

2. Normal vs. male-sterile cytoplasm in maize.

In interregional and regional experiments with inbreds and hybrids at Athens in 1971, differential reactions of cytoplasm and genotypes, in addition to that for H. maydis, Race T, were observed. Inbreds Va 35 N and 33-16 N showed more red anthocyanin in leaves than their T cms counterparts. NY X65 N had what appeared to be a physiological yellowing of leaves in comparison to green leaves for NY X65 T cms. M14 S had yellow striping of leaves while M14 N had green leaves. Pa 33 N, Pa 70 N, and M14 S had a greater intensity of apparent corn stunt than their counter sources of cytoplasm.

Under the prevalence of H. maydis, Race T, a comparison of N and T cytoplasm showed, in many of the hybrids, reduced plant height, yield, number of ears per plant, number of erect plants, and grain quality. In general, T cytoplasm decreased ear height. However, one hybrid with T cms averaged 43 inches in ear height; its N counterpart averaged only 38 inches (13 cm difference). The T cytoplasm decreased number of days to mid silk in Dixie 18 while it increased the days to mid silk in NC 222.

Helminthosporium lesions on F44 N were especially small. Lesions on GA 156 (Ga cms) looked as if they might be H. turcicum instead of H. maydis lesions.

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3. Mineral-deficient maize inbreds.

In 1972, extreme purpling occurred in the leaves of young plants of the yellow-kerneled inbred, Cl 21, on Appling soil in the nurseries at the Plant Science Farm, Athens. Under prevailing cool weather the purple color remained until the plants were 18 or more inches high before disappearing.

Plant analyses at the University of Georgia Soil Testing Laboratory pinpointed a suspected P deficiency. Phosphorus content in the lower leaves was 0.23% instead of the normal level of 0.30%, although adequate fertilizer had been applied by broadcast and in the drill.

Another inbred, GA 153, could be spotted easily in the nursery both in 1971 and 1972 due to the yellowing of its leaves. Plant analyses showed that this white-kerneled inbred is deficient in Mg (magnesium) and also N

(nitrogen). GA 153 is probably a low accumulator of Mg and therefore sensitive to a lack of this element in its tissues. The lower leaves only had .10% Mg. The normal amount is .20% or more.

The lower leaves of GA 153 also had only 1.77% N when they should have had 3.00%. The N deficiency is probably due to an inability of the plants to take up the applied N fertilizer.

The stocks should be of use in future genetic and fertility experiments.

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4. Viability in long-stored seeds of maize.

Seeds of 200 entries of $S_0 - S_3$ lines were produced in 1965. They were stored in filing cabinets under ordinary conditions of room temperature and humidity of the Southeast at Athens for seven years and then tested for viability in a germinator in 1972. A total of 21% of the entries germinated, ranging from 2 - 88% in germination. Resistance to Rhizopus sp. in the germinator was noted in 3.5% of all the entries, the range being from very resistant to moderately resistant.

The variation in viability and also resistance to Rhizopus appeared to be hereditary. Seedlings were transplanted to the field to obtain germplasm for future studies and breeding programs.

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1. Seed viability of maize (*Zea mays* L.).*

In the last issue of MGCNL 45:94-95 Dr. Walton C. Galinat has reported the oldest seed viability of sweet-corn "Chuspillo" from Bolivia,

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