

TUFTS UNIVERSITY  
Medford, Massachusetts

1. Genetics of tillering.

During 1965 crosses not obtained before because of different dates of maturation were made. Parts of two sets of crosses between the 17 translocations and the 7 tillering stocks were planted out; of these no group showed any segregation of tillering related to waxy versus non-waxy seeds. Studies are continuing during 1966.

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2. Studies involving the gene rootless.

As reported in the 1965 MGCNL, two states of the gene rootless (rt/rt) apparently occur. The first of these, designated "really rootless," forms only 6-8 adventitious roots in its lifetime, grows  $2/3$  to  $7/8$  the size of heterozygous sibs, and develops both a tassel and an ear of normal proportions. The second state, designated "regular rootless," forms no true brace roots, grows about  $7/8$  the size of heterozygous sibs, does develop quantities of fibrous roots just above nodes at those nodes which are below ground in the early stage of plant development. Sibs of both these types were obtained in 1964 and planted out in 1965; results are summarized below.

- a. Hilling of partially-mature plants did not alter root development in any way over that in unhilled sibs. The conclusion is that if light has any effect on root development the effect is manifested early in plant ontogeny.
- b. A scale of root development from 0 (6-8 adventitious roots totally) to 5 (the normal mass of 60+ adventitious roots at 7 or more nodes) has been developed. A score of 3 means no roots above ground; 4 means some are visible above ground. Typical results for plants of both rootless genotypes are given below. Controls are treated with distilled water, given daily in the same amount (1 ml) as the solutions of the growth substances TIBA (tri-iodo benzoic acid) and IAA (indole acetic acid).

Scale of root development	Numbers of plants in each category					
	0	1	2	3	4	5
Family 65-43 (really rootless)						
H <sub>2</sub> O (control)	5	33	13	2		
daily TIBA(250µg)			8	18	7	
daily IAA (500µg)	3	9	6			
cont'd.						