

second mutant gene. However, fewer backcrosses would be required than if an unrelated non-recurrent parent were used with conventional backcross procedures.

Apparently EMS can be used to produce cytoplasmic mutants in plants (Dulieu, Mutation Res. 4:177-189, 1967) and may be useful to produce cytoplasmic sterility in maize by the above outlined procedures; probably more important, cytoplasmic sterility may be produced in other species with some modification of these procedures.

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2. Modification of the efficiency and effectiveness of ethyl methanesulfonate treatments in maize.

The action of ethyl methanesulfonate (EMS) on seeds was investigated by altering post-treatment conditions so as to modify the genetic effects and physiological damage produced. Genetic effects were measured by the frequency of yellow green (yg_2) sectors in the leaves of Yg_2/Yg_2 seedlings; physiological damage by reduction in plant height. If seeds are dried immediately after treating with 0.01 M EMS (10 h, 25° C), the height of seedlings will be reduced significantly. If, however, the seeds are soaked for 4 days (at 3° C) after EMS treatment, then dried, the physiological damage is minimized and equals the control value. This post-treatment condition also reduces mutation rate, but it maximizes the treatment efficiency (ratio of yg_2 frequency to plant height reduction). Post-soaking apparently removes EMS and its hydrolysis products which are particularly harmful when the seeds are dried. However, post-soaking EMS-treated seeds before drying reduced the effectiveness of the treatment, as measured by the ratio of yg_2 frequency to dose of mutagen. This is probably because unhydrolyzed (active) EMS was removed from the seeds.

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3. Esterase isozymes: new loci.

The E_1 through E_4 esterases were described by Drew Schwartz and his students at Indiana. The present note briefly describes several new anodal esterase loci and a single transaminase locus found during an ongoing classification of enzyme polymorphisms in flowering plants carried out at the University of Hawaii.