

5. Studies of defective seeds originating in teosinte-maize derivatives.

Twenty-three defective seed types which originated from maize-teosinte derivatives are being studied to determine how many of them are different and how many are "repeats" or alleles. Both types have so far been encountered. Among the 23 defectives four are already known to be either identical or allelic. Three of the defectives show linkage with Su on Chromosome 4. Two of these are located to the right of Su, showing little linkage with gl. These two defectives, brought into a stock in the repulsion phase, create a kind of balanced-lethal system in which the ratio of normal to defective seeds instead of being 9:7 approaches 1:1 and in which the majority of the normal seeds when grown give rise to progeny segregating in this same fashion.

Many of the ears segregating various types of defective seeds yield normal 3:1 ratios, but many others exhibit marked deviations, some having more and some less than 25 percent of recessives. Several factors may be involved in these deviations. At least one of the defective seed types is unstable and mutates back to normal, and others may be behaving similarly. There is an indication that some of the mutants in the maize-teosinte derivatives are actually minute deficiencies not always transmitted through the pollen. In several cases the percentage of defective seeds is significantly higher in the upper half of the ears than in the lower.

It will be recalled that defective seeds are among the recessive characters which appear most frequently when maize is inbred. Mangelsdorf (1926) described 14 different defectives and additional ones have since been reported by other workers. Linkages of defective seeds with genes on Chromosome 4, 9 and 10 have previously been reported.

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