



## **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 14-18, 2019, 8.30-13.00; Exam July 19, 8.30**

**Educational Tour: July 18, 2019 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. Alon Ben-Gal, Dr. Eugene David Ungar, Dr. Rakefet David-Schwartz, Dr. Ran Erel, Dr. Uri Nachshon, Dr. Tarin Paz, Dr. Or Sperling, Dr. Hagai Yasuor.

### **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.

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## 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.

### Sunday, July 14

8.30-10.00	Influence of mineral nutrition on plant tolerance to environmental stress - Dr. Uri Yermiyahu
10:00-10:30	Break
10.30-12.00	Soil fertility in harsh and dry environments – Dr. Ran Erel
12.00-12.15	Break
12.15-13.00	Influence of mineral nutrition on plant tolerance to environmental stress - Dr. Uri Yermiyahu

### Monday, July 15

8.30-10.00	<i>Plant response to abiotic stress</i> – Dr. Or Sperling
10:00-10:30	Break
10.30-12.00	<i>Precision agriculture under semi-arid conditions</i> - Dr. Tarin Paz
12.00-12.15	Break
12.15-13.00	<i>Orchard cultivation under semi-arid conditions</i> – Dr. Arnon Dag

### Tuesday, July 16

8.30-10.00	<i>Vegetable reproduction in protective structures: advantage or risk?</i> – Dr. Hagai Yasuor
10:00-10:30	Break
10.30-12.00	<i>A simple model of grazing system dynamics</i> - Dr. Eugene David Ungar
12.00-12.15	Break
12.15-13.00	<i>Afforestation in the semi-arid area of Israel</i> - Dr. Rakefet David-Schwartz

### Wednesday, July 17

8.30-10.00	Croplands soil salinization- trends, processes and examples – Dr. Uri Nachshon
10:00-10:30	Break
10.30-12.00	Irrigation in Israel's Dry Regions: Questioning sustainability, lessons for the world, and tools for decision making (part 1) - Dr. Alon-Ben-Gal
12.00-12.15	Break
12.15-13.00	Irrigation in Israel's Dry Regions: Questioning sustainability, lessons for the world, and tools for decision making (part 2) - Dr. Alon-Ben-Gal

**Thursday, July 18:** Professional tour

**Final Exam:** Friday, July 19, 08:30