Autotetraploids. W. Friedt, Biologische Bundesanstalt für Land- und Forstwirtschaft, Institut für Resistenzgenetik, D-8059 Grünbach, Federal Republic of Germany.

A. Old collection

The collection of more than 160 autotetraploid spring barley stocks has been maintained as reported in previous years (BGN 1, 4, 6, 7, 8, 10; see Friedt 1980). In contrary to the report in BGN 10, 1980, the whole collection will be grown again at Grünbach in 1981 for seed multiplication. Afterwards, a sample of approximately 10,000 seeds of each of the stocks will be transferred for long-term storage to the German Genebank: Institut für Pflanzenbau der FAL, D-3300 Braunschweig.

Table 1. Seed set of 15 tetraploid barley crosses in F_2(1978) as compared to their respective best parent

C R O S S No.	best parent	SEEDS - PER - SPIKE No.plants	mean	variance	DIFFERENCE (cross-parent)	t-value
26	Nota	21	15.7	7.6	+ 2.5	2.59*
30	Nota	108	14.8	10.8	+ 1.6	1.83n.s.
60	D8/55	634	15.5	14.2	+ 2.3	14.21***
189	D9/55	289	14.4	18.2	+ 2.5	2.55*
226	Frederikson	202	14.1	18.3	+ 2.0	2.01*
260	D9/55	87	12.5	18.8	+ 0.6	0.56n.s.
278	D9/55	78	13.7	12.2	+ 1.8	1.98*
288	Nota	129	12.0	21.2	- 1.2	1.37n.s.
310	Nota	152	11.8	8.2	- 1.4	1.85n.s.
351	Nota	293	12.5	17.6	- 0.7	0.67n.s.
447	D9/55	175	11.0	13.8	- 0.9	1.01n.s.
480	Frederikson	160	6.7	10.5	- 5.4	5.45**
511	Carina	133	11.3	12.5	- 0.6	0.70n.s.
546	W1749	30	10.9	15.3	- 2.8	2.39*
555	D9/55	30	9.4	14.1	- 3.1	2.74**

n.s., *, **, *** not significant and significant at the 5%, 1% and 0.1% levels of significance, respectively.

B. New autotetraploid stocks

A number of new tetraploid two-row spring barley stocks have been added to the collection in 1980. These tetraploids arose spontaneously from anther-culture of F_1 plants of the crosses listed in Table 1 (see Foroughi-Wehr and Friedt 1981). Agronomic characters of the new stocks will be described later on.

Table 2. New autotetraploid barley stocks produced via anther-culture of crosses in F_1.

Field No. 1980	Pedigree
18	Villame x Trumph
22	"
28/1	Villame x Luke
28/2	"
30	"
36	Trumph x Villame
37/1	"
38	"
48	Ul.8852/2095 5 x Villame
62	Sigma x Ul.8852/2095 5
71	"
85	Gitte x 2174 b 21 3
100	Weib.Printa x Ul.9557/2937
112	E 1388 x 1506 c 6434
114	"
116	"
132	Ul.8545/2922 12 x E 1388
137	"
147	"
167	Br.1289/73 x 1506 c 6434
172	"
173	"
189	Trumph x Br.1289/73
190	"
215	Trumph x VM260
216	"
218	"
254	Franken III x Trumph
285	Hege 366/75 x Ul.9557/2937

C. New tetraploid crosses

Following the 'diploidisation method' described by Gaul and Friedt (1976) a number of new crosses of tetraploid spring barley stocks have been carried out after various mutagenic treatments with X-rays and/or EMS. In Figure 1 the frequency distribution for seed set of 15 different two-row complex-crosses (144 F_1-plant progenies) is given as compared to the distribution of 29 parents. It is evident that a number of cross-progenies exceeds the best parents with regard to seed setting. In Table 2 the mean seed set of the individual crosses is compared with the mean value of the respective best parent. Five out of 15 crosses are significantly[x)] to their best parent. The best plant progenies of the best crosses will be grown again in 1981 for further selection regarding seed set as well as tillering ability.

