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DYNAMICS GROWTH OF FOREST PLANTATIONS OF PINE ORDINARY SORT “NEGORELSKAYA”

Conducted a study on the dynamics of growth of cultures of *Pinus sylvestris* brand “Negorelskaya” created in the Krasnoslobodsky forestry (Berezinskii Predpolessky forest growth area subzone spruce-hornbeam oak). Received information that the culture of pine brand “Negorelskaya” characterized by high growth rates. By the age of 7 in the culture begins to grow significantly intraspecific competition for trees growing conditions, so that there is a marked differentiation families grow. At the time of transfer of forest crops in forested area final stabilization rank of families of pine brand “Negorelskaya” adjustment has not come yet. Since the establishment of pine varietal planting material observed differentiation progeny height, increasingly growing to 7 years of age. By this age in culture, the varietal planting material, 9 families were significantly higher than the control height, 10 families grow at the level of control and height deviation in one direction or another are irrelevant and unreliable and only one family (6–7) significantly behind in growth control.

Key words: pine ordinary, sort, growth, forest plantations, test.

Introduction. The current stage of development of silvan seed farming in the Republic of Belarus involves the use of quality seeds with valuable hereditary properties for the creation of highly qualitative and resistant plant [1]. For the first time in the Republic of Belarus the employees of the department of forest plantations and soil science of BSTU (L. F. Poplavskaja, N. I. Yakimov, L. M. Seroglazova, S. V. Rebko) grew common pine of class “Negorelskaya”. This sort was included in the State Register of Plant Varieties and was recommended by SI “State inspection for testing and protection of plant varieties” for use in all countries of geobotanical subzones from January 1, 2014. The aim of this article is to assess the dynamics of growth of varietal level of common pine created in 2008 in Krasnoslobodsky experimental forestry “Starobin Forestry” (Berezinskii Predpolessky forest growth district of Belarus).

Main part. The study of the dynamics of growth of varietal level of common pine were carried out in FME “Starobin Forestry” (Berezinskii Predpolessky forest growth district). Common pine species were grown in 2008 in the square 19, 36 of the Krasnoslobodsky experimental forestry on the area of 0.6 hectares. A total of 20 pine seed breeds were examined (Table).

Detailed history of creation of these crops using the varietal planting material is shown in previous published papers [1–3]. The research of the features of high-quality offspring growth of common pine at the age of 5–6 years is presented in papers [4–6]. It should be noted that for the first time in Belarus the staff of the department of forest plantations and soil science of BSTU (L. F. Poplavskaja, N. I. Yakimov, L. M. Seroglazova, S. V. Rebko) received the “Negorelskaya” pine species, which is characterized by intensive growth in height, early and abundant seed-

bearing, resistance to abiotic and biotic factors of the environment.

This variety with January 1, 2014 is included in the State Register of Plant Varieties (Order SI “State inspection for testing and protection of plant varieties”, No. 142 from 31.12.2013) and recommended for use in the manufacture of all silvicultural geobotanical subzones of the Republic of Belarus. The research for the study of the dynamics of growth of Scots pine varietal level cultures showed that when growing the family subjects varieties “Negorelskaya” have different growth rates. For comparison of growth rates, pine families were planted in the test area as a control. They were grown from the seeds of seed orchards of the first FME “Starobin Forestry” order (control). So, if in 5–6 years of age “Negorelskaya” pine species was grown at the same level and only a few families were significantly different from the control in one direction or another, by the age of 7 years old it has noticeably increasing differentiation in height. Mature “Negorelskaya” seed has a height of from 206 to 280 cm, while in the control offspring reaches a height of 222 cm.

