FACULTY OF FOOD AND AGRICULTURE

In 1921 a West Indian Agricultural College was founded at St. Augustine, which two years later was converted to the Imperial College of Tropical Agriculture (ICTA).

ICTA soon established itself as the leading worldwide institution for research and training in tropical agriculture. In 1960, ICTA merged with the then University College of the West Indies located in Jamaica to form the Faculty of Agriculture in Trinidad.

At present, the Faculty of Science and Agriculture has six Departments with 83 academic staff, as well as a student population of 1452. Of the latter, there are 1044 undergraduates and 408 postgraduate students from countries throughout the Caribbean, as well as Africa and Asia.

The University Field Station (UFS) is located in close proximity to the Campus and has all the necessary requirements for the conducting of field research. Faculty research has assumed a multidisciplinary approach.

APPLICATIONS

Interested candidates can apply online through:
http://sta.uwi.edu/postgrad/apply.asp

Specific enquiries on the course should be directed to:
Dr. Duraisamy Saravanakumar,
Co-ordinator, M.Sc. in Tropical Crop Protection,
Department of Food Production,
Faculty of Food and Agriculture,
The University of The West Indies, St. Augustine,
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Food.production@sta.uwi.edu

THE UNIVERSITY OF THE WEST INDIES
FACULTY OF FOOD AND AGRICULTURE

Postgraduate Diploma
and
MSc. Tropical Crop Protection
POSTGRADUATE DIPLOMA AND
MSC. TROPICAL CROP PROTECTION

Two intensive post graduate taught courses in crop protection methods and pest control in tropical crops.

INTRODUCTION

In the Caribbean, as in many developing regions, graduates with a B.Sc. degree or a diploma in agriculture often become extension officers in their respective Departments of Agriculture. Much of their time may be spent on crop protection matters as pest losses represent one of the most serious constraints to crop production. Such graduates may also be appointed crop protection officers. Often, they have not been adequately trained, if at all, in the recognition of and control of various pest organisms including insects, mites, nematodes, diseases and weeds.

To meet the need for providing such specialist training in crop protection for the tropics, a Postgraduate Diploma (10 months) and an M.Sc. programme (12 months) has been initiated. Formally called the MSc. Crop Protection, the programme began in the former Faculty of Agriculture and Natural Sciences at The University of the West Indies, St. Augustine Campus in Trinidad in 1987. The programme is taught primarily by crop protection specialists in the Department of Life Sciences and the Department of Food Production. The Faculty of Science and Agriculture also has strong links with the Government of the Republic of Trinidad and Tobago’s Ministry of Agriculture, Land and Marine Resources, the Caribbean Agricultural Research and Development Institute (CARDI) and the Inter-American Institute for Co-operation on Agriculture (IICA). Research scientists and other professional staff from these institutions contribute to the programme.

AIM OF THE COURSE

The programme is structured to provide both a general coverage of pest control techniques as well as more specialized training in applied entomology, plant pathology, nematology, and weed science. It is designed for graduates of agriculture or agricultural sciences or a related discipline, who are seeking careers as crop protection specialists in government service or industry.

COURSE STRUCTURE

The course of full-time study covers a ten-month period from September of one year, to June of the following year for successful completion of the Postgraduate Diploma and a twelve-month period from September of one year, to August of the following year for the completion of the MSc. in Tropical Crop Protection. The course structure is as follows:

ENTRY REQUIREMENTS

Candidates applying for admission to the Postgraduate Diploma and MSc in Tropical Crop Protection are required to satisfy the University's and the Faculty's Regulations governing:

**Postgraduate Diploma**

In order to be admitted to the Postgraduate Diploma, candidates must:

- Hold a Bachelor's Degree of at least a Lower Second Class Honours (minimum GPA of 2.0 or equivalent) in Agriculture or the Biological Sciences or other related discipline from an approved University. Or,
- Have previous equivalent level of education and relevant experience which would be acceptable to the University.

**M.Sc. Programme**

In order to be admitted to the M.Sc. programme, candidates must:

- Hold a Bachelor's Degree of at least a Lower Second Class Honours (minimum GPA of 2.0 or equivalent) in Agriculture or the Biological Sciences or other related discipline from an approved University. Or,
- Have a pass degree with at least 1-2 years of relevant working experience to be considered for entry into the programme.
- Candidates who have successfully completed the requirements for the Diploma in Tropical Crop Protection may apply to upgrade to the M.Sc. degree. In the event that such candidates are unable to complete the requirements for the M.Sc., the Postgraduate diploma will be awarded on successful completion of the prescribed courses.
- M.Sc. students who have been unable to complete the requirements within the maximum time but who have met the requirements for the Diploma may be awarded the Diploma.
- Persons initially admitted to the Diploma and wishing to transition into the M.Sc. without being awarded the Diploma must complete the 12 credits required for the Diploma plus the additional 12 credits from the compulsory courses and research project as required for direct entry into the M.Sc.
- Persons who have applied for admission into the M.Sc. within a 5-year award of the Diploma will not be exempted from more than 50% of the credits required for the M.Sc. on the basis of credits earned from the Diploma.

**THE UNIVERSITY OF THE WEST INDIES**

The University of the West Indies comprises three campuses located at Mona, Jamaica; Cave Hill, Barbados and St. Augustine, Trinidad. It is a regional institution serving 14 contributing territories. St. Augustine campus accommodates 7,585 students in seven faculties with approximately 503 academic staff. A very good library, located in a modern four-story building, serves the Campus. Central computer facilities are available and additionally, each Department is equipped with microcomputers. Adequate extra-curricular activities are available, including a gymnasium, Student Activity Center, and an outdoor 25m. swimming pool.
2.3 AGCP 6250: Weed Science Option (6cr)
This course introduces students to: the role of weeds in crop ecosystems; weed biology; dissemination; cultural, chemical and biological control of important weed species of tropical crops. All topics have particular reference to Caribbean agriculture. Practicals and field trips are included.

