Longleaf Pine

Pinus palustris Mill.

Planting Density Fact Sheet

Purpose

The purpose of this fact sheet is to provide a general overview of the advantages and disadvantages of different planting densities. Spacing varies greatly depending on the landowners objectives and so do the benefits and outcomes from the density of the stand.

Objectives

Longleaf pine is planted to achieve many different objectives and often multiple objectives are desired. Objectives range from wildlife habitat, quality timber, pine straw production, restoration of the longleaf ecosystem, silvopasture and more.

Density

The spacing between rows and the spacing between trees in the row will ultimately determine density. Below are some common tree spacing combinations:

In row	Row spacing	Trees/ac
10	10	436
8	12	454
8	10	545
6	12	605
7	10	622
8	8	681
6	10	726
5	10	871
6	8	907

Restored longleaf pine forests provide habitat for many native plants and animals, as well as opportunities for wildlife associated recreation.

Frequent prescribed burning is essential for longleaf pine management and ground cover restoration.

Row Spacing

After determining optimal density, consideration must be given to providing access to equipment for future management and harvest. Space between rows should provide long-term access for maintenance equipment such as tractors and harvesting equipment for future thinnings. Discuss spacing with your local forester(s).

Survival

It is important to note that longleaf survival is often low, especially during dry winters or on agricultural sites with heavy grass competition. Planting at higher initial densities may eliminate the need to augment the site with additional seedlings the following year.

Recommendations

A planting density of 545-605 seedlings/acre is appropriate for multiple resource objectives (timber and wildlife). When wildlife habitat is the only objective, planting at densities as low as 400 seedlings/acre is an option, but frequent prescribed burning should be applied to promote self-pruning of lower branches.

To account for potential poor survival, it is recommended that landowners plant a minimum of 436 seedlings/acre. Landowners should be advised that timber revenue may be greatly impacted by low density planting. When timber and/or pine straw production are the primary objectives, planting at higher densities of 600-900 seedlings per acre is appropriate.

Wide Planting	
Advantages	**Disadvantages**
Savanna appearance is pleasing to many Potential for extending wildlife habitat value in the early years of stand development Higher potential for silvopasture or woodland grazing	Greater need for controlling invading brush and trees Reduced income potential from thinning Seedling mortality may result in plantation failure, little margin for error Reduced potential for high value timber products such as poles Reduced potential for pine straw production Fewer future management options
Close Planting	
Less need for controlling invading brush and trees for a short time during management cycle Increased income potential from thinning Increased value of timber products such as poles Increased potential for pine straw production Hedge against unexpected seedling mortality Provides maximum management options in meeting multiple resource objectives	Not as aesthetically pleasing to many compared to a savanna Need for management (thinning) to maintain optimum habitat Less potential for silvopasture or woods grazing

For more information about Forest and Wildlife Management see: http://sref.info/. Click on your state and then Forestry and Wildlife Extension, Publications. Also see: Longleaf Partnership Council White Paper, “Longleaf Pine Planting Density”, revised December 2016 and www.americaslongleaf.org

Establishing and managing longleaf stands to maintain an open forest canopy, coupled with frequent fire, creates a savanna-like appearance that is pleasing to many. This appearance is best achieved by planting at higher densities and subsequently thinning to obtain a wider final spacing.