Desert Agriculture

Manna Center for Food Safety and Security, Tel Aviv University

in collaboration with ARO-Volcani Center

Course Number: 0411.4010
Course Location: Britannia 06
Course Dates: July 9-12, 2017, 8.30-13.00
Educational Tour: July 13, 2017 8.30-16.00

Form of Assessment: take-home 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. Ran Erel, Dr. Eli Zaady, Dr. Or Sperling, Dr. Leah Tsror, Dr. Eran Raveh, Dr. Roi Ben David, Dr. Victor Alchanati, Dr. Hagai Yasuor, Dr. Yuji Oka, Dr. Phyllis Weintraub, 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.

Manna Center Program for Food Safety & Security | תכנית מרכז מן לביטחון ואבטחת המזון
Britannia Building, Room 624, Tel Aviv University, Tel Aviv 6997801, Israel
foodsecurity@tau.ac.il | http://foodsecurity.tau.ac.il
Tel: 972 (0)3 640 5965 | Fax: 972 (0)3 640 5795

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 9

8.30-9.15: Introduction, Agricultural water management in Israel's dry regions – Dr. Alon Ben-Gal
9.30-10.15: Introduction, Agricultural water management in Israel's dry regions – Dr. Alon Ben-Gal
10.30-11.15: Soil fertility in harsh and dry environments - Dr. Ran Erel
11.30-12.15: Influence of mineral nutrition on plant tolerance to environmental stress - Dr. Uri Yermiyahu
12.30-13.15: Influence of mineral nutrition on plant tolerance to environmental stress - Dr. Uri Yermiyahu

Monday, July 10

8.30-9.15: The biogeochemistry of N cycle in arid landscape – Dr. Eli Zaady
9.30-10.15: The relationship between agriculture and environment in semiarid regions – Dr. Eli Zaady
10.30-11.15: Plant response to abiotic stress – Dr. Or Sperling
11.30-12.15: Potato soil-and seed-borne diseases under semi-arid conditions – Dr. Leah Tsror
12.30-13.15: Potato soil-and seed-borne diseases under semi-arid conditions – Dr. Leah Tsror

Tuesday, July 11

8.30-9.15: Olive cultivation under semi-arid conditions – Dr. Arnon Dag
9.30-10.15: Crop pollination – Dr. Arnon Dag
10.30-11.15: Citrus cultivation under semi-arid conditions – Dr. Eran Raveh
11.30-12.15: Winter cereals breeding and cultivation under semi- arid conditions – Dr. Roi Ben David
12.30-13.15: Precision agriculture for optimizing irrigation and fertilization under semi-arid conditions – Dr. Victor Alchanati

Wednesday, July 12

8.30-9.15: Vegetable reproduction in protective structures: advantage or risk? – Dr. Hagai Yasuor
9.30-10.15: Vegetable reproduction in protective structures: advantage or risk? – Dr. Hagai Yasuor
10.30-11.15: Plant parasitic nematodes and their control under semi-arid conditions – Dr. Yuji Oka
11.30-12.15: Integrated Pest Management in arid areas – Dr. Phyllis Weintraub
12.30-13.15: Semiarid crops as superfoods – Dr. Zipora Teitel

Thursday, July 13 – Leaving TAU Gate 2 at 8:30, returning 16:00

Professional tour to the Negev - From theory to practice in commercial cultivation of crops under arid and semi-arid conditions: orchards (pomegranates and citrus), field crops (corn), vegetables in open field and net-houses. Drip irrigation of crops with 'alternative water sources'; recycled, brackish and desalinated.

Manna Center Program for Food Safety & Security | תכנית מרכז מן לביטחון ואבטחת המזון
Britannia Building, Room 624, Tel Aviv University, Tel Aviv 6997801, Israel
foodsecurity@tau.ac.il | http://foodsecurity.tau.ac.il
Tel: 972 (0)3 640 5965 | Fax: 972 (0)3 640 5795