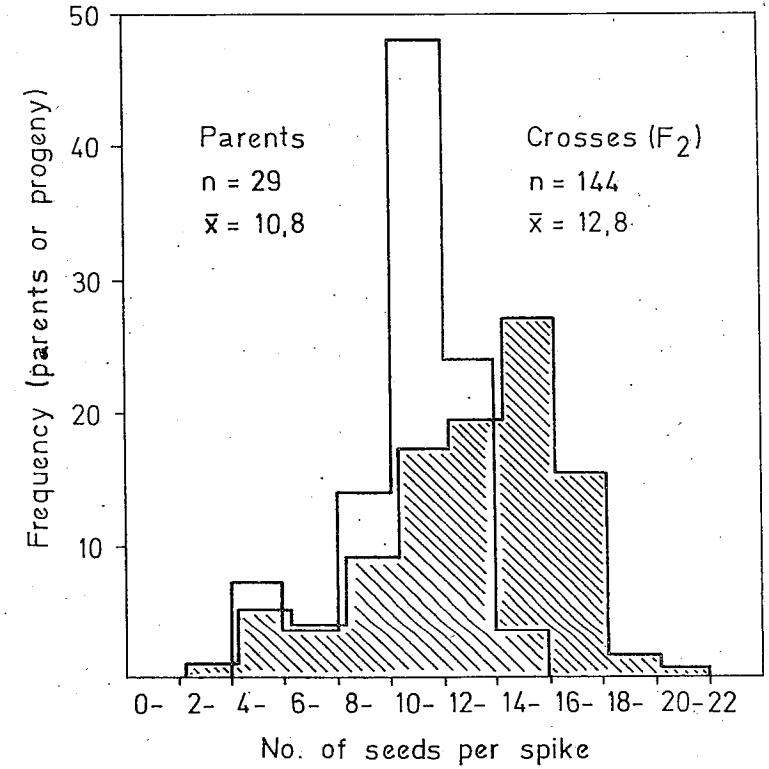

Fig. 1. Frequency distributions for seed set of tetraploid two-rowed spring barley crosses in the F_3-generation and their parents.

x) superior

Seed samples of all of the tetraploid stocks are free for distribution.

References:

Foroughi-Wehr, B. and W. Friedt. 1981. Responsiveness to anther culture of Hordeum vulgare cv. 'Dissa' and its parents. BGN 11:50-53.

Friedt, W. 1980. Coordinator's Report: Autotetraploid. BGN 10:93.

Gaul, H. and W. Friedt. 1976. Progress in the diploidisation of autotetraploid barley. In: Barley Genetics III, Proc. 3rd Int. Barley Genet. Symp., Garching 1975, 378-387.

IV.15. Pest resistant genes. J. G. Moseman. No report.

IV.16. Erectoides, laxum genes. G. Persson and U. Lundqvist. No report.

IV.17. Eceriferum genes. U. Lundqvist and B. Søgaard. No report.

IV.18. Chloroplast genes. D. von Wettstein and K. Kristiansen. No report.

IV.19. Coordinator's report: The genetic male sterile barley collection. E. A. Hockett, Western Region AR-SEA-USDA and Plant and Soil Science Department, Montana State University, Bozeman, Montana 59717, U.S.A.

Two mutants were found allelic with previously numbered loci (Table 1). The selfing and segregation behavior of msg24j and msg24at was reported in 1971 (1) and 1972 (2), respectively.

Three new mutants were assigned symbols as follows: msg,,ec in Hector, msg,,ed and msg,,ee in Ingrid. About 180 sterile stocks from C. A. Foster, Aberystwyth, Wales, UK were grown at Bozeman in 1980 and will be reported on and assigned symbols in future reports.

Table 1. Ratios of fertile to male sterile F_1 plants from crosses of genes determined to be allelic.

CI No.	Cultivar	Symbol	msg stock			
			24v	24ak	24an	24bc
13638	Betzes/Domen	msg,,j	13:14	15:17	15:12	5:5
1470	OAC 21	msg,,at	14:18	19:11	8:4	6:4

References:

Hockett, E. A. 1971. Genetic male sterile genes useful in hybrid barley production. Barley Genet. II;298-307. Wash. State Univ. Press, Pullman, Wash.

Hockett, E. A. 1972. Coordinator's report on the genetic male sterile barley collection. Barley Genet. Newsl. 2:139-144.

IV.20. Aristatum and all other mutant genes. A. Gustafsson and U. Lundqvist. No report.