

# A STUDY ON KNOWLEDGE LEVEL OF SORGHUM FARMERS TRAINED UNDER THE ATMA SCHEME IN DINDIGUL DISTRICT OF TAMIL NADU

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## **Abstract**

*Sorghum (Sorghum bicolor L.) is native place to Africa. It is the fifth most important cereal crop in the world after wheat, rice, maize and barley. Millions of people in Africa and Asia depend on sorghum as their staple food. The study was taken-up in Dindigul district of Tamil Nadu. Out of the eight taluks Dindigul, Vedesendhur and Natham were selected based on the respondents list obtained from the State department of Agriculture were more number of respondents had participated. A sample size of 120 respondents were selected by using proportionate random sampling technique. The collected data were tabulated and analysed using appropriate statistical tools. The results of the study revealed that more than half of the respondents had high level of knowledge on sorghum production technology recommended by ATMA.*

**Keywords:** ATMA, Knowledge level. Sorghum technologies

## **Introduction**

The concept of ATMA was introduced in 1999 as an autonomous organization under the National Agricultural Technology Project (NATP) by providing flexible working environment. The concept of ATMA envisages paradigm shift from “top down” to “bottom up” in planning

and implementation of agriculture development programmes. ATMA is a decentralized and demand driven extension mechanism which would focus more on diversification and increasing farm income and rural employment. The central institutional innovation that emerged to address these system problems was the Agricultural Technology Management Agency or “ATMA” model that was introduced at the district level to Integrate extension programs across the line departments and to Link research and extension activities within each district, and Decentralize decision-making through “bottom-up” planning procedures that would directly involve farmers and the private sector in planning and implementing extension programs at the block and district-levels. ATMA scheme was introduced in 2008 in Dindigul district of Tamil Nadu. A centrally sponsored scheme to support State Extension Reforms has been implemented in Tamil Nadu on September 2006 on Pilot basis in nine districts covering 133 blocks through Agricultural Technology Management Agency (ATMA).

### Research Methodology

The present study were conducted in Dindigul district of Tamil Nadu. Out of the eight taluks Dindigul, Vedesandhur and Natham were selected based on the respondents list obtained from the State department of Agriculture. There are 14 blocks in Dindigul District among them three blocks namely Sanarpatty, Vadamadurai and Dindigul were selected purposively. Sorghum practices were purposely selected as the study focussed on Agriculture. A list of trainees who attended the training on sorghum cultivation practices were obtained. Sample sizes of 120 respondents were selected by using proportionate random sampling technique. Ex-post facto research design was used in the study. To assess the knowledge of respondents about sorghum training of ATMA programme the respondents were classified into low, medium and high were carried out by cumulative frequency method. Percentage analysis was computed to study the practice-wise knowledge of the respondents. The collected data were scored, tabulated and analyzed using appropriate statistical tools.

### Findings and Discussion

#### A. Overall Knowledge level of the respondents on sorghum practices recommended by ATMA

A higher knowledge of a technical nature of improved practices will lead to a higher adoption. ATMA is playing an important role in increasing the knowledge of improved agricultural practices through its various extension activities like demonstrations, trainings, exposure visit, farm school etc. The main focus of the study is to evaluate ATMA on adoption of recommended sorghum practices. Hence, it was felt necessary to know at what extent the ATMA has helped the farmers in acquisition of knowledge about recommended practices. Knowledge levels were studied and the salient findings are presented in table 1.

**Table - 1. Distribution of the respondents according to their knowledge level about the sorghum practices recommended by ATMA (n=120)**

S. No.	Category	Number of respondents	Per cent
1	Low	16	13.33
2	Medium	70	58.34
3	High	34	28.33
<b>Total</b>		<b>120</b>	<b>100.00</b>

The result in the table 1 indicate that more than half of the respondents (58.33 per cent) had medium level of knowledge about recommended sorghum practices given by ATMA followed by high (28.33 per cent) and low (13.33 per cent) level of knowledge of the respondents respectively, Hence it may be concluded that majority of the respondents (86.67 per cent) had medium to high level of knowledge on recommended practices. The finding is in line with the findings of Deshmukh (2014)

**B. Practice-wise knowledge level of the respondents about the sorghum practices recommended by ATMA** In order to have an in depth idea about knowledge level of the respondents, a practice wise knowledge level of respondents who also worked out and the results are given in the table 2.

