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A Regional Framework of Early Growth Response for Loblolly Pine Relative to Herbaceous, Woody, and Complete Competition Control: The COMProject

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SUMMARY

A common study design has been installed at 13 locations throughout the Southeastern United States to track the growth of loblolly pine (*Pinus taeda* L.) plantations established with four different competition control treatments: no control (only chopping-burning), woody control for 5 years, herbaceous control for 4 years, and total control after site preparation. This regionwide investigation is known as the Competition Omission Monitoring Project, a coordinated study with the Auburn University Silvicultural Herbicide Cooperative (Study HB-4F). Data summaries for each location are presented for loblolly pine growth and competition intensities for the first 8 years. Approximately 10,000 loblolly pine seedlings have been measured annually. Responses from this network of studies should be useful in assessing and reporting relative growth of loblolly pines for other studies and operational plantings. These data sets should also be useful for future forest growth modeling efforts.

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INTRODUCTION

Numerous studies have been established during the past 20 years to examine the influence of herbaceous and woody vegetation on the growth of loblolly pine (*Pinus taeda* L.) across the Southeastern United States. However, few studies can be compared due to differences in site growth potential, treatment timing and duration, experimental design, and pine density, to list a few. Researchers in forest vegetation management need a logical context wherein crop-tree growth at various sites can be compared to levels of competition or to a maximum potential growth response. To assist in developing this comparison network, a group of investigators established a regionwide study to determine the standard growth response of loblolly pine to four competition situations (Miller and others 1987, 1991). The four treatments, or competition situations, are as follows:

1. **No control**, with a mixture of woody and herbaceous competitors;
2. **Woody control**, leaving herbaceous competitors;
3. **Herbaceous control**, leaving woody competitors; and
4. **Total control**, devoid of all competition.

In this simple framework, arborescent hardwoods and nonarborescent shrubs are combined as woody competition; forbs, grasses, vines, and semiwoody (e.g., blackberry) vegetation comprise the herbaceous component.

The four treatments used in this study are "extremes" because each focuses specifically on complete component or complete competition control compared to no control. These four treatments encompass the full range of competition conditions that are common to young loblolly pine plantations. Partial competition control treatments, which are used in operating plan-

tations, lie among these extremes. The growth response to partial control can be gauged relative to the results of these extreme treatments reported here. This comparative gauging should be most useful in research reporting of partial control treatments.

One objective of the Competition Omission Monitoring Project (COMProject or COMP) investigation is to establish a network of growth responses for loblolly pines when these four treatments are used on major soil types across the region. The other objectives of COMP are to compare the relative importance of herbaceous vs. woody competition as they affect the growth of loblolly pines on the wide range of sites across the region, to identify the major herbaceous and woody competitors and document early succession, and to study the interaction of competition and pine growth on insect and disease infection. These last three objectives have been or will be addressed in other reports from this research group (Miller and others 1987, 1991, 1995).

Mean pine growth response and competition response by treatment that has occurred at 13 plantation locations are presented in this report. For those readers interested in treatment comparisons and the errors associated with treatments, please refer to the other papers in this series or contact the authors (Miller and others 1987, 1991; Zutter and others, in press).

METHODS

Study Sites

A common study design was used at 13 plantation sites across four physiographic provinces—the Lower, Middle, and Hilly Coastal Plains and Piedmont—in

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Alabama, Arkansas, Georgia, Louisiana, Mississippi, Tennessee, and Virginia (table 1; fig. 1). Prior to plot establishment, pine plantations or mixed pine-hardwood stands were harvested in late 1982 or in 1983. Site preparation was by roller-drum chopping and prescribed burning at 10 study locations. A shear, pile, and burn method was used at Counce, Tennessee, which resulted in some topsoil removal and displacement into the windrows. A complete harvest of fuelwood and pines was used at Atmore, Alabama; the Lower Coastal Plain site near Pembroke, Georgia, was simply rebedded after a wildfire destroyed a young plantation that had been previously windrowed. A naturally regenerated plantation site has also been established using these treatments and is reported elsewhere (Cain 1991).

To characterize the soils at each location, USDA Soil Conservation Service soil surveyors or forest industry soil surveyors examined each site (table 1). To further characterize the soils, samples were collected at each location in April 1984. From each plot, 20 soil-

tube samples were extracted from three depths: 0 to 6, 6 to 12, and 12 to 24 inches. For each plot, samples were combined by depth, thoroughly mixed, and stored in a cold room until analysis. Samples were then air-dried and crushed to pass through an 80-mesh sieve. Duplicate samples were analyzed for available phosphorus (P), calcium (Ca), magnesium (Mg), and potassium (K) after extraction with a Mehlich I solution (Mehlich 1953). Organic matter determinations were according to Jackson (1958), and pH determinations used a 1:1 soil-to-water mixture and a pH meter. Soil texture was determined by the hydrometer method. A summary of the results of these analyses is presented in table 2.

Plot Layout

Four blocks of 4 plots each were established at 11 of the 13 locations using a factorial, randomized, complete-block design. At Pembroke, Georgia, a fifth block

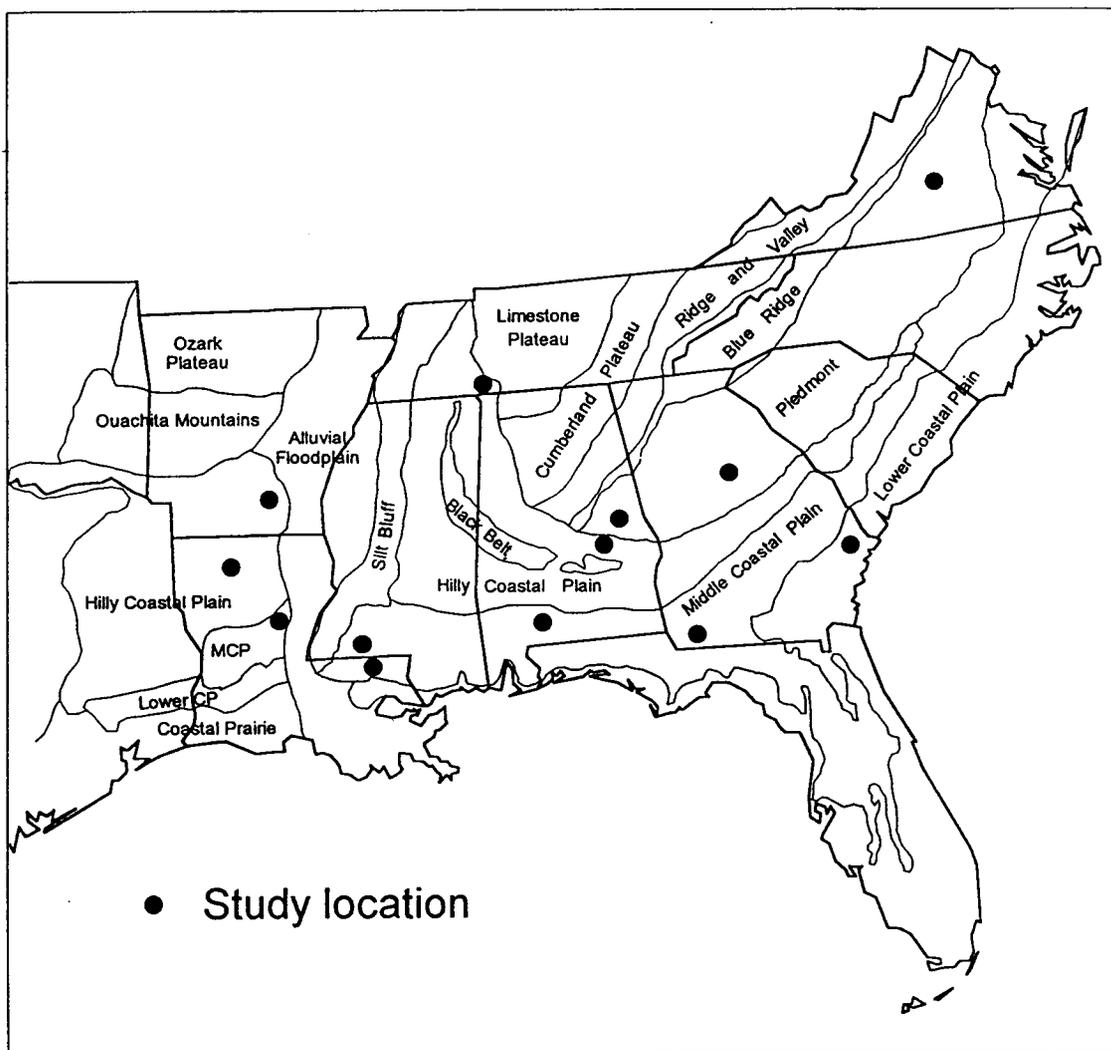


Figure 1.—COMP plantation study locations relative to physiographic provinces.

Table 1.--Description of study sites

Location	Soil series	Soil classification	Site index*	Previous stand	Harvest	Site preparation	Regeneration
Flatwoods Coastal Plain Pembroke, GA Lat. 32°11'N. Long. 81°34'W.	Mascotte Pelham	Sandy, siliceous, Thermic Ultic Haplaquods Loamy, siliceous, Thermic Arenic Paleaquults	65	6-year-old slash pine plantation Burned by wildfire	N/A	Rebedded 1983	Machine planted 7 by 11 ft Winter 1983-84
Middle Coastal Plain Bainbridge, GA Lat. 30°51'N. Long. 84°35'W.	Orangeburg Esto	Fine-loamy, siliceous, Thermic Typic Kandiodults Clayey, kaolinitic, Thermic Typic Kandiodults	88	Mixed loblolly/shortleaf pine - hardwood	Winter 1982-83	KG blade, chop & burn June 1983	Hand planted 9 by 9 ft Jan. 1984
Liberty, MS Lat. 31°90'N. Long. 90°50'W.	Cahaba Ariel	Fine-loamy, siliceous, Thermic Typic Hapludults Coarse-silty, mixed Thermic Fluvenic Dystrachrepts	77	Mixed loblolly/shortleaf pine-hardwood	April 1983	Chop & burn Summer 1983	Hand planted 9 by 9 ft Feb. 1984
Atmore, AL Lat. 31°90'N. Long. 86°44'W.	Orangeburg	Fine-loamy, siliceous, Thermic Typic Kandiodults	59	Slash pine plantation with hardwoods	Sept. 1983	Whole-tree chipped at harvest	Hand planted 9 by 9 ft April 1984
Liverpool, LA Lat. 30°49'N. Long. 90°47'W.	Tangi	Fine-silty, siliceous, Thermic Typic Fragiudults	63	Naturally regenerated loblolly pine-hardwood	Winter-Summer 1983	Chop & burn Summer 1983	Hand planted 9 by 9 ft Feb. 1984
Jena, LA Lat. 31°40'N. Long. 92°50'W.	Ruston	Fine-loamy, siliceous, Thermic Typic Paleudults	75	Mixed pine-hardwood	Fall 1983	Chop & burn Summer 1983	Hand planted 9 by 9 ft Jan. 1984
Hilly Coastal Plain Tallassee, AL Lat. 32°26'N. Long. 85°55'W.	Cowarts	Fine-loamy, siliceous, Thermic Typic Kanhapludults	56	Loblolly pine plantation	Spring 1983	Chop & burn Late spring - early summer 1983	Hand planted 9 by 9 ft Jan. 1984
Warren, AR Lat. 33°37'N. Long. 92°51'W.	Saffell Stough	Loamy-skeletal, siliceous, Thermic Typic Hapludults Coarse-loamy, siliceous, Thermic Fragiatic Paleudults	62	Mixed loblolly/shortleaf pine-hardwood	June 1983	Chop & burn Summer 1983	Hand planted 9 by 9 ft Feb. 1984
Counce, TN Lat. 35°11'N. Long. 88°91'W.	Silerton	Fine-silty, mixed, Thermic Typic Hapludults	58	Natural mixed pine-hardwood	Winter 1982-83	Shear, pile & burn windrows August 1983	Hand planted 9 by 9 ft April 1984
Arcadia, LA Lat. 32°39'N. Long. 92°55'W.	Sacul	Clayey, mixed, Thermic Aquic Hapludults	55	Natural loblolly pine-hardwood	1983	Chop & burn Summer 1984	Machine planted 7 by 10 ft Jan. 1985
Piedmont Camp Hill, AL Lat. 32°48'N. Long. 85°31'W.	Cecil Pacolet	Clayey, kaolinitic, Thermic Typic Kanhapludults Clayey, kaolinitic, Thermic Typic Kanhapludults	65	Natural mixed pine-hardwood	Spring 1983	Chop & burn Spring 1983	Hand planted 9 by 9 ft Jan. 1984
Monticello, GA Lat. 33°17'N. Long. 83°41'W.	Davidson	Clayey, kaolinitic, Thermic Rhodic Kandiodults	79	Natural mixed pine-hardwood	Oct. 1982	Chop & burn Summer 1983	Hand planted 9 by 9 ft Feb. 1984
Appomattox, VA Lat. 37°20'N. Long. 78°48'W.	Cecil Cullen Iredell	Clayey, kaolinitic, Thermic Typic Kanhapludults Clayey, mixed, Thermic Typic Hapludults Fine, montmorillonitic, Thermic Typic Hapludults	50	Natural mixed pine-hardwood	June 1983	Chop & burn Summer 1983	Hand planted 9 by 9 ft Feb. 1984

* Determined from 9th year height on no control treatments and Burkhardt and others (1987) curves for site index at 25 years.

