

GROWERS' AGREEABILITY AND SATISFACTION TOWARDS TRICKLE IRRIGATION

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Abstract:

Agriculture is the strength of Indian Economy and a key area in India. Agriculture is the main user of water which consumes more than 80 per cent of the country's exploitable water resources. The conventional methods of water conveyance and irrigation are highly inefficient due to wastage of water and other clogging problems. In this context, the use of modern irrigation methods like trickle irrigation and sprinkler irrigation are the only alternative for efficient use of surface as well as ground water resources. Hence, in this chapter, the meaning, Significance, components, scope of trickle Irrigation are discussed, apart from describing the origin, need, types of irrigation.

Key words: Trickle irrigation, Agriculture, Farmer's satisfaction.

Introduction:**“Agriculture: a living with future”**

Agriculture is a key sector for India and it will give to remain the same in the likely future also. Though India has the maximum percentage of land under cultivation in the world, only one-third of the cropped area is actually irrigated and the efficiency of agriculture is very low. Therefore, in order to grow food-crops and agricultural products in large quantities to feed the growing millions, intensive farming and rotation of crops are essential. The post-Independence decades have seen a remarkable shift in agricultural practices such as irrigation, crop rotation, fertilizers, and pesticides in response to new technologies and the development of world markets. No doubt, the present agronomy, plant breeding, pesticides and fertilizers, and technological improvements have sharply increased yields from cultivation, but at the same time have caused widespread ecological damage and negative human health effects. Among them, water scarcity is the main problem to be faced by many societies and the world in the Twenty - first century.

In India, the important for water resources development for overall social and economic development was well recognized from the beginning of the plan period. In the last five decades, a large number of water resources projects (Major, medium and minor) for irrigation have been implemented and several others are under consideration all over the country. As an outcome of all these efforts, at present, India has marginally surplus food, but has to produce about 450 MT in the year 2050 to feed the growing population of about 1.5 billion.

Water, one among the crucial input of farming, is increasing day by day for all activities viz., Agricultural, Industry, and domestic purpose. A remarkable feature, since the early 1980s, has been the widespread emergency of private ground water exploitation, which has become the dominant form of irrigation in India and also in countries like China, Pakistan, and Thailand etc. In India, surface irrigation system currently accounts for less than 25 million hectare of irrigated area while groundwater irrigation supplied by pumps and gen sets accounts for more than 65 million hectare of irrigated area.

The National Commission of Agriculture has highlighted that by harnessing all the available surface and ground water, it is possible to save about only 52 per cent of the area under irrigation by 2025 AD. Due to the decreasing tendency in water availability for agriculture and increase in

energy cost, it is imperative to efficiently use water and energy in agriculture. In other words, the efficient use of water resources becomes a fundamental target especially for grower's and Trickle irrigation is considered to be one of the most efficient irrigation system used in agriculture.

Trickle Irrigation

Irrigation is an artificial application of water to the land or soil and it has a few other uses in crop production, which include protecting plants against frost, suppressing weed growing in grain fields and helping in preventing soil consolidation. Trickle irrigation is an irrigation method that applies water slowly to the roots of plants by deporting the water either on the soil surface or directly to the root zone, through a network of valves, pipes, tubing, and emitters. The first new system of this type was established in 1959 in Israel by Blan. This method was very successfully spread to Australia, North America and South America by the late 1960s. In India, it was introduced during 1970s but became known to growers only after 1986. In order to facilitate the adoption of the micro irrigation system, the government of Maharashtra has been implementing this scheme since 18th November 1986.

