1. Enzyme studies in corn.

In the 1955 Newsletter a communication from this laboratory dealt with the influence of seed irradiation upon the activities of certain enzymes in preparations of green seedlings grown from the irradiated seeds. Appreciable increases in the specific activities of peroxidase, phosphatase, polyphenolase, and catalase, together with reduced seedling height, were found to result from seed treatment with X-rays or thermal neutrons. During the past year these observations have been confirmed using a different lot of L289 x 1205 seed for the treatments. In addition, experiments with seedlings grown from maleic hydrazide-treated seeds have disclosed that this chemical treatment produces effects on the above four enzyme activities and on seedling stature which appear similar to the effects brought about by seed irradiation. Seedlings which were reduced in stature by virtue of decreased growing period and lowered temperature during growth were also used in enzyme assays. In these cases, however, reduced seedling stature tended to be associated with either slight decreases or only very small increases in the specific activities of peroxidase, phosphatase, polyphenolase, and catalase. Metabolic differences between seedlings which are stunted because of age or temperature effects and seedlings which are small because of the effects of seed treatment with X-rays, thermal neutrons, or maleic hydrazide are thus clearly indicated.

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