

1. Dwarf mutants in maize and their growth response to a new plant hormone, gibberellic acid.

Gibberellic acid as well as a mixture of gibberellic acid and gibberellin A was applied to the leaves of a number of genetically different dwarfs. Results show that some mutants will respond by normal growth while others respond only slightly or not at all. Mutants will respond to as little as .01 micrograms of gibberellic acid per plant. With this amount normal seedlings give no growth response. With 10 micrograms of gibberellic acid per mutant, elongation is evident within 24 hours following treatment. This growth response is apparently confined to tissues that have not reached final differentiation. A continuous supply of gibberellic acid is necessary to maintain normal growth of the mutants. For the mutant, dwarf-1, treated plants reach a mature height very close to that of treated and non-treated normals, with leaf size and shape, leaf color, and internode length of treated mutants being very similar to normals. While normals show a growth response with higher amounts of gibberellic acid, treated mutants reach a height very near to that of treated normals.

Table 1. Growth response of mutant seedlings to a single application of 10 micrograms of gibberellic acid per plant. Treatments given at the time of emergence of the first leaf from the coleoptile. Response recorded 10 days following treatment. Response (+) if mutants reach the same height as treated normals, (1) if mutants show a response but do not reach the height of treated normals, and (-) if mutants show no response or only a very slight response.

<u>Mutant*</u>	<u>Linkage group</u>	<u>Response</u>
anther ear-1	I	+
dwarf (7281)	I	+
dwarf (4963)	I	-
dwarf (5232)	II	+
dwarf-1	III	+
nana-1	III	± ?
dwarf (8201)	IX	+
tiny (8446)	I	-
Dominant Dwarf	unknown	-

*Dominant Dwarf was obtained from Dr. R. R. Seanev, the mutant having originally been found by Dr. G. H. Stringfield. All other stocks were provided by Dr. E. G. Anderson and Dr. F. D. Pettem, who have also provided the linkage information. See also the linkage data reported by Dr. Pettem on page 10.

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