TECHNOLOGICAL AND CULTIVATIONAL KNOWLEDGE OF THE PMKSY BENEFICIARIES ABOUT GRAPE CULTIVATION WITH DRIP IRRIGATION IN TAMIL NADU

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Abstract

India has been witnessing growing water scarcity over the past several years and ground water also dwindling. Farmers are unable to manage their crops cycles due to unavailability of water both surface and ground. Due to the evil face of water scarcity, Government of India formulated the scheme "Pradhan Mantri Krishi Sinchayee Yojana" (PMKSY) with the vision of extending the coverage of irrigation and to improving water use efficiency.

In Tamil Nadu, the State Horticulture Department is implementing the scheme effectively with the support of Agriculture Engineering Department. The horticulture farmers utilizing the opportunities and adopting various micro irrigation technologies based on the crop to easily overcome the water scarcity issue. In Tamil Nadu, among growing commercial fruit crops grape is most important. Here, the water scarcity is the major problem in grape cultivation. The State Horticulture Department creating awareness about the scheme PMKSY and provide technological and cultivational knowledge to grape growers to solve this water problem.

Knowledge is the pre-requisite for adoption of any technology. Lack of knowledge about any idea prevents an individual to avail of its benefits. Perfect knowledge about an idea or practice related to his needs help an individual better in terms of profitability and productivity.

The present study was conducted in Dindigul district of Tamil Nadu to study the knowledge level of the grape growers about drip irrigation technologies and cultivational practices under Pradhan Mantri Krishi Sinchayee Yojana. Totally 120 respondents were selected randomly by proportionate random sampling method from selected villages based on major grape cultivated area and they were interviewed personally to collect the data with the help of structured interview schedule. The collected data were processed and statistically analyzed. The study reveals that 55.00 per cent of the respondents had medium level of knowledge about the drip irrigation technologies and 65.83 per cent of the respondents had high level of knowledge about the recommended grape cultivation practices in grape cultivation.

Key words : PMKSY, drip irrigation, grape growers, irrigational technologies, cultivational practices, knowledge level

Introduction

Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) will be to adopt a 'decentralized state level planning and projectised execution' structure that will allow states to draw up their own irrigation development plans based on District Irrigation Plan (DIP) and State Irrigation Plan (SIP). Water being the vital input, Government of Tamil Nadu has well recognizes the importance of micro irrigation scheme and is extending 100 percent subsidy to small and marginal farmers and 75 percent subsidy to big farmers in order to encourage more small farmers to

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install drip and sprinkler irrigation systems. The expansion of this scheme could be done only by additional development conservation and efficient management of the available water resources i.e. use of micro irrigation means application of optimum water according to plant requirement. This could be achieved by introducing advanced and sophisticated methods of irrigation viz. drip irrigation, sprinkler, etc.

Compared with surface or sprinkler irrigation technologies, field application efficiency of drip irrigation can be high as 90 percent (Dasberg and Or 1999). Drip technology improves the irrigation efficiency by reducing

evaporation from the soil surface, reducing or eliminating runoff and deep percolation, and eliminating the need to drastically over-irrigate some parts of the field to compensate for uneven water application (Schwankl *et al.,* 1996).

Grapes are one of the oldest utilized fruit crops in India. In India, among growing commercial fruit crops grape is most important. It occupies 1.14 percent of the total area of cultivation with 2.56 percent of the total production of fruits. India's share in the global production of grapes is 2.8 percent. Sub-tropical regions such as Delhi, Meerut district of Uttar Pradesh, Hisar and Jind district of Haryana, Bhatinda, Ferozpur, Gurdaspur districts of Punjab , Hot tropical region such as Nashik, Sangli, Solapur, Pune, Satara, Latur and Osmanabad districts in Maharashtra, Hyderabad, Ranga Reddy, Mahbubnagar, Anantapur and Medak districts of Andhra Pradesh and Telangana, Bijapur, Bagalkot, Belgaum, Gulbera districts of Northern Karnataka and mild tropical region such as Bangalore and Kolar districts in Karnataka, Chitoor district of Andhra Pradesh and Coimbatore, Dindigul, Theni and Madurai districts of Tamil Nadu covered by the grape cultivation.

