

## PROFILE OF SORGHUM GROWERS AND ITS RELATIONSHIP WITH KNOWLEDGE AND ADOPTION OF PANCHSUTRI TECHNOLOGY

S. D. Patil<sup>1</sup>, P. B. Kharde<sup>2</sup> and A. B. Gaikwad<sup>3</sup>

1 Astt. Professor (Agril. Extension) Mahatma Phule Krishi Vidyapeeth, Rahuri - 413 722 (M.S.)

2 Asso. Professor (Agril. Extension), Mahatma Phule Krishi Vidyapeeth, Rahuri - 413 722 (M.S.)

3 Assistant Professo, DEE. Mahatma Phule Krishi Vidyapeeth, Rahuri - 413 722 (M.S.)

Email : pro.mpkva@rediffmail.com

### ABSTRACT

*The yield level of sorghum crop is not as per the potential due to uneven nature of rainfall and lack of scientific knowledge to accept the new technology. Therefore, present study was conducted in Solapur district of Maharashtra state to study the, profile of sorghum growers and its relationship with knowledge and adoption of Panchsutri technology. The findings of the study show that, knowledge and adoption of Panchsutri technology by the sorghum growers was found to be influenced by their profile characteristics. Therefore, the concerned organizations and personnel may manipulate those characteristics for improving the knowledge and adoption of Panchsutri technology in rabi sorghum. More concentration should be given for imparting the knowledge through conducting more training programmes and also encourage young sorghum growers. It is proved from the study that majority of the sorghum growers had medium level of source of information. Hence, state department with SAUs should take necessary steps to improve this character by establishing information centers at village levels and frequent visits by experts. One half of the sorghum growers had medium level of knowledge and adoption about Panchsutri production technology of rabi sorghum. That means there is a wider gap between the expected and existing knowledge level and adoption level about the Panchsutri technology of the sorghum growers. Therefore, attention of the state department of agriculture and SAU's need to be diverted on this aspect. Study also shows that, the knowledge and adoption of the respondents about Panchsutri technology was increased with the increased level of education, social participation, annual income, land holding and information sources use because there was a positive and highly significant relationship in these factors with knowledge and adoption. The age and farming experience showed a negative but highly significant relationship with knowledge as well as with the adoption of the respondents. Thus, from the findings of the study it can be concluded that, Agriculture Department, SAU's and KVK's should conduct pre seasonal training programmes about the Panchsutri technology of sorghum.*

**Keywords :** *panchsutri technology, sorghum, knowledge , adoption*

### INTRODUCTION

Rabi Sorghum (*Jowar*) is an important and most preferred short duration food and fodder dry land agriculture crop grown in Maharashtra. Maharashtra had total 18.44 lakh hectares area under rabi sorghum with an average yield of 702 kg per hectares. In Western Maharashtra rabi sorghum grown on 12.58 lakh hectares area and had productivity of 831 kg per ha. (Anonymous, 2014). In rabi sorghum major constraints for low yield are variations in soil types, variation in rainfall, susceptibility to low temperature and climate change.

Considering these constraints in production and

productivity and the large area under rabi sorghum; Mahatma Phule Krishi Vidyapeeth, Rahuri developed *Panchsutri* rabi sorghum production technology i.e. Five point Production technology to increase the yield of rabi sorghum under dry land condition. *Panchsutri* technology consists of soil moisture conservation practices before sowing, use of improved varieties as per the soil types, soil moisture conservation practices after sowing, nutrient management and plant protection.

Therefore, the present study entitled, 'profile of sorghum growers and its relationship with knowledge and adoption of *Panchsutri* technology' was planned and conducted; to study the profile of the sorghum growers and

to find out the relationship between profile characteristics of sorghum growers with knowledge and adoption of *Panchsutri* technology.

**METHODOLOGY**

The present study was conducted in Solapur district of Maharashtra state. Total 120 representative farmers were selected from two villages each from Mangalwedha, Mohol and North Solapur tahsils of Solapur district by proportionate random sampling. The data were collected through specially developed interview schedule; thereafter the data were analyzed, tabulated and interpreted with suitable statistical instruments like frequency, average and correlation coefficient.

