Seasonal incidence of insect pests of chrysanthemum in Maddur and Palgutta villages of Ranga Reddy district, Telangana

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 Received: 15.6.2017/Accepted: 9.7.2017

ABSTRACT

Roving survey was carried out to determine seasonal incidence of various insect pests on chrysanthemum crop commercially grown in the farmer fields (Fields 1-4) in Maddur village of Shabad Mandal and Palgutta village (Fields 5-7) of Chevella Mandal of Ranga Reddy district, Telangana. The incidence of leaf miner, aphids and thrips fluctuated from field to field significantly. Field 1 of Maddur village and Field 5 of Palgutta showed higher incidence of insect pests as compared to other five fields. This could be due to the fact that these were commercially cultivated fields and hence pesticides were used from time to time to keep pest under check. It is imperative to take all the pest management tactics in a way that are economically feasible, sustainable and ecologically sound.

Keywords: Chrysanthemum; roving survey; pest incidence, predators

INTRODUCTION

One of the most beautiful flowering plants, chrysanthemum (*Dendranthema grandiflora* Borkh) is extolled to as 'Queen of the East'. Also known as 'Autumn flower' it has been 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 (http://nhb.gov.in). The production is high but productivity and marketability are decreasing considerably due to several factors the most important being damage caused by insect pests such as aphids, caterpillars, mites, whiteflies, thrips and leafminers. Hence it is imperative to know something about the pests which despoil and damage these plants and methods to combat the same (Butani 1974). The information on pest complex and seasonal incidence in a specific agro-ecosystem is very much essential in devising pest management strategies as it clearly reveals the insect peak activity as well as insect-free periods during crop growth.

MATERIAL and METHODS

Roving surveys were conducted in chrysanthemum fields of Maddur village of Shabad Mandal (Fields 1-4) and Palgutta village of Chevella Mandal (Fields 5-7) to monitor the pest incidence in the farmers' fields. The chrysanthemum plants sampled were all grown in red soils in an area of 0.5 acre/farmer protected by insecticide sprays. It was found that farmers took up insecticide sprays starting from bud initiation to end of flowering season at 10-15 days intervals. The most commonly used insecticide was imidacloprid 17.8 SL (Confidor, Tatamida, Victor). Leaf miners, aphids, thrips and leaf eating caterpillars were observed infesting the crop at various stages of crop growth. All the fields sampled were transplanted at the same time window of 20 to 30 July 2013.

In each field 10 plants were selected randomly and total number of leaf mines present on each plant was counted. Average number of aphids present on randomly selected top, middle and bottom leaves of a

plant was recorded and likewise readings for ten randomly selected plants were taken.

The selected branch was tapped over a white paper and number of thrips dropped off the flower was counted using 10x magnifying lens; likewise readings for ten flowers per plant in ten randomly selected plants were recorded. Data on leaf feeding caterpillars were also recorded on ten plants per field.

RESULTS and DISCUSSION

The leaf miner first appeared in the first fortnight of August in the pre-flowering stage and continued till the first fortnight of November. After a three month gap the pest reoccurred in the month of February (Table 1). Peak infestation of leaf miner was observed in the second fortnight of September (7.67 leaf mines/plant) after which the population gradually declined to nil from second fortnight of November to second fortnight of January. The leaf miner reappeared in first fortnight of February and reached a peak in the first fortnight of March (5.03 leaf mines/plant). Perusal of the data on leaf mines/plant showed that these ranged from 1.45 to 3.27 mines/plant in Maddur village and 2.49 to 3.28 mines/plant in Palgutta village over the crop season (Table 2).

Aphid incidence was first observed in both villages in the second fortnight of August which reached a peak in the first fortnight of January (45.17 aphids/plant) and then gradually declined by March occurring both in pre-flowering and flowering stage. Between the fields the aphid population per plant varied between 9.59 and 32.71 over the crop season. The incidence of aphids increased substantially from 2nd fortnight of November (35.20 aphids/plant) to first fortnight of January coinciding with peak bud and flower formation (Table 1).

