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The Study Per Hectar Yield of Sugarcane in of DRIR Irrigation Area and Non-Drip Irrigated Area in Malshiras Tahsil of Solapur District

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Abstract

Agriculture has been and will continue to be the life line of Indian economy. Directly and indirectly around two-third of Indian population is involved in agriculture activities. Irrigation plays an important role in Indian agriculture due to uncertain, unreliable, irregular, variable, seasonal and unevenly distribution of rainfall. In the present-day drip irrigation is most essential technological factor due to shortage of water resources. For present study Malshiras tahsil of Solapur district is selected purposively. The main objective of present research paper is the comparative study of sugarcane productivity in drip irrigated area and non-drip irrigated area. For the purpose of the study, both primary and secondary information was collected from different sources. The study shows that drip irrigation system is very effective irrigation system in sugarcane cultivation. It increases 17.69 M.T. per hectare yield of Sugarcane as comparison to non-drip irrigated area. The per hectare yield of sugarcane in drip irrigated area in the Village Bacheri, Manki Kanher and Chakore is high because of the use of modern irrigation technology. The empirical results suggest that, there is an urgent need to improve awareness about drip irrigation system among sugarcane growing farmer in village of river bank of Bhima in Study region.

Keywords: Irrigation, Drip Irrigation and Sugarcane

Introduction

Agriculture geography has been defined as the study of spatial variation in agriculture activity, involving both the description of such variations and attempts to explain them. Agriculture has been and will continue to be the life line of Indian economy. Directly and indirectly around two-third of Indian population is involved in agriculture activities. In Maharashtra state 65 per cent of the total workers depend on agriculture and allied activity. Agriculture productivity is a function of interplay of physical (Physiography, Climate, Soil, Water) and cultural variables (Socio-Economic, Political, Institutional and Organizational) and it manifests itself through per hectare productivity and the total production. Agricultural productivity also depends on attitudes to the farmers towards work and their aspirations for better standard of living.

Irrigation plays an important role in Indian agriculture due to uncertain, unreliable, irregular, variable, seasonal and unevenly distribution of rainfall. Irrigation is imperative for successful agriculture particularly in the arid, semi-arid and sub humid areas, which are prone to drought and famine conditions due to partial failure and delayed arrival or early withdrawal of Monsoon (Reddy & Reddy, 1992). Apart from that, there are certain crops such as Rice, Sugarcane, Jute, Cotton, etc. which require more water and have to be provide with irrigation even in area of heavy rainfall. In the present-day drip irrigation is most essential technological factor due to shortage of water resources. Drip method of irrigation helps to reduce the over-exploitation of groundwater that partly occurs because of inefficient use of water under surface method of irrigation. Environmental problems associated with the surface method of irrigation like water logging and salinity are also completely absent under drip method of irrigation (Narayanamoorthy, 2005). Drip method helps in achieving saving in irrigation water, increased water-use efficiency, decreased tillage requirement, higher quality products, increased crop yields and higher fertilizer-use efficiency.

Study Region:

For present study Malshiras tahsil of Solapur district is selected purposively. Malshiras tahsil extends from 17° 36' North latitudes to 18° 01' North latitudes and 74° 42' East longitude to 75° 13' East longitudes. The total geographical area of Malshiras tahsil is 160801 km², which is 11% of total geography area of Solapur district. The Population of Malshiras tahsil is 485645 (Census 2011). The principal source of irrigation in Malshiras tahsil is Bhatghar right bank canal and Ujjani right bank canal. Temperature is high in summer season. The tahsil has hot and dry climate, with an average annual rainfall of 463.4 mm. The study region is well known for development of sugarcane factories.

Objectives:

1. The comparative study of sugarcane productivity in drip irrigated area and non-drip irrigated area

Date Collection & Methodology:

The study was conducted in the Malshiras tahsil of Solapur district in Maharashtra state. For the purpose of the study, both primary and secondary information was collected from different sources. Data regarded to per hectare yield of sugarcane in drip irrigated area and non-drip irrigated area collected and used for the year of 2021-22 are based on the primary sources. It has been helped to production of sugarcane and per hectare yield of sugarcane. For which special questionnaires were designed and field survey has been made to obtain primary data. During the field survey, 10 villages were selected randomly from study region. 10 sugarcane growing farmers were selected from each village, among them 5 were used drip irrigation for sugarcane and 5 were used non drip irrigation for sugarcane. The secondary data like cropped area, irrigated area and geographical information collected through Agriculture Department, District statistical Department of Solapur and socio-economic abstract of Solapur district.