Table 2.--Soil properties for the three sample depths at each study location

Depth in inches	Ca	Mg	K	P	pH	OM*	Sand	Silt	Clay	Texture class
	-----Parts per million-----					-----Percent-----				
Pembroke, GA										
0-6	65	14	14	0.4	4.3	3.1	88	6	6	Sand
6-12	43	8	8	.3	4.5	2.1	88	6	5	Sand
12-24	41	7	7	.3	4.6	1.7	88	6	6	Sand
Bainbridge, GA										
0-6	375	69	31	.9	5.8	1.0	86	5	9	Loamy sand
6-12	270	130	32	.2	5.5	1.2	81	4	15	Sandy loam
12-24	332	139	25	.2	5.4	0.7	78	2	20	Sandy loam
Liberty, MS										
0-6	384	52	50	1.4	5.8	2.0	75	20	5	Loamy sand
6-12	172	37	31	.4	5.5	0.7	65	24	11	Sandy loam
12-24	231	54	22	.3	5.4	0.4	65	23	12	Sandy loam
Atmore, AL										
0-6	146	34	19	.1	5.3	2.1	70	14	16	Sandy loam
6-12	175	50	17	.0	5.4	1.5	64	14	22	Sandy clay loam
12-24	182	72	16	.0	5.4	0.9	57	13	30	Sandy clay loam
Liverpool, LA										
0-6	232	60	39	.3	5.2	3.0	39	49	12	Loam
6-12	218	65	38	.2	5.2	2.4	37	51	12	Silty loam
12-24	89	231	30	.1	5.2	0.7	33	41	25	Loam
Jena, LA										
0-6	487	75	45	.4	5.3	2.7	55	34	11	Sandy loam
6-12	375	158	36	.1	5.2	1.3	48	32	20	Loam
12-24	396	248	32	.0	5.1	0.8	45	28	27	Loam
Tallassee, AL										
0-6	124	17	17	1.8	5.2	1.3	83	11	6	Loamy sand
6-12	144	20	17	.8	5.4	0.9	77	13	10	Sandy loam
12-24	124	22	16	.4	5.1	0.6	73	12	15	Sandy loam
Warren, AR										
0-6	909	191	72	2.2	5.7	3.7	59	30	11	Sandy loam
6-12	520	169	50	1.0	5.2	2.2	59	28	12	Sandy loam
12-24	427	222	44	.8	5.0	1.6	55	27	19	Sandy loam
Counce, TN										
0-6	95	65	39	.1	4.9	2.2	9	54	37	Silty clay loam
6-12	103	87	42	.1	4.9	1.3	6	53	41	Silty clay
12-24	95	130	40	.1	4.9	0.9	9	49	42	Silty clay
Arcadia, LA										
0-6	-- ¹	--	--	--	4.9	2.4	56	31	13	Sandy loam
6-12	--	--	--	--	4.6	1.5	52	30	18	Sandy loam
12-24	--	--	--	--	4.4	1.1	47	28	25	Loam
Camp Hill, AL										
0-6	287	41	44	.4	5.4	2.1	72	17	11	Sandy loam
6-12	153	43	29	.1	5.3	1.0	65	16	19	Sandy loam
12-24	180	63	28	.0	5.3	0.6	57	15	28	Sandy clay loam
Monticello, GA										
0-6	808	143	82	1.1	5.8	3.6	64	20	16	Sandy loam
6-12	413	129	65	.1	5.5	1.4	54	21	25	Sandy clay loam
12-24	471	171	61	.1	5.5	0.9	45	20	35	Sandy clay
Appomattox, VA										
0-6	468	62	63	.8	4.9	3.8	42	34	24	Loam
6-12	266	87	63	.2	4.7	1.2	34	28	38	Clay loam
12-24	322	130	75	.1	4.8	1.4	30	24	46	Clay

*OM=organic matter

¹Measurement of these soil properties not made at this location.

was included, and at Bainbridge, Georgia, a completely randomized design was used. Treatment plots were generally 0.25 acre in size, and interior measurement plots were 0.09 acre. Precisely measured planting spots on a 9- by 9-ft spacing were used at all but the machine-planted locations at Pembroke, Georgia, and Arcadia, Louisiana (table 1). This spacing resulted in 538 trees per acre (565 and 622 trees per acre at the machine-planted locations), with 49 measurement pines in the interior plots and 2 border rows surrounding the measurement plots.

At most sites, two regraded 1-0 loblolly pine seedlings were planted at each spot, 10 to 12 inches apart. Either genetically improved or Livingston Parish, Louisiana, seedlings were used. After the first growing season, double-planted seedlings were thinned to one per spot using randomly generated codes to maintain the original population characteristics. Double planting was used to minimize variations in initial survival and the resulting long-term variation that occurs with unequal stocking. Only single seedlings were planted at Pembroke, Georgia, Arcadia, Louisiana, and Liberty, Mississippi, where adequate survival resulted in stocking levels comparable to the other locations. Measurement trees were permanently tagged. Volunteer pines were repeatedly removed from all locations except Appomattox, Virginia, where Virginia pine (*Pinus virginiana* Mill.) was left on woody competition plots because it is considered to be a common woody competitor in that area.

Establishment of Competition Situations

Four treatments, or competition situations, were established and maintained as follows:

No Control Resulting in Mixed Herbaceous-Woody Competition.—After initial site preparation, no further treatments were applied except for tree injection of scattered, large, residual hardwoods using triclopyr (Garlon®).

Woody Control Only Resulting in Herbaceous Competition.—Both foliar and basal sprays, as well as basal wipes, were used to control hardwoods and shrubs during the first 5 years. A single preplant and multiple postplant applications per year were made, usually with directed sprays of glyphosate (Roundup®), triclopyr, and picloram (Tordon®) or basal wipes of triclopyr and diesel fuel. After planting, only herbicides with no soil activity were used to minimize any potential damage to herbaceous plants and measurement pines.

Herbaceous Control Only Resulting in Woody Competition.—Preemergent applications of sulfometuron (Oust® at 3 to 6 oz/acre) were applied annually for the first 4 years to control forbs and grasses. The most effective rate, having the least pine toxicity, was

determined through screening trials on nearby sites at most locations during the year prior to establishment. After the first year, either glyphosate (Roundup at 18 oz/acre) or oxyfluorfen (Goal® at 0.6 gal/acre) were commonly added to the tank mix with sulfometuron. One to five times during a growing season, shielded, directed sprays of glyphosate (a Roundup 2-percent solution) were applied to perennial grasses, resistant forbs, and vines. At Bainbridge, Georgia, sethoxydim (Poast® or Vantage®) was broadcast sprayed for grass control in the second year.

Total Control Resulting in Elimination of All Competition.—A combination of the treatments discussed above were used to control both woody and herbaceous competition.

Complete eradication of woody or herbaceous components was rarely achieved, especially in the first and second years. But significant reductions were made, and desired competition situations were obtained, with persistent applications at most locations. Herbaceous control treatments were applied for 4 years, whereas control levels persisted for several more years, even to year 8 on some sites. Woody control treatments were applied for 5 years, although the completeness and duration of control varied by location. Minimal crop-pine damage was observed with these treatments.

Measurements and Analyses

Pine size was determined immediately after planting by randomly selecting 100 seedlings (50 at Appomattox, Virginia) and measuring groundline diameter and height for each. Seedling pines were then measured annually in the dormant season for total height (nearest 0.1 ft) for years 1 through 8, and height-to-live-crown was measured in years 5 through 8. The height-to-live-crown was measured along the bole to the first branch with live foliage. Groundline diameters were measured in years 1 through 5, diameters at 6-inch height were measured in years 2 through 5, and diameters at breast height (d.b.h.'s) were measured in years 3 through 8—all to the nearest 0.1 inch. Stocking records of surviving trees were maintained for the first 8 years. Approximately 10,000 pine seedlings were measured annually.

Basal area was calculated by summing the stem area at breast height for all surviving trees. An individual tree volume index for years 3 through 8 was estimated using $(d.b.h.^2/144 \times \text{height})/3$ —a modified conical projection—and summed for all surviving trees. Basal area and tree volume indices were expanded to an acre basis by multiplying by the appropriate expansion factor for the measurement plot.

Within each interior measurement plot, three 9- by 18-ft sample plots were systematically established,

with the corners at pine planting spots—a 0.01-acre sample per 0.09-acre measurement plot yielding a 12-percent sample. Annually in September of years 1 through 5 and in year 8, all woody rootstocks taller than 0.5 ft were recorded by species (genus for some shrubs) and height class. Rootstocks were those judged to originate from the same central root system with one or more stems. Height classes were delineated by 1-ft intervals up to 12 ft and then by 5-ft intervals. In years 5 and 8, all arborescent hardwood rootstocks exceeding 5 ft in height within the measurement plots were counted, and d.b.h.'s were measured, yielding a basal area estimate.

For cover estimates, the three 9- by 18-ft sample plots were halved to yield six 9- by 9-ft subplots per measurement plot. Annually in September for years 1 through 8, cover was visually estimated within each subplot for the herbaceous life-forms and for any “no cover” that lacked any vegetation above the area. The herbaceous life-forms were as follows: grasses and grasslike plants, forbs, vines, and semiwoody plants (e.g., blackberries and dewberries, *Rubus* spp., and St. John's wort, *Hypericum* spp.). Starting in year 2, estimates were added for “total woody cover” and for “planted pine” cover. All cover estimates were grouped into one of the following percentage classes (range): 0, 2 (1 to 5), 10 (6 to 15), 20 (16 to 25), 30 (26 to 35), 40 (36 to 45), 50 (46 to 55), 60 (56 to 65), 70 (66 to 75), 80 (76 to 85), 90 (86 to 95), 97 (96 to 99), and 100. This grouping permitted the more accurate cover estimates that can be made at the extremes.

RESULTS AND DISCUSSION

Initial seedling sizes are presented in table 3. The COMP growth response values presented in tables 4 through 16 represent biological standards for loblolly pine on these specific soil-sites, relative to their competition levels that are presented in tables 17 through 42. Greater levels of herbaceous control were evident in the spring and early summer immediately after broadcast herbicide applications. To assist future modeling efforts, table 43 presents mean total height of

the tallest 100, 200, 300, and 400 pines per acre by treatment for each location at year 8.

Sizes and growth increments of pines grown completely in the absence of competition (total control) approach as absolute a value as there is in forest vegetation management relating pine growth to site productivity. Less absolute because of varying levels of herbaceous competition, but a useful benchmark, are growth-response values on plots with woody control. The pine growth with the other two treatments—no control and herbaceous control—provide an estimate of pine-growth loss relative to these “benchmarks” from given densities of hardwoods on the sites.

Studies of pine growth with herbaceous control on similar soil sites can be compared to growth results from total control and woody control (maximum herbaceous cover with no woody plants) for any period between years 1 and 8. Either actual or relative growth increases can be used for making comparisons with other plantings. Volume index is the best integrating value for comparisons, but heights and diameters can also be used. It is recognized that diameters respond more, proportionally, to competition control than heights do, whereas heights can even be increased by severe woody competition (Miller and others 1991). The large numbers of plots and trees in this study result in small sampling error for the means. In effect, researchers using data from a smaller trial for comparisons could often assume that the values reported are “true” values and could test for differences using the trial data errors alone.

For comparison of woody control treatments or herbicide treatments that control both woody and herbaceous plants, comparisons with the total control would be best for judging the pine-growth response relative to a potential response with no competitors. For comparing plantings and plots where spacing is other than 538 trees per acre, the average individual tree-growth response may be used for the first few years. The average tree response can be obtained by dividing the volume index per acre by the stocking. The proportional gain on COMP sites can also be used to judge pine-growth response for other forest cultural treatments (e.g., disking, subsoiling, fertilization, etc.) from similar sites.

Table 3.--Initial pine groundline diameter and height at each location

Location	Groundline diameter		Height	
	Mean*	Std deviation*	Mean*	Std deviation*
	-----Inches-----		-----Feet-----	
Pembroke, GA	0.11	0.03	0.67	0.14
Bainbridge, GA	0.12	0.02	0.52	0.13
Liberty, MS	0.12	0.05	0.69	0.15
Atmore, AL	0.12	0.03	0.59	0.18
Liverpool, LA	0.10	0.02	0.47	0.12
Jena, LA	0.14	0.03	0.61	0.11
Tallassee, AL	0.14	0.03	0.48	0.16
Warren, AR	0.14	0.03	0.60	0.18
Counce, TN	0.17	0.04	0.55	0.14
Arcadia, LA	0.16	0.04	0.60	0.20
Camp Hill, AL	0.12	0.03	0.61	0.15
Monticello, GA	0.11	0.03	0.46	0.11
Appomattox, VA	0.11	0.02	0.40	0.13

*Means and standard deviations based on 100 seedlings (50 seedlings at Appomattox, Virginia) randomly selected across all plots at a given location.

Table 4.--Pembroke, Georgia: pine growth response values for the first 8 years

Measure and treatment	Year							
	1	2	3	4	5	6	7	8
----- Inches -----								
Groundline diameter								
No control	0.3	1.0	1.5	2.2	2.9	--*	--	--
Woody control	0.4	1.2	1.8	2.8	3.7	--	--	--
Herb control	0.6	2.1	3.0	4.0	4.8	--	--	--
Total control	0.6	2.4	3.4	4.6	5.3	--	--	--
Diameter at 6-inches								
No control	--	0.7	1.3	1.9	2.6	--	--	--
Woody control	--	0.9	1.6	2.4	3.3	--	--	--
Herb control	--	1.7	2.7	3.6	4.3	--	--	--
Total control	--	2.0	3.1	4.0	4.8	--	--	--
Diameter at breast height								
No control	--	--	0.5	1.1	1.7	2.4	2.8	3.5
Woody control	--	--	0.7	1.6	2.4	3.3	3.7	4.5
Herb control	--	--	1.5	2.5	3.2	3.9	4.1	4.7
Total control	--	--	1.7	2.7	3.6	4.3	4.5	5.1
----- Feet -----								
Total height								
No control	1.6	3.9	6.1	9.1	11.6	15.2	17.7	2.8
Woody control	1.8	4.5	7.3	11.1	14.9	19.5	22.7	28.7
Herb control	2.3	6.2	10.4	15.3	18.9	23.0	25.7	30.2
Total control	2.1	6.2	11.0	16.3	20.4	25.3	28.3	33.1
Height to live crown								
No control	--	--	--	--	2.6	3.4	4.2	5.9
Woody control	--	--	--	--	3.3	4.5	5.7	7.9
Herb control	--	--	--	--	4.3	6.1	7.0	9.1
Total control	--	--	--	--	3.5	6.1	7.7	10.4
----- Trees per acre -----								
Stocking								
No control	535	535	533	533	533	533	531	527
Woody control	534	526	526	522	522	522	522	519
Herb control	533	531	531	523	521	521	517	515
Total control	536	529	529	525	525	525	523	523
----- Ft ² /acre -----								
Basal area								
No control	--	--	0.9	4.3	10.0	19.3	24.4	38.4
Woody control	--	--	2.0	8.2	18.0	33.1	41.7	60.1
Herb control	--	--	7.8	19.5	31.1	44.3	49.7	65.0
Total control	--	--	9.1	22.9	38.4	54.5	60.2	77.0
----- Ft ³ /acre -----								
Volume index								
No control	--	--	3.1	19.8	57.3	139.3	202.5	402.3
Woody control	--	--	7.4	44.2	125.4	292.0	426.9	765.5
Herb control	--	--	38.0	135.5	264.4	456.2	568.8	868.6
Total control	--	--	44.9	167.0	347.1	606.4	747.1	1,115.0

*Blank fields indicate that a particular response value was not applicable to trees in this age class.

