

Analysis on Tending Technology of Young and Middle-Aged Forest Cultivation

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Abstract: Young forest tending, as the key content of forest cultivation project, is very critical in forest management production. In forest cultivation projects, doing a good job in young forest tending can improve the survival rate of forestry planting, expand the scale of forestry planting, supplement wood resources, and improve the overall benefits of forestry. In this paper, combined with the basic principles of forest cultivation and young forest tending, the technology of forest cultivation and young forest tending is analyzed, and the effective methods to improve the quality of forest cultivation and young forest tending are put forward.

1. Introduction

During the 13th Five Year Plan period, a total of 545million mu of afforestation area was completed. At present, China's forest coverage has exceeded about 23.04%. Trees have the functions of absorbing carbon dioxide, alleviating greenhouse effect and improving the ecological environment. Doing a good job in forest cultivation can improve the deteriorating environment, prevent soil erosion and reduce the frequency of flood hazards. In forest cultivation, young forest tending is the key link. We should constantly optimize the stand structure, control the stand density, adjust the stand spacing, and promote the healthy growth of trees. It can be seen that we should pay attention to forest cultivation and young forest tending in order to improve the stability of forestry development.

2. Basic Principles of Forest Cultivation and Young Forest Tending

2.1 Principles of Protecting Young Forests

We should pay more attention to the young forest tending in the forest cultivation work to avoid the problem of opportunism, especially the cultivation of precious tree species, and do the corresponding protection work to avoid the extinction of tree species, so as to effectively ensure the balanced development of the local forest ecosystem and the diversity of forest species.

2.2 Principle of Adjusting Measures to Local Conditions

Young forest tending should be carried out according to local conditions in combination with the basic situation of each region. For the actual work of young forest tending, we should closely combine the basic characteristics of local tree species, not blindly follow the cases of young forest cultivation in other regions, and try to combine the local environment and resources as much as possible, so as to ensure the scientificity and rationality of the seedling area itself. Under such circumstances, it can not only do a good job in seedling cultivation, promote local economic development, optimize the local ecological environment, and achieve sustainable and stable development.

2.3 Scientific Principle

In the work of young forest tending, we should always adhere to the principle of scientificity, and pay attention to the fact that we can't take advantage of opportunism in the work of young forest tending. All links should be planned in advance and implemented in strict accordance with the specified process. For the tree species used in young forest tending, comprehensive protection

should be achieved, and all kinds of endangered tree species should be carefully cultivated to prevent the extinction of tree species, which will have a certain impact on the diversity of tree species.

2.4 Based on the Cultivation of Ecological Forests

Forest cultivation should pay attention to the role of giving full play to the maximum value of trees, improving the environment and optimizing the ecology, so as to promote the importance of forest cultivation, promote the development of ecological forest cultivation courses, and improve the environment. It can be seen that in forest cultivation, we should pay attention to the key link of young forest cultivation and do a good job in the design of young forest cultivation, which can promote young forest cultivation to provide useful help for local economic development.

3. Analysis on Tending Technology of Young and Medium-Sized Forests in Forest Cultivation

3.1 Weeding and Scarifying

In young forest tending, attention should be paid to solving the problem of weeds. There are relatively many weeds among trees, which will compete for nutrients and water of trees, reduce soil permeability, affect the normal respiration of roots, cause root rot of trees, and affect the healthy growth of trees. Before the vigorous growth period of seedlings, weeding and soil loosening can be carried out at the same time. Regular soil loosening can increase soil permeability, improve the new energy of soil water conservation, promote the root respiration and water absorption of young forests, promote the degradation of organic matter in the soil, improve soil fertility, and promote the absorption of nutrients by young forests. Therefore, to control the soil loosening depth, which is usually controlled within 10cm, the soil loosening depth should be appropriately adjusted in combination with the soil moisture content; At the same time, weeds cannot be completely removed, and some weeds should be retained, which can fix water and soil and shade seedlings. In the first two years of young forest tending, weeding and scarifying work need to be carried out about three times a year. Specifically, it can be changed appropriately in combination with the growth of young forest, and weeding and scarifying work will not be carried out after the young forest is closed.

