

REGENERATION OF LARCH AFTER CLEAR-CUTTING

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The article describes the types of larch forests and their growing conditions, which are often subject to principal clear-cutting in the Middle Angara region. The authors present the results of their research on the natural forest regeneration at the harvest sites. It proves, that larch preservation as prevalent species requires additional forest planting and other forestry measures.

Larch trees account for about 30-40% of all wooded territories in the Middle Angara region. Larch can grow in different conditions; its presence in the forest contributes to the trunk and crown formation and improves the soil quality [1]. There is a big demand for larch on the world market.

We have studied the felling types and the process of natural forest regeneration after clear-cutting with the Russian and foreign harvesting equipment, preserving the young growth in commercial forests of the Middle Angara region.

The experimental data was collected by the method of ground observation of the felling sites on the constant and temporary test territories dominated by dark coniferous and broadleaf forests. To measure natural regeneration under a shelterwood and at the

forest harvest sites, we used the common plot estimate methods. Forest regeneration was evaluated basing on the inventory data of the young growth under a shelterwood on the discount areas. Besides, condition of field layer was evaluated by means of measuring the frequency and projective cover degree of shrub-grass and moss-lichen vegetation.

Larch forests are mostly mixed forests, which include 9 units of broadleaf trees. Mixed larch woods grow in conditions B₂, B₃, C₂.

Currently the following forests are of a commercial interest:

- green-moss larch forests (sorrel-green-moss, pine-green-moss, herb-green-moss), herb larch forests.

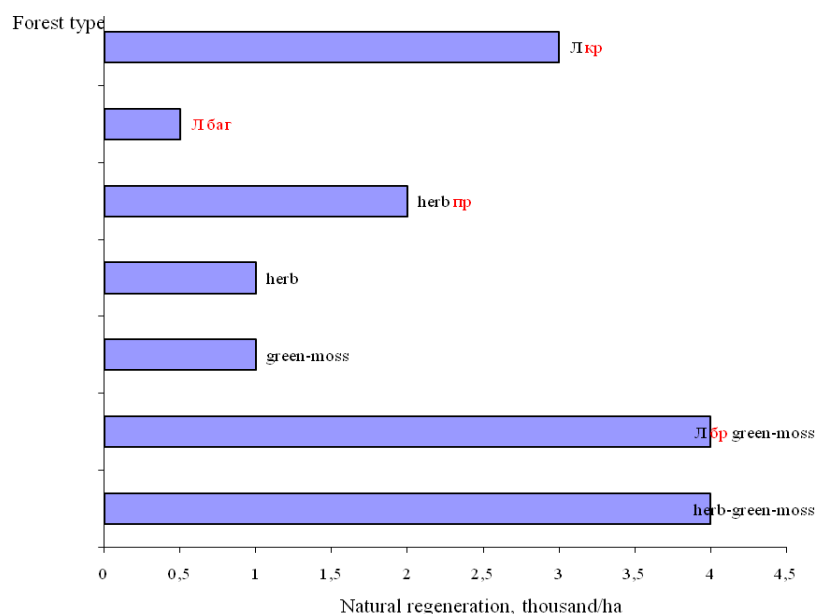


Figure 1. Relation between average amount of natural regeneration under a shelterwood per 1 ha for different types of forests

Among the felled forests prevail herb and green-moss woods.

Fig. 1 shows the relation between the felled woods of different types and the volume of the natural larch regeneration in percent to the total regeneration of commercial wood.

Our observations showed, that the amount of young growth of larch is relatively low (1,0-4,0 thousand/ha), which proves an unsatisfactory larch regeneration under a shelterwood.

Table 1 offers a taxational characteristics of larch forests on the test territories.

Table 1. Taxational characteristics of larch forests

Forest type	Growt h class	Density	Reserve per 1 ha, m ³	Young growth, thousand/ha	Species prevailing in natural regeneration	Underwood (projective cover, %)
Green-moss larch forest	3	0,6-0,8	220-290	till 3	И,Е,К	20-35
Herb larch forest	3	0,6-0,7	230-290	till 1	И,Е,К	20-25
Лкп	3	0,6	200-230	till 3	С	25-30