A comparison of each individual family of the “Negorelskaya” pine species in the control tree height shows that families differ significantly in growth, both among themselves and with the control variant. The values obtained for the height t-test of 7-year-old cultures of the “Negorelskaya” pine species of the Scots pine (compared to control) are the following: family 3–6 – 8.8; family 6–3 – 2.3; family 6–7 – 2.9; family 7–3 – 9.7; family 7–4 – 8.4; family 7–5 – 4.0; family 7–6 – 0.0; family 7–7 – 1.7; family 7–8 – 1.6; family 7–9 – 6.5; family 7–10 – 0.1; family 8–5 – 1.8; family 12–3 – 1.0; family 12–9 – 0.1; family 12–10 – 1.1; family 13–1 – 4.0; family 13–2 – 0.4; family 13–3 – 2.7; family 13–4 – 4.4 and family 13–9 – 1.2.

Crop growth dynamics of common pine “Negorelskaya” cultivar at the age of 5–7 years

Family	Hight, cm min–max	Diameter, cm min–max	Family	Hight, cm min–max	Diameter, cm min–max	Family	Hight, cm min–max	Diameter, cm min–max
3–6	136.9 ± 2.8 110–160	3.1 ± 0.1 2.3–4.6	7–7	117.9 ± 2.1 96–142	2.3 ± 0.1 1.7–2.8	12–10	122.3 ± 3.6 90–162	2.7 ± 0.1 1.6–3.4
	174.3 ± 4.0 130–218	1.6 ± 0.1 0.7–2.4		202.3 ± 5.1 132–243	1.7 ± 0.1 0.7–2.4		205.6 ± 2.6 170–233	1.9 ± 0.3 1.5–2.1
	260.7 ± 2.1 245–280	2.7 ± 0.1 2.5–3.0		231.4 ± 5.3 221–255	1.9 ± 0.1 1.4–2.6		229.1 ± 5.9 166–275	2.1 ± 0.3 1.1–2.7
6–3	141.5 ± 2.3 116–160	3.2 ± 0.1 2.0–3.9	7–8	128.0 ± 2.7 103–155	2.8 ± 0.1 2.5–3.4	13–1	146.1 ± 2.0 130–166	3.2 ± 0.1 2.8–4.0
	204.0 ± 2.2 186–229	2.2 ± 0.1 1.6–3.0		200.1 ± 3.4 170–231	2.0 ± 0.1 1.4–2.7		193.6 ± 4.0 143–242	1.8 ± 0.1 1.1–2.5
	233.6 ± 4.8 177–265	2.4 ± 0.1 1.3–2.8		216.3 ± 3.9 175–260	2.1 ± 0.1 1.6–2.4		244.3 ± 5.4 180–300	2.4 ± 0.1 1.1–3.4
6–7	122.6 ± 3.9 90–159	2.7 ± 0.1 1.6–3.6	7–9	149.0 ± 3.6 119–190	3.5 ± 0.1 2.6–5.1	13–2	114.5 ± 1.7 99–132	2.9 ± 0.1 1.8–3.8
	214.6 ± 1.1 204–227	2.1 ± 0.1 1.7–2.4		193.4 ± 2.9 152–208	1.7 ± 0.1 0.9–2.2		192.0 ± 2.8 165–227	2.0 ± 0.1 1.6–2.5
	206.3 ± 5.5 165–270	2.2 ± 0.1 1.0–3.1		261.4 ± 6.0 203–340	2.6 ± 0.1 1.5–3.7		220.4 ± 5.7 164–270	2.2 ± 0.1 1.4–3.1
7–3	157.0 ± 3.6 112–195	2.5 ± 0.1 2.4–4.2	7–10	143.8 ± 3.1 106–174	3.0 ± 0.1 2.2–3.6	13–3	128.6 ± 3.1 95–170	2.9 ± 0.1 2.1–3.6
	220.1 ± 6.4 174–320	2.0 ± 0.1 1.2–3.6		222.1 ± 6.2 165–280	1.4 ± 0.1 0.7–2.2		192.4 ± 3.8 154–245	1.9 ± 0.1 1.1–3.1
	280.0 ± 5.9 240–340	2.7 ± 0.1 1.7–4.0		261.4 ± 6.0 203–340	1.9 ± 0.1 1.1–3.2		237.0 ± 5.3 180–295	2.1 ± 0.1 1.3–3.3
7–4	144.8 ± 1.3 130–158	3.3 ± 0.1 2.7–4.0	8–5	119.1 ± 2.1 102–148	3.3 ± 0.1 2.5–4.4	13–4	134.4 ± 2.6 101–160	3.1 ± 0.1 2.3–3.6
	219.3 ± 3.7 193–278	2.1 ± 0.1 1.7–3.1		181.4 ± 3.0 147–216	1.5 ± 0.1 1.0–2.1		193.1 ± 5.3 136–237	1.8 ± 0.1 0.6–2.7
	273.7 ± 6.1 230–360	2.6 ± 0.1 1.6–3.9		212.6 ± 5.5 158–273	1.7 ± 0.1 1.0–2.7		234.4 ± 2.7 215–270	2.0 ± 0.1 1.4–2.7
7–5	151.5 ± 4.1 111–205	3.2 ± 0.1 2.3–4.0	12–3	128.1 ± 1.8 109–145	2.6 ± 0.1 2.0–3.3	13–9	146.0 ± 3.2 111–188	3.6 ± 0.1 3.0–4.1
	202.6 ± 3.2 167–237	1.9 ± 0.1 1.4–2.2		188.8 ± 4.5 137–228	1.6 ± 0.1 0.7–2.1		204.9 ± 5.8 143–285	1.9 ± 0.1 0.9–3.6
	248.3 ± 6.4 188–320	2.3 ± 0.1 1.3–3.4		227.0 ± 4.5 175–270	1.8 ± 0.1 1.0–3.1		224.9 ± 2.0 177–290	2.0 ± 0.1 1.2–3.7
7–6	148.1 ± 3.1 113–173	3.1 ± 0.1 2.0–3.7	12–9	124.1 ± 5.5 90–210	2.9 ± 0.1 1.8–3.6	Control	142.0 ± 2.2 120–175	3.2 ± 0.1 2.0–4.0
	207.1 ± 2.8 184–233	2.0 ± 0.1 1.6–2.4		122.3 ± 3.6 90–162	2.7 ± 0.1 1.6–3.4		199.7 ± 3.3 167–250	1.8 ± 0.1 1.0–3.0
	222.3 ± 5.6 180–275	2.1 ± 0.1 1.5–3.0		221.9 ± 4.2 188–265	2.9 ± 0.1 2.1–3.7		222.5 ± 3.8 190–275	2.0 ± 0.1 1.2–3.2

