

Segregating albinos	32 progenies
Segregating dwarf	1 progeny
Segregating luteus	6 progenies
Segregating virescent	2 progenies
Segregating viviparous	1 progeny
Segregating defective seed	110 progenies
Segregating germless seed	5 progenies
Segregating small seed	1 progeny
Segregating defective and germless	1 progeny
Segregating semisterile ears	28 progenies
Segregating defective and semisterile	55 progenies

In addition, one M3 progeny was segregating for an endosperm mutant phenotypically similar to sh₂. Crosses with sh₂ and su₁ produced plus kernels. Hence it is not sh₂ or su₁. Allelic tests with bt₁ and bt₂ should be made, also with su₂.

Limited quantities of all of these stocks are available. The aleurone constitution is A c r Pr homozygous. I do not plan to make allelic tests since I will retire on 1 July, 1970.

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2. Old varieties of corn.

In response to my request for antique varieties of corn last year, Dr. Paul Harvey in North Carolina sent one variety, Indian Chief, that has been grown in North Carolina for many years. It is rather unusual in that it is a yellow dent variety with a white cob. Another interesting feature was its rapid growth at the National Colonial Farm in Maryland.

There are now four old varieties of field corn in the antique corn collection at the Colonial Farm as follows:

1. Virginia Gourdseed, large white dent kernel.
2. Hasting's Prolific, white dent, with tendency for multiple ear.
3. Canada Flint Yellow Flint, obtained originally from Connecticut.
4. Indian Chief, rich yellow kernel, white cob, vigorous grower.

In addition there are two sweet corn varieties Black Mexican (ACR Pr) and Catawba Blue (ACR pr, contrary to name). Seed is available of all these varieties.

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1. Role of cyclic hydroxamic acid on monogenic resistance to Helminthosporium turcicum in maize.

Cyclic hydroxamic acids in maize were first reported in 1959, but their biological significance has yet to be clearly established. The production of the fungitoxic aglycone 2,4-dihydroxy-7-methoxy-1,4-benzoxazine-3-one from its glucoside upon cellular disruption has been implicated in resistance to several pathogens.

To observe their effects on monogenic resistance, we crossed a genotype deficient in these compounds (hthtbxbx) with the normal resistant genotype (HtHtBxBx). The deficient genotype is an S_1 line, designated no. 59C32-1, obtained from R. H. Hamilton at Penn State. Deficient seeds were detected by crushing a root tip on filter paper impregnated with M/10 $FeCl_3$. A blue colored chelate at the oxidized peptide bond of the hydroxamic acids is formed in normal seeds.

Seedlings are inoculated at the three leaf stage and incubated for 18 hours at 68°F and 100% humidity. The degree of infection is determined by measuring the total area of the fourth leaf and the area of the leaf covered with lesions. Areas are measured with the use of a transparent grid containing 100 squares to the square inch.

Significant effects on the susceptibility of the HtHt and Htht genotypes are presently being observed in the F_3 . Lesions on resistant deficient (Ht-bxbx) seedlings enlarge rapidly and have a general chlorosis. Resistant normal lesions (HtHtBxBx) generally do not enlarge