



“A Study on Water Conservation Using Drip Irrigation in Home Gardening”

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ABSTRACT:

This paper proposes a design in using drip irrigation system ready-to-use, cost effective and energy efficient device to conserve water. As the world is heading towards the depletion of water resources, it's very important to conserve water through automatic irrigation system in home gardening. Drip irrigation is an ideal solution for water saving even when you are away from home. The paper explains the complete installation of the system. An ex post facto research design with 122 residents from selected residential area around Chennai city. It is been identified that drip irrigation system is significantly better in water saving technique compared to other system for house gardening.

KEY WORDS:

Drip irrigation, Water conservation, Home gardening.

INTRODUCTION:

Drip irrigation is an efficient and economical way to water your garden or garden. Drip irrigation is commonly used in the drier parts of the country and is becoming more popular in the Northeast, unlike other forms of irrigation such as Sprinklers at 65-75% are sufficient and drip irrigation at 90% is sufficient to make the applied water available to plants. It also reduces runoff and evaporation. Drip irrigation brings water slowly to the root zone of plants where it is most needed (Stryker.2021).

Drip irrigation is the perfect solution for irregular and tight areas. Drip irrigation limits the potential for fouling by reducing or eliminating over spray on buildings, sidewalks, streets and other traffic areas. Less overspray, spills, erosion, compaction, water staining and property damage often result in lower maintenance costs (Sarkard, 2018.)

NEED OF THE STUDY:

Modern drip irrigation has become arguably the world's most valuable agricultural innovation since the invention of the impact sprinkler in the 1930s, which offered the first viable alternative to surface irrigation. In 2012, China and India were the fastest growing countries in the field of drip and other micro-irrigation, and globally he had well over 10 million hectares using these technologies. rice field. (National Geographic article, 2012). Hence it is important to study the water saving aspect and creating awareness

using drip irrigation method. This study is to invoke interest in residents to use drip irrigation for their home garden as it is a water saving and a healthy plan growth system

OBJECTIVES:

To compare water saving aspects of drip irrigation system with other types for house gardening

To create awareness on drip irrigation for house gardening among selected respondent

METHODOLOGY:

Research Design:

Ex-post facto research design was used for the study. A univariate and cross sectional study was adopted in the study.

Sampling Design:

The samples selected for the study were residents of Chennai city and selection of the sample was done randomly by distributing questionnaire through mail and through Google forms. The sample size was 122 residents residing in various regions of Chennai

Tools Used for the Study:

The main tool used for the present study was questionnaire. In order to fulfil the main objectives of the study it was essential to formulate a questionnaire containing a series of questions on personal details, family detail, preference of garden, containers preferred, care and maintenance of garden, and awareness on drip irrigation

Main Study:

The main study was conducted with hundred and twenty two people who were residing in the Chennai using the questionnaire in the month of March 2021. The people were contacted through mail and through telephones. The questionnaire was forwarded in the mode of Google forms. A good rapport was established, and information was gathered.

RESULTS AND DISCUSSION

The results were discussed as follows. Table 1 represents the percentage table of general preferences for gardening based on types of garden, garden containers and types of irrigation. From the table it is evident that 31.1% residents have back yard garden and balcony garden, mostly 52.4% residents prefer terracotta pots and 59.8% use drip irrigation in their garden.

Table 1

General Preference for Gardening

General Preference For Gardening	Residents N=122			
	Yes (n)	%	No (n)	%
Types of garden				
Front porch garden	30	24.6	92	74.4
Backyard garden	38	31.1	84	68.9
Balcony garden	38	31.1	83	68.0
Terrace garden	45	36.9	77	63.1
Vertical garden	10	8.2	112	91.8
Garden Containers	Yes (n)	%	No (n)	%
Terra cotta	64	52.4	58	47.5
Wood	18	14.8	104	85.2
Plastic	29	23.8	93	76.2
Concrete	21	17.2	101	82.8
Reusable bags	29	23.8	93	76.2
Hanging baskets	24	19.7	98	80.3
Types of Irrigation	Yes (n)	%	No (n)	%
Sprinkler	32	26.2	90	73.8
Drip	73	59.8	49	40.2

Comparison of types of garden

Table 2 represents one way ANOVA depicting Comparison of types of garden based on size of house. It was found out from the table that there is high significant difference with respect backyard garden ($F=3.347$) and vertical garden ($F=4.512$) at $P<0.01$ level.

Table 2**One way ANOVA depicting Comparison of types of garden based on size of the house**

Types of garden		Sum of Squares	df	Mean Square	F	Sig.
Front porch garden	Between Groups	1.349	3	.450	2.493	.063 ^{NS}
	Within Groups	21.274	118	.180		
	Total	22.623	121			
Backyard garden	Between Groups	2.052	3	.684	3.347	.022 ^{**}
	Within Groups	24.112	118	.204		
	Total	26.164	121			
Balcony garden	Between Groups	1.263	3	.421	1.649	.182 ^{NS}
	Within Groups	30.114	118	.255		
	Total	31.377	121			
Terrace garden	Between Groups	.865	3	.288	1.236	.300 ^{NS}
	Within Groups	27.536	118	.233		
	Total	28.402	121			
Vertical garden	Between Groups	.945	3	.315	4.512	.005 ^{**}
	Within Groups	8.236	118	.070		
	Total	9.180	121			

Relationship between types of garden and types of irrigation

Table 3 depicts t test of garden types based on types of irrigation system. It is evident from the table backyard garden prefers sprinkler irrigation and vertical garden prefers drip irrigation. It is observed from the table the mean value of drip irrigation is higher for all types of garden except the back yard garden. Most of the homes have backyard garden and vertical garden at home. It is inferred out that there is high significant difference between backyard garden at 1% level ($F=20.918$) and vertical garden at $P<0.01$ level ($F=4.559$).

Drip irrigation is a method of applying slow, steady, and precise amounts of water and nutrients to specific areas of trees, vines, ground covers, potted plants, or shrubs. At a slow application rate, water seeps into the soil and moves laterally by capillary action beneath the soil's surface. Thus, smaller quantities of water are used to the utmost efficiency (Shah, 2019).

Table 3

T Test Representing Types of Garden With Respect to Types of Irrigation

Garden types	Type of irrigation	N	Mean	Std. Deviation	Std. Error Mean	F	Sig.
Front porch garden	Sprinkler	21	1.57	.507	.111	3.503	.064
	Drip	101	1.71	.455	.045		
Backyard garden	Sprinkler	21	1.90	.301	.066	20.918	.000**
	Drip	101	1.72	.450	.045		
Balcony garden	Sprinkler	21	1.71	.463	.101	.370	.544
	Drip	101	1.70	.520	.052		
Terrace garden	Sprinkler	21	1.62	.498	.109	.058	.810
	Drip	101	1.63	.484	.048		
Vertical garden	Sprinkler	21	1.86	.359	.078	4.559	.035*
	Drip	101	1.93	.255	.025		

CONCLUSION:

It is been concluded that water saving aspects through drip irrigation system is better compared to other irrigation system was identified from the results based on size of house, type of garden and drip irrigation technique An awareness on drip irrigation is better for the residents of Chennai city.

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