Table 5.--Bainbridge, Georgia: pine growth response values for the first 8 years

Measure and treatment	Year							
	1	2	3	4	5	6	7	8
----- Inches -----								
Groundline diameter								
No control	0.3	1.0	1.7	3.1	4.0	--*	--	--
Woody control	0.3	0.9	1.7	3.2	4.2	--	--	--
Herb control	0.4	1.5	2.3	3.7	4.4	--	--	--
Total control	0.5	2.5	4.0	5.5	6.5	--	--	--
Diameter at 6-inches								
No control	--	0.8	1.4	2.4	3.3	--	--	--
Woody control	--	0.8	1.5	2.7	3.8	--	--	--
Herb control	--	1.3	2.2	3.3	4.2	--	--	--
Total control	--	2.1	3.4	4.7	5.7	--	--	--
Diameter at breast height								
No control	--	--	0.6	1.6	2.5	3.5	3.9	4.4
Woody control	--	--	0.7	1.8	2.9	3.9	4.2	4.8
Herb control	--	--	1.4	2.5	3.3	4.1	4.3	4.8
Total control	--	--	1.9	3.3	4.2	5.1	5.3	5.9
----- Feet -----								
Total height								
No control	1.5	4.1	6.5	11.1	15.1	20.1	24.5	28.5
Woody control	1.5	4.1	6.6	11.3	14.7	19.1	23.5	27.2
Herb control	2.0	6.0	9.5	14.8	19.5	24.4	28.6	32.1
Total control	2.0	6.7	11.0	17.5	22.6	28.0	32.6	36.6
Height to live crown								
No control	--	--	--	--	2.8	5.2	7.8	11.6
Woody control	--	--	--	--	2.0	4.2	6.4	10.7
Herb control	--	--	--	--	3.9	7.6	10.6	15.1
Total control	--	--	--	--	3.5	7.9	11.3	16.5
----- Trees per acre -----								
Stocking								
No control	538	538	538	532	527	524	519	516
Woody control	538	535	535	535	532	532	532	532
Herb control	535	532	530	527	527	521	513	513
Total control	535	535	535	535	535	532	524	521
----- Ft ² /acre -----								
Basal area								
No control	--	--	1.6	8.3	19.7	38.0	44.8	58.1
Woody control	--	--	1.7	9.9	25.6	46.5	52.9	69.5
Herb control	--	--	6.2	18.2	33.3	50.7	55.0	66.6
Total control	--	--	11.6	32.2	53.3	78.1	83.3	99.6
----- Ft ³ /acre -----								
Volume index								
No control	--	--	5.9	44.7	138.1	346.7	489.4	734.2
Woody control	--	--	5.7	51.3	169.1	393.0	546.5	832.2
Herb control	--	--	26.9	120.3	286.5	544.9	690.1	938.1
Total control	--	--	57.3	245.2	521.6	943.4	1,169.0	1,574.0

*Blank fields indicate that a particular response value was not applicable to trees in this age class.

Table 6.--Liberty, Mississippi: pine growth response values for the first 8 years

Measure and treatment	Year							
	1	2	3	4	5	6	7	8
----- Inches -----								
Groundline diameter								
No control	0.4	0.7	1.3	2.0	2.9	--*	--	--
Woody control	0.5	1.0	1.7	2.9	4.1	--	--	--
Herb control	0.8	1.8	2.9	4.2	5.2	--	--	--
Total control	1.0	2.3	4.0	5.7	6.9	--	--	--
Diameter at 6-inches								
No control	--	0.6	1.2	1.8	2.5	--	--	--
Woody control	--	0.8	1.5	2.5	3.7	--	--	--
Herb control	--	1.5	2.6	3.7	4.6	--	--	--
Total control	--	2.0	3.6	5.1	6.2	--	--	--
Diameter at breast height								
No control	--	--	0.6	1.2	1.9	2.7	3.5	4.3
Woody control	--	--	0.8	1.7	2.7	3.9	4.9	5.7
Herb control	--	--	1.8	2.7	3.5	4.3	5.1	5.7
Total control	--	--	2.0	3.4	4.5	5.5	6.1	6.8
----- Feet -----								
Total height								
No control	1.6	3.7	6.7	10.3	14.0	18.5	22.1	27.0
Woody control	1.8	4.2	7.4	11.5	16.0	21.2	24.7	30.1
Herb control	2.4	6.3	11.2	16.8	21.9	27.1	31.0	35.5
Total control	2.4	6.2	11.3	17.4	22.7	28.6	32.7	37.4
Height to live crown								
No control	--	--	--	--	3.3	5.4	8.3	10.6
Woody control	--	--	--	--	2.3	3.6	5.6	8.3
Herb control	--	--	--	--	4.5	8.7	12.4	13.9
Total control	--	--	--	--	1.9	5.8	10.7	13.0
----- Trees per acre -----								
Stocking								
No control	453	447	433	431	428	414	392	381
Woody control	392	387	384	381	379	379	379	376
Herb control	458	458	458	458	458	455	455	453
Total control	467	461	450	450	450	445	445	442
----- Ft ² /acre -----								
Basal area								
No control	--	--	1.1	4.3	10.0	19.2	29.5	41.2
Woody control	--	--	1.7	6.5	16.1	33.3	50.9	68.1
Herb control	--	--	8.6	19.7	32.8	49.3	66.9	83.9
Total control	--	--	10.5	28.7	50.6	75.1	94.2	113.2
----- Ft ³ /acre -----								
Volume index								
No control	--	--	3.7	21.7	67.5	167.9	297.4	494.6
Woody control	--	--	6.1	36.0	118.5	315.2	557.6	894.8
Herb control	--	--	42.8	146.7	317.4	586.9	908.2	1,302.0
Total control	--	--	54.2	220.4	503.6	929.9	1,335.0	1,825.0

*Blank fields indicate that a particular response value was not applicable to trees in this age class.

Table 7.--Atmore, Alabama: pine growth response values for the first 8 years

Measure and treatment	Year							
	1	2	3	4	5	6	7	8
----- Inches -----								
Groundline diameter								
No control	0.2	0.5	0.9	1.6	2.4	--*	--	--
Woody control	0.3	0.7	1.2	2.1	3.3	--	--	--
Herb control	0.3	0.7	1.4	2.4	3.5	--	--	--
Total control	0.3	1.2	2.4	4.0	5.3	--	--	--
Diameter at 6-inches								
No control	--	0.5	0.7	1.3	2.0	--	--	--
Woody control	--	0.6	1.0	1.8	2.7	--	--	--
Herb control	--	0.7	1.1	2.0	2.9	--	--	--
Total control	--	1.1	2.1	3.4	4.6	--	--	--
Diameter at breast height								
No control	--	--	0.1	0.6	1.2	2.2	2.7	3.3
Woody control	--	--	0.3	1.0	1.9	3.0	3.7	4.3
Herb control	--	--	0.3	1.1	2.0	2.9	3.5	4.0
Total control	--	--	0.8	2.1	3.2	4.3	5.0	5.6
----- Feet -----								
Total height								
No control	1.3	2.4	4.3	7.7	10.4	15.1	17.7	21.3
Woody control	1.4	2.6	5.1	9.3	12.9	18.2	21.6	24.6
Herb control	1.1	2.5	5.5	10.2	14.0	19.3	22.1	24.9
Total control	1.3	3.3	7.4	13.5	18.5	24.1	28.6	30.9
Height to live crown								
No Control	--	--	--	--	1.6	2.7	4.5	6.2
Woody control	--	--	--	--	1.7	3.2	5.1	7.1
Herb control	--	--	--	--	1.8	4.1	6.0	8.1
Total control	--	--	--	--	1.5	3.6	6.6	9.3
----- Trees per acre -----								
Stocking								
No control	535	535	530	530	530	527	524	521
Woody control	521	510	508	508	505	505	494	494
Herb control	497	486	480	472	472	469	458	455
Total control	519	519	516	516	516	513	508	508
----- Ft ² /acre -----								
Basal area								
No control	--	--	0.1	1.6	5.2	15.1	23.4	34.1
Woody control	--	--	0.5	3.7	10.9	26.1	38.5	52.1
Herb control	--	--	0.4	3.9	11.5	24.5	33.7	44.1
Total control	--	--	2.7	13.6	31.7	54.1	72.8	90.9
----- Ft ³ /acre -----								
Volume index								
No control	--	--	0.3	6.4	26.8	107.8	189.6	327.5
Woody control	--	--	1.4	17.9	69.0	218.1	375.2	568.0
Herb control	--	--	1.3	20.1	78.6	223.3	348.6	509.9
Total control	--	--	11.0	89.6	265.7	577.3	911.5	1,226.0

*Blank fields indicate that a particular response value was not applicable to trees in this age class.

Table 8.--Liverpool, Louisiana: pine growth response values for the first 8 years

Measure and treatment	Year							
	1	2	3	4	5	6	7	8
----- Inches -----								
Groundline diameter								
No control	0.2	0.5	1.0	1.5	2.2	--*	--	--
Woody control	0.3	0.7	1.3	2.1	3.0	--	--	--
Herb control	0.3	0.9	1.9	2.9	3.9	--	--	--
Total control	0.3	1.2	2.7	4.3	5.6	--	--	--
Diameter at 6-inches								
No control	--	0.4	0.8	1.3	1.8	--	--	--
Woody control	--	0.6	1.1	1.8	2.6	--	--	--
Herb control	--	0.8	1.5	2.5	3.3	--	--	--
Total control	--	1.0	2.2	3.7	4.7	--	--	--
No control	--	--	--	0.5	1.1	1.8	2.7	3.3
Woody control	--	--	--	0.8	1.6	2.5	3.4	4.1
Herb control	--	--	0.5	1.5	2.4	3.3	4.1	4.6
Total control	--	--	0.9	2.1	3.3	4.4	5.2	5.7
----- Feet -----								
Total height								
No control	1.2	2.5	4.1	6.6	9.7	13.0	16.5	21.1
Woody control	1.3	2.9	4.7	7.5	11.1	14.7	18.9	23.5
Herb control	1.2	3.2	6.4	10.9	15.3	19.9	24.2	28.6
Total control	1.3	3.5	7.1	12.1	17.0	22.2	27.5	32.0
Height to live crown								
No control	--	--	--	--	2.6	4.2	5.2	6.9
Woody control	--	--	--	--	2.3	4.1	5.0	6.5
Herb control	--	--	--	--	2.9	5.4	7.9	10.5
Total control	--	--	--	--	1.7	4.8	7.8	11.0
----- Trees per acre -----								
Stocking								
No control	538	535	532	532	532	532	527	527
Woody control	538	535	535	535	535	532	530	530
Herb control	532	524	519	519	516	516	516	510
Total control	532	530	521	521	521	521	521	513
----- Ft ² /acre -----								
Basal area								
No control	--	--	--	1.3	4.7	11.2	23.9	34.6
Woody control	--	--	--	2.9	8.9	20.1	36.9	51.4
Herb control	--	--	1.2	7.5	18.8	34.5	51.8	63.9
Total control	--	--	2.7	13.5	31.8	57.9	79.6	95.1
----- Ft ³ /acre -----								
Volume index								
No control	--	--	--	4.4	22.8	70.7	184.7	334.5
Woody control	--	--	--	12.4	51.1	143.6	324.4	546.3
Herb control	--	--	4.1	39.6	134.3	319.3	575.2	831.2
Total control	--	--	9.5	75.5	241.5	562.7	951.6	1,315.0

*Blank fields indicate that a particular response value was not applicable to trees in this age class.

Table 9.--Jena, Louisiana: pine growth response values for the first 8 years

Measure and treatment	Year							
	1	2	3	4	5	6	7	8
----- Inches -----								
Groundline diameter								
No control	0.5	1.1	1.8	2.8	3.8	--*	--	--
Woody control	0.5	1.0	1.7	2.6	3.7	--	--	--
Herb control	0.6	1.9	3.0	4.5	5.7	--	--	--
Total control	0.6	1.9	3.1	4.8	6.1	--	--	--
Diameter at 6-inches								
No control	--	0.9	1.6	2.3	3.2	--	--	--
Woody control	--	0.8	1.5	2.2	3.0	--	--	--
Herb control	--	1.6	2.7	3.8	5.0	--	--	--
Total control	--	1.6	2.9	4.1	5.2	--	--	--
Diameter at breast height								
No control	--	--	0.8	1.6	2.4	3.2	3.6	4.5
Woody control	--	--	0.7	1.4	2.2	3.0	3.6	4.5
Herb control	--	--	1.6	2.7	3.7	4.5	5.1	5.6
Total control	--	--	1.7	2.8	4.0	4.7	5.4	5.9
----- Feet -----								
Total height								
No control	1.6	4.0	7.4	11.2	14.5	19.0	22.5	26.0
Woody control	1.5	3.5	6.6	10.3	13.7	18.1	22.3	25.2
Herb control	1.8	5.2	10.0	15.3	20.0	24.9	28.7	32.1
Total control	1.8	5.1	10.1	15.5	20.6	25.9	29.8	33.5
Height to live crown								
No control	--	--	--	--	3.6	5.1	6.6	8.3
Woody control	--	--	--	--	3.3	4.5	5.7	7.3
Herb control	--	--	--	--	3.3	6.4	9.1	11.6
Total control	--	--	--	--	3.1	6.5	9.3	12.2
----- Trees per acre -----								
Stocking								
No control	502	499	480	475	475	475	475	475
Woody control	488	488	480	475	453	450	450	450
Herb control	513	510	505	505	505	505	505	505
Total control	516	516	516	513	513	513	513	513
----- Ft ² /acre -----								
Basal area								
No control	--	--	2.1	7.1	16.4	27.9	35.5	56.1
Woody control	--	--	1.6	6.0	13.4	23.9	33.0	51.0
Herb control	--	--	8.0	20.4	39.7	57.2	73.3	88.9
Total control	--	--	8.6	23.3	46.2	65.4	84.9	100.3
----- Ft ³ /acre -----								
Volume index								
No control	--	--	8.1	38.7	112.3	244.9	361.4	656.7
Woody control	--	--	5.5	31.0	88.4	201.8	332.5	578.0
Herb control	--	--	37.5	140.7	349.7	623.8	918.2	1,241.0
Total control	--	--	41.0	163.4	421.6	743.5	1,103.0	1,463.0

*Blank fields indicate that a particular response value was not applicable to trees in this age class.

