

APPENDIX 1 - VARIABILITY OF BEECH CUPULES IN SERBIA (Vladan Ivetić, Ivona Kerkez, Ivan Denić, Jovana Devetaković (2018) Reforesta)

A1 Population level

Table A1. Descriptive statistics for length of the longest valve (mm) from 12 beech population in Serbia: MV – mean value, N – number of samples, SD – standard deviation, VAR – variance, Min – minimal value, Max – maximal value.

Population	MV	N	SD	VAR	Min	Max
Kukavica	19,69083	458	1,908154	3,64105	13,20000	25,60000
Miroč	20,29729	813	2,590232	6,70930	11,40000	29,80000
Senjski rudnik	19,91656	622	1,647190	2,71324	13,60000	26,20000
Žagubica	19,52058	583	2,248540	5,05593	10,90000	29,80000
Fruška gora	21,14947	570	2,235921	4,99934	14,30000	27,40000
Stara planina	19,33881	286	2,165000	4,68723	12,80000	26,30000
Boranja	21,72035	737	1,854246	3,43823	15,00000	29,80000
Goč	14,13884	294	2,403721	5,77787	8,40000	23,20000
Kopaonik	13,19096	365	2,684735	7,20780	7,20000	23,00000
Golija	13,05250	40	2,068567	4,27897	9,00000	17,60000
Javor	13,96250	40	2,372890	5,63061	8,20000	18,90000
Tara	12,21887	106	2,184888	4,77374	7,10000	19,50000
All	19,17583	4914	3,507984	12,30595	7,10000	29,80000

Table A2. Descriptive statistics for width of the longest valve (mm) from 12 beech population in Serbia: MV – mean value, N – number of samples, SD – standard deviation, VAR – variance, Min – minimal value, Max – maximal value.

Population	MV	N	SD	VAR	Min	Max
Kukavica	10,56376	458	1,412680	1,995664	5,700000	15,10000
Miroč	10,29870	813	1,602995	2,569594	5,800000	18,90000
Senjski rudnik	10,41463	622	1,352446	1,829109	5,600000	21,10000
Žagubica	9,62436	583	1,525462	2,327035	5,300000	17,80000
Fruška gora	11,35175	570	1,643864	2,702290	7,300000	16,20000
Stara planina	10,33986	286	1,048350	1,099037	6,700000	12,90000
Boranja	11,17965	737	1,077168	1,160292	7,800000	14,30000
Goč	10,71871	294	1,663098	2,765895	6,900000	15,70000
Kopaonik	9,58740	365	1,494001	2,232039	6,400000	15,10000
Golija	9,02750	40	2,063105	4,256404	6,300000	16,40000
Javor	8,96750	40	1,504078	2,262250	6,500000	12,50000
Tara	9,21792	106	1,212066	1,469104	5,800000	11,70000
All	10,44254	4914	1,571246	2,468814	5,300000	21,10000

Table A3. Descriptive statistics for distance between base of the longest valve and peduncle (mm) from 12 beech population in Serbia: MV – mean value, N – number of samples, SD – standard deviation, VAR – variance, Min – minimal value, Max – maximal value.

Population	MV	N	SD	VAR	Min	Max
Kukavica	6,736026	458	1,960404	3,843185	3,300000	12,60000
Miroč	6,481931	813	1,434068	2,056550	3,500000	11,20000
Senjski rudnik	6,177653	622	1,444864	2,087632	2,400000	10,50000
Žagubica	4,777702	583	1,717772	2,950739	1,900000	11,80000
Fruška gora	6,387895	570	1,051659	1,105987	3,400000	10,00000
Stara planina	5,335315	286	0,820683	0,673520	3,400000	8,60000
Boranja	5,404613	737	0,780820	0,609680	2,800000	8,70000
Goč	4,701020	294	0,949060	0,900716	2,100000	9,30000
Kopaonik	4,556027	365	0,913192	0,833920	2,300000	7,50000
Golija	4,977500	40	1,262372	1,593583	2,300000	7,90000
Javor	4,947500	40	1,018039	1,036404	3,300000	7,90000
Tara	3,854717	106	0,832453	0,692978	1,900000	6,00000
All	5,694681	4914	1,538352	2,366526	1,900000	12,60000

Table A4. Descriptive statistics for length of cupule without peduncle (mm) 12 beech population in Serbia: MV – mean value, N – number of samples, SD – standard deviation, VAR – variance, Min – minimal value, Max – maximal value.

Population	MV	N	SD	VAR	Min	Max
Kukavica	25,32205	458	2,704299	7,31323	11,40000	34,50000
Miroč	24,58381	813	2,963032	8,77956	16,00000	35,70000
Senjski rudnik	24,45080	622	2,146283	4,60653	17,80000	35,20000
Žagubica	23,91921	583	2,990226	8,94145	10,10000	36,50000
Fruška gora	26,71937	570	2,335730	5,45563	15,80000	32,40000
Stara planina	24,24720	286	2,487832	6,18931	16,70000	30,20000
Boranja	26,19104	737	2,013022	4,05226	19,80000	32,50000
Goč	23,66565	294	2,803047	7,85708	14,00000	32,30000
Kopaonik	22,73162	365	3,131519	9,80641	10,80000	30,50000
Golija	20,44250	40	3,188110	10,16404	12,20000	27,30000
Javor	22,69750	40	2,617543	6,85153	17,30000	28,60000
Tara	19,05283	106	2,350287	5,52385	13,20000	24,30000
All	24,66523	4914	2,995827	8,97498	10,10000	36,50000

Table A5. Descriptive statistics for length of peduncle (mm) 12 beech population in Serbia: MV – mean value, N – number of samples, SD – standard deviation, VAR – variance, Min – minimal value, Max – maximal value.

