Table S1 Statistical probabilities of F-criterion of the four barley cultivars tested for two growing seasons under three densities

Source of variation	df	PH		Myc		GY		Prot		TKW	
		F-ratios	*P*	*F*-ratios	*P*	*F*-ratios	*P*	*F*-ratios	*P*	*F*-ratios	*P*
Year (Y)	1	3678.72	<0.001	113.88	<0.001	866.17	<0.001	405.27	<0.001	19.21	<0.001
Density (D)	2	0.08	ns	0.46	ns	6.95	<0.01	0.23	ns	1.25	ns
Y×D	2	0.42	ns	0.23	ns	1.59	ns	0.08	ns	1.43	ns
Cultivar (C)	3	81.00	<0.001	0.21	ns	46.61	<0.001	2.84	<0.05	30.09	<0.001
Y×C	3	7.48	<0.001	0.97	ns	17.18	<0.001	0.32	ns	0.91	ns
D×C	6	0.31	ns	1.42	ns	0.57	ns	0.41	ns	0.88	ns
Y×D×C	6	0.37	ns	1.01	ns	1.23	ns	0.34	ns	1.38	ns
CV (%)		9.32		58.84		16.60		9.68		7.98	

Where: df, degree of freedom; PH, plant height at anthesis; Myc, arbuscular mycorrhiza percentage of colonization; GY, grain yield; Prot, seed protein concentration; TKW, 1000-kernel weight; CV, coefficient of variation; ns, not significant

Table S2 Statistical probabilities of F-criterion of the barley cultivars grouped according to the two breeding methods applied for cultivar selection

Source of variation	df	PH		Myc		GY		Prot		TKW	
		F-ratios	*P*	*F*-ratios	*P*	*F*-ratios	*P*	*F*-ratios	*P*	*F*-ratios	*P*
Year (Y)	1	3678.72	<0.001	113.88	<0.001	866.17	<0.001	405.27	<0.001	19.21	<0.001
Density (D)	2	0.08	ns	0.46	ns	6.95	<0.01	0.23	ns	1.25	ns
Y×D	2	0.42	ns	0.23	ns	1.59	ns	0.08	ns	1.43	ns
Breeding method (Bm)	1	113.95	<0.001	0.56	ns	19.11	<0.001	6.54	<0.05	0.75	ns
Y×Bm	1	12.86	<0.001	1.79	ns	1.47	ns	0.06	ns	1.13	ns
D×Bm	2	0.06	ns	1.01	ns	0.33	ns	0.66	ns	0.09	ns
Y×D×Bm	2	0.11	ns	0.48	ns	0.41	ns	0.69	ns	0.17	ns
CV (%)		12.06		59.12		28.32		9.20		12.23	

Where: df, degree of freedom; PH, plant height at anthesis; Myc, arbuscular mycorrhiza percentage of colonization; GY, grain yield; Prot, seed protein concentration; TKW, 1000-kernel weight; CV, coefficient of variation; ns, not significant

Table S3 Statistical probabilities of F-criterion of the barley types

Source of variation	df	PH		Myc		GY		Prot		TKW	
		F-ratios	*P*	F-ratios	*P*	F-ratios	*P*	F-ratios	*P*	F-ratios	*P*
Year (Y)	1	3678.72	<0.001	113.88	<0.001	866.17	<0.001	405.27	<0.001	19.21	<0.001
Density (D)	2	0.08	ns	0.46	ns	6.95	<0.01	0.23	ns	1.25	ns
Y×D	2	0.42	ns	0.23	ns	1.59	ns	0.08	ns	1.43	ns
Barley type (Bt)	1	11.90	<0.01	0.02	ns	19.83	<0.001	0.64	ns	28.05	<0.001
Y×Bt	1	0.09	ns	0.26	ns	15.29	<0.001	0.06	ns	0.01	ns
D×Bt	2	0.06	ns	0.24	ns	0.16	ns	0.47	ns	1.03	ns
Y×D×Bt	2	0.14	ns	0.14	ns	0.69	ns	0.09	ns	0.30	ns
CV (%)		18.94		60.98		26.21		9.69		10.29	

Where: df, degree of freedom; PH, plant height at anthesis; Myc, arbuscular mycorrhiza percentage of colonization; GY, grain yield; Prot, seed protein concentration; TKW, 1000-kernel weight; CV, coefficient of variation; ns, not significant