Table 10.-- Tallassee, Alabama: pine growth response values for the first 8 years

Measure and treatment	Year							
	1	2	3	4	5	6	7	8
----- Inches -----								
Groundline diameter								
No control	0.3	0.7	1.2	1.8	2.7	--*	--	--
Woody control	0.3	0.8	1.5	2.3	3.4	--	--	--
Herb control	0.4	1.3	2.1	2.8	3.6	--	--	--
Total control	0.6	2.1	3.6	4.7	5.8	--	--	--
Diameter at 6-inches								
No control	--	0.5	1.0	1.6	2.3	--	--	--
Woody control	--	0.6	1.2	2.1	3.0	--	--	--
Herb control	--	1.1	1.8	2.5	3.1	--	--	--
Total control	--	1.7	3.1	4.1	5.2	--	--	--
Diameter at breast height								
No control	--	--	0.2	0.7	1.3	2.4	2.8	3.4
Woody control	--	--	0.2	1.0	1.8	3.1	3.7	4.4
Herb control	--	--	0.8	1.5	2.1	2.9	3.3	3.8
Total control	--	--	1.3	2.5	3.5	4.7	5.1	5.7
----- Feet -----								
Total height								
No control	1.1	2.7	4.4	7.3	10.3	13.6	17.0	20.0
Woody control	1.1	2.8	4.7	7.9	11.0	14.9	18.6	22.4
Herb control	1.4	4.5	7.1	10.8	13.8	17.3	20.7	23.3
Total control	1.5	5.0	8.8	13.7	17.7	22.4	26.5	30.1
Height to live crown								
No control	--	--	--	--	1.1	2.8	4.3	5.8
Woody control	--	--	--	--	1.0	2.4	3.8	5.0
Herb control	--	--	--	--	1.8	4.1	5.8	7.1
Total control	--	--	--	--	0.9	3.6	5.9	7.9
----- Trees per acre -----								
Stocking								
No control	532	519	513	513	508	505	502	502
Woody control	524	505	499	499	497	491	486	483
Herb control	527	519	513	510	505	505	497	497
Total control	535	532	530	527	524	521	521	521
----- Ft ² /acre -----								
Basal area								
No control	--	--	0.2	1.8	5.6	17.0	22.7	33.4
Woody control	--	--	0.3	3.1	9.6	27.9	37.2	52.7
Herb control	--	--	2.4	7.4	15.0	26.8	32.7	42.8
Total control	--	--	5.7	19.3	36.1	63.2	75.8	93.1
----- Ft ³ /acre -----								
Volume index								
No control	--	--	0.5	6.5	27.4	105.2	174.1	300.9
Woody control	--	--	0.8	11.6	48.7	186.7	309.8	519.1
Herb control	--	--	9.0	40.6	100.8	221.8	318.7	468.9
Total control	--	--	22.8	116.7	277.2	612.0	864.8	1,207.0

*Blank fields indicate that a particular response value was not applicable to trees in this age class.

Table 11.--Warren, Arkansas: pine growth response values for the first 8 years

Measure and treatment	Year							
	1	2	3	4	5	6	7	8
----- Inches -----								
Groundline diameter								
No control	0.3	0.7	1.3	1.9	3.1	--*	--	--
Woody control	0.3	0.8	1.5	2.1	3.6	--	--	--
Herb control	0.5	1.5	2.9	4.0	5.5	--	--	--
Total control	0.5	1.7	3.1	4.5	5.8	--	--	--
Diameter at 6-inches								
No control	--	0.5	1.1	1.5	2.5	--	--	--
Woody control	--	0.6	1.2	1.7	3.0	--	--	--
Herb control	--	1.2	2.4	3.1	4.6	--	--	--
Total control	--	1.3	2.6	3.5	5.0	--	--	--
Diameter at breast height								
No control	--	--	0.3	0.7	1.6	2.5	3.3	4.1
Woody control	--	--	0.5	0.9	2.0	3.1	4.0	4.8
Herb control	--	--	1.1	1.8	3.1	4.2	4.9	5.7
Total control	--	--	1.2	2.1	3.3	4.5	5.3	5.9
----- Feet -----								
Total height								
No control	1.3	2.8	5.1	7.7	11.2	14.2	18.9	21.6
Woody control	1.4	3.1	5.8	8.5	12.6	15.8	21.5	24.6
Herb control	1.3	3.9	8.0	12.1	17.1	21.1	27.7	30.1
Total control	1.3	4.1	8.1	12.3	17.6	21.7	28.6	31.1
Height to live crown								
No control	--	--	--	--	1.7	3.0	4.1	5.7
Woody control	--	--	--	--	1.8	2.8	4.3	6.4
Herb control	--	--	--	--	1.1	3.7	5.9	9.6
Total control	--	--	--	--	0.9	3.4	5.4	9.4
----- Trees per acre -----								
Stocking								
No control	530	530	527	527	527	527	527	527
Woody control	535	532	532	530	530	527	527	527
Herb control	532	530	530	530	527	527	527	527
Total control	521	521	519	519	519	519	519	519
----- Ft ² /acre -----								
Basal area								
No control	--	--	0.6	2.1	8.5	20.3	33.8	51.4
Woody control	--	--	0.9	2.7	12.9	29.4	47.1	68.9
Herb control	--	--	4.2	10.4	28.2	51.9	72.1	93.7
Total control	--	--	5.3	13.8	32.1	57.8	80.8	101.5
----- Ft ³ /acre -----								
Volume index								
No control	--	--	1.8	8.6	45.5	133.6	292.0	497.9
Woody control	--	--	2.5	11.3	74.7	208.1	449.1	740.7
Herb control	--	--	16.3	57.1	212.1	476.7	865.0	1,221.0
Total control	--	--	21.1	78.2	249.3	544.9	999.2	1,362.0

*Blank fields indicate that a particular response value was not applicable to trees in this age class.

Table 12.--Counce, Tennessee: pine growth response values for the first 8 years

Measure and treatment	Year							
	1	2	3	4	5	6	7	8
----- Inches -----								
Groundline diameter								
No control	0.3	0.9	1.6	2.4	3.4	--*	--	--
Woody control	0.3	0.9	1.6	2.5	3.5	--	--	--
Herb control	0.4	1.2	2.3	3.4	4.5	--	--	--
Total control	0.4	1.3	2.5	3.7	4.9	--	--	--
Diameter at 6-inches								
No control	--	0.7	1.3	2.1	2.9	--	--	--
Woody control	--	0.7	1.3	2.1	3.0	--	--	--
Herb control	--	0.9	1.9	2.9	3.9	--	--	--
Total control	--	1.0	2.1	3.1	4.2	--	--	--
Diameter at breast height								
No control	--	--	0.4	1.0	1.7	2.5	3.4	4.0
Woody control	--	--	0.4	1.0	1.8	2.6	3.5	4.2
Herb control	--	--	0.6	1.4	2.2	3.2	4.2	4.7
Total control	--	--	0.6	1.4	2.4	3.5	4.5	5.2
----- Feet -----								
Total height								
No control	1.0	2.8	5.2	7.8	10.4	13.5	16.8	22.0
Woody control	1.0	2.9	5.3	7.9	10.8	14.0	17.4	22.5
Herb control	1.0	2.9	5.9	9.1	12.3	16.1	20.3	25.6
Total control	1.0	2.8	5.8	8.9	12.6	16.7	21.3	26.7
Height to live crown								
No control	--	--	--	--	1.0	2.0	3.3	4.8
Woody control	--	--	--	--	1.2	2.2	3.3	5.1
Herb control	--	--	--	--	0.6	1.4	3.1	5.4
Total control	--	--	--	--	0.4	0.8	2.6	5.5
Total height								
No control	538	535	535	535	535	535	535	535
Woody control	538	535	535	535	532	532	532	532
Herb control	538	532	516	516	516	516	513	513
Total control	535	524	519	519	516	516	516	516
----- Ft ² /acre -----								
Basal area								
No control	--	--	0.7	3.1	8.7	19.4	34.7	47.8
Woody control	--	--	0.6	3.3	9.9	21.0	37.5	52.3
Herb control	--	--	1.4	6.2	14.9	30.8	50.0	64.7
Total control	--	--	1.5	6.4	16.9	35.8	58.0	76.2
----- Ft ³ /acre -----								
Volume index								
No control	--	--	1.7	11.4	41.2	116.6	256.3	459.9
Woody control	--	--	1.6	12.3	47.9	130.3	286.7	513.4
Herb control	--	--	4.2	26.2	82.0	218.8	441.2	713.8
Total control	--	--	4.3	26.3	95.2	260.8	533.1	877.0

*Blank fields indicate that a particular response value was not applicable to trees in this age class.

Table 13.--Arcadia, Louisiana: pine growth response values for the first 8 years

Measure and treatment	Year							
	1	2	3	4	5	6	7	8
	----- Inches -----							
Groundline diameter								
No control	0.3	0.6	1.0	1.6	2.7	--*	--	--
Woody control	0.3	0.8	1.3	2.2	3.5	--	--	--
Herb control	0.4	1.3	2.1	2.9	4.5	--	--	--
Total control	0.5	1.7	3.0	4.3	6.3	--	--	--
Diameter at 6-inches								
No control	--	0.5	0.8	1.4	2.3	--	--	--
Woody control	--	0.6	1.1	1.9	3.1	--	--	--
Herb control	--	1.0	1.8	2.6	4.0	--	--	--
Total control	--	1.4	2.6	3.8	5.7	--	--	--
No control	--	--	--	0.6	1.4	2.3	3.2	3.8
Woody control	--	--	0.1	1.0	2.0	3.0	3.9	4.5
Herb control	--	--	0.7	1.6	2.6	3.5	4.2	4.7
Total control	--	--	1.1	2.3	3.7	4.8	5.5	5.9
	----- Feet -----							
Total height								
No control	1.1	2.3	4.0	6.5	9.8	13.6	18.2	23.0
Woody control	1.1	2.6	4.6	7.9	11.8	16.0	20.2	24.0
Herb control	1.3	3.5	7.1	11.1	15.5	19.7	24.4	28.4
Total control	1.4	3.9	8.1	13.0	18.1	22.8	28.1	32.3
Height to live crown								
No control	--	--	--	--	2.4	2.8	4.2	6.4
Woody control	--	--	--	--	2.2	2.9	4.3	6.6
Herb control	--	--	--	--	2.7	4.6	7.2	9.8
Total control	--	--	--	--	1.5	3.5	7.3	10.4
	----- Trees per acre -----							
Stocking								
No control	539	526	526	526	523	523	523	517
Woody control	539	534	525	520	517	517	517	517
Herb control	537	521	508	508	502	497	497	497
Total control	537	532	532	530	530	525	525	525
	----- Ft ² /acre -----							
Basal area								
No control	--	--	--	1.4	6.7	16.4	31.4	44.1
Woody control	--	--	0.2	3.4	12.6	26.9	45.9	60.1
Herb control	--	--	1.9	7.7	20.9	36.1	51.0	63.3
Total control	--	--	4.2	16.3	41.7	66.5	87.5	101.0
	----- Ft ³ /acre -----							
Volume index								
No control	--	--	--	4.5	32.1	103.9	259.0	444.2
Woody control	--	--	1.0	13.8	71.9	198.1	417.4	642.3
Herb control	--	--	6.5	39.5	147.5	318.0	553.6	795.5
Total control	--	--	16.0	94.2	327.7	654.1	1,059.0	1,404.0

*Blank fields indicate that a particular response value was not applicable to trees in this age class.

Table 14.--Camp Hill, Alabama: pine growth response values for the first 8 years

Measure and treatment	Year							
	1	2	3	4	5	6	7	8
----- Inches -----								
Groundline diameter								
No control	0.2	0.6	1.1	1.7	2.6	--*	--	--
Woody control	0.2	0.7	1.4	2.2	3.4	--	--	--
Herb control	0.3	0.9	1.6	2.4	3.3	--	--	--
Total control	0.5	1.8	3.4	4.8	6.1	--	--	--
Diameter at 6-inches								
No control	--	0.5	0.9	1.5	2.2	--	--	--
Woody control	--	0.5	1.2	1.9	2.9	--	--	--
Herb control	--	0.7	1.4	2.0	2.6	--	--	--
Total control	--	1.5	3.0	4.3	5.3	--	--	--
Diameter at breast height								
No control	--	--	0.2	0.8	1.5	2.3	3.0	3.6
Woody control	--	--	0.3	1.0	1.8	2.8	3.5	4.2
Herb control	--	--	0.6	1.3	1.9	2.6	3.1	3.6
Total control	--	--	1.5	2.8	3.8	4.8	5.4	6.0
----- Feet -----								
Total height								
No control	1.1	2.7	4.5	8.1	11.1	14.9	18.3	22.5
Woody control	1.2	2.6	4.7	8.5	11.6	15.7	19.3	23.8
Herb control	1.2	3.7	6.4	10.6	13.8	17.7	20.8	24.7
Total control	1.4	4.8	9.0	14.5	18.3	23.2	27.5	32.5
Height to live crown								
No control	--	--	--	--	2.1	3.4	5.0	7.1
Woody control	--	--	--	--	1.3	2.5	4.2	6.3
Herb control	--	--	--	--	2.8	4.9	6.7	9.0
Total control	--	--	--	--	1.4	4.4	7.4	10.6
----- Trees per acre -----								
Stocking								
No control	532	521	510	505	502	502	502	502
Woody control	521	513	502	499	499	494	491	491
Herb control	538	516	513	505	505	505	502	499
Total control	530	521	519	513	508	505	499	497
----- Ft ² /acre -----								
Basal area								
No control	--	--	0.3	2.3	6.9	15.9	26.0	38.1
Woody control	--	--	0.6	3.3	10.2	22.6	36.0	50.3
Herb control	--	--	1.4	5.5	11.5	20.6	30.0	39.4
Total control	--	--	6.7	22.6	41.6	65.6	82.2	99.8
----- Ft ³ /acre -----								
Volume index								
No control	--	--	0.8	9.1	35.6	108.3	213.1	383.1
Woody control	--	--	1.5	14.3	57.5	165.3	316.7	538.5
Herb control	--	--	4.5	28.2	74.6	169.2	287.5	444.4
Total control	--	--	27.5	144.8	332.0	662.3	976.5	1397.0

*Blank fields indicate that a particular response value was not applicable to trees in this age class.

Table 15.--Monticello, Georgia: pine growth response values for the first 8 years

Measure and treatment	Year							
	1	2	3	4	5	6	7	8
	----- Inches -----							
Groundline diameter								
No control	0.2	0.6	1.2	2.3	3.6	--*	--	--
Woody control	0.3	0.9	1.8	3.0	4.4	--	--	--
Herb control	0.3	1.1	2.3	3.7	5.1	--	--	--
Total control	0.3	1.3	2.6	4.1	5.5	--	--	--
Diameter at 6-inches								
No control	--	0.5	1.1	1.9	3.0	--	--	--
Woody control	--	0.8	1.5	2.5	3.8	--	--	--
Herb control	--	0.9	2.0	3.2	4.4	--	--	--
Total control	--	1.1	2.3	3.5	4.8	--	--	--
Diameter at breast height								
No control	--	--	0.3	1.0	2.0	3.1	4.0	4.7
Woody control	--	--	0.6	1.5	2.6	3.8	4.6	5.3
Herb control	--	--	0.8	1.9	3.1	4.3	5.1	5.6
Total control	--	--	0.9	2.1	3.3	4.6	5.3	5.9
	----- Feet -----							
Total height								
No control	1.2	2.7	5.1	9.1	13.3	17.7	21.9	26.7
Woody control	1.2	3.3	6.2	10.8	15.7	20.2	24.3	29.8
Herb control	1.3	3.5	7.1	12.5	17.2	22.2	26.5	31.7
Total control	1.3	3.9	7.5	12.9	17.7	22.8	27.1	32.4
Height to live crown								
No control	--	--	--	--	1.4	3.2	4.9	8.1
Woody control	--	--	--	--	1.2	3.0	4.9	8.0
Herb control	--	--	--	--	1.5	4.0	6.3	10.3
Total control	--	--	--	--	1.1	3.2	5.7	9.5
	----- Trees per acre -----							
Stocking								
No control	527	519	519	519	519	519	516	513
Woody control	505	499	499	499	499	499	499	497
Herb control	510	499	499	499	499	499	499	499
Total control	519	510	508	508	508	505	505	505
	----- Ft ² /acre -----							
Basal area								
No control	--	--	0.4	3.5	12.6	29.6	46.9	63.1
Woody control	--	--	1.3	6.7	19.7	41.5	60.5	77.5
Herb control	--	--	2.4	10.9	27.0	52.8	73.2	89.7
Total control	--	--	3.1	13.3	31.7	59.5	80.8	97.6
	----- Ft ³ /acre -----							
Volume index								
No control	--	--	1.2	15.5	76.6	234.1	452.1	737.1
Woody control	--	--	4.3	35.1	140.1	370.8	645.9	1,006.0
Herb control	--	--	9.0	63.3	207.4	514.5	844.2	1,239.0
Total control	--	--	11.8	79.0	248.4	589.0	942.2	1,365.0

*Blank fields indicate that a particular response value was not applicable to trees in this age class.

