

**RESOURCE-USAGE FOR EFFICIENT OF SUGARCANE PRODUCTION IN THENI DISTRICT OF
TAMIL NADU – A STUDY**

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Abstract

Sugarcane is considered as a major industrial crop as the cane is supplied to sugar industries, where various products, from its juice are prepared by using a series of industry. The by-products from sugarcane further require some form of industry. Only a fraction of its production is used in small scale industry for making local 'Khandsari' and 'gur'. Sugarcane's products like sugar and fermented products are very important in making and preserving various kinds of medicines like syrups, liquids; capsules etc. Sugarcane provides a juice, which is used for making white sugar, and jaggery (gur) and many by-products like bagasse and molasses. Bagasse is used as a fuel, for production of fiber board, papers, plastics and furfural. Molasses is used in distilleries for the manufacture of ethyl alcohol, butyl alcohol, citric acid etc. The study conducted in Theni District and 332 farmers are approached to find the details regarding the relationship between the resources of sugarcane cultivation in usage. The study also suggests the how to utilize the resources in efficient manner.

Key Words: Resources, Farmers, Sugarcane, Linear relationship

Introduction

Sugarcane is an important commercial crop of the country occupying around 3.8 million hectares of land with an annual cane production of around 270 million tonnes. That is, it occupies about 2.8% of the cultivated land area and contributes about 7.5 % to the agricultural production in the country. About 35 million farmers grow and depend on sugarcane for their livelihood. And an equal number of agricultural laborer's earn their living by working in sugarcane farms. The sugar industry is the second largest agro-based industry, next only to textiles, in the country. There are 435 sugar mills installed which utilize around 40-50 % of the sugarcane produced manufacturing around 15 million tonnes of sugar. About 5 lakh workmen are directly employed by the industry besides a host of others gaining employment in industries that utilize by-products of sugar industry as raw material.

Objectives of the Study

- To study the primary and secondary resource-use efficiency in sugarcane cultivation.
- To suggest in improve the sugarcane production in usage of resources.

Methodology of the Study

The study is based on primary data. Primary data has been collected through personal interview, with the help of preplanned interview schedules. Data regarding resource usage in sugarcane production in Theni District under sugarcane farmers.

Tools of Analysis

Following statistical analysis have been used for analysing the data in measures of Correlation used in the present study. Simple average and percentage analysis used in the present study.

Table 1 Age-Wise Classification of the Respondents						
Age	Small		Medium		Large	
	Number	%	Number	%	Number	%
31-40 Years	92	50.55	36	37.89	25	45.45
41-50 years	44	24.18	27	28.43	11	20.00
51-60 years	24	13.17	17	17.89	12	21.82
Above 60 years	22	12.10	15	15.79	7	12.73
Total	182	100	95	100	55	100

Source: Primary Data

From Table 1 it could be observed that 182 sample respondents belong to small category. 95 farmers are medium and 55 farmers are large category. This shows that the youngest respondents are also involved in sugarcane production. The young peoples are using the resources in efficient manner in sugarcane production.

TABLE 2 Classification of Respondents by Literacy level						
Literacy level	Small		Medium		Large	
	Number	%	Number	%	Number	%
Up to Secondary	35	19.23	21	22.11	18	32.73
Higher Secondary	59	32.42	31	32.63	16	29.09
Graduation	88	48.35	43	45.26	21	38.18
Total	182	100.00	95	100.00	55	100.00

Source: Primary data.

The study observed that most of respondents are graduated, education is important for resources usage in sugarcane production.

TABLE 3 Classification of Respondents According to Family Size						
Family Size	Small		Medium		Large	
	Number	%	Number	%	Number	%
Below 4 members	35	19.23	20	21.05	13	23.64
5 – 8 members	52	28.57	25	26.32	10	18.18
Above 8 members	95	52.20	50	52.63	32	58.18
Total	182	100.00	95	100.00	55	100.00

Source: Primary data.

The Table 3 observed man power is important for agriculture, most of the farmers use their family members in sugarcane production.

Linear relationship of sugarcane cultivation resources in usage

The study assumes a significant linear relationship between the resources of sugarcane cultivation in usage. It is assumed that every resource usage is independent and interdependent. The linear relationship of resources with each other shows a change in usage of a resource that creates a significant change in other resources usage in cultivation.