Table S4. P concentration (mg g^{-1}) in the flag leaf for 2014. There were no significant effects and P was not measured the second year

	Seeding rate		
	300	400	500
Triptolemos (Tri)	1.12 ± 0.4	1.19 ± 0.4	1.62 ± 0.9
Chill (Chi)	0.87 ± 0.2	1.38 ± 0.8	1.04 ± 0.4
Makedonia (Mak)	1.38 ± 0.1	1.62 ± 1.1	2.06 ± 1.6
Mucho (Muc)	1.62 ± 0.3	1.39 ± 0.6	1.61 ± 0.3

Table S5. Data by seeding rate and cultivar for each year. There were no significant effects of planting density

2014					
	PH	Myc	GY	Prot	TKW
Triptolemos (Tri)					
300	109.0 ± 4.0	5.3 ± 1.3	330.2 ± 38.8	13.7 ± 1.0	38.0 ± 1.6
400	112.6 ± 4.1	6.9 ± 1.7	288.6 ± 32.8	13.9 ± 0.8	37.4 ± 1.7
500	108.9 ± 2.8	6.0 ± 1.2	352.0 ± 61.6	14.4 ± 0.7	43.9 ± 9.6
Chill (Chi)					
300	91.4 ± 6.1	9.8 ± 2.5	284.1 ± 30.9	13.7 ± 0.5	34.2 ± 1.3
400	91.1 ± 1.5	7.3 ± 1.7	293.1 ± 71.6	13.4 ± 0.7	35.8 ± 3.4
500	89.6 ± 5.0	10.8 ± 2.9	298.1 ± 20.0	12.5 ± 0.4	37.4 ± 4.7
Makedonia (Mak)					
300	124.1 ± 2.4	9.8 ± 2.6	288.1 ± 29.9	13.8 ± 0.8	39.1 ±
400	119.4 ± 3.6	9.5 ± 3.0	274.9 ± 42.4	14.0 ±0.6	40.3 ±
500	122.8 ± 3.3	9.3 ± 4.2	297.1 ± 43.3	14.1 ±0.2	39.1 ±
Mucho (Muc)					
300	78.4 ±2.6	10.3 ± 1.3	433.0 ± 36.8	13.6 ± 0.7	45.4 ± 2.0
400	83.2 ± 3.0	8.0 ± 2.6	481.7 ± 57.1	13.5 ± 0.9	42.6 ± 3.1
500	84.4 ± 1.1	9.5 ± 1.7	534.5 ± 55.9	13.3 ± 0.3	43.6 ± 0.2
2015					
	PH	Myc	GY	Prot	TKW
Triptolemos (Tri)					
300	66.3 ± 4.8	28.3 ± 9.6	820.0 ± 142.5	11.1 ± 1.4	39.3 ± 2.4
400	68.8 ± 4.8	42.0 ± 25.7	797.5 ± 96.7	11.0 ± 1.1	37.0 ± 2.2
500	67.5 ± 6.5	40.5 ± 29.9	836.3 ± 158.6	11.3 ± 1.0	36.3 ± 2.6
Chill (Chi)					
300	63.8 ± 6.3	28.3 ± 13.6	960.0 ± 140.5	10.0 ± 1.9	31.5 ± 2.4
400	66.3 ± 4.8	27.0 ± 13.6	1007.5 ± 142.0	10.8 ± 1.8	32.0 ± 3.4
500	65.0 ± 8.2	37.3 ± 8.3	2048.8 ± 1881.8	10.2 ± 2.1	30.5 ± 2.6
Makedonia (Mak)					
300	85.0 ± 15.8	38.7 ± 18.9	853.8 ± 390.6	11.7 ± 1.2	36.8 ± 3.9
400	83.8 ± 16.0	30.3 ± 7.6	955.0 ± 283.6	11.3 ± 2.0	37.8 ± 2.2
500	82.5 ± 15.0	30.8 ± 7.7	943.8 ± 185.5	11.3 ± 1.6	37.5 ± 1.0
Mucho (Muc)					
300	58.8 ± 4.8	44.0 ± 25.7	2122.5 ± 1856.4	11.3 ± 1.2	40.3 ± 3.3
400	53.8 ± 8.5	22.3 ± 10.2	1203.8 ± 153.3	10.9 ± 1.4	39.5 ± 2.1
500	57.5 ± 10.4	20.8 ± 12.1	1268.8 ± 170.7	11.2 ± 1.7	39.8 ± 1.3