Table 1
The distribution of the cold-chlorosis genes

Oh51A Source	Seedlings (at 10 ± 1°C) Green	Chlorotic
Illinois	0	17
Indiana	0	3
Iowa	4	16
Minnesota	2	18
New Jersey	6	10
New York	11	10
North Dakota	8	9
Ohio	8	12
Pennsylvania	0	182
South Dakota	2	5
Wisconsin	12	6
Wisconsin (outcrossed and recovered)	12	0

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1. Studies on cytoplasmic male sterility in maize.

It was of interest to determine if cytoplasmic male sterility in corn is specific for male florets or if it could confer sterility in both male and female floret born on the tassel. To study this problem the inbred line T 204 ms, which is male sterile due to the Texas type cytoplasm, was crossed with stocks heterozygous for the dominant tassel seed gene, either $\underline{Ts}_5$ or $\underline{Ts}_6$. $\underline{Ts}_5$ and $\underline{Ts}_6$ plants produce tassels which contain silks and anthers. Some kernels usually develop on the tassel, although the tassel is very susceptible to smut. Seed from the cross was grown in the field. Approximately half of the plants segregated for the tassel seed phenotype, that is, silks were born on the tassel. All plants were completely male sterile. Tassel born silks were allowed to open pollinate and then covered with bags to prevent bird predatoriness. At maturity the seeds set on the tassels were harvested and planted in the greenhouse. These seeds

germinated and the resulting plants were grown until after tassel emergence. Again all plants were male sterile and segregated about 50% for the tassel seed characteristic.

These observations clearly showed that fertile female florets do exist on tassels where all male florets contain aborted pollen. Thus, sterility conferred by this cytoplasm is specific for male florets and is not associated with the tassel location since female florets are fertile.

Studies[1/] have shown that stamen-less tomatoes can be induced by gibberellin A_3 to form anthers and viable pollen. This report suggests that gibberellin may play a determinative part in the development of male gametophytes. Therefore, the male sterile (Texas type) and normal cytoplasmic versions of the corn inbred line T 204 were selected for treatment with plant hormone to ascertain any effect on pollen fertility. Five treatments were chosen, a control (no hormones), low GA_3, high GA_3, IAA, and kinetin and GA_3. Hormones were pipetted twice weekly into the plant whorl in 1 ml volumes. Treatments were begun shortly after the plants emerged from the ground and were terminated at the time of tassel emergence. Thirteen treatments were applied in this interval. Total amounts of hormones applied to each plant were; low GA_3, 130 ug; high GA_3, 260 ug; IAA, 130 ug; and kinetin and GA_3, 130 ug of each.

After termination of treatments, tassels were observed with regard to pollen shed. T 204 with normal cytoplasm shed its normal viable pollen regardless of hormone treatment. T 204 ms with male sterile cytoplasm shed no pollen in spite of hormone treatments. Consequently, these hormones were ineffective in altering the expected pollen fertility or sterility. GA_3 treatments did increase early height of plants, caused a yellowing in plant color and in general gave a less thrifty looking plant. The latter observations have been reported previously.

1/ Phatak, S. C., S. H. Wittwer, S. Honma, and M. J. Bukovac. Gibberellin-induced Anther and Pollen Development in a Stamen-less Tomato Mutant. Nature 209:635-636. 1966.

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2. Genetic variability for coleoptile elongation.

It has been known for years that coleoptile elongation in grasses is mediated by auxin. It is reasonable to assume that auxin production and/or regulation is under genetic control. Preliminary studies with corn, which were conducted primarily to develop experimental technique, involved a number of different inbred lines, including a sample of random inbreds of the varieties, Jarvis and Indian Chief. Due to limited seed supply, studies with inbreds have been postponed until seed increases are available. However, these studies suggested that inbred lines differ somewhat with respect to coleoptile elongation and response to exogenous IAA. Critical statistical tests of these differences were not possible, but differences were of sufficient magnitude to strongly suggest genetic differences among inbreds.