

seed. Seed of the cross A x B was all of the opaque phenotype. Seed of the reciprocal cross B x A, however, was of two distinct phenotypes, opaque and normal. Lysine analysis of the different phenotypes from this cross indicate that both types are similar in lysine content and within the range expected for the opaque-2 homozygote. The bioassay method was used for lysine analysis of whole kernel samples. Kjeldahl analysis indicates that both types are also similar in total nitrogen content.

The inbred lines involved were derived from yellow dent lines. They were included in our breeding program and converted to white endosperm before incorporation of the opaque-2 gene. It is suspected that the germ plasm used as the source of white endosperm contributed the factor or factors that apparently alter the opaque phenotype.

Since plant to plant crosses were not made and no phenotypic ratios obtained, no attempt can be made at this time to explain the observed results genetically. Further studies are being carried out and any new information will be included in subsequent reports.

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1. Mutants induced by thermal neutrons in B14 inbred.

The 1969 News Letter contained an item regarding the induction of seedling mutants by thermal neutrons. The mutants were observed in the M3 generation following open pollination of the M2 in an isolated field. Seeds of stocks segregating are now available. These are as follows:

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.