

RED OAK PROPAGATION AT THE GRIFFITH STATE NURSERY, WISCONSIN RAPIDS, WISCONSIN

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Key Words

Bareroot nursery, 1+0 seedling, 2+0 seedling

PRODUCTION

Annual seedling goals at Griffith are approximately 1 million bareroot red oak seedlings. We sell both 1+0 and 2+0 seedlings. Red Oak has become a major species in our nurseries over the past 15 years. In 1986, statewide distribution of red oak was 325,000 (1% of state production). Of this, 76,000 were from Griffith. In 1999, red oak distribution hit 2.7 million (13% of total production). We have learned a lot in the past 15 years.

Current specifications for red oak at Griffith are as follows:

- 1+0: 6" top, 8" root, and 1/8" caliper
- 2+0: 10" top, 8" root and 3/16" caliper

SEED PROCUREMENT

Most of the northern red oak seed used at the Wisconsin State nurseries is purchased off the open market from the general public. In the fall of 1999, we paid \$30 per bushel. The price was increased from \$20 just this past year. We receive acorns at all three nurseries as well as at several satellite buying stations in various locations within the state. Most of the seed is hand picked, although some is now harvested with the Bag-O-Nut machines. We require only clean seed be delivered; no caps or other debris allowed. Our program has never tried storing red oak and depends on the current crop to reach seeding goals. Red oak collection time in Wisconsin runs from about September 15 to October 15. Once leaf drop occurs, most collection is over. If the seed crop is plentiful, we can usually reach our

purchase goals of 1,500 Bu statewide. The recent increased interest in direct seeding has resulted in higher demand, and therefore higher prices, for the available seed.

NURSERY CULTURING

Soil Preparation

Fields selected for growing red oak generally have a pH of 5.5 to 6.0 and an organic matter content of 3% to 3.5%.

In August the fields are fumigated with Basamid at a rate of 350 lbs/acre. The fields are disked and leveled within two weeks after fumigation. One to two weeks prior to seeding, the areas receive 150 lbs of 18-46-0, which is rototilled in to a depth of about 5 inches. This is the final preparation and areas are now ready to seed.

Seeding

All seeding is done in the fall between September 20 and October 20. We seed at a rate of 4 quarts per 48 sq ft bed. This equals about 600 to 700 seeds per bed (4 ft x 12 ft). Final desired bed densities are approximately 400 shippable seedlings, or about 8 per square foot.

Up until the fall of 1999, all of our red oak was hand seeded. Last fall we purchased a five-row hardwood seeder from Whitefield and have been very pleased with its performance after the initial season. It is easy to calibrate and feeds smoothly.

In the fall, shortly after seeding, we apply Goal herbicide at 2.5 pints per acre. The beds are then covered with a thin layer of Hydro-mulch and

guarded with a 12 gauge for squirrel predation. We normally have good snow cover from late November through the end of March.

Culturing in Year One

Germination occurs between May 5 and May 18 on the average. Fertilization begins within two weeks of germination, with 4 to 5 applications of fertilizer applied at two-week intervals. We apply 34-0-0 at 150 lbs per acre each time, in other words, approximately 250 lbs of available N per growing season. The first two applications are blended with 100 lbs per acre of 0-0-50 because our soils are generally low in K.

No herbicides are used, with the possible exception of Fusilade for grass control if needed. Generally crown closure occurs within four weeks of germination and the shade suppresses weed growth. Row cultivators are used in the alley-ways.

Every 10 to 15 days, a mixture of Benlate and Bravo is applied to control leaf diseases such as anthracnose. We also apply Pounce insecticide every 10 to 15 days for aphid and leaf hopper control.

No root culturing is done in the 1+0 stage. We have found that it sets back growth too much. We may top prune in September if top growth exceeds 17".

Irrigation if needed, is 1.5 inch per week.

The growing season at Griffith averages 140 days.

Culturing in Year Two

Fertilizer is reduced to 3 to 4 applications of 34-0-0 at 100 lbs per acre, which equates to 100 to 130 lbs of available N per year. No fungicide or insecticide during 2+0 year, and no chemical weed control is done at all during this year.

Roots are undercut at 7" to 8" right after the first flush occurs, which is early June. We use a stationary, very sharp V-blade mounted on wheels to undercut.

Irrigation occurs at a rate of 1.5" to 2" per week.

The 2+0 crop is top pruned at 16" to 17" in mid September and ready for spring lifting.

Rodent bait stations are scattered throughout both 1+0 and 2+0 oak fields throughout the growing season.

SUMMARY

Key ingredients for growing quality red oak in central Wisconsin include:

- pH 5.0 to 6.0,
- OM 3% to 4%,
- Good soil drainage,
- Application of 200 to 300 lbs of available N,
- Starting with good quality seed,
- Insect and disease control,
- Undercut 2+0 crop to promote lateral root development.