As agriculture in India suffers from many problems such as drought, water scarcity, flood, climate change etc. The grape growers are also facing many problems especially due to water scarcity which leads to decline in the area and production of crops. Many grapes farmers changed to the cultivation of Scarlet gourds due to the water scarcity. Pradhan Mantri Krishi Sinchayee Yojana (PMKSY) helps the farmers to overcome these water scarcity problems. For those grapes farmers who got 100 percent subsidy and put drip irrigation in their field, it gives them a good return on their investment. This is the reason that the Government and the Horticulture Department are encouraging farmers to go for grape cultivation with the usage of PMKSY scheme. This has resulted in bringing more and more areas under grape cultivation and thereby increasing the production of grapes.

Knowledge is generally understood as an ultimate acquaintance of an individual with facts. Bloom *et al.,*

Table 1: Distribution of the respondents according to their overall knowledge level about the recommended drip irrigation technologies (n=120).

Sl. No.	Category	Number	Percent
1.	Low	18	15.00
2.	Medium	66	55.00
3.	High	36	30.00
	Total	120	100.00

(1956) defined knowledge as those behaviour and test situation which emphasized the remembering either by recognition or recall ideas, materials and phenomena. Keeping this in view, the present study has been made to know the knowledge level of grape growers about drip irrigation technologies and cultivational practices under PMKSY programme.

Materials and Methods

In Dindigul district (Tamil Nadu), Attur block was selected for the study, as it has the maximum area under grapes cultivation under drip irrigation when compared to other blocks. 120 respondents were identified from selected villages by using the proportionate random sampling technique. The data were collected from the respondents with the help of well structured and pre tested interview schedule. The statistical tools used in the study were percentage analysis and mean percentage score. Totally fifteen items of drip irrigation technology and sixteen cultivational practices were selected for the study.

Results and Discussion

Knowledge is the human faculty resulting from the interpreted information. It helps to understanding the various technology involves in this drip irrigation scheme. The real knowledge is the foundation on which effective decisions are made. Hence to accept and adopt the new technologies, farmers need enough knowledge about that technology. Hence the knowledge levels of the respondents both drip irrigation technology and cultivational practices under PMKSY were studied and the salient findings are presented.

I. Over all knowledge level of the respondents about the drip irrigation technologies

The result on distribution of respondents according to their overall knowledge level on drip irrigation technologies are presented in Table 1.

The results in Table 1 show that 55.00 percent of the respondents had medium level of knowledge about the drip irrigation technologies in grape cultivation followed by high (30.00 percent) and low (15.00 percent) levels. This may be due to their educational status, frequent contact with extension agency and the Officials of the State Department of Horticulture. This finding is in accordance with the findings of Jitendra Patidar (2015)

II. Technology wise knowledge level of the respondents about the recommended drip irrigation system

In order to obtain detailed and in-depth idea and facts about knowledge level of the respondents, a technology

Table 2: Technology wise knowledge level of the respondents about the drip irrigation system (n=120).

Sl.No.	Recommended items	Percent
1.	Suitable irrigation system for water scarcity area	100.00
2.	Advantages of fertigation	79.30
3.	Fertilizers recommended for fertigation	52.30
4.	Quantity of fertilizers used for fertigation	53.00
5.	Use of pressure gauge	54.30
6.	Acid treatment for cleaning the emitters	42.00
7.	Manual cleaning of lateral lines per year	75.00
8.	Reasons for lateral line removals while ploughing	100.00
9.	Spacing for emitters	100.00
10.	Major components in drip irrigation system	76.00
11.	Drip irrigation interval	100.00
12.	Usage of filtration system	95.60
13.	Cleaning technique for filters	82.20
14.	Prevention methods from damage	87.30
15.	Knowledge about appropriate guidelines before installation of drip system	92.20

wise knowledge level of the respondents was worked out. The percentage wise knowledge of respondent about drip irrigation technologies in grape cultivation are presented in Table 2.

It is interesting to note from the Table 2 that out of fifteen technologies in drip irrigation system, the cent per cent of the respondents were found to be knowledge on four technologies *viz.,* 'Suitable irrigation system for water scarcity area', 'Drip irrigation interval', 'Spacing for emitters' and 'Reasons for lateral line removals while ploughing'. Further it could be observed more than ninety per cent of the respondents had knowledge on 'Usage of filtration system' (95.60 percent) and 'Knowledge about appropriate guidelines before installation of drip system' (92.20 percent).