Discussion:

Sugarcane is one of the significant crops cultivated predominantly in different villege of the study region. It is water-intensive crops. Despite being a water-intensive crop, type and fertility of soil, variety of seeds, sources and methods of irrigation and contribution of farmers are play important role in per hectare yield and production of sugarcane. Here we dominantly considered method of irrigation play a significant role in per hector yield of sugarcane.

Table No. 1

Per Hectare Yield of Sugarcane in Malshiras Tahsil

Sr. No.	Village	Per Hectare Yield (in M.T.)		
		Non -Drip Irrigation	Drip Irrigation	Deference
1	Wagholi	87.48	94.34	6.86
2	Sangam	88.92	97.76	8.84
3	Chakore	82.28	104.5	22.22
4	Kanher	77.18	108.12	30.94
5	Islampur	84.06	97.6	13.54
6	Manki	78.52	100.34	21.82
7	Tandulwadi	82.86	99.6	16.74
8	Bacheri	66.36	109.48	43.12
9	Malkhambi	82.42	98.12	15.7
10	Kolegoan	90.66	94.47	3.81
11	Tahsil	82.74	100.433	17.69

Source: 1) Complied by Researcher on the basis of field survey -2022.

During the investigation, there is 82.74 M.T. per hectare yield of Sugarcane under non drip irrigated area in the study region. The village Kolegoan has highest per hectare yield of Sugarcane (90.66 M.T.) in Malshiras tahsil, whereas lowest observed in Bacheri villege, which was 66.36 M.T. The table no. 1 reveals that the spatial distribution is very uneven. The high per hectare yield of Sugarcane in non-drip irrigated area is observed in Kolegoan Sangam and Wagholi i.e. > 80 M.T. Because of development of irrigational facility, use of high yielding variety of Sugarcane and fertile soil is available in Bhima river basin. The moderate level per hectare yield of Sugarcane is found only in Chakore, Islampur, Tandalwadi and Malkhambi. It was between 80 to 85 M.T. per hectare yield of Sugarcane, whereas it is low in Bacheri Kanher and Manki i.e. below 80 M.T. per hectare yield of Sugarcane. It was due to poor development of surface irrigation facility, lack of underground water and those villege are Jawar production tahsils of study region.

The per hectare yield of Sugarcane under drip irrigated area, the region as a whole has 100.53M.T. per hectare yield of Sugarcane. The villege level distribution of per hectare yield of Sugarcane under drip irrigated area is very uneven. The high per hectare yield of Sugarcane is found in Bacheri, Manki Kanher and Chakore i.e. > 100 M.T. because of the use of modern irrigation technology and high yielding variety of Sugarcane, development of awareness about efficient use of water. It was moderate Sangam, Islampur, Tandalwadi and Malkhambi i.e. between 95 to 100 M.T. whereas it is low in Wagholi and Kolegoan i.e. below 95M.T.

During the period of investigation, the region as a whole has 17.69 M.T. Positive change in per hectare yield of Sugarcane under drip irrigated area. The per hectare yield of Sugarcane increased in the all tahsil of study region. The high increase is found in Kanher and Bacheri i.e. > 300 M.T. per hectare, due to development of new irrigation facility and use of modern irrigation technology like drip irrigation. The moderate increase is observed in Chakore Tandalwadi Manki and Malkhmbi, whereas it is low Kolegoan, Sangam, Islampur and Wagholi i.e. below < 15 M.T.

Conclusion:

From the above discussion, we can conclude that, drip irrigation system is very effective irrigation system in sugarcane cultivation. It increases 17.69 M.T. per hectare yield of Sugarcane as comparison to non-drip irrigated area. The per hector yield of sugarcane in drip irrigated area in the Villege Bacheri, Manki Kanher and Chakore is high because of the use of modern irrigation technology and high yielding variety of Sugarcane, development of awareness about efficient use of water whereas in non-drip irrigation more per hector yield is found in Sangam, Wagholi and Kolegoan villege, due to development of irrigational facility, use of high yielding variety of Sugarcane and fertile soil is available in Bhima river basin.

The empirical results suggest that, there is an urgent need to improve awareness about drip irrigation system among sugarcane growing farmer in village of river bank of Bhima in Study region. It is also need to provide capital for purchasing drip irrigation set by sugar industry to sugarcane growing farmer in study region.

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Conflicts of interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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