

## **A STUDY ON ECONOMIC IMPACT OF SUGAR CANE PRODUCTION IN TAMILNADU**

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### **Abstract**

*In the study mainly focus on sugarcane productivity should be optimized on per unit water, labour wages or environmental cost. In this backdrop, the drip irrigation system for sugarcane should be promoted and popularized in major sugarcane producing states. Tamil Nadu is one of the major sugar producing states in India and it contributes on an average of nineteen lakhs tonnes of sugar annually, production of sugar in the country. Sugar sector transformation to save its sugar cane industry which benefited the economy in electricity generation, production of ethanol and employment creation to small-scale sugar cane farmers and reform the industry. It has played a crucial role in socio-economic development of rural areas through mobilization of production resources. Sugarcane is labour, water and other purchase input-intensive crop. Therefore, it is crucial that. Small-scale farmers were less productive partly because of the poor agronomic practices on the farms, inputs problems, old ratoon and lack of equipment to carry out activities on time. Sugarcane farmers are facing economic challenges ranging from low prices paid for sugar, unavailability of fertilizers, the high cost of inputs, lack of access to cheap finances, lack of equipment and limited extension services.*

**Keywords:** *Sugarcane Productivity, Production Resources, Sugarcane Farmers, Agronomic Practices, Economic Challenges.*

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### **INTRODUCTION**

India is the largest consumer and the second largest producer of sugar in the world. The sufficient and well-distributed monsoon rains, rapid population growth and a substantial increase in sugar production capacity have combined to make India the largest consumer and second largest producer of sugar in the world. The Indian sugar industry is a key to the rural development, supporting India's economic growth. The industry is inherently inclusive supporting over fifty million farmers and their families, in an era where there is a need for inclusive growth. It has done so by commercially utilizing the rural resources to meet the large domestic demand for sugar and

by generating surplus energy to meet the increasing energy needs of India. In addition to this, the industry has become the mainstay of the alcohol industry and delivers value addition on the farm side. In general, sugarcane price accounts for approximately seventy percent of the ex-mill sugar price. The Indian sugar industry is characterized by the coexistence of private, cooperative and public sector. It is rural centric and hence a key driver of village level wealth creation. It has tremendous transformational opportunities to meet food, fuel and power needs and earn carbon credit.

Sugarcane is a labour, water and other purchase input-intensive crop. Therefore, it is crucial that the sugarcane productivity should be optimized on per unit water, labour wages or environmental cost. In this backdrop, the drip irrigation system for sugarcane should be promoted and popularized in major sugarcane producing states. The study review reported that the adoption of skip furrow method and drip irrigation system could save 30-50 percent water as compared to conventional irrigation systems. Water is a precious natural resource should be utilized judiciously and also to be saved on priority, like any other scarce resource to meet future complex demand food and energy security. Hence, there is urgent need to formulate a comprehensive policy for sugarcane varieties development and their release on priority, seed cane multiplication and its supply to the sugar mills/farmers, location-specific suitable agronomic package of practices, sugarcane farm operations mechanization including harvesting, popularization and adoption of high sugar and water efficient varieties on large scale. It would be essential to implementing the water irrigation price policies for motivating the sugarcane growers to follow the new technology for a sustainable growth trajectory in cost effective manner to fulfill the future sugar, bio-ethanol, and energy security targets.

### **SUGARCANE PRODUCTION IN TAMILNADU**

Tamil Nadu is one of the major sugar producing states in India and it contributes on an average of nineteen lakhs tonnes of sugar annually, production of sugar in the country. Tamil Nadu comes under low recovery zone with recovery hovering around nine percent. Agro-processing units including sugar units are equally plagued by the problem of sickness. The sugar industry is beset with a number of problems like shortage of sugarcane, obsolete technologies, underutilization of capacity, payment of the high state advised price, the high cost of production etc., an industry and very few studies are conducted at the micro level. But the financial performance of selected private sector sugar industries in Tamil Nadu has received only scant attention. Moreover, a private sector sugar companies in a key industry would help to understand the major constraints faced by the sugar manufacturers. Indian share in global sugar production has risen from 5 percent to 15 percent during last five decades. India's share in global sugar consumption has gone up from 5 percent to 13 percent.

