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Training needs of sugarcane growers in Sindhudurg district

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Abstract
The present study explored Training needs of sugarcane growers in Sindhudurg district. Sindhudurg district were purposively selected from Konkan region of Maharashtra state on the basis of maximum area under cultivation. Two talukas *viz*., Vaibhavwadi and Kankavli from Sindhudurg district were selected purposively based on maximum area under sugarcane cultivation and five villages from each taluka were selected. From each village twelve respondents were selected randomly. The constituting total sample size is 120. The Ex-post-facto research design was used for the study. A properly organized questionnaire designed for study was used for collecting the data from respondents through personal interview method. The data collections from the respondents were edited tabulated and analyzed using suitable statistical tools like frequency, percentage, mean, standard deviation, chi-square and Kendall's coefficient of concordance. The study was noticed that, the profile characteristics of farmers concluded from the present study that majority areas of training reported by the respondents were fertilizers management ranking Ist as the mean score was highest (2.68) followed by soil fertility management IInd (2.43), preparatory operations IIIrd (2.42) and weed management IVth (2.35). The other important areas of training mentioned by the respondents were harvesting techniques Vth (1.79), selection of variety VIth (1.77) and irrigation method VIIth (1.69). Least expressed training areas were disease and pest control VIIIth (1.60), planting method Xth (1.59), planting time Xth (1.41) and selection of land for sugarcane XIth (1.40).

Keywords: Sugarcane, training needs, cultivation practices

Introduction
Sugarcane belongs to the family Graminaceae and genus *Saccharum officinarum*. The genus Saccharum comprises mainly of five species, three of which are cultivated and two are wild species. Sugarcane crop has its origin in New Guinea, later it spread to many countries of the world. India is considered as homeland of sugarcane and some 50 million farmers and millions of more workers, are involved in sugarcane farming. The sugarcane and sugar sector in India ranks second among the country's agro-based industries, after cotton. Insite of low acreage under sugarcane, it commands greater significance due to their remarkable contribution to our national economy through foreign exchange earnings. In the recent past, though the productivity of these crops has increased, the magnitude has been very small. In order to increase the national income, the sustainable production of such cash crops is imperative because of its importance in foreign exchange earnings. India ranks first globally in sugar production. It produced about 37 million metric tons of sugar in 2022. It is not only responsible for the livelihood of sugarcane farmers in rural areas but also provides employment to about 5 lakhs workers in the sugar mills.
Sugarcane is long duration crop maturing in 12-14 months. The planting method vary place to place, therefore, the states have to encourage optimum use of water & space. Due to long crop duration inter cropping is a major tool to enhance higher returns to the farmers. The main strategies for increasing production and productivity of sugarcane in the country are as under:

1. Popularization of new varieties by providing support for breeder seed production.
2. Thrust for transfer of technologies through demonstration and training of farmers and extension workers.
3. Production of quality planting materials including tissue culture plantlets.
4. Training to the field functionary & farmers for popularizing various technology including Ratoon Management
5. Demonstration on intercropping

6. Establishment of bio-agent and tissue culture labs.
7. The states have flexibility to take support for sugarcane development for any recommended/proven technology/inputs under RKVY.

Sugarcane crop is one of the major cash crops in Sindhudurg district of the Maharashtra. Due to various schemes and programmes launched by the government and sugar factory the area, production and productivity of sugarcane has increased remarkably during last ten years. However, the earnings from the sugarcane depend upon its efficient knowledge given through training and level of use of improved sugarcane cultivation practices.

Materials and Methods

The present study was carried out in Konkan region of Maharashtra State during the year 2022-23. The present investigation was carried out in Konkan region for the study one district is selected purposively, i.e. Sindhudurg. In Sindhudurg district two talukas were selected purposively i.e. Vaibhavwadi and Kankavli based on maximum area under sugarcane cultivation. In selected talukas five villages were selected, thus total ten villages were selected for the present investigation. From each selected village, twelve (12) farmers were selected randomly. That farmer who are engaged in sugarcane cultivation was selected as a respondent. Thus, 120 total respondents for the present study. An interview schedule was prepared, so as to collect the information in line with the objectives of the study. Personal interview technique was used for data collection. The ex-post-facto research design was used for the present study. The data collected from the selected respondent during the course of investigation was entered and tabulated in the excel worksheet and then appropriate analysis of data was made according to objectives formulated for study. Further, the statically techniques were applied to analyze tabulated data and interpreted it to reach up to the findings. Statistical methods to be used *viz*. mean, standard deviation, Chi-square test, Kendell's coefficient of concordance, frequency and percentage.