**RESULTS AND DISCUSSION**

In the present study the results are arranged after subjecting the data to statistical analysis and results are presented as per the objectives of study as below,

**Profile of the sorghum growers**

Profile characteristics of sorghum growers' viz. age, education, social participation, farming experience, annual income, land holding and source of information affect the knowledge and adoption of *Panchsutri* technology in *rabi* sorghum.

The distribution of the sorghum growers according to their profile is given in Table 1.

**Table 1 : Distribution of sorghum growers according to their profile characteristics** n=120

Sr. No.	Profile	Groups	Frequency	Percent	Mean	SD
1	Age (in years)	Young (up to 38 years)	22	18.33	46.77	8.96
		Middle (39 to 55 years)	76	63.34		
		Old (56 and above years)	22	18.33		
2	Education	Illiterate (having no education)	18	15.00	-	-
		Primary (1 <sup>st</sup> to 7 <sup>th</sup> standard)	38	31.66		
		Secondary (8 <sup>th</sup> to 10 <sup>th</sup> standard)	28	23.34		
		Higher Secondary (11 <sup>th</sup> to 12 <sup>th</sup> standard)	26	21.66		
		Graduate and above	10	8.34		
3	Social Participation (Score)	Low (up to 6 )	37	30.84	8.53	2.43
		Medium (7 to 10)	60	50.00		
		High (11 and above)	23	19.16		
4	Farming experience (in years)	Less (up to 19 )	20	16.66	28.51	9.83
		Moderate (20 to 37)	75	62.50		
		More (38 and above)	25	20.84		
5	Annual Income	Low ( up to ₹. 64,762)	10	8.33	1,60,510	95,747
		Medium ( ₹ 64,763 to ₹ 2,56,257)	95	79.17		
		High (₹ 2,56,258 & above)	15	12.50		
6	Land holding (ha.)	Marginal (up to 1)	8	6.66	-	-
		Small (1.01 to 2)	59	49.17		
		Semi-medium (2.01 to 4)	41	34.17		
		Medium (4.01 to 10)	12	10.00		
		Big (10.01 & above)	00	00.00		
7	Source of Information (Score)	Low (Up to 39 )	20	16.66	62.04	22.93
		Medium (40 to 84)	81	67.50		
		High (85 and above)	19	15.84		

**(1) Age**

Data revealed that about two third (63.34 per cent) of the sorghum growers were from middle age group while, 18.33 per cent of the sorghum growers belonged to the young age group and 18.33 per cent belonged to old age group. The findings are in line with the findings of Damre (2013) and Patil (2015).

**(2) Education**

It is observed that 31.66 per cent sorghum growers were educated up to primary level of education while, 23.34 per cent were educated up to secondary level of education.

The findings are in the line with the findings of Singh *et al.* (2014).

**(3) Social Participation**

One half (50.00 per cent) of the sorghum growers had medium level of social participation, followed by 30.84 per cent and 19.16 per cent of the sorghum growers had low and high level of social participation, respectively.

**(4) Farming experience**

About two third (62.50 per cent) of sorghum growers had moderate farming experience, followed by more farming experience (20.84 per cent) and less farming experience (16.66 per cent). The findings are in line with the findings of Lad (2013) and Patil (2015).

**(5) Annual income**

Large majority (79.17 per cent) of the sorghum growers had medium level of annual income.

**(6) Land holding**

It is observed that 49.17 per cent of sorghum growers were small farmers, followed by semi-medium land holders (34.17 per cent) and medium land holders.

**(7) Source of information**

Majority (67.50 per cent) of sorghum growers were using source of information to medium extent. The findings are consistent with the observations made by Patil *et al.* (2016).

**Knowledge of the sorghum growers about *Panchsutri* technology**

In this study knowledge is defined as factual information possessed by the sorghum growers about *Panchsutri* technology of *rabi* sorghum. The distribution of the sorghum growers according to their knowledge about *Panchsutri* technology is given in Table 2.

**Table 2 : Distribution of sorghum growers according to their knowledge level n=120**

Sr. No.	Knowledge Level (Score)	Frequency	Percent
1	Low (Up to 11)	24	20.00
2	Medium (12 to 19)	65	54.16
3	High (20 and above)	31	25.84
Mean = 15.92		SD = 4.44	

The Table 2 revealed that more than half of (54.16 per cent) sorghum growers had medium level of knowledge. While, 25.84 per cent had high level of knowledge and 20.00 per cent had low level of knowledge about *Panchsutri* production technology of *rabi* sorghum.

