A CASE STUDY

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Knowledge level of the farmers regarding improved cultivation practices of *Kharif* jowar

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ABSTRACT

The present study was conducted mainly with objective to study the knowledge and adoption of improved cultivation practices of *Kharif* jowar by farmers in Nanded district. The observations were made to know the maximum area under *Kharif* jowar and production of *Kharif* jowar under cultivation. Twelve villages were selected having larger area under cultivation of *Kharif* jowar in Nanded district. From each selected taluka, four villages were selected on the basis of maximum area and production under *Kharif* jowar cultivation. From each village ten respondents were selected randomly, who were having cultivated area under *Kharif* jowar. Thus, 120 respondents were selected. It was noticed that majority of the respondents had medium farming experience, educated upto Secondary School level, medium land holding, medium annual income, joint family structure, low level of social participation, medium risk preference, medium source of information, medium economic motivation, medium market orientation, medium level of knowledge. Majority farmers had knowledge about ploughing and harrowing, requirement of manuring/ha, suitable soil for cultivation, seed rate, improved variety of seed, sowing time, application of NPK fertilizers doses, weeding operation, protective irrigations, integrated pest and disease management practices and proper harvesting time. Correlation co-efficient (r) showed that the independent variables namely, farming experience, education, risk preference, economic motivation, were positively and significantly related with the level of knowledge of improved cultivation practices of *Kharif* jowar, whereas land holding, annual income, family type, social participation, source of information and market orientation were having non-significantly relationship with knowledge of the farmers about improved cultivation practices of *Kharif* jowar.

INTRODUCTION

Sorghum [*Sorghum bicolor* (L.) Moench.] popularly known as jowar is the most important food and fodder crop of dry land agriculture. It also forms an important source of animal feed. In India, millets are grown on about 20 million ha with annual production of 18 million tonnes and contribute 10 per cent to the country's food grain basket, supporting about 12 million people (Tonapi *et al.*, 2007 and Singh and Dayakar, 2010). However, over the past three decades, millets area has declined from 37.5 Mha to 20.2 Mha due to higher demand and profitability of competing crops (Seetharama *et al.,* 2007). The cereal crop is perennial in nature and possessing corn like leaves and bearing the grain in a compact cluster. Jowar is the fifth most important cereal crop in the world after wheat, rice, maize and barley. It is found in the arid and semi-arid parts of the world, due to its feature of being extremely drought tolerant. Jowar is also used for ethanol production, producing grain alcohol, starch production, production of adhesives and paper, other than being used as food and feed. The commonly grown cereals in state of Maharashtra are jowar (*Kharif),* paddy, wheat, bajara and maize but *Kharif* jowar is the main cereal crop in the state. In Maharashtra, *Kharif* jowar crop occupies an area about 8815 hundred hectares during 2012-13 and about 10643 hundred

tones hectares during 2013-14 with a production of about 13253 hundred tones during 2012-13 followed by about 12516 hundred tones during 2013-14. In relation to productivity of Maharashtra has about 21099 kg/ha, during 2012-13 and 18240 kg/ha, during 2013-14. Although growth in use of technology in agriculture has resulted in increased crop productivity, even then the actual yields obtained are considerably lower than those recorded in the demonstration plots and research stations/farms. Therefore, there is the need to know the different yield between the farmers' fields and the demonstration plots. Some of the farmers have knowledge about improved cultivation practices but they do not adopt at all because of some constraints in adoption. So, the present investigation was carried out for judging the knowledge level of farmers about improved cultivation practices of *Kharif* jowar.

Objectives :

- To study the personal, socio-economic characteristics of the farmers.
- To study the knowledge about improved cultivation practices of *Kharif* jowar by the farmers.
- To find out relationship between personal, socio-economic characteristics of farmers with knowledge level of improved cultivation practices of *Kharif* jowar.

MATERIAL AND METHODS

The present investigation was conducted in Nanded district of Marathwada region in Maharashtra state during 2012-13 to know the maximum area under cultivation and production of *Kharif* jowar. Further twelve villages were selected from the three talukas of Nanded district (*viz.*, Nanded, Mudkhed and Ardhapur). From each village, ten farmers were selected from small, medium and high category. Thus, a total 120 farmers were selected as sample respondents for this study. The data were collected through contact personally to the farmers with structured interview schedule.

