

Syllabus for B.Sc. (Hons) Agriculture Year – II (Sem. III)

Subject Code: 16AS0315

Subject Short Name: SEC. 3.5

Subject Name: Beneficial Insect Farming

Objective:

1. To explore information regarding Identification, mass rearing, conservation and field release of natural enemies and its role.
2. To teach students the role of beneficial insects viz., pollinators, decomposers, predators and parasitoids, soil builders, productive insects
3. To impart knowledge on the beneficial insects used under natural farming

Credits Earned: 2 Credits (0+2)

Course Outcomes: After completion of this course, Students will be able to

- Understand the concept of commercial entomology for doubling farmers' income.
- Know the field release techniques of bio-control agents and their conservation.
- Apply the concept for skill development on different rearing techniques of economically important and other beneficial insects.
- Apply the knowledge for entrepreneurial opportunities in entomology.
- Analyze the scope, importance and uses of beneficial insects.
- Gain knowledge regarding the economic entomology and processed products obtained by it.

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	Mid Sem (M)	Progressive Assessment (PA)	Viva (V)	Term work (TW)	
0	0	4	2	0	30	20	25	25	100

Practical Content:

Unit	Topics	Contact Hours
1	Identification of Different Honey Bee Species	2
2	Morphology and Structural Adaptations in Honeybees	2
3	Honey Bee Castes and Biology/Life History of Honey Bee	2
4	Honey Bee Behaviour and Communication	2
5	Identification of Bee Pasturage Plants	2
6	Bee Floral Calendar Preparation	2
7	Foraging Behaviour of Honey Bees	2
8	Role of Honey Bees in Crop Pollination	2
9	Bee hives and Beekeeping Equipment's specification and uses	2
10	Site Selection and Apiary Management	2
11	Seasonal Management of Bee Colonies	2
12	Collection, Extraction and Processing of Honey	2
13	Methods of Hive Inspection and Maintenance of Hive Records	2
14	Identification and Management of Insect Enemies of Honey Bees	2
15	Identification and Management of Diseases of Honey Bees	2
16	Principles and Methods of Migration of Bee Colonies	2
17	Identification of other important pollinators, weed killers and scavengers	2
18	Insect orders bearing predators and parasitoids used in pest control	2
19	Mass production techniques of important parasitoid (<i>Trichogramma</i> spp.) and Predator (<i>Chrysoperla</i> spp.)	2
20	Visit to research and training institutions devoted to beekeeping, sericulture, lac culture and natural enemies	2
	Total	40

Reference Books:

- Beneficial Insects and their Value to Agriculture. Getanjaly, Vijay Laxmi Rai, Preeti Sharma and Ranjit Kushwaha, 2015. Res. J. Agriculture and Forestry Sci. Vol. 3(5), 25-30.
- Integrated Pest Management: Concepts and Approaches, Integrated Pest Management: Concepts and Approaches, G. S. Dhaliwal, and R. Arora, Kalyani Publisher, 2002
- Agricultural Entomology and Pest Control, Agricultural Entomology and Pest Control, S. Pradhan, ICAR Publication, 1983
- Entomology and Pest Management, L. P. Pedigo, Macmillan Publishing Company, 1989
- Insects and Mites of Crops in India, Insects and Mites of Crops in India, M. R. G. K. Nair, ICAR Publication, 1975
- Importance of Beneficial Insects in Agriculture. Reddy, A, Anusha, C., Ramprasad, B., Kumar, R & V. Daravath. (2022). In Research Trends in Multidisciplinary Research and Development (pp.7-24) Publisher: Wiser publications, Germany.

Instructional Method:

1. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by white board may also use any of tools such as demonstration, role play, quiz, brain storming, MOOCs etc.
2. The internal evaluation will be done on the basis of continuous evaluation of students in the class-rooms.
3. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory/ field.
4. Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.