Table 16.--Appomattox, Virginia: pine growth response values for the first 8 years

Measure and treatment	Year							
	1	2	3	4	5	6	7	8
----- Inches -----								
Groundline diameter								
No control	0.2	0.4	0.8	1.5	1.9	--*	--	--
Woody control	0.2	0.7	1.3	2.5	3.1	--	--	--
Herb control	0.2	0.6	1.1	1.9	2.3	--	--	--
Total control	0.3	1.0	1.9	3.3	4.2	--	--	--
Diameter at 6-inches								
No control	--	0.3	0.7	1.3	1.6	--	--	--
Woody control	--	0.5	1.1	2.2	2.7	--	--	--
Herb control	--	0.4	0.9	1.6	1.9	--	--	--
Total control	--	0.8	1.6	3.0	3.7	--	--	--
Diameter at breast height								
No control	--	--	--	0.5	0.9	1.9	2.4	2.7
Woody control	--	--	--	1.1	1.7	2.8	3.9	4.4
Herb control	--	--	--	0.9	1.3	1.9	2.6	3.0
Total control	--	--	--	1.8	2.6	3.6	4.9	5.4
----- Feet -----								
Total height								
No control	0.7	2.3	3.4	5.7	8.5	12.1	14.2	17.8
Woody control	0.8	2.4	4.1	7.2	10.9	14.5	18.0	22.4
Herb control	0.9	2.8	4.3	7.1	10.0	13.0	16.1	19.4
Total control	1.0	2.8	5.3	9.2	13.5	17.2	21.2	25.4
Height to Live Crown								
No control	--	--	--	--	2.0	3.1	5.2	6.3
Woody control	--	--	--	--	1.2	2.0	3.9	5.2
Herb control	--	--	--	--	2.3	3.7	6.6	7.6
Total control	--	--	--	--	1.1	1.9	5.2	6.7
----- Trees per acre -----								
Stocking								
No control	513	508	508	497	491	486	477	469
Woody control	510	439	425	425	425	425	425	425
Herb control	521	508	480	461	445	431	417	401
Total control	499	458	455	455	455	455	453	453
----- Ft ² /acre -----								
Basal area								
No control	--	--	--	1.0	2.9	11.4	16.6	21.1
Woody control	--	--	--	3.3	7.4	18.6	37.9	48.0
Herb control	--	--	--	2.5	5.2	11.3	19.6	24.1
Total control	--	--	--	9.0	18.3	34.2	61.1	74.0
----- Ft ³ /acre -----								
Volume index								
No control	--	--	--	3.0	12.1	71.8	109.7	171.1
Woody control	--	--	--	11.5	38.1	123.5	306.9	480.1
Herb control	--	--	--	8.9	26.3	72.3	153.8	225.6
Total control	--	--	--	39.0	111.4	258.0	545.9	813.1

*Blank fields indicate that a particular response value was not applicable to trees in this age class.

Table 17.--Pembroke, Georgia: percentage of plant cover by components for the first 8 years

Treatment	Year							
	1	2	3	4	5	6	7	8
Vegetation components								
----- No Cover -----								
No control	17	3	5	2	3	5	1	4
Woody control	24	5	7	2	2	3	1	6
Herb control	63	64	61	21	--*	9	4	10
Total control	87	84	76	35	--	11	5	10
----- Pine cover -----								
No control	--	2	2	6	7	9	15	19
Woody control	--	4	3	7	12	16	31	50
Herb control	--	5	15	22	28	34	44	53
Total control	--	9	23	41	60	66	77	85
----- Woody cover -----								
No control	--	25	33	25	37	48	51	55
Woody control	--	1	0	1	5	9	11	13
Herb control	--	19	21	19	36	42	43	43
Total control	--	2	0	2	1	2	2	2
----- Herbaceous cover -----								
No control	72	71	64	65	78	78	72	43
Woody control	76	92	93	94	93	96	92	43
Herb Control	23	10	5	27	33	38	25	9
Total control	11	1	3	23	28	25	16	2
Herbaceous components								
----- Grasses and grasslike cover -----								
No control	72	65	55	52	64	73	67	39
Woody control	76	87	88	82	83	87	89	41
Herb control	20	9	5	23	31	36	23	7
Total control	11	2	3	21	28	25	15	2
----- Forb cover -----								
No control	2	5	1	14	2	2	3	2
Woody control	1	5	2	11	5	6	2	0
Herb control	5	1	0	3	1	1	0	0
Total control	1	0	0	2	0	0	0	0
----- Vine cover -----								
No control	0	0	0	0	0	0	0	0
Woody control	0	0	0	0	0	0	0	0
Herb control	0	0	0	0	0	0	0	0
Total control	0	0	0	0	0	0	0	0
----- Semiwoody cover -----								
No control	0	5	8	1	9	3	2	3
Woody control	0	1	4	2	3	2	1	2
Herb control	1	1	0	2	1	1	2	3
Total control	0	0	0	0	1	0	0	0

*These estimates were not made.

Table 18.—Bainbridge, Georgia: percentage of plant cover by components for the first 8 years

Treatment	Year							
	1	2	3	4	5	6	7	8
Vegetation components								
	----- No cover -----							
No control	8	2	5	2	1	1	--*	0
Woody control	13	2	4	2	5	1	--	0
Herb control	22	10	11	15	7	4	--	1
Total control	82	83	44	26	5	5	--	7
	----- Pine cover -----							
No control	--	3	10	20	27	41	--	69
Woody control	--	2	12	24	41	53	--	84
Herb control	--	9	17	30	38	48	--	75
Total control	--	15	56	74	95	94	--	91
	----- Woody cover -----							
No control	--	21	36	48	59	65	--	69
Woody control	--	7	9	10	4	5	--	9
Herb control	--	36	36	34	42	45	--	52
Total control	--	0	0	0	0	0	--	1
	----- Herbaceous cover -----							
No control	87	96	90	83	68	64	--	51
Woody control	81	97	96	98	89	96	--	93
Herb control	67	71	61	39	39	37	--	43
Total control	14	3	2	2	2	3	--	6
Herbaceous components								
	----- Grasses and grasslike cover -----							
No control	17	21	29	37	36	33	--	18
Woody control	19	25	29	33	30	31	--	16
Herb control	5	8	11	14	15	5	--	4
Total control	1	0	0	0	1	1	--	1
	----- Forb cover -----							
No control	33	43	32	13	3	4	--	4
Woody control	31	45	47	21	2	11	--	12
Herb control	9	3	9	0	1	1	--	2
Total control	3	1	2	1	1	1	--	2
	----- Vine cover -----							
No control	30	26	28	22	21	21	--	28
Woody control	27	26	27	23	24	29	--	43
Herb control	53	46	35	22	17	22	--	37
Total control	9	2	1	1	2	2	--	4
	----- Semiwoody cover -----							
No control	24	35	20	27	17	15	--	7
Woody control	20	40	39	46	50	56	--	50
Herb control	10	21	13	4	9	8	--	4
Total control	2	0	0	0	1	0	--	1

*These estimates were not made.

Table 19.--Liberty, Mississippi: percentage of plant cover by components for the first 8 years

Treatment	Year							
	1	2	3	4	5	6	7	8
Vegetation components								
	----- No cover -----							
No control	--*	0	0	--	2	0	0	0
Woody control	--	5	1	--	4	3	2	7
Herb control	--	43	57	--	2	0	1	0
Total control	--	90	65	--	12	7	6	3
	----- Pine cover -----							
No control	--	2	3	--	11	17	17	31
Woody control	--	2	4	--	25	32	35	58
Herb control	--	5	23	--	50	57	58	69
Total control	--	9	35	--	88	93	94	97
	----- Woody cover -----							
No control	--	44	48	--	70	80	87	92
Woody control	--	11	1	--	0	0	0	1
Herb control	--	32	40	--	54	69	63	70
Total control	--	1	1	--	0	0	0	0
	----- Herbaceous cover -----							
No control	--	56	50	--	23	11	2	3
Woody control	--	83	94	--	75	91	85	89
Herb control	--	22	1	--	0	0	0	0
Total control	--	3	1	--	0	0	0	0
Herbaceous components								
	----- Grasses and grasslike cover -----							
No control	--	6	21	--	8	0	0	1
Woody control	--	10	42	--	27	26	2	12
Herb control	--	1	0	--	0	0	0	0
Total control	--	1	0	--	0	0	0	0
	----- Forb cover -----							
No control	--	24	7	--	2	0	0	0
Woody control	--	39	7	--	8	9	0	1
Herb control	--	2	0	--	0	0	0	0
Total control	--	1	0	--	0	0	0	0
	----- Vine cover -----							
No control	--	11	13	--	6	10	2	2
Woody control	--	7	8	--	15	3	3	2
Herb control	--	10	1	--	0	0	0	0
Total control	--	2	1	--	0	0	0	0
	----- Semiwoody cover -----							
No control	--	17	9	--	4	0	0	1
Woody control	--	27	36	--	27	61	81	69
Herb control	--	10	0	--	0	0	0	0
Total control	--	0	0	--	0	0	0	0

*These estimates were not made.

Table 20.--*Atmore, Alabama: percentage of plant cover by components for the first 8 years*

Treatment	Year							
	1	2	3	4	5	6	7	8
Vegetation components								
	----- No cover -----							
No control	10	5	2	1	2	0	0	0
Woody control	21	11	3	4	1	0	0	0
Herb control	56	68	57	25	25	16	5	5
Total control	97	97	79	33	23	13	5	4
	----- Pine cover -----							
No control	--*	2	8	16	28	29	31	39
Woody control	--	2	9	20	34	39	49	54
Herb control	--	4	9	16	36	35	40	49
Total control	--	8	21	42	77	87	95	96
	----- Woody cover -----							
No control	--	23	32	42	51	57	64	74
Woody control	--	1	2	1	1	0	0	0
Herb control	--	26	34	40	50	54	66	69
Total control	--	0	0	0	0	0	0	0
	----- Herbaceous cover -----							
No control	71	75	75	80	72	65	57	47
Woody control	75	84	83	95	96	96	93	98
Herb control	24	4	1	2	2	2	1	1
Total control	2	2	0	1	1	0	0	0
Herbaceous components								
	----- Grasses and grasslike cover -----							
No control	53	74	70	72	61	54	41	32
Woody control	57	79	73	79	65	58	45	37
Herb control	2	1	0	1	1	1	0	1
Total control	0	0	0	0	1	0	0	0
	----- Forb cover -----							
No control	5	2	3	4	3	3	2	1
Woody control	8	4	9	8	6	12	7	2
Herb control	4	2	1	1	1	0	0	0
Total control	1	2	0	1	1	0	0	0
	----- Vine cover -----							
No control	13	3	2	3	1	10	12	10
Woody control	9	4	7	15	13	31	39	44
Herb control	16	2	1	1	1	1	0	0
Total control	1	0	0	0	0	0	0	0
	----- Semiwoody cover -----							
No control	6	3	5	6	8	4	4	8
Woody control	7	3	7	16	18	19	20	35
Herb control	2	0	0	0	0	0	0	0
Total control	0	0	0	0	0	0	0	0

*These estimates were not made.

Table 21.--Liverpool, Louisiana: percentage of plant cover by components for the first 8 years

Treatment	Year							
	1	2	3	4	5	6	7	8
Vegetation components								
	----- No cover -----							
No control	6	2	4	4	4	--*	0	0
Woody control	14	3	5	4	4	--	0	0
Herb control	63	60	49	37	39	--	1	0
Total control	57	95	88	66	57	--	1	0
	----- Pine cover -----							
No control	--	2	2	3	4	--	26	36
Woody control	--	2	3	7	8	--	50	60
Herb control	--	2	8	13	15	--	60	66
Total control	--	2	11	33	40	--	98	99
	----- Woody cover -----							
No control	--	17	19	23	23	--	60	71
Woody control	--	1	1	1	0	--	3	4
Herb control	--	23	43	50	46	--	70	82
Total control	--	0	0	0	0	--	1	2
	----- Herbaceous cover -----							
No control	94	78	89	69	73	--	82	85
Woody control	85	91	94	89	88	--	97	98
Herb control	36	15	3	2	4	--	5	10
Total control	43	2	2	3	3	--	2	6
Herbaceous components								
	----- Grasses and grasslike cover -----							
No control	59	54	85	54	51	--	62	70
Woody control	48	67	89	70	71	--	83	86
Herb control	12	4	0	1	3	--	4	8
Total control	22	1	1	1	2	--	1	4
	----- Forb cover -----							
No control	25	15	4	8	7	--	6	12
Woody control	29	19	6	12	11	--	3	2
Herb control	11	3	2	1	1	--	0	2
Total control	11	1	2	2	2	--	1	2
	----- Vine cover -----							
No control	3	3	4	6	8	--	15	28
Woody control	2	1	2	6	6	--	16	34
Herb control	6	4	2	1	1	--	0	3
Total control	4	1	1	1	0	--	0	1
	----- Semiwoody cover -----							
No control	4	4	4	2	4	--	3	2
Woody control	4	2	2	1	1	--	7	19
Herb control	3	4	2	0	0	--	0	0
Total control	3	0	1	0	0	--	0	1

*These estimates were not made.

