

DEPARTMENT OF ENTOMOLOGY

ENTO 133

Credits 2(1 + 1)

INTRODUCTION TO ZOOLOGY AND ENTOMOLOGY

Theory

Classification of Animal Kingdom, Phylum Arthropoda and Class Insecta up to orders. Abundance of insects. Structure of body wall, body regions, typical antenna, mouthparts, legs, wings and sense organs, Metamorphosis in insects. Types of larvae and pupae.

Taxonomic characters of economically important orders - Orthoptera, Mallophaga, Dictyoptera, Isoptera, Thysanoptera, Hemiptera, lepidoptera, Coleoptera, Diptera, Siphonoptera and Hymenoptera. Important characters of families of agricultural and veterinary importance.

Plant parasitic nematodes, phytophagous mites, economically important species of rodents and earth worms.

Practicals

1. Methods of collection and preservation of insects including immature stages
2. Methods of preparation of temporary and permanent slides of insect organs
3. External characters of Grasshopper
4. Types of antennae and legs
5. Types of mouthparts and study of biting, chewing and sucking type of mouth parts
6. Wing venation, types of wings and wing coupling apparatus
7. Types of larvae and pupae
8. Taxonomic characters of orders Orthoptera, Mallophaga and Dictyoptera
9. Taxonomic characters of orders Thysanoptera and Isoptera
10. Taxonomic characters of order Hemiptera
11. Taxonomic characters of orders Lepidoptera and Coleoptera
12. Taxonomic characters of orders Diptera, Siphonoptera, and Hymenoptera
13. Plant parasitic nematodes and mites
14. Rodents and earthworms
15. Ecto parasites of veterinary importance

16. Helminthes and disease causing microorganisms of veterinary importance

References

1. Imrns General Text Book of Entomology Vol. I & II Richards O W and Davies R G 199,7 . Chapman and Hall, London
2. An Introduction to the study of Insects Donald J Borror and Dwight M DeLong Hort., 1967. Rinehast and Winston, New York

ENTO 233*

Credits 4(3 +1)

CROP PESTS AND WEED MANAGEMENT

Theory

Crop Pest Management

Distribution, marks of identification, nature and symptoms of damage, alternate hosts, hosts, biology (for major pests) and management of pests of rice, sorghum maize, sugarcane, cotton, mesta, pulses, groundnut, castor, sunflower, safflower, mustard, brinjal, bhendi, tomato, beans, crucifers, cucurbits, potato, sweet potato, moringa, chilli, mango, citrus, grapevine, cashew, egranate, guava, sapota, banana, papaya, ber, custard apple, coconut, oil palm, tobacco, turmeric, ginger, betel vine, onion, coriander, rose, jasmine, chrysanthemum, crossandra, gerbera, gladiola and tuberose, storage pests, nematodes, mites and rodents.

Weed Management

Introduction, classification of weeds, weed biology and ecology, Allelopathy. Methods of weed control. Herbicides and their classification, formulations, methods and time of herbicide application. Herbicide selectivity and mode of action. Biology and control of aquatic, problematic d parasitic weeds.

Practicals

1. Typical symptoms of damage caused by various phytophagous insects
2. Identification of insects and damage symptoms of pests of rice
3. Identification of insects and damage symptoms of pests of sorghum, maize and sugarcane

4. Identification of insects and damage symptoms of pests of cotton and mesta
5. Identification of insects and damage symptoms of pests of pulses
6. Identification of insects and damage symptoms of pests of oil seeds
- 7&8. Identification of insects and damage symptoms of pests of vegetables
- 9.10. Identification of insects and damage symptoms of pests of fruit crops
11. Identification of insects and damage symptoms of pests of spices, condiments and ornamental plants
12. Identification and damage symptoms of pests of storage, rodents and their symptoms of damage
13. Survey and identification of weeds and maintenance of herbarium
14. Calculation of herbicide dose and calibration of spray equipments
15. Estimation of weed flora in weed control experiments
16. Field application of herbicides to Important crops and studies on their after effect
17. Control of parasitic and aquatic weeds

References

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| 1. Insects and Mite pests of crops In India | Nair M R G K 1975. ICAR, New Delhi |
| 2. A text book of applied Entomology Vol.II (Agricultural, Veterinary Medical, Industrial, Forest and Forensic Entomology) | Srivastava KP1993. Kalyani Publishers, New Delhi |
| 3. Scientific Weed Management | Gupta O P 1984. Today and Tomorrow's Printers and Publishers, New Delhi. |
| 4. Principles of Weed Science | Rao V S 1992. Oxford and IBH Publishing Company, New Delhi |

** Jointly offered by Entomology and Agronomy Department.*

ENTO 335

Credits 2(1 + 1)

SERICULTURE, APICULTURE AND BENEFICIAL INSECTS

Theory

Sericulture

Brief history, silkworms - Non mulberry and mulberry silkworms, systematic position and distribution, host range, brief life cycle of non-mulberry silkworms. Mulberry silkworm-life cycle in detail, silk gland and races. Rearing house - rearing equipment, rearing appliances, disinfection and hygiene. Grainage - Acid treatment, packing and transportation of eggs, incubation, black boxing. Rearing of larvae - Young age and old age rearing of mulberry silkworm, feeding, spacing and sanitation. Cocoon characters - colour, shape, hardness, shell ratio, ' defective cocoons and stifling of cocoons. Pests and diseases of silkworm larvae and their management. Mori culture - Varieties of mulberry, package of practices - cultivation under irrigated and rained conditions, important pests and diseases of mulberry and their management.

Apiculture

Introduction, history of bee keeping, species of honeybees - rock bee, dammer bee, Indian honey bee and Italian honey bee. Life cycle of Indian and Italian honey bee (in detail) Caste distinction in all stages. Bee colony maintenance - equipments for apiary, bee colony activities, starting of a new colony, site location, colony management and bee pasturage. Honey extraction, bee wax and its uses. Pests and diseases of bees, damage, prevention and control.

Lac culture

History of lac cultivation and lac growing areas, Lac insects - life cycle and behaviour, lac cultivation, natural enemies of lac insects, kinds of lac.

Beneficial insects

Mass multiplication techniques of commonly used parasites and predators and their use in IPM. Microbial agents - Viruses, bacteria, fungi, culturing and mass multiplication techniques and their use in IPM. Pollinators, weed killers, scavengers and their usefulness.

Practicals

1. Preparation of planting material and planting of mulberry under irrigated and rain fed conditions
2. Raising of mulberry nursery and method of planting
3. Study of different species of mulberry and non-mulberry silkworms