## **SOCIO-ECONOMIC IMPACT OF SUGARCANE PRODUCTION**

Sugarcane cultivation had changed drastically during last six decades. Sugarcane crop has an extra advantage in terms of biomass production potential because of multiple rationing that helps in minimizing cultivation cost and produce biomass for several years. Therefore, it offers itself as the natural green carbon resource which could be utilized as a substitute for fossil fuels as biomass for bio-green energy-efficient production. It has played a crucial role in socio-economic development of rural areas through mobilization of production resources. It has generated enormous avenues for the income and employment generation to the rural workforce. It is the main source of raw material for the production of white sugar, green bio-fuel (ethanol), electricity, jaggery, and Khandsari. However, annual fluctuations in sugarcane acreage, production and productivity have continued the matter of great concern. These fluctuations in sugarcane area, production and yield had serious implication on cane supply to sugar mills affecting crushing duration, sugar production and ultimately have an impact on farmer's income and livelihood security. These fluctuations depend on farm input supply, comparative cost advantage and its relative crops profitability, government price policies, infrastructural facilities, weather and climatic conditions.

Sugar production on the basis sugarcane production, price payment policy and time taken by sugar mills for making payment to the farmers. It is well documented that the diversion of sugarcane for alternate uses was more at the times of anticipated downswings in the sugar production. Besides it, there was the tendency of the farmers to shift to other alternate crops due to non-payment of sugarcane price to the farmers by the sugar mills, the late decision on sugarcane price, state advice price (SAP) fixation and domestic market sugar supply prices. These sectarian imbalances primarily caused by sugar glut situations lead to the downfall of sugar prices in domestic markets. In subsequent years, again due to less sugar production, its price increases, farmers attracted back to the sugarcane crop. The regional variations in sugarcane productivity were largely due to climatic conditions; sugar mills developmental activities, non adoption of scientific management practices and timely supply of cane seed and other inputs.

## **SOCIO-ECONOMIC STATUS OF FARMERS**

Rural women as unseen farmers form the backbone of the agricultural workforce in India. They perform the most tedious and laborious works in crop production, animal husbandry, poultry, fisheries, or any allied activities. In sugarcane agriculture, women are also active partners associated with almost all unit operations from land preparation, planting till harvesting; shares work between 10-70 percent in case of the majority of sugarcane intercultural operations and almost 100 percent, especially in those, involves laborious repetitive work such as children care, cooking and kitchen management. The women empowerment and gender issues have prime

importance in diversified Indian agricultural scenario. Keeping in view, socio-economic, income disparity and cultural diversity; the rural women status influenced mainly by social, religious taboos and agricultural production systems. The rural women contribute nearly 30-70 percent of the total labour requirement for some sugarcane production operations. The involvement of women in sugarcane production and processing operations is beside their customary household and animal husbandry rearing activities.

In sugarcane cultivation operations such as plowing, furrow opening, a spray of weedicide, cleaning of irrigation channels, earthing up, spray of plant protection chemicals and off barring were done by the men. These crop production operations were cumbersome and required hard labour, hence performed by the men. However, the cane production activities such as FYM application, seed sets cutting, transport, planting, and setts covering, manual hoeing/weeding, de-trashing and trash collection were done either by women or child workers. These operations were also tedious and labour intensive but did not demand that much physical energy as required by the operations done by the men. However, in some operations, there exists wide variation between the tropical and subtropical states. The other operations in which women workers participated remarkably were FYM application, seed cane sett cutting, bundling, transport, fertilizer top dressing, de-topping of harvested cane, cleaning and bundling, a collection of trash, stables and their disposal.

Sugarcane farming operations, such as a decision on acreage allocation, planting time, purchase of inputs, type of labor to be engaged, marketing and sugarcane supply to sugar mill etc., were taken solely either by the family head especially, men themselves or jointly in consultation with their female family members. The women have limited role in farm decision-making process. The women have some role in other activities like marketing of crop produce, farm financial management, disposal of by-products and money keeping and spending for household operations. The men dominate in terms of loans borrowing, as this could be attributed to their high social interaction and thereby better exposure. In most of the cases, it was seen that the women were not considered as the forefront in the decision-making process. Sometimes, women deliberately did not take part in decision process because men put blame on them if anything goes wrong. The results concluded that in the majority of cases the men played a dominant role in the decision-making process and the women had to play a supportive role as sometimes major decisions were jointly taken by men, women and other family members.

