winter bean population" (*Vicia faba* L.)

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Göttingen winter bean population

Based on 11 components (German, French and English)

started in 1989, natural selection since then

Intensive research work since 1997

Out-crossing rate

☞ Experiments on out-crossing were conducted in 1999 and 2000.

Hilum color was used as morphological marker (cf. photo).

The method used by Fyfe and Bailey (1951) was applied to estimate C (cf. eq. 1)

$$C = 4r_N^H + 2h_N^R - 1$$

C = 0ut-crossing in % [eq. 1]

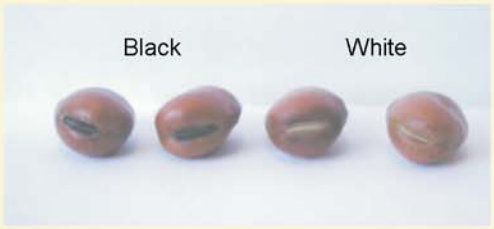
$$q = 1 - \frac{h_N^R}{C}$$

q = Frequency of recessive marker allele [eq. 2]

r_N^H = Frequency of the homozygous recessive plants in the offspring of heterozygous mothers

h_N^R = Frequency of the heterozygous plants in the offspring of the homozygous recessive mothers

Jackknife (Wier, 1990) was used to estimate the Standard error of the means.



Degree of out-crossing in 1999 and 2000

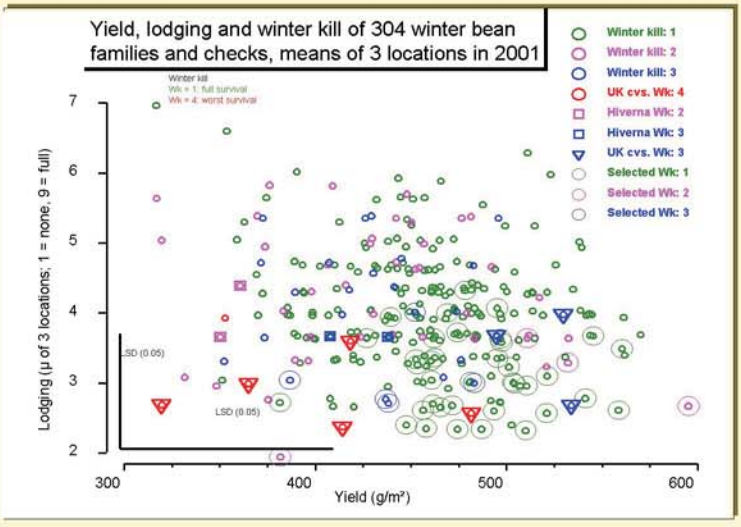
Locations	years	N*	Out-crossing rate
Göttingen	1999	247	62.4%±7.4%
Hohenlieth	2000	118	53.88%±0.08%
Göttingen	2000	139	61.55%±0.04%
Oberer Lindenhof	2000	37	66.02%±0.16%

*Number of individuals tested for degree of out-crossing

Population performance

☞ In 2001 yield trials were conducted at three locations (Hohenlieth, Göttingen and Oberer Lindenhof), N=304. English cultivars were used as checks.

☞ English checks were less winter hardy compared to the better part of the "Göttingen winter bean population" (cf. Figure)



Conclusions

☞ Out-crossing rate of the population is relatively high compared to the summer beans at Göttingen (56 % in 1989 and 50.3 in 1990 , Link et al. 1994).

☞ These results are firmly in favour of developing synthetic and hybrid cultivars from the available material. Research is continued.

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