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**I. F. Eroshkina**, PhD (Agriculture), assistant lecturer (BSTU)**FORMATION OF FOREST VEGETATION ON EXTRA WETTED LANDS OF FOREST FUND (CASE OF TUMILOVICH FORESTRY)**

The article presents the results of a formation of forest vegetation on excessively moist-forest lands Tumilovichi forestry over a long period of time. Found that for almost 50 years due to conduct a large-scale hydraulic engineering reclamation occurred translating marsh land covered with forest. The proportion of forest land to 94.4% and forested areas to 91.2% of the total forest area. The share of forest crops increased 15-fold, and makes 31.7% of the forested land. Shrub-cotton grass-sphagnum and sedge forest after hydrotechnical reclamation accounted for as derivatives shrub-green moss forest.

**Introduction.** The Republic of Belarus makes a considerable contribution to saving and increasing of forests. This is particularly important against the background of continuing reduction of forest covering of the planet, where annually on average 13 million ha of forests are transferred into other ways of utilization [1]. It is possible to compensate these consequences only by means of effective methods of forestation, reforestation and forest growing.

During the last 50 years in Belarus nearly 4 million ha of new forests were planted. Due to the large scale of artificial reforestation and forestation a number of forests for the post-war period have increased from 22 to 39% [2, 3, 4]. Lands of former collective farms and state farms in the form of arable lands, meadow lands, grazing and other kinds of lands have been consecutively and on considerable areas given to the forest fund of the republic [5].

Hydraforestmelioration which is one of the means of productivity increase of bogged forests is considered to be one of the factors influencing the structure of Belarus forest fund lands. According to the research data [6], the area of extra wetted lands in forest fund of our republic makes 2084 thousand ha, including: forest covering lands – 1617 thousand ha, non-forest covering lands – 183 thousand ha, arable, haying and grazing – 21 thousand ha; area of meliorated lands of the forest fund makes nearly 365 thousand ha (forest covering lands – 293 thousand ha, non-forest covering – 30 thousand ha). Efforts on reclamation of extra wetted lands are typical for individual forestry enterprises.

**Main part.** Forest fund of Tumilovichi forestry of Glubokoe experimental forestry enterprise which was formed within unchanged territorial boundaries during the period of 1959-2006 (47 years) has been the object of research. During this period much work has been done on reclamation of extra wetted lands by the forestry. Percentage of the drained lands of Tumilovichi experimental forestry for the researched period makes about a half of the territory while in general hydraforestmeliorated fund out of the total area of forest fund lands of the Ministry of forestry of the Republic of Belarus makes about 3%.

Total area of lands of the researched forest fund within comparable boundaries as for initial 1959 makes 4357 ha, including forest lands 85.5% (3728.7 ha), non-forest – correspondently 14.5% (628.3 ha).

Forest covering lands occupied 80.0% (or 3484.3 ha), including forests of artificial origin – 1.7%.

Bogs as a part of non-forest lands occupied the largest specific weight – 73.1% (or 459.6 ha out of the area of non-forest lands), haying lands – 20.0% out of the area of non-forest (or 125.1 ha), the rest 6.9% were arable lands, roads and glades.

Due to hydrotechnical melioration that was carried out on the territory of the forestry largest transformation of bogged non-forest lands into forest covering lands took place. 72.6%, or 456.3 ha of non-forest lands have undergone transformation. Among them 75.5% (94.5 ha) of the area of bogged haying lands have undergone forestation, including transformed lands:

- into black alder formation 31.4% (29.7 ha);
- into birch – 24.8% (23.4 ha);
- into spruce – 23.3% (22.0 ha);
- into pine – 17.7% (16.7 ha);
- into aspen – 2.8% (2.6).

Trial areas planted on the site where according to the forest management 1959 there were non-forest lands, testify about it.

By the present year of observation on one trial area where there were bogged haying, plantation consisting of 9Al.b.1W, type of forest – spirea black alder, age – 45 years, quality of locality class II, fullness 0.72, timber stand reserve – 190 m<sup>3</sup>/ha (figure) was formed. On the other trial area at the site of the bad quality bogged haying, plantation consisting of 4S5L1S, type of forest – ledum pinery, age of plantation – 50 years, quality of locality class IV, fullness – 0.60, timber stand reserve – 91 m<sup>3</sup>/ha was formed.

Natural forestplanting as well as forestation at the site of meliorated bogs took place on 76.9% (353.4 ha) out of the existing bogs as for the initial year. On this area sylvula was developed and natural forestplanting with the following formations took place:

- pine – 56.3% (199.0 ha);
- birch – 33.6% (118.8 ha);
- spruce – 8.3% (29.4 ha);
- black alder – 1.8%.

