

## Supplementary Material

**Tab. S1** - Yield parameters of the tested clones in the first (I.), second (II.) and third (III.) harvests, comparisons between the clones (means followed by the same letter are not significantly different based on Tukey's test) and differences between the first (I.) and second (II.) harvests or second (II.) and (III.) harvests (t-test, \*  $\alpha < 0.05$ , \*\*  $\alpha < 0.01$ , \*\*\*  $\alpha < 0.001$ ). 'MAX 4' - *P. nigra* × *P. maximowiczii* reference clone, 202 and 301 - *P. nigra* reference clones from natural populations, the rest clones are *P. nigra* clones from controlled crosses. <sup>1</sup> Dry matter weight of individual plants.

Clone	Average annual dry matter yield [t ha <sup>-1</sup> yr <sup>-1</sup> ]	N	Dry matter yield per unit area [t ha <sup>-1</sup> yr <sup>-1</sup> ]					DMIP <sup>1</sup> [kg yr <sup>-1</sup> ]										
			I. harvest		II. harvest	t-test	III. harvest		t-test	I. harvest		II. harvest	t-test	III. harvest		t-test		
			mean±SE		mean±SE		I. vs. II.	mean±SE		II. vs. III.	mean±SE		mean±SE		I. vs. II.	mean±SE		II. vs. III.
MAX 4	12.8	8	11.2±0.5	a	17.3±0.9	a	***	9.8±0.5	a	***	1.85±0.09	a	2.85±0.15	a	***	1.62±0.09	a	***
02/455	9.4	4	7.8±0.2	b	11.5±0.5	b	***	8.8±0.4	ab	**	1.28±0.03	b	1.90±0.08	b	***	1.45±0.06	ab	**
02/477	8.8	4	7.6±1.0	b	11.0±1.3	b		7.9±1.2	abcd		1.25±0.16	b	1.81±0.21	bc		1.30±0.19	abc	
02/456	8.8	4	7.3±0.5	b	11.0±0.1	b	***	8.1±0.3	abc	***	1.21±0.07	b	1.93±0.12	b	**	1.33±0.04	abc	**
02/371	8.4	4	7.1±0.5	b	10.6±0.7	bc	***	7.4±0.7	abcd	*	1.18±0.08	b	1.75±0.11	bc	**	1.23±0.12	abc	*
02/286	8.2	5	7.4±0.7	b	9.8±0.8	bc	*	7.4±0.5	bcd	*	1.22±0.11	b	1.62±0.13	bc	*	1.22±0.08	bc	*
00/274	8.1	4	8.0±0.3	b	9.8±0.3	bc	***	6.6±0.5	bcd	**	1.31±0.06	b	1.62±0.05	bc	**	1.08±0.08	bc	**
02/21	8.0	4	7.7±0.7	b	9.4±1.1	bc		6.9±1.2	bcd		1.27±0.12	b	1.55±0.19	bc		1.13±0.21	bc	
02/40	7.7	4	7.3±0.4	b	9.5±0.7	bc	*	6.2±0.6	bcd	**	1.20±0.06	b	1.57±0.11	bc	*	1.07±0.06	bc	**
02/476	7.7	4	6.1±0.4	b	9.5±1.1	bc		7.3±0.9	abcd		1.01±0.06	b	1.57±0.18	bc		1.21±0.15	abc	
02/378	7.4	5	6.1±0.3	b	9.9±0.8	bc	**	6.3±0.5	bcd	**	1.01±0.05	b	1.63±0.13	bc	**	1.04±0.09	bc	**
00/234	7.3	3	6.3±0.8	b	9.4±0.9	bc		6.0±0.6	bcd	*	1.05±0.14	b	1.55±0.15	bc		1.00±0.09	bc	*
