7 APPENDIX

Table 1. Characteristics of analyzed wheat varieties

Wheat species / type	Variety	ECN[1]	BCHAR[2]	Origin	Spike - awnedness (26)[3]	Caryopsis - colour (40))	Glume-colour (35)	Glume - indumentum (36)	Spike density (25)	Plant - height (3)	Powdery mildew (58)	Country of origin
Emmer wheat [*Triticum dicoccum* Schuebl (Schrank)] syn. *Triticum turgidum*, sp. *dicoccon* Schrank	Rudico	01C0200948	412048	CZE	7- awned	5 - brown	4 - red	1 - absent	9 - compact	6 – 96-110 cm	9	Czech Republic; legally protected cultivar, Crop Research Institute Prague (2006), ECN 01C0200948
	Kahler Emmer	01C0203989	412013	DEU	6- short awned	5 - brown	1 - white, straw-yellow	1 - absent	8 - very dense	6 – 96-110 cm	9	Germany; advanced /improved cultivar, ECN 01C0203989
	T.dicoccon (Tapioszele)	01C0201282	412048	HUN	5 – long scurs	5 - brown	4 - brown	1 - absent	7 - dense	6 - 96-110 cm	9	Not registered[4]
	Krajova-Horny Tisovnik (Malov)	01C0200117	412013	CSK	4 - scurs	4 – light brown	2- white, with a gray edge	1 - absent	5 – medium dense	5 - medium 81-95 cm	9	Not registered[4]
	T.dicoccum No.8909	01C0204501	412013	DNK	5 – long scurs	5 - brown	1 - white, straw-yellow	1 - absent	7 - dense	7- 115 cm	9	Not registered[4]

Einkorn wheat (*Triticum monococcum* L.)	*Triticum monococcum* L. var. *flavescens* KOERN. Escana	01C0201503	242002	ESP	6- short awned	4 – light brown	1 - white, straw-yellow	1 - absent	9 - compact	5 - medium 81-95 cm	8	Spain; traditional cultivar/landrace, seed sample from Gene bank of the Crop Research Institute Prague, ECN 01C0201503
	Triticum monococcum L. var. *vulgare* Schwedisches Einkorn	01C0204053	242019	SWE	6- short awned	4 – light brown	1 - white, straw-yellow	1 - absent	9 - compact	6 - 96-110 cm	9	Sweden; traditional cultivar/landrace, ECN 01C0204053
	T.monococcum	01C0204039	242007	ALB	5 – long scurs	4 – light brown	1 - white, straw-yellow	1 - absent	5 – medium dense	6 - 96-110 cm	9	Not registered[4]
	T.monococcum	01C0204040	242007	ARM	5 – long scurs	4 – light brown	1 - white, straw-yellow	1 - absent	7 - dense	6 - 96-110 cm	9	Not registered[4]
	T.monococcum	01C0204044	242019	ALB	5 – long scurs	5 - brown	4 - brown	1 - absent	5 – medium dense	6 - 96-110 cm	9	Not registered[4]
Spring bread wheat (*Triticum aestivum* L.)	Granny	01C0204799	635001	CZE	4 - semi-awned	5- brown	1 - white, straw-yellow	1 - absent	3 - lax	5 - medium 81-95 cm	7	Czech Republic; registered cultivar, Selgen, Ltd., Plant Breeding Station Úhřetice (2004), ECN 01C0204799
	SW Kadrilj	01C0204877	635000	SWE	2 - awnless	2- yellow	1 - white, straw-yellow	1 - absent	5 - intermediate	5 - medium 81-95 cm	8	Sweden; registered cultivar (in CR 2006), Svalöf Weibull AB, ECN 01C0204877

Kärntner Früher	01C0203840	635104	AUT	1 - awnless	5- brown	4 - red	1 - absent	3 - lax	6 - 96-110 cm	6	Austria; registered cultivar, Kärntner Saatbaugenossenschaft Reg. G.m.b.H (1960), ECN 01C0203840
Jara	01C0200100	635090	CSK	1 - awnless	5- brown	1 - white, straw-yellow	1 - absent	5 - intermediate	6-110 cm	8,7	CSK Úhřetice Rdkm. Remo/Úhřetice400 (1975)
Postoloprtská přesívka 6	01C0200043	635090	CSK	1 - awnless	6- amber brown	1 - white, straw-yellow	1 - absent	5- medium dense	7-115 cm	8,5	CSK Rdkm. S-LV Postoloprty (1922-1941)

Notes: the classifications were done according to Bareš et al. (1985);

[1] identification number of gene bank;

[2] taxonomical code (botanical characteristics);

[3] number of descriptor,

The 1-9 scale in described part express state of descriptor of morphological character within the limits 1 to 9

(9 - The highest level, 0 - variable character); in the case of powdery mildew means 9 – very high resistant, 1 - very sensitive;

[4]Registration of Plant Genetic Resources in the Czech Republic.

