



Desert Agriculture

Manna Center for Food Safety and Security, Tel Aviv University

in collaboration with ARO-Volcani Center

Course Number: 0466.4010

Course Location: TBA

Course Dates: July 22-26, 2018, 8.30-15.00; Exam July 27, 8.30

Educational Tour: July 26, 2018 7.45-15.30

Form of Assessment: Exam will be given at the end of the course

Credit Points: 2

Coordinated by Dr. Arnon Dag and Dr. Uri Yermiyahu (ARO)

Course Lecturers:

Dr. Ran Erel, Dr. Alon Ben-Gal, Dr. Or Sperling, Dr. Michal Lieberman- Lazarovich, Dr. Eugene David Ungar, Dr. Rakefet David-Schwartz, Dr. Ron Porat, Dr. Roi Kaspi, Dr. Uri Nachshon, Dr. Eran Raveh, Dr. Tarin Paz, Dr. Zipora Teitel

Background

Arid and semi-arid regions are expanding world-wide due to climate change, overgrazing, deforestation, drought, and improper/inappropriate agricultural techniques. Traditionally such areas produce low yields and poor quality food. However, to sustain the world's growing human population, food production must become more intense. Israel is unique in that her deserts are receding instead of expanding. In fact, the U.N. Development Program called Israel "one of the driest, but agriculturally most successful, countries of the world". The quantity and quality of food production in arid areas can be improved through the application of modern technologies and know-how being developed in Israel. The type of plant cultivar, soil, fertilization and irrigation practice, and pest control greatly affect yield. Livestock is often considered in terms of overgrazing and soil degradation; however, proper animal species and breed, herd size and movement can yield greater plant diversity, stimulate grass tillering and improve seed germination. Agriculture using modern technology, and executed properly under arid and semi-arid conditions, enables farmers to control or optimize many variables to create a more favorable environment for enhanced food production and hence food security.

Aims

To enrich the students with a basic understanding of the latest advances in agriculture in arid and semi-arid environments including: effects of biotic and abiotic environmental conditions, biological principles involved in plant and animal production, and technologies to improve production.



Main Subjects

The main subjects include: The effects of abiotic stress-causing factors (temperature, humidity, drought, salinity) on vegetable production, nutrient requirements for vegetables, orchard crops (citrus and olive), rain-fed crops, plant protection (arthropods, nematodes and pathogens), and rangeland grazing.

The course will consist of two major components: 1. Frontal lectures from experts in each field. 2. Professional tour and visits to relevant sites.

Monday, July 23 (Arnon)

- 8.30-9.15: Introduction and Olive cultivation under semi-arid conditions – Dr. Arnon Dag
- 9.30-10.15: Crop pollination – Dr. Arnon Dag
- 10.30-11.15: Plant response to abiotic stress – Dr. Or Sperling
- 11.30-12.15: Plant response to abiotic stress – Dr. Or Sperling
- 12.30-13.15: Heat stress response in tomato – Dr. Michal Lieberman- Lazarovich
- 13.30-14.15: Soil fertility in harsh and dry environments - Dr. Ran Erel

Tuesday, July 24 (Uri)

- 8.30-9.15: A simple model of grazing system dynamics- Dr. Eugene David Ungar
- 9.30-10.15: Afforestation in the semi-arid area of Israel- Dr. Rakefet David-Schwartz
- 10.30-11.15: The global food crisis – Dr. Ron Porat
- 11.30-12.15: Food loss and waste- Dr. Ron Porat
- 12.30-13.15: Classical Biological Control of Citrus Pests- Dr. Roi Kaspi
- 13.30-14.15: Agricultural water management in Israel's dry regions – Dr. Alon Ben-Gal
- 14.30-15.15: Agricultural water management in Israel's dry regions – Dr. Alon Ben-Gal

Wednesday, July 25 (Uri)

- 8.30-9.15: Croplands soil salinization- Trends, processes and examples – Dr. Uri Nachshon
- 9.30-10.15: Citrus cultivation under semi-arid conditions – Dr. Eran Raveh
- 10.30-11.15: Precision agriculture under semi-arid conditions – Dr. Tarin Paz
- 11.30-12.15: Precision agriculture under semi-arid conditions – Dr. Tarin Paz
- 12.30-13.15: Semiarid crops as superfoods – Dr. Zipora Tietel
- 13.30-15.00: Influence of mineral nutrition on plant tolerance to environmental stress - Dr. Uri Yermiyahu

Thursday, July 26 (Arnon)

Professional tour

Friday, July 27, 08:30, Sherman building, room 02 (Arnon)

Final Exam