02/383	7.2	4	6.2±0.3	b	9.1±0.5	bc	**	6.3±0.5	bcd	**	1.03±0.05	b	1.50±0.09	bc	**	1.03±0.08	bc	**
00/441	7.1	4	7.3±0.2	b	8.5±0.5	bc		5.4±0.6	cd	**	1.21±0.03	b	1.40±0.08	bc		0.90±0.09	c	**
00/237	7.1	3	7.7±0.4	b	8.0±0.7	bc		5.6±0.2	cd	*	1.26±0.07	b	1.32±0.12	bc		0.92±0.04	c	*
02/264	7.1	4	7.0±0.6	b	8.3±0.9	bc		6.2±0.7	bcd		1.15±0.09	b	1.37±0.15	bc		1.02±0.11	bc	
00/239	6.8	4	7.3±0.5	b	7.9±1.0	bc		5.1±0.5	cd		1.20±0.09	b	1.30±0.17	bc		0.85±0.08	c	
02/278	6.7	4	5.9±0.3	b	8.2±1.0	bc		6.0±0.4	bcd		0.97±0.05	b	1.35±0.17	bc		0.98±0.06	bc	
202	6.6	2	6.5±0.7	b	7.3±1.7	bc		5.9±1.7	bcd		1.07±0.11	b	1.21±0.29	bc		0.97±0.28	bc	
02/102	6.5	4	6.5±0.6	b	7.8±0.8	bc		5.3±0.8	cd		1.07±0.11	b	1.29±0.14	bc		0.93±0.13	c	
301	6.0	3	5.6±0.4	b	7.3±0.8	bc		5.1±0.8	bcd		0.92±0.07	b	1.21±0.13	bc		0.84±0.13	bc	
02/103	5.8	4	6.0±0.7	b	6.5±0.5	c		4.8±0.1	d	*	1.03±0.08	b	1.12±0.06	c	*	0.92±0.11	c	*

**Tab. S2** - Comparison of the growth parameters of the tested clones in the first (I.), second (II.) and third (III.) rotations (means followed by the same letter are not significantly different based on Tukey's test). 'MAX 4' - *P. nigra* × *P. maximowiczii* reference clone, 202 and 301 - *P. nigra* reference clones from natural populations, the rest clones are *P. nigra* clones from controlled crosses. <sup>1</sup> Total cross-sectional area.

Clone	N	Diameter of main shoot (mm)			Average shoot diameter (mm)		Number of shoots per plant		TCA <sup>1</sup> (mm <sup>2</sup> )	
		I. rotation mean±SE	II. rotation mean±SE	III. rotation mean±SE	II. rotation mean±SE	III. rotation mean±SE	II. rotation mean±SE	III. rotation mean±SE	II. rotation mean±SE	III. rotation mean±SE
MAX 4	40	68.2±1.3 <sup>a</sup>	62.8±1.5 <sup>a</sup>	48.8±0.9 <sup>a</sup>	30.5±0.9 <sup>a</sup>	24.6±0.5 <sup>a</sup>	5.9±0.2 <sup>e</sup>	7.4±0.4 <sup>d</sup>	5764.3±223.7 <sup>a</sup>	4323.7±170.5 <sup>ab</sup>
02/455	20	68.1±2.9 <sup>ab</sup>	47.5±2.2 <sup>b</sup>	34.4±1.1 <sup>bc</sup>	20.3±0.5 <sup>bcdef</sup>	18.9±0.3 <sup>bc</sup>	12.0±1.1 <sup>abcd</sup>	14.7±1.2 <sup>ab</sup>	5125.9±497.6 <sup>abc</sup>	4738.2±395.1 <sup>a</sup>
02/477	20	64.8±3.0 <sup>abc</sup>	43.2±2.2 <sup>bcde</sup>	33.9±1.2 <sup>bcd</sup>	19.1±0.5 <sup>cdef</sup>	17.7±0.4 <sup>bcde</sup>	14.1±1.0 <sup>ab</sup>	15.4±0.9 <sup>ab</sup>	5192.5±509.7 <sup>abc</sup>	4403.8±386.6 <sup>abc</sup>
