

Autotetraploids derived from anther culture of winter barley (*Hordeum vulgare* L.). W. Friedt, Biologische Bundesanstalt für Land- und Forstwirtschaft, Institut für Resistenzgenetik, D-8059 Grünbach, Federal Republic of Germany.

Nineteen winter barley hybrids were produced by the seed company F. v. Lochow-Petkus GmbH D-3410 Northeim 13 (Dr. E. Pehse) in order to combine the complete resistance to Barley Yellow Mosaic Virus of the German six-rowed cultivar "Franka" with agronomic characters of 19 other parents. Plants of the parents and F<sub>1</sub> hybrids were used as anther donors (Table 1) to study the inheritance of anther culture responsiveness (Foroughi-Wehr and Friedt 1984, Friedt and Foroughi-Wehr 1983).

Table 1. Chromosome numbers of androgenetic plants of winter barley (from Foroughi-Wehr and Friedt 1984).

Chromosome Number	No. of Plants	% Plants
2n=x = 7	73	10.6
2n=2x = 14	475	68.9
2n=2x+1 = 15	7	1.0
2n=3x = 21 a)	7	1.0
2n=4x = 28 b)	125	18.1
2n=4x+1 = 29	3	0.4
Total	690	100.0

a) including 1 plant with 22 chromosomes

b) including 1 plant with 27+1 fragment chromosome

Regenerated plantlets were checked for their chromosome number as soon as they could be transferred from *in vitro* culture to greenhouse cultivation. Vigorous root tips were pretreated for 5 hours in a saturated solution of 1-bromonaphthalene, fixed in alcohol:acetic acid(3:1) and stored in 70% alcohol. Staining was performed according to the standard Feulgen procedure (hydrolyzation for 10 min at 60°C in 1N HCl, staining in basic fuchsin for at least 1 h). Of a total of 690 plants 10.6% were haploid, 68.9% were diploid (doubled haploid), 1% were trisomic, 1% were triploid (Table 2) and 18.5% were tetraploid, including 1 plant with 27+1 fragment chromosome and 3 plants with 29 chromosomes (Table 1, Foroughi-Wehr and Friedt 1984).

Viable plants were grown to maturity and almost all of them set seed, which were harvested for further testing of agronomic characters. The number of available tetraploid lines of differing parentage are listed in Table 2. They will be included in the collection of autotetraploids preserved at our institute.

Table 2. Androgenetic autotetraploid plants derived from winter barley cultivars or hybrids, respectively.

Materials	Number of autotetraploids		
	6-row	2-row	Total
Cultivars 6-row <sup>1)</sup>	6	-	6
2-row <sup>2)</sup>	-	40	40
Hybrids 6-row x 6-row	13	1	14
6-row x 2-row	30	5	35
Cultivars used: 1)	Arma, Corona, Franka, LP 1.676		
2)	Alpha, Igri, LP 8.34218.		

#### References:

- Foroughi-Wehr, B. and W. Friedt. 1984. Rapid production of recombinant barley yellow mosaic virus resistant *Hordeum vulgare* lines by anther culture. Theor. Appl. Genet. 65: in press.
- Friedt, W. and B. Foroughi-Wehr. 1983. Frequency of tetraploid and triploid androgenetic plants of winter barley (*Hordeum vulgare* L.). BGN 13:19-21.