

# GREEN EAR DISEASE CAUSED CHANGES IN CHLOROPHYLL FRACTION OF BAJRA LEAVES

'Green ear' disease caused by *Sclerospora graminicola* is an important disease of Bajra crops and causes remarkable biochemical alterations in the host (Sinha, 1965; Sinha & Kumar, 1984). While observing decrease in photosynthetic rate in *Sclerospora*-infected Bajra plants, Garg and Mandahar (1975) reported a decrease in total Chlorophyll content of the diseased leaves. Since chlorophyll has been reported to be an indispensable pigment in the process of photosynthesis (Gaffron, 1966), and so far no attempt appears to have been made to study the effect of the disease on chlorophyll fractions in the leaves, it was considered desirable to study the effect of the infection of Bajra by *S. graminicola* on chlorophyll fractions of leaves.

Comparable young leaves of healthy and diseased Bajra plants were collected from the same field, freed of veins and cut into small pieces for being lyophilized to constant weight. The chlorophyll fractions— a and b were extracted and estimated following the method described by Mahadevan and Sridhar (1982).

It is evident from the above data that the concentrations of total chlorophyll and chlorophyll a and chlorophyll b decreased in diseased leaves. While the concentration of

chlorophyll a decreased to a considerable extent, that of chlorophyll b showed only a slight decrease. The ratio of chlorophyll a/b and percent chlorophyll a (in relation to the total chlorophyll) was less in diseased leaves while that of chlorophyll b (in relation to the total chlorophyll) was more in diseased leaves.

Reduction in total chlorophyll content of the host leaves due to powdery mildews, downy mildews, wilts, etc. has been reported by many workers (Allen, 1942; Balasubramanian 1981; Krishnamani & Lakshamanan, 1976; Mathre, 1968; Naidu *et al.*, 1981; Padmanabhan *et al.*, 1974; Tugnawatt, 1976; 1977). The results presented here show that the Green ear disease causes a decrease in the total chlorophyll content of the leaves similar to those observed earlier (Garg & Mandahar, 1975).

Chlorophyll a/b ratio in the host leaves has been reported to decrease due to different diseases (Balasubramanian, 1981; Mathre, 1968; Padmanabhan *et al.*, 1974; Tugnawat, 1977). As reported earlier, it has been observed here that as a result of Green ear disease of Bajra, the chlorophyll a/b ratio reduced in affected leaves. The decrease in the concentration of chlorophyll a—the indispensable photosynthetic pigment

**Table 1—Total chlorophyll and chlorophyll a and chlorophyll b fractions in healthy and diseased Bajra leaves**

	Healthy leaves	Diseased leaves
Total chlorophyll (mg/l)	74.781	32.115
Chlorophyll a (mg/l)	58.746	17.203
Chlorophyll b (mg/l)	16.035	14.912
Chlorophyll a % (in relation to total chlorophyll)	78.56	53.57
Chlorophyll b % (in relation to total chlorophyll)	21.44	46.43
Chlorophyll a/b ratio	3.66	1.15

—is probably responsible for the decrease in the photosynthetic activity of the diseased leaves of Bajra. These may be attributed to the metabolic disruption or direct disruption by the pathogen, as suggested by Padmanabhan, *et al.* (1974).

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