

TWO YEAR RESULTS USING AZAFENIDIN, SULFOMETURON, PENDIMETHALIN AND SIMAZINE ALONE AND IN COMBINATION ON TEN HARDWOOD TREE SEEDLINGS. John R. Seifert, Extension Forester, Department of Forestry and Natural Resources, Purdue University, Butlerville, IN 47223 and Dr. Keith Woeste, USDA Forest Service, Hardwood Tree Improvement and Regeneration Center, Purdue University, West Lafayette, IN 47907.

The study was established to evaluate the percent weed control and growth response of sulfometuron and azafenidin on nine hardwood species and one conifer species that were field planted as one year old seedlings.

Tree seedlings were planted on 5-15-00 with a machine planter. Herbicide applications were applied on 5-29-00 and 4-23-01 as a pre-bud break and 6-20-00 and 5-21-01 as a post-bud break treatment. Herbicide treatments were applied in 25 gallons of water with a plot sprayer.

Eighteen herbicide/combinations were applied to 10 tree species in a randomized complete block design with three replications and ten seedlings per species per plot. Test species were black cherry, black walnut, yellow poplar, red oak, white oak, flowering dogwood, northern bayberry, flowering crab, white ash and white pine.

Treatments were control, tilled, sulfometuron formulations at 0.75, 1.0, oz/ac; azafenidin at 2.5, 5.0, 7.5, 10, 20 oz/ac; simazine 4 qt/ac and pendimethalin 4 qt/ac. Also azafenidin was applied at 2.5 and 5.0 oz/ac with a tank mix each of sulfometuron at 0.50 and 0.75 oz/ac respectively. And finally azafenidin at 5.0 oz and sulfometuron at 1.0 oz were applied over the top of fully leafed trees. All application rates are expressed as product and not active ingredient. Treatment responses were evaluated 90 days after application as percent bare ground.

The following treatments exhibited at least 60 percent weed control after 90 days: azafenidin 5.0, 7.5, 10, and 20 oz of product per acre. Sulfometuron at 1.0 oz product per acre gave similar results. The treatments of simazine and pendimethalin gave 20 and 27 percent weed control after 90 days. Post application of azafenidin at 5.0 oz or sulfometuron at 1.0 oz did not control existing annual weeds. Yellowing, slowing of weed growth and seed head suppression was noted, but the injured weeds recovered within 3 weeks.

Seedling survival was not impacted the first or second year by any of the treatments. Survival ranged from 87 to 100 percent throughout all species.

Tree seedling growth was affected differently by treatments and treatment rates. An index of ground line diameter x total height was used in the ANOVA to determine growth response by treatment. A mean ranking was then determined. Listed below are the treatments in descending order of growth response for all species: azafenidin 5.0oz, tilled, azafenidin 10, 7.5, 20 oz, pendimethalin 4 qt, simazine 4 qt, azafenidin 2.5 oz, sulfometuron 0.75 oz, azafenidin 5.0 oz post leaf out, control, sulfometuron 1.0 oz post leaf out and sulfometuron 1.0 oz.

Within a treatment, individual tree species response was dependent on herbicide and rate. An examination of best growth response by species is listed below: white ash and flowering crab apple – azafenidin 20 oz, northern bay berry – simazine 4 qt, black cherry – azafenidin 10 oz, white pine and red oak – pendimethalin 4qt, black walnut, white oak, and yellow poplar – azafenidin 7.5 oz, and flowering dogwood azafenidin 2.5 oz.