More than three fourth of the respondents had knowledge on, 'Prevention methods from damage' (87.30 percent), 'Cleaning technique for filters' (82.20 percent), 'Advantages of fertigation' (79.30 percent), 'Major components in drip irrigation system' (76.00 percent) and

Table 3: Distribution of the respondents according to their overall knowledge level about the recommended cultivation practices in grapes (n=120).

Sl. No.	Category	Number	Percent
1.	Low	18	15.00
2.	Medium	23	19.17
3.	High	79	65.83
	Total	**120**	**100.00**

'Manual cleaning of lateral lines per year' (75.00 percent).

More than fifty percent of the respondents had knowledge on 'Use of pressure gauge' (54.30 percent), 'Quantity of fertilizers used for fertigation' (53.00 percent) and 'Fertilizers recommended for fertigation' (52.30 percent). Only 42.00 per cent of the respondents had knowledge about 'Acid treatment for cleaning the emitters'.

This reported that the high and medium level of knowledge about the drip technologies may due to proper training and the awareness given by the Extension Functionaries of State Horticulture Department and also the educational level of the farmers. This finding is in accordance with the finding of Sivapriyan (2018). The low level knowledge on Acid treatment for cleaning the emitters was only due to the lack of interest.

III. Over all knowledge level of the respondents about the recommended cultivation practices in grapes

The results on distribution of respondents according to their overall knowledge level on the recommended grape cultivation practices are presented in Table 3.

The results in Table 3 Shows that, 65.83 percent of the respondents had high level of knowledge about the recommended grape cultivation practices followed by high (19.17 percent) and low (15.00 percent) levels. This may due to their experience in grape cultivation and frequency contact with extension agencies and the Officials of State Horticulture Department. This observation is in agreement with the earlier findings of Dasharath Domani

Table 4: Practice wise knowledge level of the respondents in grape cultivation (n=120).

Sl. No.	Recommended Practices	Mean Perce-ntage Score
1.	Varieties	100.00
2.	Field preparations	98.00
3.	Recommended age of Stem cutting	93.20
4.	Planting	100.00
5.	Spacing	100.00
6.	Irrigation management	100.00
7.	Fertigation	43.20
8.	Manures and fertilizers	88.30
9.	Training	77.20
10.	Pruning	100.00
11.	Pest management	86.40
12.	Disease management	92.50
13.	Special practices	89.60
14.	Weed management	94.00
15.	Ripening	40.00
16.	Harvesting	100.00

(2014).

IV. Practice-wise knowledge level of the respondents about the recommended grape cultivation practices

In order to study detailed idea about the knowledge level of the respondents about the recommended cultivation practices in grapes, the practice wise knowledge was worked out. The mean percentage score for practice wise knowledge about the recommended grape cultivation practices are presented in the Table 4.

It is interesting to note from the Table 4 that, out of sixteen grape cultivation practices, the mean percentage score of the respondents were found to be the cent per cent for six practices *viz.,* Varieties, Spacing, Planting, Irrigation management, Pruning, and Harvesting. Further it could be observed that more than ninety per cent of the respondents had knowledge on Field preparation (98.00 percent), Weed management (94.00 percent), Recommended age of stem cutting (93.20 percent) and Disease management (92.50 percent).

The mean percentage score of the respondents who have around eighty per cent *viz.,* 89.60 per cent in Special practices, 88.30 percent in Manures and fertilizers, 86.40 percent in Pest management and 77.20 percent in Training. The reported high knowledge level is due to the frequent contact with extension agencies, interest of the respondents in grape farming and most of them did grape cultivation in generation wise.

Below fifty percent of the respondents had knowledge on Fertigation (43.20 percent) and ripening (40.00 percent). The low level of knowledge may due to lack of confidence and complexity about such practices.

Conclusion

In drip irrigational technologies, majority of the respondents had medium (55.00 percent) followed by high (30.00 percent) and low level of knowledge (15.00 percent) about the recommended drip irrigation technology. The respondents were lacking knowledge on fertigation and acid treatment for cleaning the emitters. The medium and high level of knowledge about the drip irrigation technologies may due to proper training and the awareness given by the Officials of State Horticulture Department. Regarding cultivational practices, majority of the respondents (65.83 percent) had high level of knowledge about the recommended grape cultivation practices followed by medium (19.17 percent) and low (15.00 percent) levels. This may due to their experience in grape cultivation and frequency contact with the Officials of State Horticulture Department. They are slightly lacking in the fertigation process that is because of lesser interest.

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