The following commercial varieties were used: Yangmai 3, Ningmai 3 and Ningmai 6. They are high-yielding varieties, but susceptible to powdery mildew. Seeds of these cultivars were treated with gamma-rays. The material was screened in the seedling stage in M_2 in the greenhouse and under field conditions in M_3-M_4 and later generations. The seedlings were inoculated with a spore suspension of the powdery mildew fungus.

The most resistant mutant selected from variety Ningmai 3 was the line 34080 with resistance to races 4, 16 and 20. According to the number of progenies in M_2, the mutation frequency was 1.2×10^{-4}. The other two mutants (34157, 34158) were screened from variety Yangmai 3. Mutant 34157 showed a stable resistance to races 4, 16 and 20; mutant 34158 was resistant to races 4 and 20 but susceptible to race 16. Tracing them back to M_2 progeny, the mutation frequency was 1.0×10^{-4}.

From electrophoretic analysis of mildew resistant mutant lines of wheat we found that the zymogram of peroxidase in resistant lines 34080 and 34157 was different from their parents and that these lines do not have band 3A.

(Contributed by Xueyu LIU, Institute for Application of Atomic Energy in Agriculture, Jiangsu Academy of Agricultural Sciences, Nanjing, China).

Induced lodging resistance in upland rice

Seeds of two short duration but tall upland rice varieties "PMK 1" and "Poongar", susceptible to lodging, were subjected to mutation breeding in 1988-1989. Dry seeds of these two varieties were treated with 20, 25 and 30 krad of gamma rays and soaked seeds were treated with 40, 50 and 60 mM concentration of EMS.

In M_2 generation lodging was measured and a correlation study was made between the angle of lodging and various characters like plant height, length of lower internode, productive tiller number, culm diameter and panicle weight. The angle to which the main tiller can be bent before lodging on the 25th day after flowering was measured by using a protractor. Those plants which lodged at an angle beyond 30° from the vertical plane were classified as lodging. From 60,000 M_2 plants, 78 lodging resistant semi-dwarf mutants and 5 dwarf mutants were selected.

As expected, there was generally a negative correlation between internode length and lodging resistance and a positive correlation of culm diameter with lodging resistance. For plant height and tiller numbers, correlations were not so clear.

(Contributed by M. Arumugam Pillai and M. Subramanian, Department of Agricultural Botany, Agricultural College and Research Institute, Madurai 625 104, Tamil Nadu, India).

Mutants with increased resistance to herbicide in Guinea corn Sorghum bicolor (L.) Moench

Sorghum is an important staple food in many tropical countries. In Nigeria, it is extensively cultivated for food and, in recent times, as raw material for the brewing, baking and starch-making industries. We have investigated the possibilities of breeding crop cultivars of Sorghum