

Short Communication

Efficacy of Some Insecticides Against Sesame Gall Fly, *Asphondylia sesami* Felt.

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The sesame, *Sesamum indicum* L. (Family Pedaliaceae), is the major *kharif* oil seed crop grown in Rajasthan on a total area of 6,91,590 ha, with an annual production of 1,17,628 tonnes (Anonymous, 1991). The sesame gall fly, *Asphondylia sesami* Felt. (Diptera, Cecidomyidae), a major pest causing extensive damage to this crop (Narayana, 1961), appears regularly in the transitional plains of Luni basin in western Rajasthan. The maggots feed the flower buds, which gets malformed to unproductive galls. Population of this pest can be minimized by destroying the infested buds (Vora *et al.*, 1985). The natural enemies, *Eurytoma dentipectus* Gohan and *E. nesiotetes* (Hymenoptera, eurytomidae), parasitize its maggots. However, not much information is available on the management of this pest on sesame. It is well known, that chemical control measures are of utmost importance, in the integrated pest management. Economical chemical control schedule is the requirement of this system. As such, a study was conducted to evaluate the bioefficacy of commonly used insecticides against this pest.

Field trails were laid out during three consecutive *kharif* seasons (1990-92), at Agricultural Research Station, Keshwana, Jalor, in randomized block design, with four replications in 4 x 3 m plots. The crop (var. RT-46) was raised with 30 cm row to row and 10 cm plant to plant distance. There were seven treatments, viz., carbaryl 50 WP @ 0.1%, phosalone 35 EC @ 0.05%, monocrotophos 36 WSC @ 0.04%, phosphamidon

86 EC @ 0.03%, malathion 5% dust @ 25 kg ha⁻¹, quinalphos 25 EC @ 0.05% and plain water (control). Five plants were randomly tagged in each plot for recording the observations on fly damage. The treatments were applied with knap sack sprayer at the initiation of capsule formation and repeated after fifteen days. The total number of capsules and number of malformed capsules (galls) were recorded from observational plants and per cent malformed capsules were computed. The per cent malformed capsules and the seed yield in each treatment were subjected to analysis of variance. The benefit cost ratio was worked out on the basis of average cost of insecticides, labour and seed yield over a period of three years. The average cost of carbaryl 50 WP, phosalone 35 EC, monocrotophos 36 WSC, phosphamidon 86 EC, malathion 5% dust and quinalphos 25 EC were Rs. 300.00 kg⁻¹, Rs. 168.00 L⁻¹, Rs. 335.50 L⁻¹, Rs. 301.00 L⁻¹, Rs. 9.20 kg⁻¹ and Rs. 219.00 L⁻¹, respectively. The labour cost in the insecticidal application was Rs. 22.00 per day, whereas, the cost of the seed was Rs. 13.00 per kg.

A good check of the gall fly damage was afforded by the spray of monocrotophos 36 WSC and phosphamidon 86 EC significantly reducing the malformed capsules to 2.56 and 3.00%, respectively, over these years (1990-92), whereas, in control 37.53% capsules were malformed. Tewari *et al.* (1987) observed that 500 g a.i. ha⁻¹ phosphamidon applied at 10 day interval gave effective control of *Asphondylia* sp. on brinjal. The carbaryl 50 WP was ranked in the middle order of effectivity and showed 5.92% malformed capsules. Hub-

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Table 1. Bioeconomic efficacy of commonly used insecticides against sesame gall fly (pooled mean, 1990-92)

Treatment	Per cent malformed capsules (galls)	Seed yield (kg ha ⁻¹)	Net returns over control (Rs. ha ⁻¹)	Benefit - cost ratio
Carbaryl 50 WP	5.92 (13.61)*	755	2441.00	3.01:1
Phosalone 35EC	14.53 (22.52)	611	1361.00	4.24:1
Monocrotophos 36WSC	2.56 (8.62)	827	4009.00	7.92:1
Phosphamidon 86EC	3.00 (9.32)	810	4131.09	18.44:1
Malathion 5% dust	16.88 (24.16)	707	2482.04	5.54:1
Quinalphos 25EC	15.83 (23.31)	729	2657.38	5.04:1
Water (control)	37.53	474	-	-
S.Em. ±	0.69	13	-	-
CD (p=0.05)	2.03	38	-	-

* Figures in parentheses are angular transformed values

baishan (1989) reported that carbaryl 80 WP reduced the infestation of *A. sesami* significantly and increased the seed yield.

The seed yield obtained under monocrotophos 36 WSC (827 kg ha⁻¹) and phosphamidon 86 EC (810 kg ha⁻¹) were statistically at par and were significantly superior over other treatments and control (474 kg ha⁻¹). The phosphamidon 86 EC exhibited quite high net returns (Rs. 4131.09) and benefit cost ratio (18.44:1). The highest net returns and benefit cost ratio in this treatment appeared to be due to its high effectivity and requirement of low quantity, due to high active ingredient content. This treatment was followed by monocrotophos 36 WSC, which provided a net return of Rs. 4009.00 and benefit cost ratio of 7.92:1. The malathion 5% dust, quinalphos 25 EC and phosalone 35 EC were ranked in the middle order as far as seed yield and benefit cost ratio are concerned. The carbaryl 50 WP exhibited high seed yield (755 kg ha⁻¹) after monocrotophos and phosphamidon, but net returns over control (Rs. 2441.00) and benefit

cost ratio (3.01:1) were low due to its high cost and requirement of more quantity for pest control.

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