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RESEARCH ARTICLE

Factors Influencing the Knowledge and Adoption of Sustainable Sugarcane Initiative (SSI) by the Sugarcane Farmers of Villupuram District

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ABSTRACT

Sugarcane occupies a significant position on the agricultural map of India, covering large areas in sub-tropics and tropics. In 2014-15, there were 538 sugar mills in the country when compared to 139 mills in 1950-51 and the acreage under sugarcane from 1950-51 (1.71 million ha) to 2015-16 (4.90 million ha) has increased (Cooperative Sugar Vol. 47 (3), November 2015). Sugarcane a water guzzling crop is often raised with water scarcity issues. To achieve higher production by means of ensuring efficient utilization of water and fertilizer, the Sustainable Sugarcane Initiative (SSI) under TN-IAMWARM project was implemented in the year 2011. The Tamil Nadu Irrigated Agriculture Modernization and Water-bodies Restoration and Management Project (IAMWARM) is a multidisciplinary project funded by World Bank. The research study conducted in Villupuram district during 2015-16, involving 124 Sugarcane farmers comprised from 74 villages. The objective of the study was to identify the relationship between various personal, socio-psychological characteristics of the sugarcane farmers and their Extent of knowledge and adoption of Sustainable Sugarcane Initiative (SSI). Among the fourteen variables under study, eight of them showed a positive and significant association with dependent variable, extent of knowledge. Correlation analysis between extent of adoption and profile also revealed that eight independent variables showed a significant positive and associative relationship.

Keywords- Sustainable Sugarcane Initiative, TNIAMWARM, Correlation, Knowledge, Adoption, Sugarcane, SSI, Micro irrigation.

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INTRODUCTION

Sugarcane is an important irrigated crop in India. Farmers and agricultural scientists have in fact always assumed that the sugarcane crop requires a considerable amount of water to flourish. Sugarcane cultivation is generally admitted to be resource-intensive. Only those farmers who have ready access to cash or credit, irrigation and water supply, fertilizers and pesticides can cultivate sugarcane. The sugarcane plant requires steady irrigation for its growing period of 18 months to 24 months. So subsistence farmers are unable to cultivate sugarcane since sole reliance on monsoon supplies is inadequate. Reviewing these issues sustainable water use is the need of the day as threat of water scarcity will be the defining condition of life for many in the new century (Mukherjee, 2007). Sustainable Sugarcane Initiative as a technology which provides high productivity with saving of irrigation water, reduces the seed cane cost, increases the farm income through intercrops and facilitating mechanized cane harvesting due to wider spacing (Kathiresan, 2014).

The Sustainable Sugarcane Initiative (SSI) aims to: provide practical options to farmers for improving the productivity of land, water, and labour reduce crop duration, providing factories a longer crushing season and increased employment opportunities for workers reduce the overall pressure on water resources and ecosystems. It stresses a practical approach that originates from farmers and civil society to improve productivity while reducing pressures on natural resources. It's estimated that by adopting SSI, a farmer will be able to produce at least 20% more sugarcane while reducing water inputs by 30% and chemical inputs by 25% (ICRISAT, 2009). This is an innovative technique of agronomic practice to increase the cane yield significantly (Biksham Gujja and Natarajan, 2013).

Objectives of the Study: The following are the objectives of the study.

i. To find out the degree of association between the independent variables with that of Extent of knowledge.

ii. To find out the degree of association between the independent variables with that of Extent of adoption.

MATERIALS AND METHODS

The researcher adopted Ex post facto research design for the present study in order to know the Knowledge and adoption level of farmers towards SSI technology. Aim of the study is **t**o study the relationship between the profile of the sugarcane growers with the dependent variable knowledge and adoption of Sustainable Sugarcane Initiative (SSI).

The universe of the study comprises all the farmers who have adopted the SSI technology under TNIAMWARM project residing in Villupuram District of Tamil Nadu state. Both primary and secondary data were used for this study. The primary data was collected from respondents through questionnaire that contain list of questions related to this study. Population study was adopted by selecting all the beneficiaries of the project. Information collected from a sample of 124 respondents. The secondary data required for the study have been

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collected from the, Krishi Vigyan Kendra (KVK, Tindivanam), Water Technology Centre (TNAU, Coimbatore), Joint Director of Agriculture office (Villupuram District), books, magazines, journals and websites.

Fourteen personal and socio-psychological variables such as age, educational status, occupational status, annual income, farming experience, farm size, area under SSI, experience in SSI, contact with extension agency, exposure to agricultural messages, social participation, scientific orientation, economic motivation and perception towards SSI were taken as independent variables. Whereas extent of knowledge and extent of adoption of Sustainable Sugarcane Initiative (SSI) technology were taken as dependent variable.

Statistical analysis of data: The data collected using semi-structured interview schedule were carefully analyzed and processed. Statistical tool such as correlation analysis were applied to interpret the data to draw meaningful inferences.