Population	MV	N	SD	VAR	Min	Max
Kukavica	13,40926	458	4,860488	23,62435	2,100000	31,20000
Miroč	16,55796	813	6,589609	43,42295	2,300000	35,90000
Senjski rudnik	14,50289	622	5,562011	30,93597	2,300000	27,80000
Žagubica	9,94099	583	6,090496	37,09414	1,500000	29,40000
Fruška gora	14,20253	570	4,587919	21,04900	3,500000	30,20000
Stara planina	12,18252	286	3,232007	10,44587	2,000000	24,30000
Boranja	11,90657	737	4,061129	16,49277	3,200000	29,40000
Goč	8,93061	294	3,677319	13,52268	1,400000	20,90000
Kopaonik	11,25507	365	3,903402	15,23655	3,000000	23,70000
Golija	10,74500	40	4,550117	20,70356	1,900000	19,10000
Javor	11,29000	40	4,247702	18,04297	4,500000	19,50000
Tara	9,29904	104	3,633434	13,20184	3,500000	20,80000
All	12,89830	4912	5,583942	31,18041	1,400000	35,90000

Table A6. Results of ANOVA at population level.

	SS	df	MS	SS	df	MS	F	p
Length of the longest valve of cupule	36804,47	11	3345,861	23654,7	4902	4,82552	693,3684	0,00
Width of the longest valve	1904,39	11	173,126	10224,9	4902	2,08586	82,9997	0,00
Distance between base of the longest valve and peduncle	3173,97	11	288,542	8452,8	4902	1,72435	167,3338	0,00
Length of cupule without peduncle	10592,42	11	962,947	33501,7	4902	6,83428	140,8994	0,00
Length of peduncle	26799,43	11	2436,312	126327,6	4900	25,78114	94,4998	0,00

Table A7. Grouping of population on mean value (MV) of length of the longest valve from 12 beech population in Serbia (Tukey Unequal N HSD test, $\alpha = 0.05$, Error: between mean values= 4.8259, df = 4900).

Population	Length of the longest valve of cupule (MV)	1	2	3	4	5	6	7
Tara	12,23173		****					
Golija	13,05250		****	****	****			
Kopaonik	13,19096		****	****				
Javor	13,96250			****	****			
Goč	14,13884				****			
Stara planina	19,33881	****						
Žagubica	19,52058	****						
Kukavica	19,69083	****						
Senjski rudnik	19,91656	****				****		
Miroč	20,29729					****		
Fruška gora	21,14947						****	
Boranja	21,72035							***

Table A8. Grouping of population on mean value (MV) of width of the longest valve from 12 beech population in Serbia (Tukey Unequal N HSD test, $\alpha = 0.05$, Error: between mean values= 2.0867, df = 4900).

Population	Width of the longest valve	1	2	3	4
Javor	8,96750	****			
Golija	9,02750	****			
Tara	9,21731	****			
Kopaonik	9,58740	****			
Žagubica	9,62436	****			
Miroč	10,29870		****		
Stara planina	10,33986		****	****	
Senjski rudnik	10,41463		****	****	
Kukavica	10,56376		****	****	
Goč	10,71871			****	
Boranja	11,17965				****
Fruška gora	11,35175				****

Table A9. Grouping of population on mean value (MV) of distance between base of the longest valve and peduncle from 12 beech population in Serbia (Tukey Unequal N HSD test, $\alpha = 0.05$, Error: between mean values= 1.7246, df = 4900).

Population	Distance between base of the longest valve and peduncle	1	2	3	4	5	6
Tara	3,838462						****
Kopaonik	4,556027	****					
Goč	4,701020	****					
Žagubica	4,777702	****					
Javor	4,947500	****	****				
Golija	4,977500	****	****				
Stara planina	5,335315		****				
Boranja	5,404613		****				
Senjski rudnik	6,177653			****			
Fruška gora	6,387895			****	****		
Miroč	6,481931				****	****	
Kukavica	6,736026					****	

Table A10. Grouping of population on mean value (MV) of length of cupules from 12 beech population in Serbia (Tukey Unequal N HSD test, $\alpha = 0.05$, Error: between mean values= 6.8314, df = 4900).

Population	Length of cupule without peduncle	1	2	3	4	5	6	7
Tara	18,99423			****				
Golija	20,44250			****				
Javor	22,69750	****	****		****			
Kopaonik	22,73162				****			
Goč	23,66565	****						
Žagubica	23,91921	****						
Stara planina	24,24720	****	****					
Senjski rudnik	24,45080		****					
Miroč	24,58381		****					
Kukavica	25,32205					****		
Boranja	26,19104						****	
Fruška gora	26,71937							****

Table A11. Grouping of population on mean value (MV) of peduncle length from 12 beech population in Serbia (Tukey Unequal N HSD test, $\alpha = 0.05$, Error: between mean values= 25.781, df = 4900).

