



Understanding Water-Soil Relationships and Soil Moisture Management

Essential Concepts for
Effective Irrigation and
Plant Health

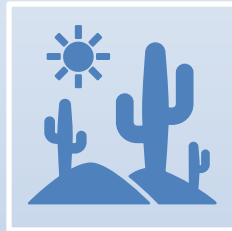


Introduction

Water-Soil Relationship



The water-soil relationship is how water interacts with soil.

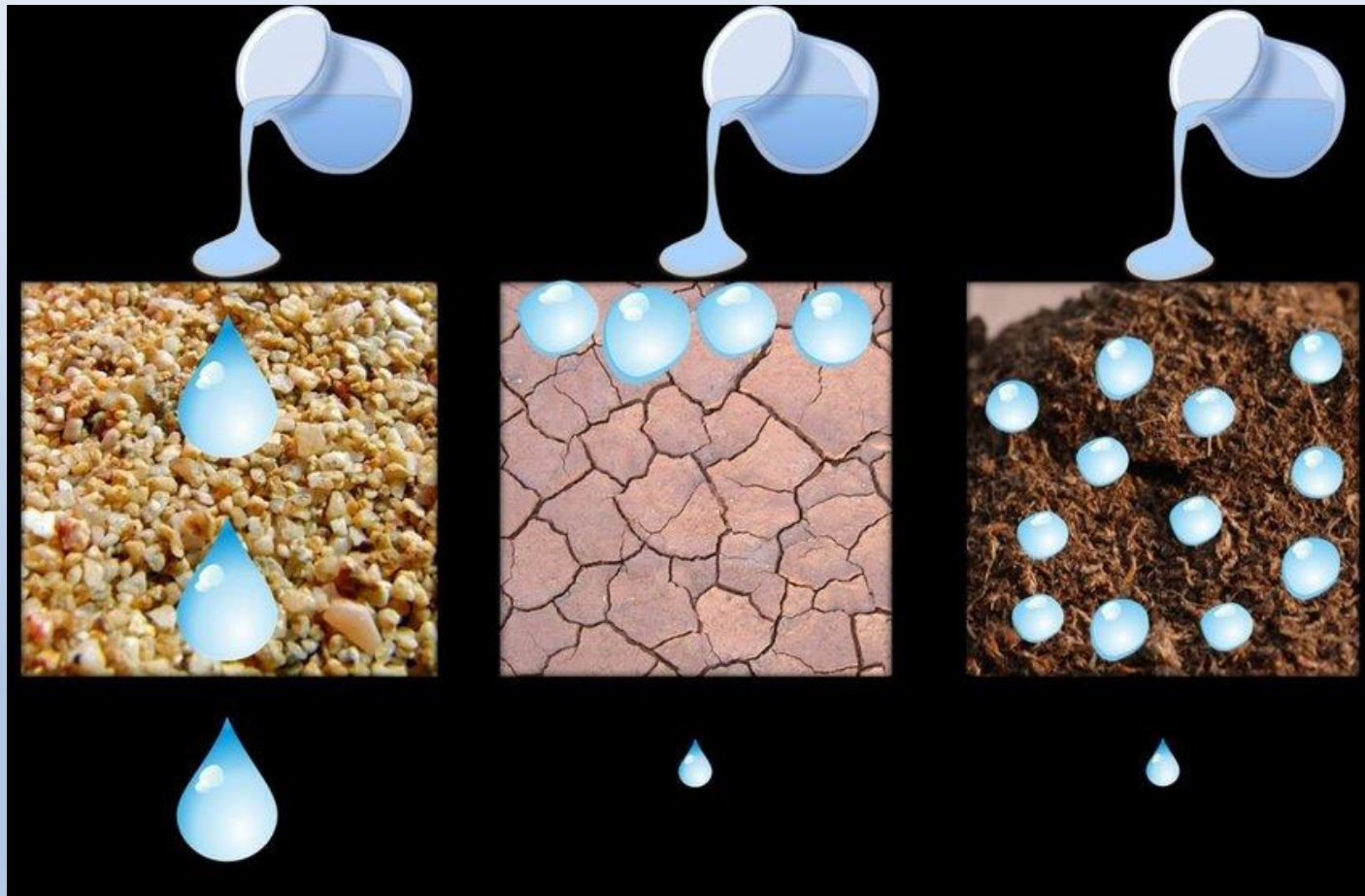


It involves how soil absorbs, holds, and drains water.