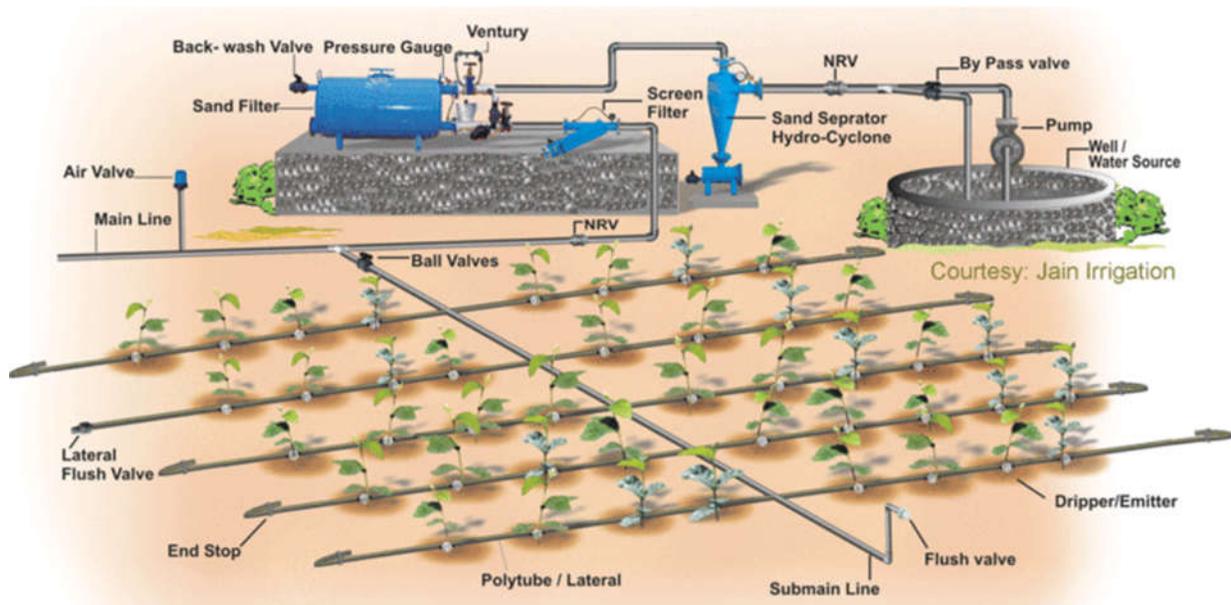
Trickle is the most heavily promoted form of irrigation due to its economic aids such as low cost of operation and maintenance, high water application efficiency, usage in uneven terrain etc., compared to overhead sprinkler and other permanent irrigation systems. However, the spread of this technology, their adoption and diffusion have been far below its potential and expectations. This study, therefore, intends to examine the attitude and gratification of the grower's at Coimbatore district towards Trickle irrigation system.

Need for Irrigation in India

- About 80 per cent of the total annual rainfall of India occurs only during four months, i.e. from mid-June to mid-October and hence, it is essential during the rest of the eight months.
- As monsoons are uncertain, irrigation is necessary to protect crops from drought as a result of uncertain rainfall.
- The irrigation is necessary for agriculture in less rainfall areas.

- Sandy and loamy soils cannot retain water like the alluvial soil and the black soil. This is one of the major reasons for using the irrigation for farming in the areas having sandy and loamy soils and along the slopes of hillsides.

Operation of Trickle Irrigation System



Source: en.wikipedia.org/wiki/Trickle_Irrigation//www.jains.com.

Objectives of the study

The primary objective of the present study is to examine the effectiveness of Trickle irrigation system practiced by grower's in Coimbatore district. In tune with the above primary objective, the following secondary objectives are framed.

1. To identify the socio-economic status of the sample grower's.
2. To study the attitude of the grower's towards Trickle irrigation system.
3. To evaluate the effectiveness of Trickle irrigation system
4. To study the level of satisfaction and the reasons to switch over to Trickle irrigation System

Research Methodology

Research Methodology is the systematic, theoretical analysis of the methods applied to a field of study. The methodology may include publication research, interview surveys and other research techniques, and could contain both present and historical information. Any scientific approach should have a method or an outline to be followed to attain specific goals.