Resources of sugarcane cultivation	LU	MPU	MU	FU	EU	WU	TU	ERU
Land Resource Usage (LU) (M=3.76, SD=.734)	1							
Manpower Resource Usage (MPU) (M=3.78, SD=.609)	.814**	1						
Material Resource Usage (MU) (M=3.78, SD=.623)	.608**	.948**	1					
Finance Resource Usage (FU) (M=3.69, SD=.760)	.884**	.613**	.430**	1				
Electricity Resource Usage (EU) (M=3.71, SD=.669)	.936**	.736**	.537**	.851**	1			
Water Resource Usage (WU) (M=3.76, SD=.684)	.864**	.709**	.534**	.775**	.799**	1		
Technology Resource Usage (TU) (M=3.77, SD=.692)	.902**	.696**	.488**	.772**	.882**	.797**	1	
Economic Resource Usage (ERU) (M=3.75, SD=.600)	.973**	.893**	.735**	.859**	.930**	.888**	.898**	1
Note: ** <.001, * <.05, significant level.								
Source: Compiled from SPSS Output								

H₀: There is no significant relationship between primary resources like land, Man power, Water, and Material resource usage and usage in sugarcane cultivation.

H₁: There is a significant relationship between primary resources like land, Man power, Water, Material resource usage and usage in sugarcane cultivation.

H₀: There is no significant relationship between secondary resources Finance, Electricity and Technology resource usage and usage in sugarcane cultivation.

H₁: There is a significant relationship between secondary resources Finance, Electricity and Technology resource usage and usage in sugarcane cultivation.

Pearson correlation analysis results a statistical significant evidence to reject the null hypothesis, since p value < 0.05 and to accept the alternative that there is a significant positive strong relationship of primary and secondary resource usage of sugarcane cultivation.

Linear relationship of sugarcane cultivation Primary resources in usage

The primary resources like land, manpower, water and material is important for sugarcane production. It will be describe the linear relationship ($r = 0.814$) ($r = 0.608$) between land resource usage and man power, material resource usage in sugarcane cultivation. This shows that land resource usage and man power, material resource usage are independent and significantly related each other. This means a one percent increases in land resource usage that creates a relative change in manpower, material resource usage.

The subsequent linear relationship ($r = 0.864$) ($r = 0.973$) between land resource usage and water resource, economic resource usage in sugarcane cultivation. This shows that land resource usage and water resource, economic resource usage are independent and significantly related each other. This means a one percent increases in land resource usage that creates a relative change in water resource, economic usage.

The following linear relationship ($r = 0.948$) ($r = 0.613$) between man power resource usage and material, finance resource usage in sugarcane cultivation. This shows that man power resource usage and material, finance resource usage are independent and significantly related each other. This means a one percent increases in manpower usage that creates a relative change in material, finance resource usage.

The next linear relationship ($r = 0.736$) ($r = 0.709$) between man power resource usage and electricity, water resource usage in sugarcane cultivation. This shows that manpower resource usage and electricity resource usage are independent and significantly related each other. This means a one percent increases in manpower usage that creates a relative change in electricity resource usage.

The ensuing primary sources of linear relationship ($r = 0.696$) ($r = 0.893$) between manpower resource usage and technology, economic resource usage in sugarcane cultivation. This shows that manpower resource usage and technology resource usage are independent and significantly related each other. This means a one percent increases in manpower usage that creates a relative change in technology, economic resource usage.

The linear relationship ($r = 0.430$) ($r = 0.537$) between material resource usage and finance, electricity resource usage in sugarcane cultivation. This shows that material usage and finance, electricity resource usages are independent and significantly related each other. This means a one percent increases in material resource usage that creates a relative change in finance, electricity resource usage.

The important of primary resources linear relationship ($r = 0.534$) ($r = 0.488$) ($r = 0.735$) between material resource usage and water, technology and economic resource usage in sugarcane cultivation. This shows that material usage and water, technology and economic resource usage are independent and significantly related each other. This means a one percent increases in water resource usage that creates a relative change in material, technology resource usage.

. The next linear relationship ($r = 0.797$) ($r = 0.888$) between water resource usage and technology, economic resource usage in sugarcane cultivation. This shows that water resource usage and technology, economic usage are independent and significantly related each other. This means a one percent increases in water resource usage that creates a relative change in technology, economic resource usage.