Population	Length of peduncle	1	2	3	4	5	6	7
Goč	8,93061	****						
Tara	9,29904	****	****					
Žagubica	9,94099	****						
Golija	10,74500	****	****	****	****	****		
Kopaonik	11,25507		****	****				
Javor	11,29000	****	****	****	****	****	****	
Boranja	11,90657		****					
Stara planina	12,18252		****		****			
Kukavica	13,40926				****	****	****	
Fruška gora	14,20253					****	****	
Senjski rudnik	14,50289						****	
Miroč	16,55796							****

A2 Individual level

Table A12. Descriptive statistics for measured attributes of beech cupules from Kukavice: MV – mean value, N – number of samples, SD – standard deviation, VAR – variance.

Sample	Length of the longest valve of cupule			Width of the longest valve			Distance between base of the longest valve and peduncle			Length of cupule without peduncle			Length of peduncle			
	N	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR
Tree																
k1	40	20,9	2,16	4,66	10,3	1,30	1,69	6,8	1,14	1,31	26,2	2,00	4,02	13,7	4,85	23,5
k2	41	20,4	1,77	3,14	10,4	1,19	1,41	7,2	0,93	0,86	26,4	1,79	3,19	13,3	5,85	34,2
k8	41	19,9	2,21	4,87	10,7	1,32	1,75	10,6	1,07	1,15	29,2	2,06	4,24	14,3	6,76	45,7
k11	50	19,1	1,88	3,55	11,3	1,38	1,90	5,7	1,00	1,00	23,9	1,97	3,89	14,0	4,34	18,8
k13	41	18,9	1,59	2,54	10,6	1,50	2,25	5,5	1,10	1,21	22,7	2,70	7,30	13,4	4,10	16,8
k14	41	19,1	1,04	1,08	10,7	1,35	1,81	9,2	1,64	2,69	27,3	1,94	3,77	16,8	3,06	9,4
k15	41	20,8	2,26	5,12	10,4	1,77	3,15	6,5	1,45	2,12	26,2	2,38	5,65	14,4	2,81	7,9
k16	40	20,0	1,38	1,91	10,5	1,30	1,69	6,3	1,05	1,10	25,2	1,48	2,18	11,4	4,09	16,8
k17	41	20,1	1,24	1,54	10,0	1,13	1,29	6,1	1,13	1,28	24,9	1,75	3,06	11,0	5,10	26,0
k18	41	17,8	1,24	1,55	9,9	1,43	2,04	5,1	0,56	0,32	22,6	1,52	2,32	11,5	4,20	17,6
k20	41	19,8	1,52	2,32	11,3	1,12	1,26	5,4	0,82	0,67	24,4	1,82	3,30	13,5	4,70	22,1
All	458	19,7	1,91	3,64	10,6	1,41	2,00	6,7	1,96	3,84	25,3	2,70	7,31	13,4	4,86	23,6

Table A13. Results of ANOVA for measured attributes of beech cupules from Kukavica.

	SS	df	MS	SS	df	MS	F	p
Length of the longest valve of cupule	347,12	10	34,71	1316,8	447	2,94	11,78	0,00
Width of the longest valve	88,84	10	8,88	823,17	447	1,84	4,82	0,00
Distance between base of the longest valve and peduncle	1201,43	10	120,14	554,8	447	1,24	96,78	0,00
Length of cupule without peduncle	1596,70	10	159,67	1745,4	447	3,90	40,89	0,00
Length of peduncle	1112,16	10	111,21	9684,16	447	21,66	5,13	0,00

Table A14. Descriptive statistics for measured attributes of beech cupules from Miroč: MV – mean value, N – number of samples, SD – standard deviation, VAR – variance.

