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FARMERS' KNOWLEDGE LEVEL OF DRIP IRRIGATION SYSTEMS IN OPEN FIELD VEGETABLE CULTIVATION: A STUDY FROM GHAYATHI, UNITED ARAB EMIRATES

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Abstract

The research study examined the knowledge level of open field vegetable growers regarding drip irrigation systems, discovering that 76.25% of them possess a strong understanding of its operation. This finding indicates that a majority of these growers recognize the significance of water efficiency and environmental sustainability in crop production. Such knowledge can contribute to enhancing the efficiency and eco-friendliness of open field vegetable cultivation.

Keywords: Knowledge level, open field vegetable, growers, drip irrigation, Ghayathi.

INTRODUCTION

Open field vegetable cultivation in arid regions, particularly the Middle East, holds significant cultural, economic, and nutritional importance, with the UAE serving as an example where modern irrigation techniques are increasingly being implemented. Drip irrigation, among these techniques, aims to tackle water scarcity issues and improve crop productivity in open field vegetable cultivation, which is a critical part of the agricultural landscape in the UAE. This sector significantly contributes to the local economy and food security, with a crucial role in supporting the household industries through human food supply. As the demand for human products grows, open field vegetable cultivation has become even more vital. However, the sector faces challenges such as water scarcity, land degradation, and the need for sustainable agricultural practices. Drip irrigation provides a solution to these challenges by reducing water consumption and increasing crop yields.

The successful implementation of drip irrigation systems relies not only on technological advancements but also on the knowledge and practices of farmers. Assessing the knowledge level of farmers engaged in drip-irrigated open field vegetable cultivation is essential for promoting sustainable agricultural practices and improving overall productivity. In the UAE, specifically in Ghayathi, open field

vegetable cultivation is a significant agricultural activity, and drip irrigation has gained popularity among farmers. However, the success of drip irrigation depends on the farmers' understanding of the system's installation, operation, and maintenance. Therefore, evaluating the knowledge level of farmers engaged in drip-irrigated open field vegetable cultivation in Ghayathi, UAE, is vital for enhancing sustainable agricultural practices and improving overall productivity.

This study aims to examine the knowledge level of farmers regarding drip irrigation techniques in open field vegetable cultivation, focusing on Ghayathi, UAE. The study's findings will provide valuable insights into the farmers' understanding of drip irrigation techniques and identify areas for improvement to enhance sustainable agricultural practices and improve overall productivity.

METHODOLOGY

In January 2024, a study was conducted in the You Al Nazrah district of Ghayathi city, Abu Dhabi State, UAE, to evaluate the knowledge level of open field vegetable growers regarding drip irrigation systems. The district was selected due to its high prevalence of drip-irrigated open field vegetable growers. A total of 150 farms utilizing modern drip irrigation systems were identified, and a random sample of 80 respondents was selected from this list.

A questionnaire was developed to collect data on the respondents' background and their knowledge of drip irrigation systems in open field vegetable cultivation. The questionnaire covered various aspects of drip irrigation system implementation, and responses were recorded on a binary scale. The questionnaire had a maximum achievable score of 5, with a minimum score of 0. The respondents were categorized into five groups based on an arbitrary method, as shown in table 01, to assess their understanding of drip irrigation systems.

Table 1: Classification of Score Range Based on Drip Irrigation Knowledge

Category	Score Range
Very low	1
Low	2
Medium	3
High	4
Very high	5

RESULTS AND DISCUSSIONS

The study evaluated the knowledge level of drip irrigation systems among open field vegetable growers using a specially designed test. Table 02 presents the data related to the level of knowledge of drip irrigation systems among these growers, and Figure 01 offers a visual representation of the same.

Table 2: Distribution of the respondents according to their level of knowledge about drip irrigation system (n=80)

Knowledge level	Frequency	Percent
Very low (1)	0	0.00
Low (2)	4	5.00
Medium (3)	15	18.75
High (4)	45	56.25
Very high (5)	16	20.00

As per the data presented in Table 02, a significant majority of drip irrigated open field vegetable growers, precisely 56.25%, displayed a high level of understanding regarding drip irrigation systems. The remaining respondents showed varying levels of knowledge, with 20.00% exhibiting a very high level, 18.75% displaying a medium level, and 5.00% having a low level of knowledge. Notably, none of the growers displayed a very low level of knowledge about drip irrigation systems. These results suggest that the majority of drip irrigated open field vegetable growers in the study area possess a good knowledge of drip irrigation systems.

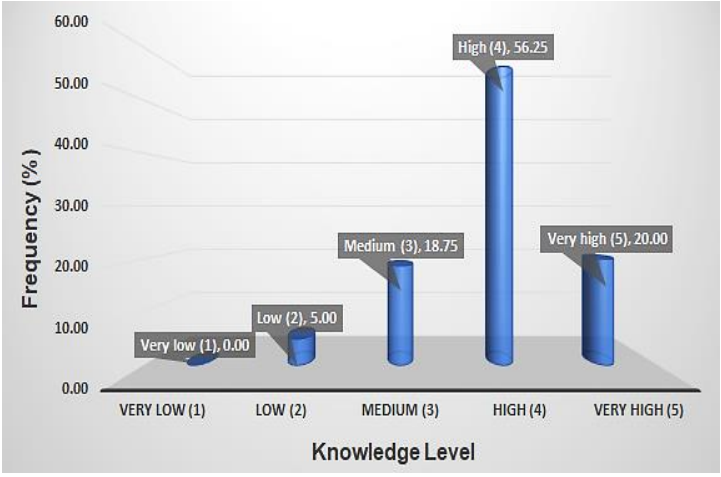

Fig. 1: Distribution of the respondents according to their level of knowledge about drip irrigation system

The research study findings suggest that a significant majority of drip-irrigated open field vegetable growers, specifically 76.25%, possess a high to very high level of knowledge regarding drip irrigation systems. This indicates that the majority of respondents have a strong understanding of the technology. Several factors may have contributed to this, such as higher education levels, active social involvement, regular extension contacts, exposure to mass media, economic incentives, substantial annual incomes, and a preference for scientific practices among drip-irrigated open field vegetable growers. These results are consistent with a previous study conducted by Arshad et al. (2021) on farmers' awareness of advancements in cotton production technology.

The study's results imply that the respondents' understanding of drip irrigation systems is likely due to their active participation in agricultural education and training programs. These programs have equipped them with practical experience and knowledge of the technology. The findings align with the current trends in modern agricultural practices, which emphasize the significance of sustainable water management techniques. Drip irrigation systems are a critical component of modern agricultural practices, as they provide a sustainable and efficient method of water management. The technology's popularity is growing among farmers due to its ability to reduce water waste and increase crop yields. The study's findings suggest that most drip-irrigated open field vegetable growers are aware of the benefits of drip irrigation systems and are proactively implementing them in their agricultural practices.

CONCLUSION

On the basis of the study's results it can be concluded that the majority of drip-irrigated open field vegetable growers (76.25%) have a high level of expertise in drip irrigation systems, which can be attributed to several contributing factors, such as their active engagement in agricultural education and training programs, mass media exposure, economic benefits, and a tendency towards evidence-based practices. The findings highlight the significance of sustainable water management techniques in contemporary agriculture. By encouragement a deep comprehension of these techniques, farmers can work towards ensuring the long-term viability of the agricultural sector, boost crop output, and protect essential water resources.

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