Table 22.--Jena, Louisiana: percentage of plant cover by components for the first 8 years

Treatment	Year							
	1	2	3	4	5	6	7	8
Vegetation components								
----- No cover -----								
No control	14	3	3	0	0	0	0	0
Woody control	18	7	3	0	0	0	0	0
Herb control	96	54	67	47	17	15	12	0
Total control	99	48	77	39	12	5	3	0
----- Pine cover -----								
No control	--*	3	10	20	27	35	42	50
Woody control	--	2	9	18	25	30	38	47
Herb control	--	7	20	53	69	73	77	78
Total control	--	6	20	61	86	93	95	94
----- Woody cover -----								
No control	--	5	5	29	17	25	36	41
Woody control	--	2	1	0	4	4	11	15
Herb control	--	9	8	18	10	16	21	23
Total control	--	1	0	0	0	0	0	1
----- Herbaceous cover -----								
No control	81	90	95	85	92	93	94	85
Woody control	83	88	96	97	99	100	100	95
Herb control	2	39	7	1	3	5	8	7
Total control	1	50	5	0	2	1	2	2
Herbaceous components								
----- Grasses and grasslike cover -----								
No control	31	57	63	54	59	71	72	64
Woody control	27	55	65	63	72	78	81	68
Herb control	0	12	3	0	2	6	6	5
Total control	0	11	3	0	2	1	1	0
----- Forb cover -----								
No control	50	44	37	12	18	7	7	8
Woody control	53	43	45	14	16	7	7	5
Herb control	1	24	4	0	0	0	1	1
Total control	0	41	3	0	0	0	1	1
----- Vine cover -----								
No control	1	3	1	5	5	5	5	6
Woody control	0	2	1	4	4	4	6	8
Herb control	0	1	1	1	1	0	0	0
Total control	0	1	1	0	0	0	0	1
----- Semiwoody cover -----								
No control	6	15	7	13	13	12	12	9
Woody control	4	9	3	15	14	17	21	17
Herb control	0	1	0	0	0	0	0	0
Total control	0	1	0	0	0	0	0	0

*These estimates were not made.

Table 23.--Tallassee, Alabama: percentage of plant cover by components for the first 8 years

Treatment	Year							
	1	2	3	4	5	6	7	8
Vegetation components								
----- No cover -----								
No control	11	8	11	10	4	1	2	2
Woody control	8	3	7	7	5	2	1	1
Herb control	83	56	47	47	17	12	9	6
Total control	96	89	82	55	15	8	5	2
----- Pine cover -----								
No control	--*	2	4	7	18	27	33	47
Woody control	--	2	5	12	27	40	55	73
Herb control	--	5	9	17	36	42	49	63
Total control	--	9	18	45	85	92	95	97
----- Woody cover -----								
No control	--	31	37	41	57	60	69	75
Woody control	--	0	0	0	1	1	1	1
Herb control	--	41	45	45	52	55	55	60
Total control	--	0	0	0	0	0	1	1
----- Herbaceous cover -----								
No control	68	62	56	47	45	42	35	28
Woody control	92	96	91	87	88	85	80	91
Herb control	2	2	1	1	2	2	2	3
Total control	3	3	1	1	2	2	1	1
Herbaceous components								
----- Grasses and grasslike cover -----								
No control	14	25	44	32	38	35	27	17
Woody control	14	40	61	58	54	52	26	24
Herb control	1	0	1	1	1	1	1	2
Total control	0	0	1	1	1	1	0	1
----- Forb cover -----								
No control	30	35	13	11	5	3	3	3
Woody control	63	55	37	25	19	13	14	10
Herb control	2	1	0	0	1	1	1	1
Total control	3	3	1	0	2	1	0	1
----- Vine cover -----								
No control	1	1	0	1	1	2	2	3
Woody control	1	0	0	0	5	4	5	11
Herb control	0	0	0	0	0	0	0	0
Total control	0	0	0	0	0	0	0	0
----- Semiwoody cover -----								
No control	21	5	6	4	7	8	5	5
Woody control	15	7	5	5	21	33	40	53
Herb control	1	1	0	0	0	0	0	0
Total control	0	0	0	0	0	0	0	0

*These estimates were not made.

Table 24.--Warren, Arkansas: percentage of plant cover by components for the first 8 years

Treatment	Year							
	1	2	3	4	5	6	7	8
Vegetation components								
	----- No cover -----							
Treatment	1	2	3	4	5	6	7	8
No control	46	2	0	1	1	1	0	7
Woody control	45	4	1	4	3	1	1	3
Herb control	98	79	51	25	12	5	5	4
Total control	99	85	67	33	17	10	18	7
	----- Pine cover -----							
No control	--*	2	19	10	29	31	35	42
Woody control	--	2	19	12	31	36	37	55
Herb control	--	10	29	56	68	66	69	81
Total control	--	10	33	66	80	87	81	93
	----- Woody cover -----							
No control	--	27	21	29	23	43	59	54
Woody control	--	1	17	0	4	10	20	29
Herb control	--	31	18	18	15	24	29	28
Total control	--	0	0	0	0	0	0	0
	----- Herbaceous cover -----							
No control	54	94	62	66	99	99	87	79
Woody control	55	93	63	87	98	99	87	82
Herb control	3	2	2	3	5	7	5	3
Total control	1	7	0	1	3	3	3	1
Herbaceous components								
	----- Grasses and grasslike cover -----							
No control	18	55	58	62	99	98	87	72
Woody control	18	59	65	79	97	96	86	67
Herb control	1	1	2	3	5	4	2	2
Total control	1	5	0	1	2	2	3	1
	----- Forb cover -----							
No control	35	37	25	1	19	10	11	8
Woody control	36	29	22	5	24	27	20	5
Herb control	1	1	0	0	0	3	3	2
Total control	1	2	0	0	1	1	1	0
	----- Vine cover -----							
No control	1	2	7	1	9	8	20	5
Woody control	4	2	5	2	11	14	28	11
Herb control	1	0	0	0	0	0	1	0
Total control	0	0	0	0	0	0	0	0
	----- Semiwoody cover -----							
No control	0	3	6	3	17	16	14	11
Woody control	0	6	7	2	24	26	30	18
Herb control	0	0	0	0	0	0	1	0
Total control	0	0	0	0	0	0	0	0

*These estimates were not made.

Table 25.--Counce, Tennessee: percentage of plant cover by components for the first 8 years

Treatment	Year							
	1	2	3	4	5	6	7	8
Vegetation components								
	----- No cover -----							
No control	25	3	2	2	3	1	0	2
Woody control	31	5	2	0	2	0	0	3
Herb control	94	75	63	33	27	10	4	2
Total control	97	87	78	43	34	10	4	7
	----- Pine cover -----							
No control	--*	5	13	16	13	32	40	53
Woody control	--	5	14	20	18	34	44	61
Herb control	--	8	21	42	49	68	75	79
Total control	--	8	23	46	59	81	89	85
	----- Woody cover -----							
No control	--	7	9	10	17	29	41	42
Woody control	--	2	2	3	1	5	9	10
Herb control	--	13	15	17	18	24	30	37
Total control	--	0	0	0	0	0	0	0
	----- Herbaceous cover -----							
No control	75	85	75	72	81	95	77	60
Woody control	69	88	83	78	89	98	80	67
Herb control	6	5	1	10	11	24	28	18
Total control	2	5	0	11	9	20	19	9
Herbaceous components								
	----- Grasses and grasslike cover -----							
No control	54	83	55	59	67	83	68	28
Woody control	53	84	64	59	69	89	64	20
Herb control	6	4	0	8	10	23	22	7
Total control	2	5	0	9	8	19	16	7
	----- Forb cover -----							
No control	8	9	9	8	15	28	23	9
Woody control	12	5	7	8	17	26	23	8
Herb control	1	0	0	1	1	4	4	2
Total control	1	0	0	1	2	4	4	3
	----- Vine cover -----							
No control	2	5	8	3	7	10	13	14
Woody control	3	7	6	7	8	14	21	22
Herb control	3	1	1	2	3	6	11	11
Total control	2	1	0	0	1	2	3	1
	----- Semiwoody cover -----							
No control	1	3	3	3	4	6	12	24
Woody control	1	4	5	5	5	9	18	40
Herb control	0	0	0	0	0	0	0	0
Total control	0	0	0	0	0	0	0	0

*These estimates were not made.

Table 26.--Arcadia, Louisiana: percentage of plant cover by components for the first 8 years

Treatment	Year							
	1	2	3	4	5	6	7	8
Vegetation components								
----- No cover -----								
No control	3	2	0	0	0	0	0	0
Woody control	10	3	1	1	8	1	1	2
Herb control	55	50	50	32	13	3	0	4
Total control	84	52	89	72	12	3	1	2
----- Pine cover -----								
No control	2	1	2	5	8	18	31	53
Woody control	2	2	2	7	9	24	55	73
Herb control	2	3	5	14	21	33	52	52
Total control	2	3	9	24	56	85	91	90
----- Woody cover -----								
No control	15	21	21	44	48	52	63	66
Woody control	11	2	4	3	10	12	1	4
Herb control	20	31	45	53	61	66	60	62
Total control	3	1	1	1	0	0	0	0
----- Herbaceous cover -----								
No control	86	90	86	89	78	55	54	44
Woody control	81	95	95	89	81	76	89	82
Herb control	24	18	3	3	15	10	4	3
Total control	6	44	3	5	50	38	35	24
Herbaceous components								
----- grasses and grasslike cover -----								
No control	62	83	75	76	64	32	25	18
Woody control	66	79	85	79	55	19	25	20
Herb control	21	15	3	1	6	6	2	1
Total control	5	23	2	0	20	13	13	4
----- Forb cover -----								
No control	24	13	7	16	12	12	12	4
Woody control	16	20	10	18	25	27	26	15
Herb control	3	3	1	1	7	5	3	2
Total control	1	13	1	2	34	27	24	21
----- Vine cover -----								
No control	3	3	2	3	5	5	5	7
Woody control	2	2	2	3	3	2	5	6
Herb control	3	3	2	1	3	1	1	1
Total control	9	10	1	1	1	0	0	0
----- Semiwoody cover -----								
No control	1	8	5	7	11	12	19	14
Woody control	1	2	2	7	13	30	46	43
Herb control	1	1	0	1	1	0	0	0
Total control	0	0	1	2	0	0	0	0

Table 27.--Camp Hill, Alabama: percentage of plant cover by components for the first 8 years

Treatment	Year							
	1	2	3	4	5	6	7	8
Vegetation components								
	----- No cover -----							
No control	2	2	1	1	0	0	0	0
Woody control	17	3	3	1	1	0	1	0
Herb control	46	25	21	11	6	3	3	2
Total control	97	97	70	35	7	2	2	1
	----- Pine cover -----							
No control	--*	2	2	8	17	23	32	40
Woody control	--	2	3	10	25	37	52	66
Herb control	--	2	6	9	17	21	23	35
Total control	--	7	30	65	92	97	97	99
	----- Woody cover -----							
No control	--	47	43	47	50	58	71	85
Woody control	--	1	0	1	1	3	2	11
Herb control	--	70	78	84	89	91	91	94
Total control	--	0	0	0	0	0	0	2
	----- Herbaceous cover -----							
No control	88	89	81	89	85	85	73	71
Woody control	83	96	97	98	97	99	93	98
Herb control	2	1	1	1	2	5	4	7
Total control	2	2	0	0	0	2	1	2
Herbaceous components								
	----- Grasses and grasslike cover -----							
No control	64	83	64	81	67	62	41	35
Woody control	26	42	57	85	83	84	56	59
Herb control	1	1	0	0	0	1	1	1
Total control	1	0	0	0	0	1	0	1
	----- Forb cover -----							
No control	50	45	25	24	14	16	11	6
Woody control	61	73	51	48	36	33	17	21
Herb control	1	1	0	0	0	1	1	1
Total control	1	2	0	0	0	2	1	1
	----- Vine cover -----							
No control	12	16	10	10	18	25	32	43
Woody control	2	6	3	7	11	23	38	51
Herb control	2	5	1	1	2	5	3	7
Total control	2	1	0	0	0	0	0	1
	----- Semiwoody cover -----							
No control	2	2	1	3	5	4	3	4
Woody control	2	1	1	1	1	2	4	15
Herb control	1	1	0	0	0	0	0	1
Total control	0	0	0	0	0	0	0	1

*These estimates were not made.

Table 28.-- Monticello, Georgia: percentage of plant cover by components for the first 8 years

Treatment	Year							
	1	2	3	4	5	6	7	8
Vegetation components								
----- No cover -----								
No control	55	7	8	4	2	1	0	0
Woody control	75	31	15	6	6	4	3	1
Herb control	81	70	47	53	52	30	23	18
Total control	87	85	55	57	51	37	25	18
----- Pine cover -----								
No control	--*	7	10	13	18	40	51	54
Woody control	--	8	20	25	28	45	60	68
Herb control	--	8	21	37	41	68	78	84
Total control	--	9	28	39	43	61	76	83
----- Woody cover -----								
No control	--	19	21	30	28	25	37	42
Woody control	--	2	1	1	1	1	1	1
Herb control	--	9	9	13	10	8	12	12
Total control	--	1	0	0	0	0	3	1
----- Herbaceous cover -----								
No control	45	70	60	72	57	60	61	60
Woody control	25	62	64	82	69	67	70	55
Herb control	19	14	26	3	2	1	4	11
Total control	13	6	18	10	1	5	6	10
Herbaceous components								
----- Grasses and grasslike cover -----								
No control	11	35	33	38	34	37	40	44
Woody control	4	22	46	58	51	51	54	43
Herb control	8	5	11	1	1	1	2	7
Total control	3	1	10	5	4	2	4	6
----- Forb cover -----								
No control	23	17	8	9	4	5	5	5
Woody control	10	37	13	9	7	4	4	3
Herb control	4	3	4	0	0	0	0	1
Total control	3	3	3	1	1	1	0	1
----- Vine cover -----								
No control	8	11	18	22	9	9	11	7
Woody control	8	2	2	12	8	7	8	8
Herb control	5	3	9	0	0	0	0	1
Total control	5	1	4	4	2	1	1	1
----- Semiwoody cover -----								
No control	5	5	1	1	8	5	3	2
Woody control	2	0	0	0	3	2	1	0
Herb control	1	3	0	0	0	0	0	1
Total control	2	1	0	0	0	0	0	0

*These estimates were not made.

Table 29.--Appomattox, Virginia: percentage of plant cover by components for the first 8 years

Treatment	Year							
	1	2	3	4	5	6	7	8
Vegetation components								
----- No cover -----								
No control	18	12	--*	--	9	3	0	2
Woody control	22	62	--	--	16	2	2	2
Herb control	27	40	--	--	27	4	2	2
Total control	33	93	--	--	39	6	1	2
----- Pine cover -----								
No control	--	2	--	--	11	8	19	15
Woody control	--	2	--	--	20	23	47	47
Herb control	--	2	--	--	12	8	20	10
Total control	--	2	--	--	29	50	74	67
----- Woody cover -----								
No control	--	53	--	--	55	75	86	85
Woody control	--	4	--	--	4	6	7	11
Herb control	--	53	--	--	55	75	88	87
Total control	--	4	--	--	0	2	2	3
----- Herbaceous cover -----								
No control	56	40	--	--	29	45	39	24
Woody control	53	35	--	--	67	96	99	82
Herb control	37	9	--	--	6	19	14	11
Total control	38	3	--	--	32	83	69	67
Herbaceous components								
----- Grasses and grasslike cover -----								
No control	21	16	--	--	24	29	21	11
Woody control	6	9	--	--	49	83	74	53
Herb control	13	3	--	--	5	11	8	7
Total control	16	2	--	--	26	74	57	51
----- Forb cover -----								
No control	36	11	--	--	5	7	10	5
Woody control	39	13	--	--	19	11	15	12
Herb control	16	2	--	--	1	4	4	4
Total control	16	1	--	--	7	6	10	11
----- Vine cover -----								
No control	9	12	--	--	1	9	4	4
Woody control	12	9	--	--	3	11	28	21
Herb control	13	2	--	--	0	4	0	1
Total control	8	1	--	--	0	6	0	2
----- Semiwoody cover -----								
No control	4	9	--	--	3	9	4	4
Woody control	4	5	--	--	2	6	7	7
Herb control	8	2	--	--	0	3	1	1
Total control	9	1	--	--	0	6	2	7

*These estimates were not made.