In general, Land is one of the predominant factors in cultivation process a change in land resource usage that relatively changes in other resources used in cultivation. Land resource economic usage is independent and significantly correlated with economic resource usage by 97%.

Manpower is one of the key factors in cultivation process a change in manpower economic usage that relatively changes in other resources used in cultivation. Manpower economic usage is independent and significantly correlated with economic resource usage by 89%. materials and machines are one of the key determinants of yields in cultivation process, a change in material economic usage that relatively changes in other resources used in cultivation. Material economic usage is independent and significantly correlated with economic resource usage by 73%. Thus, water resource is one of the basic resources in cultivation process, a change in water economic usage that relatively changes in other resources used in cultivation. The study results the same. Water economic usage is independent and significantly correlated with economic resource usage by 88%.

Linear relationship of sugarcane cultivation Secondary resources in usage

The secondary resources like finance, electricity and technology are also important for sugarcane production.

It will be shows that the linear relationship ($r = 0.884$) ($r = 0.936$) ($r = 0.902$) between land resource usage and finance, electricity and technology resource usage in sugarcane cultivation. This shows that land resource usage and finance resource usage are independent and significantly related each other. This means a one percent increases in land resource usage that creates a relative change in finance resource and electricity usage.

($r = 0.775$) ($r = 0.772$) ($r = 0.859$) between finance resource usage and water, technology and economic resource usage in sugarcane cultivation. This shows that finance resource usage and water, technology and economic usage are independent and significantly related each other. This means a one percent increases in finance resource usage that creates a relative change in water, technology and economic resource usage.

($r = 0.799$) ($r = 0.882$) ($r = 0.930$) between electricity resource usage and water, technology and economic resource usage in sugarcane cultivation. This shows that electricity resource usage and water, technology and economic usage are independent and significantly related each other. This means a one percent increases in electricity resource usage that creates a relative change in water, technology and economic resource usage.

($r = 0.898$) between technology resource usage and economic resource usage in sugarcane cultivation. This shows that technology resource usage and economic resource usage are independent and significantly related each other. This means a one percent increases in technology resource usage that creates a relative change in economic resource usage.

Thus, technology is one of the basic resources in cultivation process, a change in technology economic usage that relatively changes in other resources used in cultivation. The study results the same. Technology economic usage is independent and significantly correlated with economic resource usage by 89%.

Finance resource is one of the basic resources in cultivation process, a change in finance economic usage that relatively changes in other resources used in cultivation. The study results the same. Finance economic usage is independent and significantly correlated with economic resource usage by 85%. Thus, electricity resource is one of the basic resources in cultivation process, a change in electricity economic usage that relatively changes in other resources used in cultivation. The study results the same. Electricity economic usage is independent and significantly correlated with economic resource usage by 93%.

Finally, the correlation analysis results a significant linear relationship between the resources of sugarcane cultivation in economic usage. Among the resources, land (97%), electricity (93%), manpower (89%) and water (89%) resources significantly correlate with economic resource usage.

Findings and Suggestions

- Land is very important resources of sugarcane cultivation, but the most of the farmers are decided to selling their land to the wind mill companies, real estate peoples. The reason for cultivation costs are increased but return was decreased. The Central and state government to take the necessary steps to stop their selling of agriculture land.
- Manpower resources also important for sugarcane cultivation, the skilled laborers were reduced in rural areas for the reason insufficient wages. The north Indian peoples are involved to support the cultivation of sugarcane, but the communication problems are raised in working place. The awareness programmes are conducting by the agriculture department to expose the importance of agriculture to the people especially in sugarcane production.
- Agriculture department to take the necessary steps to improve the ground water resources using technologies in agriculture areas. Water resources are important for sugarcane cultivation.
- Most of the farmers are used chemical fertilizers for sugarcane cultivation, the agriculture department of NGO are encourages to using a natural fertilizers.
- Nowadays, the farmers are financially weak to struggle the purchase the seeds, fertilizers, pesticides and other materials for using sugarcane cultivation. The sugar mill, government given subsidy to help the sugarcane farmers.

Conclusion

It is concluded from the study that the main problems faced by the farmers regarding sugarcane production were; lack of irrigation water, non-availability of improved varieties of sugarcane, land preparation, high cost of inputs, diseases and insect pest, weeds and marketing problem. In our Theni district lack of water is the main problem of reducing the production of sugarcane. The land was sold by the farmers to real estate peoples.

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