Studies are continuing this year on effects of these and other growth substances alone and in combination on the above-listed and other mutant forms. The purpose of such investigations is to ascertain whether or not effects of specific genes which differ from their alleles in normally-growing plants can be modified or overcome by applied substances which have been found to influence plant growth. The most clear-cut example is still the overcoming of $\underline{d_1}$ by GA discovered by Phinney. Another which may be equally clear-cut is overcoming of rt by auxins, noted above. Suggestions as to genes which could be tested will be welcome.

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3. Responses of stalk and tassel mutants to TIBA.

Tri-iodo benzoic acid (TIBA) is a synthetic substance which has been shown to cause loss of polar movement of auxin (IAA). During 1961, groups of $\underline{ts_1}$, $\underline{ts_2}$, $\underline{ts_4}$, $\underline{Ts_5}$, $\underline{Ts_6}$, sk, Cg, Tp and la plants were subjected to daily treatments of either dist. H_2O, 100 µg, 500 µg or 1000 µg of TIBA from 2 weeks of age until tassel emergence. In general, doses below 500 µg were ineffective in causing growth changes. An exception was sk / sk, where doses of 100 µg inhibited brace root development entirely and resulted in greatly foreshortened plants; sk / sk plants treated with higher doses died. In $\underline{ts_1}$ / $\underline{ts_1}$ plants, main shoots were killed and 2 tillers developed, each with $\underline{ts_1}$ tassels. Plants were also 1/2 height of controls. $\underline{ts_2}$ / $\underline{ts_2}$ plants were reduced in height by the higher concentrations but were essentially unchanged in tassel appearance. $\underline{ts_4}$ / $\underline{ts_4}$ plants were slightly increased in height by 100/µg doses; the effect was more pronounced on + / $\underline{ts_4}$ plants. $\underline{Ts_5}$ and $\underline{Ts_6}$ plants were shortened by higher concentrations, but they did not die. 1000 µg doses caused a general chlorosis and often death of tips of leaves as well as general inhibition of brace root development. They also apparently prevented normal cell differentiation in some strains; stalks were of smaller diameter and far more flexible than controls. Tiller production of Cg and Tp was not strongly affected, but a lowering in height over controls was common. la / la plants did not remain upright, but fell over from lack of roots rather than from the ageotropic growth characteristic of control la / la plants. These studies are being continued.

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4. Effects of high concentrations of auxins on normal maize plants under field conditions.

Field-grown plants of the hybrid Spancross showed no detectable growth responses to season-long daily treatments with NAA, IBA and IAA in concentrations ranging from 10^{-8} up to 10^{-3}, the effective ranges of auxin activity employed in laboratory experiments. In preliminary trials of concentrations somewhat higher than these levels, detectable growth effects were obtained. Studies are continuing to find out the limits of tolerance of these substances and their effects on growth of other inbreds, races and hybrids.

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