STATE OF ISRAEL

MASHAV
Israel's Agency for International Development Cooperation

HEBREW UNIVERSITY OF JERUSALEM
Robert H. Smith Faculty of Agriculture, Food & Environment
Division for External Studies

The 1st INTERNATIONAL POST-GRADUATE COURSE ON

COMMERCIAL BEEKEEPING IN MODERN AGRICULTURE

December 20, 2010 – January 13, 2011

Q0300610

In cooperation with the Hebrew University of Jerusalem's Faculty of Agriculture – MASHAV's only academic professional affiliate – we are pleased to announce the opening of a capacity building course on Commercial Beekeeping in Modern Agriculture. The course will be held in Israel at the Robert H. Smith Faculty of Agriculture, Food and Environment, Division of External Studies, in Rehovot from December 20, 2010 – January 13, 2011.

BACKGROUND

Beekeeping has ancient roots in the Middle East. In Israel's Beth Shean Valley, researchers from the Hebrew University of Jerusalem Institute of Archaeology recently excavated an apiary dating from the 10th to early 9th centuries B.C.E. The cylindrical clay beehives, similar to those found, are still used in some traditional cultures throughout the Mediterranean.

The find demonstrates Israel's experience with beekeeping as far back as the Biblical period. The practice has developed over time -- today Israel has 84,000 Langstroth beehives. Israel's beekeeping industry had to address modern challenges such as:

- the uprooting of trees due to urbanization
- the threat of infiltration of invasive species competing for food sources
- the exposure of bees to new disease
- the increased resistance of both diseases to antibiotics and parasites to pesticides
- a water shortage that reduces the availability of nectar-rich crops, restricting nectar sources for honey production.

In response to these challenges, Israeli beekeepers turned to more efficient methods, such as mechanization and breeding.

Unlike most developed countries, where large-scale beekeeping is a small fraction of the bee industry, in Israel, the more significant role of commercial apiaries contributes to advancing apiary management. There are about 450 beekeepers in Israel, and 75% of the hives are in large commercial apiaries. Israel produces about 3,200 tons of honey annually, with hive yield varying from 20-30 kg for small-scale beekeepers to 50-60 kg for large commercial apiaries. Although apiary products also include beeswax, honeycomb foundations, royal jelly, and pollen propolis, one of the most important aspects of beekeeping in Israel is the pollination of crops. Over 60,000 hives are used for pollination, with some crops depending on the honeybee for pollination and other crops obtaining a 30% increased yield.

Due to the reliance on beekeeping for the pollination of a segment of Israel's agricultural production, and for the purpose of increasing honey production, Israeli researchers have sought to maximize the practice. They developed strategies to counter various difficulties - many of which are shared by apiary managers in nearby countries. The knowledge and techniques of the researchers at **The Hebrew University of Jerusalem's Robert H. Smith Faculty of Agriculture, Food & Environment** can be adapted to benefit beekeepers -- potentially increasing their honey production and efficiency.

Agricultural extension agents, apiary industry leaders, researchers, representatives of government programs supporting beekeeping, and university professors instructing on this subject have a meaningful potential to advance these efforts with the benefit of exposure to the latest technology, enhanced awareness of proven strategies that can be adapted to their locale, opportunities to interact with experts in the field, and introductions to a network

of professionals serving as resources and collaborators. The *International Course on Beekeeping*, supported by MASHAV (Israel's Ministry of Foreign Affairs' Agency for International Development Cooperation), and conducted by Hebrew University of Jerusalem's Robert H. Smith Faculty of Agriculture, Food and Environment, Division for External Studies, endeavors to address these needs.

COURSE OBJECTIVES

The aim of this course is to work with participants in various aspects of apiary management, and to share experience and know-how. The goal is to provide tools to people engaged in beekeeping so that they can increase honey production, improve honey quality, implement changes for greater efficiency, and adapt strategies to address the problematic issues related to beekeeping in their region. For instance, the countries Jordan, Ethiopia, Turkey, and India share some common challenges and also have aspects that differ in their area and industry practice:

Contrasting with the industry trend in Israel, in **Jordan** only 10% of bee colonies are managed by professional or large-scale beekeepers with over 100 colonies, and 60% are kept as a hobby by beekeepers with fewer than 10 colonies. In addition to contending with diseases, some beekeepers are also disadvantaged by foreign bee importation. The honey bee indigenous to the eastern Mediterranean region, *Apis mellifera syriaca*, is so aggressive that some beekeepers in Jordan switched to European bees, who had difficulties in times of severe heat and drought, and in warding off hive-destroying wasps. Due to interspecies breeding, the more resilient native honeybee is now difficult to find. In Jordan, although domestic honey is highly valued – even costing more than imported honey -- the domestic production meets only 20% of national consumption.

