THE ROLE OF TREE IMPROVEMENT IN THE NORTHEAST

AN INDUSTRIAL FORESTER'S VIEWPOINT

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ABSTRACT.-- Factors influencing tree improvement programs in the Northeast are reviewed. The relationship between intensive forest management and tree improvement are discussed. Both basic needs and specific needs for tree improvement in the Northeast are enumerated. Tree improvement programs should be pursued now to provide the foundation for a self-sustaining tree improvement program in the future,

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INTRODUCTION

In order to assess the past, present, and future role of tree improvement in the Northeast we need to keep in focus the general characteristics of the Northeast Region. In particular, we need to recognize factors which have a direct influence on land management activities. More particularly, we must recognize those factors which influence the timber management activities of which tree improvement is but one aspect.

A complete review of the social, political, economic, environmental, geographic and other influences in the Northeast is obviously beyond my capabilities and the scope of this presentation. We can, however, recognize a number of general conditions in the Northeast which will impact on our timber management programs and therefore impact on tree improvement programs. Brief comments on some of these factors follow:

FOREST LAND

The Northeast is heavily forested, possibly more heavily forested than any comparably sized region of the U. S. even Alaska. Thus, the land base is present to warrant an extremely large tree improvement Program if we judge solely on the basis of forested and potentially plantable acreage.

OWNERSHIP PATTERN

A high percentage of the land in the Northeast is privately owned in relatively small acreages. Compared to the South and the West, state and federal ownership in the Northeast is relatively small. Except for the extremely northern portion of the Northeast area, extensive industrial land holdings are few. This land ownership pattern has a decided impact on timber management programs and will therefore impact on tree improvement activities.

ECONOMY

In the majority of the area in the Northeast, the wood products industries are of lesser importance to the economy than other manufacturing industries or agricultural output and tourism. The economic situation is such that wood products do not play a dominant role in the region's economic survival.

TREE SPECIES

The Northeast has a wide variety of commercially valuable tree species, no one of which is comparable in importance to the Northeast region as is slash pine to the South and Douglas fir to the West. This species mix in the Northeast either complicates or simplifies timber management, depending on the intensity of the management effort. Generally speaking, intensive management becomes more complicated as the number of species increases. In initiating tree improvement programs, initial decisions as to the species objectives are difficult. Should we put our improvement efforts into white pine, white spruce, white birch, or white maple? Our friends from Tennessee might even suggest that we concentrate on improving white lightning.

NATURAL REGENERATION

On much of the forest land in the Northeast, it is difficult to prevent natural regeneration following harvest. If left alone, nature will reforest most areas rather rapidly. Species and spacing obviously will not be ideal, but with even a small amount of luck, a future timber crop gets established promptly. This phenomenon has a tendency to reduce the urgency for artificial regeneration programs. The alternative to artificial regeneration, that is natural regeneration, is not normally a disaster.

I believe that much of the emphasis for tree improvement programs in the South resulted from the fact that natural regeneration of pine cut-overs frequently did result in a disaster. Lumber and pulp companies were far-sighted enough to realize that they could not tolerate long term inadequate regeneration of pine producing lands.

LACK OF UTILIZATION

In my opinion, all of the Northeast suffers from a lack of adequate utilization of the existing timber resource, and in particular from lack of utilization of lowgrade hardwoods. Standing timber is a real detriment to artificial regeneration. If standing timber must first be removed in a non-commercial operation before planting can begin, it is unlikely that significant planting will be done. In the Northeast, nearly all planting has been confined to old abandoned agricultural fields or burned-over areas. Recently, some artificial regeneration of cut-ovens has begun but it is relatively insignificant in terms of acreage.

SOCIAL VALUES

Because the majority of people in the Northeast live in an urban rather than a rural environment, public opinion has been largely oriented toward the social value of timberland rather than the productive value for wood products. Consequently public pressure has been focused on preserving wilderness, aesthetic values, wildlife, and recreation. There has been no broad-based public outcry to grow more wood, or to better utilize what already was being grown. In the past, those who might advocate clearcutting followed by site preparation and artificial regeneration, were, in reality, a lone voice crying in the wilderness. While recent National events may have removed some of the public curse on these activities, misunderstanding and solid opposition still persist. To a certain extent, they probably always will. They should not, however, be allowed to negate tree improvement programs which might be socially beneficial and in the public's best interest,

THE ROLE OF INTENSIVE FOREST MANAGEMENT

Having now completed this brief review of some factors which obviously influence the role of tree improvement in the Northeast, I would like to express some opinions about tree improvement needs in the Northeast. I do not presume to speak for any broad segment of industry, but rather intend to relate some general thoughts which might be appropriate with regard to a tree improvement program.

