LONG-TERM RECORDS OF SOUTHERN PINE DYNAMICS IN EVEN-AGED STANDS

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The timber management research work unit of the U.S. Department of Agriculture Forest Service in Pineville, LA (SRS-4111) oversees many long-term studies in stand dynamics; we summarize current studies in table 1. We remeasure > 700 plots established in even-aged stands of southern pines at approximately 5-year intervals; some plots have measurements spanning > 50 years (table 1). These plots largely came from silvicultural studies investigating the effects of establishment methods, initial spacing, and subsequent thinning. There are studies in loblolly (*Pinus taeda* L.), longleaf (*P. palustris* Mill.), slash (*P. elliottii* Engelm.), and shortleaf (*P. echinata* Mill.) pine. The majority of the studies are in artificially regenerated stands; however, one study examines thinning in naturally regenerated loblolly pine. Fertilization, prescribed burning, pruning, and other silvicultural practices were tested in some of the studies; in other cases, the specific silvicultural practices varied across studies, reflecting local practices. While some studies reflect practices that are rarely applied now, such as direct seeding of southern pines, they provide a rare and valuable historic database. Data from these studies provide a point of comparison for current practices from a wide range of conditions that is biologically interesting, such as natural thinning in very dense stands. Long-term records available for plantations > 60 years old are particularly noteworthy. While most of our data reflect artificial regeneration practices of 20 to 70 years ago, we are revitalizing our long-term database with the addition of new plots in young, operationally established plantations with the cooperation of public and private forest land managers. Our data continue to be available to interested cooperators.

Table 1—Studies in growth and yield of even-aged pine stands that are maintained by SRS-4111

Emphasis of study	Species (pine)	Regeneration technique	Year of stand origin	Current plots[a]	Study number
Fire, spacing, pruning, thinning	Longleaf	Planted	1935	32	2.03
Fire, spacing, pruning, thinning	Longleaf	Planted	1935	64	3.02
Thinning, fertilization, clover, forage production	Longleaf	Planted	1952	24	2.29
Thinning	Longleaf	Planted	1945	18	3.12
Thinning	Longleaf	Planted	1940 – 1941	42	3.13
Effect of site on growth of unthinned plantations	Longleaf	Planted	1940 – 1958	47	3.29
Thinning, initially site preparation	Loblolly	Planted	1970 – 1973	17	2.21
Thinning, pruning, (sudden sawlog)	Loblolly	Planted	1944	12	4.1
Spacing and thinning	Loblolly	Planted	1952	88	3.22
Spacing and site effects on growth of unthinned plantations	Loblolly	Planted	1928 – 1968	16	3.30
Thinning, site preparation	Loblolly, slash	Planted	1964	24	5.12
Compare row and selective thinning	Slash, loblolly	Planted	1953 – 1960	7	3.33
Thinning	Slash	Planted	1941	36	3.05
Thinning	Slash	Planted	1948	38	3.06
Thinning	Slash	Planted	1948 – 1950	40	3.14

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Table 1—Studies in growth and yield of even-aged pine stands that are maintained by SRS-4111 (cont.)

Emphasis of study	Species (pine)	Regeneration technique	Year of stand origin	Current plots[a]	Study number
Spacing, thinning	Slash	Planted	1977	31	3.34
Spacing	Loblolly	Seeded	1971	28	3.23
Spacing	Loblolly	Seeded	1971	28	3.25
Spacing	Slash, loblolly, longleaf	Seeded	1965	54	3.15
Spacing	Slash	Seeded	1968	18	3.19
Spacing	Slash	Seeded	1962	7	3.10
Precommercial thinning	Longleaf	Seeded	1961 – 1962	24	3.20
Precommercial thinning	Longleaf	Seeded	1965	15	3.31
Precommercial thinning	Slash loblolly, longleaf	Seeded	1987	24	2.37
Precommercial thinning	Loblolly	Seeded	1964	18	3.18
Precommercial thinning	Loblolly	Seeded	1966	15	3.21
Precommercial thinning	Loblolly	Seeded	1958	26	3.07
Precommercial thinning	Slash	Seeded	1964	18	3.17
Precommercial thinning	Slash	Seeded	1968	18	3.24
Current management practices of broad range of owners	Longleaf loblolly, slash	Planted	1990+	Plots being added	OPS
Thinning, growing space study	Loblolly	Natural	1861 – 1949	59	NEAL
Choice of species, soil-site evaluation	Loblolly, longleaf, slash, shortleaf	Planted	Mid 1950s	< 135	1.1

[a] Current number of plots may be much fewer than initial numbers due to attrition.