

THE POLY-CROSS AS AN APPLIED BREEDING PROCEDURE FOR
SWEET POTATO IMPROVEMENT IN SRI LANKA

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Poor seed set in sweet potato due to complexity in sterility and incompatibility mechanisms make it difficult to create genetic variations and desirable gene recombination to bring about varietal improvement by selective matings. As sweet potato is naturally an insect pollinated crop species, the polycross breeding technique provided the best solution for the above problem. Growing of highly selected genotypes in an isolated crossing block as in a mating arrangement for interpollination through natural hybridization provides breeders numerous sexual seeds with increasing genetic variabilities in this crop improvement tool.

The first ever approach to upgrade sweet potato by polycross breeding in Sri Lanka was initiated at the Central Agricultural Research Institute, Gannoruwa and two polycross nurseries were established using exotic and indigenous superior genotypes with the aim of creating all possible variations under natural conditions. The resulting sexual seeds which are over five thousand in number are subjected to moderate and then to intense selection pressure based on specific breeding objectives. Selection was done at seedling stage and subsequently clonally propagated stages of single-row, non-replicated and replicated yield trials.

The generated genetic variability among the polycross hybrids was numerous and some of the progenies showing superior performance in one character showed unfavourable performances in others. In spite of the short experience in this technique success achieved in the development of many superior sweet potato seedlings was considerable. Three of these superior genotypes which possess new recombinations with good horticultural characters were identified for entries in the National Sweet Potato Co-ordinated Testing Programme.

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