

AGX5565 Soil Plant and Water Relationship

Level	5
Course Code	AGX5565
Course Title	Soil Plant and Water Relationship
Credit value	4
Core/Optional	Core
Course Aim/s	To provide the knowledge on the relationship between soil, plant and water for sustainable agricultural production.
Course Learning Outcomes (CLO):	<p>After completion of this course student will be able to;</p> <p>CLO1: Understand the soil plant water relations [PO1, PO5, PO11, PO12]</p> <p>CLO2: Explain the movement of water within and into the soils in saturated and unsaturated conditions [PO1, PO5, PO11, PO12]</p> <p>CLO3: Explain the movement of water within the plants [PO1, PO5, PO11, PO12]</p> <p>CLO4: Analyse different methods in measuring soil water content in plants [PO1, PO5, PO11, PO12]</p> <p>CLO5: Demonstrate the soil thermal regimes in soils [PO1, PO5, PO11, PO12]</p> <p>CLO6: Design irrigation systems and suggest different soil management techniques [PO1, PO5, PO11, PO12]</p>
Content (Main topics, sub topics)	<p>Outline Syllabus:</p> <p>Unit 1: Soil water relationship</p> <p style="padding-left: 20px;">Session 01 : Soil physical properties in relation to water</p> <p style="padding-left: 20px;">Session 02: Soil plant water relations I</p> <p style="padding-left: 20px;">Session 03: Soil plant water relations II</p> <p style="padding-left: 20px;">Session 04: Movement of water into soils infiltration</p> <p style="padding-left: 20px;">Session 05 : Movement of water within the soils-percolation, redistribution, internal drainage, seepage</p> <p style="padding-left: 20px;">Session 06: Moisture movement under saturated conditions</p> <p style="padding-left: 20px;">Session 07: Moisture movement under unsaturated conditions</p> <p style="padding-left: 20px;">Session 08: Measurement of soil water I</p> <p style="padding-left: 20px;">Session 09: Measurement of soil water II</p> <p style="padding-left: 20px;">Session 10 : Supplementary session on the use of Neutron Probe for soil moisture measurement</p> <p>Unit 2 : Plant water relations</p> <p style="padding-left: 20px;">Session 11: Plant water relations I</p> <p style="padding-left: 20px;">Session 12: Plant water relations II</p> <p style="padding-left: 20px;">Session 13: Absorption of water</p> <p style="padding-left: 20px;">Session 14 : The absorption of solutes by plants</p> <p style="padding-left: 20px;">Session 15 : Movement of water in plants</p> <p style="padding-left: 20px;">Session 16: Evaporation</p> <p style="padding-left: 20px;">Session 17: Transpiration</p> <p style="padding-left: 20px;">Session 18: Consumptive use I</p> <p style="padding-left: 20px;">Session 19: Consumptive use II</p> <p style="padding-left: 20px;">Session 20: Water deficit and plant growth</p> <p>Unit 3: Soil plant and water management</p> <p style="padding-left: 20px;">Session 21: Soil aeration, gaseous exchange, mass flow and diffusion</p> <p style="padding-left: 20px;">Session 22: Thermal regime and thermal properties of soil</p> <p style="padding-left: 20px;">Session 23: Soil degradation I</p> <p style="padding-left: 20px;">Session 24: Soil degradation II</p>

Session 25: Soil conservation and management
Session 26: Soil reclamation
Session 27: Irrigation management I
Session 28: Irrigation management II
Session 29: Water requirement and irrigation efficiency
Session 30: Irrigation scheduling and water management

Laboratory Work: Yes

1. Measurement of soil water retention/ water holding capacity by using pressure plate apparatus
2. Measurement of soil water using digital tension meter
3. Determination of the infiltration rate of soils using a concentric ring infiltrometer
4. Particle density and bulk density practical