

TABLE I
Stem characters of the parents and F_1 and segregation pattern of F_2 and F_3

Generation	Stem character	No. of plants		Observed ratio	'p'
		Glossy	Non-glossy		
B-85	Non-glossy	..	..	..	..
Glossy plants	Glossy	..	..	..	..
F_1	Glossy	..	..	..	..
F_2	..	339	112	3 : 1	0.95-0.90
F_3	..	1648	331	5 : 1	0.95-0.90

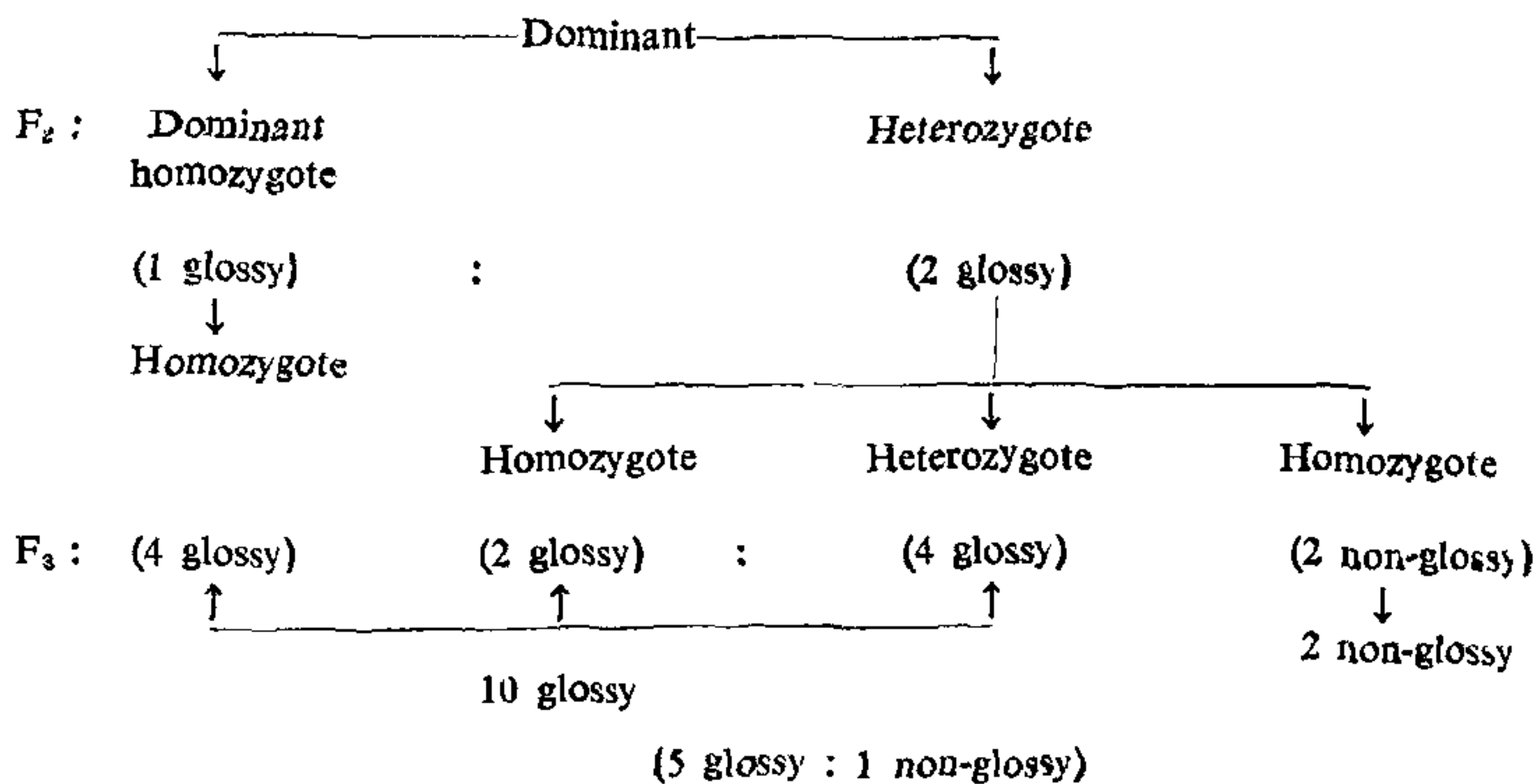


FIG. 1

Hybridization work with other genotypes has been undertaken to symbolise the gene so detected.