Table 2. Typical physical properties of the Valečov soil (area C); figures is brackets indicate standard deviations

Depth (cm)	Particle density (g/cm3)	Dry bulk density (g/cm3)	Porosity (% vol.)	Field capacity (% vol.)	Wilting point (% vol.)	Clay < 0.002 mm (% mass)	Silt 0.002–0.05 mm (% mass)	Sand 0.05–2.0 mm (% mass)
20	2.65 (0.03)	1.52 (0.05)	42.4 (1.8)	36.2 (1.2)	14.0 (0.4)	16.5 (1.7)	37.2 (2.6)	46.4 (1.3)
40	2.69 (0.02)	1.52 (0.08)	43.6 (3.2)	35.1 (3.1)	14.2 (1.4)	22.5 (2.8)	33.2 (5.0)	44.3 (6.5)
60	2.69 (0.01)	1.57 (0.06)	41.5 (2.3)	36.6 (3.2)	15.1 (3.1)	28.8 (7.8)	21.4 (7.3)	49.8 (15.1)
80	2.68 (0.03)	1.67 (0.09)	37.7 (3.2)	33.9 (3.4)	13.6 (4.2)	24.8 (8.7)	18.4 (10.3)	56.7 (18.6)
120	2.70 (0.04)	1.71 (0.03)	36.6 (1.4)	23.6 (6.2)	9.4 (2.8)	14.4 (7.1)	11.3 (5.9)	74.3 (12.7)

Table 3. Typical chemical properties of the Valečov soil (area C); figures is brackets indicate standard deviations

Depth (cm)	Oxidisable carbon (% mass)	Cation exchange capacity (cmol(c)/kg dry soil)	CEC base saturation (%)	pH (H2O)
20	1.25 (0.04)	13.1 (0.7)	91.0 (4.4)	7.0 (0.0)
40	0.32 (0.07)	9.1 (1.9)	74.3 (9.1)	6.9 (0.0)
60	0.15 (0.06)	10.8 (2.9)	75.3 (12.3)	6.5 (0.4)
80	0.12 (0.08)	10.4 (3.9)	77.0 (13.9)	5.9 (0.6)
120	0.07 (0.05)	8.4 (5.3)	68.3 (9.1)	5.3 (0.1)

Table 4. Content of mercury (Hg) in the analyzed grain wheat species in (mg kg^{-1} dry matter)

Wheat variety	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*
C1	0.0020	0.0008	0.0074	0.0018	0.0012	0.0006	0.0008	0.0008	0.0014	0.0021	0.0012	0.0021	0.0017	0.0009	0.0013
C2	0.0024	0.0012	0.0099	0.0014	0.0014	0.0005	0.0006	0.0008	0.0016	0.0022	0.0012	0.0015	0.0014	0.0010	0.0015
C3	0.0027	0.0008	0.0088	0.0013	0.0012	0.0008	0.0005	0.0006	0.0014	0.0023	0.0012	0.0018	0.0012	0.0008	0.0013
Mean	0.0025	0.0009	0.0087	0.0015	0.0012	0.0006	0.0007	0.0008	0.0015	0.0022	0.0012	0.0018	0.0014	0.0009	0.0013
SD	0.0004	0.0002	0.0012	0.0003	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001	0.0003	0.0002	0.0001	0.0001

C1, C2, C3= replicates; 1= SW Kadrilj, 2 = Granny, 3 = Jara, 4 = Kaerntner Frueher, 5 = Postoloprstska presivka 6, 6 = Escana, 7 = Schwedisches Einkorn, 8 = *T. monococcum* 2101, 9 = *T. monococcum* 2102, 10 = *T. monococcum* 2103, 11 = Rudico, 12 = Kahler Emmer, 13 = *T. dicoccon* (Tapioszele), 14 = Krajova-Horny Tisovnik (Malov), 15 = *T. dicoccon* No 8909

Table 5. Content of cadmium (Cd) in the analyzed grain wheat species in (mg kg^{-1} dry matter)

Wheat variety	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*
C1	0.0327	0.0321	0.0135	0.0049	0.0348	0.0551	0.0589	0.0577	0.0551	0.0561	0.0215	0.0318	0.0269	0.0242	0.0297
C2	0.0365	0.0345	0.0127	0.0360	0.0378	0.0550	0.0550	0.0574	0.0556	0.0549	0.0237	0.0348	0.0322	0.0140	0.0301
C3	0.0383	0.0347	0.0137	0.0376	0.0344	0.0529	0.0570	0.0591	0.0409	0.0515	0.0243	0.0336	0.0226	0.0175	0.0412
Mean	0.0358	0.0338	0.0133	0.0262	0.0357	0.0543	0.0570	0.0580	0.0505	0.0542	0.0232	0.0334	0.0273	0.0186	0.0337
SD	0.0028	0.0014	0.0005	0.0048	0.0018	0.0012	0.0019	0.0009	0.0084	0.0024	0.0015	0.0015	0.0048	0.0052	0.0065