3.2 Irrigation and Fertilization

The irrigation and fertilization of young forests need to be regulated accordingly, and the varieties, characteristics, tree age and other factors of young forests should be fully considered. The roots of young forests are underdeveloped, and the absorption of water and nutrients is poor. In most cases, irrigation and fertilization should be implemented in combination. Ditches should be opened at the roots of seedlings, and fertilizer should be evenly spread, water diversion irrigation, and fertilizer dissolution should be carried out to promote the absorption of root nutrients. For fertilization, appropriate fertilizers should be selected according to the variety, characteristics, environment and state of seedlings, and the proportion of N, P and K should be controlled to prevent the problems that hinder the growth of seedlings due to uneven fertilizer nutrition. In the process of actual irrigation, the irrigation water volume should be controlled, and the relevant factors such as seedling species, tree age and soil environment should be fully considered to prevent the problem of excessive water in the early stage of cultivation, which will hinder the root respiration and indirectly lead to the death of seedlings. For example, for the young forest of *Populus tomentosa*, the centralized irrigation is generally selected from April to June, but the actual research shows that the DBH of the young forest increases by about 30% during the irrigation from April to June, so it can be seen that the irrigation effect is greater.

3.3 Thinning

It is necessary to selectively remove some seedlings with clumping phenomenon and reasonably control the planting spacing. Clustered seedlings are prone to compete for nutrients, sunlight and water, which is not conducive to the healthy state of seedlings, but also reduces the survival rate of

seedlings. Therefore, it is necessary to do a good job in thinning seedlings, retain relatively healthy and strong seedlings, directly remove weak seedlings, improve the living space of seedlings, ensure sufficient nutrients and water, and improve the survival rate of seedlings. Among them, the growth state of young forest should be fully considered and reasonably controlled.

3.4 Trimming

In the work of seedling pruning, stubble leveling, tillering and bud wiping are the key links, mainly to promote the growth of seedlings. The details are as follows: (1) flat stubble. In winter and early spring, the seedlings will be stubbed, and a small amount of branches and leaves on the top of the seedlings will be removed to promote root development, prevent lateral growth of branches and leaves, and promote the prosperity of branches and leaves; (2) Tillering. Generally, the sprouting of seedlings is removed to avoid the growth of branches and leaves on the trunk base, prevent the root tillers from absorbing the nutrients of the trunk, and promote the rapid development and growth of the trunk; (3) Wipe buds. It is mainly to remove unknown buds about 2/3 of the height of the trunk tree, so as to promote the rapid growth of the trunk, make the seedlings more straight, and promote the rapid growth of trees; (4) Prune. Pruning is usually carried out in late autumn and early spring, and the dried seedlings and branches of pests and diseases are carefully pruned to improve the nutritional distribution of seedlings, enhance the growth state of seedlings, and do a good job in pest control to promote the healthy growth of seedlings.

3.5 Reseeding

During seedling planting, seedling death is easy to occur. Therefore, about one year after the young forest is planted, a comprehensive patrol of the afforestation team should be carried out to count the survival rate of the young forest. When the survival rate of the young forest is less than 80%, the young forest can be replanted; When the survival rate of young forests is less than 40%, it is necessary to re plant them to consolidate the afforestation achievements. When the young forest is light cured, it can alleviate the growth pressure between trees, adjust the density of the stand, create a healthy growth environment for the forest management, and improve the growth quality of the forest itself.

3.6 Inspection and Acceptance

Generally, the survival rate of forest land needs to be checked and accepted after about one year of afforestation. The acceptance criteria are as follows: (1) if the survival rate is more than 85%, it is regarded as a qualified afforestation land; If the survival rate is below 41%, it will be regarded as a failed afforestation site. In 41% to 85% of the forested land, attention should be paid to the planning of young forest tending for the next year. Replanting and replanting can be carried out on the basis of the original forestation methods, making full use of the land, improving the overall quality and efficiency of forestation and increasing the tidiness rate of young forests. Among them, we should also do a good job in the daily management and later maintenance of young forests, which is the key to the success of young forest planting. In the later maintenance and management work, we should prevent the problems of deforestation and gnawing on young forests, and we should not create wasteland and livestock. We should also strengthen fire prevention management and improve the survival rate of young forests. Serious insect pests should be prevented and controlled in time to ensure the quality of young forests.

