



# WATER USE AND CROP PERFORMANCE OF MORINGA UNDER DRIP AND SELF-REGULATING, LOW ENERGY, CLAY BASED IRRIGATION (SLECI) SYSTEMS

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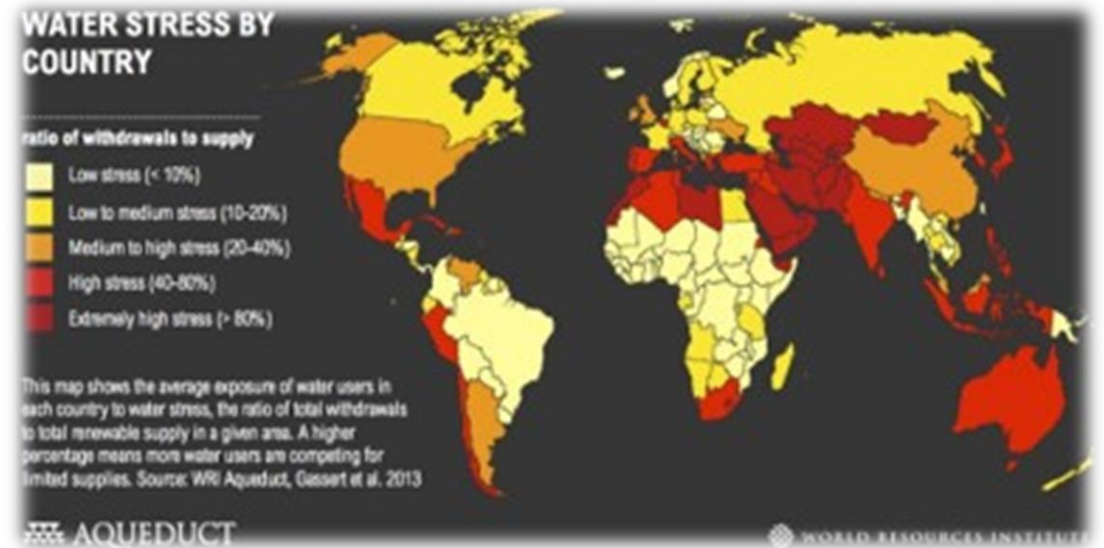
# Introduction

- *Moringa oleifera* Lam. is a perennial tropical deciduous tree.
- It is widely distributed in many tropical and subtropical countries.
- It is well known as the “miracle tree”.
- Almost all parts of *M. oleifera* Lam can be utilized as a source of edible food.
- Intensive cultivation with good irrigation practices will give improved yield.



# Introduction

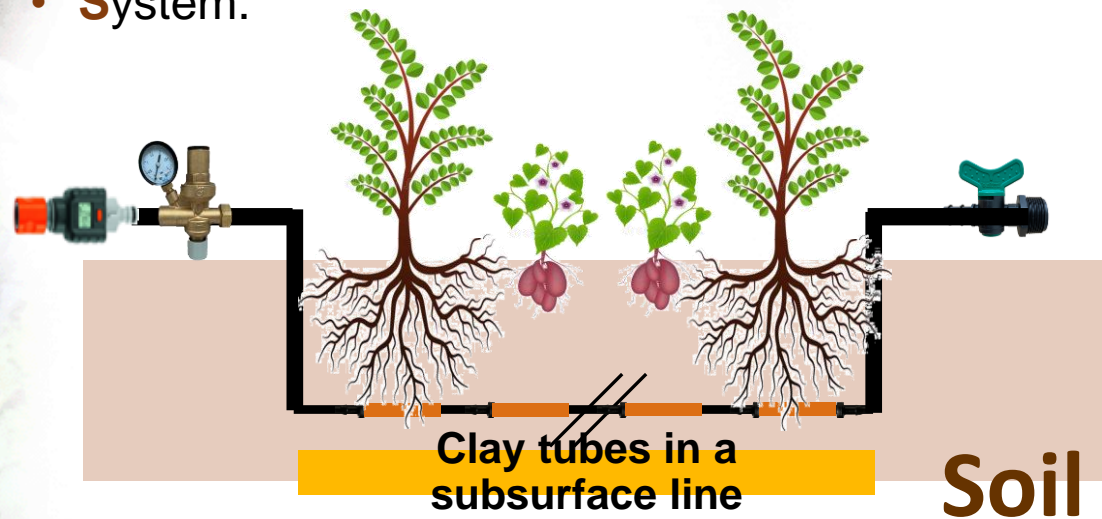
- Water scarcity is considered a limiting factor.
- Because of the often inadequate and uneven distribution of rainfall in South Africa.
- Water saving irrigation technologies.
- Especially within SHF enterprises.
- Therefore, irrigation, such as subsurface irrigation called a SLECI.





# Introduction Cont...

- The **SLECI** technology is a
- **S**elf-regulating
- **L**ow
- **E**nergy
- **C**lay based
- **I**rrigation
- **S**ystem.