Sugarcane as raw material utilized mainly for sugar production as the primary product and the bio-ethanol produced only from sugar mill by-products molasses. The molasses availability and its supply to the ethanol distilleries primarily depend on sugarcane production. Therefore, the economic viability of bio-ethanol production depends on processing efficiency of

molasses- ethanol conversion and its prices. The government of India did not permit to produce bio-ethanol directly from sugarcane juice to fulfill its commitment to food security through regular sugar supply for domestic consumption at affordable market price. During years of less sugarcane production and brief sugar crushing seasons, high molasses prices and its inadequate supply forced most of the bio-ethanol distilleries units to work for a short duration and underutilization of installed ethanol processing capacity.

The sugarcane growers plant different varieties having different characters such as early, mid, late maturity and sugar recovery level. There is no discrimination in price for high, medium, low sugar varieties as sugarcane prices paid to the farmers on a weight basis. Therefore, it would be useful to develop and implement the sugarcane price system based on juice quality. It would encourage sugarcane farmers to plant high sugar varieties and also help in improving the sugarcane productivity for higher economic return and remuneration. The voluntary adoption of sugarcane samplers and sucrose testing machines could be effective for this innovative sugarcane price policy.

#### **IMPACT OF SUGARCANE PRODUCTION TECHNOLOGIES**

Sugarcane farmers, to analyze the impact indicators under different combinations of technologies as followed by the sugarcane farmers, to study the relationship between the profile characteristics and the impact of sugarcane production technologies on sugarcane farmers, to elicit the problems in practicing the production technologies of sugarcane and the suggestions to overcome the problems as perceived by sugarcane farmers. Majority of the respondents had medium achievement motivation, scientific orientation, management orientation and innovativeness. More than half of the sugarcane farmers perceived the impact of sugarcane production technologies as medium followed by the low and high impact of sugarcane production technologies.

Sugar industry and sugarcane cultivation are passing through a critical phase of restructuring. Hence, sugar industry should also harness the potential of sugarcane production and diversification for power, bio-ethanol, other co-product, jaggery and Khandsari for sustainable development of industry and economic prosperity of sugarcane farmer. The high demand for fuel and electricity can be eased if the challenges facing the sugar industry are addressed and more sugar is produced. This is so because by-products from sugar cane can be used to generate electricity and also for ethanol which can be blended into fuel.

There is a need for high levels of management during weeding, harvesting and transporting of the cane. This implies that extension services are required right through the year. If at weeding no proper management is done the crop will be choked by the weeds and the quality of cane will be compromised. There is need to even train the workers as they spend more time on the fields. Sugar cane farming is highly labour intensive and if no serious training is given to the

workforce then the quality of the cane will be poor. Seventy-eight farmers, 97%, strongly agreed that there was a need for more training workshops to learn about new varieties and better methods of growing cane and management workshops. It was interesting to note that most farmers do not keep any records of the farm's earnings and expenditure but only get to know about them when the Miller deducts them. It was unanimously agreed therefore that management skills need to be acquired by all the farmers. Extension work is a necessary activity by both the Government and the Estate in order to increase productivity. While the availability of inputs can go a long way in assuring productivity, it was noted that the know-how of sugar cane farming was also essential. If the high-cost inputs were not administered properly the expected productivity might not be realized. While all the respondents had received some form of training, 97% said they needed more training as sugar technology was improving and new varieties being developed. Inefficiency at farm level will increase costs. If farmers and their workers do not receive adequate training the scarce resources will not be allocated efficiently and optimum use will not be achieved.