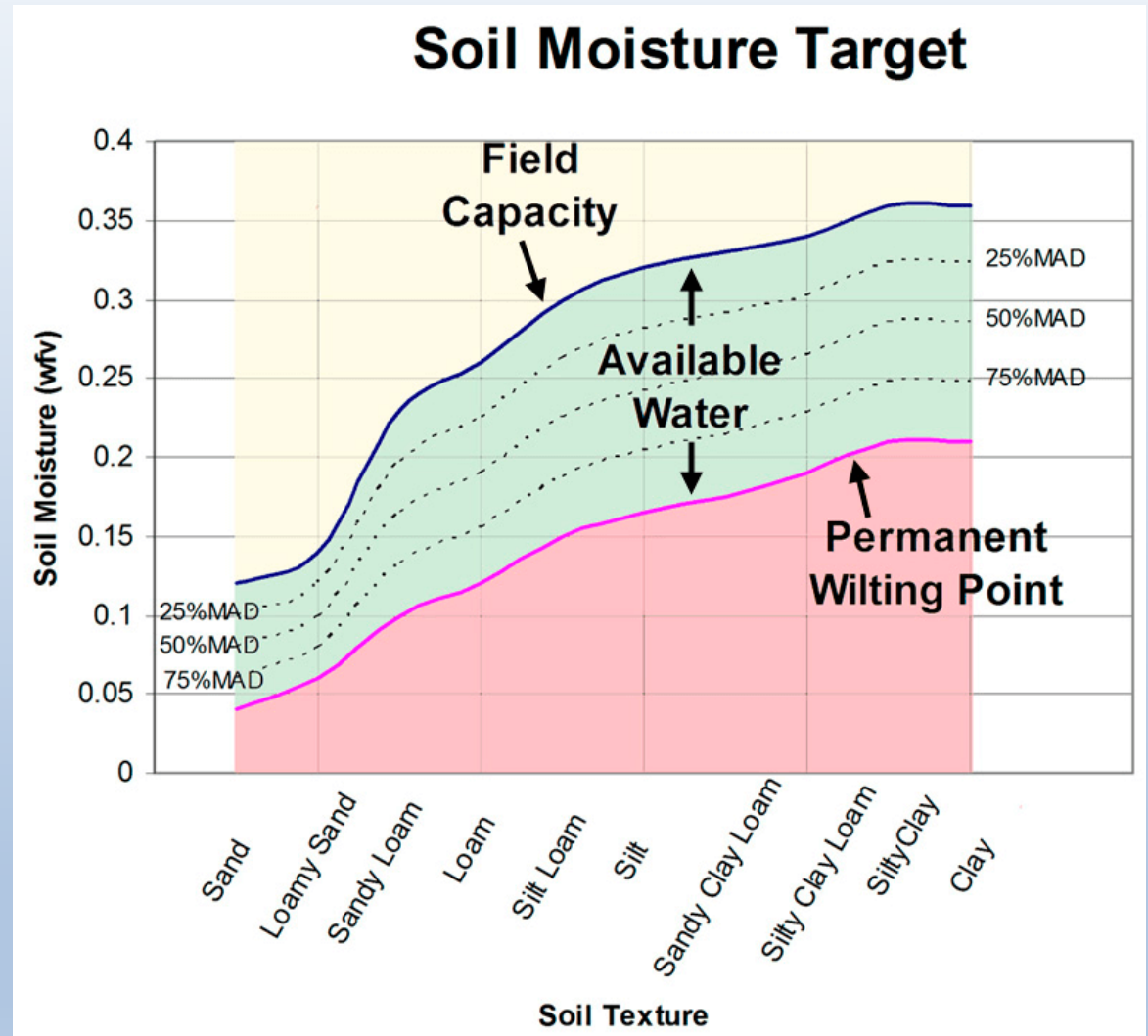


This relationship is crucial for plant growth because plants need water from the soil to stay healthy.

