

## Effect on the growth and yield due to the aphid, *Dactynotus sonchi* Linn. in safflower

D S SURYAWANSHI and V M PAWAR  
Marathwada Agricultural University, Parbhani 431 402, India

MS received 21 August 1979; revised 4 January 1980

**Abstract.** Field experiments were conducted in paired plots to assess the losses due to *Dactynotus sonchi* Linn. in the yield of safflower in two successive winters 1977-78 and 1978-79. The percentage losses in the number of capitula per plant and in seed yield have been calculated and discussed. Excepting the secondary branches per plant, all the yield contributing characters and the seed yield showed significant differences in treated and untreated plots.

**Keywords.** *Dactynotus sonchi* Linn; aphids; safflower yield.

### 1. Introduction

Safflower suffers from serious damage due to aphid *Dactynotus sonchi* Linn. every year during winter season in Maharashtra. Studies on the extent of infestation and losses in different crops have been undertaken by many workers (Bindra and Vaishampayan 1965; Rawat and Jakhmola 1967; Srivastava 1972; Rawat and Sahu 1973, and Karve *et al* 1978). The present investigation was undertaken to assess the losses due to this aphid in the safflower yield.

### 2. Material and methods

Field experiments were conducted in paired plots with five replications at the Agriculture College Farm, Parbhani during the winter seasons of 1977-78 and 1978-79. The plot size was 5.4 × 3.0 m. One set of plots was treated with 0.03% diamethoate regularly for the control of aphids at an interval of 10 days starting from 30 days after sowing at which time the aphids appeared in the field. Another set of plots was allowed to develop natural infestation by the aphids. Observations were recorded on the population of aphids and on the yield contributing characters, viz., primary and secondary branches per plant, plant height, number of capitula per plant, capitulum diameter, seeds per capitulum, hundred seed weight, and on the yield of safflower.

### 3. Results and discussion

Results obtained during the winter season of 1977-78 are given in table 1. Treated plots showed negligible infestation due to aphid but the untreated plots were

Table 1. Effect of incidence of aphid, *D. sonchi* on the yield of safflower (1977-78).

Particulars	Treated plots	Untreated plots	per cent loss in untreated plots	t Test at 5%
Average number of aphids/leaf	Nil	19.3	..	Significant
Average number of capitula/ plant	18.64	10.76	42.2	Significant
Average number of infested capitula/plant	Nil	0.68	..	Significant
Average yield/ha (Kg.)	617	244	60.45	Significant

Table 2. Effect of incidence of aphid *D. sonchi* on the yield of safflower (1978-79).

Particulars	Treated plots	Untreated plots	Per cent loss in untreated plots	t Test
Average number of aphids/leaf	0.7	12.12	..	**
Primary branches per plant	8.2	5.8	29.26	*
Secondary branches per plant	9.8	5.46	44.28	***
Average plant height (cm)	58.00	56.16	3.17	*
Average number of capitula/plant	19.44	12.08	32.71	*
Capitulum diameter (cm)	9.78	6.49	33.64	**
Seeds/capitulum	25.76	18.96	26.35	**
Hundred seed weight (g)	14.00	9.60	31.42	**
Seed yield/ha (Kg)	715	325	54.54	**

\* Significant at 5% level.

\*\* Significant at 1% level

\*\*\* Non significant.

heavily infested. The incidence of other pests was negligible. The total number of capitula per plant and yield were significantly less in untreated plots (244 kg/ha) than the treated plots (617 kg/ha). Average percentage of infested capitula per plant was 0.68 in untreated plots while in treated plots it was totally absent.

The results obtained during the winter season of 1978-79 are presented in table 2. The average population of aphids per leaf in treated plots was 0.7 and it was 12.12 in untreated plots. It was observed that the percentage losses in untreated plots in the yield contributing characters, viz., primary and secondary branches per plant, plant height, number of capitula per plant, capitulum diameter, seeds per capitulum, and hundred seed weight were 29.26, 44.28, 3.17, 32.71, 33.64, 26.39 and 31.42 respectively. The percentage loss in seed yield was 54.54. Excepting the secon-

dary branches per plant, the yield contributing characters showed significant differences in the treated and untreated plots.

Thus it is evident from the foregoing that due to aphid infestation on safflower, on an average 381 kg of seed yield/ha were reduced which could be avoided by the application of a suitable insecticide.

The present findings agree with the findings of Karve *et al* (1978), who recorded the loss in seed yield in unprotected crop of safflower to the tune of 55% as compared to fully protected crop. The extent of reduction in seed yield of 35% and 36.05% in safflower has been estimated by Bindra and Vaishampayan (1965) and Bhumanwar and Thontadarya (1979) respectively.

## References

- Bhumanwar B S and Thontadarya T S 1979 Estimation of the safflower crop loss due to the aphid, *Dactynotus compositae* Theobald (Hemiptera : Aphididae) under rainfed condition; *Pestology* 3 18-19
- Bindra O S and Vaishampayan S M 1965 Studies on the chemical control of safflower aphid, *Dactynotus compositae* Theobald; *Indian Oil Seeds J.* 9 113-118
- Karve A D, Murugkar V K and Quadri S M H 1978 Assessment of yield reduction due to aphid infestation. Report on resistance of safflower (*Carthamus tinctorius* L.) to insects and diseases, Nimbkar Agricultural Research Institute, Phaltan pp. 58-60
- Rawat R R and Jakhmola S S 1967 Estimation of loss in grain yield in different varieties of tur, (*Cajanus cajan*) by pod fly, plume moth, pulse beetle and other means; *Madras Agric. J.* 54 601-602
- Rawat R R and Sahu H R 1973 Estimation of losses in growth and yield of okra due to *Empoasca devastans* Distant and *Earias* sp; *Indian J. Ent.* 35 752-754
- Srivastava O S 1972 Estimation of loss in T-21 variety of arhar (*Cajanus cajan* Linn.) due to tur pod fly (*Melanagromyza obtusa* Malloch). *Indian J. Ent.* 34 82-83