

UNIVERSITY OF SARGODHA

DEPARTMENT OF SOIL & ENVIRONMENTAL SCIENCES, UNIVERSITY COLLEGE OF AGRICULTURE

COURSE OUTLINE

Fall 2020-21

Course Title: Saline Agriculture
Course Code: SES-409
Credit Hours: 3(3-0)
Instructor: Dr. Noor-us-Sabah
Email: soilscientist.uca@gmail.com

DESCRIPTION AND OBJECTIVES

The aim of this course is to develop an understanding of salt affected soils, various types of salt affected soils including saline, sodic, saline sodic soils, their management and reclamation. The students will be able to utilize salt-affected soils without reclamation only through appropriate management techniques. It will make the profitable use of salt-affected soils at status-quo.

INTENDED LEARNING OUTCOMES

After completion of this course, the students will be able to utilize salt-affected soils without reclamation only through appropriate management techniques. It will make the profitable use of salt-affected soils at status-quo.

COURSE CONTENTS

Theory

1. Saline agriculture: Definition, history and prospects in Pakistan
2. Components and approaches of saline agriculture
3. Breeding, physiology, agronomy and nutrition
4. Plants growth in degraded environments
5. Plants for saline agriculture: Crops, grasses, bushes and trees
6. Saline agriculture as a sustainable farming system
7. Future of saline agriculture in the context of global climate change

READINGS

1. Qureshi, R. H. and E. G. Barrett-Lennard. 1998. Saline Agriculture for Irrigated Land in Pakistan: A handbook. Australian Centre for International Agricultural Research (ACIAR), Canberra, Australia.
2. Ahmad, R. and K. A. Malik. (eds.). 2002. Prospects for Saline Agriculture. Kluwer Academic Publishers, Dordrecht, The Netherlands.
3. Pessarakali, M. (ed.) 1999. Handbook of Plant and Crop Stress. Marcel Dekker Inc., New York, USA.

COURSE SCHEDULE

Week	Topics and Readings	Books with Page No.	Dates
1.	Course Outlines: Introduction and importance of the course		12-10-2020 to 16-10-2020
2.	What is saline agriculture, objectives of saline agriculture, Components of saline agriculture	Qureshi, R. H. and E. G. Barrett-Lennard. 1998. Saline Agriculture for Irrigated Land in	19-10-2020 to 23-10-2020

		Pakistan: A handbook. Australian Centre for International Agricultural Research (ACIAR), Canberra, Australia.	
3.	Salt-affected soils, saline, sodic and saline sodic soils	Qureshi, R. H. and E. G. Barrett-Lennard. 1998. Saline Agriculture for Irrigated Land in Pakistan: A handbook. Australian Centre for International Agricultural Research (ACIAR), Canberra, Australia.	26-10-2020 to 30-10-2020
4.	Reclamation of saline soils, sodic soils and saline sodic soils	Qureshi, R. H. and E. G. Barrett-Lennard. 1998. Saline Agriculture for Irrigated Land in Pakistan: A handbook. Australian Centre for International Agricultural Research (ACIAR), Canberra, Australia.	02-11-2020 to 06-11-2020
5.	Management of saline soils, sodic soils and saline sodic soils	Qureshi, R. H. and E. G. Barrett-Lennard. 1998. Saline Agriculture for Irrigated Land in Pakistan: A handbook. Australian Centre for International Agricultural Research (ACIAR), Canberra, Australia.	09-11-2020 to 13-11-2020
6.	Saline agriculture: history in Pakistan	Qureshi, R. H. and E. G. Barrett-Lennard. 1998. Saline Agriculture for Irrigated Land in Pakistan: A handbook. Australian Centre for International Agricultural Research (ACIAR), Canberra, Australia.	16-11-2020 to 20-11-2020

7.	Saline agriculture: prospects in Pakistan	Qureshi, R. H. and E. G. Barrett-Lennard. 1998. Saline Agriculture for Irrigated Land in Pakistan: A handbook. Australian Centre for International Agricultural Research (ACIAR), Canberra, Australia.	23-11-2020 to 27-11-2020
8.	Components of saline agriculture	Qureshi, R. H. and E. G. Barrett-Lennard. 1998. Saline Agriculture for Irrigated Land in Pakistan: A handbook. Australian Centre for International Agricultural Research (ACIAR), Canberra, Australia.	30-11-2020 to 04-12-2020
9.	Approaches of saline agriculture	Qureshi, R. H. and E. G. Barrett-Lennard. 1998. Saline Agriculture for Irrigated Land in Pakistan: A handbook. Australian Centre for International Agricultural Research (ACIAR), Canberra, Australia.	07-12-2020 to 11-12-2020
10.	MID-TERM EXAMINATION		14-12-2020 to 18-12-2020
11.	WINTER BREAK		21-12-2020 to 25-12-2020
12.	Salt tolerance; how to develop salt tolerant crops; use of salt tolerant plants in saline agriculture	Qureshi, R. H. and E. G. Barrett-Lennard. 1998. Saline Agriculture for Irrigated Land in Pakistan: A handbook. Australian Centre for International Agricultural Research (ACIAR), Canberra, Australia.	28-12-2020 to 01-01-2021

		Research (ACIAR), Canberra, Australia.	
13.	Mechanism of salt tolerance in plants	Handouts will be provided	04-01-2021 to 08-01-2021
14.	Breeding, physiology, agronomy and nutrition regarding saline agriculture Breeding techniques for developing salt tolerance in plants	Handouts will be provided	11-01-2021 to 15-01-2021
15.	Nutrition of plants used for saline agriculture, Plants growth in degraded environments	Pessarakali, M. (ed.) 1999. Handbook of Plant and Crop Stress. Marcel Dekker Inc., New York, USA.	18-01-2021 to 22-01-2021
16.	Plants for saline agriculture: Crops, grasses, bushes and trees	Handouts will be provided	25-01-2021 to 29-01-2021
17.	Saline agriculture as a sustainable farming system	Handouts will be provided	01-02-2021 to 05-02-2021
18.	Future of saline agriculture in the context of global climate change	Handouts will be provided	08-02-2021 to 12-02-2021
19.	FINAL TERM		15-02-2021 to 19-02-2021

RESEARCH PROJECT/PRACTICAL/LABS/ASSIGNMENTS

Assignment

Visit to various bio saline agriculture center and report writing about running projects

ASSESSMENT CRITERIA

Sessional: 12 (project, presentation, participation)

Project: 06

Presentation: 03

Participation: 03

Mid exam: 82

Final exam: 30