Results and Discussion

Training needs of sugarcane growers

The identification of the cultivation practices followed by sugarcane growers were taken into consideration to know the level of use of improved practices by the farmers.

Table 1: Area wise training needs of sugarcane growers

Sr. No	Area of training	N	Training needs (n=120)			Score	W mean score	Rank
			Most Needed	Needed	Less Needed			
1.	Selection of land for sugarcane cultivation	120	11 (09.17)	27 (22.50)	82 (68.33)	169	1.40	11
2.	Preparatory operations	120	61 (50.83)	49 (40.84)	10 (08.33)	291	2.42	3
3.	Planting time	120	12 (10.00)	26 (21.67)	82 (68.33)	170	1.41	10
4.	Selection of variety	120	28 (23.33)	37 (30.84)	55 (45.83)	213	1.77	6
5.	Planting method	120	17 (14.17)	37 (30.83)	66 (55.00)	191	1.59	9
6.	Irrigation method	120	19 (15.83)	45 (37.50)	56 (46.67)	203	1.69	7
7.	Fertilizer management	120	90 (75.00)	22 (18.33)	08 (06.67)	322	2.68	1
8.	Managing soil fertility	120	64 (53.33)	44 (36.67)	12 (10.00)	292	2.43	2
9.	Weed management	120	57 (47.50)	48 (40.00)	15 (12.50)	282	2.35	4
10.	Disease and Pest control	120	21 (17.50)	30 (25.00)	69 (57.50)	192	1.60	8
11.	Harvesting techniques	120	28 (23.33)	39 (32.50)	53 (44.17)	215	1.79	5

1. Selection of land for sugarcane cultivation

In Table 1 it was found that, most of the respondents 68.33 percent fell under the less needed category of selection of land for sugarcane cultivation. Whereas, 22.50 percent of the respondents felt need of training and 09.17 percent of the respondents mostly needed the training of selection of land for sugarcane cultivation.

2. Preparatory operations

In Table 1 it was very much clear that training in this area was expressed as most needed by respondents 50.83 percent followed by those respondents 40.84 percent who showed need of training in the area. Only 08.33 percent of the respondents showed less need of training for preparatory operations.

3. Planting time

As indicated Table 1 shows that in this area, majority of the respondents 68.33 percent fell under less needed category of training. Whereas, 21.67 percent of the respondents felt need of training and 10.00 percent of the respondents had most need of the training in this area.

4. Selection of variety

From Table 1 it was very much clear that, training in this area was expressed as less needed by 45.83 percent respondents followed by 30.84 percent respondents who showed need of training in the area. Only 23.33 percent of the respondents showed most need of training for selection of variety.

5. Planting method

From Table 1 it was clear that, more than half 55.00 percent of the respondents had less need of training in this area of planting method followed by 30.83 percent of the respondents felt need of training and only 14.17 percent of the respondents had most needed of the training.

6. Irrigation method

According to Table 1, 46.67 percent of the respondents had less need of training in this area of irrigation method followed by 37.50 percent of the respondents felt need of training and only 15.83 percent of the respondents most needed the training of Irrigation method.

7. Fertilizer management

From Table 1 it was found that, the most needed area for the respondents 75.00 percent to be trained in the area of fertilizer management followed by those respondents 18.33 percent who needed training in this area of sugarcane cultivation. Only 06.67 percent respondents felt less needed in this area. It was very likely that respondents are eager for training on fertilizer management.

8. Managing soil fertility

As indicated in Table 1 more than fifty percent of the respondents 53.33 percent fell under most needed category of training of managing soil fertility. Whereas, 36.67 percent of the respondents felt need of training and 10.00 percent of the respondents felt less need of the training in this area.

9. Weed management

The data presented ion Table 1 indicates that most of the respondents 47.50 percent expressed most needed the training in this area of weed management followed by 40.00 percent who showed need of training in the area. Only 12.50 percent of the respondents showed less need of training for weed management.

10. Disease and pest control

According to Table 1, it was found that more than half 57.50 percent of the respondents less needed the training in the area of disease and pest control followed by 25.00 percent who needed training in this area of sugarcane cultivation. Only 17.50 percent respondents felt that training was most needed in this area. As per respondent's experience, there was less attack and problem of disease and pest so they were less eager to have training in this area of disease and pest control.

11. Harvesting techniques

Data in Table 1 revealed that most of the respondents 44.17 percent fell under the less needed category of training for harvesting techniques. Whereas, 32.50 percent of the respondents felt need of training and 23.33 percent of the respondents mostly needed the training of harvesting techniques.

