

## Management of coriander aphid (*Hyadaphis coriandri* Das) under soybean – coriander cropping system

H.R. Chaudhary, M. Ali, P. Verma\*, B. Ram and C. Jadon

Agricultural Research Station, Ummedganj, Kota  
Agricultural University, Kota, Rajasthan

### Abstract

A field experiment was conducted during rabi 2007- 08 and 2008 – 09 to study the comparative efficacy of different neem based biopesticides against aphids in coriander. Among different treatments applied, azadirachtin spray @ 5 ml/lit. was found the most effective measure for the control of aphid population as well as for increasing the seed yield .

**Key words:** Aphid, azadirachtin, coriander, neem products

Coriander is an important seed spice belonging to family Apiaceae and cultivated for both seed as well as tender leaves. In India, it is mainly cultivated in Rajasthan, Madhya Pradesh, Gujarat, Karnataka and Uttar Pradesh. Coriander occupies the top place in term of area, production and export. Rajasthan occupies an area of 232139 ha. under this crop with production of 281076 mt and productivity of 1211 kg/ha (2009 – 10). In Rajasthan, the south eastern part comprising the districts of Kota, Bundi, Jhalawar and Baran occupies area of 229236 ha and production of 278930 mt with 1217 kg/ha productivity. Thus, Rajasthan ranks first in area and production contributing more than 80 percent to total coriander production in the country while in Rajasthan, 98 percent production comes from *Hadoti* region i.e. South Eastern Rajasthan (Anonymous, 1). Insect pests are one of major limiting factors for yield, quality, leaves and seed production. Sucking pests comprises major pests complex of coriander and among them aphids alone causes major losses to the production. Coriander is attacked by more than one species of aphids. *Hyadaphis coriandri* Das is main aphid of coriander and have worldwide distribution. (Jain and Yadava, 5). During flowering stage a population of 55-70 aphids/5 plants could reduce yield by 50% ( Jain and Yadava,4). The population of *H. coriandri* in coriander crop at more than 200 aphids/plant can reduce the yield by 2.0 qt/ha ( Jain and Yadava,5) the maximum multiplication of aphid on coriander has found when temperature existed between 20-25°C ( Maximum), 2-6°C (Minimum) and 60-65% relative humidity ( Meena *et al.* , 7). A number of commercial formulations of botanical insecticides are available in the market which has been

extensively evaluated against a number of insects, pests (Dhaliwal *et al.*, 2). The indiscriminate and excessive use of insecticides has registered various undesirable phenomena such as resistance, resurgence and outbreak of secondary pests besides environmental pollution, adversely effects on natural ecosystem and have enormous health hazards. In view of this, neem based insecticides have shown promising results. In addition to being moderately toxic to insect – pests, they exhibit antifeedent, ovipositional deterrent and growth disruptive effect, yet the potential of neem based insecticides has not been fully established. Hence, an attempt has been made for aphids management based on neem products in coriander crop.

The field experiment was conducted during *rabi* 2007 – 08 and 2008 – 09 to study the effect of various neem products against coriander aphid at Experimental Farm of Agricultural Research Station, Ummedganj, Kota. The experiment was laid out in randomized block design with six treatments and four replications keeping plot size 2.1 X 5.0 m<sup>2</sup>. The experimental material comprised of CS – 6, the bold seeded coriander variety. The neem products selected for the study were commercial formulation of azadirachtin 1500 ppm @ 5 ml/lit, azadirachtin 1500 ppm @ 2 ml/lit, Neem oil 1.0 and 2,0 %, Neem Seed Kernal Extract 2% and absolute control. All the treatments were applied twice at 7 days intervals. Population of aphids on crop was taken by counting average number of aphids / umbel/plant from 10 randomly selected plant in each treatment. The observation on aphids were recorded prior to application of treatment and post treatment observation were taken at 03 days after each treatments. Seed yield in each

**Table 1:** Effect of spray of different neem products on aphids in coriander

S.No.	Treatments	Average no. of aphids/umbel		Yield (kg/ha)
		After 1 <sup>st</sup> spray	After 2 <sup>st</sup> spray	
1	Azadirachtin 5.0ml/lit.	48.0 <sup>a</sup>	16.7 <sup>a</sup>	1043 <sup>a</sup>
2	Azadirachtin 2.0ml/lit.	65.0 <sup>b</sup>	23.4 <sup>b</sup>	705 <sup>c</sup>
3	Neem oil-1%	60.0 <sup>b</sup>	24.0 <sup>b</sup>	610 <sup>d</sup>
4	Neem oil-2%	52.0 <sup>a</sup>	22.0 <sup>b</sup>	724 <sup>b</sup>
5	NSKE-2%	70.0 <sup>c</sup>	39.0 <sup>c</sup>	667 <sup>c</sup>
6	Control	215.0 <sup>d</sup>	238.8 <sup>d</sup>	457 <sup>e</sup>

\*Mean separation with in column by Duncan<sup>s</sup> multiple range test at <0.005.

treatment was also recorded after harvest and calculated on per hectare basis. All the data recorded were analyzed statistically using SPSS-14 software.

The population of aphids recorded after the each application showed that all the treatments reduced the aphids population. Application of Azadirachtin 1500 ppm @ 5 ml/lit proved most effective in reduction of aphids population after every spray on crop and increased the yield of seed coriander at harvest. Neem oil-2%, proved at par with it after first spray in reduction of population. Azadirachtin at 2ml/lit. showed lower efficacy both in terms of aphids reduction and yield of coriander. Neem oil 1.0% and NSKE-2% showed moderate efficacy in control of aphids on crops though all the treatments were significantly superior over the absolute control. Tayde and Simon, 8 reported use of NSKE 5% for control of shoot and fruit borer in brinjal and enhanced yield. Gupta and Rai, (3) found neem oil -1.0 % was most effective against aphid *H. coriandri* in coriander crop and found maximum protection followed by neem seed extract and Cow urine-3%+ methyl demeton -0.003%. Meena *et.al.* (6) found neem and karanj products were least effective in comparison to synthetic insecticides.

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Received : October 2014; Revised : November 2014  
Accepted : December 2014