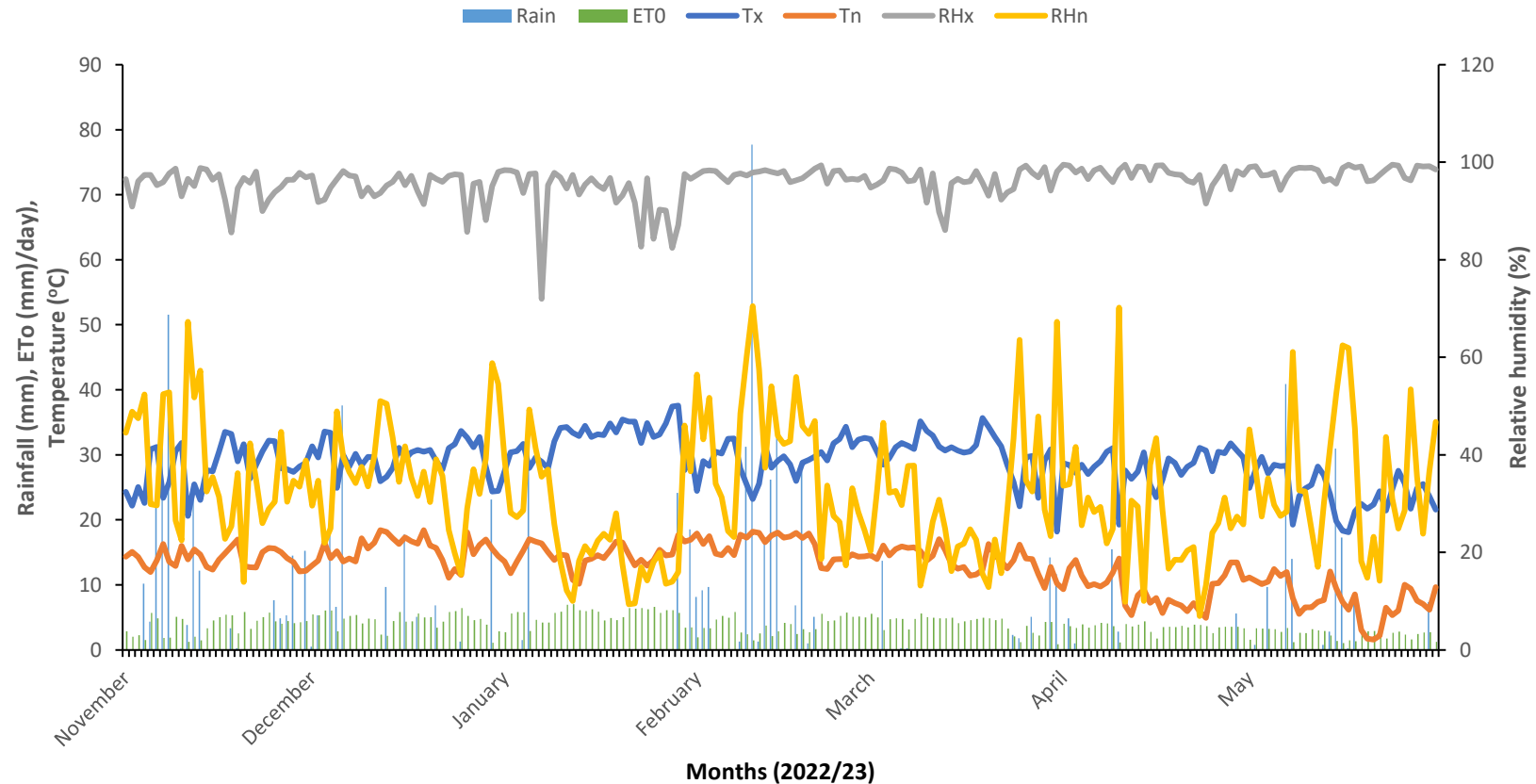
# Objectives

- To evaluate the growth and yield performance of Moringa using four irrigation systems (standard drip, subsurface drip irrigation and Slecir irrigation system).
- To evaluate the water-use efficiency of the four tested irrigation systems (standard drip irrigation system, subsurface drip irrigation system and SLECI irrigation system).



# Materials and Methods

**Location:** Open field trial was conducted from November 2022 to May 2023 at the Agricultural Research Council's Vegetable, Industrial, and Medicinal Plants (ARC-VIMP).







## Materials and Methods

- Moringa (*Moringa oleifera*) was planted to investigate the growth performance using four irrigation systems (standard drip, subsurface drip and SLECI irrigation system).
- The standard and subsurface irrigation systems used a pressure-regulated drip irrigation tube with an application rate of  $2.3 \text{ l h}^{-1}$  and emitters spaced at 0.3 m width.
- The pipes for the subsurface drip irrigation and SLECI irrigation systems were installed 30 cm below the surface.
- Water meters were installed for each irrigation system to monitor water flow rate.



## Conclusions and recommendations

- SLECI showed significant potential to minimize water loss by evaporation, runoff and percolation and can be considered as a promising new irrigation technology to increase water use efficiency, especially for perennial crops like moringa.
- Small holder farmers are encouraged to use a SLECI irrigation system because it reduces water use and increases yield, allowing water to be available to other economic sectors.



# Acknowledgements



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