

Indiana's Program of Tree Seed Betterment

by

RICHARD RAMBO

Indiana Division of Forestry

Indianapolis, Indiana

PAST ACCOMPLISHMENTS

In 1960, the Indiana Division of Forestry became interested in starting seed production areas for obtaining seed of some of the hardwood species grown in the state nurseries of Indiana. During this year several young stands of yellow-poplar, northern red oak, and black walnut were selected on the Morgan-Monroe State Forest at Martinsville, Indiana.

In 1961, with the help of Gus Limstrom and Bryan Clark of the Central States Forest Experiment Station, the stands to become seed production areas were selected. At the same time, trees were selected in these stands to be retained for future seed production.

In the yellow-poplar stand, 14 very good looking trees were picked out to be retained for seed production. All other yellow-poplars in this stand were removed and all yellow-poplars around the remaining seed trees for a distance of 300 feet were removed during the winter of 1961-1962.

In the northern red oak stand, 20 very good looking trees were picked out for future seed production. All other red oaks were removed from the stand and for a distance of 300 feet on all sides of the remaining seed trees. This work was done during the winter of 1961-1962.

Trees in both the yellow-poplar and the northern red oak seed production areas were measured in 1962 and again in 1964. The growth of the yellow-poplar trees for the 2 years was good, ranging from 0.6 to 1.0 inch in diameter at breast height. The red oak, however, grew very little during this period.

In 1962, two black walnut seed production areas were set up at the Morgan-Monroe State Forest. One area was developed with native walnut trees which were growing among red pines in a plantation. The red pine plantation had been established in the 1930's by CCC labor. In this area, 14 very good young black walnut trees were selected for seed production.

Surrounding red pines and some of the other competing vegetation were cut to aid the seed trees. The other walnut seed production area came about as a result of a timber sale. Here, nine very good black walnut trees were left as seed producers.

In 1964, trees in each seed production area were paired off (mainly on the basis of diameter but away from each other). Half of the trees were fertilized and the other half were not. No effects of fertilizer can yet be seen on walnut and red oak seed production. In fact, the heaviest walnut seed producer (tree 14) was not fertilized. However, the next heaviest seed producer (tree 12) was fertilized. This fall it appears that the yellow-poplar seed trees which were fertilized have a much larger crop of fruit than the unfertilized ones. We can judge this better, however, as soon as the leaves have fallen or when the seed is harvested.

In 1963, we started planting black walnut for seed orchards. Tom Dearth started an area at the Jasper-Pulaski State Forest and Sherman Gee started a new seed orchard at the Morgan-Monroe State Forest. In 1965, Paul Shereda enlarged the black walnut seed orchard at Medaryville and Jim Waddell enlarged the orchard at Morgan-Monroe. Waddell also started a new walnut seed orchard on the Owen-Putnam State Forest. In 1966, Bill Willsey set out a large number of walnut seedlings at the Owen-Putnam State Forest and enlarged the seed orchard there considerably.

Black walnut seed used to produce the seedlings for Indiana's walnut seed orchards came mainly from the trees in Illinois, Indiana, and Ohio which Bryan Clark selected for study trees. These trees all have outstanding characteristics which should make them good parent trees. Seedlings from the study trees are being tested at the Salamonie River State Forest and in other areas outside of Indiana. The following tabulation shows the number of black walnut seedlings planted in each seed orchard:

Year	Jasper-Pulaski	Morgan-Monroe	Owen-Putnam
1963	104 spots—234 trees		
1964	125 spots—250 trees	49 spots—98 trees	
1965	111 spots—247 trees	49 spots—98 trees	148 spots— 296 trees
1966	66 spots—132 trees		502 spots—1004 trees
Total	406 spots—863 trees	98 spots—196 trees	550 spots—1300 trees

A grand total of 1054 spots (2 or 3 seedlings planted close together) or a total of 2359 black walnut seedlings have been planted in the various seed orchards.

Seedlings used in the seed orchards have come from 36 different parent trees. Twenty-six trees were study trees used by Bryan Clark in his work. Ten trees were non-study trees but all were trees with good characteristics located in Indiana.

FUTURE PLANS

The Indiana Division of Forestry will continue to maintain the seed production areas now in existence. This will be done by the following:

- (a) Keep out competing vegetation
- (b) Fertilize the seed trees
- (c) Top some of the yellow-poplars to make better orchard trees for seed collection

It is planned to put in more northern red oak seed production areas. Limstrom recommends this for obtaining oak seed.

We want to start additional seed orchards for walnut and to develop seed orchards for yellow-poplar. At the present time, we are cleaning apple trees off a 20-acre orchard near Mitchell, Indiana. Here we plan to start a new seed orchard of black walnut for southern Indiana.

The Indiana Division of Forestry would like to use some of the U. S. Forest Service land at Vallonia

to develop a seed orchard for yellow-poplar. We may need to enter into a cooperative agreement whereby we could develop together a seed orchard for walnut at Mitchell and a seed orchard for yellow-poplar at Vallonia.

We will also need to put in another seed orchard for black walnut in northern Indiana and to develop a seed orchard for yellow-poplar in northern Indiana. We think that the state of Indiana will eventually need 3000 bushels of unhulled walnuts and probably 600 bushels of yellow-poplar cones.

An in-service training meeting was held in early September at Bedford, Indiana. At that time, Extension foresters from Purdue, district rangers of the U. S. Forest Service, and property resident foresters of the Indiana Division of Forestry were trained on how to judge a tree to determine if it had characteristics good enough to become a candidate for a Superior Tree Rating. Tree geneticists from Purdue University, state and private forestry, and the national forests were in charge of the training.

It is hoped that Indiana's foresters, as a result of this training, will soon be sending in many reports of good trees from which 50 to 100 superior trees of both black walnut and yellow-poplar can be found. From these superior trees, it is hoped that we can obtain seed to permit us to go ahead at a much faster rate and raise seedlings for our future seed orchards.