**Table - 2. Distribution of the respondents according to their practice-wise knowledge level about the sorghum practices recommended by ATMA**

(n=120)

S. No.	Recommended practices	Number of respondents	Per cent
<b>I</b>	<b>Field preparation</b>		
1	Recommended FYM t/ha	106	88.30
<b>II</b>	<b>Varieties</b>		
2	Recommended variety	80	66.67
<b>III</b>	<b>Seed rate</b>		
3	Recommended seed rate	84	70.00
<b>IV</b>	<b>Seed treatment</b>		
4	KCL solution recommended for seed hardening	86	71.66
5	Recommended Bio-fertilizer for seed treatment	102	85.00
6	Recommended quantity of Bio-fertilizer for seed treatment	96	80.00
7	Recommended fungicide for seed treatment	84	70.00
<b>Mean Percentage</b>			<b>76.66</b>
<b>V</b>	<b>Spacing and Sowing</b>		
8	Recommended spacing	102	85.00
9	Recommended depth of sowing	116	96.66
<b>Mean Percentage</b>			<b>90.83</b>
<b>VI</b>	<b>Nutrient Management</b>		
10	Recommended NPK fertilizer application kg/ha	88	73.33
11	Recommended quantity of split doses	69	57.50
<b>Mean Percentage</b>			<b>65.41</b>
<b>VII</b>	<b>Integrated Weed Management</b>		
12	Identification of major weeds	98	81.67
13	Recommended pre-emergence herbicide	51	42.50
14	Recommended dosage of pre-emergence herbicide	46	38.33
15	Number of hand weedings recommended	106	88.33
16	Recommended time interval of weeding	113	94.16
<b>Mean Percentage</b>			<b>68.99</b>
<b>VIII</b>	<b>Plant Protection Measures</b>		
<b>A</b>	<b>Pest Management</b>		
17	Identification of major pest	95	79.17
<b>a)</b>	<b>Cultural Control</b>		
18	Selection of season for sowing	112	93.33

19	Raising pest and disease resistant varieties	80	58.33
20	Summer ploughing	110	91.67
21	Crop rotation	98	81.66
22	Roughing of crop residues	90	75.00
<b>Mean Percentage</b>			<b>79.99</b>
<b>b)</b>	<b>Mechanical Control</b>		
23	Use of pheromone trap	100	83.33
24	Use of solar light trap	90	75.00
25	Removal of deadheart affected plant	94	78.33
<b>Mean Percentage</b>			<b>78.88</b>
<b>c)</b>	<b>Chemical Control</b>		
26	Recommended pesticide	45	37.50
27	ETL recommendation for spraying pesticide	32	26.67
<b>Mean Percentage</b>			<b>32.08</b>
<b>B</b>	<b>Disease Management</b>		
28	Identification of major diseases	108	90.00
29	Recommended fungicides to control the diseases	68	56.66
30	Sorghum injury	82	68.33
31	Sorghum poisoning	66	55.00
<b>Mean Percentage</b>			<b>67.49</b>
<b>IX</b>	<b>Value Added Products</b>		
32	Value added products of sorghum	46	38.33

It may be concluded that the training programmes organised by ATMA showed significant changes among the respondents to gain knowledge on various recommended practices on sorghum crop. Follow - up trainings are to be organised for the same respondents so as to enable them to have further exposure on all those practices. This would help the respondents to enrich their knowledge and skill in a better manner.

### **I. Field Preparation**

Most of the respondents (88.30 per cent) had knowledge on recommended farm yard manure (FYM t / ha) for sorghum cultivation. The recommended tonnes of FYM for sorghum is 12.5 tonnes / ha. Majority of the respondents had high level of knowledge about field preparation to get higher yield. This may be due to their farming experience in sorghum cultivation and also they might have known the importance of FYM as an enriching factor for the soil.

### **II. Selection of Variety**

Nearly three-fourth of the respondents (66.67 per cent) had knowledge about the recommended sorghum varieties. This might be due to the more educational status and the extension agency contact.

### III. Seed Rate

Around three-fourths of the respondents (70.00 per cent) had knowledge on the recommended seed rate. Based on their experience the respondents easily understood the importance of seed rate and remembered easily.

