

THE PECULIARITIES OF FORMING TYPES OF CUTTING DOWNS AFTER COMMON FELLS OF MAIN USING

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In this article discussed the problems of influence alive soil covers for forming of growth after common cuttings. Marked the groups of bush and grass planting. Received the mathematical models, which describe the dependence a planting coating of forest types of grass plants group of types cutting down.

Keywords: growth, alive soil covers, types of grass plants, natural restocking, forests types, deforestation types.

Field layer influences initial stages of forming the forest. There have been made research at constant and temporary sample plots to learn the dynamics of field layer changes on different types of slashes. The research was carried out with the help of standard methods with descriptions of fruticulose-herbascent and mossy-lichen plants, their projective cover, abundance, species vitality, distributional pattern. In accordance with the findings there've been made a comparative analysis.

Annual observations allow finding out the dynamics of slash coverage of a group of plants, determine the reproduction principles connected with the dominant species of herbaceous vegetation all plants may be assembled in ecological groups. Lashchinsky N.N. separated groups (elements) based on the structure of pinery flora, orienting at phytocenotic behavior, development rhythm, vitality of a specie in coordination of mainly within Western and Central Syberia and with account of pine and birch range.

On the basis of the materials of analysis of sample plots there have been separated 6 groups of fruticulose-herbascent vegetation, volume ratio of which reflects the condition of life soil mantle forests of Central Angara region:

- 1 group – forest xerophytes,
- 2 group – forest hylophytes,
- 3 group – pratal xerophytes,
- 4 group – pratal hylophytes,
- 5 group – brook hygrophyte,
- 6 group – swamp hygrophyte.

For the first group such species of herbascent vegetation as *Peltigera aphthosa*,

Cladonia sylvatica, bearberry *Arctostaphylos uva-ursi* L.Spreng, *Antenaria dioica* L. etc. are common.

For the second group *Aconitum volubile* Pallas ex Koelle, *Calamagrostis obtusata* Trim, *Crepis sibirica* L., *Lathyrus sylvestris* L., *Maianthemum bifolium*, *Ramischia secunda* (L.) Garcke, *Linnaea borealis* L., *Pleurozium schreberi*, *Hylocomium splendens*, *Dicranum polysetum* etc. are common.

A group of pratal xerophytes and hylophytes was formed in accordance with the classification of A.P.Shennikov (1938) and taking into account L.I.Namokonov's suggestions (1959).

In grass canopy of pratal xerophytes and hylophytes there's a great number of plants typical to wood and woodside communities.

The group of pratal xerophytes and hylophytes in herbal wood formations is presented by 45-50 species of higher plants. Basically their dispersal is connected with the human business activity.

In the group of brook hygrophyte *Cacalia hastate* L., *Trolius asiaticus* L., *Impatiens noli-tangere* L., *Scrophularia nodosa* L., *Lilium pensylvanicum* Ker-Gawler, *Carex cespitosa*, *C. Media* R.Br., *C. Riparia* Curtis and etc. are dominated.