We are all aware that in the past the intensity of silviculture and timber management in the Northeast has been relatively low and not as great as in other regions of the country. Any future increase in management intensity will need to be justified by increased productivity. Ultimately, an analysis of the motivations and methods for increasing product yields will determine future management policies. Without both the motivation to increase product yields and the methods to increase product yields, increased intensity of management cannot be implemented. This is true regardless of whether the product is fiber, Christmas trees, maple syrup, or ornamental plantings.

Thus far, i have referred to increased levels of management intensity and not to tree improvement per se. This is deliberate. Tree improvement represents only one aspect of a very advanced forest management system. Tree improvement offers little gain unless applied in conjunction with the intensive silviculture of which it is a part. While there may be exceptions to this for tree improvement programs which are not timber oriented, in general, an operational tree improvement program must be part of an overall intensive forest management approach.

Overall, the level of intensity of management and silviculture necessary to justify operational tree improvement programs is well above what is now being practiced in the Northeast. This situation has obviously hindered implementation of both operational tree improvement programs and even restricted the research efforts which are required before operational programs can be evaluated.

The basic question as I see it, is not what is being done now, but more appropriately, what is in store for the future? Will our needs change to the degree that more intensive management practices will be necessary and justified?

I believe that all reliable projections of future demand for wood and wood products, and in particular softwood products, indicate that our management intensity must increase if the wood products industry is to meet the future wood demands of society.

We can, I believe, confidently assume that increasing wood demand or decreasing land base, or a combination of both, will result in significantly increased wood values in the future. These increased values will make it economically feasible, if in fact it is not already so on a limited basis, to practice in the Northeast some form of intensive forest management which will include significant artificial regeneration. It also appears likely that the initial economic justification will be for the softwood species rather than the hardwood species. This assessment is based on the relative worldwide abundance of hardwoods as compared to softwoods, and on the generally greater utility and use of softwood species in the marketplace. This is not to say that intensive management and planting of hardwoods will not occur. More intensive management of both hardwoods and softwoods is likely to occur over the long term. My assessment is that the economic situation will favor the softwood species first, and that significant changes in the intensity of forest management in the Northeast are more likely to be tied to the softwood species rather than to hardwoods.

THE ROLE OF TREE IMPROVEMENT

As we foresee economically feasible artificial regeneration as one aspect of our future intensive management, what role do we see for a tree improvement program? What is it that we will need in the future that we presently do not have?

For purposes of discussion I have divided the needs into two groups, namely some basic reeds which would no doubt be applicable to a tree improvement program anywhere, and some specific needs which are tailored to the Northeast, and perhaps more specifically to the New England area.

Our basic needs will include:

1. Seed for direct seeding.
2. Improved seedlings for planting.
3, Provenance information.

4. Progency testing.

5. Vastly expanded nursery and/or greenhouse capabilities. The recent trend of closing or abandoning tree nurseries in the Northeast is untimely and unfortunate. Good nurseries and high quality planting stock are essential to both research in tree improvement and operational tree improvement programs.

6. Improved nursery techniques for both bare root stock and container seedlings.

7. Improved field planting techniques and equipment. Mechanization of the planting function on cut-over areas is probably essential if a large scale planting program is to develop.

With regard to the specific needs. I foresee the following;

1. Improved fiber yields from trees artificially regenerated.

2. Faster growing trees to reduce rotation age.

3. Rapid early growth of planted trees to overcome competition from natural regeneration of other trees and competing vegetation.

4. Improved insect and disease resistance, particularly with respect to spruce budworm, balsam wholly aphid, white pine weevil, and possibly gypsy moth.

5. Improved wind firmness including resistance to breaking, as well as uprooting.

6. Reduced limbiness and reduced persistence of tree limbs.

CONCLUSION

In the future, demand for products from the forests of the Northeast will very likely increase for any number of reasons, all primarily economic. Coupled with increased demands there is the likelihood of reduced total acreage from which product needs can be met. Both of these factors will combine to make it desirable and economically feasible to increase product yields per acre by intensifying management activities on certain selected areas.

Tree improvement programs can play a vital role in the increased silvicultural intensity which will result from this increase in management efforts. In order to properly evaluate our future options, and retain the necessary degree of management flexibility, we should now be pursuing tree improvement programs which will give us the foundation for building a self-sustaining tree improvement program in the not-too-distant future.