UNIVERSITY OF SARGODHA

DEPARTMENT OF AGRONOMY, COLLEGE OF AGRICULTURE

COURSE OUTLINE FALL 2020-2021

Course Title: **CROP MANAGEMENT ON PROBLEM SOILS**

Course Code: AGRO-7107

Credit Hours: 3(3-0)

Instructor: Dr. Muhammad Rafi Qamar

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| DESCRIPTION |

This course improves theoretical and practical knowledge of the students regarding perspective of crop productivity in eroded, salt affected, water deficit and water-logged soils. Moreover, their management strategies in improvement and reclamation of these problematic soils. In this course, the site specific cultural practices; land preparation, sowing methods, fertilizer and irrigation adjustments are studied. The course explains the specific cropping patterns and crop management practices for economic crop production in problem soils and their demonstration in degraded soils.

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| LEARNING OUTCOMES |

The key objectives/outcomes of this course are;

* To introduce the students about different problematic soils and influences on crop production.
* To familiar’s students to different management strategies adopted in problematic soils.
* To study the site specific agronomic practices adopted in these soils.
* To adopt the specific cropping patterns at problematic soils for economic crop production.

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| CONTENTS |

**THEORY**

1. Concept and perspective of crop productivity in eroded, salt affected, water deficit and water-logged soils.
2. Improvement and reclamation of eroded soils, salt affected water deficit and water-logged.
3. Site specific cultural practices.
4. Fertilizer and irrigation adjustments in eroded, salt affected, water deficit and water logged soils.
5. Specific cropping patterns and crop management practices for economic in eroded, salt affected, water deficit and logged soils.
6. Crop production in eroded, salt affected, water deficit and water logged soils.
7. Demonstration of degraded, water logged and water deficit soils.

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| READINGS |

1. Gupta, U.S. 2005. Physiology of Stressed Crops: nutrient relations. Science Pub., India.

2. IIMI. 1997. Salinization, Alkalinisation and Sodification on Irrigated Areas in Pakistan. Lahore.

3. Lauchli, A. and U. Luttge. 2002. Salinity: environment-plant-molecules. Lavoisir, France.

4. Rhoades, J. D., F. Chanduvi and S.M. Lesch. 1999. Soil salinity assessment: Methods and interpretation of electrical conductivity measurements (Vol. 57). Food & Agriculture Org.

5. Reeves, D.W. 1997. The role of soil organic matter in maintaining soil quality in continuous cropping systems. Soil and Tillage Research, 43(1), 131-167.

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| COURSE |
| Week | Topics and Readings | Book with Page No. |
| 1 | Concept and perspective of crop productivity in eroded soils.  | Book # 2 Page # 2, Book # 3 Page # 2-5 |
| 2 | Concept and perspective of crop productivity salt affected soils.  | Book # 2 Page # 2-5 |
| 3 | Concept and perspective of crop productivity water deficit soils.  | Book # 2 Page # 439-463 |
| 4 | Concept and perspective of crop productivity water-logged soils.  | Book # 2 Page # 6-8, Book # 3 Page # 439-463 |
| 5 | Improvement and reclamation of eroded soils.  | Book # 2 Page # 217-220 |
| 6 | Improvement and reclamation of salt affected soils.  | Book # 2 Page # 49-51 |
| 7 | Improvement and reclamation of water deficit soils.  | Book # 2 Page # 140-144. Book # 1 Page # 147-166 |
| 8 | Improvement and reclamation of water-logged soils.  | Book # 2 Page # 211-214 |
|  | **Mid Term Examination** |  |
| 9 |  Site specific cultural practices | Book # 2 Page # 2-4, Book # 3 Page # 100, 110 |
| 10 | Fertilizer and irrigation adjustments in eroded, salt affected, water deficit and logged soils.  | Book # 1 Page # 112-124, Book # 2 Page # 112-119 |
| 11 | Fertilizer and irrigation adjustments in eroded, salt affected, water deficit and logged soils.  | Book # 1 Page # 112-124, Book # 2 Page # 112-119 |
| 12 | Specific cropping patterns and crop management practices for economic in eroded, salt affected, water deficit and logged soils.  | Book # 1, Page # 112-124, Book # 2 Page # 112-119 |
| 13 | Crop production in eroded and salt affected soils  | Book # 2 Page # 70-77, Book # 3 Page # 211-215 |
| 14 | Crop production in salt affected soils.  | Book # 2 Page # 206-211, Book # 3 Page # 142-150 |
| 15 | Crop production in water deficit and logged soils. | Book # 2 Page # 217-220 |
| 16 | Demonstration of degraded soils.  | Book # 2 Page # 133-138, Book # 3 Page # 432-461 |
| 17 | Demonstration in water logged and deficit soils.  | Book # 2 Page # 397-399 |
| 18 | Demonstration in water logged and deficit soils.  | Book # 2 Page # 397-399 |

***Note****: You can reserve one week for sessional or mid-term exam, and if you wish, one week for student presentations of the assigned research project*

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| **RESEARCH PROJECT/ PRACTICAL/LABS** |

*State here the prerequisites of the assigned research project including term paper or lab assignment etc.*

No practical

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| **ASSIGNMENT CRITERIA** |

*Write here the distribution of marks. You can choose any or all from the below for the purpose*

Sessional: 04

Project: 04

Presentation: 02

Participation: 02

Mid-term: 12

Final-Exam: 36