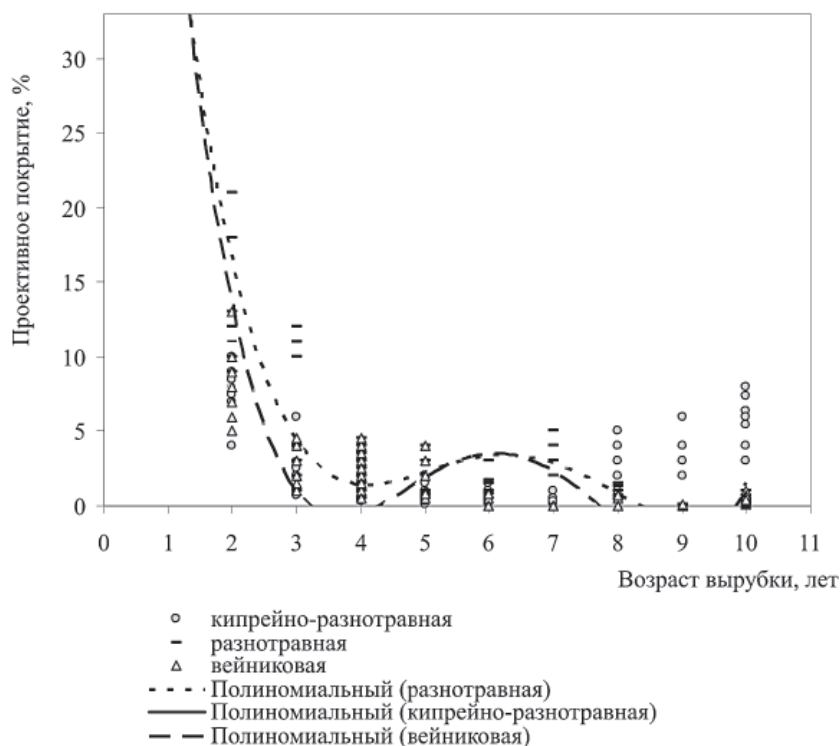
A group of swamp hygrophyte is presented by *Spiraea salicifolia* L., *S. Media*, *Carex pauciflora* L., *C. Dioica* L., *Calla palustris*, *Senecio congestus*, *Parnassia palustris*, different types of *Sphagnum* and etc.

Human business activity conduces to meadow vegetation penetration into wood grass formations and also to temporary disappearance of wood grass veg-

etation. Human activity doesn't influence hand-reared and swamp communities as they all are mostly poor stand in which tree felling is carried out. In connection with this a close research of the first four communities on different types of slashes has been carried out.

Changes of projective cover of forest herbaceous plants at willow herb, grass and reedgrass slashes at the age up to 10 years is presented in picture 1.

In pic. 1 we can see sudden fall of forest herbaceous plants quantity after final cuttings at willow herb type of slash (projec-



Pic. 1. Change dynamic of projective cover of forest herbaceous plants at willow herb, grass and reedgrass slashes at the age up to 10 years

tive cover up to 1-2%) and complete die-off at grass (up to 25% of the total area of research slashes) and reedgrass type of slash (up to 70% of the total area of research slashes).

According to floristic composition and storied construction ground vegetation in

young stock of willow type of slashes differs from reedgrass and grass by less coverage and gramineous plant frequency.

Approximating data by biquadrate polynomial gives formula:

– for willow-herb type of slash ($R^2=0,9312$)

$$Y = 0,0867 \cdot X^4 - 2,1901 \cdot X^3 + 19,718 \cdot X^2 - 73,922 \cdot X + 97,328 ; \quad (1)$$

for herb type of slash ($R^2=0,9442$)

$$Y = 0,0741 \cdot X^4 - 1,9292 \cdot X^3 + 17,856 \cdot X^2 - 69,51 \cdot X + 98,246 . \quad (2)$$

