

Research Paper :

Control of Natural Virus Infection on Okra (*Abelmoschus esculentus*) by Root Extract of *Boerhaavia diffusa*

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SUMMARY

Yellow vein mosaic on okra (*Abelmoschus esculentus*) under natural condition was suppressed by partially clarified aqueous root extract of *Boerhaavia diffusa*. Treatments were administered as foliar sprays at concentration of 4% at 7 days interval, commencing from the time when plants were at seedling stage. Regular sprays of root extract of *Boerhaavia diffusa* were highly effective in reducing okra yellow vein mosaic disease. Comparative data recorded with respect to infection, growth, flowering, fruiting and yield revealed that extract from the roots reduced infection by about 80%. Flowering and consequent fruiting were observed in all treated beds, which showed high yield. Fruits were more in number, soft and green as compared to yellow and fibrous fruits in control beds.

Key words :

Boerhaavia diffusa, Aqueous root extract, Okra yellow vein mosaic virus

Okra (*Abelmoschus esculentus*) is an important vegetable crop of UP, Bihar, MP, Maharashtra etc. It suffers from a very destructive disease, yellow vein mosaic (YVM) spread by whitefly, *Bemisia tabaci*. The YVM has been reported as a major disease of okra (Shivpuri *et al.*, 2004), causing 25-35% mortality of plants every year in most of the okra growing areas of the country. Okra yellow vein mosaic disease is caused by OYVMV, which is transmitted by the whitefly. It not only inflicts drastic reduction in fruit yield but also affects the fruit quality, yield losses to a tune of 95.7% have been reported in case of early infection (Pun and Doraiswamy, 1999; Pun *et al.*, 2005). The climatic conditions of plateau region of UP generally favour disease development. In order to control the disease, the bioefficacy of conventional insecticides was tested against pests of okra (Patel *et al.*, 1997; Mote *et al.*, 1994; Bhagat *et al.*, 1997). Induction and transfer resistance in okra was also tried (Fungra and Rajpoot, 1993, 1999; Jambhale and Nerkar, 1983). The main aim of the present work was to determine the efficiency of root extract of *Boerhaavia diffusa* in checking the disease under field conditions. The extract has earlier

been reported as inducer of resistance in susceptible host plants against viruses showing mosaic type of symptoms (Awasthi *et al.*, 1984; Verma *et al.*, 1979; Verma and Srivastava, 1985; Singh *et al.*, 2004; Singh and Awasthi, 2004; Awasthi and Verma, 2006; Singh, 2006).

MATERIALS AND METHODS

Seeds of okra cultivar Parbhani Kranti were sown in separate beds. Upon germination, the seedlings were adjusted to approximately 500 plants/bed (bed size = 10×7 meter²) during 200-05 and 2005-06. Care was taken to avoid the growth of border weeds along the sides of the bed to facilitate the free flow of virus vector.

The sample of *Boerhaavia diffusa* (BD) roots was collected from fully mature plants in Kushinagar, U.P. roots after washing in running tap water, cut into small pieces, dried under natural sunlight and grounded to fine powder. The *Boerhaavia diffusa* powder was soaked in 0.2 M Sodium acetate (NaHCOOH) buffer (pH 5.2) in the ratio of 1:5. The pulp was squeezed through two folds of muslin cloth and filtrate was centrifuged at 8000 rpm for 15 minutes. To the supernatant, 60% ammonium sulphate was added and kept overnight. The

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