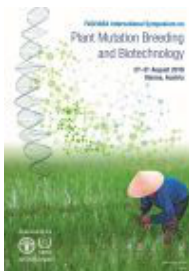


# FAO/IAEA International Symposium on Plant Mutation Breeding and Biotechnology



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## Rapid Cycling Techniques to Accelerate Plant Mutation Breeding in Cereals

Although plant mutation breeding is faster than conventional breeding, techniques are available that can speed up the time from mutation induction to mutant variety release. Advances in high-throughput phenotyping and genotyping, and tissue culture provide several opportunities to make efficiency gains and accelerate the delivery of mutant varieties. The PBGL is carrying out R&D to integrate methods in rapid generation cycling, doubled haploidy and marker-assisted selection to speed up the breeding of mutant varieties. Ten wheat, 7 sorghum and 4 barley varieties from Kenya, Sudan and Austria, respectively, were propagated in different pot sizes, day length and watering regimes to shorten the time needed to flowering and seed setting. At milky stage of seed development, immature embryos rescued at 10, 15, and 20 days after pollination. Plants propagated in small pots under continuous light flowered in less than 35 days. With embryo rescue, an average of 45 days (barley), 48 (wheat) and 60 (sorghum) days were sufficient to complete a generation cycle and produce enough seeds for phenotyping and marker assisted selection in the next generation. These techniques may enable the production of 4-7 generations a year under glass-house with manageable day length options, which is enough to reach sufficient homozygosity to advance a mutant line to evaluation trails.

### Country or International Organization

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