2.4 AGRI 6252: Nematology Option (6cr)
The biology of plant-pathogenic nematodes and their economic importance in plant protection; current methods and techniques in plant nematology; the ecological factors that influence nematode populations and disease development; alternative management systems for the control of plant parasitic nematodes; use of nematodes for the biological control of insect pests of crops and as indicators of environmental pollution.

AGRI 6300: Internship (4Cr)
Students can gain experience in crop protection through different responsibilities in the world of work in the crop protection field. Gives students the opportunity to apply and visualise the link between their theoretical knowledge and the world of work.

AGRI 6200: Research Project (9Cr)
Candidates who successfully complete the core courses, the elective course and research papers in the MSc Crop Protection, will be allowed to undertake a 13-week independent research project. This project may involve field, greenhouse and/or laboratory investigations in some aspect of crop protection and may be conducted anywhere in the region providing suitable arrangements can be made. At the end of the project, students are required to do an oral examination.

EXAMINATIONS
All courses except FOSQ 6011: Research and Statistical Skills for Food and Agriculture (60 % coursework; 40 % final examination) is worth 100 % coursework only. There are no final examinations. Students are required to do several assignments throughout the semester.

Candidates who at the end of two years have not completed the programme of study leading to the Postgraduate Diploma or the MSc in Crop Protection will be required to withdraw from the programme unless they have been granted special permission by the Board for Graduate Studies to continue.

POSTGRADUATE DIPLOMA DEGREE
Core Courses (4 credits each)

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<th>SEMESTER I</th>
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MSc. DEGREE
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they have been granted special permission by the Board for Graduate Studies to continue.

**COURSE OUTLINE**

1. **Core courses (4 credit hours each)**

1.1 **AGRI 6210: Biology, Ecology and Epidemiology of Pests (4cr)**
   An introduction to ecological principles and the concept of the ecosystem; cropping systems and the pest concept; the ecological origins of pest status; crop yields and assessment methods in relation to an effective crop protection programme; biology, ecology and epidemiology of plant pathogens including the classification, symptomatology and pathogenesis; abiotic diseases; the biology, ecology and recognition of insects, mites, rodents, birds and other crop pests; biology, ecology, and recognition of weeds, weed identification and weed surveys.

1.2 **AGRI 6221: Pesticide Technology (4cr)**
   Practical and Chemical control, pesticide chemistry, bioassays, formulations and application equipment, pesticide selectivity, consequences of pesticide abuse, resistance and environmental impact and human health, legislative control, mechanisms of resistance to pest attack.

1.3 **AGRI 6230: Integrated Pest Management (IPM) (4cr)**
   IPM concept; elements of IPM including sampling methods; the concept of economic threshold level; decision making; socioeconomic factors in IPM; IPM and farming in the Caribbean.

1.4 **AGRI 6211: Global Phytosanitary Issues and their Application (4cr)**
   This course covers some of the major current global issues in crop protection, particularly with regard to their impact on international trade in agricultural commodities. It aims to provide modern-day plant protection specialists with the information and tools to deal with some of the key issues which they will encounter in their day-to-day work situations, especially in the role of plant protection officer whether in the private or public sector. Also and equally importantly, the course will provide an understanding of a country's Phytosanitary obligations under the major international agreements such as the International Plant Protection Convention and the WTO Agreement on the Application of Sanitary and Phytosanitary Measures, as well as provide some insight into other contemporary issues such as invasive alien species and the impact of climate change on agriculture and crop pests.

1.5 **AGRI 6222: Molecular Techniques in Crop Protection (4cr)**
   Introduction to the molecular and immunological tools used in plant disease, pest and weed diagnosis and identification. This includes a brief introduction to nucleic acid and protein based technologies, discussion of the relevance to population and diversity studies, sampling strategies and quarantine implications. The lab component will allow the development of skills in nucleic acid extraction, PCR and hybridization techniques, sequencing and sequence analysis and the bases of serological techniques.

1.6 **FOSQ 6011: Research and Statistical Skills for Food and Agriculture (4cr)**
   This course involves the use of research tools and appropriate statistical packages for data processing and presentation. It is anticipated that the students and professionals enrolled in the course would obtain increased empowerment to read and critique published research particularly with respect to methodology or results presented in research papers in published journals in their field of academic or professional interest. The topics covered are types of research methods, planning research projects, writing reports and research papers and statistical methods and applications by descriptive analysis, estimation techniques, hypothesis testing, correlation, regression, analysis of variance and principle component analysis. The course would be taught using a blended approach through face to face lectures, Webinars and podcasts. The incourse assessment is divided into two assignments worth 60% and a final exam worth 40%. The final exam is comprised of short questions and essay/problem-based questions.

2. **Elective courses. (6 credit hours each)**

2.1 **AGRI 6250: Applied Entomology Option (6cr)**
   Population dynamics and the regulation of insect populations; an introduction to insect toxicology; profit analysis and LD50 measurements; description and identification of major pest groups including mites; biology and control of pests of important crop groups in the tropics with special reference to the Caribbean. Practical classes and field trips are included.

2.2 **AGRI 6241: Plant Pathology and Virology Option (6cr)**
   The importance, etiology, epidemiology and control of crop diseases under different farming systems in the Caribbean including those caused by fungi, bacteria, viruses, nematodes, mycoplasma and abiotic agents. Strategies for disease control examine the merits and demerits of chemical, cultural, integrated and other cheap and practical measures. Practicals include field trips to farmers' fields and a plant disease clinic where students learn to recognize, diagnose and control diseases.