

**Plant Pathology**

**EFFECT OF BROWN SARSON LEAF LEACHATES ON THE  
GERMINATION OF THE CONIDIA OF *ALTERNARIA*  
*BRASSICAE* AND *ALTERNARIA BRASSICICOLA***

by S. K. SHARMA and J. S. GUPTA, Department of Botany, Agra College,  
Agra 282 002

(Received 22 February, 1978; after revision 26 April, 1978)

Brown sarson (*Brassica campestris* L. var. *dichotoma* Watt.) is principally cultivated in India for oil in rabi crop season. It is attacked by *Alternaria brassicae* and *A. brassicicola* causing leaf blight disease. Many findings reveal that the presence of several diffusible substances (leachates or exudates), organic or inorganic in nature, affect the leaf surface colonizers (fungi, bacteria and actinomycetes). Further, it has been observed that the conidial inhibition depends upon the nature of leachates, host varieties, the age of the host plants and maturity of leaves. Taking these points in view the germination of conidia of both the pathogens (*A. brassicae* and *A. brassicicola*) of brown sarson was seen in the leaf leachates collected from the surface of the young and old leaves of the three brown sarson cultivars (Agra local, BS<sub>2</sub> and K<sub>1</sub>) from December, 1973 to March 1974 to evaluate the relative resistance of these brown sarson cultivars against the pathogens.

The leaf leachates were collected in the morning at 6 A.M. from the surface of young (uppermost) and old (lowermost) leaves of 20 randomized tagged plants of each cultivar of brown sarson, following the 'leaf washing technique' of Burri (1903). From the surface of young and old leaves of the three cultivars six samples of leaf leachates were obtained at monthly interval, and conidia germination of *Alternaria brassicae* and *A. brassicicola* was studied by hanging drop method. Conidial suspensions of *A. brassicae* and *A. brassicicola* were incubated at the optimum temperature of 20°C ( $\pm 1^\circ\text{C}$ ) and 24°C ( $\pm 1^\circ\text{C}$ ) respectively. Germination of *A. brassicae* was observed after 60 hr and of *A. brassicicola* after 36 hr of incubation. Fifty observations were recorded for each treatment including control.

It is obvious from the results that the leaf leachates of different cultivars of brown sarson appear to influence the germination of conidia of *A. brassicicola*, and *A. brassicae*. The maximum inhibition of pathogens was seen in the leaf leachates of BS<sub>2</sub> and minimum in Agra local, while K<sub>1</sub> had inhibition in between. The percentage of conidial inhibition was found to be decreased with the age of the host plants being maximum in 30 days old and minimum in 120 days old plants.

The young leaf leachates of all the three cultivars caused higher inhibition than those of old leaf leachates.

Van Velson (1957) studied wheat varieties with respect to infection by *Helminthosporium sorokinianum* and observed that exudates differed from variety to variety of the host. This change might be an important factor in the degree of susceptibility or resistance of the plants. Chand and Walker (1964) showed that *Pseudomonas lachrymans* multiplied more rapidly in the leachates of susceptible variety of cucumber than in the resistant ones. In the present investigation more multiplication of conidia of *A. brassicae* and *A. brassicicola* was observed in Agra local variety of brown sarson. Further, it was seen that the conidial inhibition of *A. brassicae* and *A. brassicicola* was more suppressed in the leaf leachates of younger leaves as compared to old leaves in all the three cultivars. These results are in conformity with the findings of Kono Akitsma (1960) on maize; and Sharma (1971) on sorghum.

#### ACKNOWLEDGEMENTS

The authors are thankful to the Principal, Agra College, Agra, and Dr M. N. Gupta, Incharge of Botany Department, Agra College, Agra, for providing necessary facilities. Thanks are also due to Dr J. K. Sharma and Dr K. D. Sharma for suggestions.

#### REFERENCES

- Burri, R. (1903). Die Bakterienvegetation auf der oberfläche normal entwickelter. *Pflanzen. Zbl. Bakt.*, **10**, 756-763.
- Chand, J. N. & Walker, J. C. (1964). Relation of age and varietal resistance to bacterial multiplication in cucumber inoculated with *Pseudomonas lachrymans*. *Phytopathol.* **54**, 49-50.
- \*Kono Akitsma (1960). Influence of various water drops to germination and germ tube development of uredospore of *Puccinia coronata*. *Bull. Fac. Agric. Univ., Miyazaki*, **6**, 121-124.
- Sharma, J. K. (1971). Biochemical basis of resistance to anthracnose in sorghum incited by *Colletotrichum graminicola*. In : *Plant Disease Problem*, pp. 882-887. Proc. of the 1st Int. Symp. on Plant Pathology, New Delhi, India, 1966.
- \*Van Velson, R. J. (1957). A study of the pathogenicity of *Helminthosporium* species. B.Ag.Sc. Hons. Thesis. Univ. of Adelaide.