

Pests of Chrysanthemum in Winter Season

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Abstract

Chrysanthemum is one of the most important crops under floriculture, having high cut flower production. Its productivity and marketability are decreasing considerably due to insect pest damage causing economic loss to the growers. Hence it is imperative to understand about the pest complex of chrysanthemum that attack and affect its yield.

Introduction

The name Chrysanthemum (*Dendranthema grandiflora* Borkh) was derived from Greek words *Chryos* - golden, *anthos* - flower belonging to the family Asteraceae. Chrysanthemum was cultivated in China as early as 15th century BC. It is commonly known as “Queen of the East” or “Autumn flower”. It was recognized as one among the five commercially important flower crops in India (Janakiram *et al.* 2006). The total area under chrysanthemum cultivation in Andhra Pradesh is 3198 ha with the production and productivity being 36777 MT and 11.50 tons/ha respectively. Despite of its high production, the productivity and marketability are declining considerably owing to several factors the most important being damage caused by insect pests such as aphids, caterpillars, mites, whiteflies, thrips and leaf miners (Saicharan *et al.* 2017). Hence it is imperative to know something about the pests which despoil and damage these plants and methods to combat the same (Butani 1974 and Saicharan *et al.* 2017). The distribution, identification, nature of damage, symptoms, biology and management of chrysanthemum pests are described below with respective sub-headings:

1. Black aphid, *Macrosiphoniella sanborni* (Aphididae: Hemiptera)**Distribution:**

It is distributed throughout the India.

Host plants:

This aphid species is a monophagous pest of chrysanthemum only.

Appearance:

Spindle shaped, dark reddish brown to blackish brown aphids. Apterous forms measure 1.0-2.3 mm, alatae forms measure 1.8-2.6 mm, Antenna is almost equal to body length.

Nature of damage:

They appear in the flowering season. They multiply enormously and are found covering the tender shoots and buds. They feed on the sap of the plants. Vigour of the plant is reduced and the quality of the flower is reduced. Severe infestation results in disfiguring and withering of flowers. Feeding puncture marks are also observed on the flower. As the plant matures, large amount of honey dew is also excreted by the insect, which gives a sticky appearance on touch. A black fungus may also develop on the honey dew excreted by these insects giving an ugly appearance to the plant. By the end of the flowering season, winged aphids appear. Yellowing and drying of tender shoots is also observed (Saicharan *et al.* 2017).

Management:

- Pruning of infested plant parts.
- Chrysanthemum germplasm viz., Anuradha, Aparjitha, Asha, Chandi, F-52, Heritage, PC-31, Rangoli, Redstone and Ushakiran were found to be resistant against aphid (Ramireddy *et al.* 2004).
- Spray application of Imidachloprid 18.5 SL @ 0.3 ml/l (Saicharan *et al.* 2017). Dimethoate 30 EC (Rogor) @ 2 ml/l at the appearance of the pest.

2. Composite thrips, *Microcephalothrips abdominalis* (Thripidae: Thysanoptera)**Distribution:**

It is distributed all over India.

Host plants:

It infests Asteraceae plants viz., *Helianthus annuus*, *Chrysanthemum* spp. etc.

Appearance:

Nymphs are tiny, slender, fragile and straw coloured. Adults have heavily fringed wings.

Nature of damage:

Nymphs and adults suck the sap. Leaves become crinkled, curled upward and shed. Buds become brittle and drop. Plants become stunted and bronzed (Saicharan *et al.* 2017).

Management:

- Pruning of infested shoot, twigs and flower buds.
- Spray 500 ml of Fipronil (Reagent Jump) 5 % SC @ 2 ml/l, Dimetoate 30 EC (Rogor) @ 2ml/l.

3. Leaf folder, *Hedylepta (Lamprosema) indicata* (Pyraustidae: Lepidoptera)

Distribution:

It is widely distributed all over India.

Host plants:

It infests host plants *viz.*, Soyabean and chrysanthemum.

Appearance:

Larva is green in colour with white stripes. Adult is orange coloured moth with dark lines.

Nature of damage:

Larvae feed on the epidermal tissues of the leaves by webbing the leaves together. Symptoms are skeletonisation and shedding of the leaves.

