REACTION OF POPLAR GERMPLASM TO *CLADOSPORIUM* LEAF SPOT

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Introduction

A large number of fast growing exotic species/hybrids/clones of *Populus* species have been introduced in India to test their performance. Poplars are valued for their growth potential, good form characteristics, timber quality and colourless wood (Mathur and Sharma, 1983). *P. ciliata*, an indigenous species is widely distributed in Western Himalayas and is attacked by large number of pathogens (Singh and Singh, 1986). *Cladosporium humile* Davis, the incitant of leaf spot of Poplar has often caused defoliation of great magnitude to *P. ciliata* in nurseries and plantations (Sharma and Sharma, 1997, 1999). Not much information is available in literature except a sketchy account. Lack of resistant planting material necessitates frequent fungicide applications in the nurseries. Identification of resistant source is the pre-requisite to be exploited in the breeding programme. The use of resistant planting material is considered to be the cheapest and best means of combating plant diseases. The present study was, therefore, undertaken with the objective to find out the resistant source, if any, so that it can be exploited in breeding programme.

Material and Methods

These investigations were undertaken in the Shilly nursery (1500 m amsl) of Dr Y.S. Parmar University, Solan during 1997-98. A total of 42 clones/species/hybrids of *Populus* species were raised in the month of February. Cuttings of 18 to 23 cm were planted at a distance of 45 x 45 cm in the randomised block design with three replications each. The screening of germplasm against *C. humile* was done in the month of September on the basis of leaf area covered by the lesions as given below :

Class rating	Area under lesions (%)	Disease reaction
0	0	Immune
1	1	Highly resistant
2	5	Resistant
3	10	Moderately resistant
4	25	Moderately susceptible
5	50	Susceptible
6	≥65	Highly susceptible

Table 1

Reaction of Populus ciliata clones to Cladosporium humile

Clone	Severity	Disease reaction
Narkanda, Raishilli, Kalath, Rahala, Balos, Kiari, Manali, Kangoni Dhamaudli, Chambi, Fagu, Kufri, Prem Nagar, Katrain, Gharna, Vashisht, Chhachpur-2, Chhachpur-3, Chhachpur, Sanaba, Fagu-1,	5	Susceptible
Theog, Taradevi, Sanjauli	6	Highly susceptible

Based on disease severity, disease index was worked out in accordance to McKinney (1923) :

$$\text{Disease index (\%)} = \frac{\text{Sum of all disease ratings}}{\text{Total number of ratings} \times \text{Maximum grade}} \times 100$$

Results and Discussion

The disease first appeared in the month of May. The assessment of the disease was made in the month of September. It is evident from the data (Table 1) that out of 24 clones of *P. ciliata* screened, none was found to be immune, highly resistant, resistant, moderately resistant or moderately susceptible. Eight clones were rated as susceptible (50% disease index) while rest were highly susceptible (≥65% disease index) and succumbed to the disease. All other 18 *Populus* species/ hybrids/clones were found to be disease free.

If the primary goal is to compare genetic material for relative susceptibility or resistance to *Cladosporium* leaf spot, the optimal time to evaluate the germplasm is after the rapid spread of the disease (after July-August). During present investigations, none of the *P. ciliata* clones was found disease free. All the clones were rated as susceptible or highly susceptible. The clones of *P. deltoides, P. robusta, P. yunnanensis, P. trichocarpa, P. eugenii, P. oxford, P. gwayder* and *P. regenerata* were found to be immune. However, elsewhere *P. deltoides* has been reported to be susceptible to *Cladosporium* leaf spot pathogen (Khan and Beig, 1996). *Cladosporium letiferum* and *C. rambosum* have also been reported pathogenic on *Populus* species (Anon., 1960).

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SUMMARY

***Populus ciliata*, an indigenous species is widely distributed in Western Himalayas and is attacked by large number of pathogens. *Cladosporium humile*, the incitant of leaf spot causes defoliation of great magnitude to *Ciliata* in nurseries and plantations. During 1997-98, an**

defoliation of great magnitude to *Ciliata* in nurseries and plantations. During 1997-98, an experiment was conducted to assess 42 clones/species/hybrids of *Populus* species against *C. humile*. Out of 24 clones of *P. ciliata*, none was found disease free. Eight clones were rated as susceptible while rest were highly susceptible. All other 18 hybrids/clones of *P. deltoides*, *P. robusta*, *P. yunnanensis*, *P. trichocarpa*, *P. eugenii*, *P. oxford*, *P. gwayder* and *P. regenerata* were found to be immune.

क्लैडोस्पोरियस पर्ण लांछन के प्रति पोपलर बीजाणुधरस की प्रतिक्रिया

आर०सी० शर्मा व संजीव शर्मा

साराशं

पोपुलस सिलियाटा देशज जाति है जो पश्चिमी हिमालय प्रदेश में दूर दूर तक फैली हुई है जिसको बहुत-सारे रोगजन आघ्रान्त करते रहते हैं । पर्ण लंछन उत्पन्न करने वाला *क्लैडोस्पोरियस* ह्यूमाइल पो० सिलियाटा की रोपणियों और उसके रोपवनों में बड़े परिमाण पर इस वृक्ष का निष्पत्रण करता है । 1997-98 में *क्लैडोस्पोरियम* के प्रति *पो० सिलियाटा* के 42 कृन्तकों/जातियों/संकरों की प्रतिरोधिता मालूम करने को एक संपरीक्षण किया गया । *पो० सिलियाटा* के 24 कृन्तकों में से कोई भी कृन्तक रोगमुक्त नहीं रहा । आठ कृन्तक प्रभाव्य माने गए, बाकी कृन्तक अत्यधिक प्रभाव्य रहे । *पो० डेज्टायडिस, पो० रोबस्टा, पो० युन्नानेंसिस, पो० ट्राइकोकार्या, पो० युजेनिआई, पो० ग्वेडर, पो० आक्सफोर्ड* और *पो० रिजेनरेटा* के सभी अन्य संकर/कृन्तक अप्रभाव्य पाए गए ।

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