The first appearance of thrips was observed in Maddur village in the first fortnight of October. The infestation suddenly rose from first fortnight of January (3.60 thrips/plant) to first fortnight of February (5.58 thrips/plant) coinciding with the peak flowering season. The mean population over the crop season ranged between 2.14 and 3.37 thrips/plant in Maddur village and 1.77 and 3.21 thrips/plant in Palgutta village (Table 2).

Table 1. Incidence of insect pests at different stages of chrysanthemum in farmers' fields at Ranga Reddy district, Telangana

Crop stage	Date of sampling	Number of leaf mines/plant	Number of aphids/plant	Number of thrips/plant	Number of caterpillars/plant
Nursery					
	16 Jul 2013	0.00	0	0.00	0.00
Vegetative stage (pre-flowering)					
	1 Aug 2013	1.37	0	0.00	0.00
	16 Aug 2013	4.80	1.54	0.00	0.29
	1 Sep 2013	5.36	11.78	0.00	2.14
	16 Sep 2013	7.67	17.24	0.00	3.29
	1 Oct 2013	6.61	24.78	0.27	5.43
Buds and flower formation stage (flowering stage)					
	16 Oct 2013	1.37	23.40	1.58	2.86
	1 Nov 2013	0.14	15.88	2.52	4.43
	16 Nov 2013	0.00	35.20	2.73	1.71
	1 Dec 2013	0.00	34.00	3.44	1.57
	16 Dec 2013	0.00	44.21	2.96	2.00
	1 Jan 2014	0.00	45.17	3.60	7.57
	16 Jan 2014	0.00	30.64	5.53	4.43
	1 Feb 2014	3.01	16.82	5.58	2.43
Senescence (post-flowering)					
	16 Feb 2014	3.76	4.47	5.43	3.00
	1 Mar 2014	5.03	0.57	4.73	3.00
	16 Mar 2014	1.93	0	3.38	1.43
Mean		2.41	17.98	2.45	2.68
SD		2.63	15.78	2.12	1.98

Table 2. Incidence of different insect pests on chrysanthemum in farmers' fields at Ranga Reddy district, Telangana

Field number	Number of leaf mines/plant	Number of aphids/plant	Number of thrips/plant	Number of caterpillars/plant
Village Maddur				
Field 1	3.27	29.27	3.37	4.53
Field 2	1.71	9.59	2.14	3.12
Field 3	1.94	19.41	2.35	3.71
Field 4	1.45	10.89	2.28	0.24
Village Palgutta				
Field 5	2.77	32.71	3.21	4.88
Field 6	2.49	10.36	2.06	0.24
Field 7	3.28	13.64	1.77	1.47
Mean	2.41	17.98	2.45	2.68
SD	0.68	8.81	0.55	1.80

The incidence of *Spodoptera litura* and *Helicoverpa armigera* was recorded on 10 randomly selected plants and first infestation was observed during second fortnight of August in Maddur village (4.5 larvae/10 plants) (Table 1). Two peaks were observed in the first fortnight of October (5.43 larvae/10 plants) and first fortnight of January (7.57 larvae/10 plants) and the larvae were found on the stalks and flowers. The mean population of caterpillars observed in Maddur village was 0.24 to 4.53 larvae/plant and 0.24 to 4.88 larvae/plant in Palgutta village over the crop season (Table 2).

It can be observed from the roving survey data that the pest incidence in seven fields was not uniform and highly fluctuating. Field 1 of Maddur village and Field 5 of Palgutta showed higher incidence of insect pests as compared to other 5 fields (Table 2). This could be due to the fact that these were commercially cultivated fields and hence plant protection chemicals were used from time to time to keep pests under check.

Two species of ladybird beetles were found predating on the aphids. They were identified as *Coccinella septumpunctata* (Linnaeus) and *C trifasciata* (Linnaeus) whereas the common predator of thrips found on the flowers was identified as *Orius insidiosus* (Say).

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