Turkey covers a broad geographical area and has rich flora. The honeybee population there includes great genetic variation, each type with distinct advantages and disadvantages. Some of the disadvantages of certain variations include: high swarming, high temper, low honey yield, low wintering ability, and a high level of robbing tendency. The summer of 2009 presented a particular difficulty for beekeepers: a lack of rain and dust clouds from Syria, resulted in dust sticking to leaves, preventing nectar-producing plants from flourishing and curtailing honey production.

India also has a long history of beekeeping, several types of bees, and great diversity in topography and flora. India's beekeeping practices vary. Honey hunting is done on rocks

and trees. Some rural beekeepers keep log hives in house walls. Other hives are made of clay pots, baskets, and boxes. Moveable frame hives are also used. Honey is valued for health and as a medicinal ingredient, and the wax is used for cosmetics and candles. The major challenges facing India's honey production are bee diseases, pests and enemies, as well as practices, equipment (which may be older and unclean), and storage containers that reduce the quality of the product.

Ethiopia, like India, has beekeeping traditions utilizing several types of hives. There are over one million farmer-beekeepers in Ethiopia and three million traditional hives. Hives are made of hollowed-out logs, mud and baskets, although some modern hives are also used. Ethiopia has a variety of honeybees, each with disadvantages and variations in productivity. With three climate zones in Ethiopia, there are different lengths in flowering seasons, also influencing the yield of honey. Additional challenges relate to aggressiveness of the bees, disease, wind, pest, robbery, a lack of knowledge about bee management and a need for usage of more modern equipment. Honey production in Ethiopia is estimated to be about 26 tons a year, about 2/3 of which is used for making the honey wine, "tej". However, honey is not the only end-product: Ethiopia is ranked as the third exporter of wax in Africa, collecting about 3000 tons of beeswax annually. In 2007, MASHAV sent two Israeli experts to Ethiopia. They trained over 100 farmers on modern beekeeping techniques.

This First International Course on Beekeeping offers an opportunity for participants from Ethiopia, Jordan, Turkey, and India to garner connections with colleagues from other countries while being exposed to new developments in apiary management. The course demonstrates advancements to improve beekeeping practices, enhancing production and increasing efficiency and ease in working with various species and hives, to yield a better product.

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Course participants will acquire crucial information which they can adapt to the unique challenges of their countries. The course promotes networking and research cooperation

between the participants, their respective countries and the researchers at the Faculty. We also encourage follow-up programs in participants' home countries.

TOPICS OF STUDY

- Overview of apiary management: Israeli examples
- Pests, diseases and treatment
- Pollination
- Supervision of quality control in various aspects of beekeeping and honey production; standardization of types of honey
- Supplemental nutrition
- Queen-breeding: management and queen selection

STUDY CONDITIONS

- Classes will be held at the Faculty's Rehovot campus, where there are laboratories, advanced research equipment and the Central Library of Agricultural Science.
- Around-the-clock computer access will be provided, and computers will be used extensively.
- Scientific material and homework will be assigned and graded.
- Professional field trips will be held.
- Full attendance is required.

COURSE COMPLETION

Each participant will prepare a final project, which will be reviewed and graded. It should apply knowledge acquired during the course to a topic in beekeeping. Participants are advised to bring with them digitalized data relevant to their countries for preparing the projects. On completion of the course and fulfillment of its requirements, participants will receive certificates, which will be accredited by many universities.

REQUIREMENTS

Candidates interested in attending this program require:

- B.Sc. degree or above in entomology, agriculture, animal sciences, business management, or a related field from a recognized university.
- Documentation of academic studies conducted in English OR a TOEFL score of at least 89 on the internet-based scale OR an internationally recognized equivalent. (The language of instruction is English. Therefore, participants whose native tongue is not English, must furnish proof of proficiency in this language.)
- Copies of degrees must be included with application forms.
- Professional experience in the field is recommended. We encourage applications from agricultural extension service officers, educators on apiary practices, entomologists, quality control engineers/inspectors for beekeeping, representatives of government agencies supporting beekeeping, and apiary industry leaders.
- An official certificate of good health.
- Letters of recommendation are required from the candidate's place of work or university.

COST AND APPLICATION

MASHAV (see below) will grant all participants a **scholarship** to cover the cost of the course. The scholarship **does not include** travel costs to and from the home countries or incidental expenses.

