

GENETIC IMPROVEMENT OF WINGED BEAN THROUGH INDUCED MUTATIONS AND CROSSBREEDING

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The potential of winged bean (*Psophocarpus tetragonolobus* L.) as a source of high-quality protein and edible oil is well known. However, the growth habit, hard seedcoat, and the presence of antinutritional factors limit its widespread cultivation and use. A programme for the genetic improvement of the crop was initiated in August 1989 to alleviate these problems and to make this valuable crop more commercially viable.

Induced Mutations for Improvement of Winged Bean

The air-dried seeds of cultivar UPS 122, which is less sensitive to photoperiod and adapted to Sri Lanka and several other countries, were irradiated with 150 and 300 Gy doses of ^{60}Co gamma rays. The doses were based on the results of a preliminary pot experiment covering a range of doses from 50 to 500 Gy. About 2,000 seeds were irradiated per dose and sown with the unirradiated control in a Randomized Complete Block Design with three replications.

A high degree of yellow spotting on the cotyledons observed in M_1 seedlings of both treatments is an indication of the effectiveness of the irradiation. Sampling of M_1 population is expected to begin in March 1990.

Germplasm Studies in Winged Bean

Forty-eight cultivars from the collection at University of Bangalore, India, were introduced in November 1989 and were planted in two replications in a Randomized Complete Block design. The cultivars will be studied for their adaptability, yield potential, seed quality, and other agronomic characters.

A semidwarf mutant, induced in India, was also introduced and will be closely studied at several locations for its performance. Crossbreeding and/or further induction of mutations will be applied to this mutant for its improvement.