C1, C2, C3= replicates

1= SW Kadrilj, 2 = Granny, 3 = Jara, 4 = Kaerntner Frueher, 5 = Postoloprstska presivka 6, 6 = Escana, 7 = Schwedisches Einkorn, 8 = *T. monococcum* 2101, 9 = *T. monococcum* 2102, 10 = *T. monococcum* 2103, 11 = Rudico, 12 = Kahler Emmer, 13 = *T. dicoccon* (Tapioszele), 14 = Krajova-Horny Tisovnik (Malov), 15 = *T. dicoccon* No 8909

Reference material: mean 0.0205, standard deviation 0.0050 (mg kg^{-1} dry matter)

Table 6. Content of lead (Pb) in the analyzed grain wheat species in (mg kg^{-1} dry matter)

Wheat variety	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*
C1	0.2472	0.0595	0.0790	0.2116	0.0743	0.0463	0.0244	0.0438	0.0794	0.0544	0.0758	0.0372	0.0224	0.0640	0.1614
C2	0.2923	0.0504	0.0764	0.1775	0.1351	0.0634	0.0379	0.0445	0.2437	0.0977	0.0687	0.0268	0.1009	0.0195	0.0779
C3	0.2942	0.0761	0.0790	0.4961	0.1081	0.0353	0.0627	0.0483	0.0692	0.0510	0.0789	0.0317	0.0745	0.0357	0.1411
Mean	0.2779	0.0620	0.0781	0.2950	0.1058	0.0483	0.0416	0.0455	0.1308	0.0677	0.0745	0.0319	0.0659	0.0397	0.1268
SD	0.0266	0.0130	0.0015	0.1749	0.0305	0.0142	0.0194	0.0024	0.0979	0.0261	0.0052	0.0052	0.0399	0.0225	0.0435

C1, C2, C3= replicates

1= SW Kadrilj, 2 = Granny, 3 = Jara, 4 = Kaerntner Frueher, 5 = Postoloprstska presivka 6, 6 = Escana, 7 = Schwedisches Einkorn,

8 = *T. monococcum* 2101, 9 = *T. monococcum* 2102, 10 = *T. monococcum* 2103, 11 = Rudico, 12 = Kahler Emmer,

13 = *T. dicoccon* (Tapioszele), 14 = Krajova-Horny Tisovnik (Malov), 15 = *T. dicoccon* No 8909

Reference material: mean 0.0793, standard deviation 0.0624 (mg kg^{-1} dry matter)

Table 7. Content of zinc (Zn) in the analyzed grain wheat species in (mg kg^{-1} dry matter)

Wheat variety	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*
C1	38.360	38.147	48.417	48.010	39.019	28.072	35.099	38.816	58.292	72.711	66.993	67.214	68.404	60.277	50.187
C2	35.693	32.760	49.585	47.395	36.727	49.437	35.352	38.213	56.545	70.419	65.652	66.774	63.905	61.378	46.561
C3	36.890	34.652	48.754	43.801	36.564	43.196	35.577	42.037	56.169	74.755	69.568	66.106	69.062	62.829	46.947
Mean	36.981	35.187	48.919	46.402	37.437	40.235	35.343	36.689	57.002	72.629	67.404	66.698	67.124	61.495	47.899
SD	1.336	2.732	0.601	2.273	1.372	10.986	0.239	2.055	1.132	2.169	1.989	0.558	2.806	1.280	1.991

C1, C2, C3= replicates

1= SW Kadrilj, 2 = Granny, 3 = Jara, 4 = Kaerntner Frueher, 5 = Postoloprstska presivka 6, 6 = Escana, 7 = Schwedisches Einkorn,

8 = *T. monococcum* 2101, 9 = *T. monococcum* 2102, 10 = *T. monococcum* 2103, 11 = Rudico, 12 = Kahler Emmer,

13 = *T. dicoccon* (Tapioszele), 14 = Krajova-Horny Tisovnik (Malov), 15 = *T. dicoccon* No 8909

Reference material: mean 12.023, standard deviation 6.756 (mg kg^{-1} dry matter)

Table 8. Potato cultivar characteristics

Cultivar	*Origin of seed tubers*	*Maturity*	*Skin colour*	*Flesh colour*	*Shape of tubers*
Agria	Holland	medium-early to medium-late	yellow	yellow	oval
Russet Burbank	Czech (Gene Bank)	late	yellow	white	long
Valy	Czech Republic	early	yellow	pale-yellow	oval
Salome	Germany	very early	yellow	pale-yellow	round to oval
Bohemia	Czech Republic	early	yellow	yellow	oval
Axa	Czech Republic	early	yellow with red spots	yellow	oval
Jelly	Germany	medium-late	yellow	yellow	oval
Ditta	Austria	medium-early	yellow	yellow	long-oval
Bionta	Austria	medium-late	yellow	dark-yellow	round to oval
Keřkovský rohlíček	Czech Republic	medium-early	yellow	dark-yellow	long
Rosara	Germany	very early	red	yellow	oval
Dali	Holland	early	yellow	pale-yellow	oval
Mayan Gold (S. phureja)	Germany	late	yellow	deep yellow	long
Valfi	Czech Republic	medium-early to medium-late	purple	purple partially coloured	round to oval
Violetta	Germany	medium-early	purple	purple	long
Blaue Anneliese	Germany	medium-early	purple	purple	oval
Rosemarie	Germany	medium-early	red	red	long oval
Vitelotte	France	late	purple	deep purple with bright spots	long oval
Königspurpur	German	medium-early	red	red	round to oval
Highland Burgundy Red	Germany	medium-early	red	red with white borders	long
Herbie 26	Czech (Gene Bank)	early to medium early	red	red	long oval
Red Emmalie	Germany	early to medium-early	red	red	long