RESULT AND DISCUSSION

To find out the relationship between the characteristics with the dependent variable knowledge level on SSI, correlation analysis was carried out and the results are given in Table 1. Correlation analysis revealed that out of fourteen independent variables eight of them showed a positive and significant association with dependent variable, extent of knowledge. They were educational status, contact with extension agency, exposure to agricultural messages, social participation, scientific orientation, economic motivation and perception towards SSI whereas farm size showed a negative and significant association, while the other variables had non-significant association with dependent variable, extent of knowledge.

Thus, it is concluded that higher the educational status, contact with extension and other agencies, exposure to agricultural messages, social participation, scientific orientation, economic motivation and perception towards SSI; higher will be their extent of knowledge, irrespective of their age, occupational status, farming experience, annual income, area under SSI, and experience in SSI.

Table 1: Relationship between profile of sugarcane growers with extent of knowledge on Sustainable Sugarcane Initiative (SSI) Technology (n=120)

Profile	Correlation Coefficient ('r' value)
Age	0.057^{NS}
Educational status	0.307*
Occupational Status	-0.023^{NS}
Annual Income	0.030^{NS}

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Farm size	-0.197*
Farming Experience	0.144^{NS}
Area under SSI	0.018^{NS}
Experience in SSI	0.112^{NS}
Contact with Extension agency	0.402**
Exposure to agricultural messages	0.545**
Social Participation	0.392**
Scientific Orientation	0.515**
Economic Motivation	0.247**
Perception towards SSI	0.317**

**Significant at 0.01 per cent level *Significant at 0.05 per cent level ^{NS} Non - Significant

Educational status had shown positive and significant association with knowledge level of the respondents. Higher educational status would have created interest and motivated them to utilize the information sources properly in order to acquire and practice the gained technical knowledge. Contact with extension agency had a positive and significant relationship with the knowledge level. The role of extension personnel is to bring about desirable changes among the farmers. Hence, in the present study these changes reflected the up gradation of their knowledge level on SSI. The performance of fellow farmers practicing SSI, efforts of agricultural scientists, state department functionaries, Sugar factory extension professionals, private companies and input dealers might have resulted in maximum knowledge level among the respondents.

Economic motivation was found to have a positive and significant relationship with the knowledge level. Generally, the sugarcane farmers who had higher level of extension agency contact were motivated by the extension personnel's towards getting higher yield and profit. The higher level of economic motivation made them to gather more information and gain knowledge about critical technologies of SSI.

Perception towards SSI had shown positive and significant association with knowledge level of the respondents. The advantageous attribute of the technology would have created interest and motivated them to realize the need for knowledge on SSI in order to practice technically. This result is in conformity with the findings of Nithiya (2014).

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Table 2: Relationship between profile of sugarcane growers with extent of adoption of Sustainable Sugarcane Initiative (SSI) Technology (n=120)

Profile	Correlation Coefficient ('r' value)
Age	0.078NS
Educational status	0.327**
Occupational Status	-0.148NS
Annual Income	0.086NS
Farm size	-0.118NS
Farming Experience	0.170NS
Area under SSI	-0.019NS
Experience in SSI	0.332**
Contact with Extension agency	0.273**
Exposure to agricultural messages	0.552**
Social Participation	0.245**
Scientific orientation	0.468**
Economic motivation	0.356**
Perception towards SSI	0.327**

**Significant at 0.01 per cent level *Significant at 0.05 per cent level NS Non - Significant

The data regarding the relationship of characteristics of farmers with the extent of adoption of recommended SSI are presented in Table 2.

The higher level of formal schooling extension agency contact, exposure to agricultural messages and higher social participation received by a farmer enhance his capacity to understand the intricacies involved adoption of SSI technology and applying them in the field situation hence a positive and significant relationship was observed between extent of adoption of SSI practices and the variables education, extension agency contact, social participation and exposure to agricultural messages. If the SSI farming experience is high it is feasible to have higher adoption level of SSI technology.

It could be justified that the variable scientific orientation and economic motivation had exhibited a positive

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contribution with the adoption of SSI. Since, the SSI itself is a scientific technology and high remunerating, it was natural that the variables scientific orientation and economic motivation had contributed to the adoption level. These have contributed to increased positive perception about the technology which showed a positive and significant association with the extent of adoption. The above results were in line with the studies of Rakesh (2010).

CONCLUSION

It could be concluded from this study that, out of fourteen independent variables eight of them showed a positive and significant association with dependent variable studied namely "extent of knowledge". They were educational status, contact with extension agency, exposure to agricultural messages, social participation, scientific orientation, economic motivation and perception towards SSI whereas farm size showed a negative and significant association, while the other variables had non-significant association with the dependent variable "extent of knowledge". Correlation analysis between extent of adoption and profile characteristics also revealed that the independent variables viz., educational status, experience in SSI, contact with extension agency, exposure to agricultural messages, social participation, scientific orientation, economic motivation and perception towards SSI were found to be significantly positive and associative relationship with the dependent variable "extent of adoption".

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