OBSERVATIONS AND ANALYSIS

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

The personal and socio-economic characteristics of the farmers :

The data of Table 1 reveal that more than half of the farmers had found medium farming experience (65.84%), while 45.00 per cent of them have Secondary level of education, while 49.17 per cent farmers were in medium land holding (4.1 to 10 ha), whereas 60 per cent farmers were in medium annual income (Rs. 103340 to Rs. 380676), while (50.83%) farmers were having

Table 1 : Distribution of the farmers according to their personal and socio-economic characteristics (n=120)

Sr. No.	Categories	Frequency	Per cent
Farming experience			
1.	Low (upto 12 years)	22	18.33
2.	Medium (13 to 32 years)	79	65.84
3.	High (33 years and above)	19	15.83
Education			
1.	Illiterate	29	24.17
2.	Primary school level (1^{st} to 4^{th} std.)	05	04.17
3.	Secondary school level (5^{th} to 10^{th} std.)	54	45.00
4.	Higher Secondary School level (11^{th} to 12^{th} std.)	15	12.50
5.	College level education (above 12^{th} std.)	17	14.16
Land holding			
1.	Marginal farmers (upto 1 .0)	3	2.50
2.	Small farmers (1.01 to 2.0)	16	13.33
3.	Semi-medium farmers (2.01 to 4.0)	31	25.83
4.	Medium farmers (4.01 to 10)	59	49.17
5.	Big farmers (10.01 and above)	11	9.17
Annual income			
1.	Low (upto Rs. 103339)	29	24.17
2.	Medium (Rs. 103340 to 380676)	72	60.00
3.	High (above Rs. 380677)	19	15.83
Family type			
1.	Joint family	61	50.83
2.	Nuclear family	59	49.17
Social participation			
1.	Low (upto 0)	57	47.50
2.	Medium (1 and 2)	54	45.00
3.	High (3 and above)	9	7.50
Risk preference			
1.	Low (upto 14)	19	15.84
2.	Medium (15 to 20)	82	68.33
3.	High (21 and above)	19	15.84
Sources of information			
1.	Low (upto 11)	26	21.67
2.	Medium (12 to 22)	71	59.17
3.	High (23 and above)	23	19.16
Economic motivation			
1.	Low (upto 14)	18	15.00
2.	Medium (15 and 20)	62	51.67
3.	High (21 and above)	40	33.33
Market orientation			
1.	Low (upto 12)	22	18.33
2.	Medium (13 to 20)	61	50.84
3.	High (21 and above)	37	30.83

joint family type background. It was found that 47.50 per cent farmers were having low social participation and most of the farmers (68.33 %) had medium risk preference. Most of the farmers used medium source of information (59.17 %), while 51.67 per cent of the farmers had medium economic motivation and about half of the farmers (50.84%) were having medium market orientation.

Knowledge level of the farmers about improved cultivation practices of *Kharif* jowar :

Practice wise knowledge level of the farmers about improved cultivation practices of Kharif jowar :

Date of Table 2 indicate that farmers were having the least knowledge about the improved cultivation practices of *Kharif* jowar. The different practices known by farmers were knowledge about suitable soil type for cultivation (76.67%), ploughing and harrowing (98.33 %), while 80.00 per cent farmers had knowledge about manuring (12-15 carts / ha) application. More than half of farmers had knowledge about improved varieties and 93.33 per cent farmers were having knowledge about seed rate for sowing *Kharif* jowar, while only 30.83 per cent farmers were knowing about seed treatment of Thiram/ 300 Mesh Sulphar (4g/kg) of seed. It was found that regarding to sowing time, 96.67 per cent farmers had knowledge, if late sowing yield will decrease, while more than half of the farmers (65.50%) were having knowledge about spacing (45 × 12 cm). As regards to application of recommended NPK (80:40:00), 76.67 per cent of the farmers had knowledge about fertilizers doses, Most of the farmers (71.67%) had knowledge about the major pests and diseases of *Kharif* jowar and only 39.17 per cent farmers had knowledge about application of weedicide Attrazine @1kg/1000 lit of water/ha, while 97.5 per cent and 99.16 per cent farmers were having knowledge about maturity stages and proper harvesting time, respectively and 76.66 per cent of farmers were knowing the yield of *Kharif* jowar per hectare.

Overall knowledge level of the farmers about improved cultivation practices of Kharif jowar :

It is reported from Table 3 that majority (46.67 %) of the farmers had medium level of knowledge; while 32.50 per cent of the farmers had high knowledge level and only 20.83 per cent of them had low level of knowledge about improved cultivation practices of *Kharif* jowar.

It revealed that most of respondents were from medium level of knowledge. As reported earlier, the utilization of sources of information and extension contact was considerable. Hence, most of the respondents might possess medium level of knowledge. This finding was supported by Sonawane *et al.* (2009); Sasane (2010); Singh *et al.* (2010); Dayakar Rao (2008) and Singh *et al.* (2014).