Table 9. One-way factorial analysis of variance (ANOVA), Tukey HSD test, α = 0.05 of mercury (Hg)

Č. buňky	Tukeyův HSD test; proměnná Hg mg/kg (inf of variety) Homogenní skupiny, alfa = .05000 (Neúplné vyhledávání) Chyba: meziskup. PČ = .00000, sv = 30.000 variety	Hg mg/kg Průměr	1	2	3	4	5
7	Schwedisches Einkorn	0.000633	****				
6	Escana	0.000633	****				
8	T. monococcum 2101	0.000733	****	****			
14	Krajova-Horny Tisovnik (Malov)	0.000900	****	****			
2	Granny	0.000933	****	****			
11	Rudico	0.001200	****	****	****		
5	Postoloprtská přesívka	0.001267	****	****	****	****	
15	T. dicoccum No. 8909	0.001367	****	****	****	****	
13	T. dicoccon (Tapioszele)	0.001433	****	****	****	****	
9	T. monococcum 2102	0.001467	****	****	****	****	
4	Kaertner Frueher	0.001500	****	****	****	****	
12	Kahler Emmer	0.001800		****	****	****	
10	T. monococcum 2103	0.002200			****	****	
1	SW Kadrilj	0.002367				****	
3	Jara	0.008700					****

Table 10. One-way factorial analysis of variance (ANOVA), Tukey HSD test, α = 0.05 of lead (Pb)

Č. buňky	Tukeyův HSD test; proměnná Pb mg/kg (inf of variety) Homogenní skupiny, alfa = .05000 (Neúplné vyhledávání) Chyba: meziskup. PČ = .00315, sv = 30.000 variety	Pb mg/kg Průměr	1	2
12	Kahler Emmer	0.031900	****	
14	Krajova-Horny Tisovnik (Malov)	0.039733	****	
7	Schwedisches Einkorn	0.041667	****	
8	T. monococcum 2101	0.045533	****	
6	Escana	0.048333	****	
2	Granny	0.062000	****	
13	T. dicoccon (Tapioszele)	0.065933	****	
10	T. monococcum 2103	0.067700	****	
11	Rudico	0.074467	****	
3	Jara	0.078133	****	
5	Postoloprtská přesívka	0.105833	****	
15	T. dicoccum No. 8909	0.126800	****	****
9	T. monococcum 2102	0.130767	****	****
1	SW Kadrilj	0.277900		****
4	Kaertner Frueher	0.295067		****

Table 11. One-way factorial analysis of variance (ANOVA), Tukey HSD test, α = 0.05 of cadmium (Cd)

Č. buňky	variety	cd mg/kg Průměr	1	2	3	4
Tukeyův HSD test; proměnná cd mg/kg (inf of variety) Homogenní skupiny, alfa = .05000 (Neúplné vyhledávání) Chyba: meziskup. PČ = .00004, sv = 30.000						
3	Jara	0.013300	****			
14	Krajova-Horny Tisovnik (Malov)	0.018567	****	****		
11	Rudico	0.023167	****	****		
4	Kaertner Frueher	0.026167	****	****		
13	T. dicoccon (Tapioszele)	0.027233	****	****		
12	Kahler Emmer	0.033400		****	****	
15	T. dicoccum No. 8909	0.033667		****	****	
2	Granny	0.033767		****	****	
5	Postoloprtská přesívka	0.035667		****	****	
1	SW Kadrilj	0.035833		****	****	
9	T. monococcum 2102	0.050533			****	****
10	T. monococcum 2103	0.054167				****
6	Escana	0.054333				****
7	Schwedisches Einkorn	0.056967				****
8	T. monococcum 2101	0.058067				****

Table 12. One-way factorial analysis of variance (ANOVA), Tukey HSD test, α = 0.05 of zinc (Zn)