Note. Pine seed breeds of common pine grown from seeds of the first generation of seed orchards of FME “Starobin Forestry” were taken as a control option to compare growth rates. The diameter of the trees in the 5 years of age was measured at the root of the neck with calipers, 6–7 years of age – at a height of 1.3 m.

Analysis of the data indicates that nine from all the 7-years old aged seed species were significantly higher than the control ones in height. Ten families grow at the level of monitoring and height deviations in either direction and are irrelevant and unreliable. And only one family (6–7) is significantly lagging behind in growth being compared to the control variant.

Conclusion. The following conclusions based on the studies of the dynamics of growth of seed progenies of pine species “Negorelskaya” created in Krasnoslobodsky development and production forestry FME “Starobin Forestry” (Berezinskii Predpolessky silvicultural area, spruce-hornbeam and oak subzone) should be made:

- culture pine species “Negorelskaya” is characterized by high growth rates;
- by the age of 7 years old the culture begins to grow significantly, and in conjunction with the

factor of interaction “genotype – environment” a marked differentiation of progenies for growth can be distinguished;

- the final stabilization rank of families adjustment of pine species “Negorelskaya” has not come at the time of transfer of forest cultures in a wooded area yet;

– the diameter of the trees in the 7-year-old test cultures of Scots pine varietal level has no significant differences compared with the height of the trees in the control;

- differentiation of progeny on growth has been observed since the creation of crop varietal planting of Scots pine material. It is more and more growing by the age of 7 years old.

With this in mind in the future, it is necessary to continue to study the features of varieties of pine growth “Negorelskaya” in the cultures at a later age.

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