#### **EQUIPMENT AVAILABILITY**

Farmers interviewed said it was important to own equipment for most operations on tillage farms required the use of a tractor and its implements. It was interesting to note that ferrying cane from the field to the loading zone chewed the greater part of the farmer's earnings as this was quite expensive. The expense was greater than the expense incurred to haul cane from the loading zone to the miller who is about 60 kilometers away. It was critical that the Government and financiers considered funding this foreign currency earner. The estates and millers agreed that there was a need for more involvement of extension workers in the farming operations to ensure high productivity. Estate extension workers sometimes move around the fields providing advice to farmers on good sugar cane farming practices. The estates and millers strongly agreed that equipment is critical in sugarcane farming. Only one of the three estates argued that equipment is critical but for small-scale farmers, it is not viable to own the entire equipment but farmers can aim for group ownership of equipment. All the estates agreed that small-scale farmers were less productive partly because of the poor agronomic practices on the farms, inputs problems, old ratoon and lack of equipment to carry out activities on time.

#### **CONCLUSION**

Sugar cane is a specialized crop which needs a lot of expertise. There is need to provide such skills to increase productivity and earn the much-needed foreign currency. Equipment and transport play a major part in sugar cane farming in plowing, disking, carrying inputs, carrying a cane and carrying workers. Farmers fail to carry out tasks on time because of lack of equipment or transport thereby affecting productivity. If a farmer has to wait for a hired truck to deliver his

fertilizer then he may not apply the input on time compromising on productivity. More than 60% of most farmers' earnings go towards hiring equipment and transport.

Productivity in the sugar industry affects the whole nation in terms of foreign currency earnings, production of ethanol, generation of electricity, molasses and other byproducts from sugar cane. If more sugar cane is produced then more of each of the benefits that can be obtained from sugar cane will be derived. Have the best climate for the growth of sugar cane with water being complimented through irrigation. Zimbabwe thus has a comparative advantage over the production of sugar cane. The breakeven point for sugar cane is on average 60 tons per hectare although the yield can go as far as 115 tons per hectare.

The farmers have not been reaching the expected yield because their ratoon is old and needs plowing out but they do not have the funds to carry out the expensive exercise. If the ratoon goes beyond its productive life, its sugar content is greatly reduced and water and nutrients cannot be supplied to all the parts of the cane. A disease called the ratoon standing disease will develop. A fertilizer is an important input in sugar cane farming but farmers do not always get it when they need it. Sometimes they apply the fertilizers long after it was due or in short quantities because of its unavailability or its high price

The high cost of fuel leads to exorbitant hiring charges leaving the farmer with very little income for sustenance. The research found out that farmers were disgruntled on the price offered for sugar. Some even compared it to sand which was just fetched in rivers but was better paying than sugar. They thus attributed all the other challenges to low prices offered for sugar. It can, therefore, be concluded that the small-scale sugar cane farmers are facing economic challenges ranging from low prices paid for sugar, unavailability of fertilizers, the high cost of inputs, lack of access to cheap finances, lack of equipment and limited extension services. The Government should, through the existing structures treat sugar cane in the same way tobacco is treated so that farmers are encouraged to produce.

A support price for sugarcane could also be put to incentivize farmers. Farmers could also earn part of their proceeds in foreign currency to be able to import equipment. Since sugar cane produces ethanol that can be blended into fuel the government could finance farmers to ensure that mills are utilized to capacity, ethanol and electricity are generated to save foreign currency

and substitute imports. To reduce the burden on the fiscus as there would be import substitution when electricity is generated locally and fuel is manufactured locally. Mauritius embarked on sugar sector transformation to save its sugar cane industry which benefited the economy in electricity generation, production of ethanol and employment creation to small-scale sugar cane farmers and reform the industry.

The Sugar Cane Association could come up with their constitution and use it to borrow funds from commercial banks for purchasing group assets which could then be rotated on group members' farms at relatively low costs. The farmers could also emulate what small holder farmers in countries. These have established revolving funds where farmers can borrow. The Estate and millers can also guarantee the small-scale farmers so that they can access loans from banks to purchase their own equipment and to be able to plough out their cane. The millers know that farmers will definitely sell their cane to the mill and they use this premise to guarantee the farmer's loan.

The sugar cane on the field should be recognized as enough collateral to advance loans to farmers by banks. Banks can assess the crop on the field to vet the client's credit worthiness. The current complex procedures for obtaining a loan are commercialized and cannot be accessed by small-scale farmers.

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