Sources of Data

The study is mainly based on primary data, which are collected from growers through Interview Schedule. The secondary data needed for the study were collected from the Department of Agriculture, Government of Tamil Nadu, Suppliers of Trickle and online sources, apart from the related journals, articles, and books.

Area of the Study

Coimbatore is selected as the sample for the conduct of this study.

Sample Design:

The sampling technique used in this study is simple random sampling method.

Review of Literature

Jennifer Burney et al.,(2010)⁵ analyzed solar-powered Trickle irrigation as a strategy for enhancing food security in the rural Sudano–Sahel region of West Africa, through a comparison of villages in Northern Benin, and household survey and field-level data through the first year of harvest in those villages. This study finds that solar-powered Trickle irrigation significantly augments both household income and nutritional intake, particularly during the dry season, and it is cost effective when compared to alternative technologies.

United State Department of Agriculture USDA-NASS. (2009)¹⁰ made is a general agreement about the spread of SDI. However, it is difficult to obtain data to confirm this trend since the surface irrigated with SDI is counted as Trickle irrigation in most surveys. In the US, the USDA Farm and Ranch Irrigation Survey (USDA-NASS, 2009) indicates that SDI comprises only about 27 per cent of the land area devoted to Trickle and subsurface Trickle irrigation. Nonetheless, this percentage is continuously increasing over Trickle irrigation as grower's substitute their

conventional Trickle irrigation methods by SDI systems. If this framework continues in the future, SDI would still have a potential increase.

Eugenio Nadala, (2007)¹⁷ has explained the modernization of existing irrigation systems, by means of consolidation and improvement programmes, as the new priority of contemporary irrigation policy. At the same time, the article considers the roles played by the various agents charged with carrying out the programmes—basically state-owned companies—and of the grower's in their irrigation communities. The positive impact of these measures in achieving better and more efficient management of water resources, as well as the negative environmental impact that derives from the new demands for energy, is also presented and discussed.

Anandhakumar N. (2006)¹⁸ has clearly indicated that the growers are satisfied with Trickle irrigation system. The study reveals that for majority of the grower's the yield has been maximized, after usage of the Trickle for the cultivation.

Results and Discussion

1. Recommendation of Trickle Irrigation to Others

Grower's' Opinion	Number of Respondents	%
Strongly Agree	371	93.92
Agree	24	6.08
Neutral	0	0.00
Disagree	0	0.00
Strongly Disagree	0	0.00
Total	395	100.00

Source: Primary Data

It is observed that out of 395 respondents, 93.92 per cent of them strongly agree to it and 6.08 per cent of them agree to their opinion in recommending Trickle irrigation to others. Remarkably none of the respondent has any other option and their only notion is to recommend the Trickle irrigation to other people. In other words, it is clear that majority (93.92 per cent) of the respondents are willing to recommend Trickle irrigation to others.

2. Cross Tabulation: Demographic Factors and Respondents' Involvement in Agriculture

Demographic Factor		Involvement in Agriculture		Self Interest	Income Potential	Total
		By Tradition	Nature of Job			
Gender	Male	232	18	40	61	351
		(66.1)	(5.1)	(11.4)	(17.4)	(100.0)
Gender	Female	20	0	12	12	44
		(45.5)	(.0)	(27.3)	(27.3)	(100.0)
Age	Below 25 years	0	0	1	2	3
		(.0)	(.0)	(33.3)	(66.7)	(100.0)
	26-35 years	32	5	15	17	69
		(46.4)	(7.2)	(21.7)	(24.6)	(100.0)
	36-45 years	96	6	20	32	154
		(62.3)	(3.9)	(13.0)	(20.8)	(100.0)
Above 45 years	124	7	16	22	169	
	(73.4)	(4.1)	(9.5)	(13.0)	(100.0)	
Marital Status	Single	5	2	5	4	16
		(31.2)	(12.5)	(31.2)	(25.0)	(100.0)
	Married	247	16	47	69	379
		(65.2)	(4.2)	(12.4)	(18.2)	(100.0)
Educational Qualification	SSLC/HSC/diploma	113	15	28	31	187
		(60.4)	(8.0)	(15.0)	(16.6)	(100.0)
	Under-graduate	31	2	10	17	60
		(51.7)	(3.3)	(16.7)	(28.3)	(100.0)
	Post-graduate	1	0	3	4	8
		(12.5)	(.0)	(37.5)	(50.0)	(100.0)
Others	107	1	11	21	140	
	(76.4)	(.7)	(7.9)	(15.0)	(100.0)	

