

Successes and Failures in Controlling Weeds in Hardwood Seedbeds at the Arkansas Forestry Commission Baucum Forest Nursery

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Fumigation with methyl bromide is essential in the production of hardwood seedlings in nurseries in the southern United States. However, the proposed rules under the 2008 U.S. Environmental Protection Agency (EPA) Risk Mitigation will further restrict the use of methyl bromide for nursery use.

The Arkansas Forestry Commission Baucum Forest Nursery in North Little Rock fumigates nursery seedbeds in the first year for hardwood crops. In 2008, hardwood species were grown on 12 ha (30 ac), of which 11 ha (28 ac) were treated with methyl bromide. The difference in weed growth between the treated and nontreated areas was significant.

Weed Control

Pre-Emergent

If fumigation with methyl bromide is not available, or becomes more restricted, use of pre-emergent herbicides becomes extremely important. At Baucum Nursery, Goal® 2XL is used for almost all hardwood crops, with the exception of some small-seeded species (for example, mulberry [*Morus* spp.]). Once germination begins, however, we have a 5- to 6-week window when no applications can occur because any treatment will stunt or kill germinating seedlings. During this time, it is necessary to use a “health squad,” or hand crews, to remove weeds as quickly as possible.

Post-Emergent

The number of herbicides that can be applied to broadleaf crop species is limited. The nursery has used GoalTender® over the top of a few species, including Nuttall oak (*Quercus nuttallii*), with very little damage. Use of this herbicide on other species of oaks, for example, Shumard oak (*Q. shumardii*), has resulted in significant damage to new top growth. Therefore, the decision must be made as to whether to use chemicals at a younger age or wait until the trees are larger.

When hardwood species begin to grow and achieve canopy closure on the seedbeds, weeds become less of a problem. At that point, weeds can be managed with a hand crew. Every day, the nursery runs a hand crew of seven to nine people with a supervisor. Because the nursery grows up to 12 ha (30 ac) of hardwoods annually, or 6 to 6.5 million seedlings comprised of 25 different species, weed control is extremely important.

Problems and Solutions

Nut grass (*Cyperus* spp.) is a problem weed at Baucum Nursery. The nursery has had success using hand mops with Roundup®. If the seedlings are small enough and the nut grass is tall, a wiper rig can be used over the top of the seedbeds.

Broadleafweed species, however, are the biggest challenge in the hardwood seedbeds. These species can be removed by costly hand weeding. The nursery has made several attempts at using shielded sprayers, and each sprayer has been a failure. The sprayers are successful for two to three beds, but usually break down at that point. In addition, the seedlings must be large enough to apply the herbicide under the crop foliage. If seedlings have attained this size,

it is usually unnecessary to apply herbicides because the foliage has covered the beds.

Nursery culturing has changed in an effort to lower herbicide use. Hardwood beds are now sown with five drills instead of the traditional four drills. The result is faster foliage cover on the beds, resulting in faster shading, less weeds, and less herbicide treatments. Although hand control is still done on a daily basis, the hardwood beds at the nursery remain fairly clean.