

1.5 percentage points each year. For effective yield increases, selection should be on replicated families grown at 2 locations. Inbred backcross lines were developed using commercial cultivars as recurrent parents and high protein accessions as donors. Recombinant progeny lines were found that had increased levels of individual protein fractions, total protein, good horticultural traits and stable or improved yield.

We conclude that simultaneous improvement in seed yield and protein traits are possible using suitable selection strategies. It should be possible to develop varieties with satisfactory yield, protein at levels of 30% and better nutritional quality.

Induced Bean Mutations: Recessive Seedling Marker Genes for Gene Mapping

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Dry seeds of common bean, Phaseolus vulgaris were irradiated at 0, 10, 20, 30, and 40 K rems with gamma rays from a Cesium 137 source. M_1 plants were field planted and M_2 seeds were harvested from individual plants with remaining seeds from similar treatment levels being bulked. Plants with mutant characteristics were selected from the M_2 population using the following criteria: 1) distinctive characteristic, 2) vegetative vigor, 3) good fertility, and 4) earliness of expression. The selected mutants were grouped according to gross appearance of either morphological or chlorophyll changes. The inheritance characteristic of individual mutants were determined and summarized using chi-square goodness of fit test. Gamma irradiation of dry seeds was found to be a suitable method to induce mutational changes in beans, to provide additional recessive seedling and plant markers for gene mapping. Illustrations are included of selected mutational changes observed.