for improving cultivation practices of *Kharif* jowar**

Sr. No.	Suggestion	Frequency	Percentage	Rank
1.	Improved seed should be provided in time and sufficient in quantity	78	65.00	II
2.	Pest and disease resistant varieties be developed	41	34.16	X
3.	Crop loan should be provided on time	88	73.33	I
4.	Information should be provide timely about pest and disease management	64	53.33	IV
5.	Provide the information about proper scientifically herbicide application	55	45.83	VII
6.	Supply of inputs (i.e. seed and fertilizers) should be provided in time.	58	48.33	VI
7.	Cost of seeds, fertilizers and pesticides should be reduced	70	58.33	III
8.	Availability of co-operative banks and transport facilities	48	40.00	VIII
9.	Provide the information about seed treatment	62	51.66	V
10.	Provide the information about scientifically preparation of FYM / compost	46	38.33	IX
11.	Provide the information about importance of intercultural operations	40	33.33	XI
12.	Organizing farm demonstration programme regularly during the season.	35	29.16	XI
13.	Short duration and Draught resistant varieties be developed	30	25.00	XII

insecticides, Inadequate knowledge about scientific plant protection and not available of insecticides or pesticides at proper time were the important constraints expressed by 65.00 per cent, 52.50 per cent and 45.83 per cent of the respondents, respectively. These were the major constraints leading to technological gap in application of plant protection measures.

*Constraint faced by Kharif sorghum growers in adoption of recommended harvesting techniques:*

Table 10 reveals that 76.66 per cent of the respondents expressed the major of not available of labour at the time of harvesting. Whereas 43.33 per cent of the respondents expressed the problem of non-availability of threshing machine at proper time and 30.83 per cent of the respondents expressed the high charges for threshing of sorghum.

**Suggestions obtained from respondents :**

The data in Table 11 reveals that majority of the respondents, 73.33 per cent farmers suggested to crop loan should be provided on time whereas 65.00 per cent of the respondents suggested improved seed should be provided in time and sufficient in quantity, 58.33 per cent suggested that cost for seeds, fertilizers and pesticides be reduced, 53.33 per cent farmers suggested information should be provide timely about pest and disease management, 51.66 per cent respondents suggested Provide the information about seed treatment.

It is further reported 48.33 per cent of the respondents suggested supply of inputs (*i.e.* seed and fertilizers) should be provided in time, 45.83 per cent of the farmers suggested Provide the information about proper scientifically herbicide application, 40.00 per cent of the farmers suggested availability of co-operative banks and transport facilities, 38.33 per cent of the respondents suggested provide the information about scientifically preparation of FYM / compost, 34.16 per cent of the respondents suggested pest and disease resistant varieties be developed, 33.33 per cent of farmers suggested provide the information about importance of intercultural operations, 29.16 per cent of the farmers suggested organizing farm demonstration programme regularly during the season and 25.00 per cent of the respondents suggested short duration and draught resistant varieties be developed

**Conclusion:**

It can be concluded from the findings that majority of the respondents faced the difficulties like high cost of chemical fertilizer, high cost of tractor charges for tillage, non-availability seed at proper time, high cost of FYM, non-availability of labour at the time of harvesting, high cost of pesticide or insecticide, inadequate knowledge about scientific plant protection, inadequate knowledge about the proper NPK does. They suggested providing them crop loan should be provided on time, improved seed should be provided in time and sufficient in quantity, cost of seeds, fertilizers and pesticides should be reduced, supply of inputs should be provided in time, provide the information about seed treatment and short duration and draught resistant varieties be developed.

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