Water-Soil Relationship



Soil Moisture Levels in Plants

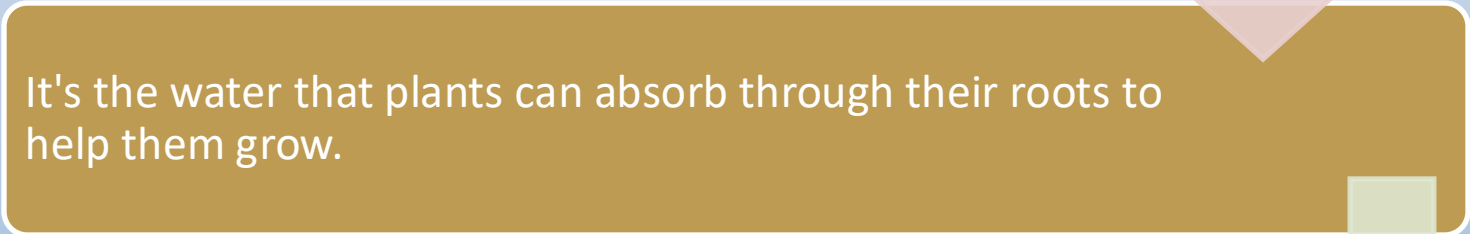


Explanation of Soil Moisture

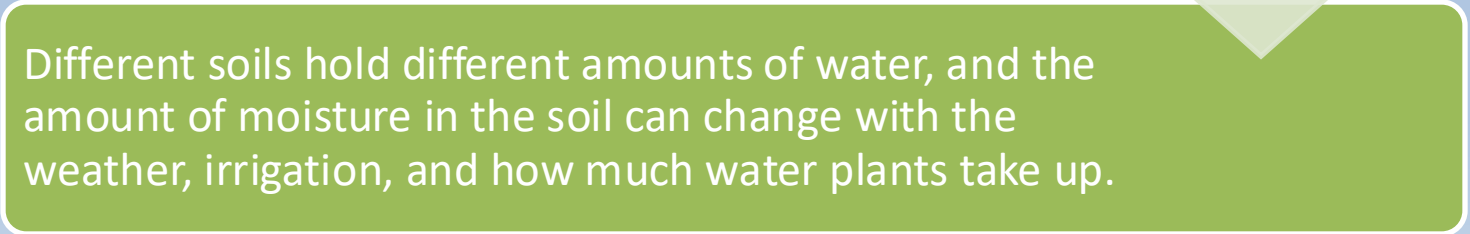
Soil moisture is the water that is present in the soil.



It's the water that plants can absorb through their roots to help them grow.



Different soils hold different amounts of water, and the amount of moisture in the soil can change with the weather, irrigation, and how much water plants take up.