Č. buňky	variety	Zn mg/kg Průměr	1	2	3	4	5	6	7
Tukeyův HSD test; proměnná Zn mg/kg (inf of variety) Homogenní skupiny, alfa = .05000 (Neúplné vyhledávání) Chyba: meziskup. PČ = 11.026, sv = 30.000									
2	Granny	35.18710	****						
7	Schwedisches Einkorn	35.34307	****						
1	SW Kadrilj	36.98163	****	****					
5	Postoloprtská přesívka	37.43707	****	****					
8	T. monococcum 2101	39.68933	****	****	****				
6	Escana	40.23567	****	****	****				
4	Kaertner Frueher	46.40250		****	****				
15	T. dicoccum No. 8909	47.89917			****	****			
3	Jara	48.91947			****	****			
9	T. monococcum 2102	57.00247				****	****		
14	Krajova-Horny Tisovnik (Malov)	61.49507					****	****	
12	Kahler Emmer	66.69860					****	****	****
13	T. dicoccon (Tapioszele)	67.12433						****	****
11	Rudico	67.40477						****	****
10	T. monococcum 2103	72.62900							****

Table 13. Content of mercury (Hg) in the analyzed wheat species (in the boot growth stage according to Feekes scale) (mg kg^{-1} dry matter)

Wheat variety	*1*	*2*	*3*	*4*	*7*	*8*	*9*	*10*	*14*
C1	0.0181	0.0133	0.0204	0.0146	0.0199	0.0136	0.0115	0.0099	0.0148
C2	0.0221	0.0137	0.0184	0.0145	0.0202	0.0133	0.0107	0.0101	0.0148
C3	0.0164	0.0138	0.0207	0.0143	0.0229	0.0139	0.0110	0.0102	0.0139
Mean	0.0189	0.0136	0.0198	0.0144	0.0210	0.0136	0.0111	0.0101	0.0145
Standard deviation	0.0029	0.0003	0.0013	0.0002	0.0016	0.0003	0.0004	0.0001	0.0005

C1, C2, C3= replicates

1= SW Kadrilj, 2 = Granny, 3 = Jara, 4 = Kaerntner Frueher, 7 = Schwedisches Einkorn,

8 = *T. monococcum* 2101, 9 = *T. monococcum* 2102, 10 = *T. monococcum* 2103,

14 = Krajova-Horny Tisovnik (Malov)

Table 14. One way factorial analysis of variance (ANOVA), Tukey HSD test, α = 0.05 of mercury (Hg) in the boot growth stage

Tukeyův HSD test; proměnná boot growth stage (inf of stage_separately)
Homogenní skupiny, alfa = .05000
Chyba: meziskup. PČ = .00000, sv = 18.000

Č. buňky	variety	boot growth stage Průměr	1	2	3
8	T. monococcum 2103	0.010067			****
7	T. monococcum 2102	0.011067	****		****
2	Granny	0.013600	****		
6	T. monococcum 2101	0.013600	****		
4	Kaertner Frueher	0.014467	****		
9	Krajova-Horny Tisovnik (Malov)	0.014500	****		
1	SW Kadrilj	0.018867		****	
3	Jara	0.019833		****	
5	Schwedisches Einkorn	0.021000		****	

Table 15. Content of mercury (Hg) in the analyzed wheat species (in the stage 11 according to Feekes scale) (mg kg^{-1} dry matter)

Wheat variety	*1*	*2*	*3*	*4*	*7*	*8*	*9*	*10*	*14*
C1	0.0020	0.0027	0.0023	0.0023	0.0016	0.0024	0.0037	0.0048	0.0034
C2	0.0021	0.0027	0.0023	0.0021	0.0017	0.0023	0.0038	0.0035	0.0035
C3	0.0017	0.0027	0.0022	0.0043	0.0017	0.0022	0.0037	0.0043	0.0036
Mean	0.0019	0.0026	0.0023	0.0029	0.0017	0.0023	0.0037	0.0042	0.0035
Standard deviation	0.0002	0.0001	0.0001	0.0012	0.0001	0.0001	0.0001	0.0007	0.0001

C1, C2, C3= replicates

1= SW Kadrilj, 2 = Granny, 3 = Jara, 4 = Kaerntner Frueher, 7 = Schwedisches Einkorn,

8 = *T. monococcum* 2101, 9 = *T. monococcum* 2102, 10 = *T. monococcum* 2103,

14 = Krajova-Horny Tisovnik (Malov)

Table 16. One-way factorial analysis of variance (ANOVA), Tukey HSD test, $\alpha = 0.05$ of mercury (Hg) in the stage 11

Č. buňky	variety	stage 11 Průměr	1	2	3	4
	Tukeyův HSD test; proměnná stage 11 (inf of stage_separately) Homogenní skupiny, alfa = .05000 Chyba: meziskup. PČ = .00000, sv = 18.000					
5	Schwedisches Einkorn	0.001667	****			
1	SW Kadrilj	0.001933	****			
3	Jara	0.002267	****	****		
6	T. monococcum 2101	0.002300	****	****		
2	Granny	0.002700	****	****	****	
4	Kaertner Frueher	0.002900	****	****	****	****
9	Krajova-Horny Tisovnik (Malov)	0.003500		****	****	****
7	T. monococcum 2102	0.003733			****	****
8	T. monococcum 2103	0.004200				****

