NORTH CAROLINA'S EXPERIENCE IN NURSERY PRODUCTION OF HARDWOOD SPECIES

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The increase in the demand for hardwood lumber and the subsequent decline in the quality of hardwood timber is of much concern to the foresters and woodusers of North Carolina. True, we are growing more hardwood than we are cutting but the quality is getting progressively lower. The same has been happening in pine stands and is the reason most of us are now in the Pine Tree Improvement Program.

This is not a new problem by any means. It has been recognized by many for quite some time. One of the oldest notes in my file (which is not a very good library) is U.S.D.A. Leaflet No. 84 dated 1932 and pertains to the planting of black walnut nuts and seedlings. In 1927, a distinguished forester present here today published an article on the germination and survival in oaks, Yale University, School of Forestry, Bulletin 19, Korstian, C. F., 1927.

Since the 1930's the State of North Carolina has been very much concerned about their hardwood timber stands, and as a result over twenty hardwood species have been raised in the State nurseries.

As a matter of interest, some of the species were tung-oil, black locust, white oak, willow oak, water oak, Eucalyptus, white ash, red gum, tupelo, black cherry, dogwood, black walnut (seedlings and nuts), Asiatic chestnut, sycamore, cottonwood, and yellow poplar.

The survival and use of a few species are very interesting. Tung-oil - complete failure due to cold weather. Asiatic chestnut - poor form, no timber value. Black locust - the borers love it. The success of the remainder of the species listed above can be placed in two catagories: planted on wrong site or no one desires to plant.

I can recall two classical examples. While stationed in Fayetteville as a Service Forester, I was required to check the survival of several yellow poplar plantings. In each case the purchaser planted the seedlings to sites that loblolly would not venture and longleaf hesitated. The other difficulty is demand. Some 10 years ago we were practically forced to plant northern black cherry. With luck we had the best seedlings I have ever seen. The person who made the demand could not recall his request and I was not able to give them away.

At the present time, the concentration is mainly on yellow poplar. Why? Demand - even though survival is very poor. The majority of foresters in North Carolina do not encourage the planting of yellow poplar seed-

lings. As we all know, this species is very selective as to site. Anyone traveling the mountains and the Piedmont in the fall or early spring can readily detect this. Many advocate that the organization pushing the planting of yellow poplar, which will bring practically no financial return to industry, would profit more by informing the grower of the proper management of this species and its growth characteristics and subsequent financial return to him and hence to industry. This State has an abundance of yellow poplar, the majority of which is now entering the 12- to 14-inch class and is just starting to return dividends to the owner – in other words, it should not be cut.

Bowater's Tree Farmer (newspaper) summer edition 1964 has an article titled "Cottonwood Study Results Disappointing But Valuable." They experienced insect and weed competition. According to the article, next year the planting will be on carefully selected sites. Again, site selection is a must when planting hardwoods. Most states do not have sufficient personnel to inspect each planting site prior to planting.

Most young hardwood stands, regardless of cover type, become established readily following cutting or burning. Their quality, species composition, and form of individual trees are often undesirable. As stated before, in North Carolina the reproduction of yellow poplar has been realized on many suitable sites. On other sites, there are a considerable number of poor stands.

It appears now that two big jobs lie ahead before any appreciable advance can be made in the growing of hardwood seedlings. First, the demand, primarily because the nurseries of this State are self-supporting and must be guaranteed a sale or reason to believe the seedlings can be sold. Second, the conversion or cleaning of present stands.

The first hurdle, demand, can be cleared through education. Just how long this will take remains to be seen. If the value of most hardwoods increase as has black walnut, the time element will be shortened considerably. A considerable amount of mountain land in North Carolina is owned by the Federal Government which steadily works toward the improvement and conversion of these stands.

The majority of private ownerships involve small acreage. It is these small ownerships that give us much concern. The average owner knows he should do something to his hardwood timber stand but can not make a sale of any kind and does not have enough money to carry out a cleaning or poisoning program, let alone planting.

Just how important are the hardwood stands to the various wood industries, the States, the Federal Government? Are they important enough to assist the landowner? Should the researchers spend more

time improving hardwoods? At the same time we must keep in mind that most hardwoods require a special site, usually the best site a small landowner has – is he willing to sacrifice a few hundred dollars a year profit from corn or some other agriculture crop to raise walnuts? Will the average landowner spend time to improve his hardwood stand when there isn't any market as is the case in much of Northwestern North Carolina today? What species will be of value 50 to 100 years from now? Will sufficient professional personnel be provided to approve planting sites?

Until the majority of the above questions are answered, not much progress will be made. In the meantime, we will continue to encourage the landowner to improve his hardwood stands and to convert them to the most desirable species suitable to the site and will, if necessary, produce the seedlings to convert the stand. And, when sufficient know-how is at hand, develop seed orchards or through other means, improve the most desirable species.

Over the years the various nurseries in the southeast have grown many hardwood species. Certainly with this accumulation of know-how, it will be possible to grow whatever hardwood species is desirable, and in the quantity desired.

DISCUSSION TO: D. L. Brenneman

Q. I would judge by your comment that North Carolina is growing a considerable amount of black walnut, is that right?

A. (Brenneman) No, we aren't. Those species I mentioned, we have grown sometime since 1930.

Q. What I had in mind was a comparison of growing them in the nursery as opposed to stratifying the nuts and planting in the field?

A. (Brenneman) Many of us agree that it is better to grow the walnuts in the field than to grow them in the nursery. That goes for black locust, yellow poplar, and others. I like to refer to those species as a plant with a numerous-root, soft-root, or potato-root system, and I've found that with that type of seedling that once you lift them and plant them, survival is low; so we have to watch ourselves.

COMMENTS by Mr. Heltzel:

You might be interested in our experience with black walnut. We were also under the misconception of producing the seedlings, about 6 or 8 years ago. Because of the difficulty of lifting and then field survival, we went to stratifying and sowing in the field. We thought we had been getting along pretty good until this spring. We made a rather intensive check and found that we had lost between 85 percent and 90 percent of <u>all</u> of the seed sown over the past 3 to 4 years to the squirrels. With the demand for walnut, we are thinking of possibly going back to the seedlings again. Maybe fumigation will overcome our troubles this time.

COMMENTS by Mr. Brenneman:

My favorite system of stratifying yellow poplar hasn't been mentioned yet. We take an old wornout burlap sack, fill it with yellow poplar seed and dump it into our waterhole until we are ready to plant it. We usually leave it about 2 to 3 months.

COMMENTS by Mr. Darby:

We have been using the plastic bags for several years now and we not only stratify our hardwood but loblolly and all other seed we stratify. It works real well. The bags can be saved and used year after year. There is no work involved, no need to water once you put the seed in and seal them up. We have tried stratifying outside and in various type bags but we've had trouble with the bags deteriorating.