### IV. Seed Treatment

The mean knowledge percentage of seed treatment was (76.66 per cent). Among the sub-items under seed treatment, seed treatment with bio-fertilizer (Azospirillum and Phosphobacteria) were known to (85.00 per cent) of the respondents. Recommended quantity of biofertilizer for seed treatment (2 kg of Azospirillum and 2 kg of Phosphobacteria with 25 kg FYM + 25 kg of soil) were known to (80.00 per cent) of the respondents, seed treatment with the KCL solution for seed treatment were known to (71.66 per cent) and seed treatment with fungicides were known to (70.00 per cent) of the respondents. The finding is in line with the findings of Sahu et al (2014)

### V. Spacing and Sowing

Majority of the respondents (96.66 per cent) had possessed more knowledge on the recommended sowing depth of sorghum followed by (85.00 per cent) on recommended spacing for sorghum. This may be due to their greater awareness about method of spacing and sowing practices. Further, they aware about the spacing will helps in better aeration, easy weeding operations and better exposure of sunlight to the crop.

### VI. Nutrient Management

The mean knowledge percentage under nutrient management is (65.41 per cent). Among the sub-items under nutrient management, application of recommended quantity of N, P, K fertilizer (40:20:0 kg/ha) and recommended split doses of fertilizer were known to (73.33 per cent) and (57.50 per cent) of the respondents respectively. The strong conviction of farmers about the results of application of N, P, K fertilizer might have enabled them to seek complete information about these practices which in turn would have resulted in more knowledge on application of N, P, K. As nutrient is more important for crop growth and more production, they remember the information correctly.

### VII. Integrated Weed Management

The mean percentage of knowledge under Integrated Weed Management was (68.99 per cent). Among the sub-items, Identification of major weeds of sorghum was known to (81.67 per cent) of the respondents. Around ninety per cent (88.33 per cent) of the respondents were possessing knowledge about the hand weeding practices. Recommended time interval weeding were reported by (94.16 per cent) of the respondents. Recommended pre-emergence herbicide and recommended dose of pre-emergence herbicide was known to (42.50 per cent) and (38.33 per cent) respectively. As weed infestation will affect the crop growth and production, they take special care in controlling the weeds. Hence, they possess more knowledge.

## **VII. Plant Protection Measures**

### **A. Pest Management**

Identification of major pests in sorghum was known to (79.17 per cent) of the respondents. This might be due to the farming experience in sorghum cultivation and the extension agency contact.

#### **a. Cultural Control**

The mean knowledge percentage for cultural control was (79.99 per cent). Among the sub-items of cultural control, majority of the respondents (93.33 per cent) possess knowledge on the recommended season for sowing for rainfed sorghum is kharif season (June-July). More than 90.00 per cent of the respondents possess knowledge on season for sowing and summer ploughing. More than four-fifths of the respondents (81.66 per cent) possess knowledge on crop rotation technologies. Three-fourths of the respondents possess knowledge on roughing of crop residues and less than three-fifths (58.33 per cent) of the respondents possess knowledge on recommended raising pest and disease resistant varieties. This might be due to the reason that farmer have more experience in farming. The finding is in line with the findings of Narasimhan (2014)

#### **b. Mechanical Control**

The mean knowledge percentage for mechanical control was (78.88 per cent). Among the sub-items of mechanical control, recommended use of pheromone trap was known by more than four-fifths of the respondents with (83.33 per cent). Less than eighty per cent of the respondents possess knowledge on removal of dead heart affected plant followed by three-fourths of the respondents possess knowledge on solar light trap. As extension officials visit regularly and gave information about these practices helps the respondents in acquiring more knowledge.

#### **c. Chemical Control**

The mean knowledge percentage for chemical control was (32.08 per cent). Among the sub-items, recommended pesticide was known to (37.50 per cent) and ETL recommendation of spraying pesticide was known to (26.67 per cent). This might be due to the fact that respondents might have gained knowledge about plant protection measures during training. As majority of the respondents belonged to middle aged to old aged group, they may forget the control measures and appropriate time of pesticide application. Moreover they are not interested in spraying chemicals to their field as it will spoil the fertility of the soil.

### **B. Disease Management**

The mean knowledge percentage for disease management was (73.33 per cent). Among the sub-items the identification of major diseases were known by the most of the respondents with (90.00 per cent) and recommended fungicides to control the diseases was known by (56.66 per cent) of the respondents.

## **XI. Value Added Products**

The knowledge on value added products of sorghum (Sorghum flake and Puffed sorghum, Wheat + Sorghum flour = Bread and Cakes) was known by (38.33 per cent) of the

respondents. The probable reason for the low knowledge on value added products may be due to their unawareness about the value addition and medium level of risk orientation.

### Conclusion

It is concluded that the majority of the trainees have medium to high level of knowledge on sorghum production practices. The State Department Official should take proper steps and suitable extension strategies to be followed for maximum knowledge of sorghum production technologies.

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