Bangladesh J. Bot. **34**(1): 53-58, 2005 (June) **Short communication**

SCREENING OF BRINJAL ACCESSIONS FOR BACTERIAL WILT CAUSED BY *RALSTONIA SOLANACEARUM*

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Abstract

Fifteen brinjal accessions were screened in the sick bed preinoculated with *Ralstonia solanacearum.* The population of *R. solanacearum* in the sick bed soil was 2.1 × 107 cfu/g soil. The accession EG 203 was resistant against the bacterium with lowest wilt incidence. The accession EG 193 was moderately susceptible. Rest of the accessions were susceptible. Resistant and moderately susceptible accessions showed longer incubation period.

Brinjal (*Solanum melongena* L.) is an important and widely consumed Solanaceous vegetable of Bangladesh grown round the year. Among the diseases of brinjal bacterial wilt is a major one caused by *Ralstonia solanacearum*, a soil borne pathogen, which invades the host through wounds in roots or underground parts of the plant. The disease causes heavy loss in brinjal production in the tropical, sub-tropical and temperate regions. In Bangladesh 7-31 % bacterial wilt incidence of brinjal have been reported. This present paper reports on the susceptibility of fifteen local and exotic brinjal accessions to bacterial wilt caused by *R. solanacearum.*

Fifteen brinjal accessions were screened in the sick bed pre-inoculated with *R. solanacearum* in the research field of Plant Pathology Division, BARI, Gazipur. The pathogen was isolated from the infected brinjal plants on Cassamino Acid Peptone Glucose (CPG) medium. Its pathogenicity was performed. One-month-old seedlings, raised separately in earthen pots containing sterile soil and were transplanted in rows on September 23, 2001. The size of the experimental plot was 8m × 7m for each replication. Plant to plant and row-to-row distances were 20 cm and 50 cm respectively. The population of *R. solanacearum* in the sick bed soil was estimated 2.1×10^7 cfu/g soil and pH was 6.5. The number of days for the development of visible symptoms (incubation period) and number of days required for 50% wilting after transplantation (DAT) were recorded for each accession. The incidence of wilt was monitored daily up to 42 days from transplantation.

Wilt symptoms and the number of wilted plants for each accession was recorded and graded on a 0-5 scale of Winstead and Kelman (1952) with some modifications. The modified rating scale is given below:

0	Highly resistant (HR)	:	Plants did not show any wilt symptom
I	Resistant (R)	:	1-20% plants wilted
2	Moderately resistant (MR)	:	21-40% plants wilted
3	Moderately susceptible (MS)	:	41-60% plants wilted
4	Susceptible (S)	:	61-80% plants wilted
5	Highly susceptible (HS)	:	More than 80% plants wilted

The accessions were categorized as resistant to highly susceptible depending on the percentage of wilt of the plants. Obtained data were analyzed statistically using MSTAT.

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The reactions of the brinjal accessions to *R. solanacearum* were shown in the Table 1. The accession EG 203 showed resistance against the bacterium with lowest wilt incidence (Fig. 1). The accession EG 193 showed moderately susceptible reaction with 60% wilt incidence; while rest of the accessions were susceptible to highly susceptible. Kazla, Dohazari, Barsati, Tal begun, EG 190, and S 90 were highly susceptible brinjal accessions. The accessions S 56 B, S3 and BJ 004 did not show 50% wilt even after 23 DAT. However, most of the accessions showed 80% wilt incidence within 25 DAT. The resistant and moderately susceptible accessions showed longer incubation periods (22-28 days) but the incubation period was shorter (6-12 days) for highly susceptible accessions (Table 1).

Table 1. Reactions of fifteen brinjal accessions to *Ralstonia solanacearum.*

Name of accessions	Source of accessions	Percentage of wilt[1]	Reaction	Incubation period (day)	50% wilt on DAT
Kazla	Bangladesh	100 a (89.01)	HS	6	8
Dohazari	Bangladesh	90 b (71.95)	HS	8	11
Barsati	Bangladesh	100 a (89.01)	HS	7	24
Uttara	Bangladesh	70 d (57.00)	S	7	14
Tal begun	Bangladesh	100 a (89.01)	HS	6	8
Islampuri	Bangladesh	70 cd (56.84)	S	10	15
EG 193	India	60 d (50.77)	MS	22	29
EG 203	India	10 e (18.38)	R	28	-
EG 219	India	70 cd (56.84)	S	10	12
EG 190	India	90 b (71.72)	HS	8	23
S 90	Indonesia	90 b (71.95)	HS	8	11
S 56B	Indonesia	70 d (56.72)	S	8	27
S3	Malaysia	80 c (63.52)	S	10	26
S47A	Malaysia	70 cd (56.84)	S	9	15
BJ 004	Taiwan	80 c (63.6 4)	S	12	26
LSD 6.15					

[1]Average of three replications containing 30 plants.
Figures in the parenthesis are angular transformed value. In a column, figures having same letter do not differ significantly at 5% level.

In the present study under sick bed condition the air temperature and relative humidity were 24-32° C and 80-94 % respectively. These factors together with the influence of soil moisture and

temperature may influence the resistance of the accessions. Results of the present study were in agreement with those obtained by Hanson *et al.* (1996) and Wang *et al.* (1997) where the field reaction of tomato lines to different strains of *R. solanacearum* differed at different locations in South East Asia and to eggplants respectively. Hanson *et al.* (1996) found that in Malaysia and Taiwan most of the tomato lines were resistant, but in the Philippines and Indonesia they were susceptible. This indicates that it is necessary to evaluate different accessions in local conditions against the *R. solanacearum.*

Fig. 1. Screening of brinjal accessions against bacterial wilt in a sick bed.

Atabug and Juan (1981) had taken 10% of wilted tomato plants to assess the incubation period of *R. solanacearum* and observed that the resistant accessions had longer incubation period compared to susceptible accessions. Rahman (1997) observed similar result in chilli. The present study produced similar results, i.e. the resistant accessions had longer incubation periods and took a longer time to produce disease symptoms than the susceptible accessions.

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