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# STUDIES ON FRUIT-ROT OF CHILLIES. I. PATHOGENICITY TEST OF ISOLATES

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Nine fungal species of *Colletotrichum*, *Fusarium*, *Alternaria*, *Curvularia*, *Penicillium*, *Aspergillus*, *Mucor*, *Rhizopus* and *Cephalosporium* were isolated from the diseased parts of chillies. *Colletotrichum* sp. was found in the highest proportion on all plant parts. *Colletotrichum* sp., *Fusarium* sp., and *Alternaria* sp. produced 100% fruit-rot in case of injured fruits. Similar results were also obtained from *Colletotrichum* sp. in case of uninjured fruits. *Curvularia* sp. was found non-pathogenic in respect of uninjured fruits of chillies. Both the methods of infection (injured and uninjured) differed significantly in enhancing fruit-rot.

## INTRODUCTION

Chillies or red-peppers (*Capsicum annuum L.*) occupy an imortant place amongst the vegetable crops of Pakistan These are well known for their use both as green and ripe pods as a spice. The crop, however, suffers from many diseases namely fruit-rot and anthracnose (*Colletotrichum capsici*), wilts (*Fusarium* and *Verticillium*), bacterial blight, bacterial leaf spot and virus diseases (Frohlich and Rodewald, 1970). Of these, fruit-rot is the most destructive in Pakistan which causes a considerable damage in years of abundant rainfall during summer. During the years favourable for disease development, the direct loss may be as high as 10-45%. In view of the evident damage done to chilli crop by diseases in general and by fruit-rot in particular, it was considered essential to investigate the fungi causing the fruit-rot of chillies.

## MATERIAL AND METHODS

A) *Collection, Isolation and Identification* : Diseased parts of chilli plants were collected from Vegetable Research Area at Ayub Agricultural Research Institute, Faisalabad. Various funji were isolated from seeds, stems and fruits by using

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usual isolation techniques. Stock cultures were maintained on basal media for further studies. The fungi were identified up to their generic level.

B) *Pathogenicity Study* : Species of *Colletotrichum*, *Fusarium*, *Alternaria* and *Curvularia* were used to test their pathogenicity, as their recovery was the highest among the isolated fungi. Chilli pods of Peshawari variety were infested with the spores of the test fungi, by using healthy and injured pods on the plants nearing maturity and covered with polythene bags for four days. The experiment was laid out *in vitro* in four replications. Observations on fruit-rot were taken in percentage by counting healthy and diseased pods.

## RESULTS AND DISCUSSION

*Colletotrichum* sp. was the highest among the isolates followed by the species of *Fusarium*, *Alternaria*, *Curvularia*, *Aspergillus*, *Cephalosporium*, *Mucor*, *Penicillium* and *Rhizopus* (Table 1). *Mucor*, *Penicillium* and *Rhizopus* were isolated only from seeds, whereas *Cephalosporium*, *Curvularia* and *Aspergillus* were not isolated either from seeds, stem or pods.

Table 1. *Percentage fungal recovery from various parts of chillies*

| Isolates | Plant parts | | | Average |
|---|---|---|---|---|
| | Stem | Pod | Seed | |
| 1. *Colletotrichum* sp | 50.0 | 52.1 | 35.7 | 45.6 |
| 2. *Fusarium* sp. | 25.0 | 26.2 | 15.7 | 22.4 |
| 3. *Alternaria* sp. | 5.0 | 8.7 | 14.3 | 9.0 |
| 4. *Curvularia* sp. | — | 11.3 | 11.1 | 7.5 |
| 5. *Aspergillus* sp. | 10.0 | — | 8.0 | 6.0 |
| 6. *Cephalosporium* sp. | 10.0 | 1.7 | — | 3.9 |
| 7. *Mucor* sp. | — | — | 11.1 | 3.8 |
| 8. *Penicillium* sp. | — | — | 2.1 | 0.8 |
| 9. *Rhizopus* sp. | — | — | 2.0 | 0.8 |

The comparison of the pathogenic effects of the test fungi was made on fruits of Peshawari variety of chillies. The pathogenicity test revealed that the species of *Colletotrichum* and *Fusarium* were equally effective in rotting chilli fruits. There was highly significant difference among the methods of fruit infection.

Uninjured fruits did not suffer as much rotting as the injured ones (Table 2). Injured fruits infected with *Colletotrichum* sp., *Fusarium* sp. and *Alternaria* sp., produced 100% fruit-rot which was similar to that of uninjured fruits infected with *Colletotricum* sp., whereas *Alternaria* sp. was found moderately pathogenic and *Curvularia* sp: non-pathogenic in respect of uninjured fruits. Fruit-rots of chillies caused by *Fusarium moniliforme*, *F. oxysporum* and *F. solani* and *Alternaria alternata* have also been reported (Micosa and Ilag, 1977 and Uma, 1981).

Table 2. *Effect of fungi and infection methods on fruit-rot of chillies*

| Infection method | Percentage infection by | | | |
|---|---|---|---|---|
| | *Colletotrichum* | *Fusarium* | *Alternaria* | *Curvularia* |
| Uninjured fruits | 90ab* | 80b | 20d | — |
| Injured fruits | 100a | 100a | 100a | 60.0c |

Mean values with the same letters do not differ significantly at 5% level of probability

## REFERENCES


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