Tree	N	Length of the longest valve of cupule			Width of the longest valve			Distance between base of the longest valve and peduncle			Length of cupule without peduncle			Length of peduncle		
		MV	SD	VAR	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR
M1	40	24,0	1,94	3,77	11,7	1,50	2,26	7,55	0,88	0,77	28,0	2,48	6,17	26,5	3,16	10,0
M2	41	20,8	1,70	2,90	9,8	1,04	1,07	7,61	1,18	1,40	26,0	2,17	4,70	22,3	4,15	17,2
M3	41	21,8	1,48	2,18	10,3	1,44	2,08	5,58	1,35	1,83	24,7	1,36	1,86	13,9	4,73	22,4
M4	40	20,3	2,09	4,36	10,0	1,04	1,08	7,77	1,34	1,79	24,0	2,22	4,91	14,4	3,90	15,2
M5	40	20,2	1,68	2,83	10,1	1,07	1,14	6,24	1,53	2,35	23,6	1,52	2,32	17,9	6,04	36,4
M6	40	21,0	1,76	3,10	10,1	2,40	5,76	5,11	1,00	1,00	22,3	2,15	4,64	16,0	4,44	19,7
M7	40	19,7	1,52	2,30	9,9	1,33	1,77	6,09	1,52	2,31	23,7	2,07	4,26	11,8	3,78	14,3
M8	40	15,6	1,27	1,60	8,8	1,17	1,38	5,07	0,73	0,53	19,1	1,31	1,71	17,6	5,22	27,2
M9	41	18,4	1,34	1,78	10,4	1,41	1,99	5,57	1,20	1,44	22,7	1,60	2,56	13,3	5,92	35,1
M10	41	16,9	1,74	3,03	9,8	1,53	2,36	6,86	1,06	1,13	22,7	1,99	3,96	10,8	5,23	27,4
M11	41	22,3	2,91	8,49	11,5	1,30	1,69	6,83	0,93	0,87	27,5	3,08	9,48	17,9	8,38	70,2
M12	41	20,5	1,22	1,50	10,1	1,27	1,62	6,35	0,89	0,79	24,7	1,72	2,96	15,7	6,29	39,6
M13	41	21,0	1,42	2,02	9,8	1,12	1,26	6,06	1,22	1,49	24,6	1,26	1,60	19,3	5,94	35,3
M14	41	20,8	1,42	2,01	10,2	1,09	1,18	6,28	0,86	0,73	24,8	1,09	1,18	15,6	7,31	53,5
M15	41	19,6	1,70	2,89	9,2	1,45	2,09	6,19	1,24	1,53	23,1	2,32	5,37	12,9	5,46	29,8
M16	41	22,6	1,63	2,64	10,7	1,54	2,39	7,24	1,28	1,65	27,7	2,19	4,81	19,4	5,98	35,8
M17	41	20,5	1,77	3,13	10,1	1,29	1,65	6,54	1,67	2,78	25,6	1,76	3,09	18,4	5,15	26,5
M18	41	20,5	2,64	6,97	11,5	1,89	3,59	7,61	1,44	2,07	26,2	2,88	8,32	18,9	6,97	48,6
M19	41	18,0	0,99	0,98	10,2	1,63	2,65	5,61	0,75	0,56	22,8	1,89	3,57	11,6	3,40	11,6
M20	40	21,5	2,31	5,35	11,8	1,24	1,53	7,47	0,91	0,83	27,8	2,06	4,24	17,0	5,00	25,0
All	813	20,3	2,59	6,71	10,3	1,60	2,57	6,48	1,43	2,06	24,6	2,96	8,78	16,6	6,59	43,4

Table A15. Results of ANOVA for measured attributes of beech cupules from Miroč.

	SS	df	MS	SS	df	MS	F	p
Length of the longest valve of cupule	2917,71	19	153,563	2530,24	793	3,1907	48,128	0,00
Width of the longest valve	479,25	19	25,2236	1607,26	793	2,0268	12,444	0,00
Distance between base of the longest valve and peduncle	565,76	19	29,7767	1104,16	793	1,3923	21,385	0,00
Length of cupule without peduncle	3888,64	19	204,665	3240,37	793	4,0862	50,086	0,00
Length of peduncle	11371,16	19	598,482	23888,2	793	30,123	19,867	0,00

Table A16. Descriptive statistics for measured attributes of beech cupules from Senjski rudnik: MV – mean value, N – number of samples, SD – standard deviation, VAR – variance.

Tree	Sample	Length of the longest valve of cupule			Width of the longest valve			Distance between base of the longest valve and peduncle			Length of cupule without peduncle			Length of peduncle			
		N	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR
	SR1	40	19,7	1,14	1,30	10,8	1,30	1,70	5,93	1,40	1,95	23,5	2,05	4,20	14,5	6,26	39,2
	SR2	40	19,7	1,15	1,32	10,2	0,91	0,83	6,21	1,42	2,01	24,6	1,17	1,37	14,2	5,53	30,6
	SR4	40	19,7	1,37	1,87	10,4	1,52	2,32	8,10	1,03	1,06	24,6	2,60	6,77	19,0	1,88	3,5
	SR6	40	21,2	1,69	2,87	11,8	1,15	1,32	5,79	1,06	1,12	25,0	0,83	0,69	17,4	6,16	38,0
	SR7	40	18,8	1,06	1,13	10,6	0,99	0,98	5,19	0,65	0,43	23,2	1,55	2,40	15,0	6,20	38,4
	SR8	40	19,9	1,35	1,81	11,1	1,00	1,01	4,95	0,89	0,80	24,3	1,73	3,00	15,4	5,36	28,7
	SR9	40	20,0	1,79	3,20	10,3	1,23	1,52	5,39	1,07	1,14	24,6	1,82	3,32	12,5	4,38	19,2
	SR10	40	20,0	1,80	3,25	11,1	1,61	2,60	5,10	0,63	0,39	24,5	2,35	5,53	10,2	4,32	18,7
	SR11	40	18,4	1,03	1,07	10,3	1,36	1,85	4,86	0,60	0,36	22,9	1,43	2,05	10,0	5,56	30,9
	SR12	40	19,6	1,37	1,88	10,5	1,03	1,06	6,37	1,48	2,18	23,1	2,39	5,73	11,1	3,53	12,5
	SR13	40	18,8	1,17	1,37	9,9	2,07	4,30	6,45	0,79	0,62	23,1	1,54	2,39	12,8	5,89	34,8
	SR14	40	20,1	1,49	2,21	9,9	1,21	1,46	6,28	1,56	2,43	24,9	2,15	4,60	18,3	2,49	6,2
	SR16	23	21,8	2,39	5,69	10,1	0,92	0,85	6,51	1,35	1,82	26,7	2,99	8,97	16,5	3,73	13,9
	SR17	40	19,9	0,99	0,99	9,9	1,01	1,03	6,99	1,28	1,63	24,7	1,71	2,94	16,2	4,60	21,1
	SR18	40	20,7	1,61	2,60	9,6	0,80	0,63	7,27	0,86	0,73	25,9	1,50	2,24	15,5	5,55	30,8
	SR20	39	20,9	1,59	2,54	10,1	1,05	1,11	7,63	1,01	1,03	26,6	1,47	2,16	14,3	4,64	21,6
	All	622	19,9	1,65	2,71	10,4	1,35	1,83	6,18	1,44	2,09	24,5	2,15	4,61	14,5	5,56	30,9

