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EVALUATION OF BRINJAL VARIETIES FOR RESISTANCE TO BACTERIAL WILT

Bacterial wilt caused by *Pseudomonas solanacearum* is one of the important diseases of brinjal (Kelman, 1953). In India, the disease is serious in parts of Karnataka, Kerala, Orissa, Maharashtra, Madhya Pradesh, Bihar and West Bengal. Yield losses upto 65% have been recorded on account of this disease (Das and Chattopadhyay, 1955). Prophylactic and remedial measures suggested for the control of tnis disease are ineffective. It is rather impossible to save a plant after infection has set in, and the yield loss in such cases is almost total. Hence identification of resistant varieties forms an important slep in the control of bacterial wilt.

Screening of populations to isolate resistant types under conditions of artificial infection is rather easy in this case. Winstead and Kelman (1952) suggested the stem puncturing technique of inoculation in which an injury is made on the second leaf axil of a seedling two weeks after transplanting and a small piece of sterile cotton wool dipped in bacterial culture is placed over the injury. Planting the seedlings in pots filled with soil from wilt infested areas has also been reported to successfully incite infection (Gopimony, 1968).

Varieties of brinjal isolated as induced recombinants following gamma irradiation of hybrid seeds of the cross between brinjal and the wild type *Solanum melongena* var *insanum* have been reported by Gopimony *et al*. (1982). Three such varieties (SMI 5, SMI 10 and SMI 31 2) were evaluated for resistance along with two resistant types (SM 6, Pusa Purple Cluster) and six popular varieties (Arka Kusumakar, Arka Sheel, Black Beauty, Pusa Kranthi, Pusa Purple Long and Pusa Purple Round) in the Department of Plant Breeding, College of Agriculture, Veliayani.

Seeds of the eleven varieties were sown in pots and 40 day old seedlings were planted in singles in polythene bags of size 15 x 10 cm filled with soil collected from the pits of freshly wilted brinjal plants. A few holes were punctured at the bottom of the bsgs to allow proper drainage. Two replications of 10 seedlings each were maintained for each variety. A seedling dip treatment which consists of dipping the root system of uprooted seedlings in a bacterial suspension was provided for each seedling uniformly before transplanting. The suspension for treatment was prepared by cutting freshly wilted brinja! plants at the collar region and dipping the cut end immediately in distilled water in a beaker. The cut plant was removed after an hour and the content of the beaker was stirred to disperse the bacterial ooze uniformly. The seedlings were.irrigated regularly and the number of wilted plants in each variety was counted every week for four weeks.

The seedlings surviving after four weeks were inoculated with the bacterial suspension by employing the puncturing method. This consisted of inflicting a wound in the axil of the second leaf using a needle and placing a sterile cotton wool dipped in the bacterial suspension, over the wound. The infection thus reaches the plant system through the wound. The number of wilted plants was again recorded for another four weeks (Table 1).

Table 1

Evaluation of eleven brinjal varieties for resistance to wilt

Varieties	At the end of the 4 week period		At the end of the 8 week period	
	No. of plants wilted	% of wilting	Total no. of plants wilted	% of wilting
SMI 5	0	0	0	0
SMI 10	0	0	0	0
SMI 31 2	0	0	0	0
SM 6	0	0	0	0
Pusa Purple Cluster	3	15	4	20
Arka Kusumakar	17	85	20	100
Arka Sheel	16	80	19	95
Black Beauty	16	80	20	100
Pusa Kranthi	20	100	20	100
Pusa Purple Long	19	95	20	100
Pusa Purple Round	19	95	20	100

The results showed that in the varieties SMI 5, SMI 10, SMI 31 2 and SM 6 none of the 20 plants wilted, indicating that they are highly resistant to the bacterial wilt. In the case of Pusa Purple Cluster, the percentage of wilting was 20, indicating that this variety is moderately resistant. On the other hand, the percentage of wilting in the six popular varieties ranged from 95 to 100 at the end of the eight week period. The wilting percentage in these varieties was as high as 80 to 100 even at the end of the four week period. This indicated that these varieties are highly susceptible to the disease.

The procedure adopted for screening in this case is an integration of the techniques suggested by Winstead and Kelman (1952) and that followed by Gopimony (1968). It ensured that no susceptible plant escaped infection and hence is a very efficient technique to identify resistance to bacterial wilt in brinjal. The resistant varieties could be profitably utilized by incorporating them in future breeding programmes for evolving high yielding resistant varieties.

സംഗ്രഹം

ഉഷ്ണമേഖലാ പ്രദേശങ്ങളിൽ വഴുതനയെ ബാധിക്കുന്ന മാരകമായ raoj രോഗമാണ് ''ബാക്ടീരിയൽ വിൽറ്റ്''. രോഗനിവാരണം പ്രായോഗികമല്ലാത്തതിനാൽ പ്രതിരോധശക്തിയുള്ള ഇനങ്ങൾക്ക് വളരെയേറെ പ്രാധാന്യമുണ്ട്. പതിനൊന്ന് വഴുതന ഇനങ്ങളുടെ പ്രതിരോധ ശക്തി നിർണ്ണയിച്ചതിൽ അഞ്ചെണ്ണം കൂടിയ അളവിൽ പ്രതിരോധ ശക്തിയുള്ളവയായി കണ്ടു. ഈ ഇനങ്ങളെ അധികോൽപാദനശേഷിയും പ്രതിരോധ ശക്തിയുമുള്ള പുതിയ ഇനങ്ങൾ ഉൽപാദിപ്പിക്കുവാൻ ഉപയോഗിക്കാവുന്നതാണ്.

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