The following forest type series were singled out:

- sedge – 28.1% (126.2 ha);
- sedge-sphagnous – 14.6% (65.7 ha);
- ledum – 17.8% (79.8 ha);
- blackberry – 12.7% (57.0 ha);
- sedge-grass – 9.6% (42.5 ha);
- moss-grown – 8.1% (36.4 ha);
- spirea – 3.6% (15.7 ha);
- paludous-filical – 2.6% (11.7 ha);
- stream-grass. fern. nettle and shamrock – 2.9%.



Spirea black alder at the site of bogged haying

Generally 15.8% (687.4 ha) out of the total area of the forest fund: 94.3% (219.6 ha) non-forest covering lands out of their initial area and 72.6% non-forest lands have undergone forestation and have been transformed into forest covering lands.

As a result a number of forest lands have considerably been increased - from 85.6 to 94.4% of the area of the forest fund. A number of forest covering lands have been increased from 80.0 to 91.2%. A number of sylvula have been increased 15 times - from 2.1 to 31.7% out of the area of forest covering lands. Non-forest lands have been reduced from 14.5 to 5.6%, including haying lands – from 2.9 to 0.8%, lands under bog – from 10.6 to 3.3%.

As consequence, decrease of the area of pine formation took place by 7.7%, of black alder – by 12.8% and of aspen – by 2.4 times. The area of birch forests has been increased by 42.3% out of their initial area and the area of spruce forest – by 3.5 times.

Formation of forest planting due to other formations (their succession) took place:

- 64.7% of area of forest planting have not undergone succession, i.e., replacement of the forma-

tions didn't take place (including specific species – 63.1% and non-specific – 1.6%);

- on 10.8% of the area replacement of forest stand from non-specific species into specific ones, 0.7% – into non-specific species took place;

- on 21.4% of the area of forest covering lands replacement of specific species including forest stand into other specific species took place.

Some separate cases that ended in deterioration of planting composition – this is replacement of specific species into non-specific – by 2.4% of the area covered with forest took place.

It should be taken into consideration that choice of the specific wood species for certain conditions is determined by a number of ecological, economical and practical factors. Hydromorphic (bogged) soils, that are present in Tumilovichi forestry, show that in this place all naturally forming forest species can be as basic ones including bushy-birch forest stands that occupied in forestry 13.2% of forest lands.

In connection with hydraforestmeliorative works considerable changes in typological structure of forests on extra wetted lands took place.

As for the initial year the following observations of extra wetted group of forest types were carried out: suffruticous-subshrub-sphagnous, sedge and spirea forests (ledum, sphagnous, grass-sphagnous, sedge, sedge-sphagnous, sedge-grass, spirea and fern series of forest types), occupied 38.5% of the whole territory of the forestry. After hydrotechnical melioration almost all of them (91.2%) were estimated, generally as meliorative-derivative suffruticous-greenmoss forests (cowberries, blackberries, green-moss and other series of forest types).

Longmoss, flood, ledum, sphagnous, sedge, sedge-sphagnous, sedge-grass series of forest types have undergone anthropogenic succession in connection with hydroforestmelioration.

As a result of such a transformation extra wetted groups of forest types are within the following ranges 2.3–8.5% out of the total number of all examining stratum by the present year of observation.

The initial typological category of forests of Tumilovichi forestry has preserved at 38.5% of testing areas.

In general analysis of the succession of forest planting of Tumilovichi forestry testifies about orientation of forest-based activity on formation of forest planting with regard to soil-typological conditions.

As for hydroforestmelioration of bogged forests of Tumilovichi forestry and its influence on forest planting, the following should be noted. The average reserve increase by 2.3 times has been the result of hydromelioration without other

forest-based measures. A considerable part of meliorated forests (65.7%) have undergone final felling operations, that lead to young generation forest stand increase 1.5–2.0 times greater; and further it can be supposed that planting growth will take place at naturally renewed and artificially made plants.

**Conclusion.** Analysis of changes of Tumulovich forestry forest find testifies about the large varied forest-based activity, aimed at rational usage of forest fund lands, formation of basic forest plantation as regards to soil-typological conditions, forest care measures.

All the ways of lands transformation are well justified: forestation and natural reforestation with transformation of non-forest lands (hayings and bogs) into forest covering lands till 72.6%; increase of forest lands area till 10.3% at simultaneous decrease of non-forest lands by 61.0% of their initial area. As for negative sides of transformation the following can be noted: transformation of forest covering lands into non-forest covering lands (4.4% out of their initial area), but this is least important and fact-based factor.

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