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TARGET SPECIES COMPOSITION OF THE FORESTS OF THE REPUBLIC OF BELARUS WITHIN THE PROBLEM OF "FOREST OF THE FUTURE"

The forest target species composition substantiation requires the full alignment of the latter with the economy of a specific region, and the prospect of individual sectors development as a whole. Technology for conversion derived softwood stands to the valuable hardwood and coniferous ones must be tested and demonstrated at specific sites primarily in the Ministry of Forestry Experimental Forestries.

Introduction. Wide forest exploitation, steady functional extension conduce forestry of Belarus to become one of the most important branches of national economy that have not only economic, but also social importance.

In our country "forest management should provide multipurpose, scientifically grounded, continuous, sustainable and rational use of forest to satisfy the requirements of branches of economy, natural and legal persons for wood, other forest production and natural useful properties of forest; reforestation, improvement of species composition and forest quality…" [1, p. 17].

Forest management plays a decisive role in the reproduction of forest resources, forecasting of species composition with regard to demand on wood quality. The projects of forestry organization and management for the revision period, which are worked out by forest institutions, serve as the basis for advance and current planning of the branch and forest management in the forestry stations [1].

In Belarus, like in other European countries, it's legislated that forest exploitation without proper forest management is forbidden [1].

For forestry branch planning and solution of the problems of its development, it's necessary to obtain exhaustive and reliable information about the state of forest fund of forest station, region, republic, which should be collected and regularly upgraded in the automated data bank "The Forestry Fund of the Republic of Belarus". The main information source for data bank creation and maintaining is traditional forest management in its modern form – forest management is charged with estimation of growing stock, growing conditions, projecting target species composition for forest stands with accordance to forest designation and regional wood consumption pattern.

Main part. Forest-forming wood species are of different value due to different wood characteristics. The wood of Scots pine (Pinus silvestris L.) is one of the most popular. More than 30 thousand of various products are made of pine wood, pine stands are one of the most valuable renewable natural resources of Belarus. Pine wood is of high importance for furniture industry, building, metal mining industry, papermaking industry and other sectors of national economy.

Pine trees occupy a wide area and grow on podzolic tight sandy soils as well as on aquic mineral and peat soils; pine takes the first place among forest-forming wood species in many countries of Central Europe. On the territory of intensive forestry conducting, pine trees are often changed by other wood species, often small-leaved. In this regard great attention is paid by specialists to target species forest-forming.

Pine wood has always been notable for high utility, that's why first artificial plantings of pine on the felling sites were mostly of pure composition and relatively dense [2]. In specialized forestry literature of the latter half of the previous century, judgments on the advantages of mixed stands (with addition of birch) were expressed. It was affirmed that birch inclusions up to 30% in pine stand can benefit the soil, protect pine against pests, and especially root fungus, increase yield and merchantability of stands. Sometimes it's stated that mixed stands are more sustainable, that's why it's considered to be necessary to maintain inclusions of small-leaved wood species in pine stands. Moreover, in the working Regulations for fellings [3, point 6.1.5.5] it's written that "all the intermediate fellings are aimed at forming of mixed and multi-storeyed stands". But detailed survey of this question [2] proves that biogeocenose stability is not a direct consequence of stand's breed multiplicity.

It's obvious that the arguments on advantages of mixed or pure stands without clear determination of the growing conditions are baseless, because there is often used subjective reasoning, based on from very limited testing material. In publications of this kind wood consumption patterns, technical and cost parameters often are not considered. For example, up to the present day there can be met positive estimations of such low-quality wood as red oak (Quercus rubra L.).

Over the last 50 years considerable changes of species composition have taken place in the forests of Belarus. Pine wood area decreased from 59.1 to 52%, birch wood area increased from 9.3 to 24%, fir and black alder woods area hold the same level [4]. Taking into consideration prior demand of economy, natural and legal persons for coniferous and hardwood broadleaved wood, the Forest Code

of the Republic of Belarus requires from the Ministry of Forestry to provide them with necessary wood quantity as required by law. Requirements of this kind have been always placed in front of the Ministry of Forestry and forestry sciences, in which regard some of the Belarusian scientists proposed variants of target forest species composition, taking into account the most important factors: regional forest-site peculiarities, demand and consumption of wood, cost parameters of the current period, stand volume at the felling age, technical quality of the certain wood type (Moiseenko F.P., Yurkevich I.D., Yanushko A.D., Goev V.Y., Ermakov V.E. [5]).

