

working for cold tolerance in maize both at the time of germination and at the seedling stage.

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Morphological and physiological analysis of d alleles — To characterize the d alleles of maize, mature plants of d, d-Tall, the F_1 between d-Tall and d and the heterozygotes +/d and +/d-T were compared with respect to total height, leaf length and area, and internode length and diameter. The data suggest regression of the F_1 toward the d-T parent, even when heterosis is taken into account. It is interesting that the leaf area comparisons show that only d plants differ from the heterozygotes.

Data for sixth node down from tassel

	<u>+/d-T</u>	<u>+/d</u>	<u>d-T</u>	F_1	<u>d</u>
internode length (cm) (nodes 5-6)	16.79	15.41	6.08	8.25	6.15
internode diameter (cm) (node 6)	1.36	1.56	1.35	1.32	1.17
leaf length (cm)	88.29	81.13	60.00	79.33	58.17
leaf area (cm ²)	565.75	450.00	442.92	539.08	339.33

Total height (first node to tassel top) measurements show d-T plants to be 20 cm taller than d plants and the F_1 to be 13 cm taller than d-T; the +/d plants are 30 cm shorter than +/d-T plants. These data support the inference that d-T is a leaky mutant and that the function or structure of the protein involved is not as completely impaired as in d.

Morphological comparisons of four-day-old GA-treated coleoptiles and mesocotyls revealed a difference in the response of the two alleles to GA. The coleoptiles of d-T do not respond, but the mesocotyls do; in d, both respond. Measurements on 12-day-old GA-treated seedlings revealed similar responses by both alleles.

Biochemical analyses of coleoptiles and mesocotyls for RNA, amylases and peroxidases are in progress. Preliminary data indicate a difference in amylase activity when expressed as mg of starch converted per 20 minutes per mg of protein. Peroxidase electrophoretic patterns show a distinct difference between alleles and in response to GA. Ribosomal RNA shows no difference in the ratio of smaller molecular weight to larger molecular weight species.

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