Application forms may be obtained from the nearest Israeli diplomatic or consular representative or can also be downloaded from the web site of the Foreign Ministry of Israel, MASHAV Study Programs. The e-address for the application form is: http://mashav.mfa.gov.il/mfm/Data/52920.pdf

Completed applications (2 copies) **MUST** be sent directly to the Israeli representative in your country by November 15, 2010. In addition, please send a copy of the forms to the Faculty by e-mail to lang@agri.huji.ac.il .

PARTICIPATING INSTITUTIONS

This 25-day course is truly a joint venture. Involved in its implementation are:

- Academics: under the auspices of the Hebrew University of Jerusalem's Robert H. Smith Faculty of Agriculture, Food & Environment.

- Administration: by the Faculty's Division for External Studies in cooperation with the Agency for International Development Cooperation of the Ministry for Foreign Affairs (MASHAV).

MASHAV

Israel's Agency for International Development Cooperation, known as **MASHAV** in its Hebrew acronym, was founded in 1958 as part of the Ministry of Foreign Affairs. It is responsible for initiating and implementing Israel's development-cooperation program worldwide. MASHAV aims at transferring the expertise and technologies, which have assisted Israel in its own path to development, to other countries. Today, Israel cooperates with almost 140 countries, providing training in Israel and abroad, operating on-site demonstration projects and building medical infrastructures in partner countries. MASHAV is active in fields ranging from agriculture to medicine and from community development to entrepreneurship.

THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem was opened in 1925, preceding the establishment of the State of Israel by over two decades. The University was designed to be a world class institution of higher learning and research. Today, the Hebrew University comprises 7 faculties, 15 schools, some 60 research centers, a present student body of about 24,000 and a tenured-track faculty of some 1,500. One third of its enrollment is at the M.Sc. and Ph.D. level.

THE ROBERT H. SMITH FACULTY OF AGRICULTURE, FOOD & ENVIRONMENT

The Hebrew University's Robert H. Smith Faculty of Agriculture, Food & Environment was established in 1942 in Rehovot, a city at a distance of some 55 km (35 miles) from the main campus of the University in Jerusalem. The site was chosen due to considerations of climate and soil conditions. It is the only agricultural institution of higher education in Israel offering university degrees.

The Faculty's **Division for External Studies** was established in 1986. One of its aims is to expose academic graduates from abroad to post-graduate programs, giving them insight into the achievements and research of Israel in general (and of the Faculty in particular), expanding their knowledge in specific fields and creating opportunities for international cooperation.

ADDITIONAL DETAILS FOR PARTICIPANTS

- **ACCOMMODATIONS**: **Single bedroom accommodation** in a shared apartment will be provided in our fully equipped guest-house on campus. Meals will be provided. Both laundry (on campus) and dry cleaning (in town) are at the participant's expense.
- **WEATHER:** The weather in Israel during the winter months is varied, approximately 10-22° C. There may be some sunny days where light cl othing is appropriate, but it might also rain and be cool during the season. Participants are requested to bring clothes suitable for outdoor activities including a warm jacket and comfortable walking shoes. We also recommend that you bring some light sweaters, long-sleeved shirts, a rain coat and an umbrella.
- **INSURANCE**: Participants are insured for medical care during their stay in Israel. This does not include pre-existing conditions and /or major dental care. Personal belongings are not insured, and are the responsibility of each individual.
- Participants who take regular **MEDICATION** are requested to bring enough medicine for the duration of the course. Participants who wear **GLASSES** are advised to bring a spare pair.
- We recommend that **HAND LUGGAGE** include basic toiletries and a change of clothes for the first day or so. These should be carried separately in case of delay in baggage delivery.
- Participants will not receive any allowance or pocket money. Please bring some money for **SMALL EXPENSES**.
- **AIRPORT TRANSPORTATION**: Those accepted to the course will supply flight details to their local Israeli representative, to be forwarded to us. Upon arrival in Israel, the participant will pick up his/her luggage. After passing through customs, the participant will enter the arrivals terminal and walk towards the left. Go up the escalator to the first floor. On the left, behind the car rental counters, you will see a counter of a company called "TOURBUS". This is a special taxi service, which has a list of expected arrivals. Go to the counter and tell them your name, country and that you're attending a course at the Faculty. You will be taken to the Faculty of Agriculture, Rehovot, free of charge. This service is pre-paid.

PLEASE DO NOT TAKE ANY OTHER FORM OF TRANSPORTATION.

COMMUNICATION

Further information relating to the subject matter of the course may be obtained from:

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