PTEROPHYLLUM INCISUM SAHNI AND RAO FROM UPPUGUNDURU, ANDHRA PRADESH

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Recently some plant fossils have been collected from the village Uppugunduru (15°40′:80°15′), Prakasam District, Andhra Pradesh. One of these fossils (no. UPG/18/87) resembles *Pterophyllum incisum* Sahni and Rao[1] in gross features and venation pattern. It is a portion of pinnate leaf, 2.4 cm long and 3.9 cm broad. Rachis is 2 mm thick, longitudinally striated. Pinnae are linear, parallel-sided, 2.5 cm long and 0.2 cm broad, attached to rachis laterally at an angle of about 70° by the entire base. Basal margin is decurrent, connected with the pinna below. Apices of pinnae are incised. Veins are parallel, simple and 6 in number.

This is the first record of *P. incisum* from Upper Jurassic of Uppugunduru. Earlier, *P. footeanum* Feistmantel and *P. distans* Morris were reported from here by Vagyani[2] and Vagyani and Zuting[3] respectively.

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INHERITANCE OF POWDERY MILDEW RESISTANCE IN WHEAT

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POWDERY mildew caused by *Erysiphe graminis* DC f. sp. *tritici* Marchal, is a major disease of wheat in the temperate regions of the world. In India, it takes heavy toll of the crop in the Himalayan foot-hills[1] and hence it is desirable to develop powdery mildew resistant wheat varieties for the disease prone areas. Two *Triticum aestivum* lines from CIMMYT, viz. CPAN 1922 and CPAN 1946 were found to be resistant to powdery mildew at Gurdaspur[2]. The present investigation deals with the mode of inheritance of resistance from these sources.

CPAN 1922 and CPAN 1946 were each crossed with the susceptible cultivar WL 711. Parental stocks, F_1, F_2 and backcross generations were grown in the earthen pots (30 cm diameter) in the laboratory at the minimum and maximum ambient temperatures of 6 to 10°C and 20 to 24°C respectively. Ten to twelve days old seedlings were inoculated using the monoconidial isolate of known virulence[2]. Individual plants were scored for the presence/absence of powdery mildew on them. Powdery mildew-free plants were designated as resistant plants and those supporting powdery mildew colonies as susceptible. χ^2-test was applied to test the goodness of fit of segregation ratios.

WL 711 was uniformly susceptible whereas CPAN 1922 and CPAN 1946 were highly resistant (table 1). F_1 in both the crosses was susceptible indicating recessiveness of resistance in both the crosses.

In the F_2 generation a segregation ratio of 1 resistant:3 susceptible plants was observed in the cross CPAN 1922/WL 711 indicating the monogenic control of the resistance. In the backcross (CPAN 1922/WL 711^2) all the plants were found to be powdery mildew susceptible. However, in the backcross, CPAN 1922^2/WL 711 a segregation ratio of 1 resistant:1 susceptible plants was observed. This confirmed that a single recessive gene controlled the powdery mildew resistance in CPAN 1922.

In the F_2 generation 16 resistant and 197 susceptible plants were observed in CPAN 1946/WL 711 fitting into a segregation ratio of 1 resistant: 15 susceptible plants. In the backcross, CPAN 1946/WL 711^2, all plants developed powdery mildew. In the second backcross, CPAN 1946^2/WL 711, a segregation ratio of 1 resistant:3 susceptible plants was observed. This showed that powdery mildew resistance of CPAN 1946 was conditioned by two recessive genes.

The parentage of CPAN 1922 is Ore F_1 158/Fdl//Mef's'/2* Tiba/3/Coc and that of CPAN 1946 is Kvz/3/Cno/Chr//On. There is no common parent in the parentage of resistant stocks suggesting that the genes governing powdery mildew resistance in the stocks would probably be different. CPAN 1922 and CPAN 1946 could, therefore, serve as the

Table 1 *Reaction of powdery mildew of the parents, F_1, F_2 and various backcross generations of two wheat crosses*

Generation cross	No. of plants Resistant (R)	Susceptible (S)	Genetic ratio (R:S)	χ^2 value	P value
WL 711	0	16			
CPAN 1922	15	0			
CPAN 1946	19	0			
F_1:CPAN 1922/WL 711	0	16			
F_1:CPAN 1946/WL 711	0	13			
F_2:CPAN 1922/WL 711	61	191	1:3	0.08	0.7–0.8
F_2:CPAN 1946/WL 711	16	197	1:15	0.59	0.3–0.5
Backcrosses					
CPAN 1922^2/WL 711	63	69	1:1	0.27	0.5–0.7
CPAN 1922/WL 711^2	0	85			
CPAN 1946^2/WL 711	15	53	1:3	0.31	0.5–0.7
CPAN 1946/WL 711^2	0	69			

basic material for breeding powdery mildew-resistant varieties of wheat.

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SEASONAL EFFECT ON INFECTION BY COCONUT STEM BLEEDING PATHOGEN, *THIELAVIOPSIS PARADOXA*

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STEM bleeding is an important disease of coconut which has been reported from almost all coconut-growing countries[1,2]. Recently, involvement of *Thielaviopsis paradoxa* (de Seynes) Von Hohnel as a primary causative agent of the disease has been established[3]. There is no information on the effect of different seasons on infection by this pathogen. Hence the present study was undertaken and the results are presented in this paper.

T. paradoxa isolated from the affected trunk of coconut was inoculated on the trunk, at about 75 cm height from the ground, using inoculum grown on 2 cm long bits of sterilized coconut rachis[3]. An uninoculated bore-hole made on the opposite side of the inoculated trunk served as the control. A total of 29 palms including both West Coast Tall (WCT) and Chowghat Orange Dwarf (COD) were inoculated at CPCRI Farm during different months and periodically observed for symptom production. The observations on depth and size of lesion as recorded in December, 1987 are presented in table 1.

When the amount of decay in young WCT palms inoculated at different periods was compared, the maximum lesion depth/size was recorded in palms inoculated during or after monsoon (July to November). The lesion size was comparatively less in palms inoculated during April–May.

Young WCT palms (10–12 years) showed generally more internal decay as compared to 45–60 year-old palms. The infection progressed up to a depth of 7–7.5 cm in young palms inoculated during July–November as against 5.5 cm in old palms after 24 months of inoculation. The lesion size for both age groups, however, did not vary much. The infection was rather low and delayed during summer months. In general, the extent of decay increased with progress of time.

When young palms of WCT and COD inoculated in April 1987 were compared, the size and depth of lesion were slightly more in the former variety. But this requires confirmation by testing more palms since the number of dwarf palms inoculated was inadequate.

The results thus showed that the establishment of infection was quicker and the decay was more in palms inoculated during July–November irrespective