02/456	20	62.2±2.9 <sup>abc</sup>	47.2±2.6 <sup>bc</sup>	32.9±1.2 <sup>bcde</sup>	20.4±0.7 <sup>bcdef</sup>	18.9±0.5 <sup>bc</sup>	12.7±0.8 <sup>abc</sup>	13.9±1.0 <sup>abc</sup>	5516.5±449.1 <sup>ab</sup>	4574.8±397.5 <sup>ab</sup>
02/371	20	60.1±2.1 <sup>abcd</sup>	46.6±2.2 <sup>bc</sup>	33.8±1.0 <sup>bcd</sup>	20.2±0.5 <sup>bcdef</sup>	19.0±0.4 <sup>b</sup>	12.0±0.9 <sup>abc</sup>	12.8±1.2 <sup>abc</sup>	5053.9±464.4 <sup>abc</sup>	4099.5±367.0 <sup>abcd</sup>
02/286	25	56.6±1.3 <sup>cd</sup>	34.9±1.0 <sup>f</sup>	28.0±0.7 <sup>e</sup>	17.2±0.3 <sup>f</sup>	16.3±0.3 <sup>e</sup>	13.4±0.8 <sup>ab</sup>	15.1±0.8 <sup>ab</sup>	3613.1±241.1 <sup>cde</sup>	3436.8±165.7 <sup>abcd</sup>
02/274	20	63.4±1.9 <sup>abc</sup>	44.4±1.1 <sup>bcd</sup>	32.6±1.2 <sup>bcde</sup>	22.5±1.3 <sup>b</sup>	18.6±0.4 <sup>bcd</sup>	10.4±0.8 <sup>abcd</sup>	12.6±0.8 <sup>abc</sup>	4517.0±295.6 <sup>abcde</sup>	3884.5±271.9 <sup>abcd</sup>
02/21	20	61.5±3.0 <sup>abcd</sup>	40.6±1.4 <sup>bcdef</sup>	32.5±1.3 <sup>bcde</sup>	21.5±0.5 <sup>bcd</sup>	18.5±0.5 <sup>bcd</sup>	9.0±0.7 <sup>cd</sup>	11.4±0.7 <sup>bc</sup>	4028.5±383.1 <sup>bcde</sup>	3607.8±406.9 <sup>abcd</sup>
02/40	20	60.5±2.9 <sup>abcd</sup>	35.9±1.7 <sup>def</sup>	28.7±1.2 <sup>cde</sup>	18.7±0.6 <sup>cdef</sup>	17.6±0.4 <sup>bcde</sup>	11.1±0.9 <sup>abcd</sup>	11.8±1.0 <sup>abc</sup>	3767.2±381.2 <sup>bcde</sup>	3346.5±358.0 <sup>abcd</sup>
02/476	20	57.4±2.2 <sup>bcd</sup>	46.7±2.1 <sup>bc</sup>	32.8±1.2 <sup>bcde</sup>	18.3±0.4 <sup>def</sup>	17.7±0.3 <sup>bcde</sup>	14.2±1.0 <sup>a</sup>	16.1±1.0 <sup>a</sup>	4982.4±380.3 <sup>abcd</sup>	4481.2±309.0 <sup>abc</sup>
02/378	25	54.7±1.2 <sup>cd</sup>	41.9±1.3 <sup>bcdef</sup>	30.9±0.9 <sup>bcde</sup>	18.9±0.4 <sup>cdef</sup>	17.0±0.4 <sup>bcde</sup>	10.8±0.6 <sup>abcd</sup>	12.2±0.6 <sup>abc</sup>	3935.4±193.7 <sup>bcde</sup>	3189.2±188.7 <sup>bcd</sup>
00/234	12	53.8±4.0 <sup>cd</sup>	43.6±3.2 <sup>bcdef</sup>	30.8±1.7 <sup>bcde</sup>	21.6±0.7 <sup>bcde</sup>	18.4±0.6 <sup>bcde</sup>	7.6±0.8 <sup>de</sup>	9.7±1.1 <sup>cd</sup>	4360.7±704.2 <sup>abcde</sup>	3033.7±434.4 <sup>cd</sup>