Table 17. Content of mercury (Hg) in the analyzed wheat species (in the stage 10.2 according to Feekes scale) (mg kg^{-1} dry matter)

Wheat variety	*1*	*2*	*3*	*4*	*7*	*8*	*9*	*10*	*14*
C1	0.0024	0.0047	0.0047	0.0024	0.0026	0.0017	0.0029	0.0033	0.0025
C2	0.0027	0.0048	0.0051	0.0026	0.0028	0.0016	0.0031	0.0018	0.0024
C3	0.0019	0.0048	0.0047	0.0026	0.0046	0.0015	0.0031	0.0026	0.0024
Mean	0.0023	0.0048	0.0048	0.0026	0.0033	0.0016	0.0030	0.0026	0.0024
Standard deviation	0.0004	0.0001	0.0003	0.0001	0.0011	0.0001	0.0002	0.0008	0.0001

C1, C2, C3= replicates

1= SW Kadrilj, 2 = Granny, 3 = Jara, 4 = Kaerntner Frueher, 7 = Schwedisches Einkorn,

8 = *T. monococcum* 2101, 9 = *T. monococcum* 2102, 10 = *T. monococcum* 2103,

14 = Krajova-Horny Tisovnik (Malov)

Table 18. One-way factorial analysis of variance (ANOVA), Tukey HSD test, α = 0.05 of mercury (Hg) in the stage 10.2

Tukeyův HSD test; proměnná stage 10.2 (inf of stage_separately)
Homogenní skupiny, alfa = .05000
Chyba: meziskup. PČ = .00000, sv = 18.000

Č. buňky	variety	stage 10.2 Průměr	1	2	3
6	T. monococcum 2101	0.001600		****	
1	SW Kadrilj	0.002333	****	****	
9	Krajova-Horny Tisovnik (Malov)	0.002433	****	****	
4	Kaertner Frueher	0.002533	****	****	
8	T. monococcum 2103	0.002567	****	****	
7	T. monococcum 2102	0.003033	****		
5	Schwedisches Einkorn	0.003333	****		
2	Granny	0.004767			****
3	Jara	0.004833			****

Table 19. Content of mercury (Hg) in the analyzed wheat species (in the leaf-stage 10.2 according to Feekes scale) (mg kg^{-1} dry matter)

Wheat variety	*1*	*2*	*3*	*4*	*7*	*8*	*9*	*10*	*14*
C1	0.0161	0.0158	0.0246	0.0204	0.0264	0.0268	0.0162	0.0210	0.0230
C2	0.0162	0.0159	0.0245	0.0202	0.0222	0.0264	0.0162	0.0222	0.0228
C3	0.0166	0.0162	0.0249	0.0218	0.0354	0.0263	0.0153	0.0220	0.0228
Mean	0.0163	0.0160	0.0246	0.0210	0.0280	0.0265	0.0159	0.0217	0.0229
Standard deviation	0.0003	0.0002	0.0002	0.0007	0.0068	0.0003	0.0005	0.0007	0.0001

C1, C2, C3= replicates

1= SW Kadrilj, 2 = Granny, 3 = Jara, 4 = Kaerntner Frueher, 7 = Schwedisches Einkorn,

8 = *T. monococcum* 2101, 9 = *T. monococcum* 2102, 10 = *T. monococcum* 2103,

14 = Krajova-Horny Tisovnik (Malov)

Table 20. One-way factorial analysis of variance (ANOVA), Tukey HSD test, α = 0.05 of mercury (Hg) in the leaf stage 10.2

Č. buňky	Tukeyův HSD test; proměnná leaf stage 10.2 (inf of stage_sepa Homogenní skupiny, alfa = .05000 Chyba: meziskup. PČ = .00001, sv = 18.000 variety	leaf stage 10.2 Průměr	1	2	3
7	T. monococcum 2102	0.015900	****		
2	Granny	0.015967	****		
1	SW Kadrilj	0.016300	****		
4	Kaertner Frueher	0.020800	****	****	
8	T. monococcum 2103	0.021733	****	****	****
9	Krajova-Horny Tisovnik (Malov)	0.022867		****	****
3	Jara	0.024667		****	****
6	T. monococcum 2101	0.026500		****	****
5	Schwedisches Einkom	0.028000			****

Table 21. Two-way factorial analysis of variance (ANOVA), Tukey HSD test, α = 0.05 of mercury (Hg) in different growth stages (boot growth, stage 11, stage 10.2 and leaf-stage 10.2)

Č. buňky	Tukeyův HSD test; proměnná Hg mg/kg (inf of stage) Homogenní skupiny, alfa = .05000 Chyba: meziskup. PČ = .00001, sv = 96.000 stage og growth	Hg mg/kg Průměr	1	2	3
2	stage 11	0.002800	****		
3	stage 10.2	0.003048	****		
1	boot growth stage	0.015222		****	
4	leaf stage 10.2	0.021415			****

A one-way analysis of variance was conducted to evaluate the null hypothesis that there is no difference in the concentrations of Cd, Pb and Hg in different varieties in Uhříněves (N=39). The factor is the varieties, included 13 varieties. The dependent variables are the concentrations of Cd, Pb and Hg.

