

## APHIS GOSSYPHII GLOVER, AN INSECT VECTOR OF CARNATION (*DIANTHUS CARYOPHYLLUS* L.) MOTTLE VIRUS—A NEW RECORD

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CARNATION is an ornamental plant; it is also used in the manufacture of sophisticated perfumes and medicines. Carnation mottle disease, caused by a virus, is characterized by chlorotic spots on young apical leaves, followed by mosaic chlorosis, mottling and streaks of yellowish-white colour on infected leaves. The infected plant shows stunted growth and bushy appearance. No insect vector has been reported so far for the carnation mottle virus (CMV). This communication reports an insect vector for CMV.

In nature insects are the main cause of the spread of plant viruses and there is a specific relationship between a virus and its vector<sup>1</sup>.

Insects were collected from carnation fields and also from the neighbouring areas during morning, noon, evening and night hours. These were cultured in insect cages on healthy carnation plants. The insects were transferred directly from the infected carnation plant to healthy plants in one set and in another set a preliminary period of fasting was allowed before transmission experiments. During the fasting period the insects were placed in petri dishes covered with cellophane.

The infected plants on which insects were fed to acquire the virus were all of the same age. Plastic cages with nylon-covered windows were used for raising the stock culture and for all insect transmission trials. These cages were fixed over the young plants in 6-inch pots. To study the possibility of insect transmission of the virus three experiments, viz. preliminary screening of insects, virus-vector relationship and persistence of the virus in the vector, were conducted.

In the preliminary screening of insects, each insect species was given an acquisition feed for 1 h and then allowed a test feed of 1 and 12 h separately on healthy carnation plants. The results obtained with all the insect species except *Aphis gossypii* were negative. Only 10% transmission was recorded after 1 h test feed, and 100% after 12 h test feed.

To test virus-vector relationship five different acquisition feeds, each with a set of seven test feeds, were given to *A. gossypii*. For each combination of

Table 1 Effect of duration of acquisition and test feeds on transmission of CMV by *Aphis gossypii*

Acquisition feed (min)	Number of plants infected out of 40 plants						
	Test feed (h)						
	1	2	4	6	8	12	24
10	—	—	—	—	—	—	—
20	—	—	—	—	—	—	—
40	—	—	—	4	6	10	20
60	4	16	24	40	40	40	40
90	10	22	36	40	40	40	40

acquisition and test feed 10 healthy carnation plants were used, each with a batch of 10 *A. gossypii*. Vectors were transferred to healthy plants for different periods of test feed after subjecting them to 6 h fasting period before allowing the required acquisition feed (table 1). The results reveal that with increase of duration of acquisition and test feeds the number of infected plants increase regularly.

The persistence of virus in the vector was studied and the results revealed that the virus was retained within the vector for up to 8 days, indicating that the virus is of the persistent type. It is concluded that the vector can acquire sufficient virus in 60-min acquisition feed and 6-h test feed to give 100% transmission. Thus it is apparent that *A. gossypii* requires a latent period of 1 to 6 h to become infective.

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1. Kennedy, J. S., Day, M. F. and Eastop, V. F., *A conspectus of aphid as vector of plant viruses*, Commonwealth Institute of Entomology, London, 1962, p. 1.

## OCCURRENCE OF *BEAUVERIA BASSIANA* (BALSAMO) VUILL. ON SAPLING BORER *SAHYADRASSUS MALABARICUS* MOORE (LEPIDOPTERA: HEPALIDAE) IN KERALA, INDIA

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*SAHYADRASSUS MALABARICUS* Moore, popularly known as the sapling borer, is a polyphagous insect