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Evaluation of different fungicides and biopesticides against Sclerotinia blight of brinjal (*Solanum melongena* L.)

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ABSTRACT

Sclerotinia blight caused by *Sclerotinia sclerotiorum* is an important disease of brinjal (*Solanum melongena* L.) in eastern U.P. Efficacy of fungicides, plant extracts and biopesticide were tested *in vitro* and *in vivo*. Bavistin (0.1%), Vitavax (0.1%), and Topsin-M (0.15%) proved to be the most effective in inhibiting the growth of pathogen *in vitro* and controlling the diseases in the field. Biopesticide, Nimbidine was also proved effective, but slightly less effective than systemic fungicide except Chlorothalonil. Nimbidine being a safe eco-friendly and economical bioproduct which can be used in the management of the disease.

Key words : Brinjal , *Solanum melongena* L. Sclerotinia blight, *Sclerotinia sclerotiorum*, Management, Fungicides and biopesticide.

Brinjal or egg plant (*Solanum melongena* L.) is one of the most common, popular and principal annual vegetable crops grown in all the three seasons under irrigated conditions. Brinjal was observed to suffer from Sclerotinia blight caused by *Sclerotinia sclerotiorum* (L.) de Bary, a most important and severe disease in eastern part of U.P. Not much work appears to have been done on this disease except the report of its occurrence. Recently, the disease has assumed the serious proportion damaging the crop to the tune at 20-40 per cent. Therefore, it was felt necessary to explore the possibility for the management of this disease through the use of fungicides, biopesticide and plant extracts.

MATERIALS AND METHODS

The efficacy of fungicides, biopesticide and plant extracts against the pathogen *in vitro* was tested by poison food technique as suggested by Schmitz (1930) using PDA medium. Bavistin, Vitavax, Blitox-50, Chlorothalonil, Kitazin, Ridomil, Zineb, Captafol, Indofil M-45, Captan, Topsin-M, one antibiotic Streptocycline (0.05%), Nimbidine, Garlic and Sadabahar extract (0.5%) were used (Table 1).

Extracts of the botanicals, Sadabahar (*Vinica rogeia*) and garlic (*Allium sativum*) were prepared by crushing their leaves (100g each) in 100ml of sterilized distilled water. The extracts were then filtered through a muslin cloth and centrifuged for 30 min at 5000 rpm. The extracts were sterilized by passing them through a Millipore filter (0.22µm pore size) using a swimmy filter adapter. The materials were dried at room temperature (25 ± 2^0 C) for 6 hours to remove the traces of water. Subsequently 0.5% concentration of the extract of each botanical was used for bio-assay test by food poison technique. The radial growth of *S. sclerotiorum* in three replications were recorded separately and their averages were taken. The per cent inhibition over control was calculated by the formula (Bliss, 1934) as given below:

$$\text{Per cent inhibition over control} = \frac{C-T}{C} \times 100$$

where, C = growth of fungus in control
T = growth of fungus in treatment

In order to find out a suitable control of the disease, efficacy of fungicides, host extract and biopesticides were assessed in field trial during *Kharif* season 2003-2004 and 2004-2005. A highly sick field with known history of Sclerotinia blight of brinjal was selected. The brinjal variety, Black Beauty was transplanted in 4x4 m plot size in Randomized Block Design with 4 replications. The five fungicides *viz.* Vitavax and Bavistin(0.1%), Vapam (0.2%), Topsin-M(0.15%), Chlorothalonil (.02%) and one biopesticide, Nimbidine (.02%) were used as spray (Table 2). The first spray was done at the onset of disease followed by two more sprays at 10 days intervals. Observations were recorded at 15 days after the final spray. The control plots were sprayed with water. For recording the disease incidence, forty randomly selected plants per plot were examined and the disease incidence in percentage was transformed into angles and analysed statistically. Yield was estimated on plot basis without considering the border rows in Q/ha.