

## RESEARCH NOTE

# Effect of plant extracts and neem products on okra yellow vein mosaic virus infection under *in vitro* conditions

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## ABSTRACT

Efforts were made for the management of okra yellow vein mosaic spraying with NSKS@5.0 per cent, which reduced maximum OYVMV infection by 89.4 per cent followed by neem oil @ 3.0 per cent and *Bougainvilleas spectabilis* (10.0%) 86.4 and 83.3 per cent, respectively *in vitro*. Whereas the minimum reduction over control (72.2%) was observed in case of *Oscimum sanctum* L.@10.0 per cent. Neem derivatives by virtue of their repellent, antifeedent and insecticidal properties against vectors indirectly interfered with viral transmission

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Okra [*Abelmoschus esculentus* (L.) Moench] is grown as an important vegetable crop in many tropical and sub tropical parts of the world for its nutritive, medicinal and industrial value. Okra has received a great setback under Indian condition due to the attack of many fungal, viral and nematode diseases. Okra yellow vein mosaic virus is the most destructive virus disease and has become one of the limiting factors in successful cultivation of the crop. The losses range from 50 to 94 per cent depending upon the stage of crop growth infection level.

After 24h of application of products, the plants were then fed with 25 viruliferous whiteflies per okra (cv. Parbhani Kranti) seedling (days) raised in the polyhouse. Suitable controls were maintained using distilled water spray only. Twenty-four hours after the application of leaf extracts, the okra (cv. Parbhani Kranti) were inoculated with 25 viruliferous whiteflies per seedlings. Percentage of infected plants was determined. The per cent reduction in infected plant over control was calculated using the formula of Balasubramanyam *et al.* (2000):

$$\frac{\text{Control} - \text{treated}}{\text{Control}} \times 100$$

For *in vitro* study, fresh leaves of different plant species *i.e.* *Bougainvillea spectabilis*, *Ocimum sanctum* and *Azadirachta indica* were collected and washed with running tap water. Again washed with distilled water and air dried. These leaves were ground in mixture grinder along with equal volume of 0.01 sodium acetate buffers (pH 5.2). The ground material containing juice was strained with double layered muslin cloth to get clear leaf extract. This extract was used in the 10 per cent dilution for the management of okra yellow vein mosaic virus under polyhouse condition. The 10 per cent leaf extracts from various plant species *viz.*, *Bougainvillea spectabilis*, *Ocimum sanctum* and *Azadirachta indica* were sprayed on the primary leaves of 15 days old 20 okra test plants. To evaluate efficacy of neem products, neem oil (3 per cent aqueous solution) and neem seed kernel extract (5 per cent aqueous solution) were sprayed on 20 okra test plants.

Pre-inoculation sprays of plant extracts and neem products significantly reduced the OYVMV infection in okra plants compared to the control. The spray with NSKS @ 5.0 per cent reduced maximum OYVMV infection by 89.4 per cent followed by neem oil @ 3.0 per cent and *Bougainvilleas spectabilis* (10.0 %) 86.4 and 83.3 per cent, respectively.

**Table 1: Effect of plant extracts and neem products on okra yellow vein mosaic virus infection under *in vitro* conditions**

Treatments	Concentration (%)	Number of infected /inoculated seedlings	Infection (%)	Reduction over control (%)
<i>Bougainvillea spectabilis</i>	10.0	30/60	16.7	83.3
<i>Ocimum sanctum</i>	10.0	50/60	27.8	72.2
<i>Azadirachta indica</i>	10.0	40/60	22.2	77.8
Neem oil	3.0	24/60	13.3	86.7
NSKS	5.0	19/60	10.6	89.4
Control (no spray)	-	60/60	100.0	-
S. E.±			1.616	
C.D. (0.05)			4.979	

No. of seedlings inoculated in each treatment : 60 (20 X 3 replications), Acquisition feeding period : 12 hrs, Inoculation feeding period : 12 hrs,  
No. of whitefly used : 25

Whereas, the minimum reduction over control (72.2 %) was observed in the case of *Ocimum sanctum* @ 10.0 per cent (Table 1). This has indicated that the pre-inoculation spray of plant products did not facilitate whiteflies to probe or feed quite comfortably on leaves and thus reduced YVMV infection in okra. Pun *et al.* (1999) have also made some investigation related to the present studies.

#### Conclusion :

The spray with NSKS (5.0 %) reduced maximum OYVMV infection by 89.4 per cent followed by neem oil @ 3.0 per cent and *Bougainvillea spectabilis* (10.0%) 86.4 and 83.3 per cent respectively under *in vitro*.

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