Table 2 : Distribution of farmers according to their practice wise knowledge about the improved cultivation practices of *Kharif* jowar (n=120)

Sr. No.	Improved cultivation practices of *Kharif* jowar	Frequency	Per cent
Preparatory tillage			
1.	Type of soil	92	76.67
2.	Ploughing and harrowing	118	98.33
3.	Manuring (12-15 carts / ha)	96	80.00
Seed			
1.	Improved variety	75	62.50
2.	Seed rate (8-10 kg/ha)	112	93.33
3.	Seed treatment of Thiram/300 Mesh sulphar (4g/kg)	37	30.83
Sowing			
1.	Sowing time	116	96.67
2.	Spacing (45 × 12 cm)	75	62.50
Fertilizer dose			
1.	Application of recommended NPK 80:40:00/ 40:80:80	92	76.67
Intercultural operations			
1.	Thinning 10-15 days after sowing	30	25.00
2.	Weeding	110	91.67
Protective irrigations		108	90.00
Intercropping/ Mixed cropping		65	54.17
Integrated plant protection measures			
1.	Major pests and diseases of jowar	86	71.67
2.	Application of weedicides (Attrazine)	47	39.17
Harvesting			
1.	Maturity stage	117	97.5
2.	Harvesting time	119	99.16
3.	Yield (20-25 Q/ha)	92	76.66

Table 3 : Distribution of the farmers according to their level of knowledge about improved cultivation practices of *Kharif* jowar (n=120)

Sr. No.	Knowledge level	Frequency	Per cent
1.	Low (upto 15)	22	20.83
2.	Medium (16 to 19)	56	46.67
3.	High (20 and above)	39	32.50

Relationship between personal and socio-economic characteristics of the farmers with the knowledge of improved cultivation practices of *Kharif* jowar :

It was observed from Table 4 that correlation co-efficient (r) showed that the independent variables, namely farming experience, education, risk preference, economic motivation were positively and significantly related with the level of knowledge of improved cultivation practices of *Kharif* jowar,

whereas land holding, annual income, family type, social participation, source of information and market orientation were having non-significantly relationship with knowledge of the farmers about improved cultivation practices of *Kharif* jowar.

Table 4 : Distribution of the farmers according to their relationship between personal and socio-economic characteristics with their level of knowledge about improved cultivation practices of *Kharif* jowar (n=120)

Sr. No.	Category	Correlation co-efficient 'r'
1.	Farming experience	0.385**
2.	Education	0.398**
3.	Land holding	0.183
4.	Annual income	0.171
5.	Family type	0.099
6.	Social participation	0.123
7.	Risk preference	0.208*
8.	Sources of information	0.082
9.	Economic motivation	0.210*
10.	Market orientation	0.113

* and ** indicate significance of values at P=0.05 and 0.01, respectively

It was found that farming experience and education were positively and highly significant with knowledge due to farmers had engaged in farming work hence increase in farming experience increased the knowledge with their level of education also decided the most important factor for this. Whereas most of the farmers had risk bearer because they had previous knowledge from the past situation hence risk preference was positive and significant, while economic motivation was also positive and significant due to farmers having more knowledge and wider contact and these farmers were willing to take more economic activity. As regards to the relationship of land holding, annual income, family type, social participation, source of information and market orientation were having non-significantly relationship with knowledge because most of the farmers had medium land holding, medium annual income due to most of the farmers depend on the agriculture, joint type family structure and social participation level was very low because most of the farmers were engaged in farming hence they were unable to give much time to these social activity. Most of the farmers belonged to medium source of information due to their friends, neighbour farmers and other mass media contacts for transfer of the knowledge to them and market orientation was found non-significantly related with knowledge because of farmers having not any market facility. Similar work related to the present work was also done by Gharule (1998); Kadam (2003) in soybean and Aski *et al.* (2011) on bajra growers in Bijapur.

Conclusion :

It is concluded that majority of the *Kharif* jowar growers were from medium farming experience, secondary level of education, medium land holding, medium annual income, joint family type, low social participation, medium risk preference, medium sources of information, medium economic motivation, medium market orientation and possessed medium knowledge about improved cultivation practices of *Kharif* jowar. The data revealed that majority of farmers of *Kharif* jowar were having complete knowledge about selection of suitable soil type (76.67 %), manuring (80.00), ploughing and harrowing operation (98.33%), Use of improved varieties (62.50%), Appropriate seed rate (93.33), seed treatment (30.83%), sowing time (96.67%), spacing 45 × 12 cm between plant and row (62.50), application of chemical fertilizers NPK doses (76.67%), Intercultural operation thinning weeding (25.00% and 91.67%), protective irrigation (90.00%), plant protection measures for controlling pests, diseases and weeds (71.67% and 39.17%, respectively and 97.5 per cent and 99.16 per cent farmers were having complete knowledge about maturity stages and harvesting time, respectively. It was also observed that farming experience, education, risk preference, economic motivation were positively and significantly related with the level of knowledge of improved cultivation practices of *Kharif* jowar farmers.

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