

prevents anthesis in the tassels of both types of rootless plants. Studies are continuing.

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3. Studies involving the gene Knotted.

Development of double-knotted plants Kn/Kn was checked by selfing three suspected plants and at the same time crossing each one to standard L317/W23 female, in 1964. During 1965 these three checks, of 64, 65, and 61 plants, all developed knots. They were not as well expressed in the first group, possibly indicating the presence of modifying genes. Thus the assumption is that double-knotted plants were indeed obtained. These stocks were treated with various growth substances. TIBA had little effect on masking or altering the expression of Kn in either Kn/+ or Kn/Kn plants. NAA does suppress or retard elongation and development of knots; since there is also a slowing down of tissue maturation with this chemical, the "suppression" of Kn may simply mean non-development of knots which ordinarily appear relatively late in ontogeny. IBA and IAA had no demonstrable effects, but the number of plants employed were small. When NAA was administered in a 5% solution of DMSO (Dimethyl sulfoxide), penetration of the NAA was apparently enhanced, as Kn manifestations practically disappeared. A side effect of DMSO at this level was death of areas within the leaves, however. Controls treated with 5% DMSO only showed a slight dwarfing as well as death in leaf areas. The numbers of plants involved in the studies, distributed among 20 seed stocks, are given in the following table:

Substance:	H ₂ O (control)	TIBA	NAA	IBA	IAA	DMSO	DMSO-NAA
No. of plants treated daily (includes both <u>Kn/+</u> and <u>Kn/Kn</u>)	227	145	92	23	32	20	46

Anatomical study of knots from Kn/Kn and from Kn/+ leaves shows no vascular proliferation. All cells are essentially the same size as their counterparts in other places of the same leaf. Compared to cells from +/+ sibs, these cells are smaller with thinner walls, but there are many more of them. In knotted plants treated with NAA, there is a progressive lack of development of the transfusion tissue around

the vascular bundles. In general, cells from Kn/+ and Kn/Kn plants are less differentiated and more numerous than in normal leaves, as they have been so far examined. A knot seems to be a section of leaf in which there is maintained the same relative cell patterns as in the rest of a leaf, but there is conspicuously less differentiation of certain cell types. Studies are continuing.

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1. Studies at the su_1 locus.

As part of an undergraduate research project, four genotypes of maize pollen were tested for their starch content. The starch was extracted with perchloric acid, hydrolysed and then measured using the Somgi method of determining reducing sugars.

Three samples of each genotype were used for the starch determination while a fourth was used to measure the dry weight of the pollen.

Results				
Genotype	Fresh wt.	% H ₂ O	Dry Weight	% Starch (dry wt.)
+ +	0.100 gm.	36%	0.064	14.8
su_1 +	0.100 gm.	27%	0.073	11.0
+ su_2	0.100 gm.	23%	0.077	10.9
su_1 su_2	0.100 gm.	32%	0.068	5.3

It is interesting to note that these results resemble those obtained by R. G. Creech for 28 day old endosperm (Genetics 52: 1175):

Genotype	% Starch (dry weight)
normal	73.4
su_1 su_1 su_1	35.4
su_2 su_2 su_2	64.6
su_1 su_1 su_1 su_2 su_2 su_2	18.9