Table A17. Results of ANOVA for measured attributes of beech cupules from Senjski rudnik.

	SS	df	MS	SS	df	MS	F	p
Length of the longest valve of cupule	415,197	15	27,6798	1269,72	606	2,0952	13,210	0,00
Width of the longest valve	193,539	15	12,9026	942,34	606	1,5550	8,2974	0,00
Distance between base of the longest valve and peduncle	559,427	15	37,2951	736,99	606	1,2161	30,666	0,00
Length of cupule without peduncle	739,144	15	49,2762	2121,51	606	3,5008	14,075	0,00
Length of peduncle	4337,231	15	289,148	14874,0	606	24,544	11,780	0,00

Table A18. Descriptive statistics for measured attributes of beech cupules from Žagubica: MV – mean value, N – number of samples, SD – standard deviation, VAR – variance.

Tree	Sample	Length of the longest valve of cupule			Width of the longest valve			Distance between base of the longest valve and peduncle			Length of cupule without peduncle			Length of peduncle			
		N	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR
	Z1	40	17,6	1,32	1,7	8,2	0,82	0,68	3,28	0,81	0,66	20,5	2,20	4,84	3,6	1,27	1,6
	Z2	7	18,4	2,09	4,4	9,6	1,42	2,02	5,49	1,24	1,53	23,6	2,29	5,27	10,3	2,58	6,7
	Z3	40	19,8	1,58	2,5	7,9	0,86	0,75	4,24	0,92	0,84	23,7	1,97	3,90	6,0	3,24	10,5
	Z4	40	17,3	1,75	3,1	7,8	0,99	0,97	3,07	0,77	0,59	20,9	2,39	5,73	6,0	3,38	11,4
	Z5	40	20,3	3,18	10,1	9,4	1,32	1,75	4,35	0,79	0,62	24,5	3,09	9,53	6,4	3,53	12,5
	Z6	18	17,8	1,59	2,5	8,7	1,44	2,09	4,03	1,17	1,36	21,1	2,16	4,68	6,5	2,90	8,4
	Z7	21	17,5	1,37	1,9	8,9	1,74	3,03	3,77	0,56	0,31	20,9	1,28	1,64	16,5	4,89	23,9
	Z8	40	20,3	1,99	4,0	9,4	1,16	1,35	4,31	0,81	0,65	24,1	1,83	3,36	12,4	6,55	42,9
	Z9	40	21,5	2,89	8,3	11,1	1,24	1,53	9,07	1,53	2,35	29,8	2,38	5,66	13,5	4,43	19,6
	Z10	40	19,2	2,04	4,1	10,4	1,56	2,43	5,29	0,99	0,97	23,8	2,40	5,78	8,3	3,84	14,8
	Z11	40	19,5	1,68	2,8	10,7	0,94	0,89	6,11	1,27	1,61	24,9	1,78	3,19	13,7	6,04	36,5
	Z12	40	20,7	1,13	1,3	9,7	0,75	0,57	4,71	0,97	0,94	25,2	1,40	1,95	10,6	6,79	46,1
	Z13	40	19,5	2,84	8,0	10,1	1,23	1,52	4,84	1,42	2,02	23,5	2,17	4,72	10,2	6,49	42,1
	Z14	40	19,6	1,54	2,4	10,6	1,06	1,12	4,62	1,23	1,51	23,9	2,23	4,96	11,3	6,16	37,9
	Z15	40	20,4	1,07	1,1	10,3	1,11	1,23	4,15	1,11	1,22	24,4	1,66	2,76	8,2	5,76	33,1
	Z16	40	20,0	1,48	2,2	10,3	0,92	0,84	4,85	0,78	0,61	24,5	1,75	3,06	15,8	4,68	21,9
	Z17	17	19,7	1,21	1,5	10,4	0,94	0,88	4,67	0,52	0,27	24,6	1,17	1,37	12,6	5,38	29,0
	All	583	19,5	2,25	5,1	9,6	1,53	2,33	4,78	1,72	2,95	23,9	2,99	8,94	9,9	6,09	37,1

Table A19. Results of ANOVA for measured attributes of beech cupules from Žagubica.

	SS	df	MS	SS	df	MS	F	p
Length of the longest valve of cupule	794,406	16	49,6504	2148,15	566	3,7953	13,082	0,00
Width of the longest valve	622,478	16	38,9049	731,86	566	1,2930	30,088	0,00
Distance between base of the longest valve and peduncle	1104,572	16	69,0358	612,76	566	1,0826	63,767	0,00
Length of cupule without peduncle	2720,424	16	170,0265	2483,50	566	4,3878	38,749	0,00
Length of peduncle	7556,654	16	472,290	14032,1	566	24,791	19,050	0,00

Table A20. Descriptive statistics for measured attributes of beech cupules from Fruška gora: MV – mean value, N – number of samples, SD – standard deviation, VAR – variance.