Involvement in Agriculture Demographic Factor		By Tradition	Nature of Job	Self Interest	Income Potential	Total	
Occupation	Grower	249	18	49	70	386	
		(64.5)	(4.7)	(12.7)	(18.1)	(100.0)	
	Govt. Employee	0	0	1	0	1	
		(.0)	(.0)	(100.0)	(.0)	(100.0)	
	Private employee	2	0	1	3	6	
		(33.3)	(.0)	(16.7)	(50.0)	(100.0)	
	Business	1	0	1	0	2	
		(50.0)	(.0)	(50.0)	(.0)	(100.0)	
	No. of Earning Members	One	104	14	11	12	141
			(73.8)	(9.9)	(7.8)	(8.5)	(100.0)
Two		146	3	41	61	251	
		(58.2)	(1.2)	(16.3)	(24.3)	(100.0)	
Three and more		2	1	0	0	3	
		(66.7)	(33.3)	(.0)	(.0)	(100.0)	
Annual Family Income	Below Rs.1lakh	9	8	1	1	19	
		(47.4)	(42.1)	(5.3)	(5.3)	(100.0)	
	Rs. 1 lakh - Rs. 3 lakhs	177	5	39	62	283	
		(62.5)	(1.8)	(13.8)	(21.9)	(100.0)	
	Rs. 3 lakhs - Rs.6 lakhs	55	4	11	8	78	
		(70.5)	(5.1)	(14.1)	(10.3)	(100.0)	
	Above Rs.6 lakhs	11	1	1	2	15	
		(73.3)	(6.7)	(6.7)	(13.3)	(100.0)	

Interpretation: It can be observed from the above table that majority of the respondents in different categories are related to agriculture by tradition. The subsequent factors found are as

follows: 66.1 per cent of the respondents are males. 73.4 per cent of the respondents are above 45 years of age. 65.2 per cent of the respondents are married. 60.4 per cent of the respondents are having an educational qualification of SSLC/ HSC/ Diploma. 64.5 per cent of the respondents are occupied as growers. 58.2 per cent of the respondents have two earning members in their family. 62.5 per cent of the respondents have their annual family income of Rs. 1 lakh to Rs. 3 lakh

Conclusion

Agricultural growth is an integral part of overall economic expansion. However, the increasing demand for irrigation water, coupled with a rapid decline in net potential of water in modern years, has forced adoption of first-hand methods of irrigation for crop cultivation all over the world. Therefore, the Trickle irrigation system is in practice for irrigating both perennial and orchard crops in Coimbatore district where water is scarce and expensive.

The results of the study reveal that the Trickle irrigation system, besides having water saving potential, have other advantages also like increase in crop yield, needful less labour, requiring no individual attention, facility in application of fertilizers, etc. Thus, the Trickle system is very much agreeable to the grower's in the study area and hence it may be recommended to the grower's in other areas too. At the time, the grower's, especially the small grower's, seek the financial help and support of the central and state government to meet out the high initial cost in the adoption of this system. Apart from the provision of capital subsidy, there is an urgent need to initiate a low cost Trickle irrigation system through R&D. To conclude, the extensive adoption of Trickle irrigation method will be a win – win situation for both the grower's and government as it would help in conserving water.