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OUTBREAK OF COLLAR ROT OF SUNFLOWER CAUSED BY *BOTRYTIS CINEREA* IN RAJASTHAN, INDIA

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DURING 1978, sunflower plants, about $3\frac{1}{2}$ months old, were found to be dying at the Agronomy Farm, Rajasthan College of Agriculture, University of Udaipur, Udaipur. The incidence of the disease was 5-10% in different plots. Drooping of leaves and heads resulting in death of the plants was first observed in the fields,

Isolations were made on potato dextrose agar (PDA) medium from roots, collar regions and stems and consistently the same fungus was isolated. Pathogenicity was tested and symptoms as seen in the field were reproduced. The fungus grew readily on PDA producing white mycelium with black sclerotia of varying sizes (2–10 mm). The fungus grew at 5–25°C but the optimum temperature for growth was found to be $20 \pm 1^\circ\text{C}$. The culture of the fungus was sent to the Commonwealth Mycological Institute, England; phialidic microconidial state was observed in the culture and it has been identified as *Botrytis cinerea* Pers. ex Pers. (IMI 239192).

The pathogen is seedborne (2) and from India *B. cinerea* has been isolated from sunflower seeds (1) but from available literature, collar rot and subsequent death of sunflower plants due to *Botrytis cinerea* in nature appears to be a new record for India (3).

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ZONATE ANTHRACNOSE, A NEW DISEASE OF SORGHUM CAUSED BY *COLLETOTRICHUM GRAMINICOLA* VAR. *ZONATUM* VAR. NOV.

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In the course of our studies on sorghum diseases, anthracnose lesions of two distinct types were noticed and earlier we had assumed that the restricted eye-shaped ellipsoid spots characteristic of *Colletotrichum graminicola* (Ces.) Wilson, formed diffuse type spots at maturity. Continued observations revealed the existence of both types of spots side by side on the same leaf and the absence of any change from one type to the other. This increased the doubts about

the taxonomy of the fungus producing diffuse type of spots and detailed studies were undertaken.

Field observations were made on the local variety of sorghum 'bili jola', which is also used for testing the symptom expression. The pathogen was isolated on potato-dextrose-agar and oat-meal agar. Artificial inoculations were made by spraying healthy plants raised in pots with conidial suspensions prepared from pure cultures or infection spots. The inoculated plants were incubated for a day at high humidity and then under normal day conditions in isolation. Disease was scored on the sixth day. Measurements of conidia, conidiophores, setae, acervuli were taken from leaf spots on sorghum and were based on 100 measurements.

The diffuse type disease spots were larger in size (upto 50 mm) with numerous acervuli throughout the leaf spot, in parallel rows between veins often appearing in concentric circles (Fig. 4). They are produced in all growing seasons on sorghum, in the mature stages of the crop, a few weeks after the appearance of the restricted eye-shaped anthracnose spots produced by *C. graminicola* (Fig. 1). The fungus isolated from the new type disease spots, produced the typical zonate anthracnose spots on inoculation. A comparative study (Table I) of the new type with *C. graminicola* revealed many marked differences, in the number of conidia per acervuli, time of appearance of disease in field, cultural characters (Figs. 2 and 5), chlamydo-spores (Figs. 3 and 6) in addition to the symptoms. On the basis of these differences, the new pathogen is proposed as a new variety, *Colletotrichum graminicola* var. *zonatum* and the disease caused by it as zonate anthracnose disease of sorghum.

Colletotrichum graminicola var. *zonatum* var. nov.

A varietate *graminicola* differt maculis foliaribus majoribus (ad 50 mm diam.), diffusis, multis acervulis plus minusve zonatis occupatis; *in vitro* coloniae acervulis zonatae, mycelio aereo carentes. Chlamydo-sporae catenulatae in hyphis fasciculatis aggregatae.

Type specimen on leaves of sorghum, Mysore, India, 15th August 1979; deposited in Herb. IMI 24881 and CBS 001295.

Cross inoculations using isolates of *C. graminicola* and *C. graminicola* var. *zonatum* taken from sorghum were carried out thrice, on sorghum (3 varieties), maize and sugarcane. Maize and sugarcane were not infected by both the types. On 'bili jola', DMS 652 and SPV 252 varieties of sorghum, inoculated with *C. graminicola*, the percentages of plants infected respectively were 95.8, 3.1 and 1.5; and the percentages of leaf area involved were 2.5, no data, and 0.5; with *C. graminicola* var. *zonatum* the corresponding figures respectively were 81.4, 8.0 and 6.0, and 1.9, 1.6 and 1.7. Some workers^{1,2} have also failed to