02/383	20	56.1±2.0 <sup>cd</sup>	36.9±0.9 <sup>def</sup>	28.2±0.8 <sup>de</sup>	18.8±0.4 <sup>cdef</sup>	16.9±0.2 <sup>bcde</sup>	11.8±0.9 <sup>abcd</sup>	14.0±0.9 <sup>ab</sup>	3915.0±310.9 <sup>bcde</sup>	3513.3±266.4 <sup>abcd</sup>
00/441	15	54.9±1.8 <sup>cd</sup>	37.5±1.4 <sup>cdef</sup>	29.8±1.0 <sup>bcde</sup>	19.0±0.5 <sup>cdef</sup>	17.4±0.4 <sup>bcde</sup>	10.7±0.8 <sup>abcd</sup>	11.6±0.7 <sup>abc</sup>	3620.2±256.8 <sup>cde</sup>	3049.8±207.1 <sup>bcd</sup>
00/237	12	56.4±2.7 <sup>cd</sup>	37.0±2.7 <sup>def</sup>	29.3±1.4 <sup>bcde</sup>	18.0±0.7 <sup>ef</sup>	16.7±0.5 <sup>cde</sup>	10.6±1.3 <sup>abcd</sup>	11.8±0.8 <sup>abc</sup>	3425.6±478.3 <sup>cde</sup>	2921.8±286.5 <sup>cd</sup>
02/264	20	62.0±3.2 <sup>abcd</sup>	40.2±2.5 <sup>bcdef</sup>	34.7±2.2 <sup>b</sup>	18.4±0.5 <sup>def</sup>	17.6±0.5 <sup>bcde</sup>	10.7±0.9 <sup>abcd</sup>	11.2±0.8 <sup>bc</sup>	3765.7±453.7 <sup>bcde</sup>	3348.1±350.6 <sup>abcd</sup>
00/239	20	58.2±2.0 <sup>abcd</sup>	42.8±1.6 <sup>bcdef</sup>	31.1±1.3 <sup>bcde</sup>	22.0±0.8 <sup>bc</sup>	18.1±0.3 <sup>bcde</sup>	7.8±0.7 <sup>de</sup>	9.7±0.9 <sup>cd</sup>	3606.8±289.8 <sup>cde</sup>	2793.6±231.8 <sup>d</sup>
00/278	16	54.3±2.3 <sup>cd</sup>	33.9±1.3 <sup>f</sup>	27.8±0.9 <sup>de</sup>	17.0±0.5 <sup>f</sup>	16.2±0.3 <sup>e</sup>	11.3±1.1 <sup>abcd</sup>	13.8±1.1 <sup>abc</sup>	3055.5±298.7 <sup>e</sup>	3110.8±232.6 <sup>bcd</sup>
202	10	54.7±1.8 <sup>cd</sup>	34.5±1.7 <sup>f</sup>	31.4±2.2 <sup>bcde</sup>	18.7±0.6 <sup>cdef</sup>	18.5±0.4 <sup>bcde</sup>	9.4±0.7 <sup>bcde</sup>	9.7±0.8 <sup>cd</sup>	3002.8±240.5 <sup>e</sup>	2966.6±285.1 <sup>cd</sup>
02/102	20	62.0±2.2 <sup>abcd</sup>	39.6±1.4 <sup>bcdef</sup>	31.9±1.2 <sup>bcde</sup>	18.6±0.4 <sup>cdef</sup>	17.3±0.4 <sup>bcde</sup>	10.6±0.6 <sup>abcd</sup>	11.7±0.9 <sup>abc</sup>	3659.8±287.8 <sup>cde</sup>	3142.5±255.5 <sup>bcd</sup>
301	15	49.8±1.8 <sup>d</sup>	35.1±1.7 <sup>def</sup>	28.1±1.4 <sup>bcde</sup>	18.9±0.3 <sup>cdef</sup>	16.2±0.3 <sup>de</sup>	9.1±0.6 <sup>bcd</sup>	11.8±0.7 <sup>abc</sup>	2867.0±127.6 <sup>de</sup>	2692.4±194.4 <sup>cd</sup>
02/103	20	59.5±2.7 <sup>abcd</sup>	35.2±1.2 <sup>ef</sup>	28.8±1.1 <sup>bcde</sup>	18.1±0.3 <sup>ef</sup>	17.1±0.3 <sup>bcde</sup>	11.4±0.7 <sup>abcd</sup>	12.5±0.9 <sup>abc</sup>	3520.0±260.3 <sup>cde</sup>	3241.9±270.9 <sup>abcd</sup>