Looking in more details at the training needs of the sugarcane growers, Table 1 showed that training on fertilizers management rank Ist as the mean score was highest (2.68) in this area followed by soil fertility management IInd (2.43), preparatory operations IIIrd (2.42) and weed management IVth (2.35) were the most sought-after by the respondents, followed by other areas like harvesting techniques Vth (1.79), selection of variety VIth (1.77) and irrigation method VIIth (1.69). Training was least sought for disease and pest control VIIIth (1.60), planting method Xth (1.59), planting time Xth (1.41) and selection of land for sugarcane XIth (1.40).

Under the fertilizer management, the method of fertilizer application, fertilizer dose, time of application, types of chemical fertilizers and organic fertilizers were in highly needs. Farmers know the importance of fertilizers however they may not know the right timing, type and amount of fertilizer to use. Urea is the most important nitrogenous fertilizer in sugarcane production, with the highest Nitrogen (N) content (about 46 percent), however, farmers settle for cheaper fertilizers considering the N requirement of the soil. The proper application of the fertilizer is very crucial for the farmers to realize the efficiency of fertilizer usage while minimizing the bad effects of improper dosage at improper time and especially of the chemical fertilizers

Under the soil fertility management, trash mulching and the application of mud press were the highly needs. Concern was raised regarding the degree of soil degradation that can occur under sugarcane production due to continuous cultivation. Farmers have thought that the most serious factor associated with soil degradation under sugarcane is the loss of soil fertility especially the organic matter. Soil sampling helps to know the soil condition and requirement of the soil thus improving the soil fertility, texture and structure of the soil. Soil tilth is improved which decreases the need for tillage intensity, enhanced water infiltration and water retention.

Under preparatory operations ploughing, harrowing, manure application and furrow layout were in high needs. As farmers needed training regarding manure application its dosage and time of application in order to get high yield from the cultivated area along with methods of furrow layout which is followed in the area and practices followed for more production using ploughing and harrowing techniques.

Under weed management respondents have expressed the importance of an integrated weed control management since manual weeding is laborious and time consuming while chemical treatments must typically be administered several times to prevent the weed from re-establishing. Designing an integrated weed control management is economically efficient as it involves integration of cultural, manual, mechanical and chemical methods which are applied depending on the age of crop and available resources.

Under harvesting techniques training on seizing fertilizer and irrigation before harvesting were also regarded as the highly needs of the respondents. When farmers were informed that these practices could help increase sugar yield, they expressed interest on the topics. There are detrimental effects of these two practices when improperly applied. Excessive application of N fertilizer few months before harvesting is harmful to the crop as it prolongs vegetative growth thus, delays maturity and ripening, increases reducing sugar content in juice thus lowering juice quality and increases soluble N in juice affecting its clarification during the manufacturing of sugar. While seizing irrigation before harvesting induces maturity in sugarcane by reducing the of al rate of vegetative growth thus, forcing the conversion of total sugars to recoverable sucrose thus increases sucrose yields.

Under selection of varieties training needs were put the drought/water resistant and high yielding varieties (HYVs). Majority of the respondents weren't aware of this improved technology and would like to adopt it. However, farmers lack knowledge in variety selection plus the fact that planting HYVs command more inputs and judicious appropriate cultural practices to maximize its potential. But need to select the variety for planting which is suggested by the sugarcane factories. hence, the need on training on such technology is needed Under irrigation method river and canal are the major and mostly used source for irrigation as majority of the respondents possess farm pump for irrigation purpose and surface irrigation is mostly used the farmers. As they dint had much knowledge about sprinkle and drip irrigation it wasn't followed by them and they found surface irrigation as most efficient and economically beneficial.

Under training on disease and pest management identifying the prominent disease and pest were sought important. Respondents realized that there is less infestation of pest and disease so they showed less interest in training regarding disease and pest management but needed the knowledge of use of various fungicide and pesticides.

Furthermore, less training need has been perceived for planting method includes ridges and furrow method, broad furrow method, strip method and flatbed method because mostly used method was ridges and furrow for cultivation. Whereas Planting time and selection of land for sugarcane cultivation had least need of training, as majorly sugarcane was cultivated in suru season and was cultivated in self-owned land.

Conclusion

The study provides us Training needs of sugarcane growers. Where majority areas of training reported by the respondents were fertilizers management ranking Ist as the mean score was highest (2.68) followed by soil fertility management IInd (2.43), preparatory operations IIIrd (2.42) and weed management IVth (2.35). The other important areas of training mentioned by the respondents were harvesting techniques Vth (1.79), selection of variety VIth (1.77) and irrigation method VIIth (1.69). Least expressed training areas were disease and pest control VIIIth (1.60), planting method Xth (1.59), planting time Xth (1.41) and selection of land for sugarcane XIth (1.40).

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