

GENE-ECOLOGICAL STUDIES IN PEAS: INFLUENCE OF MICROCLIMATE

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Although only short distances apart, different fields and plots of land may have quite different microclimates which in turn can have substantial effects on plant growth and development. Figs. 1, 2 and Table 1 show differences in plant height and yield (seeds per plant) for 'Dippes Gelbe Viktoria' and for ten fasciated lines grown at two different locations. The second location was at a higher elevation and some 2 km from the first.

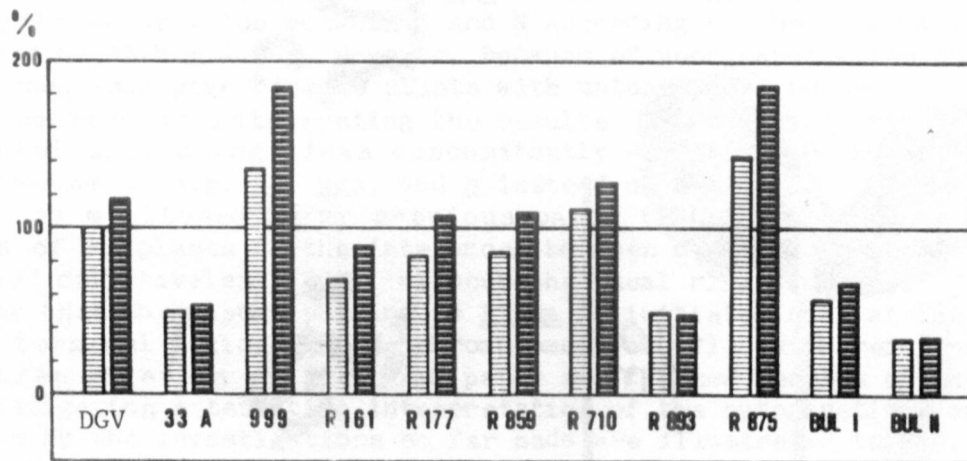


Fig. 1. Length of DGV and a few fasciated lines in % of DGV at location I.

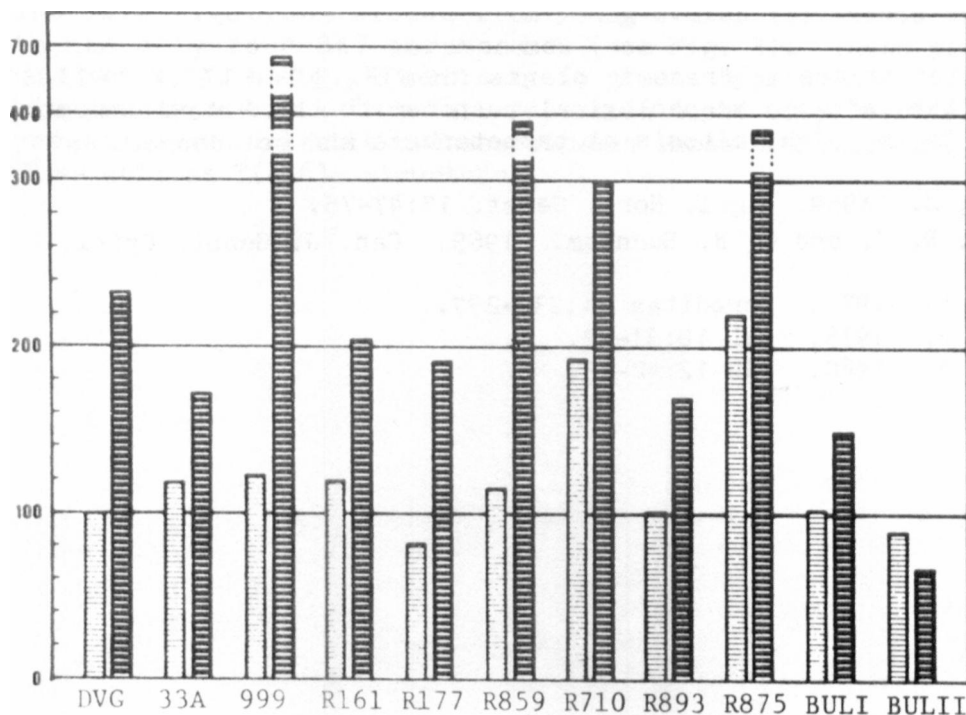


Fig. 2. Seeds per plant.

With respect to plant height, most of the values were well within the range of variation shown by the control groups of the same lines on the same field. Mutant 999 and recombinant 875 were exceptions which should be included in further investigations. Under the extremely rainy weather conditions in Central Europe in 1980 the ratio of 100 (location I) : 136 (location II) was found for DGV, reducing most of the relative values of other lines on location II to a certain degree, but systematic comparisons of the above mentioned mutants and recombinants were not made during that year.

As was expected from the 233% seed production (Fig. 2) of the 63 plants of DGV on location II compared to the control groups at location I (54 plants), most of the mutants and recombinants were not able to compensate this increased productivity and accordingly their values are lowered in relation to DGV on location II. Distinct gene-ecological reactions seem to be involved in the relative differences between the mother variety DGV and most of its mutants and recombinants under the conditions investigated. Moreover, mutant 999 and R 859 strongly surpassed its mother variety in seed production on location II and additional gene-ecological reactions seem to be involved here.

Table 1. Relative differences in plant height and seeds per plant of ten fasciated lines grown at two different sites as a percent of DGV (and comparison of values)

	Location I		Location II	
	Length	Seeds per plant	Length	Seeds per plant
DGV	100%	100%	100%	100%
33 A	50	119	46 (- 5)	77 (- 43)
999	136	123	157 (+21)	295 (+173)
R 161	70	120	77 (+ 7)	88 (- 32)
R 177	84	92	91 (+ 7)	82 (- 9)
R 859	86	115	94 (+ 8)	170 (+ 56)
R 710	112	193	109 (- 3)	129 (- 64)
R 875	144	222	158 (+14)	169 (- 53)
R 895	46	101	50 (+ 4)	73 (- 28)
Bul I	58	103	58 (- 1)	64 (- 38)
Bul II	35	90	31 (- 4)	29 (- 60)