

A Comparative Study of Conventional Method of Irrigation and Drip Method of Irrigation in Tirunelveli District

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Abstract— The performance of the Indian economy depends largely upon the performance of the agriculture sector, which contributes nearly one-third of the Gross Domestic Product (GDP). Within the overall strategy of agricultural growth, irrigation is a major programme for modernizing Indian agriculture. Such irrigation resources are limited and the water use efficiency as well as agricultural productivity is low. Hence Micro irrigation in general and drip irrigation in particular which is the most efficient method of irrigation was introduced in India in the year 1987. In this paper a comparative study of conventional and drip method of irrigation in Tirunelveli district has been studied in terms of resources use and production. Hence the policy should be focused on the promotion of drip irrigation in those regions where we find scarcity in water and labour.

Index Terms—About four key words or phrases in alphabetical order, separated by commas.

I. INTRODUCTION

Irrigation is a vital input to increase agricultural output to keep pace with food requirements of the ever increasing population. It is one of the key elements in boosting and stabilising agricultural production.

The availability of sufficient and timely supply of water is considered as an essential prerequisite for transforming traditional agriculture into a modern agriculture. Irrigation is assigned such a crucial role because this is the single most important factor which can facilitate the fuller utilization of scarce farm land resources and can facilitate acceptance of improved technology at the farm level. Today, intensive agriculture is the main stay of the present programme of agricultural development, necessitating an expansion of irrigation facilities. Most of the developing countries which are under the pressure of overpopulation and have severe food grains shortage, have been attempting to provide a fillip to their irrigation facilities. Such independence India is making concerted efforts to achieve success in irrigating its agricultural land.

II. OBJECTIVES OF THE STUDY:

1. To examine the correlation between net area irrigated and production of horticulture crops
2. To analyze the conventional and drip method of irrigation with different sources of irrigation in Tirunelveli district

III. METHODOLOGY:

This study is exclusively based on primary data with 30 farmers selected in the study area. The data were collected by personal interview method using multi stage random sampling method for the year 2014- 2015. 15 villages of 9 blocks were selected for the study.

IV. HYPOTHESIS AND TOOLS USED

Based on the objectives, the following hypothesis have been formulated

1. The impact of drip irrigation is positive in terms of income and yield
2. There is a high possibility of promotion of drip irrigation system among the conventional irrigation farmers

A simple correlation coefficient model is used for calculating the relationship between net area irrigated and yield.

V. IRRIGATION IN TIRUNELVELI DISTRICT

Tirunelveli district is in the southern part of Tamil Nadu. The district is predominantly agrarian; agriculture is the backbone of the district's economy. Out of the total geographical area of 6, 82,308 hectares the cultivable area is 1, 98,422 hectares and 2, 38,808 hectares lands are under cultivable waste, current fallow, and other fallows.

Table 1: Sources of Irrigation in the Study Area

Sources of irrigation	Conventional Method		Drip Method	
	Net Irrigated Area (in acres)	%	Net Irrigated Area (in acres)	%
Canal	28	13.53%	32	12.75%
Open Wells	53	25.60%	64	25.50%
bore wells	110	53.14%	126	50.20%
other sources	16	7.73%	29	11.55%
Net Irrigated Area	207	100%	251	100%

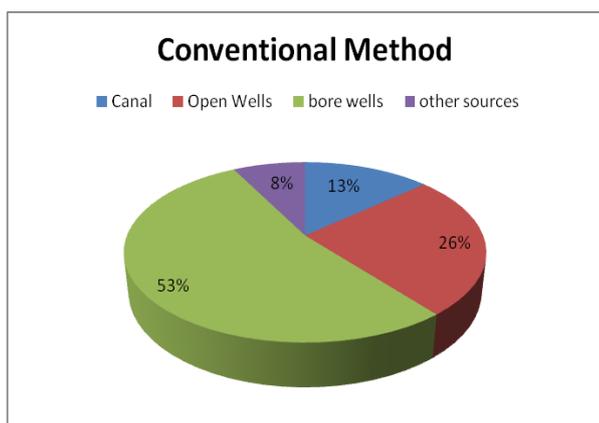


Figure 1

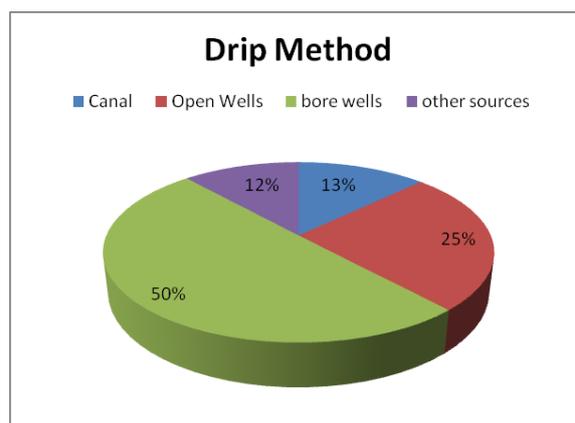


Figure 2

This area can be brought under cultivation by improving the irrigation methods. The methods of irrigation are classified into conventional and drip method of irrigation.

Sources of Irrigation

Thamiraparani is the major river basin in the district. The other streams which are seasonal in nature are chittar, pachayar, manimuthar, ramanathi, and Uppodai Rivers which drain into the Thamiraparani basin. The major sources of irrigation are canal, open well and bore well.

