A509	Pa11	Tx61M	Tx303	Tx601
CMD5	Pa32	Tx102A	Tx305	Tx602
Mich1334	Pa36	Tx127C	Tx403	W37A
NY16	Pa54	Tx203	Tx585	W153R
NYD410				W182B

In no case did a chlorotic condition result from the germination at the low temperature. All seedlings appeared to be normally green. Both F_1 and F_2 populations of crosses in which Oh51A had been a parent were available. The other parent was a U.S.D.A. plant introduction which did not result in a chlorosis from the low temperature treatment. When 13 F_1 and 44 F_2 seeds were germinated at low temperature, all resulting seedlings were green. Apparently there is not a simple genetic explanation for this phenomenon.

The Oh51A seeds used in this study were obtained from the Pennsylvania Agricultural Experiment Station. I am in the process of obtaining seeds of this inbred line from a variety of sources in order to determine whether or not this is a universal trait of this line.

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1. Surface waxes of maize.

Preliminary investigations have begun on the surface waxes of maize. Surface waxes are extracted from the leaves by immersion in chloroform for 15 seconds. Several other lipid solvents have proven equally effective but a personal preference exists for chloroform. Immersion time can be varied; however, if too long, internal lipid extraction will also occur. For this same reason, broken or cut ends of leaves are avoided. Inbred lines, CI 21, Kys and T 204 were used as the normal or wild type for maize while 13 stocks carrying different glossy genes represent the mutant types. The 13 different glossies were $\underline{gl}_1$, $\underline{gl}_2$, $\underline{gl}_3$, $\underline{gl}_4$, $\underline{gl}_5$, $\underline{gl}_6$, $\underline{gl}_7$, $\underline{gl}_8$, $\underline{gl}_9$, $\underline{gl}_{11}$, $\underline{gl}_{14}$, $\underline{gl}_{15}$ and $\underline{gl}_{16}$.

Initial analysis of the surface lipid constituents has been by thin layer chromatography. The extract, after reducing by evaporation, has been spotted on silica gel G plates and developed in benzene for a distance of 10 cms. Spots were located by spraying with 50% sulfuric acid and heating on a hot plate for about ten minutes. Four spots are located by this technique when the sample extract was taken from a seedling in the two or three leaf stage. Two of the spots have been identified as fatty acids

and paraffins by co-chromatography of knowns. Positive identification has not been made of the remaining two spots, but they are tentatively identified as primary alcohols and either ketones or esters. These four spots have been found in extracts from all the normal and glossy seedlings. However, the glossies in general produce much lighter spots than the normal inbred lines. Thus, a quantitative difference was found between the normals and glossies, but no qualitative differences were detected by this method. Based upon these results, the visual difference between normals and glossies lies in the relatively greater amount of surface waxes on the leaves of normal plants than on glossy.

Several other observations are worth noting. First, although the same four spots were developed from the 13 different glossies, a wide range of quantitative differences was noted. It seems apparent, therefore, that the various glossy genes are acting at different sites in the synthesis of surface waxes. Secondly, glossies exhibit their mutant phenotype while in the seedling stage and ultimately develop a normal wax covering. A difference was evident in the rate of developing the normal wax complement among glossies. Lastly, leaves taken from plants at the time of anthesis developed six spots by the previously described chromatographic technique. Four of these were identical to those described for the seedling extracts, but the other two were new. Therefore, the surface waxes of mature plants are more complex than those of seedlings.

C. S. Levings, III

2. Application of plant hormones to cytoplasmic male steriles.

To determine the effect of hormones on cytoplasmic male sterile tassels, GA_3, IAA and kinetin were applied individually to male fertile and sterile plants of the inbred line T 204. Sterility was due to the Texas type male sterile cytoplasm. Treatment was begun at the onset of tassel differentiation (42 days after planting) and continued until tassel emergence. The late treatment start was chosen deliberately to coincide with the beginning of tassel development. Ten milligrams of hormone were pipetted into the plant whorl every 3 days. A season total of 60 milligrams of hormone was applied to each treated plant. Alterations of sterility or fertility were not detected on the treated plants when compared with appropriate checks. No differences were noted in plant height or shape between treated and untreated plants. Since similar quantities of GA_3 have been reported to cause misshapen plants, taller plants, tassel silks and pollen sterility when the treatment was initiated at the time of plant emergence, it is believed that the treatment was begun too late. Therefore, although the late treatment was ineffective, it is doubtful that an adequate test of hormone effects on pollen fertility and sterility has been performed.

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