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Control of Brown Scale *Saissetia Coffeae* Wlk. (Homoptera : Coccidae) on Pointed Gourd with *Aspergillus* SPP.

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The pointed gourd, *Trichosanthes dioica* Roxb. locally known as 'Parwal' is one of the most nutritive and wholesome vegetables grown in India. The brown scale, *Saissetia coffeae* Walker (Homoptera : Coccidae) is one of the important pests of parwal. Insecticidal control of this pest has been advocated by various workers (Graham, 1966 ; Hanlen, 1975 ; Singh *et al.*, 1980 ; Sparks and Jippins, 1982). Since the use of insecticides, particularly, on vegetables is highly objectionable in view of its health hazards to the consumers, a survey was initiated to isolate pathogens associated with *S. coffeae*. During the survey it was found that the nymphs of the brown scale *S. coffeae* were infected by two species of fungi having black and green spores. Diseased nymphs were brought to the laboratory for isolation of pathogenic fungi. The fungi were isolated and brought to pure culture and identified as *Aspergillus niger* and *Aspergillus flavus* by the Department of Plant Pathology, Gujarat Agricultural University. Anand Campus, Anand. Application of Koch's Postulates proved their pathogenicity on the brown scale, *S. coffeae*. A field experiment was conducted in September 1984 in the kitchen gardens at Anand Campus to test the field efficacy of the entomopathogens.

Two concentrations of *Aspergillus niger* and *Aspergillus flavus* were used for the study. For *A. niger*, 5.2×10^7 spore/ml and 7×10^5 spore/ml and for *A. flavus* 3.9×10^8 and 1.6×10^6 spore/ml along with a control using only distilled water, were selected. Fungal suspensions were prepared in 0.01 per cent Tween 80 and shaken thoroughly prior to their use. Five kitchen gardens of parwal were selected in the residential quarters of Gujarat Agricultural University at Anand Campus with heavy infestation of brown scale, *S. coffeae*.

Ten infested leaves were selected at random and the counts of nymphs were made and tagged. Spraying of *A. niger* and *A. flavus* was carried out in early morning hours and the leaves were protected using perforated polythene bags from rain. The observations of nymphal scale count were recorded before and after the treatment every day after spraying upto twelve days. Mortality due to fungi was recorded every day and the total dead nymphs after 12 days were converted into percentage dead nymphs for each spot (Leaf) for each treatment. The percentage mortality was converted into Arcsin transformation to compare different treatments.

The data presented in Table 1 show that both the fungi at both concentrations gave significant reduction of brown scale, *S. coffeae* as compared to control 12 days after spraying.

However, *A. niger* was found more effective in reducing the scale population as compared to *A. flavus*. Between the two levels of *A. niger*, the higher concentration (5.2×10^7 spore/ml) was found superior to the control as compared to the lower concentration (7×10^5 spore/ml). In case of *A. flavus*, the differences in mortality of brown scale in both the concentrations were not significant. Similarly *Verticillium lecanii* has been used to control the brown scale, *S. coffeae* which gave promising results in coffee (Heinrich, 1966; Ramakrishnan and Kumar, 1976). A fungus *Aschersonia* sp., has also been tried on *S. coffeae* in the tea plantation of North eastern India (Barua, 1983).

Both these fungi, *Aspergillus niger* and *Aspergillus flavus* warrant further study on large scale in the orchards to control the brown scale *S. coffeae*.

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TABLE 1

Efficacy of *Aspergillus niger* **and** *Aspergillus flavus* **against** *S. coffeae*.

Treatment	*Concentrations*	*Percentage Scale mortality*	*Group average*
Aspergillus niger (Group I)	1. 5.2×10^7 spore/ml	32.69* (29.17)	28.24
	2. 7.0×10^5 spore/ml	23.79 (16.21)	(22.39)
Aspergillus flavus (Group 2)	1. 3.9×10^8 spore/ml	24.05 (16.60)	22.26
	2. 1.6×10^6 spore/ml	20.46 (12.22)	(14.35)
Control	Water spraying only	5.04 (0.77)	05.04 (00.77)

	SEM	*CD 5%*	*CV %*
Aspergillus niger (G-1)	2.09	4.2	
Aspergillus flavus (G-2)	2.09	N.S.	31.13
Control Vs. Treatment (G-3)	2.96	4.7	
A.niger Vs. A.flavus	1.65	4.65	

* $\sqrt{\text{Arcsin}}$ transformation values. Figures in parentheses indicate the mortality values in original scale.

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