

RESEARCH NOTE

Performance of commercial cucumber cultivars against viral diseases under natural field conditions

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ABSTRACT

Twenty one cultivars of cucumber were screened against viral infection under natural field conditions, during 2004-05 and 2005-06. Seven cultivars viz., Faizabadi green long, Bansi cucumber, Bansi cucumber-1, Pusa Sanyog, Sheetal, Panth Kheera-1 and Priya were found to be resistant, four cultivars Kheera Faizabadi, Small green, Super green, Bakhtapur, and Faizabadi Sodar were moderately resistant, Bakhtapur Local- 3, Green EXP-12 and Faizabadi Chota were moderately susceptible, five cultivars viz., Kusle, Bakhtapur local-2, Five star Kheera, Kalyanpur and Sultanpur Barsati were susceptible and two cultivars Japanese long green and Bakhtapur Local-1 were found highly susceptible against viral diseases.

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Cucumber plays an important role in the human diet and provides a continuous source of income to the formers. India is a leading cucumber producing country in the world. Presently cucumber cultivation has been estimated to occupy 6.09 million hectares areas with annual production of 84.8 million tons (Anonymous, 2006). According to the Unani system of medicine, the oil from cucumber seeds prevents constipation and also useful for treating people suffering from jaundice and allied diseases (Yawalkar and Ram, 2004). This crop is continuously damaged by a number of pests and diseases. Apart from fungal and bacterial diseases, a number of viral diseases have been reported on cucumber in recent years. Among these, *Cucumber mosaic virus* and its strain, *Squash mosaic virus*, *Melon mosaic virus* and *bottle gourd mosaic virus* are important because of their wide distribution, severity of symptoms and heavy losses caused to cultivated cucumber (Verma and Giri, 1998, Awasthi and Khan, 2007). Production of crop plant from the ravages of pests and diseases by the use of synthetic pesticides has been the usual practice for many years. The constraints to use chemically synthesized pesticides for pest control presently includes the health and ecological hazards, development of

pesticidal resistance in insects and also their use is not economically feasible. Therefore, the plant disease control using toxic chemicals are not preferred now-a-days. So, some alternative methods in place of chemical control are being preferred for the management of viral diseases. In recent years, several plant products have been demonstrated to be useful for the management of viral disease of crop plants (Khan and Awasthi, 2006). Botanical pesticides are gaining stature and their recognition as a possible method for practical control of viral disease of crop plants. Considering the above facts, the present investigation was taken up to screen the available cucumber cultivars against viral diseases.

The experiment was carried out during two consecutive seasons i.e. 2004-05 and 2005-06 at Student's Instruction Farm of Narendra Deva University of Agriculture and Technology, Kumarganj, Faizabad (U.P.) to screen the available cucumber varieties/ cultivars against the viral diseases under natural field conditions.

Seeds of 21 cucumber cultivars, collected from different sources were sown in single lines in 2-2.5 cm deep furrow following augmented design in 3×3 m plot size, which were opened with

Table 1 : Disease rating scale 0-5 (Arunachalam *et al.*, 2002)

Scale	Code	Per cent Infection
0	Highly resistant	No symptoms
1	Resistant	Minute chlorotic specks/ patch on leaf
2	Moderately resistant	Wide area of mosaic symptoms on whole leaf without distortion
3	Moderately susceptible	Distortion and reduction of about 25% of normal leaf area
4	Susceptible	Distortion and reduction of about 25% to 75% of normal leaf area
5	Highly susceptible	Distortion and reduction of about more than 75% of normal leaf area

Table 2 : Response of genotypes of cucumber against CMV under natural field conditions during 2004-05 to 2005-06

Sr. No.	Grade	Variety	Number of gemplasm	Reaction
1.	0	Nil	Nil	Highly resistant
2.	1	Faizabadi green long, Bansi cucumber -1, Bansi cucumber, Pusa Sanyog, Sheetal, Pant Kheera-1, Priya	07	Resistant
3.	2	Keera Faizabadi small green, Super green, Baktapur, Faizabad Sodar,	04	Moderately resistant
4.	3	Bakhtapur Local-3, Green Exp-12, Faizabadi Chota	03	Moderately susceptible
5.	4	Kusle, Bakhtapur Local-2, Five Star Kheera, Kalyanpur, Sultanpur Barsati	05	Susceptible
6.	5	Bakhtapur Local -1, Japaneese Long Green	02	Highly susceptible

the help of spade. All recommended agronomical practices were followed for raising a good crop. One month after sowing, observations were recorded regularly on all the plants for the appearance of disease symptoms and the severity for categorizing the variety on 0-5 scale (Arunachalam *et al.*, 2002) (Table 1).

Twenty one cucumber cultivars were sown in augmented design under field conditions for evaluation of their resistance against viral infection during the year 2004-05 and 2005-06. They showed varying degrees of response against viral infection when categorized on 0-5 scale. Among these, seven cultivars *viz.*, Faizabadi green long, Bansi cucumber, Bansi cucumber-1, Pusa Sanyog, Sheetal, Pant Kheera -1 and Priya were found to be resistant in both the years. Five cultivars *viz.*, Kheera Faizabadi, Small green, Super green, Bakhtapur, and Faizabadi Sodar were moderately resistant and whereas three cultivars *viz.*, Bakhtapur Local- 3, Green EXP-12 and Faizabadi Chota were found moderately susceptible. Five cultivars *viz.*, Kusle, Bakhtapur Local-2, Five star Kheera, Kalyanpur and Sultanpur Barsati were categorized as susceptible. Whereas, two cultivars *viz.*, Japanese long green and Bakhtapur Local-1 were found highly susceptible against viral infection in both the years of crop seasons *i.e.* 2004-05 and 2005-06 (Table 2).

Twenty one cucumber cultivars were screened against viral diseases under natural field conditions. Among them 7 cultivars were found as resistant, 4 moderately resistant, 3 moderately susceptible, 5 susceptible and 2 highly susceptible.

Several reports are available on host resistance against viral diseases. Nakvasil and Petrikova (2004) reported Duet, Asterix, Blanka and Regina as resistant cultivars, whereas, Fatima, Hana and Nora cultivars as susceptible, against *Zucchini yellow mosaic virus (ZYMV)*.

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