

**Research Note :**

SCREENING OF OKRA VARIETIES FOR RESISTANCE TO YELLOW VEIN MOSAIC VIRUS UNDER FIELD CONDITION

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Okra or Bhindi [*Abelmoschus esculentus* (L.) Moench] is an annual, herbaceous, plant of erect growth habit, with or without branches and with bisexual flower, which belongs to family Malvacene. It is one of the most popular vegetable crops cultivated throughout world. Because of high consumer demand and thereby better price, farmers grow okra widely during the rainy and summer season. The crop is very much susceptible to whitefly (*Bemisia tabaci* Gen.) transmitted yellow vein mosaic virus. It is the most destructive disease, which causes heavy yield losses in the crop by affecting the quality and yield of fruits. Some attempts had been made by several workers to reduce to disease through the vector control (Bhagal *et. al.* 3; Chakraborty and Mukhotadhyay, 4; Shastri and Singh, 8; Singh and Singh, 9), resistant screening (Arora *et. al.* 1; Singh and Singh, 10) and also through the breeding strategies (Jambhale and Nerkar, 5; Nerkar and Jambhale, 7). Emphasis is needed on breeding to develop yellow vein mosaic virus resistant variety. This study was undertaken to find out the potential source of resistance of okra to yellow vein mosaic virus under natural epiphytic condition.

The experiment was conducted at the Indian Institute of Vegetable Research, Varanasi during 2006 and 2007. Seeds were sown in single 5m row with 20 cm plant and 45 cm row spacing. The experiment was carried out in randomized block design. All the recommended agronomic practices were adopted. For assessing the yellow vein mosaic virus in okra varieties, the intensity of the yellow vein mosaic disease was calculated according to

method suggested by Banarjee and Kalloo (2) as per given in Table 1.

Table 1 : Scale for classifying disease reaction of Okra to yellow vein mosaic virus.

YVMV Symptoms	Severity Grade	Reaction
Symptoms absent	0	Highly Resistant
Very mild symptoms up to 25% plant	1	Resistant
Appearance of symptoms in 26-50% plant	2	Moderately Resistant
Appearance of symptoms in 51-75% plant	3	Moderately Susceptible
Sever disease infection in symptoms (>75% plant)	4	Highly Susceptible

In 2006 and 2007 incidence was recorded 90 days after sowing. The per cent disease incidence (PDI) was calculated by the formula :

$$PDI = \frac{\text{Number of diseased plant}}{\text{Total no. plant observed}} \times 100$$

Rainy season 2006 : Five varieties of okra were screened for resistance to infection by YVMV of okra under field condition. It was found that only one variety *i.e.*, VRO-6 was found to be resistant to yellow vein mosaic virus disease (Table 2). Beside that moderately resistance was obtained in two varieties in VRO-3 and HRB-9-2. These varieties showed per cent disease intensity of 31.3 to 35.5 under field condition. The other variety Pusa Sawani showed high susceptibility to this disease and per cent disease incidence was 90.2. In other variety Pusa Makhmali, disease reaction was found moderately susceptible with per cent disease incidence of 53.2 under field condition.

Table 2: Screening of okra varieties for YVMV intensity in 2006.

Variety	Severity Grade	Per cent Disease Intensity	Reaction
Pusa Sawani	4	90.2	Highly susceptible
VRO-3	2	31.3	Moderately resistant
Pusa Makhamali	3	53.2	Moderately susceptible
VRO-6	1	15.5	Resistant
HRB-9-2	2	35.5	Moderately resistant

Table 3: Screening of okra varieties for YVMV intensity in 2007.

Variety	Severity Grade	Per cent Disease Intensity	Reaction
HRB-9-2	2	37.5	Moderately resistant
VRO-3	2	29.5	Moderately resistant
VRO-6	1	13.5	Resistant
Pusa Makhamali	3	55.1	Moderately susceptible
Pusa Sawani	4	92.3	Highly susceptible

Rainy season-2007

It was found that two varieties *i.e.*, VRO-3 and HRB 9.2 were found to be moderately resistant with 29.5 to 37.5 per cent disease intensity (Table 3). Besides that high degree of resistance was obtained in variety VRO-6 under field condition. This variety showed per cent disease intensity of 13.5. The rest two varieties *i.e.*, Pusa Makhamali and Pusa Sawani showed moderate susceptible and highly susceptible reaction respectively. Pusa Sawani showed 92.3 per cent disease intensity.

Results of this study indicated that VRO-6 and VRO-3 were found to be most promising variety against yellow vein mosaic infestation in the field. This could be a useful source of resistant genes to yellow vein mosaic virus. Similar type of works has been reported by (Khan and Mukhopadhyay, 6) in screening of okra varieties to yellow vein mosaic virus.

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