Importance of Soil Moisture for Plants

Soil Moisture for Irrigation Scheduling

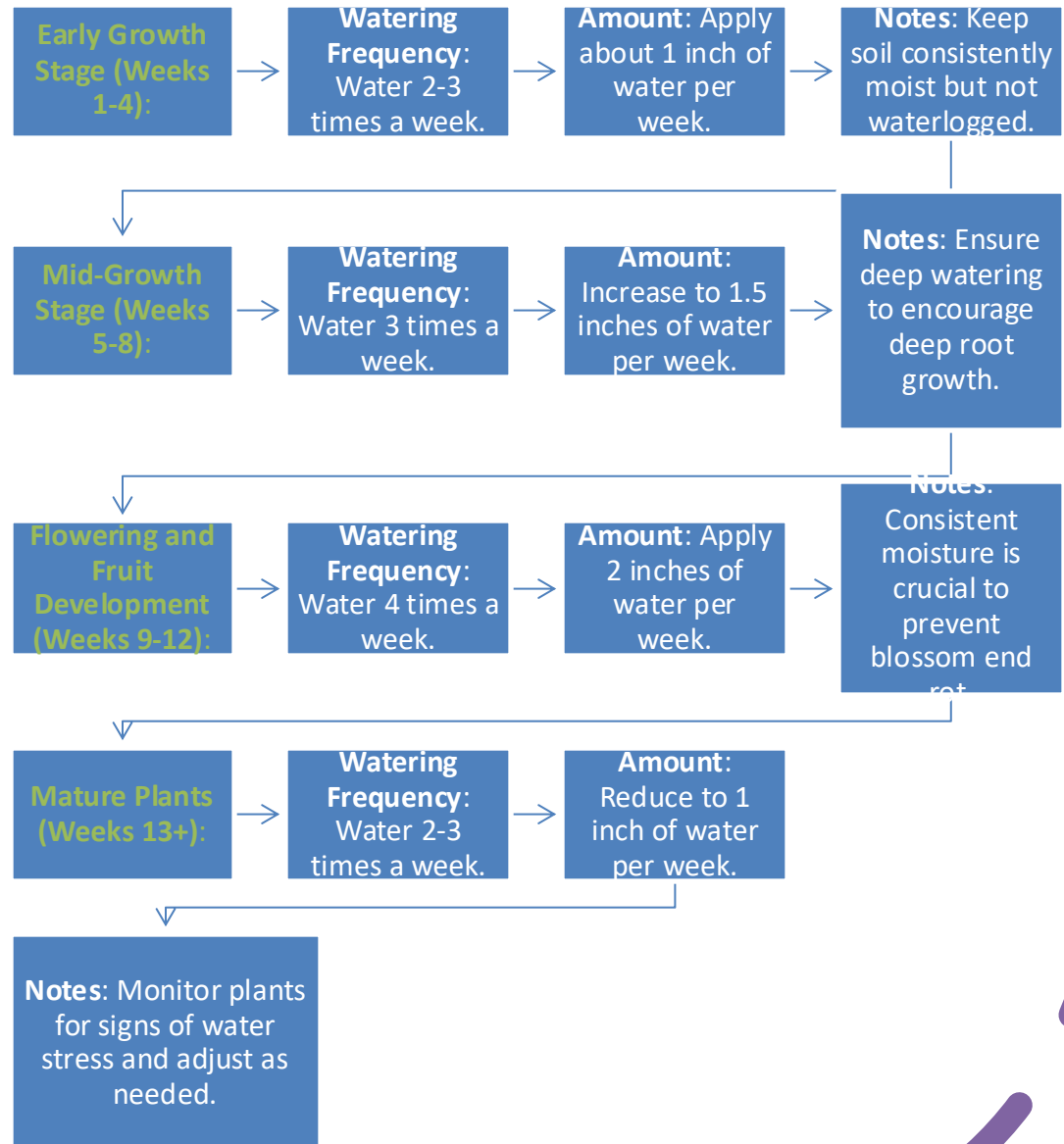


Irrigation scheduling is the process of planning when and how much water to apply to crops.

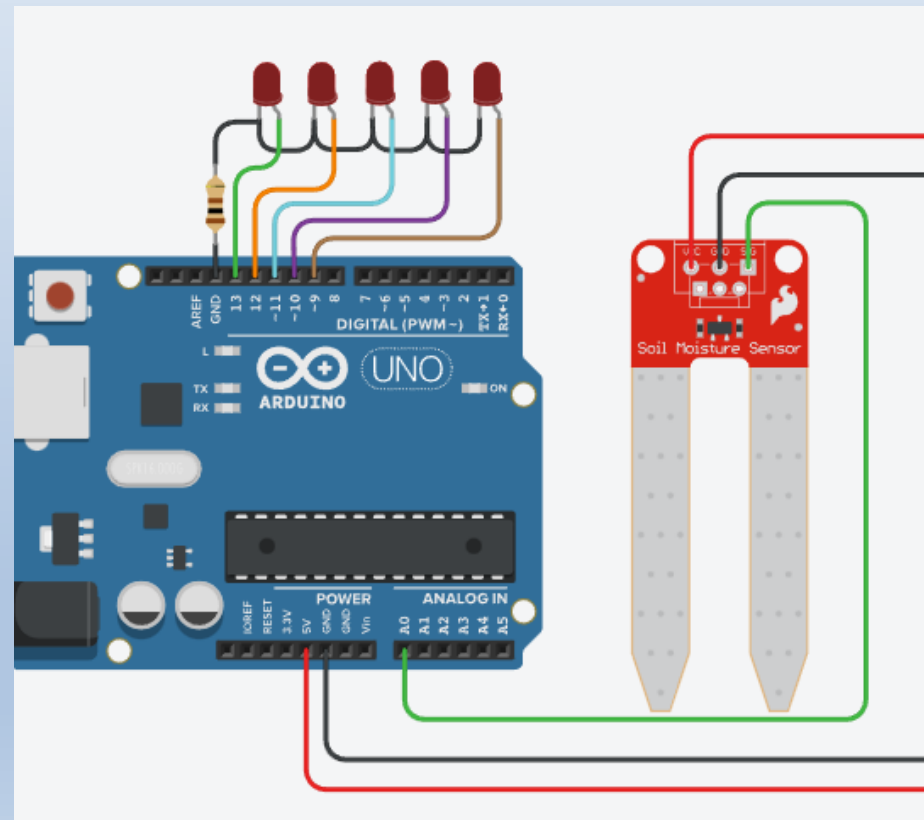


The goal is to give plants the right amount of water at the right time to help them grow best while saving water and avoiding waste.

