

International Atomic Energy Agency
Technical Co-operation Department

The Food and Agriculture Organisation
of the United Nations

**PROSPECTUS FOR A TECHNICAL COOPERATION/IAEA SUPPORTED
INTERREGIONAL TRAINING COURSE**

**Use of the Sterile Insect and Related Techniques for the Area-wide
Integrated Management of Plant, Animal and Human Insect Pests**

6 November to 2 December 2017

Metapa de Dominguez, Chiapas, Mexico
Guatemala City, Guatemala

PROSPECTUS

<u>TITLE</u>	Use of the Sterile Insect and Related Techniques for the Area-wide Integrated Pest Management of Native and Exotic Insect Pests
<u>PLACE</u>	Metapa de Dominguez, Chiapas, Mexico, with a one week visit to SIT facilities and field operations in nearby Guatemala.
<u>DATE</u>	6 November to 2 December 2017 (first, second and fourth weeks in Mexico, third week in Guatemala).
<u>ORGANISERS</u>	The International Atomic Energy Agency (IAEA) and the Food and Agriculture Organisation of the United Nations (FAO) in co-operation with the Mexican Ministry of Agriculture and the Moscamed Programme of the Guatemala, Mexico and USA Governments.
<u>DEADLINE FOR NOMINATIONS</u>	3 August 2017.
<u>PARTICIPATION</u>	The course is open to 25 participants from IAEA and FAO Member States in all geographical regions. Preference will be given to qualified candidates from developing countries.
<u>LANGUAGE</u>	The language of instruction will be English.
<u>PURPOSE OF THE COURSE</u>	The purpose of the course is to provide a thorough overview and training on the integrated application of nuclear and related techniques within the context of area-wide insect pest management programmes to managers of insect control programmes, animal/human health and plant protection officials and applied research entomologists. The course will include the concept of integrated area-wide insect pest management, radiation-induced sterility, the Sterile Insect Technique (SIT), Inherited Sterility (F ₁ Sterility), integration of pre-and post-harvest control methodologies, compatibility of control methods, the biology, ecology, genetics and surveillance of pest insect populations subjected to control, economic analysis of area-wide programmes and reviews of major past and ongoing SIT programmes.
<u>PARTICIPANTS QUALIFICATIONS</u>	Applicants must have at least a Bachelor of Science degree or equivalent in entomology or a related biological field. Preference will be given to those in pest control policy-formulating positions or managing or preparing applied pest control programmes, or who have had at least several years of practical experience in post-graduate applied research or teaching on pest control. As the course will be conducted in English, participants must have an adequate working knowledge of that language. After training, participants are expected to continue to be engaged in the implementation of animal/human health or plant protection, insect control or eradication programmes, entomological teaching, or

applied pest control research in which their training will be immediately utilised.

NATURE OF THE COURSE

The course will last for four weeks, with each week about 20 hours of lectures, 4 hours of discussion, 3 laboratory periods of about 3 hours each and field visits to operational programme activities. Emphasis will be placed on the area-wide concept of integrated insect pest management and on the practical applications of integrating nuclear techniques including the SIT, Inherited Sterility and other genetic methods of insect control, with other methods, including the augmentative releases of natural enemies. Participants will actively participate in preparing and discussing theoretical approaches to specific case studies and for this purpose are encouraged to bring technical materials related to major key pests in their region.

The course will include lectures on:

- Principles of area-wide insect control for integrated pest management as part of suppression, containment, eradication or prevention programmes.
- Principles of SIT, inherited sterility and other genetic control methods.
- The concept of key and secondary insect pests and the economics of area-wide control programmes.
- The management of area-wide insect pest control programmes.
- Application of SIT or Inherited Sterility for major insect pests: pest population suppression techniques, surveillance and monitoring, insect colonisation, mass-rearing, sterilisation, releases and major sterile insect release programmes (case studies), including fruit flies, tsetse flies, screwworms, mosquitoes, moths and beetles.
- Specific developments in the control of insect pests in agricultural, veterinary and medical entomology, including the SIT, inherited sterility, augmentative biological control, attractants, pheromones and integrated pest management.
- Reproduction biology and ecology of some key Diptera and Lepidoptera species.
- Genetic sexing and other developments related to classic and molecular genetics, and populations genetics.
- Principles of, and methods in, radiobiology, including radiation measurement equipment, radiation safety, radiation dosimetry, and radiation effects on insects and cells.
- Use of computers for data management, models of SIT impact on insect populations and their distribution, GIS and analysis of insect population dynamics and insect control.
- Implications for international trade resulting from insect pest infestations, post-harvest treatments, systems approach, quarantine and pest free or low prevalence areas.

The Laboratory exercises and field visits will cover:

- Radiation sterilisation of insects, dosimetry and procedures related to the SIT.
- Assessment of sperm transfer, reproductive physiology and chromosome aberrations.
- Insect mass-rearing and quality control.
- Sterile fly packing, transport, emergence and aerial release procedures.
- Discrimination of sterile and wild flies catch in traps.
- Introduction to genetic and molecular biology studies.
- Field cage mating behaviour studies.
- The use of GIS to manage field data and guide field operations.
- Web-based data management and sharing.
- Economic benefit-cost analyses.
- Databases on insect sterilization and disinfestation.
- Visits to mass-rearing and sterilization facilities, mass-production of parasitoids, release centres, field monitoring, baiting and ongoing field programmes.

APPLICATION PROCEDURES

Nominations should be submitted in duplicate on the standard IAEA application forms for training courses. Completed forms should be endorsed by and returned through the official channels established (the Ministry of Foreign Affairs, the National Atomic Energy Authority, the Office of the United Nations Development Programme, the Office of the FAO or the Ministry of Agriculture). They must be received by the International Atomic Energy Agency, P.O. Box 100, A-1400 Vienna, Austria **not later than 3 August 2017**. Nominations received after that date or applications sent directly by individuals or private institutions cannot be considered.

Advance nominations by pdf or facsimile (+43 1) 26007 (Official.Mail@iaea.org) are welcome. The message should contain the following basic information about the candidate: name, age, sex, academic qualifications, present position, proficiency in English, and an exact mailing address, as well as the completed application form, **referring to course INT51552**.

LANGUAGE REQUIREMENT

Nominations will only be considered if an applicant demonstrates good knowledge of spoken and written English.

ADMINISTRATIVE AND FINANCIAL ARRANGEMENTS

Nominating Governments will be informed in due course of the names of the selected candidates, and at that time will be given full details of the procedures to be followed with regard to administrative and financial matters. Selected candidates are responsible to obtain their visas from both host countries, and this process should be initiated as early as possible.

During their attendance at the course, participants from developing countries will receive from the IAEA a stipend sufficient to cover the cost of food and incidental expenses. The IAEA will cover the cost of accommodation and also pay the full cost of the round-trip travel, economy class, from their home countries to Tapachula, Mexico and return.

The organisers of the course do not accept liability for the payment of any cost or compensation that may arise from damage to or loss of personal property, or from illness, injury, disability or death of a participant while he/she is travelling to and from or attending the course, and it is clearly understood that each Government, in nominating participants, undertakes responsibility for such coverage. Governments would be well advised to take out insurance against these risks.