

Controlling Weeds Early is the Name of the Game for Longleaf Pine

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QUESTION OF INTEREST

What is the effectiveness of various herbicides on the survival and growth of newly planted longleaf pine seedlings in a former cotton field?

DATA FROM THE FIELD

Site conditions

Containerized longleaf pine seedlings were planted on an old-field site (previously planted to cotton) in December, 1999. The study area is located on the Tifton soil series (Plinthic Kandiudults) in Emanuel County, Georgia.

Herbicide treatment

On April 7, 2000, an over the top banded (4ft wide) application of Oust (2 oz/ac) + Velpar L (32 oz/ac) was applied to 8 of the 12 acre field as the operational treatment. On May 9, 2000, the other treatments (See Table 1 in the Full document for specific information) were applied to the remaining four acres.

Measurements

The following measurements were recorded:

1. Seedling survival
 - a. Number of seedlings alive after each growing season
 - b. Recorded for three years
 - c. Expressed as a percentage
2. Seedlings out of the grass stage
 - a. Number of seedlings reaching second stage of growth
 - b. Expressed as a percentage
3. Height of seedlings out of the grass stage
 - a. Demonstrates seedling vigor
 - b. Expressed in feet of growth

RESULTS

Survival

First year survival was the most dramatic result found in this study. The Oust+Velpar treatment applied in April had a survival rate of 90 percent the first year. This is a significant increase when compared to all other treatment combinations (applied in May) that had an average

survival rate of 40 to 64 percent. What is most important is that this **treatment timing effect** continued for the three year study period.

Growth

The percentage of trees that had matured out of the grass stage and entered into “rocket stage” was significantly higher in the Oust+Velpar treatment applied in April (80 percent) compared to all other treatments applied in May (30-55 percent). The mean total height of all trees out of the grass stage was also significantly higher for the April Oust+Velpar treatment (3.95 feet) compared to the herbicide treatments applied in May (2.04-3.50 feet).

APPLYING THE RESULTS

The results from this study indicate that timing of the herbicide application is vital for successful establishment of longleaf pine on old-fields. Early herbaceous weed control appears to be especially critical when droughty conditions occur in late April, May, and into mid June. In May 2000, the rainfall was only 5 percent (0.21 inches) of the 50 year average for that month, and the application of Oust+Velpar in early April of 2000 appears to have allowed more competition control during that critical dry spell. Control of the competition early, prior to the onset of droughty conditions, may have enabled those trees to obtain enough soil moisture to survive during the extended droughty conditions.

Successful longleaf pine establishment can be much more difficult and generally more costly on old-fields and pastures than loblolly or slash pine. Applying herbicide in April to control herbaceous weeds can save money and increase seedling growth. Here are the numbers to prove it:

With a 90% survival rate at the end of the 1st growing season, the total savings = \$97.50/ac; plus the value-added benefit of the additional height and diameter growth of the surviving seedlings.

Savings generated by not replanting (seedlings + labor):

250 containerized longleaf seedlings (\$150 per 1000 seedlings) + labor to replant (\$0.10/seedling) = **\$62.50/ac**

Savings generated by not applying 2nd round of herbicide:

Herbicide + application fee = **\$35/ac**

WHAT YOU SHOULD CONSIDER

If you want to grow longleaf pine in an area where:

1. April and May historically have low rainfall (i.e. Statesboro, Swainsboro, and Vidalia, Georgia)
2. The site is a old-field with moderately well to excessively well drained soil; and
3. The investment costs of additional seedlings and labor is not desired;

You should strongly consider applying the appropriate herbicides no later than the first week of April, and before the end of March to control herbaceous weeds that compete with the seedlings for water, light, and growing space.

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CITATION

K. M. Irwin, B. C. McElvany, E. D. Dickens, and P. R. Torrance. 2005. Controlling weeds early is the name of the game for longleaf pine. Georgia Forest Productivity Series No. 002S-05. www.bugwood.org/productivity. 3 p

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