UNIVERSIDADE ESTADUAL DE SANTA CRUZ - UESC
DEPARTAMENTO DE CIÊNCIAS AGRÁRIAS E AMBIENTAIS - DCAA
PROGRAMA DE PÓS-GRADUAÇÃO EM PRODUÇÃO VEGETAL

PROGRAMA DE DISCIPLINA

CÓDIGO			DISCIPLINA
CAA739			TÓPICOS ESPECIAIS I - BIOACTIVE PLANT COMPOUNDS AND INSECT–PLANT INTERACTIONS
CRÉDITOS		CARGA HORÁRIA	PROFESSOR (A)
Teóricos	2	30h	Lawrence Ahmed Ugbe Carla Fernanda Fávaro
Práticos	-	-	
Total	2	30h	

EMENTA

Introduction to the principles of insect–plant interactions. Role of insects in ecosystems, identification of crop pests, use of insecticidal plants, extraction of plant semiochemicals, and bioassays using olfactometry. Practical activities include insect collection, preparation of insect boxes, extraction of bioactive compounds, and laboratory evaluation of insect behavior.

OBJETIVOS

At the end of the course, students will be able to:

- Understand the ecological and agricultural relevance of insect–plant interactions;
- Identify common insect pests in cropping systems;
- Apply appropriate methods to extract plant semiochemicals;
- Conduct laboratory bioassays to assess plant extract effects on insects.

METODOLOGIA

he course includes lectures, laboratory practicals, scientific article discussions, field collection, entomological box preparation, chemical extraction, and insect bioassays. Students will also present a seminar on a relevant topic.

AVALIAÇÃO

Participation in practical activities: 30%
Laboratory reports: 30%
Seminar presentation: 40%

CONTEÚDO PROGRAMÁTICO

1. **Principles of Insect–Plant Interaction (Relationship)**
   A. General introduction to insects
   I. Insects as part of the ecosystem
   II. Importance of insects to man and plants

   B. Destructive activities of herbivorous insects, parasites, and predators to crops
   I. Insects as field pests
   II. Insects as stored product pests

III. Identification of some common insect pests of crops within the environment

2. **PRACTICAL 1: PREPARATION OF INSECT BOX**
   Students shall collect insects from the field using light traps, bait, pheromones, and sticky traps. The caught insects are taken to the laboratory for the preparation of an insect box. The insect box is used for insect studies and identification. The insects in the box are labeled with the following information:
   I. Scientific name of the insect
   II. Family name of the insect
   III. Date collected
   IV. Location collected from
   V. Insect's primary host plant
3. **INSECTICIDAL PLANTS**
   I. What are insecticidal plants and their extracts?
   II. Examples of plants with insecticidal properties
4. **COMMON METHODS OF OBTAINING PLANT EXTRACTS**
   I. The maceration method
   II. Soxhlet method
   III. Ultrasonic-assisted extraction method
5. **PRACTICAL 2: EXTRACTION OF PLANT SEMIOCHEMICALS**
   Each student is to bring insecticidal plant materials (leaves, stems, or hosts) to carry out the extraction of semiochemicals in the laboratory, based on any of the methods mentioned above.
6. **PRACTICAL 3: LABORATORY OLFACTOMETER EXPERIMENT (BIOASSAY) WITH PLANT EXTRACTS**
   Students shall carry out a bioassay experiment in the laboratory to test the bioactivity of plant extracts on selected insect pests.
   The bioactivity shall be evaluated in terms of: insect repellency, antifeedant activity, oviposition deterrence, and toxicity on selected insect pests of the student's choice.
7. **SEMINAR PRESENTATIONS**
   Students shall submit seminar topics for approval and presentation. Topics shall be based on semiochemicals and their effects on plant pests and diseases.

REFERÊNCIAS

Regnault-Roger, C., Vincent, C., Arnason, J. T. **Essential Oils in Insect Control: Low-Risk Products in a High-Stakes World.** 1 ed., Springer Nature, 2021, 306 p.

Zebelo, S.A., Maffei, M.E. **Volatile-Mediated Interactions Between Plants and Insects: Involvement of Phytohormones and Semiochemicals**. 1 ed., Springer, 2020, 276 p.

Séquin, M. **The Chemistry of Plants and Insects: Plants, Bugs, and Molecules.** 1 ed., Royal Society of Chemistry, 2017, 196 p.

Haynes, K., Millar, J. **Methods in Chemical Ecology Volume 2: Bioassay Methods.** 1 ed. Springer Science & Business Media, 2012, 406 p.

Artigos científicos especializados.