

THE EFFICIENCY OF SOME MICRO-MUTANTS

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Some of our radiation-induced mutants do not show any obvious morphological deviations from the initial line. They are somewhat later ripening and their seed production is higher (mutant 37C, recombinant R 624). Two other mutants differ from the mother variety so insignificantly that they cannot be classified reliably in segregating families. This is the case for mutant 68C having an increased number of ovules per carpel and for mutant 39 having a subtly deviating leaflet shape. Thus, these genotypes represent typical "micro-mutants". Seed and protein production in these mutants was compared with values obtained from genotypes with stronger anomalies.

The positive effect of the increased number of ovules per carpel in 68C is counteracted by the reduced number of pods per plant resulting from the pleiotropic action of gene *ion*. Its seed and protein production per plant was nearly equivalent to that of the mother variety (Fig. 1). Mutant 39 has good yielding properties combined with normal seed size and normal protein content of the seed meal. In two years tested, its protein production per plant was 20-30% higher than that of the initial line. This mutant will be tested more intensively during the next generations.

Recombinant R 624 arose from the cross of mutant 489C (stem fasciation and many other anomalies) x 142B (tiny plants with degenerating leaves). Its seed production was determined from replicated rows grown in three consecutive generations. The mean number of seeds per plant was regularly higher than the control material, but because of reduced seed size the seed weight per plant was not improved.

Mutant 37C is of particular interest because of its good yielding capacity. It, too, was tested over three generations and showed a very high seed production due to a strongly increased number of pods per plant. Unfortunately, the seed size of this genotype is reduced. Thousand seed weight for 1978 and 1979 was as follows: 1978: 222.80 g (mother variety: 283.40 g); 1979: 234.33 g (mother variety: 302.07 g). Protein content of the seed meal was found to be approximately equal to that of the initial line. Because of the high seed production, 15-20% higher values for the protein production per plant were obtained in 1978 and 1979. The protein quality, i.e. the relative amounts of the different amino acids, was normal. Thus, the protein production of this micro-mutant exceeded the mother variety in spite of having a strongly reduced seed size.

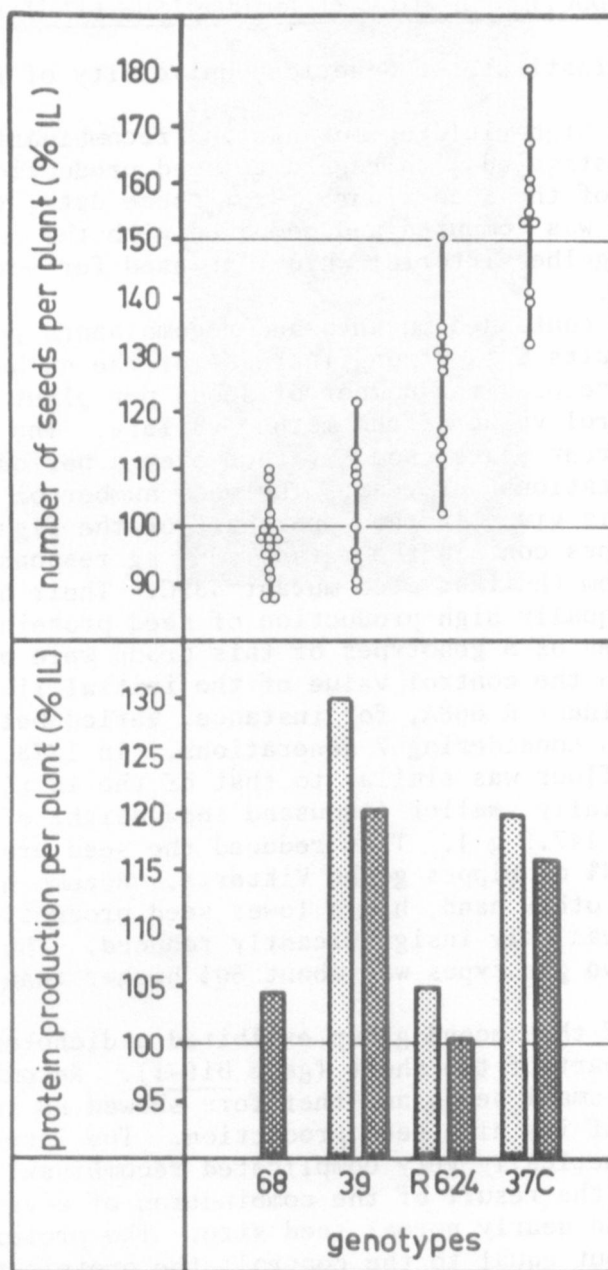


Fig. 1. Seed and protein production per plant of three *Pisum* mutants and a recombinant. All the values are related to the control values of the mother variety 'Uippes gelbe Viktoria'. Each dot represents the mean value for one year (39, 68C) or for one replication in 3 years (37C, R 024), respectively.