and percent of spore germination within 2-3 days, but 4-5 days were required from the detached leaf. No effects were observed with diffusates from susceptible (htht) leaves or from either resistant or susceptible control leaves (control leaves sprayed with water only).

Diffusates from HtHtBxBx leaves were more inhibitory on spore germination than diffusates from HtHtbxbx leaves. The diffusates from hthtBxBx were slightly more inhibitory than diffusates from hthtbxbx, and the former delayed the growth of germinated spores. Diffusates from homozygous resistant leaves (HtHtBxBx) inhibited spore germination much more than diffusates from the heterozygous genotype (HthtBxBx).

A. G. Calub
G. M. Dunn
R. M. Couture
D. G. Routley

THE NEW MEXICO INSTITUTE OF MINING AND TECHNOLOGY
Socorro, New Mexico
Department of Biology

1. An amino acid accumulating mutant from USDA P.I. 194047.

A pale-green maize mutant has been isolated from USDA P.I. 194047 and was first reported by Bell (MNL 36:73, 1962). This is a viable mutant which displays pale-green leaves for the entire life of the plant. Growth is somewhat stunted and seed set is fair to poor. Outcrosses of the mutant were made with several inbred lines, and F_2 populations produced 592 normal green and 200 pale-green plants, indicating the involvement of a single allelic pair of genes displaying simple dominance. Crosses were also made with Dr. E. G. Anderson's waxy-marked translocation series involving all chromosomes. All F_2 populations from these crosses showed normal 3:1 segregations; however, chromosomes 7, 9 and 10 cannot be eliminated as possible locations for this mutant gene. The gene has tentatively been designated pg_{13}.

A segregating population involving the mutant trait as well as a normal green line derived from the inbred Oh51A were grown in a Percival growth chamber model PGC-78 at 27$\pm$ 3°C under approximately 1000 ftc. of illumination on a 16 hour photoperiod. The plants were watered with tap

water and supplemented with Hoagland's #1 nutrient solution. Leaves were harvested after three weeks of growth. Pigment analyses, carried out according to Arnon (Plant Physiol. 24:1-15, 1949) and von Wettstein (Expt. Cell Res. 12:427-506, 1957) revealed that in the mutant segregants chlorophyll a was reduced to 37%, chlorophyll b to 63% and the carotenoids to 38% of that in the normal segregants.

Free amino acid extractions were made according to Block, Durrum and Zweig (1958) and purified on a Dowex 50-X8 ion exchange column. Total free amino acid concentrations were determined according to the method of Barrolier (Naturwissenschaften 48:554, 1961) using ninhydrin. Spectrophotometric readings were taken at 570 mμ (purple) and at 400 mu (yellow). Separations of free amino acids were carried out on cellulose thin layer chromatograms using both one- and two-dimensional methods.

The total free amino acid concentrations of these three lines are given below in terms of absorbance at the wavelength indicated. Each value represents the mean and standard error at the 5% level, of absorbance values recorded from seven plants.

Line	440 mμ	470 mμ
Normal green segregants	0.154±0.015	0.055±0.003
Pale-green segregants	1.401±0.043	0.455±0.013
Oh51A derivative	0.153±0.007	0.055±0.004

Thin-layer chromatograms indicated that no particular amino acid had accumulated in the pale-green segregants but that the increase involved all amino acids, suggesting a block in the synthesis of one or more major proteins in the leaf.

Raymond P. Amby
David K. Shortess

2. Amino acid analyses of pale-green-11, -12 and oil yellow.

Two pale-green maize mutants, pale-green-11, pale-green-12 ($\underline{pg}_{11}\underline{pg}_{12}$) and oil yellow (oy), along with a control, a normal green derivative of Oh51A, were analyzed for pigment and free amino acid