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Cd	14.075	12	26	.000
Pb	10.398	12	26	.000
Hg	6.679	12	26	.000

The first test is the test of homogeneity of variance. The values under "sig" of both Cd, Pb and Hg are less than 0.05. It means that they are non- homogeneity and this provides a strong warning against using a parametric test. So in the next step, the non-parametric test was used.

The non- parametric tests are performed. There are 3 null hypothesis:

- The first is the distribution of Cd is the same across categories of variety (significant level is 0.05)
- The second is distribution of Pb is the same across categories of variety (significant level is 0.05)
- The third is distribution of Hg is the same across categories of variety (significant level is 0.05)

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Cd is the same across categories of Variety.	Independent-Samples Kruskal-Wallis Test	.002	Reject the null hypothesis.
2	The distribution of Pb is the same across categories of Variety.	Independent-Samples Kruskal-Wallis Test	.019	Reject the null hypothesis.
3	The distribution of Hg is the same across categories of Variety.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

All three null hypothesis are rejected. So the conclusion is that there is a significant difference in concentrations of of Cd, Pb and Hg in different varieties in Uhříněves in 2013.

A one-way analysis of variance was conducted to evaluate the null hypothesis that there is no difference in the concentrations of Cd, Pb and Hg in different varieties in Valečov (N=39). The factor is the varieties, included 13 varieties. The dependent variables are the concentrations of Cd, Pb and Hg.

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Cd	10.430	12	26	.000
Pb	3.533	12	26	.003
Hg	4.862	12	26	.000

The first test is the test of homogeneity of variance. The values under "sig" of both Cd, Pb and Hg are less than 0.05. It means that they are non-homogeneity and this provides a strong warning against using a parametric test. So in the next step, the non- parametric test was used.

The non- parametric tests are performed again. There are 3 null hypothesis:

- The first is the distribution of Cd is the same across categories of variety (significant level is 0.05)
- The second is distribution of Pb is the same across categories of variety (significant level is 0.05)
- The third is distribution of Hg is the same across categories of variety (significant level is 0.05)

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Cd is the same across categories of Variety.	Independent-Samples Kruskal-Wallis Test	.001	Reject the null hypothesis.
2	The distribution of Pb is the same across categories of Variety.	Independent-Samples Kruskal-Wallis Test	.035	Reject the null hypothesis.
3	The distribution of Hg is the same across categories of Variety.	Independent-Samples Kruskal-Wallis Test	.002	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

All three null hypothesis are rejected. So the conclusion is that there is a significant difference in concentrations of of Cd, Pb and Hg in different varieties in Valečov in 2013.

A one-way analysis of variance was conducted to evaluate the null hypothesis that there is no difference in the concentrations of Cd, Pb and Hg in different varieties in Uhříněves (N= 42). The factor is the varieties, included 14 varieties. The dependent variables are the concentrations of Cd, Pb and Hg.

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Hg	6.735	14	30	.000
Cd	4.620	14	30	.000
Pb	7.958	14	30	.000

The first test is the test of homogeneity of variance. The values under "sig" of both Cd, Pb and Hg are less than 0.05. It means that they are not homogenous and this provides a strong warning against using a parametric test. So in the next step, the non- parametric test is used.

The non-parametric tests are performed. There are 3 null hypothesis:

- The first is the distribution of Cd is the same across categories of variety (significant level is 0.05)

- The second is distribution of Pb is the same across categories of variety (significant level is 0.05)
- The third is distribution of Hg is the same across categories of variety (significant level is 0.05)

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Hg is the same across categories of Variety.	Independent-Samples Kruskal-Wallis Test	.001	Reject the null hypothesis.
2	The distribution of Cd is the same across categories of Variety.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
3	The distribution of Pb is the same across categories of Variety.	Independent-Samples Kruskal-Wallis Test	.481	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Two null hypothesis are rejected. So the conclusion is that there is a significant difference in concentrations of Cd and Hg in different varieties in Uhříněves in 2014. The third hypothesis is retained, there is no significant difference in concentrations of of Pb in different varieties in Uhříněves in 2014.

