DISCIPLINE SPECIFIC ELECTIVE COURSE: **ALS ZOO DSE 11**

LOCUSTS AND THEIR MANAGEMENT

Credits distribution, Eligibility and Pre-requisites of the Course

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practicals/ Practice		
Locusts and their Management **ALS ZOO DSE 11**	**4**	**2**	**Nil**	**2**	Appeared in Sem-VII	**NA**

Learning Objectives:

The learning objectives of this course are as follows:

- The course aims to apprise the students of locust as one of the most dangerous pests of agricultural crops.
- To focus on identification of locust, reasons of their swarming and migratory nature which gives immense economic loss leading to national emergency of food and fodder.
- To provide knowledge about the control, monitoring and management strategies of locust.

Learning Outcomes:

By studying this course, students will be able to:

- learn about the importance of locust as serious pest that cause damage to the agro-ecosystems affecting the economy.
- learn about the habit, habitat, behaviour, morphology and different phases of locust.
- learn about the biology of locust and various methods of its control.

Theory: **30 h**

Unit 1: Introduction to Locusts **7 h**

Introduction, historical background, locust plague and upsurges, Systematic position of locusts and grasshoppers; habitat, behaviour and morphology of locusts. Difference between locusts and grasshoppers.

Unit 2: Distribution, life cycle of Locusts in India **6 h**

Locusts in India, distribution, life cycle of different species: *Schistocerca gregaria, Patanga succincta, Locusta migratoria;* damage caused by them.

Unit 3: Breeding of Locusts **5 h**

Breeding seasons and breeding areas, swarming. Biological phases: solitary, transient and gregarious. Changes in their behavior, color and structure. Biotic theory of periodicity.

Unit 4: Locust management **12h**

National and international organizations - LWO, SALO, CALO, FAO, NLCC, IRLCO-CSA (International Red Locust Control Organization for Central and Southern Africa), swarm monitoring. Control methods- Mechanical and traditional, regulatory practices,Chemical methods: ULV Sprays, dusting, baits, IGRs; advantages and disadvantages of different chemical control methods, biological practices: biopesticides, predators, parasitoids; Integrated Pest Management; Plant quarantine. Socio-Economic importance: Impact on the health of fauna and humans; on agriculture.

Practicals **60 h**

(Laboratory periods: 15 classes of 4 hours each)

1. Comparative study of different species of locusts through specimens /photographs.
2. Study of mouthparts, wings and legs of locust through specimens /photographs.
3. Study of sexual dimorphism in locust through specimens/photographs.
4. Study the life stages of the locust through specimens/slides/photographs.
5. Study of different tools used in the management of locust.
6. Study of different host plants of locust.
7. Visit to different institutes/stations/laboratories (submit a Report on visit/current status of locusts in India).

Essential/recommended readings

1. Ritchie, J. M., &Dobson, H. (1995).*Desert Locust, control operations and their environmental impact*. NRI bulletin 67, Hopps the printers Ltd.
2. Atwal, A. S.; &Dhaliwal, G. S. (2015). *Agricultural pest South Asia and their management* (8th Ed.). Kalyani publishers.
3. Pradhan, S. (2016). *Agricultural Entomology and Pest Control*. ICAR publication.
4. Pandey & Kumari R. (2021) *Locust in Indian Agriculture*. Notion press India.

Suggested readings

1. Rachadi, Tahar (2010). *Locust control handbook*. CTA publication, AJ Wagningen, The

Netherlands.
2. Krall, S; Peveling, R & Diallo, D. Ba. (1997).*New strategies in Locust Control*. Pirahauser Basel springer.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.