

**INHERITANCE OF RESISTANCE TO
CERCOSPORA SORGHI ELLIS AND EVERH.
CAUSING GREY LEAF SPOT OF SORGHUM**

GREY leaf spot of sorghum caused by *Cercospora sorghi* is a destructive disease causing loss in grain and fodder yield and also affecting quality of fodder (Porter¹, Ramakrishnan², Sharma and Jain³). The disease is favoured by wet weather (Ramakrishnan²). As the chemical control would be uneconomic, breeding resistant varieties seem to be more effective and cheap. Successful planning of resistance breeding programme depends on the availability of the resistant variety and the knowledge on the inheritance of resistance. An attempt has therefore been made to study this aspect at the Regional Research Station, Dharwar, during Kharif 1979 and the results are reported here.

SPV-81, a tan plant variety possessing high level of resistance to foliar diseases, was selected and crossed to CSV-2, a susceptible high yielding variety. Subsequently the F₁ was back crossed to both the parents to develop six generations. The parents, F₁, F₂ and two back-crosses were planted on 15th July 1979 in a randomized block design with three replications.

TABLE I
Disease reaction of parents, F₁, F₂ and back-cross generations of SPV-81 × CSV-2

Generation	Disease score* (Number of plants)				
	1	2	3	4	5
P ₁ (SPV-81)	74	20	..	..	..
P ₂ (CSV-2)	..	..	..	64	24
F ₁ (SPV-81 × CSV-2)	..	..	40	58	..
BC ₁ (SPV-81 × CSV-2) × CSV-2	..	..	..	146	371
BC ₂ (SPV-81 × CSV-2) × SPV-81	110	50	92	71	..
F ₂ (SPV-81 × CSV-2)	41	121	138	324	25

* 1. Traces or no symptoms, 2. upto 10% leaf area affected, 3. 11 to 25% leaf area affected, 4. 26 to 50% leaf area affected, 5. 51% and more leaf area affected.

TABLE II

Number of susceptible and resistant plants in F₂ and test cross of SPV-81 × CSV-2 and the values of x² based on 3 : 1 and 1 : 1 segregation in F₂ and test cross

Cross	Total No. of plants	Susceptible		Resistant		x ²	P value
		Observed	Expected	Observed	Expected		
SPV-81 × CSV-2	651	489	488.75	162	162.75	0.000454	0.9 to 1.0
(SPV-81 × CSV-2) × SPV-81	323	163	161.50	160	161.5	0.020000	0.9

Recommended dose of fertilizer was given and the insect control measures were adopted. The disease appeared in epiphytotic form as the artificial spray inoculation with rich conidial suspension was done four times on alternate days from 45th day of sowing. The observations were recorded at grain maturity following 1 to 5 scale where grades 1 and 2 are resistant and grades 3, 4 and 5 are susceptible. The data were statistically analysed and subjected to x² test (Tables I and II).

The F₁ showed susceptible reaction indicating its dominance over resistance. The back-cross to susceptible parent further confirmed this observation. It can be seen that the data in F₂ and test cross generation had a good fit for ratio of 3 : 1 in F₂ and 1 : 1 in test cross indicating simply monogenic inheritance

of the disease. This information should assist in breeding resistant varieties.

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