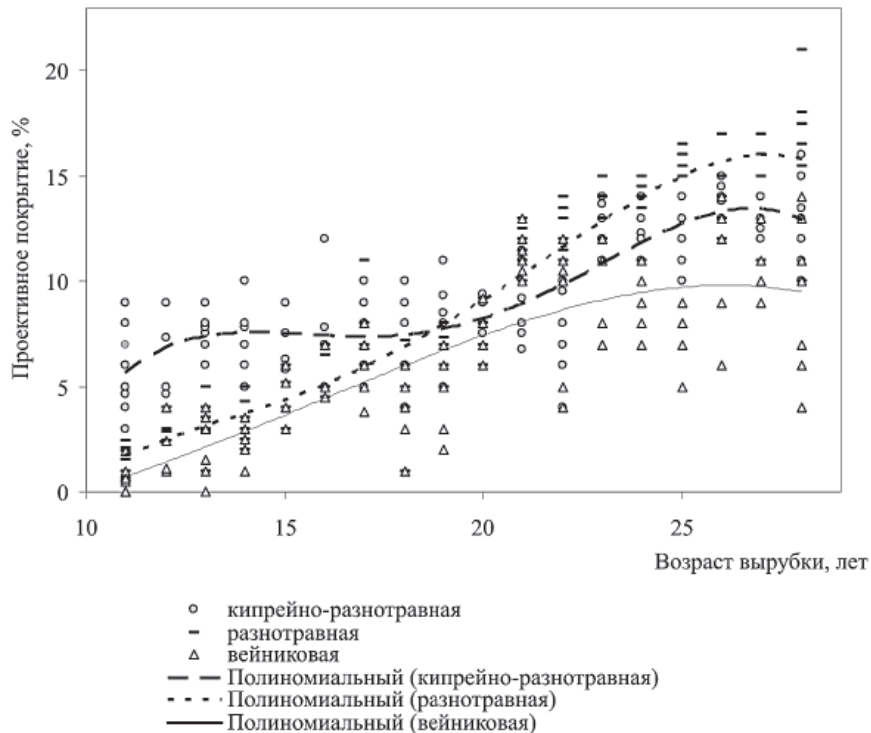
Coefficient of determination allows coming to a conclusion that at willow-herb,

grass and reedgrass types of slashes up to 10 years old biological projective cover with

forest plants 92-94% depends on type and age of a slash and 6-8% on other factors, impact of which is insignificant. The research showed that it is connected with the increase of light level after weeding main canopy at one go as forest herbaceous plants, growing under forest stand canopy, are in different extent skiophilous.

At the age of 10 years gradual recovery of forest types of grass vegetation is seen. Green moss is recovered under the canopy of meadow grass and tall grass vegetation.

Changes of projective cover of forest herbaceous plants at willow herb, grass and reedgrass slashes at the age over 10 years are presented in picture 2.



Pic.2 Change dynamic of projective cover of forest herbaceous plants at willow herb, grass and reedgrass slashes at the age over 10 years

It is seen in picture 2 that at willow-herb, grass and reedgreen slashes forest species recover very slowly. The processes are almost the same. Reedgrass types of slashes recover with valuable species the most protractedly and weakly – less than 1,0 thous/ha. It is connected with a strong ramping of soil level.

As the research shows reedgrass negatively responds to the tree species shading whereupon at the age of 15-18 years its quantity is falling. There’s no grass vegetation growth. A species composition and storied construction typical to the slashes remained

in grass- fruticulose story of reedgrass slashes 16 years after the cutting.

The projective cover of slashes with the forest herbaceous plants is up to 20% concerning the cover under canopy of cut trees at 28 year-old slashes. It is the maximum age of the research, as it’s the period when timber stockpiling started in the region of Angar.

The obtained math models, describing the relation between projective cover with forest herbaceous plants and the age of a slash, we can get the following formula:

– for willow-herb type of slash ($R^2=0,649$)

$$Y = -0,0013 \cdot X^4 + 0,99 \cdot X^3 - 2,7554 \cdot X^2 + 33,036 \cdot X - 137,35 . \quad (3)$$

– for herb type of slash ($R^2=0,8812$)

$$Y = -0,0006 \cdot X^4 + 0,0413 \cdot X^3 - 1,0256 \cdot X^2 + 11,522 \cdot X - 47,25 . \quad (4)$$

– for reedgrass type of slash ($R^2=0,6638$)

$$Y = -2E - 0,5 \cdot X^4 - 0,0011 \cdot X^3 + 0,0822 \cdot X^2 + 0,6671 \cdot X - 0,0783 . \quad (5)$$

Coefficient of determination allows coming to a conclusion that at grass types of slashes up to 10 years old biological projective cover with forest plants 88% depends on type and age of a slash and 12% on other factors, impact of which is insignificant. And at willow-herb and reedgrass types of slashes – 64-66% depends on type and age

of a slash and 34-36% on other factors. The research showed that durable soil ramping influences the recovery process. And we come to a conclusion that to reduce period of growing of economically valuable species at willow-herb and reedgrass types of slashes additional action is needed for forest recreation.