Table 30.--Pembroke, Georgia: woody competition growth response values for plants >0.5 ft tall for years 1 through 5 and at year 8

Treatment	Year					
	1	2	3	4	5	8
Nonarborescent rootstocks per acre* ----- Number -----						
Nonarborescent						
No control	5,826	9,522	10,050	9,997	4,893	12,954
Woody control	950	1,003	1,179	2,006	1,109	4,805
Herb control	4,699	4,928	5,368	5,773	3,062	6,072
Total control	862	827	158	510	493	1,214
Nonarborescent sum of heights* ----- Ft/acre -----						
No control	7,427	13,341	16,192	14,960	9,750	29,181
Woody control	1,056	1,426	1,514	2,605	1,883	9,574
Herb control	6,002	8,131	10,525	11,634	9,011	16,843
Total control	933	1,232	158	616	651	2,006
Arborescent rootstocks per acre* ----- Number -----						
No control	792	950	898	774	774	898
Woody control	70	88	35	53	70	158
Herb control	563	739	704	722	669	810
Total control	194	53	0	106	158	158
Arborescent sum of heights* ----- Ft/acre -----						
No control	1,531	2,288	2,658	2,851	3,326	4,805
Woody control	106	176	53	123	176	616
Herb control	1,091	2,270	2,710	3,854	3,678	4,646
Total control	194	88	0	123	264	317
Arborescent basal area† ----- Ft ² /acre -----						
No control	---	---	---	---	0.4	1.1
Woody control	---	---	---	---	0.0	0.1
Herb control	---	---	---	---	1.4	2.1
Total control	---	---	---	---	0.0	0.0
Arborescent rootstocks per acre with d.b.h.† ----- Number -----						
No control	---	---	---	---	326	340
Woody control	---	---	---	---	19	30
Herb control	---	---	---	---	443	338
Total control	---	---	---	---	2	4

*Values based on three 9- by 18-ft subplots within each pine measurement plot.

†Values based on 100-percent sample of pine measurement plot for arborescent hardwoods >5 ft tall.

‡These measurements were not made.

Table 31.--Bainbridge, Georgia: woody competition growth response values for plants >0.5 ft tall for years 1 through 5 and at year 8

Treatment	Year					
	1	2	3	4	5	8
Nonarborescent rootstocks per acre*						
	----- Number -----					
No control	2,084	3,294	4,369	4,885	3,899	2,398
Woody control	1,412	2,241	2,532	3,832	784	650
Herb control	2,173	2,241	2,375	1,972	1,479	874
Total control	448	22	0	0	0	134
Nonarborescent sum of heights*						
	----- Ft/acre -----					
No control	3,720	7,372	10,352	18,150	17,926	12,481
Woody control	2,465	4,481	4,504	10,755	2,465	2,644
Herb control	3,608	6,296	7,977	8,649	7,148	3,316
Total control	739	22	0	0	0	336
Arborescent rootstocks per acre*						
	----- Number -----					
No control	2,868	2,823	4,235	3,988	3,675	3,316
Woody control	1,322	739	851	515	493	851
Herb control	4,100	4,392	4,661	4,885	4,235	3,720
Total control	2,196	90	0	0	0	134
Arborescent sum of heights*						
	----- Ft/acre -----					
No control	5,579	8,873	16,805	24,222	29,353	41,341
Woody control	1,905	1,143	1,681	1,232	1,255	3,361
Herb control	7,663	14,811	21,869	30,698	35,448	42,685
Total control	2,689	90	0	0	0	202
Arborescent basal area†						
	----- Ft ² /acre -----					
No control	---	---	---	---	5.8	12.0
Woody control	---	---	---	---	0.0	0.1
Herb control	---	---	---	---	10.7	15.9
Total control	---	---	---	---	0.0	0.0
Arborescent rootstocks per acre with d.b.h.†						
	----- Number -----					
No control	---	---	---	---	1,830	1,830
Woody control	---	---	---	---	8	134
Herb control	---	---	---	---	2,714	2,618
Total control	---	---	---	---	0	3

*Values based on three 9- by 18-ft subplots within each pine measurement plot.

†Values based on 100-percent sample of pine measurement plot for arborescent hardwoods > 5 ft tall.

‡These measurements were not made.

Table 32.--Liberty, Mississippi: woody competition growth response values for plants >0.5 ft tall for years 1 through 5 and at year 8

Treatment	Year					
	1	2	3	4	5	8
Nonarborescent rootstocks per acre* ----- Number -----						
Nonarborescent						
No control	---‡	4,661	3,249	---	6,789	2,129
Woody control	---	3,316	45	---	0	0
Herb control	---	1,098	941	---	874	538
Total control	---	67	67	---	0	0
Nonarborescent sum of heights* ----- Ft/acre -----						
No control	---	16,536	17,007	---	43,940	31,303
Woody control	---	11,383	134	---	0	0
Herb control	---	4,952	6,655	---	9,030	10,442
Total control	---	112	134	---	0	0
Arborescent rootstocks per acre* ----- Number -----						
No control	---	3,182	3,316	---	5,759	3,451
Woody control	---	672	202	---	0	0
Herb control	---	2,935	3,047	---	3,720	2,711
Total control	---	381	224	---	0	0
Arborescent sum of heights* ----- Ft/acre -----						
No control	---	11,674	18,912	---	39,257	49,251
Woody control	---	1,748	471	---	0	0
Herb control	---	11,696	19,091	---	36,142	40,691
Total control	---	605	471	---	0	0
Arborescent basal area† ----- Ft ² /acre -----						
No control	---	---	---	---	9.7	20.1
Woody control	---	---	---	---	0.0	0.0
Herb control	---	---	---	---	9.6	21.6
Total control	---	---	---	---	0.0	0.0
Arborescent rootstocks per acre with d.b.h.† ----- Number -----						
No control	---	---	---	---	2,406	3,732
Woody control	---	---	---	---	0	0
Herb control	---	---	---	---	1,813	2,634
Total control	---	---	---	---	0	0

*Values based on three 9- by 18-ft subplots within each pine measurement plot.

†Values based on 100-percent sample of pine measurement plot for arborescent hardwoods >5 ft tall.

‡These measurements were not made.

Table 33.--*Atmore, Alabama: woody competition growth response values for plants >0.5 ft tall for years 1 through 5 and at year 8*

Treatment	Year					
	1	2	3	4	5	8
Nonarborescent rootstocks per acre*						
	Number					
No control	8,492	9,747	11,248	6,162	8,537	4,997
Woody control	829	627	807	291	269	0
Herb control	9,142	7,730	8,179	3,383	4,459	3,540
Total control	784	0	0	0	0	0
Nonarborescent sum of heights*						
	Ft/acre					
No control	10,867	15,192	24,043	15,237	21,623	22,026
Woody control	829	717	1,188	493	426	0
Herb control	12,548	13,713	21,219	13,511	17,836	17,365
Total control	784	0	0	0	0	0
Arborescent rootstocks per acre*						
	Number					
No control	1,300	1,120	1,210	1,053	986	829
Woody control	471	202	224	45	112	0
Herb control	964	762	695	695	739	515
Total control	336	67	22	0	0	0
Arborescent sum of heights*						
	Ft/acre					
No control	2,532	3,047	5,288	4,885	5,826	7,910
Woody control	515	224	515	90	336	0
Herb control	1,703	2,398	4,818	6,252	7,954	7,574
Total control	359	67	45	0	0	0
Arborescent basal area†						
	Ft ² /acre					
No control	---	---	---	---	3.2	8.1
Woody control	---	---	---	---	0.0	0.0
Herb control	---	---	---	---	7.3	15.0
Total control	---	---	---	---	0.0	0.0
Arborescent rootstocks per acre with d.b.h.†						
	Number					
No control	---	---	---	---	664	694
Woody control	---	---	---	---	0	0
Herb control	---	---	---	---	587	516
Total control	---	---	---	---	0	0

*Values based on three 9- by 18-ft subplots within each pine measurement plot.

†Values based on 100-percent sample of pine measurement plot for arborescent hardwoods > 5 ft tall.

‡These measurements were not made.

Table 34.—*Liverpool, Louisiana: woody competition growth response values for plants >0.5 ft tall for years 1 through 5 and at year 8*

Treatment	Year					
	1	2	3	4	5	8
Nonarborescent rootstocks per acre* ----- <i>Number</i> -----						
No control	2,084	2,823	2,801	3,271	3,495	3,899
Woody control	1,479	941	314	515	650	1,434
Herb control	2,420	1,815	1,568	1,479	1,613	2,577
Total control	2,263	336	112	112	157	919
Nonarborescent sum of heights* ----- <i>Ft/acre</i> -----						
No control	2,913	5,378	6,565	9,030	10,867	16,357
Woody control	1,882	1,793	403	807	1,008	3,518
Herb control	3,742	4,840	6,027	7,036	7,932	12,369
Total control	3,092	627	157	157	224	1,255
Arborescent rootstocks per acre* ----- <i>Number</i> -----						
No control	1,658	1,905	1,815	1,793	1,882	1,703
Woody control	538	179	45	67	22	90
Herb control	1,860	1,949	1,636	1,255	1,344	1,636
Total control	739	67	22	22	22	179
Arborescent sum of heights* ----- <i>Ft/acre</i> -----						
No control	3,204	5,310	6,677	8,044	9,613	13,848
Woody control	874	224	90	90	22	224
Herb control	4,280	7,260	10,688	10,867	12,996	19,920
Total control	1,412	134	22	22	22	179
Arborescent basal area[†] ----- <i>Ft²/acre</i> -----						
No control	---	---	---	---	3.4	6.6
Woody control	---	---	---	---	0.0	0.0
Herb control	---	---	---	---	10.4	14.6
Total control	---	---	---	---	0.0	0.0
Arborescent rootstocks per acre with d.b.h.[†] ----- <i>Number</i> -----						
No control	---	---	---	---	1,114	1,213
Woody control	---	---	---	---	0	0
Herb control	---	---	---	---	1,180	1,114
Total control	---	---	---	---	0	0

*Values based on three 9- by 18-ft subplots within each pine measurement plot.

[†]Values based on 100-percent sample of pine measurement plot for arborescent hardwoods >5 ft tall.

[‡]These measurements were not made.

Table 35.--Jena, Louisiana: woody competition growth response values for plants >0.5 ft tall for years 1 through 5 and at year 8

Treatment	Year					
	1	2	3	4	5	8
Nonarborescent rootstocks per acre*						
	----- <i>Number</i> -----					
No control	1,076	1,277	1,882	2,173	1,143	1,905
Woody control	314	583	246	672	650	1,434
Herb control	224	246	202	134	224	291
Total control	45	0	0	0	0	67
Nonarborescent sum of heights*						
	----- <i>Ft/acre</i> -----					
No control	1,949	2,644	4,414	5,490	3,764	11,226
Woody control	493	919	336	1,501	1,546	7,394
Herb control	314	739	829	807	1,232	2,173
Total control	45	0	0	0	0	112
Arborescent rootstocks per acre*						
	----- <i>Number</i> -----					
No control	986	964	1,344	1,389	1,232	1,188
Woody control	359	403	67	471	538	448
Herb control	874	1,076	1,008	851	650	605
Total control	179	314	0	0	22	157
Arborescent sum of heights*						
	----- <i>Ft/acre</i> -----					
No control	1,232	1,905	3,294	3,787	4,526	8,447
Woody control	448	605	112	1,098	1,322	2,711
Herb control	1,053	2,599	4,011	4,818	4,526	8,918
Total control	179	336	0	0	22	246
Arborescent basal area†						
	----- <i>Ft²/acre</i> -----					
No control	---	---	---	---	0.6	2.1
Woody control	---	---	---	---	0.0	0.9
Herb control	---	---	---	---	1.9	5.4
Total control	---	---	---	---	0.0	0.0
Arborescent rootstocks per acre with d.b.h.†						
	----- <i>Number</i> -----					
No control	---	---	---	---	277	455
Woody control	---	---	---	---	25	179
Herb control	---	---	---	---	302	329
Total control	---	---	---	---	0	0

*Values based on three 9- by 18-ft subplots within each pine measurement plot.

†Values based on 100-percent sample of pine measurement plot for arborescent hardwoods >5 ft tall.

‡These measurements were not made.

Table 36.--Tallasse, Alabama: woody competition growth response values for plants >0.5 ft tall for years 1 through 5 and at year 8

Treatment	Year					
	1	2	3	4	5	8
Nonarborescent rootstocks per acre*						
	----- <i>Number</i> -----					
No control	538	627	695	538	493	941
Woody control	45	22	0	22	0	90
Herb control	246	202	179	112	202	134
Total control	0	0	0	0	0	291
Nonarborescent sum of heights*						
	----- <i>Ft/acre</i> -----					
No control	1,053	1,703	2,263	2,173	2,734	5,467
Woody control	45	45	0	45	0	224
Herb control	471	560	538	538	627	583
Total control	0	0	0	0	0	336
Arborescent rootstocks per acre*						
	----- <i>Number</i> -----					
No control	3,204	3,339	3,742	3,809	3,787	3,428
Woody control	112	45	67	112	67	112
Herb control	2,106	1,927	2,017	1,860	1,793	1,793
Total control	0	0	0	0	0	134
Arborescent sum of heights*						
	----- <i>Ft/acre</i> -----					
No control	8,918	13,243	16,402	20,301	23,483	34,664
Woody control	112	45	112	134	224	381
Herb control	6,610	11,943	14,632	16,648	18,508	23,886
Total control	0	0	0	0	0	134
Arborescent basal area†						
	----- <i>Ft²/acre</i> -----					
No control	---	---	---	---	8.8	19.1
Woody control	---	---	---	---	0.0	0.0
Herb control	---	---	---	---	17.1	22.7
Total control	---	---	---	---	0.0	0.0
Arborescent rootstocks per acre with d.b.h.†						
	----- <i>Number</i> -----					
No control	---	---	---	---	1,745	2,212
Woody control	---	---	---	---	0	19
Herb control	---	---	---	---	1,704	1,690
Total control	---	---	---	---	0	0

*Values based on three 9- by 18-ft subplots within each pine measurement plot.

†Values based on 100-percent sample of pine measurement plot for arborescent hardwoods >5 ft tall.

‡These measurements were not made.

