cytoplasm has been identified. The male parent would not be able to shed visible pollen unless it had an (F) cytoplasm. If the F_1's are all fertile, then the cytoplasmic source must have dominant male sterile genes and may or may not have the fertile cytoplasm.

The first approach is more expensive per cytoplasmic source tested; however, it will identify an (F) cytoplasm in an Ms Ms genetic background. The second approach will not provide such identity.

The author is not aware of attempts to locate this type of cytoplasm in maize. This is a preliminary report on an attempt to identify an (F) cytoplasm. Genetic male steriles ms 1, 2, 5, 6, 7, 8, 9, 10, 12, 13, 14 and 17 are being crossed on each of 25 distantly related genetic sources. About half of the genetic sources involve diverse sources which conform to the general plant type common in commercial maize hybrids. The remainder involve exotic type plant introductions.

At this date, 82 different genetic male sterile and cytoplasm crosses have been observed in the F_2. Six F_2 populations did not demonstrate sterile plants. These six conformations are being re-evaluated. One of the six may be a result of small population size, while the other five are unexplained at this date.

References

Hermsen, Th. G. J. (1968). A discussion on cytoplasmic restoration of ms-sterility. Euphytica Supp. No. 1:63-67.

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2. Complementation among EMS-induced lemon endosperm mutants.

There was a relatively large number of lemon endosperm mutants among those previously reported in MGNL 43:23-31, 1969 and MGNL 44:11-17. Eleven of these mutants were crossed together in a diallel and the F_1 ears were examined for complementation. All possible crosses among these mutants were not obtained; however, results of the partial diallel show complementation for three of the mutants. This does not mean that three separate genes are involved, for these three mutants could be at the same locus. One of the mutants that showed complementation was phenotypically classed as slightly lemon; hence, it might have been expected

to show complementation. All of these lemon endosperm mutants produce plants with green color.

There is good indication from the data available that EMS could be used to induce lemon endosperm mutants in material and the probability is high that the mutants would be at the same locus. These data are also of practical value since corn with lemon colored endosperm is valued in the human food industry.

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1. Inheritance of a new brachyism.

Four experiments with Tx61M (Texas stock) and T61 (Tenn. stock) on the inheritance of brachyism (above the ear) reveal that two pairs of genes differentiate the parents for this new character. Partial phenotypic dominance toward the T61 non-brachytic parent occurred in three out of four families.

A negative association with an r value of -.43 exists between the brachytic trait and plant height. The r value of .18 between brachyism and stalk diameter is much lower.

The lack of a significant correlation between ear height and brachyism may give the new brachytic an advantage over other brachytic genes in that a reduction in plant height is not accompanied by a reduction in ear height and yield.

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2. South American flints.

Flint corns from South America in 1971 averaged 74 bu./a in yield compared to 139 bu./a for U.S. dents and 98 bu./a for a flint-dent South American hybrid.

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