

Course Title: Horticultural Entomology (5ECTS)

Course description: Class Insecta, characters, relationships with other Arthropods; importance in Ethiopian agriculture; insect dominance and adaptations; morphology, head, thorax, abdomen and the appendages; anatomy and physiology of digestive, excretory, respiratory, circulatory, nervous, reproductive systems; development and metamorphosis, ecology and classification of insects of agricultural importance, collection, preservation, handling; methods of pest management, natural and applied control, integrated pest management, principles; insecticides and their use in agriculture.

Section one: - Introduction.

- 1.1. Definitions
- 1.2. Fields of Entomology
- 1.3. Relationships of insects with arthropods classes.
- 1.4. Importance of class insect for horticultural crops
- 1.5. Success of insects

Section two: - Insect Morphology.

- 2.1. External structures of insects
- 2.2. Head and its appendages
- 2.3. Thorax and its appendages
- 2.4. Abdomen and its appendages

Section three: - Insect Anatomy and Physiology.

- 3.1. Development and metamorphosis in insects
- 3.2. Organs and systems
 - 3.2.1. Circulatory System
 - 3.2.2. Digestive System
 - 3.2.3. Respiratory System
 - 3.2.4. Excretory
 - 3.2.5. Nervous System
 - 3.2.6. Reproductive System
 - 3.2.7. Tracheal System

Section four: - Principles of Insect Taxonomy

- 4.1. Insect nomenclature and classification
- 4.2. Apterygota
- 4.3. Pterygota
 - 4.3.1. Exo-Pterygota
 - 4.3.2. Endo-Pterygota
- 4.4. Agriculturally important insect orders

Section five: Behavior of insects

- 5.1. Insect feeding behavior (Locating food source)
- 5.2. Mating and oviposition of insects
- 5.3. Migration of insects
- 5.4. Defensive behavior
- 5.5. Insect communication

Section six. - Insect Ecology

- 6.1. Habitat and life styles of insects
- 6.2. Food habit and insect host relations

- 6.3. Effects of physical and biological factors on insect life cycle
- 6.4. Distribution and abundance of insects on the ecology
- 6.5. r-k continuum of insects on the ecology
- 6.6. Interactions of insects with living matters (Intraspecific and interspecific r/ships)

7. Section seven:- Principles of insect pest control

- 7.1. Natural control
 - 7.2. Quarantine
 - 7.3. Cultural control
 - 7.4. Biological control
 - 7.5. Use of resistant varieties
 - 7.6. Chemical control
 - 7.7. Botanical
 - 7.8. Integrated pest management (IPM)
8. **Section eight.** Economic Important of insect pests on major horticultural crop

REQUIRED REFERENCE BOOKS

- Tedido, G. 1996. Agricultural Entomology, India
- Gillotte, C. Entomology 3rd edt. Insect Pest Management
- Timothy d. and Schowalter, 2006. INSECT ECOLOGY. A n E c o s y s t e m A p p r o a c h. Third Edition
- Dent, D. 2000. Insect Pest Management. 2nd Edition. CABI Bioscience UK Centre Ascot UK