

Efficacy of botanicals for the control of safflower aphid (*Uroleucon compositae* T.)

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ABSTRACT

Field experiments were conducted with five treatments for the management of aphid (*Uroleucon compositae* T.) on safflower cultivar Bhima during post rainy season of 2005-06 and 2006-07. The spray fluid @ 500 L ha⁻¹ was used to each of the treatment. Every year, two sprays of all the treatments except seed treatment and absolute control were applied at an interval of 15 days commencing from 15-20 days after the first aphid occurrence (>ETL). The seed treatment was given at the time of sowing. The fermented extract of dashparni was prepared on w/v basis by soaking the leaves of all ten plants in the clean water for the period of one month prior to the spraying. A daily shake was given for better soaking of the leaves. The treatment of jivamrut was a mixture of 5 litre cow-urine, 1 kg jaggary, 1 kg crushed grains and 1 kg cow dung for each plot (4.00 x 4.50 m²). The seed yield (kg ha⁻¹) of each treatment was recorded at harvest. The treatment with 0.03 % dimethoate was the most effective in suppressing aphid infestation and producing good seed yield (1002 kg ha⁻¹) followed by seed treatment (684 kg ha⁻¹), goneem (578 kg ha⁻¹) and dashparni (540 kg ha⁻¹). The other two formulations viz., jivamrut and cow-urine were relatively less effective for aphid control and producing seed yields as well.

Key words : Botanicals, Safflower, Aphid (*U. compositae* T.)

INTRODUCTION

Safflower aphid, *Uroleucon compositae* Theobald is one of the major sap sucking pests infesting the Safflower (*Carthamus tictorius* L.) particularly from its elongation stage up to flowering period (Akashe *et al.*, 1999). The seed yield losses caused due to this pest were reported from 35 to 72 per cent during heavy infestation periods (Suryawanshi and Pawar, 1980). Effective chemical control measures have been developed for its control which involve a number of insecticide treatments (Dhange *et al.*, 1996; Charati and Pawar, 1998; Neharkar *et al.*, 2003). The major limitations of this method are insecticidal hazards and high cost of cash inputs for plant protection. The relative efficacy of some of the botanicals against safflower aphid has been reported by earlier workers also (Akashe and Shewale, 1997; Akashe *et al.*, 1998; Pal *et al.*, 1999; Akashe *et al.*, 2007). The natural products are safe and eco friendly for pest management as they do not harm the parasites and predators and cause environmental pollution (Ingawale *et al.*, 2005). Efforts were, therefore, made in this direction to evaluate the botanicals in comparison with the presently recommended dimethoate 30 EC @ 0.03 per cent spray as well as seed treatment with thiamethoxam 70 WS @ 5 g kg⁻¹.

MATERIALS AND METHODS

The field experiments were conducted with Bhima variety of safflower during the year 2005-06 and 2006-07 with plot size of 4.0 x 4.5 m². The experiments were

carried out in Randomized Block Design with seven treatments and three replications. Two applications as per treatment details in Table 1 were given at 40 and 55 days after sowing during each season. The treatment of dashparni was a fermented extract of different ten plant leaves (w/v basis) which included 5 per cent neem leaves (*Azadirachta indica*) and 2 per cent each of ghaneri (*Lantenna camera*), nirgudi (*Vitex negurida*), popaya (*Carica papaya*), dhotra (*Datura innoxia*), rui (*Calotropis gigantea*), kanher (*Nerium indicum*), van erandi (*Jatropha curacus*), karanj (*Pongamia pinnata*) and custard apple (*Annona squamosa*). The observations on aphid count were recorded on 5 cm apical twig plant⁻¹ on five randomly selected plants in each treatment at fortnightly intervals. The seed yield (kg ha⁻¹) of each treatment was recorded at harvest. The benefit cost ratio of each treatment was also worked out for comparison.

RESULTS AND DISCUSSION

The data presented in Table 1 revealed that all the treatments recorded significantly less aphid population than the absolute control after both the sprays (66.33 and 62.08 aphids plant⁻¹). However, the pre count before first spray was non significant which indicated the uniformity of pest population in all treatments. The results also revealed significant reduction in the population of aphids on safflower. In the plots treated with dimethoate 0.03 per cent (13.17 and 8.75 aphids plant⁻¹). After second spray dimethoate 0.03 per cent, it was followed by dashparni (14.00 aphids plant⁻¹), goneem (14.17 aphids plant⁻¹) and ST-thiamethoxam (15.92 aphids plant⁻¹). However, later