Management:

- Cutting and removal of infested leaves.
- Spray application of Chlorpyrifos 20 EC @ 2ml/l, Thiodicarb 75 WP (Larvin) @ 0.75 ml/l.

4. Fruit borer, *Helicoverpa armigera* (Noctuidae: Lepidoptera)

Distribution:

It is cosmopolitan in nature and distributed widely in all states of India.

Host plants:

It is a polyphagous pest infesting crops like bhendi, rose, cotton and pulse crops.

Appearance:

Eggs are shiny, cream coloured. Larva is dark green to varied colour. There is a white longitudinal line on either side of the body. Adult is a stoutly built yellowish brown moth. There is a “V” or kidney shaped greyish speck on the fore wing. The hind wings are whitish and lighter in colour with broad blackish band along the outer margin.

Life cycle:

A female oviposits as much as 750-1500 eggs singly on tender plant parts. Eggs are greenish yellow in colour and they hatch in 2-3 days and newly hatched larva feeds by scrapping the tender parts of foliage. The fully fed larva pupates in 13-17 days. Pupa is dark brown coloured with a posterior spine. Pupal period lasts for 8-15 days. There are eight generations in a year.

Nature of damage:

The larva bores into the fruit by inserting their heads inside whereas their body is present outside. They make the flowers unfit for marketing. In severe cases of infestation, more than 80% flowers get damaged (Saicharan *et al.* 2017).

Management:

- Planting of Marigold as trap crop (1:16 ratio)
- Installation of pheromone traps i.e., ‘Helilure’ @ 4/ acre.
- Release of egg parasitoid, *Trichogramma chilonis* @ 20,000/acre.
- Erection of 20 bird perches/ acre.
- Spray application of NPV @ 250 larval equivalents/ha in 1125 l of water/ha (or) *Bacillus thuringiensis* var. *kurstaki* @ 1.5 kg in 1125 l of water/ha during evening hours.
- Spray application of Chlorpyrifos 20 EC @ 2 ml/lit, Flubendiamide 480 SC (Fame) @ 1 ml/l and Fenvalerate 0.4% D @ 20 kg/ha.

5. Leaf miner, *Liriomyza trifolii* (Agromyzidae: Diptera)

Distribution:

It is an exotic pest originated from California during transport of chrysanthemum seedlings in 1990 (Singh, 2004 and Raghuteja *et al.* 2022). It is distributed widely throughout India.

Host plants:

It is a polyphagous pest attacking over 47 genera in ten families. Some of the crops

attacked include beans, carrot, celery, cucumber, gourds, brinjal, hibiscus, lettuce, onion, pea, pepper, potato, pumpkin, spinach, squash, tomato, watermelon, and some ornamental crops. It is a serious pest of chrysanthemum.

Appearance:

Eggs are small, creamy white in colour and oval shaped. The maggots are apodous, bright yellow to yellowish green in colour, measuring 1/6 inch in length. Pupa is distinctly segmented and yellowish brown in colour. Adult fly is yellowish black coloured fly measuring about 1.5 inch of length.

Life cycle:

Eggs are laid in upper or lower surface of the leaf. Eggs hatch in 2-4 days. Larva feeds between the epidermal layers. Larval stage is completed in 6-7 days. Larva on maturity, makes a longitudinal slit in the leaf, comes out and pupates in the leaves or in the soil.

Nature of damage:

Larva mines and feeds on the chlorophyll in between the epidermal layers of the leaves. Characteristic symptom of serpentine mining is observed. Severely affected leaves dry and drop. Large population of the pest destroys leaves in large extent and affects the growth of plants(Saicharan *et al.* 2017).

Management:

1. Spray application of neem based formulations *viz.*, neem oil @ 3 ml/l, Azadiracthin 10,000 ppm @ 1 ml/l.
2. Spray application of Chlorpyrifos 20 EC @ 2 ml/l, Thiodicarb 75 WP @ 0.75 ml/l and Flubendiamide 480 SC @ 1 ml/l.

Conclusion

Insect pests are a serious menace to the profitable cultivation of Chrysanthemum flowers. We can overcome the problem of pest complex in chrysanthemum by implementing Integrated Pest Management technology. An eco-friendly alternative to chemical pesticides is the use of bio-pesticides, which encompasses a broad array of microbial pesticides and bio-chemicals derived from micro-organisms and other natural resources, which confer protection against pest damage.

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