According to land capability classification in Tirunelveli district, 20 per cent lands are wet land, 10 per cent lands are poramboke lands, 10 per cent lands are other lands and remaining 60 per cent lands are dry lands. The agriculture in the wet region mostly depends on canal irrigation which gets water from reservoirs, while the dry region cultivation depends on rainfall only. In this area, 80 per cent dry lands are cultivated by supplemental sources like open wells and bore wells. However, the farmers who are far away from the water sources are unable to take sufficient water to their field where they are irrigating through conventional method of irrigation. In this method 30 to 50 per cent of water gets wasted by evaporation, transpiration and by other means. Instead of conventional method of irrigation, if the farmers irrigate their cultivating land through pipe line using drip irrigation method, they can reduce water losses. Thus they can be able to irrigate double the area with available water and the yield and quality will be high. It also increases the income of the

farmer there by improving their socio- economic condition.

The methods of irrigation are classified into conventional method of irrigation and drip method of irrigation. The table 1 have the details of area irrigated by different sources of irrigation under conventional and drip method of irrigation. The first important source of irrigation, Wells accounted for 78.74 per cent of net irrigated area under the conventional method of irrigation whereas 75.70 per cent of net irrigated area accounted under the drip method of irrigation. Thus wells are spread over large areas of Tirunelveli district. The second most important sources of irrigation is Canals accounting for 13.53 per cent of the total net irrigated area under conventional method of irrigation whereas 12.75 per cent of net irrigated area accounted under drip method of irrigation. Other source contributes 7.73 per cent under conventional method and nearly 11.55 per cent under drip method of irrigation. Figures 1 and 2 illustrate the major sources of irrigation in Drip and Conventional irrigation method.

Source wise the pace of progress in irrigation by wells has been much faster than that by canals and other sources. However under drip method of irrigation pace of progress by other sources are much faster than wells and canals due to 100 per cent subsidy provided by the government to create additional irrigation sources.

Hypothesis to test the growth of certain irrigation related variables.

The important variables in this connection are net area irrigated and production. The model used to calculate the

simple correlation coefficient is given below:

The results of correlation coefficient are given in table 2. It is observed from the table that the correlation between net

Table 2: Correlation Coefficient of Conventional and Drip Irrigation Methods

Crop	Conventional Method of Irrigation		Drip Method of Irrigation	
	Net Area Irrigated in acres	production in kgs per acre	Net Area Irrigated in acres	production in kgs per acre
Banana	55	160	65	200
Chillies	85	1200	110	2000
Brinjal	67	1000	76	1500
	207		251	
Correlation		0.9		0.9

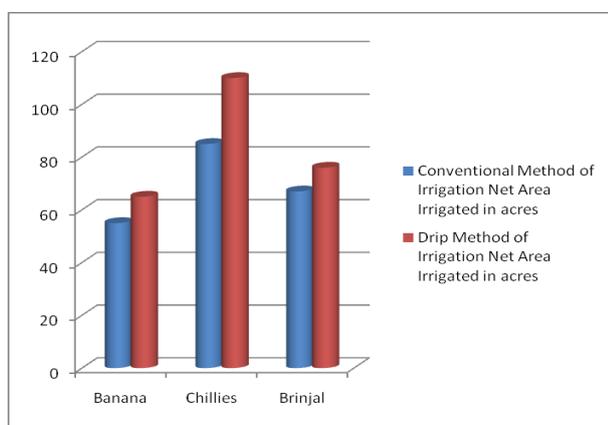


Figure 3

area irrigated and production is very high. This high correlation coefficient indicates that as net irrigated area increases production also increases in both the irrigation method. However net area irrigated and production increases more in drip method of irrigation than the conventional method of irrigation as illustrated in figures 3 and 4.

VI. FINDINGS AND CONCLUSION OF THE STUDY:

From the study, it is observed that farmers adopting Drip Irrigation had a better net area irrigated. As a result, farmers cultivated higher production and yield. Thus it clearly shows that drip irrigation is more suited than conventional irrigation in the study. The study also finds that Drip Irrigation is more water efficient than Conventional irrigation with the different sources of irrigation in the study area. Also there is need for proper maintenance of canal and other sources. The different constraints were identified during the cultivation of crops like the damage due to insect and pests, lack of finance for adopting modern method of irrigation, lack of technical knowledge about the modern techniques and others.

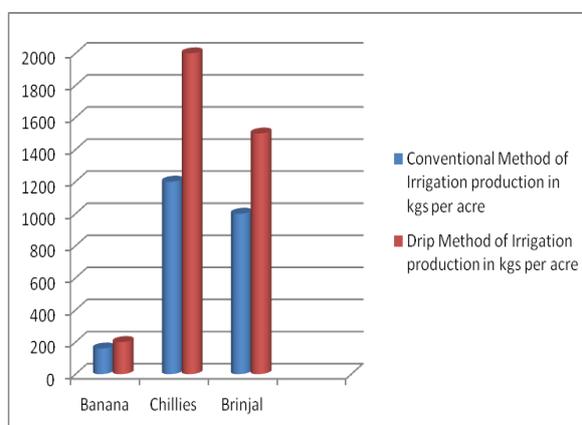


Figure 4

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