

RESEARCH NOTE

Studies on host-range of tip-over disease of banana caused by *Erwinia carotovora* subsp. *carotovora*

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ABSTRACT

Host-range study of *Erwinia carotovora* subsp. *carotovora* was carried out and the plants used for the study were carrot, potato, tomato, onion, cabbage, brinjal, groundnut and citrus. All the plants were found infected by the pathogen under artificial inoculation except citrus. However, time taken to express the symptoms varied from plant to plant. Tomato, potato and carrot showed symptoms after two days, cabbage and onion took three days for first symptom expression, while brinjal and groundnut took five days.

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Banana is the one of the oldest and best known fruits of the world. Banana and plantain constitute a major staple food crop for millions of people in tropical populations. Several factors are attributed to the constraints for high production of banana and the major being the occurrence of diseases. Among the bacterial diseases, tip-over or bacterial rhizome rot of banana caused by *Erwinia carotovora* subsp. *carotovora* is gaining importance in recent years in Karnataka though earlier the disease was considered as of minor importance. *Erwinia carotovora* subsp. *carotovora* is a soft rot pathogen infecting most of fruits and vegetables.

The ability of the bacterium to infect different host and crop plants was tested by inoculating pathogen to the vegetables and fruits under aseptic condition. For this study clean, fresh healthy fruits and vegetables were washed in running tap water to remove dust and soil particles, if any, and then surface sterilized in one per cent sodium hypochlorite for 30 seconds to eliminate surface contaminants. The traces of sodium hypochlorite has to be removed by washing the fruits and vegetables in three series of sterile water and the fruits and vegetables were blot dried.

The plants which were used for the study of host-range

of pathogen were carrot, potato, tomato, onion, cabbage, brinjal, groundnut and citrus.

Carrot, potato, tomato, onion, cabbage, brinjal, groundnut and citrus were used for the study of host range of pathogen. They were inoculated as mentioned detail in material and methods. All the plants were infected by the pathogen except citrus. However, time taken to express the symptoms varied. Carrot, potato and tomato showed symptoms after two days, cabbage and onion took three days for first symptom expression, while brinjal and groundnut took five days for symptom expression. Citrus did not show any symptom. On tomato it produced soft rot with brown discoloration of leaves and subsequent drying of leaves was observed. Onion produced typical symptoms of soft rot and oozing of putrefied liquid at the point of inoculation. On cabbage, brown-blackish discoloration of leaves and subsequent drying of leaves was observed (Table 1).

Alippi *et al.* (1997) reported tomato as a host of *Erwinia carotovora* subsp. *carotovora* in Argentina. Bhat *et al.* (2010) took seven different vegetable species viz., carrot (*Dacus carota*), cucumber (*Cucumis sativa*), onion (*Allium cepa*),

Table 1 : Host range of <i>Erwinia carotovora</i> subsp. <i>carotovora</i>			
Hosts	Common name	No. of days taken for symptom expression	Symptoms
<i>Lycopersicon esculentum</i>	Tomato	2	Typical soft rot and drying of leaves
<i>Solanum melongena</i>	Brinjal	5	Brownish discolouration
<i>Allium cepa</i>	Onion	3	Drying of leaves
<i>Solanum tuberosum</i>	Potato	2	Brownish discolouration
<i>Daucus carota</i>	Carrot	2	Typical soft rot and black discolouration
<i>Brassica oleracea</i>	Cabbage	3	Brown to blackish discolouration
<i>Arachis hypogaea</i>	Groundnut	5	Brownish discolouration
<i>Citrus</i> sp.	Citrus	–	No symptoms



Fig. 1 : Host range studies for *Erwinia carotovora* subsp. *carotovora*

potato (*Solanum tuberosum*), knol khol (*Brassica oleracea* var. *caulorapa*), cauliflower (*B. oleracea* var. *Botrytis*) and tomato (*Lycopersicon esculentum*), belonging to different families which were tested for host-range studies of the pathogen. Studies on host range of the bacterium under artificial inoculation revealed that all the seven tested vegetable species, representative of the different families, were susceptible to soft rot (Fig. 1). Here, the present findings also exhibited the same situation as reported by earlier workers. Rajeh and Khalif (2000) studied the host range of soft rot disease of vegetables in Jordan. *Erwinia carotovora* subsp. *carotovora* was collected from various crops including cabbage, cauliflower, chard, common mallow, gladiolus sp., lettuce, onion, pepper, potato, spinach, squash, sweet melon and tomato which showed its host range capacity.

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