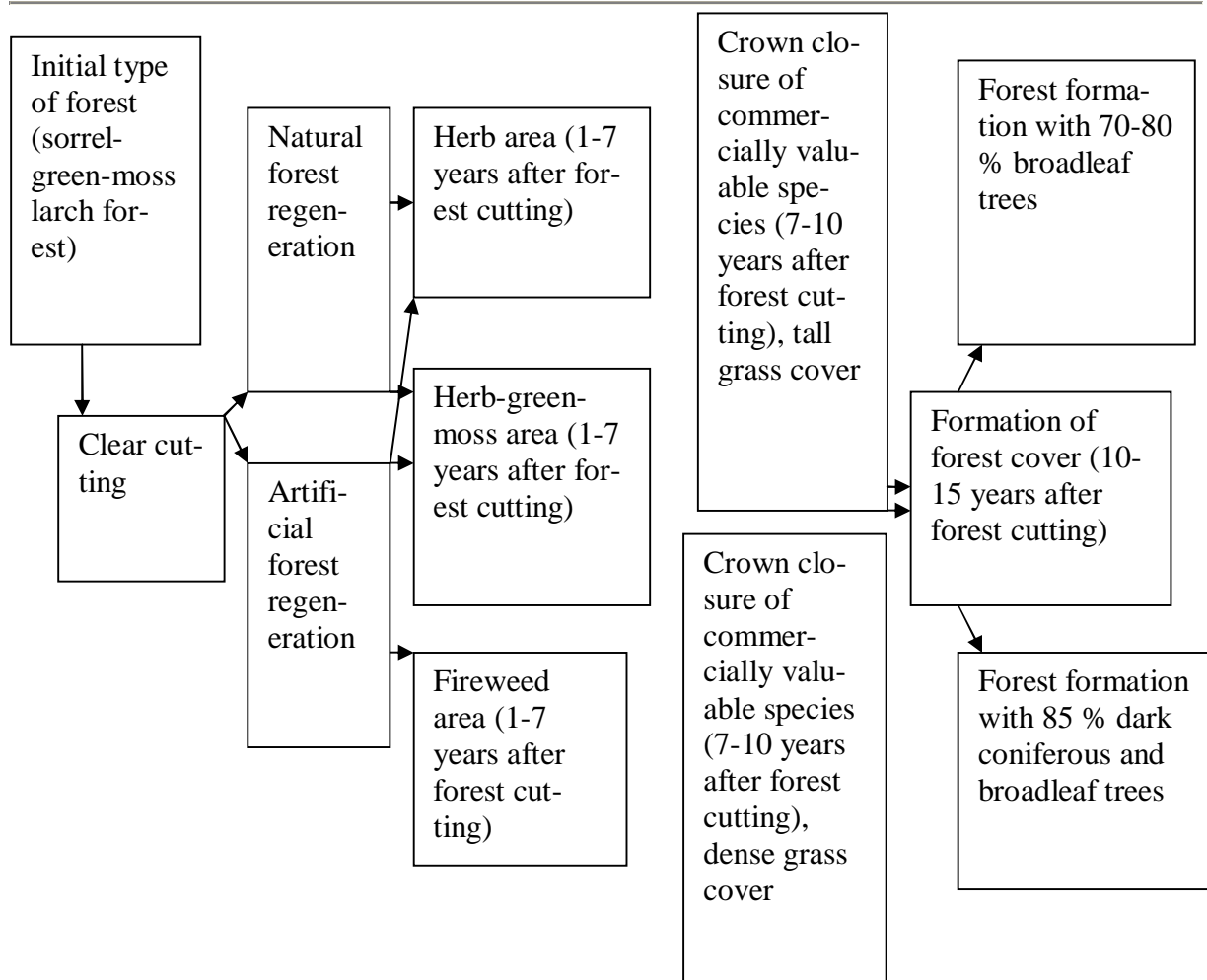


Figure 2. Structure of forest formation after principal felling in sorrel-green-moss larch forests

After the forest cutting, the majority of the territories become herb and herb-green-moss areas. If a forest fire spreads to the felling site, then fireweed establishes in a burned area (fig. 2).

Under a shelterwood in a green-moss larch forest, forms mainly dark coniferous young growth in amount of 2,5-6,8 thousand/ha. The principal clear-cutting causes changes in the forest type.

Principal felling of herb larch forests triggers reed grass growth (fig. 3).

In 67% of the examined territories, the young growth under a shelterwood of a herb larch forest reaches 1,5-1,8 thousand/ha.

Principal clear-cutting destroys 65-75% of the initial young growth. The cleared areas get strongly overgrown with grass, making it necessary to plant new forests. The forest regeneration includes changes in the species range.

The conducted research let us conclude the following:

1. Natural regeneration under a shelterwood in a larch forest is not strong enough and accounts for 1,0-4,0 thousand/ha, the young growth is represented mostly by dark coniferous species.