Therefore, it is seen that there is a wider gap between the expected and existing knowledge level about the *Panchsutri* technology of the sorghum growers. Therefore, attention of the state department of agriculture and SAU's need to be diverted on this aspect and necessary steps like demonstrations, publicity should be taken to enhance the knowledge level so that it ultimately enhance the adoption level of *Panchsutri* technology. These findings are similar with the findings of Patil *et al.* (2015).

**Adoption of the sorghum growers about *Panchsutri* technology**

In this study adoption is operationalized as, a process by which sorghum growers passes from first knowledge of *Panchsutri* technology to a decision to adopt the *Panchsutri* technology. The distribution of the sorghum growers according to their adoption about *Panchsutri* technology is given in Table 3.

**Table 3 : Distribution of sorghum growers as per the adoption level about *rabi* sorghum *Panchsutri* technology n=120**

Sr. No.	Adoption Level (Score)	Frequency	Percent
1	Low (Up to 19)	27	22.50
2	Medium (20 to 33)	68	56.66
3	High (34 and above)	25	20.84
Mean = 26.46		SD = 7.83	

The Table 4 revealed that more than half of (56.66 per cent) the sorghum growers had medium level of adoption. While, 22.50 per cent had low level of adoption and 20.84 per cent had high level adoption of *Panchsutri* production technology in *rabi* sorghum. Similar to knowledge gap there is a wider scope to enhance the adoption level of sorghum growers and overall. Therefore, there is a need to conduct demonstrations and convert the sorghum growers from awareness to adoption stage.

**Relationship between profile characteristics of sorghum growers with knowledge and adoption about Panchsutri technology**

In the present investigation an attempt was made to find out the relationship between the profile characteristics of sorghum growers with knowledge and adoption of Panchsutri technology in rabi sorghum, for that coefficient of correlation (r) was worked out and presented in table 4.

**Table 4. Relationship between profile characteristics of sorghum growers with knowledge and adoption**

Sr. No.	Category	Correlation coefficient 'r' for knowledge	Correlation coefficient 'r' for adoption
X <sub>1</sub>	Age	-0.35884**	-0.28769**
X <sub>2</sub>	Education	0.680694**	0.57801**
X <sub>3</sub>	Social participation	0.607563**	0.57904**
X <sub>4</sub>	Farming experience	-0.3636**	-0.28502**
X <sub>5</sub>	Annual income	0.736259**	0.71444**
X <sub>6</sub>	Land holding	0.583654**	0.599025**
X <sub>7</sub>	Source of Information	0.846187**	0.756139**

Note: \* = Significant at 5 percent level

\*\* = Significant at 1 percent level

**(A) Relationship between profile characteristics of sorghum growers with knowledge**

The relationship between profile characteristics of sorghum growers with knowledge level of respondents is worked out and presented in table 4.

**(1) Age and knowledge**

The correlation coefficient (r = -0.35884) indicates that the relationship between the age and knowledge of Panchsutri technology on respondent was negative but highly significant. It is therefore, concluded that as the age of the respondents increased, there was a decrease in the knowledge, production level and income. These finding are in line with the findings of Patil (2015).

**(2) Education and knowledge**

There was a positive and highly significant (r =0.680694) relationship between the education and knowledge level of Panchsutri technology. It is, therefore,

concluded that higher the education, more was the knowledge level. This finding shows conformity with the findings of Patil (2015).

**(3) Social participation and knowledge**

The relationship between the social participation and knowledge of Panchsutri technology was positive and highly significant (r = 0.607563). It means that the knowledge level and income of respondents increased with increase in social participation. It is obvious that social participation develops wider outlook of respondents leading to higher contact with outside world.

**(4) Farming experience and knowledge**

There was negative and highly significant (r=-0.3636) relationship between the farming experience and level of knowledge about Panchsutri technology. These findings are in line with those of Bedre (2009).

**(5) Annual income and knowledge**

The annual income of the respondents exhibited positive and highly significant (r =0.736259) relationship with their knowledge of Panchsutri technology.

Annual income determines the economic status of the farmer. They could afford to spend timely money on purchase of critical inputs in desired quantity as and when required for recommended management practices. This indicates that higher the annual income more will be the knowledge of Panchsutri technology in rabi sorghum. These findings are in line with those of Patil (2015).

