3. Dominant mutants induced by EMS.

From a population of 3693 F_1 plants produced by treatment of pollen with EMS (method, MNL 45:146), five good dominant mutants were obtained. They included one striped virescent, one dwarf, one yellow striped and two which mimic disease lesions caused by Helminthosporium species. In addition to these five viable mutants, a larger number of dominant inviable cases also occurred, but these could not be propagated and were lost without confirmation. All five have been transmitted through the pollen for at least two generations.

The striped virescent mutant first appears as a nearly white to pale green seedling that gradually changes to a green seedling with white or pale green stripes much like v_5, though the striping may be more extreme. Viability is good, though homozygotes may be too extreme to survive in some cases.

The dwarf mutant is very extreme, rarely growing more than four inches high. Plant parts are small, and internodes are shortened. Some plants produce a few normal anthers which have normal pollen. The mutant does not respond to gibberellic acid.

The yellow striped mutant is not expressed in the seedling, but first appears at the 6-8 leaf stage, when a yellowing of tissue between the veins of the terminal half of all leaves occurs. The appearance is like that of ys, but less extreme. As the plant matures, strong anthocyanin appears on the blade of affected leaves. Viability is good, though plants with extreme expression may be small and weak.

The disease lesion mutants are described under a separate heading below.

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4. Dominant disease lesion mutants.

The first of the disease lesion mutants (designated Les) referred to above appears initially at the 3-leaf seedling stage. One to several irregular, elliptical shaped watery spots (1-3mm x 4-7 mm in size) appear scattered over the surface of the first leaf. In 24 hours these spots develop a necrotic appearance on the top surface of the leaf and sometimes a drop of dark brown exudate on the underneath surface.