2. Clear-cuttings destroys up to 65-75% of the initial young growth.

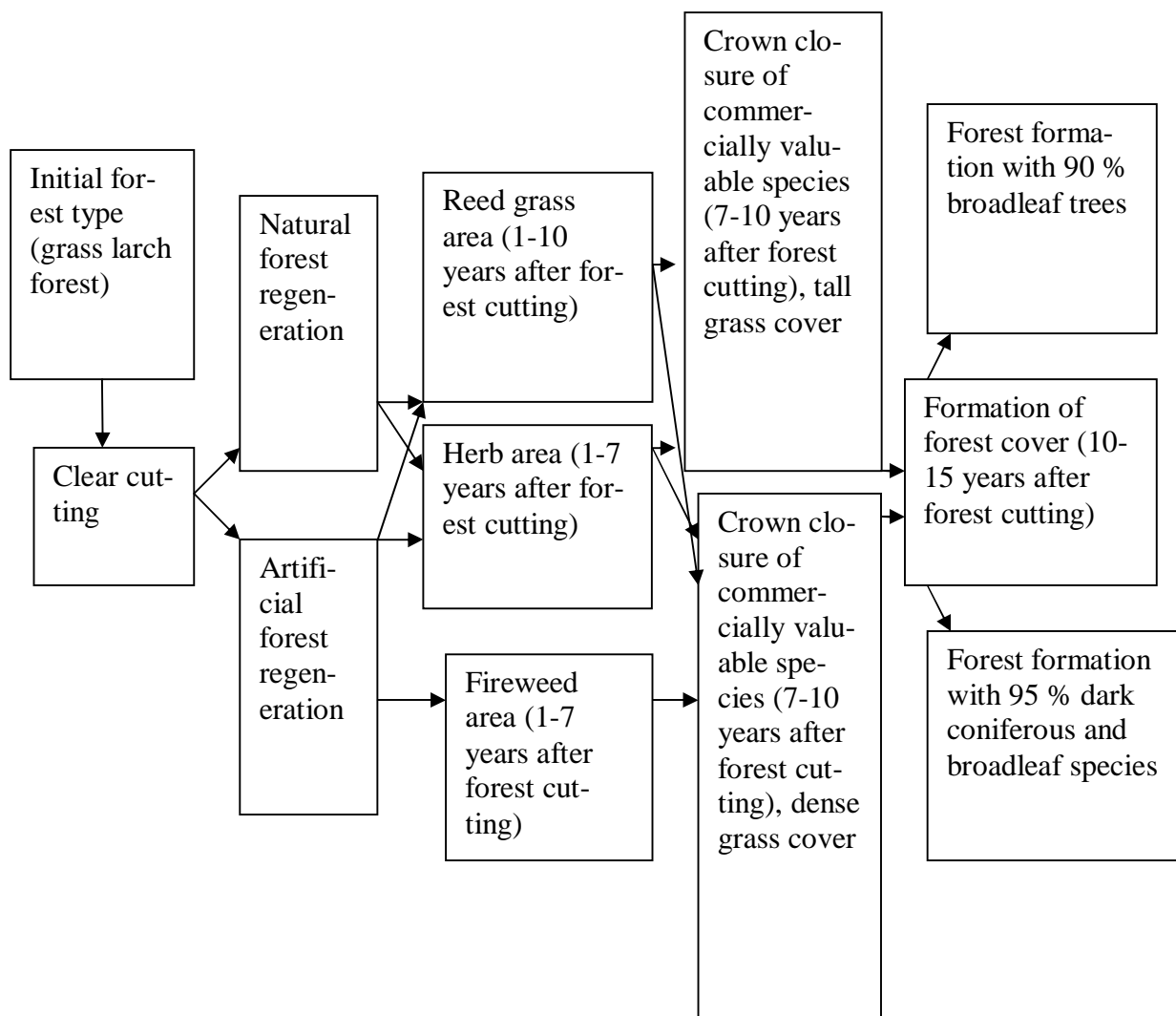


Figure 3. Forest formation after principal cutting of herb larch forest.

3. Natural regeneration is always accompanied with the species changes and does not provide a sufficient regeneration of valuable coniferous species, as often the broad-leaf stands establish.

4. The most appropriate method is planting forests, which let reduce the time of the forest grow and help preserve coniferous species. The existing methods of the natural

forest regeneration and forest planting (mostly pine trees) causes concerns about whether larch remains to be a prevalent species on the territory of Middle Angara.

References

1. Vashuk L.N., Shvidenko A.Z. Dynamics of wooded territories in the Irkutsk region. - Irkutsk: JSC «Irkutsk regional printing house №1», 2006.-392 p.