Tree	Sample	Length of the longest valve of cupule			Width of the longest valve			Distance between base of the longest valve and peduncle			Length of cupule without peduncle			Length of peduncle			
		N	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR
	FG1	40	21,2	1,95	3,78	11,4	1,35	1,81	7,96	0,70	0,49	27,4	1,82	3,3	12,1	3,84	14,7
	FG2	41	18,0	1,18	1,39	10,1	1,20	1,45	6,91	0,85	0,72	24,4	1,96	3,8	13,5	2,71	7,3
	FG3	41	20,2	1,48	2,20	11,5	1,20	1,44	6,93	0,95	0,91	26,2	1,97	3,9	14,6	2,65	7,0
	FG4	41	20,4	1,63	2,66	10,9	1,03	1,07	6,42	1,18	1,39	25,8	1,81	3,3	13,7	4,74	22,5
	FG5	41	23,7	1,91	3,67	13,5	1,25	1,56	5,93	0,82	0,67	28,8	1,30	1,7	9,8	2,99	8,9
	FG6	41	21,4	1,37	1,87	13,1	1,41	1,98	6,27	0,79	0,62	26,4	1,85	3,4	12,9	2,28	5,2
	FG7	41	19,9	2,03	4,12	11,1	1,22	1,50	6,14	0,87	0,75	25,3	2,04	4,2	13,2	3,42	11,7
	FG9	41	21,1	2,27	5,16	11,4	1,22	1,49	5,37	0,59	0,35	25,6	3,25	10,6	12,8	3,31	10,9
	FG10	41	22,1	1,66	2,75	11,6	1,76	3,09	6,84	0,95	0,90	28,3	1,04	1,1	14,0	4,41	19,5
	FG11	41	21,2	1,69	2,84	9,7	1,57	2,46	6,54	0,77	0,59	27,0	2,02	4,1	13,9	4,55	20,7
	FG12	41	22,1	1,62	2,62	11,9	1,52	2,32	6,23	0,92	0,84	27,3	2,04	4,2	20,3	5,92	35,0
	FG14	41	23,1	2,22	4,91	11,4	1,42	2,02	6,21	0,96	0,92	27,1	3,10	9,6	14,8	3,31	11,0
	FG15	39	21,5	1,51	2,28	10,9	1,18	1,38	5,98	0,80	0,65	27,4	1,48	2,2	17,8	5,31	28,2
	FG19	40	20,0	2,11	4,44	10,3	0,79	0,63	5,71	0,82	0,66	27,3	1,96	3,9	15,6	3,86	14,9
	All	570	21,1	2,24	5,00	11,4	1,64	2,70	6,39	1,05	1,11	26,7	2,34	5,5	14,2	4,59	21,0

Table A21. Results of ANOVA for measured attributes of beech cupules from Fruška gora.

	SS	df	MS	SS	df	MS	F	p
Length of the longest valve of cupule	1070,286	13	82,3297	1774,33	556	3,1912	25,798	0,00
Width of the longest valve	574,847	13	44,2190	962,756	556	1,7315	25,536	0,00
Distance between base of the longest valve and peduncle	213,663	13	16,4356	415,643	556	0,7475	21,985	0,00
Length of cupule without peduncle	748,133	13	57,5487	2356,12	556	4,2376	13,580	0,00
Length of peduncle	3354,654	13	258,050	8622,22	556	15,507	16,640	0,00

Table A22. Descriptive statistics for measured attributes of beech cupules from Stara planina: MV – mean value, N – number of samples, SD – standard deviation, VAR – variance.

Tree	Sample	Length of the longest valve of cupule			Width of the longest valve			Distance between base of the longest valve and peduncle			Length of cupule without peduncle			Length of peduncle			
		N	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR
	SP1	40	17,9	2,37	5,61	10,0	1,07	1,14	6,12	1,03	1,05	23,3	2,19	4,79	8,7	2,23	5,0
	ST2	41	19,4	1,40	1,95	9,6	1,10	1,21	5,59	0,73	0,53	26,7	1,61	2,60	12,6	4,29	18,4
	ST3	41	19,0	0,58	0,33	11,0	0,86	0,74	5,11	0,58	0,34	23,8	1,09	1,18	11,4	1,48	2,2
	ST4	41	20,8	0,98	0,96	10,8	0,87	0,75	5,02	0,56	0,31	24,0	0,69	0,48	13,0	1,72	3,0
	ST5	41	19,0	0,91	0,83	10,7	0,84	0,71	5,35	0,59	0,34	24,0	1,40	1,95	12,4	1,90	3,6
	ST6	41	17,0	0,91	0,83	9,5	0,61	0,37	4,59	0,54	0,29	21,0	2,18	4,74	10,9	1,73	3,0
	ST8	41	22,2	2,12	4,48	10,8	0,76	0,57	5,59	0,70	0,49	26,8	1,85	3,43	16,2	2,81	7,9
	All	286	19,3	2,17	4,69	10,3	1,05	1,10	5,34	0,82	0,67	24,2	2,49	6,19	12,2	3,23	10,4

Table A23. Results of ANOVA for measured attributes of beech cupules from Stara planina.