**(6) Land holding and knowledge**

The relationship between the size of land holding and knowledge of Panchsutri technology was positive and statistically significant (r =0.583654). Farmers with large size of land holding have higher socio-economic status and have higher social participation. Because of larger size land holding and sound economic position, they are likely to take higher risks, accept new ideas earlier and adopt modern technology on their farm.

**(7) Sources of information and knowledge**

There was positive and highly significant (r = 0.846187) relationship between respondents sources of information and extent of knowledge level. It revealed that with an increased use of sources of information by

the respondents there was gain in the additional technical information of the respondents which leads them to increase knowledge level. Higher the exposure and contacts with various sources of information enriches the knowledge of respondents and also offers solutions to their problems which ultimately results into higher adoption by them. This finding shows conformity with the findings of Patil (2015).

#### **(B) Relationship between profile characteristics of sorghum growers with knowledge adoption**

The relationship between profile characteristics of sorghum growers with adoption level of respondents is worked out and presented in table 4.

##### **(1) Age and adoption**

The correlation coefficient ( $r = -0.28769$ ) indicated that age of the respondent was negatively and highly significantly related to their adoption. Similar finding was reported by Bahire (2011) and Patil (2015).

##### **(2) Education and adoption**

The education of the respondent was positively and highly significantly ( $r = 0.57801$ ) related to their adoption. It is therefore concluded that higher the education more was the adoption as higher education brings about changes in farmers knowledge, skill and attitude. Similar finding was reported by Patil (2015).

##### **(3) Social participation and adoption**

The social participation and adoption of *Panchsutri* technology was positive and statistically significant ( $r = 0.57904$ ). It means that the adoption level of respondents increased with increase in social participation.

##### **(4) Farming experience and adoption**

There was negative and highly significant ( $r = -0.28502$ ) relationship between the farming experience and level adoption about *Panchsutri* technology.

##### **(5) Annual income and adoption**

The annual income of the respondents exhibited positive and highly significant ( $r = 0.71444$ ) relationship with their extent of adoption of *Panchsutri* technology. Annual income determines the economic status of the farmer. They could afford to spend timely money on purchase of critical inputs in desired quantity as and when required for recommended management practices. This indicates

that higher the annual income more will be the adoption of *Panchsutri* technology.

##### **(6) Land holding and adoption**

There was a positive and highly significant correlation ( $r=0.599025$ ) between size of land holding and adoption *Panchsutri* technology by the respondents. Farmers with large size of land holding had higher socio-economic status.

##### **(7) Sources of information and adoption**

The source of information used by the respondents and extent of adoption level was positive and significant ( $r = 0.756139$ ). It revealed that with an increased use of sources of information by the respondents there was gain in the additional technical information of the respondents which leads them to increase adoption level. Higher the exposure and contacts with various sources of information enriches the knowledge of respondents and also offers solutions to their problems which ultimately results into higher adoption by them. The findings are similar with the findings of Lad (2013) and Patil (2015).

#### **CONCLUSION**

From the study it can be concluded that, knowledge and adoption of *Panchsutri* technology by the sorghum growers was found to be influenced by their profile characteristics. Therefore, the concerned organizations and personnel may manipulate those characteristics for improving the knowledge and adoption of *Panchsutri* technology in *rabi* sorghum. More concentration should be given for imparting the knowledge through conducting more training programmes and also encourage young sorghum growers. It is proved from the study that majority of the sorghum growers had medium level of source of information. Hence, state department with SAUs should take necessary steps to improve this character by establishing information centers at village levels and frequent visits by experts.

One half of the sorghum growers had medium level of knowledge and adoption about *Panchsutri* production technology of *rabi* sorghum. That means there is a wider gap between the expected and existing knowledge level and adoption level about the *Panchsutri* technology of the sorghum growers. Therefore, attention of the state department of agriculture and SAU's need to be diverted on this aspect and necessary steps like demonstrations, publicity should be taken to enhance the knowledge level and convert

the sorghum growers from awareness to adoption stage so that it ultimately enhance the adoption level of *Panchsutri* technology.

From the results it is concluded that, the relationship between the profile characteristics of sorghum growers with knowledge and adoption of *Panchsutri* technology in rabi sorghum was positive and significant in terms of education, social participation, annual income, land holding and source of information, while in case of age and farming experience it was negatively significant.

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