Having analyzed the proposals on Belarusian forest species composition optimization, we propose a method of rationalization of target forest species composition, which takes into account [5]:

– the pattern of wood consumption in Belarus by economy branches and enterprises at present and in prospect;

– merchantable wood, received from final felling as well as from intermediate fellings;

– costs on forest management up to final felling;

– wood density and technical quality of different forest-forming species;

– forest regional division on the territory of the Republic of Belarus.

While working out target forest species for a forest station, it's necessary to consider the main wood consumer in the certain region, because after all forestry is to provide the demand of economy branches for certain size and quality. In the Republic of Belarus the main goals of forest management were defined, the main of them is to increase efficiency and completeness of forestry resources utilization on the basis of continuity and sustainability of forest management.

To reach these goals, the government of Belarus for a period of years adopted Programmes for Forestry Development in the Republic of Belarus (October 11, 2002 No. 1410; March 7, 2004 No. 245; December 29, 2006 No. 1769), and a group of leading scientists and specialists of forestry of Belarus and a range of foreign countries with foreign financial support developed the Strategic Forestry Development Plan of the Republic of Belarus for the period till 2015. However in the official publication "Forest Health and Utilization in the Republic of Belarus" (annual review, 2011) it was noticed that "in 2009-2010 the effect of all these strategic documents was stricken down" [6, p. 16].

Once again to increase the efficiency of forest management and improve forest resources utilization, on July 21, 2010 the Resolution of the Council of Ministers of the Republic of Belarus No. 1626 approved the State Programme for Forestry Development of the Republic of Belarus for 2011–2015 [7], which provided the increase of efficiency of reforestation, conservation and protection of forests, rational use of the forest resources "on the basis of achievements of scientific and technical progress, considering development of the world economy" [7, c. 2].

The Programme requires to establish scientifically an optimal forest species composition with increase of share of coniferous and hardwood broadleaved wood species, increase of share of mature stands up to 11.8%, increase of average inventory with increasing the mature inventory to 254 m^3/ha, to develop a project of essential increase of participation of large-sized wood in timber cutting fund to satisfy the demands of branches of economy to the maximum extent possible and produce high-quality globally competitive finished product.

The State Programme for Forestry Development of the Republic of Belarus for 2011–2015 imposed on the Ministry of Forestry a task of pursuing a single scientific and technical policy in the field of forestry, coordinating applied scientific researches on rational use and reproduction of forests, increase of their efficiency and improvement of species composition, to provide branches of economy of the Republic of Belarus with the necessary wood, timber etc. Within the competence of the Ministry of Forestry there is also the organization of special funds for financing scientific research and development works, studying of the best practices of foreign countries, control of the correct use of money allocated for scientific purposes.

For introduction and experimental check of scientific development, in the Ministry of Forestry 14 experimental forestry stations were established and work now, they are to become objects of demonstration of scientific and practical achievements, study of workers and the managers of forest branch. Optimization of species composition of the forests of Belarus should definitely begin in experimental forestry stations, where scientists can offer their proposals, prove their competence and advantages over the currently existing forestry.

The Forest of the Future is first of all an object for satisfying the demands of branches of economy for raw materials, and providing the population of the Republic of Belarus with necessary social functions of growing forest. The question of the forests of the future allows no groundless statements about advantages of one or another forest species composition without exact determination of growing conditions [5]. Rational forest exploitation and reproduction of forest resources have to be dynamically balanced on yield and increasing requirements of branches of economy of Belarus. In this context, on the basis

of currently existing Forestry Specialists Community it is expedient to summon a scientific and practical conference devoted to the forests of the future. Such conferences [8] were convened not so long ago, the executives of forest departments, skilled workers, scientists addressed there. At conferences they summed up the results of work of forestry specialists and the enterprises of certain regions for formation of perspective forest species composition, proved the improvement of their qualitative consumption properties, economic feasibility of a projected target wood species, with a high added value of demanded raw materials, promulgated improvement of age-class composition of forest stands considering the increasing need of the market for large-sized wood [6].

Conclusion. In solving methodical and technical questions of justification of target forest species composition it's necessary to fully coordinate them with the economy of the definite region and the prospect of development of separate branches of national economy as a whole. The technologies of transformation of softwood broadleaved plantings in valuable hardwood broadleaved and coniferous forest stands should be tested and demonstrated on certain objects, first of all in experimental forestry stations of the Ministry of Forestry. The importance of the problem of forest species composition optimization requires participation of the Society of Foresters, convention of special thematic scientific and practical conference.

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