	SS	df	MS	SS	df	MS	F	p
Length of the longest valve of cupule	741,710	6	123,618	594,149	279	2,1295	58,048	0,00
Width of the longest valve	94,601	6	15,7669	218,624	279	0,7836	20,121	0,00
Distance between base of the longest valve and peduncle	58,462	6	9,7437	133,491	279	0,4784	20,364	0,00
Length of cupule without peduncle	1001,602	6	166,933	762,351	279	2,7324	61,093	0,00
Length of peduncle	1263,263	6	210,543	1713,80	279	6,1426	34,275	0,00

Table A24. Descriptive statistics for measured attributes of beech cupules from Boranja: MV – mean value, N – number of samples, SD – standard deviation, VAR – variance.

Tree	Sample	Length of the longest valve of cupule			Width of the longest valve			Distance between base of the longest valve and peduncle			Length of cupule without peduncle			Length of peduncle			
		N	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR
	D601	41	21,6	1,77	3,14	11,0	0,76	0,58	5,21	0,61	0,38	26,1	2,27	5,14	10,3	2,64	6,9
	D512	41	22,7	2,33	5,42	10,8	1,12	1,26	5,40	0,62	0,38	27,1	2,08	4,34	14,0	3,73	13,9
	D621	41	21,5	2,41	5,83	10,9	1,08	1,17	5,25	0,77	0,59	26,7	2,41	5,79	15,0	5,52	30,5
	D609	41	22,2	1,65	2,73	11,2	1,14	1,31	5,15	0,68	0,46	26,7	1,62	2,61	12,2	3,85	14,8
	D528	41	21,4	1,92	3,69	11,3	0,95	0,91	5,34	0,83	0,68	26,0	2,05	4,20	7,6	1,84	3,4
	D532	41	22,3	1,11	1,22	10,9	1,05	1,11	5,18	0,79	0,62	26,8	1,52	2,32	12,8	2,54	6,4
	D486	41	21,8	1,45	2,10	11,7	1,29	1,65	5,10	0,72	0,52	25,9	1,81	3,29	13,0	4,28	18,3
	D652	41	22,3	2,13	4,53	11,3	1,00	1,00	5,04	0,76	0,58	26,5	2,10	4,41	8,9	1,62	2,6
	D137	41	21,8	1,79	3,19	11,3	0,97	0,94	5,58	0,68	0,46	26,4	1,83	3,36	10,1	1,79	3,2
	D612	41	21,5	2,20	4,86	11,4	0,93	0,87	5,73	0,71	0,51	27,2	2,13	4,53	11,6	2,12	4,5
	D44	41	22,3	1,74	3,04	12,2	1,24	1,54	5,56	0,79	0,62	26,8	2,07	4,30	11,2	3,47	12,0
	D42	41	22,0	1,50	2,24	11,2	1,18	1,40	5,40	0,84	0,71	26,6	1,67	2,80	11,1	2,72	7,4
	D42p	41	21,8	1,65	2,74	10,8	0,92	0,85	5,61	0,67	0,45	26,0	2,23	4,95	11,0	3,01	9,1
	D39p	41	21,3	1,35	1,83	11,3	0,95	0,90	5,46	0,82	0,67	25,5	1,57	2,45	13,5	3,77	14,2
	D40p	81	21,0	1,67	2,80	11,2	0,99	0,98	5,47	0,88	0,78	25,1	1,76	3,11	15,1	5,23	27,3
	D47p	41	21,1	1,61	2,60	11,0	0,91	0,83	5,53	0,80	0,64	25,4	1,60	2,56	11,0	3,51	12,3
	D495	41	21,4	2,05	4,21	10,6	0,85	0,73	5,79	0,76	0,57	25,7	1,99	3,97	10,7	3,15	9,9
	All	737	21,7	1,85	3,44	11,2	1,08	1,16	5,40	0,78	0,61	26,2	2,01	4,05	11,9	4,06	16,5

Table A25. Results of ANOVA for measured attributes of beech cupules from Stara planina.

	SS	df	MS	SS	df	MS	F	p
Length of the longest valve of cupule	171,897	16	10,7436	2358,63	720	3,2758	3,2795	0,00
Width of the longest valve	94,323	16	5,8952	759,652	720	1,0550	5,5874	0,00
Distance between base of the longest valve and peduncle	32,285	16	2,0178	416,440	720	0,5783	3,4886	0,00
Length of cupule without peduncle	293,576	16	18,3485	2688,88	720	3,7345	4,9131	0,00
Length of peduncle	3171,957	16	198,247	8966,72	720	12,453	15,918	0,00

Table A26. Descriptive statistics for measured attributes of beech cupules from Goč: MV – mean value, N – number of samples, SD – standard deviation, VAR – variance.

