



Assessing Farmers' Knowledge Level in Drip-Irrigated Date Palm Cultivation: A Case Study of Ghayathi, United Arab Emirates

(*Imran Arshad¹, Mubarak Ahmed Saleh AlMansoori² and Phiji Jacob Philip³)

¹Agriculture Engineer, SAA Technical – (ADAFSA Project), Ghayathi Extension Center, Abu Dhabi, United Arab Emirates,

²Research Station Head, Department of Research & Development, AlDhafra Region, (ADAFSA), Model Farm, Madinat Zayed, Abu Dhabi, United Arab Emirates,

³Agriculture Engineer, SAA Technical – (ADAFSA Project), Madinat Zayed Extension Center, Abu Dhabi, United Arab Emirates.

*Corresponding Author's email: engr_imran1985@yahoo.com

Abstract

This study investigated the understanding of drip irrigation systems among date palm growers, revealing that 74.67% of them exhibited a strong hold of the workings of this method. The high level of awareness and proficiency observed suggests a positive impact of knowledge on agricultural practices and outcomes, particularly in the domain of sustainable water management and crop production. These findings indicate that date palm growers have a commendable understanding of the benefits of drip irrigation, which can lead to enhanced sustainability and efficiency in date palm cultivation.

Keywords: knowledge level, date palm, growers, drip irrigation, Ghayathi.

Introduction

In arid regions, particularly the Middle East, date palm cultivation holds enormous cultural, economic, and nutritional significance and has long been a foundation of agriculture. To address water scarcity issues and bolster crop productivity, there has been a notable shift towards more efficient irrigation methods, such as drip irrigation, in recent years. The United Arab Emirates (UAE) represents this transition, with a growing adoption of modern irrigation techniques, particularly in date palm cultivation, which forms a vital component of the agricultural landscape in the UAE, contributing significantly to the local economy and food security. The adoption of drip irrigation systems in UAE's date palm cultivation has been increasingly prevalent due to its potential to optimize water usage and enhance crop yield.

However, the successful implementation of drip irrigation systems hinges not only on technological advancements but also on the knowledge and practices of farmers. Farmers' comprehension of drip irrigation techniques, encompassing installation, operation, and maintenance, plays a pivotal role in maximizing the benefits of this irrigation method. Therefore, evaluating the knowledge level of farmers engaged in drip-irrigated date palm cultivation in UAE, becomes imperative for ensuring sustainable agricultural practices and improving overall productivity. This study aims to investigate into the understanding of farmers regarding drip irrigation techniques in date palm cultivation, with a specific focus on Ghayathi, UAE.

Methodology

The study was conducted in the You Al Nazrah district of Ghayathi city, Abu Dhabi State, United Arab Emirates, specifically in January 2024. You Al Nazrah district was purposively chosen due to its high concentration of drip irrigated date palm growers. A comprehensive list of respondents was compiled, consisting of farmers who had implemented modern drip irrigation systems on their agricultural lands. From this list, out of total 450 farms a sample of 150 respondents was randomly selected using a simple random sampling technique, ensuring representation from those who had successfully utilized drip irrigation systems for date palm cultivation.

A questionnaire was designed to capture respondents' background information and their knowledge regarding drip irrigation systems in date palm cultivation. The questionnaire covered various aspects of drip irrigation system implementation. Responses were recorded on a binary scale, with "Yes" assigned a weightage of 1 and "No" assigned a weightage of 0. The maximum achievable score on the test was 05, while the minimum was 0. Respondents were categorized into five groups based on an arbitrary method, which is elaborated below in table 01:

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 assessed the knowledge of drip irrigation system among date palm growers by managing a developed test. Table 02 displays the data concerning the level of knowledge regarding drip irrigation systems among these growers, while Figure 01 provides a graphical representation of the same.

Table 02: Distribution of the respondents according to their level of knowledge about drip irrigation system (n=150)

| Knowledge level | Frequency | Percent |
|-----------------|-----------|---------|
| Very low (1) | 0 | 0.00 |
| Low (2) | 6 | 4.00 |
| Medium (3) | 32 | 21.33 |
| High (4) | 63 | 42.00 |
| Very high (5) | 49 | 32.67 |

The data provided in Table 02 reveals that approximately 42.00% of drip irrigated date palm growers exhibited a high level of knowledge regarding drip irrigation systems. Following this, percentages of 32.67%, 21.33%, and 4.00% were observed for very high, medium, and low levels of knowledge among these growers, respectively. Notably, none of the growers displayed a very low level of knowledge about drip irrigation systems.

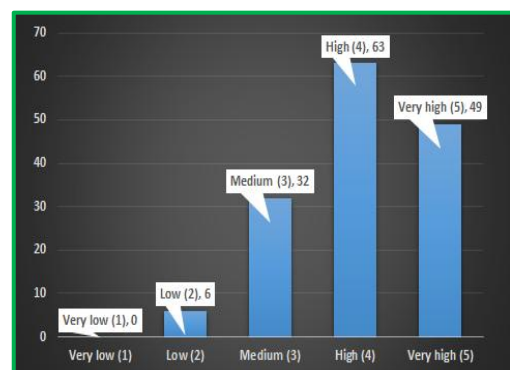


Fig. 01: Distribution of the respondents according to their level of knowledge about drip irrigation system

In summary, approximately 74.67% of the respondents demonstrated a high to very high level of knowledge about drip irrigation systems. This could possibly be attributed to factors such as higher education levels, active social involvement, frequent extension contacts, extensive exposure to mass media, stronger economic incentives, higher annual incomes, and a greater inclination towards scientific practices among drip irrigated date palm growers. These findings support the results of (Arva *et al.*, 2003) concerning farmers' awareness of advancements in sugarcane production technology.

The findings indicate that the respondents' understanding of drip irrigation systems may be attributed to their active participation in agricultural education and training programs, which have provided them with hands-on experience and knowledge of the technology. Furthermore, the findings are consistent with the evolving trends in modern agricultural practices, emphasizing the importance of sustainable water management techniques.

Conclusion

In conclusion, this study found that an overwhelming majority (74.67%) of date palm growers have a remarkable understanding of drip irrigation systems, underlining the importance of sustainable water management in modern agriculture. These findings emphasize the need for continued support and promotion of sustainable farming practices in the region. By encouragement a strong understanding of efficient irrigation methods, farmers can significantly contribute to the long-term sustainability of the agricultural sector while optimizing crop production and preserving valuable water resources.

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