Example of an Irrigation Schedule for a Tomato Crop



Sensors for Water Management



How Sensors Work



Installation: Sensors are placed in the soil at various depths where plant roots are active.



Measurement: Each sensor type measures soil moisture differently (tension for tensiometers, electrical charge for capacitance sensors, and pulse travel time for TDR).



Data Collection: Sensors send data to a display unit or a computer system that records and analyzes the information.



Irrigation Decisions: The data helps farmers decide when to water their crops and how much water to use.

Benefits of Using Sensors for Water Management



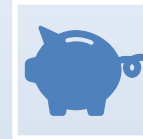
Precision:
Sensors provide accurate information about soil moisture levels, helping farmers apply the right amount of water at the right time.



Water Conservation:
By knowing exactly when and how much to water, farmers can avoid overwatering and under-watering, saving water.



Improved Plant Health:
Consistent and optimal soil moisture levels lead to healthier plants and better crop yields.

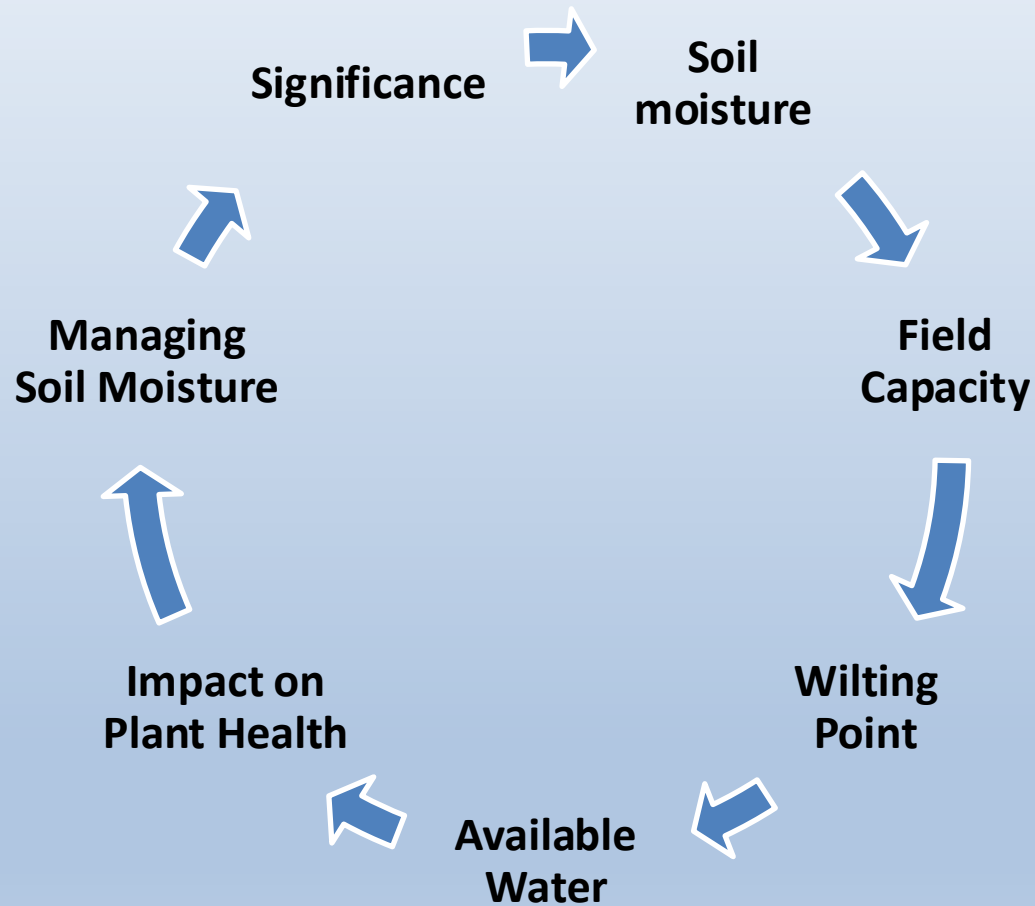


Cost Savings:
Efficient water use reduces water and energy costs.



Environmental Benefits: Using water efficiently helps conserve natural resources and reduce the impact on the environment.

Conclusion



Future Trends in Irrigation Tech



Questions & Discussion