Tree	Sample	Length of the longest valve of cupule			Width of the longest valve			Distance between base of the longest valve and peduncle			Length of cupule without peduncle			Length of peduncle			
		N	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR
	G1	27	16,9	1,78	3,18	13,2	1,55	2,41	4,99	0,87	0,76	28,7	1,99	3,95	14,9	3,18	10,1
	G3	40	15,5	1,94	3,78	11,6	1,48	2,19	4,75	0,81	0,66	23,4	2,58	6,64	9,6	1,83	3,3
	G4	38	11,4	1,88	3,55	10,0	1,38	1,91	4,43	0,73	0,54	22,5	1,77	3,12	4,6	2,68	7,2
	G5	40	14,8	2,13	4,54	10,9	1,27	1,61	4,68	0,75	0,56	23,8	1,74	3,03	8,4	2,65	7,0
	G6	34	14,3	1,60	2,55	9,9	0,82	0,68	5,15	1,33	1,76	23,1	2,08	4,34	8,9	2,35	5,5
	G7	25	14,5	1,60	2,56	10,2	0,98	0,97	3,68	0,57	0,33	22,2	1,08	1,16	8,2	1,54	2,4
	G8	35	13,5	2,41	5,83	10,3	1,50	2,26	5,20	0,75	0,56	24,0	2,32	5,38	7,1	1,92	3,7
	G10	9	11,9	0,97	0,94	10,1	0,96	0,92	3,92	0,41	0,16	19,8	1,98	3,93	6,4	2,40	5,8
	G11	14	14,7	1,76	3,11	9,0	0,83	0,68	4,18	0,60	0,36	20,7	2,49	6,21	11,2	1,86	3,5
	G12	32	13,2	1,79	3,21	11,0	1,67	2,79	4,97	0,93	0,87	24,8	2,00	4,01	11,2	3,88	15,0
	All	294	14,1	2,40	5,78	10,7	1,66	2,77	4,70	0,95	0,90	23,7	2,80	7,86	8,9	3,68	13,5

Table A27. Results of ANOVA for measured attributes of beech cupules from Goč.

	SS	df	MS	SS	df	MS	F	p
Length of the longest valve of cupule	663,285	9	73,6983	1029,63	284	3,6254	20,327	0,00
Width of the longest valve	303,742	9	33,7492	506,665	284	1,7840	18,917	0,00
Distance between base of the longest valve and peduncle	58,532	9	6,5036	205,378	284	0,7231	8,9932	0,00
Length of cupule without peduncle	1116,610	9	124,067	1185,51	284	4,1743	29,721	0,00
Length of peduncle	2108,195	9	234,243	1853,94	284	6,5279	35,883	0,00

Table A28. Descriptive statistics for measured attributes of beech cupules from Kopaonik: MV – mean value, N – number of samples, SD – standard deviation, VAR – variance.

Tree	Sample	Length of the longest valve of cupule			Width of the longest valve			Distance between base of the longest valve and peduncle			Length of cupule without peduncle			Length of peduncle			
		N	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR	MV	SD	VAR
	KO7	14	11,4	2,59	6,7	9,6	1,36	1,85	4,84	0,92	0,84	22,3	3,09	9,5	9,3	3,92	15,4
	KO9	40	14,8	2,00	4,0	9,8	0,95	0,90	5,37	0,70	0,49	26,6	1,57	2,5	9,1	1,64	2,7
	KO10	40	12,8	2,52	6,3	8,4	1,17	1,37	4,51	0,80	0,64	20,1	2,57	6,6	10,9	4,89	23,9
	KO12	31	11,8	1,88	3,5	8,8	0,98	0,96	3,98	0,85	0,71	19,3	1,81	3,3	10,9	2,46	6,1
	KO15	40	12,2	1,44	2,1	11,1	0,96	0,93	4,16	0,81	0,65	21,2	1,79	3,2	9,0	2,21	4,9
	KO16	40	13,1	1,62	2,6	9,6	1,09	1,19	4,40	0,68	0,46	23,1	1,81	3,3	11,2	1,85	3,4
	KO17	40	15,2	2,98	8,9	8,8	0,92	0,85	4,84	0,81	0,65	24,6	2,34	5,5	13,1	3,80	14,4
	KO18	40	14,0	3,38	11,4	9,6	1,41	1,98	4,26	0,88	0,78	24,5	2,60	6,8	10,9	5,31	28,2
	KO19	40	11,1	2,30	5,3	9,1	1,74	3,04	4,52	0,89	0,79	21,4	2,04	4,2	11,8	3,05	9,3
	KO20	40	14,0	2,43	5,9	10,8	1,60	2,56	4,73	1,06	1,13	23,1	3,38	11,4	15,1	3,86	14,9
	All	365	13,2	2,68	7,2	9,6	1,49	2,23	4,56	0,91	0,83	22,7	3,13	9,8	11,3	3,90	15,2

Table A29. Results of ANOVA for measured attributes of beech cupules from Kopaonik.

	SS	df	MS	SS	df	MS	F	p
Length of the longest valve of cupule	616,363	9	68,4848	2007,27	355	5,6543	12,111	0,00
Width of the longest valve	259,909	9	28,8788	552,553	355	1,5564	18,553	0,00
Distance between base of the longest valve and peduncle	53,158	9	5,9065	250,389	355	0,7053	8,3741	0,00
Length of cupule without peduncle	1657,490	9	184,165	1912,04	355	5,3860	34,193	0,00
Length of peduncle	1199,001	9	133,222	4347,10	355	12,245	10,879	0,00