Jednorozměrné testy významnosti pro Cd (Tab_effect of year and variety)
Sigma-omezená parametrizace
Dekompozice efektivní hypotézy

Efekt	SČ	Stupně volnosti	PČ	F	p
Abs. člen	0,550725	1	0,550725	66,33981	0,000000
Variety	0,129592	11	0,011781	1,41914	0,188639
Year	0,013972	1	0,013972	1,68310	0,199564
Chyba	0,489793	59	0,008302		

Jednorozměrné testy významnosti pro Pb (Tab_effect of year and variety)
Sigma-omezená parametrizace
Dekompozice efektivní hypotézy

Efekt	SČ	Stupně volnosti	PČ	F	p
Abs. člen	4,275180	1	4,275180	43,86003	0,000000
Variety	1,341038	11	0,121913	1,25073	0,275600
Year	0,553597	1	0,553597	5,67948	0,020403
Chyba	5,750923	59	0,097473		

Jednorozměrné testy významnosti pro Hg (Tab_effect of year and variety)
Sigma-omezená parametrizace
Dekompozice efektivní hypotézy

Efekt	SČ	Stupně volnosti	PČ	F	p
Abs. člen	0,000217	1	0,000217	282,6138	0,000000
Variety	0,000014	11	0,000001	1,6404	0,110942
Year	0,000021	1	0,000021	27,5108	0,000002
Chyba	0,000045	59	0,000001		

Jednorozměrné testy významnosti pro Cd (Tab_effect of locality and variety)
Sigma-omezená parametrizace
Dekompozice efektivní hypotézy

Efekt	SČ	Stupně volnosti	PČ	F	p
Abs. člen	1,806066	1	1,806066	204,5987	0,000000
Variety	0,196490	12	0,016374	1,8549	0,057662
Locality	0,238266	1	0,238266	26,9917	0,000002
Chyba	0,564951	64	0,008827		

Jednorozměrné testy významnosti pro Hg (Tab_effect of locality and variety)
Sigma-omezená parametrizace
Dekompozice efektivní hypotézy

Efekt	SČ	Stupně volnosti	PČ	F	p
Abs. člen	0,000241	1	0,000241	416,8688	0,000000
Variety	0,000019	12	0,000002	2,7281	0,004834
Locality	0,000016	1	0,000016	27,7522	0,000002
Chyba	0,000037	64	0,000001		

Table 22. **Characterization of analyzed potato cultivars in cooking experiment and statistical evaluation of cooking on Cd and Pb contents**

Cultivar	Origin of seed tubers	Maturity	Skin colour	Flesh colour	Shape of tubers
Agria	Holland	medium-early to medium-late	yellow	yellow	oval
Russet Burbank	Czech (Gene Bank)	late	yellow	white	long
Valy	Czech Republic	early	yellow	pale-yellow	oval
Salome	Germany	very early	yellow	pale-yellow	round to oval
Bohemia	Czech Republic	early	yellow	yellow	oval
Axa	Czech Republic	early	yellow with red spots	yellow	oval
Jelly	Germany	medium-late	yellow	yellow	oval
Ditta	Austria	medium-early	yellow	yellow	long-oval
Bionta	Austria	medium-late	yellow	dark-yellow	round to oval
Keřkovský rohlíček	Czech Republic	medium-early	yellow	dark-yellow	long
Rosara	Germany	very early	red	yellow	oval
Dali	Holland	early	yellow	pale-yellow	oval
Mayan Gold (*Solanum phureja*)	Germany	late	yellow	deep yellow	long
Valfi	Czech Republic	medium-early to medium-late	purple	purple partially coloured	round to oval
Violette	Germany	medium-early	purple	purple	long
Blaue Anneliese	Germany	medium-early	purple	purple	oval
Rosemarie	Germany	medium-early	red	red	long oval
Vitelotte	France	late	purple	deep purple with bright spots	long oval
Königspurpur	Germany	medium-early	red	red	round to oval
Highland Burgundy Red	Germany	medium-early	red	red with white borders	long
Herbie 26	Czech (Gene Bank)	early to medium early	red	red	long oval
Red Emmalie	Germany	early to medium-early	red	red	long

Two-way ANOVA: Factor I (independent variable): Variety, Factor II (Independent variable): Cooking method, dependent variable: Cd (mg kg^{-1} DM)

(Post-Hoc: Tukey's test)

Efekt	Jednorozměrné testy významnosti pro Cd (mg/kg) (Tab_cooking methods) Sigma-omezená parametrizace Dekompozice efektivní hypotézy				
	SČ	Stupně volnosti	PČ	F	p
Abs. člen	2,518102	1	2,518102	3083,455	0,000000
Cooking method	0,006790	2	0,003395	4,157	0,017232
Variety	0,692380	21	0,032970	40,373	0,000000
Chyba	0,142097	174	0,000817		

Two-way ANOVA: Factor I (independent variable): Variety, Factor II (Independent variable): Cooking method, dependent variable: Pb (mg kg^{-1} DM)

(Post-Hoc: Tukey's test)

Efekt	Jednorozměrné testy významnosti pro Pb (mg/kg) (Tab_cooking methods) Sigma-omezená parametrizace Dekompozice efektivní hypotézy				
	SČ	Stupně volnosti	PČ	F	p
Abs. člen	11,85948	1	11,85948	1563,369	0,000000
Cooking method	0,64852	2	0,32426	42,745	0,000000
Variety	0,63718	21	0,03034	4,000	0,000000
Chyba	1,31994	174	0,00759		