

## INTRODUCTION

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Agricultural Crops are prone to the attack of a number of pests destructing the different parts of plants. It is estimated that, on an average 35% annual world crop loss is due to the pests (i.e. insects, Pathogens and weed) (Cramer, 1967). The protection of crops from various kinds of pests remains a pressing problem. The introduction of high yielding varieties also has increased the pest problem. Various techniques like Hormonal control, Radiational control, Genetic control, Behavioural control, Biological control, Pheromones Allomones Kairomones etc. are the components of Integrated pest management (IPM). But Hormonal, Genetic and Radiational and sterilisation have not proved too be successful in pest management, chemical pesticides afford only temporary relief from insect pests, but their massive overuse and frequent misuse have resulted in serious world wide problems. Its toxicity hazards to man, plants, domestic animals, wildlife, contamination of soil, water of food chains and wholesale pollution of the environment. Reliance on chemical pesticides is not likely to provide a solution to pest problems.

Safer, less costly alternatives to chemical control are therefore desirable. Biological control, with its firm basis in sound ecological principles and in vast practical experience is by far the most successful and most promising of these alternatives.

Biological control may be defined as the utilization of natural enemies to reduce the damage caused by noxious pests. The utilisation of natural enemies is an inexpensive, non-hazardous success in applied biological control is often dependent on a thorough understanding of the organisms involved both injurious and beneficial and their intricate interactions. Basic studies of the systematics, biology and ecology of pests and their natural enemies are the integral part of the field of biological control.

The modern history of biological control can be dated from the spectacular control of the cottony cushion scale, Icerya purchasi on citrus in California by the Vedalia lady beetle.

Hundreds of biological control projects have been successfully carried out in many parts of the world. Biological control has proved very successful under very diverse circumstances in continental areas as well as on islands, in temperate as well as tropical climates on annual as well as perennial crops in forests.

The recent trend towards integrated pest management (IPM) should not obscure paramount importance of biological control. Any integrated multidisciplinary management programme should definitely include active biological control project as major component.

In India after the establishment of the Indian station of commonwealth Institute of Biological control (CIBC) at Bangalore in 1957 gave a fill up to the study of entomophagus insects, since then a number of centres are actively engaged in the biological control programme, Amongst them the central Biological control stations at Gorakhpur (U.P.); Solan (H.P.); Hyderabad (A.P.); Sri Ganganapur (Rajasthan); Indian Agricultural Research Institute, Pusa (New Delhi); International crop Research Institute for the semi Arid Tropics, Patanchery (A.P.); Tamilnadu Agriculture University, Coimbtore; Marathwada University, Aurangabad, Shivaji University, Kolhapur; Bio-control Research Laboratory Chengal Pattu and other agricultural universities are outstanding. DeBach (1964) defined Biological control as "the action of parasitoids, predators and Pathogens in maintaining other organisms density at a lower average than would occur in their absence". Though Biological control is variously defined basically it is use of natural agents, usually parasitoids predators and pathogens to increase the mortality of the pest.

The term "Parasitoid" was firstly used by Reuter in 1913. Adult female parasitoids are free living, feed on nectar, pollen or as predators and forge actively for their arthropod hosts on plants and other substrates. Usually on locating a host the female lays one or more egg on or in it and ensuing consumes the host tissue, killing the host. The parasitoid life style is found chiefly in the orders Strepsiptera, Hymenoptera and Diptera their density makes identification and systematic studies difficult which hampers, many aspects of research.

The order Hymenoptera is extremely important from the view of Biological control of insect pests. Ichneumonidae, Braconidae, Chalcidae, Thricogrammatidae, Eurotomidae are the parasitic families of order Hymenoptera. Among the parasitic families, Ichneumonidae is the first largest family in the Hymenoptera. The Ichneumonids studied at world level by Haliday (1883), Ashmead (1906), Imms (1935), King (1984). There are numerous reviews available on inundative releases in biological control and integrated pest management. Fox and Fox (1963), Mani (1968, 1989), Coppel and Mertin (1977), Kushwaha (1977), Butani and Jotwani (1984), Ballal (1989). Previous investigations were done on Ichneumonides by Charpentier et al (1969), Pradhan (1969), Fisher (1971), Huffaker et al (1971) and Huffaker (1971), Oatman and Platner (1974), Solayappam et al (1974), Nikam and Basarkar (1976), House (1977), Nikam (1980), Ross (1981), Sathe (1987a, 1971b), Nikam and Kanhekar (1987), Kanhekar and Nikam (1981), Sathe and Shantkumar (1989), Sathe (1990).

Economical exploitation of parasitoids will be possible and fruitful, if we have information on their systematics of pests and parasitoids which is the basis for Biological control programme.

Thus, the taxonomic knowledge of parasitoid is essential for the progress of Biological control and also predicts directions for further research and exploration. Keeping in view the above facts the present work is carried out.

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