

## Screening of Brinjal Cultivars and Inoculation Methods Against Stem and Branch Blight Disease Caused by *Phomopsis vexans*\*

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In Junagadh region a local brinjal cultivar aradia long grown under *kharif* season was found to be severely affected with stem and branch blight disease caused by *Phomopsis vexans* in the past 2-3 years. The disease was also noticed in different entries grown at Vegetable Research Farm (VRF) of Gujarat Agricultural University, Junagadh. This pathogen is reported to affect all the stages of growth and symptoms like damping off, leaf blight, stem canker, collar rot and fruit rot have been recorded (Singh, 1992). The disease observed in Junagadh area produced only stem and branch blight symptoms in *kharif* brinjal. Under natural condition, the disease was noticed 45 days after transplanting. Affected branch showed drooping of leaves followed by drying of whole plant. Considering its typical symptoms and damages, the present investigation was undertaken to study the mode of entry and screening of different brinjal cultivars against *P. vexans*.

### Inoculation methods and host parts

*P. vexans* is reported to produced symptoms on different plant parts viz. fruit, stem, leaf etc. The pathogen under study was isolated from infected stem. To know the relative efficacy of different methods of inoculation on local cultivar aradia long, a pot experiments was conducted during *kharif* 1999. Following methods were used along with uninoculated control:

**1. Pin prick method :** One stroke of gentle pressing on stem / leaf / fruit surface with one cm diameter pin pricker made from steel needles tied around a thin wooden stick keeping their pointed ends 5 mm out.

**2. Tooth brush method :** Little pressure for 5 to 10 seconds with new hard tooth brush on stem/ leaf / fruit surface.

**3. Petiole scar (only on stem) method :** Leaf along with petiole was removed from stem, then inoculation on exposed petiole scar.

**4. No injury :** Inoculum is to be placed on uninjured surface of stem / leaf / fruit.

Fifteen days old PDA culture bit having 5-8 pycnidia was used for inoculation. Stem and leaf inoculation was carried out on two months old plants, while medium sized fruits of full grown plants were selected for fruit inoculation. Separate pot plants were kept for stem, leaf and fruit inoculation and also for each of the inoculation methods. The inoculated area was covered with moist absorbent cotton and loosely tied with thin

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plastic to maintain humidity. The plastic was removed after five days. The observations for disease initiation were recorded after 15 days of inoculation.

### Screening of brinjal cultivars / entries

A pot trial was laid out to study the resistance against *P. vexans*. Twenty brinjal cultivars / entries received from VRF, Junagadh were tested during late *kharif* 1999. Twelve pots of each cultivar with single plant, were raised and when plants were of two months age, six plants of each cultivar were artificially inoculated using pin prick method. Remaining six plants were also pin pricked followed by no inoculation and kept as control. In each plant single branch was inoculated and observations were recorded after fifteen days of inoculation. On the basis of disease reaction, cultivars were graded into different categories as follows:

| Disease reaction                                                       | Grade                       |
|------------------------------------------------------------------------|-----------------------------|
| 1. No symptom on any part of plant                                     | Immune (I)                  |
| 2. Only inoculated spot necroted.                                      | Resistant (R)               |
| 3. Necrosis over passing inoculated area but less than 2 cm in length. | Moderately susceptible (MS) |
| 4. Long necrotic lesion without drying of branch                       | Susceptible (S)             |
| 5. Whole inoculated branch dried                                       | Highly susceptible (HS)     |

The results as presented in Table 1 revealed that the typical disease symptoms were developed only on stem when inoculated. Pathogen failed to produce symptoms on leaves and fruits. Only pin prick method was found effective for infection. Hence injury to stem or branch was necessary for the infection of *P.*

TABLE 1

Efficacy of inoculation methods and disease development on different plant parts of brinjal.

| Method of inoculation  | Disease development*                    |        |        |
|------------------------|-----------------------------------------|--------|--------|
|                        | Stems                                   | Leaves | Fruits |
| No injury              | -                                       | -      | -      |
| Tooth brush            | -                                       | -      | -      |
| Petiole scar (on stem) | -                                       | -      | -      |
| Pin prick              | +                                       | -      | -      |
|                        | (typical stem blight symptoms produced) |        |        |

\* = Mean of four replications

+ = Symptoms developed

- = No symptom development

*vexans* under study. Similar observations have been made by Singh and Chand (1986) for symptoms development on fruits. Although results of present investigation are differing in regard to fruit rot development, as injured fruits did not get infection.

The results given in Table 2 showed that none of the entry under test was found to be immune.

All the inoculated plants of AB-98-1, AB-98-4, AB-98-15, Aradia long, Green gota (Anand), JBL-1, JBL-3, JBL-4, JBBL-1, JBPL-2, Junagadh long and Junagadh oblong were infected (100 % infection). Among the entries showing 100 per cent infection, inoculated branches in AB-98-4 and JBPL-2 got dried hence rated as highly susceptible, other fall in the category of

susceptible. The entries in which 33 and 66 per cent inoculated plants produced symptoms, showed moderately susceptible and resistance reaction respectively. The inoculated plants in the entries viz. AB-98-20, Dhandhusar long, Doli-5 and JBL-2 showed 66 per cent infection and categorised as moderately susceptible. Four entries namely Green gota, JBPL-6, Junagadh

ravaiya and PLR-1 were observed as resistant against blight disease and developed only little necrosis on inoculated spot. No symptoms were observed in control plants. More or less similar types of results were recorded during the screening of different entries against *P. vexans* in brinjal (Ahmed, 1987; Raut and Sapkal, 1994).

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TABLE 2

Reaction of brinjal cultivars against branch blight.

| Entry              | No. of plants<br>Inoculated | No. of plants<br>infected | Per cent plant<br>infected | Disease<br>rating |
|--------------------|-----------------------------|---------------------------|----------------------------|-------------------|
| AB-98-1            | 6                           | 6                         | 100                        | S                 |
| AB-98-4            | 6                           | 6                         | 100                        | HS                |
| AB-98-15           | 6                           | 6                         | 100                        | S                 |
| AB-98-20           | 6                           | 4                         | 66                         | MS                |
| Aradia long        | 6                           | 6                         | 100                        | S                 |
| Dhandhusar long    | 6                           | 4                         | 66                         | MS                |
| Doli-5             | 6                           | 4                         | 66                         | MS                |
| Green Gota         | 6                           | 2                         | 33                         | R                 |
| Green Gota (Anand) | 6                           | 6                         | 100                        | S                 |
| JBL-1              | 6                           | 6                         | 100                        | S                 |
| JBL-2              | 6                           | 4                         | 66                         | MS                |
| JBL-3              | 6                           | 6                         | 100                        | S                 |
| JBL-4              | 6                           | 6                         | 100                        | S                 |
| JBPL-1             | 6                           | 6                         | 100                        | S                 |
| JBPL-2             | 6                           | 6                         | 100                        | HS                |
| JBPL-6             | 6                           | 2                         | 33                         | R                 |
| Junagadh long      | 6                           | 6                         | 100                        | S                 |
| Junagadh oblong    | 6                           | 6                         | 100                        | S                 |
| Junagadh ravaiya   | 6                           | 2                         | 33                         | R                 |
| PLR-1              | 6                           | 2                         | 33                         | R                 |

**Note :** No symptom produced in uninoculated plants of all entries.

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