

3. Development of sugary-waxy corn (su su wx wx).

The sugary-waxy inbreds reported in the 1961 issue were all either lost or discarded because they were extremely weak and very poor pollen shedders. This further strengthened the suspicion that unfavorable yield genes are linked to the waxy and sugary alleles and that the complementary effect of the two linkage groups results in very weak plants. In an effort to verify this, a new group of lines (already in the S₃) is now being developed from crosses of sweet and glutinous corn, and instead of maintaining the sugary-waxy plants, only the flint kernels from ears segregating for the three kernel types (flint, sweet, waxy) are selected for planting in the next generation. Four out of nine of these selected kernels are expected to be heterozygous for both loci. Thus, the genes controlling kernel types are always maintained in the heterozygous condition while the other factors follow normal inbreeding behavior.

After the general combining ability test four sublimes--flint, sweet, waxy and waxy sweet--will be extracted from each of the selected inbreds. These four will then be compared with each other for vigor and yielding ability. If all waxy-sweet lines shall consistently be inferior to the others, then it is highly possible that some unfavorable yield genes are indeed linked to the recessive alleles of these two loci.

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4. Susceptibility of glutinous corn to rust.

In our breeding nurseries and performance tests, where the different corn types are planted adjacent to each other, it has been consistently observed for the last five seasons that the glutinous type, as a group, is very susceptible to corn rust. In all plantings the glutinous group was always the first and the most heavily damaged by the disease. To verify this observation a separate and more systematic experiment on relative resistance to rust of the different corn types will be planted this season.

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5. Rust-resistant corn lines.

In an extensive screening for rust resistant corn plants at the Central Experiment Station, College, Laguna, 7 varieties introduced from Central and Northern South America showed a relatively high degree of resistance to the disease. Rust-resistant inbreds are presently being extracted from these varieties. Of the three inbreds (B38, Cuzco and GG 208) reported by Russell and Hooker of the U.S.D.A. to be resistant to corn rust incited by Puccinia sorghi Schw., only GG208 was observed to be highly resistant.

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