

MASTERS IN SCIENCE CROP PROTECTION (ENTOMOLOGY OPTION)

KCU 800: Biometry

Importance of biostatistics; hypotheses; comparison of populations and samples; variables, graphs and frequency distribution, measures of central tendency, and dispersion, commonly used distributions, statistical estimation and decision theory; computer applications and analysis of experimental data; completely randomized designs, lattice designs, latin square designs and split plot experiments; factorial experiments; variation in factor and level number. Correlation and regression theory; distribution: chi-square and binomial; non-parametric tests; tests of significance.

KCU 801: Research Methods and Scientific Writing

Overview; types of research; social and scientific, observation, experimental and survey. Main steps of research projects; identification of research problems, formulation of research questions, hypotheses, and objectives, planning, literature review. Sampling strategies; sampling designs; methods of data collection. Data cleaning and management; analysis; interpretation; report writing. Writing technical reports, styles of writing and referencing. Dissemination: publication, seminars, information packaging. Research ethics. IPR.

KST 809: Integrated Pest Management Strategies

Principles of Integrated Pest Management (IPM); components of IPM strategies: process of IPM, pesticides, IPM triangle, Types of control strategies; quarantine and regulatory measures, agronomic practices; mechanical and physical strategies, biological control, botanicals, pesticide and bio-pesticide control measures, attributes of an effective natural enemy (Predators and parasitoids), advantages and disadvantages of IPM, pest forecasting; early warning systems; victim protection and avoidance techniques; current issues: sanitary and phytosanitary measures; good agricultural practices (GAPs). Case studies on success and failures of IPM in developing countries.

KST 812: Plant Protection Products and Environment

Categories and classification of pesticides; bio-pesticides; pesticide formulation; mode of action; classification by activity: systemic and contact pesticides; pesticide efficacy; application methods: droplet size; safe and effective use of pesticides; cross and multiple resistance; environmental effects and related issues; re-entry period; pesticide labels; legislation; legal use of pesticides; maximum residue limits; phyto-toxicity; crop selectivity; resistant plants; public health toxicity.

KST 819: Insect Physiology and Biochemistry

Introduction to physiology of insects; circulatory system; digestive processes; respiration; factors affecting respiration; excretion; excretory by products; juvenile hormones; ecdysone; hormonal regulation; pheromones; nerve and muscle physiology; oviposition; reproduction and development; morphogenesis; organogenesis; metamorphosis; communication;

KST 822: Pests and Diseases of Stored Products

Economic importance; pests identification: morphology, ecology, biology, life histories; pest outbreak & damage; assessment, monitoring, economic threshold, factors influencing abundance and pest distribution; pest orders; Coleoptera (weevils, beetles), Diptera, Lepidoptera, Isoptera, acari; regulation and enacted laws of prevention of spread of insect pests in imported. Diseases: causative agents, fungal, aflatoxins, bacterial. Management and Control

strategies- legislation, quarantine, chemicals, biological, cultural, mechanical and mechanical, biopesticides

KST 823: Advanced Insect Taxonomy and Morphology

Insect structure and functions: integument, primary and secondary segmentation, mouth parts and adaptations; wings and evolution; appendages; insect biology; larval forms; growth and development; biosystematics and classification: taxonomy, basis of classification, nomenclature, characteristics of phylum and class insecta; insect orders of agricultural importance.

KST 826: Pests of Horticultural and Field Crops

Economic importance of insect pests attacking horticultural and field crops; biology; reproduction; growth and development; life history; pest outbreak; crop damage; crop loss assessment; habitat; pest distribution and abundance; control measures; quarantine pests (thrips, whitefly, cucumber moth, spodoptera, American bollworm, leaf miner), invasive species (fruit flies); a study of important species.

KST 829: Crop-Pest/Pathogen Interactions

Plant pests and pathogen impacts; biology of insect and nematode pests, viruses, bacteria and fungi; symptomology, etiology, pathogenicity: genetic aspects of interactions, pathogenicity and disease resistance; basic ecological and epidemiological principles: establishment, spread and survival of plant pests and diseases; pest and disease management, post harvest pests and diseases; yield and yield loss assessment.

KST 838: Plant Resistance to Biotic and Abiotic Stresses

General principles and methods of breeding for resistance; choice of parental material; sources of resistance; inheritance of resistance; assessment and selection for resistance; development of resistant varieties; genetic variability of crop pests and pathogens; types of resistance; morphological and biochemical expression of resistance; environmental and genetic factors influencing expression and stability of plant resistance; mechanisms of plant resistance to pests and pathogens; mechanisms and breeding for tolerance to drought and, mineral deficiency and toxicity.

LEVEL 880

KST 880: Research and thesis- 8 Units

Selection of research topic will be done by the student in consultation with supervisors. Research and thesis writing will be done in year two of the study culminating with thesis submission. The thesis will be examined according to the university regulation that is written and oral presentations.