

ACTIVITY OF PHOSPHATASES IN HEALTHY AND DISEASED BAJRA TISSUES

Studies on the physiology of parasitism in 'Green ear' disease of Bajra have been in progress in this laboratory for the last few years. This paper describes the results of studies on the activity of phosphatases (both acid and alkaline) in healthy Bajra (*Pennisetum typhoides* Stapf & Hubb.) tissues and those infected with *Sclerospora graminicola* (Sacc.) Schroet—the cause of 'Green ear' disease of Bajra.

Malformed green ears and diseased leaves bearing conidia and oospores and their healthy counterparts were chosen for the study of the enzyme activity. Acetone dried powders, prepared according to procedure of NASON (1955), were used for the study. Activity of phosphatases (both acid and alkaline) were assayed according to the method described by BODANSKY (1932) with certain modifications. Colour in 0.5 ml of the supernatant was developed according to the method of SUMNER (1944). Colour intensity was immediately read on Klett-Summerson Colorimeter at 660 m μ . Klett readings were then converted to micrograms of phosphorus with the help of a standard curve.

The activities of acid and alkaline phosphatases, studied at pH 5.0 and pH 9.0 respectively, in healthy and diseased Bajra tissues, have been shown in the following table.

Enzyme Source	Activity of Acid phosphatases as μ g of phosphorus solubilized	Activity of alkaline phosphatases as μ g of phosphorus solubilized
Healthy leaves	21.00	15.00
Diseased leaves	39.50	33.50
Healthy spikes	7.00	11.00
Malformed spikes	14.50	27.00

It is apparent from the above that the disease causes appreciable increase in the activity of phosphatases—both acid and alkaline.

Studies on bio-chemical changes in Bajra plants associated with 'Green ear' disease were initiated by SINHA (1965) and SINHA AND KUMAR (1984) reviewed the work done on 'Green ear' disease of Bajra in India including studies on changes in the activity of various enzymes. Phosphatases have been classified as an enzyme of phosphorus metabolism (COLOWICK & KAPLAN, 1955). Increased phosphate contents as a result of infection with *Sclerospora graminicola* have been reported earlier (RAI & SINHA, 1967). Thus, increased phosphate contents in Bajra tissues infected with *Sclerospora graminicola* may be attributed to the increased activity of phosphatases in the diseased tissues as suggested by ATKINSON AND SHAW (1955).

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