4. Measures to Improve the Tending Quality of Young and Medium-Sized Forests in Forest Cultivation

4.1 Improve the Forest Management Mechanism

In the forest cultivation work, we should improve the forest management mechanism to optimize the effect of young forest tending. First, based on the unified coordination of the government, we should improve the cognition of forestry staff and transfer the work center; Secondly, we should expand the scope of publicity, set up special publicity points for the cultivation of young forests in a

certain area, and have professional staff implement professional skill training for the staff. Starting from theory and combining with practice, the publicity work on the site of young forest tending has achieved more obvious results; Finally, from the perspective of the overall pattern, we should provide useful legal protection for the young forest tending work, standardize the young forest tending behavior of relevant personnel through laws and regulations, and promote the effective implementation of the young forest tending work.

4.2 Improve the Growth Environment of Young Forests

In the work of young forest tending, the results of young forest tending are closely related to its growth environment. When dealing with the problem of young forest tending, it is necessary to improve its surrounding environment, provide useful growth guarantee for it, and avoid too much interference from the environment during tending, resulting in the obvious reduction of survival rate and quality. First of all, the young forest tending work has strict requirements on the growth environment, and the staff should accurately measure the pH value and soil properties of the soil in the young forest planting site. However, among them, the development ability of young forest roots is relatively entrusted. If the planting site cannot provide sufficient nutrients, it is easy to die and reduce the growth quality of young forests. Therefore, the staff should strictly follow the standardized young forest tending steps and optimize the young forest tending environment as much as possible; Secondly, governments at all levels should do a good job in the corresponding overall management, carry out the corresponding investigation in the market, actively cooperate with the arrangements of higher-level leaders, follow the basic principle of “survival of the fittest”, and retain young forests with better growth. If the withered young forest is found, it needs to be replaced in time and a more complete forest cover system should be established; Finally, we should pay attention to forest cleaning, such as water pollution, debris removal, etc. At the same time, it should also organize relevant businesses, carry out centralized learning, deeply master the relevant regulations such as the forest tending method, and establish a special punishment and reward mechanism. For some employees with excellent performance, necessary bonuses or the honorary title of “best employee” should be given to encourage other employees to actively participate in it, so as to avoid the phenomenon of inaction.

4.3 Reasonably Design Tending Thinning

For the work of young forest tending, the forestry department should reasonably set up young forest tending and thinning to make the planting density of young forests more uniform and promote the growth of young forests. Combined with relevant research, common tending thinning includes the following three different types: (1) light logging. The growth of young forest needs light, and photosynthesis is used to improve the carbon storage rate. For the light transmission cutting involved in the young forest tending work, we should identify the young forest species, investigate the growth potential of each forest, directly screen out and remove the trees with poor growth potential, and then reasonably design the planting density of the young forest; (2) Sanitary logging. In the period of young forest tending, it is easy to be affected by natural disasters, and then there are different degrees of damage problems, such as: forest diseases and pests, various natural disasters, etc., which are easy to damage the health of young forests, resulting in the loss of tending value of young forests. The damaged trees should be removed in time to avoid the impact on other healthy trees, and the target trees should be replanted in time to actively respond to the invasion of disasters; (3) Growth cutting. In the work of young forest tending, areas with high density should be rectified according to the distribution law of young forests, and generally the best quality trees should be left. For inferior trees, appropriate cutting can be carried out, and the overall tending level of young forests can be improved through scientific tending and thinning.

5. Conclusion

Young forest tending is very important in forest cultivation. It can also regulate the local ecological environment. Trees also have the function of absorbing carbon dioxide in the air and

reducing soil erosion. It can be seen that staff should pay attention to young forest tending, master the core technology of young forest tending, pay attention to soil loosening and weeding, master special tending technology, and use more scientific and effective water and fertilizer management measures to improve the quality of young forest tending from the overall level. In addition, it is also necessary to strengthen the technical training of young forest tending staff, comprehensively improve their comprehensive literacy and professional ability, pay attention to the daily management of young forest tending, and formulate a more perfect forest management system in combination with the local government, so as to lay a solid foundation for the subsequent improvement of forest quality. At the same time, the forest structure and planting density should be optimized to give full play to the economic, social and economic benefits of forest cultivation.

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