Table 37.--Warren, Arkansas: woody competition growth response values for plants >0.5 ft tall for years 1 through 5 and at year 8

Treatment	Year					
	1	2	3	4	5	8
Nonarborescent rootstocks per acre*						
	----- <i>Number</i> -----					
No control	359	964	2,666	2,286	2,465	1,636
Woody control	112	1,053	1,905	22	493	2,151
Herb control	90	134	157	67	90	157
Total control	0	0	0	0	0	157
Nonarborescent sum of heights*						
	----- <i>Ft/acre</i> -----					
No control	403	1,165	8,492	9,030	7,708	11,988
Woody control	112	1,210	7,305	45	1,076	9,837
Herb control	90	134	202	90	112	336
Total control	0	0	0	0	0	179
Arborescent rootstocks per acre*						
	----- <i>Number</i> -----					
No control	471	762	762	471	627	605
Woody control	471	202	179	22	179	179
Herb control	1,008	1,120	874	784	739	1,098
Total control	269	90	0	0	0	45
Arborescent sum of heights*						
	----- <i>Ft/acre</i> -----					
No control	784	1,703	2,263	1,658	2,017	4,123
Woody control	650	359	291	22	359	941
Herb control	1,815	5,400	6,229	7,058	7,148	16,111
Total control	269	90	0	0	0	67
Arborescent basal area†						
	----- <i>Ft²/acre</i> -----					
No control	---	---	---	---	0.2	2.2
Woody control	---	---	---	---	0.0	0.8
Herb control	---	---	---	---	1.2	3.8
Total control	---	---	---	---	0.0	0.0
Arborescent rootstocks per acre with d.b.h.†						
	----- <i>Number</i> -----					
No control	---	---	---	---	159	450
Woody control	---	---	---	---	0	206
Herb control	---	---	---	---	192	209
Total control	---	---	---	---	0	8

*Values based on three 9- by 18-ft subplots within each pine measurement plot.

†Values based on 100-percent sample of pine measurement plot for arborescent hardwoods >5 ft tall.

‡These measurements were not made.

Table 38.—Counce, Tennessee: woody plant growth response values for plants >0.5 ft tall for years 1 through 5 and at year 8

Treatment	Year					
	1	2	3	4	5	8
Nonarborescent rootstocks per acre*						
	----- <i>Number</i> -----					
No control	560	1,479	1,367	1,479	1,994	1,770
Woody control	314	695	919	1,098	538	919
Herb control	179	448	381	359	336	246
Total control	22	22	0	0	45	22
Nonarborescent sum of heights*						
	----- <i>Ft/acre</i> -----					
No control	583	1,770	2,241	3,204	4,302	5,355
Woody control	314	829	1,613	1,972	807	2,846
Herb control	179	493	471	695	717	1,479
Total control	22	22	0	0	45	45
Arborescent rootstocks per acre*						
	----- <i>Number</i> -----					
No control	1,367	1,277	1,524	1,434	1,568	1,412
Woody control	157	179	202	157	0	22
Herb control	1,770	1,636	1,524	1,367	1,232	1,255
Total control	179	22	0	0	0	0
Arborescent sum of heights*						
	----- <i>Ft/acre</i> -----					
No control	1,815	2,465	4,056	5,019	6,252	8,828
Woody control	202	269	426	314	0	22
Herb control	3,137	4,728	6,453	6,924	6,722	9,994
Total control	179	22	0	0	0	0
Arborescent basal area†						
	----- <i>Ft²/acre</i> -----					
No control	---	---	---	---	0.7	1.6
Woody control	---	---	---	---	0.0	0.0
Herb control	---	---	---	---	2.0	2.9
Total control	---	---	---	---	0.0	0.0
Arborescent rootstocks per acre with d.b.h.†						
	----- <i>Number</i> -----					
No control	---	---	---	---	439	851
Woody control	---	---	---	---	0	0
Herb control	---	---	---	---	527	590
Total control	---	---	---	---	0	0

*Values based on three 9- by 18-ft subplots within each pine measurement plot.

†Values based on 100-percent sample of pine measurement plot for arborescent hardwoods > 5 ft tall.

‡These measurements were not made.

Table 39.--Arcadia, Louisiana: woody plant growth response values for plants >0.5 ft tall for years 1 through 5 and at year 8

Treatment	Year					
	2	3	4	5	8	1
Nonarborescent rootstocks per acre*						
	----- <i>Number</i> -----					
No control	10,165	11,050	7,011	12,434	-- [‡]	4,606
Woody control	5,536	908	1,157	1,021	--	749
Herb control	4,288	3,494	2,541	1,770	--	840
Total control	930	68	0	0	--	930
Nonarborescent sum of heights*						
	----- <i>Ft/acre</i> -----					
No control	14,385	21,737	17,585	29,656	--	23,416
Woody control	7,556	1,407	2,382	2,587	--	1,225
Herb control	6,467	7,374	7,079	6,648	--	26,525
Total control	1,407	91	0	0	--	1,157
Arborescent rootstocks per acre*						
	----- <i>Number</i> -----					
No control	976	1,724	2,065	2,337	--	1,452
Woody control	590	408	476	363	--	318
Herb control	2,065	3,086	3,154	2,609	--	1,997
Total control	363	340	204	45	--	23
Arborescent sum of heights*						
	----- <i>Ft/acre</i> -----					
No control	2,496	5,083	7,488	8,690	--	13,478
Woody control	998	567	1,044	885	--	2,677
Herb control	5,196	10,937	18,265	19,377	--	5,105
Total control	522	431	408	227	--	1,157
Arborescent basal area†						
	----- <i>Ft²/acre</i> -----					
No control	---	---	---	---	3.1	5.0
Woody control	---	---	---	---	0.1	0.1
Herb control	---	---	---	---	12.3	13.2
Total control	---	---	---	---	0.0	0.0
Arborescent rootstocks per acre with d.b.h.†						
	----- <i>Number</i> -----					
No control	---	---	---	---	1,027	1,366
Woody control	---	---	---	---	131	121
Herb control	---	---	---	---	1,335	1,496
Total control	---	---	---	---	0	0

*Values based on three 9- by 18-ft subplots within each pine measurement plot.

†Values based on 100-percent sample of pine measurement plot for arborescent hardwoods >5 ft tall.

‡These measurements were not made.

Table 40.--Camp Hill, Alabama: woody competition growth response values for plants >0.5 ft tall for years 1 through 5 and at year 8

Treatment	Year					
	1	2	3	4	5	8
Nonarborescent rootstocks per acre*						
	<i>Number</i>					
No control	16,514	11,540	12,324	9,254	9,299	5,064
Woody control	2,017	1,143	45	560	1,165	2,308
Herb control	8,761	4,862	7,865	6,498	5,826	2,935
Total control	1,412	359	0	0	22	90
Nonarborescent sum of heights*						
	<i>Ft/acre</i>					
No control	22,878	19,292	21,152	20,749	19,741	15,349
Woody control	2,263	1,277	67	896	1,524	5,826
Herb control	13,915	10,778	16,200	18,284	18,351	10,823
Total control	1,412	359	0	0	45	179
Arborescent rootstocks per acre*						
	<i>Number</i>					
No control	3,428	3,630	4,459	4,100	5,086	3,988
Woody control	1,165	717	45	112	179	269
Herb control	4,168	3,227	4,011	4,414	4,571	4,526
Total control	336	112	0	0	0	426
Arborescent sum of heights*						
	<i>Ft/acre</i>					
No control	6,834	10,128	13,153	16,581	21,533	31,392
Woody control	1,389	941	67	179	291	695
Herb control	9,792	13,668	20,883	30,294	34,888	50,124
Total control	336	112	0	0	0	471
Arborescent basal area†						
	<i>Ft²/acre</i>					
No control	---	---	---	---	5.3	7.1
Woody control	---	---	---	---	0.0	0.0
Herb control	---	---	---	---	14.7	14.4
Total control	---	---	---	---	0.0	0.0
Arborescent rootstocks per acre with d.b.h.†						
	<i>Number</i>					
No control	---	---	---	---	1,827	2,173
Woody control	---	---	---	---	0	0
Herb control	---	---	---	---	2,769	2,480
Total control	---	---	---	---	0	0

*Values based on three 9- by 18-ft subplots within each pine measurement plot.

†Values based on 100-percent sample of pine measurement plot for arborescent hardwoods >5 ft tall.

‡These measurements were not made.

Table 41.--Monticello, Georgia: woody plant growth response values for plants >0.5 ft tall for years 1 through 5 and at year 8

Treatment	Year					
	1	2	3	4	5	8
Nonarborescent rootstocks per acre*						
	----- <i>Number</i> -----					
No control	3,025	4,930	5,736	3,204	2,532	2,106
Woody control	2,263	224	157	179	134	67
Herb control	717	1,210	1,591	1,143	964	1,165
Total control	717	224	22	0	67	157
Nonarborescent sum of heights*						
	----- <i>Ft/acre</i> -----					
No control	4,840	8,380	8,985	9,120	7,125	9,389
Woody control	3,585	291	291	291	224	202
Herb control	964	2,554	3,787	4,459	3,720	5,535
Total control	1,165	403	90	0	112	426
Arborescent rootstocks per acre*						
	----- <i>Number</i> -----					
No control	1,681	2,420	1,837	1,367	1,076	1,636
Woody control	1,412	426	224	90	112	90
Herb control	1,501	1,031	627	605	426	807
Total control	807	134	90	0	0	45
Arborescent sum of heights*						
	----- <i>Ft/acre</i> -----					
No control	3,003	5,736	4,885	5,579	4,078	9,254
Woody control	2,711	717	381	179	246	246
Herb control	1,815	1,882	1,860	2,577	1,703	3,966
Total control	1,255	202	134	0	0	90
Arborescent basal area†						
	----- <i>Ft²/acre</i> -----					
No control	---	---	---	---	3.3	9.3
Woody control	---	---	---	---	0.3	0.0
Herb control	---	---	---	---	2.2	3.2
Total control	---	---	---	---	0.5	0.0
Arborescent rootstocks per acre with d.b.h.†						
	----- <i>Number</i> -----					
No control	---	---	---	---	870	1,388
Woody control	---	---	---	---	107	5
Herb control	---	---	---	---	392	417
Total control	---	---	---	---	52	0

*Values based on three 9- by 18-ft subplots within each pine measurement plot.

†Values based on 100-percent sample of pine measurement plot for arborescent hardwoods > 5 ft tall.

‡These measurements were not made.

Table 42.--Appomattox, Virginia: woody competition growth response values for plants >0.5 ft tall for years 1 through 5 and at year 8

Treatment	Year					
	1	2	3	4	5	8
----- <i>Number</i> -----						
Nonarborescent rootstocks per acre*						
No control	6,341	4,907	-- [‡]	7,999	5,669	3,787
Woody control	5,848	605	--	0	45	1,120
Herb control	7,372	4,885	--	5,288	3,563	2,622
Total control	7,730	2,039	--	0	45	359
----- <i>Ft/acre</i> -----						
Nonarborescent sum of heights*						
No control	9,299	10,486	--	17,500	14,206	12,257
Woody control	9,052	986	--	0	45	3,294
Herb control	10,038	9,904	--	13,399	11,316	9,971
Total control	11,674	3,832	--	0	45	1,188
----- <i>Number</i> -----						
Arborescent rootstocks per acre*						
No control	3,495	3,294	--	2,577	2,465	3,137
Woody control	2,644	1,232	--	22	90	403
Herb control	3,652	3,249	--	2,218	2,442	2,846
Total control	2,689	1,681	--	0	45	359
----- <i>Ft/acre</i> -----						
Arborescent sum of heights*						
No control	6,341	7,820	--	10,262	14,228	23,751
Woody control	3,787	1,770	--	45	112	1,479
Herb control	7,282	9,657	--	9,792	15,013	26,844
Total control	4,123	3,652	--	0	67	762
----- <i>Ft²/acre</i> -----						
Arborescent basal area[†]						
No control	---	---	---	---	4.7	15.0
Woody control	---	---	---	---	0.1	0.2
Herb control	---	---	---	---	8.5	21.4
Total control	---	---	---	---	0.3	0.2
----- <i>Number</i> -----						
Arborescent rootstocks per acre with d.b.h.[†]						
No control	---	---	---	---	1,163	1,808
Woody control	---	---	---	---	36	134
Herb control	---	---	---	---	1,476	1,729
Total control	---	---	---	---	19	102

*Values based on three 9- by 18-ft subplots within each pine measurement plot.

[†]Values based on 100-percent sample of pine measurement plot for arborescent hardwoods >5 ft tall.

[‡]These measurements were not made.

Table 43.--Mean height of the tallest 100, 200, 300, and 400 pines per acre by treatment for each location at year 8 (continued)

Location	Treatment	Mean height of tallest trees per acre			
		100/acre	200/acre	300/acre	400/acre
		-----Feet-----			
Pembroke, GA	No control	27.3	26.2	25.4	24.7
	Woody control	33.5	32.3	31.3	30.4
	Herb control	34.5	33.6	32.8	31.9
	Total control	37.6	36.3	35.6	34.7
Bainbridge, GA	No control	32.9	31.5	30.8	30.0
	Woody control	31.3	30.3	29.6	28.8
	Herb control	35.9	35.1	34.3	33.4
	Total control	40.6	39.3	38.6	37.8
Liberty, MS	No control	30.6	29.3	28.2	27.0
	Woody control	34.2	32.6	31.4	30.3
	Herb control	40.0	38.6	37.6	36.5
	Total control	41.2	40.1	39.3	38.3
Atmore, AL	No control	25.0	23.7	23.0	22.6
	Woody control	28.7	27.2	26.4	25.5
	Herb control	29.9	28.5	27.3	26.1
	Total control	34.7	33.6	32.6	32.0
Liverpool, LA	No control	25.7	24.5	23.7	22.8
	Woody control	28.0	26.8	25.8	25.0
	Herb control	33.2	32.1	31.2	30.2
	Total control	34.7	34.1	33.6	33.0
Jena, LA	No control	29.3	28.4	27.7	26.9
	Woody control	28.9	27.9	27.1	26.1
	Herb control	35.1	34.4	33.8	33.2
	Total control	36.4	35.7	35.2	34.7
Tallassee, AL	No control	23.6	22.7	21.9	21.1
	Woody control	25.7	24.7	23.9	23.3
	Herb control	28.7	27.2	25.9	24.7
	Total control	33.3	32.5	31.8	31.2

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PESTICIDE PRECAUTIONARY STATEMENT

Pesticides used improperly can be injurious to humans, animals, and plants. Follow the directions and heed all precautions on the labels.

Store pesticides in original containers under lock and key—out of the reach of children and animals—and away from food and feed.

Apply pesticides so that they do not endanger humans, livestock, crops, beneficial insects, fish, and wildlife. Do not apply pesticides when there is danger of drift, when honey bees or other pollinating insects are visiting plants, or in ways that may contaminate water or leave illegal residues.

Avoid prolonged inhalation of pesticide sprays or dusts; wear protective clothing and equipment if specified on container.

If your hands become contaminated with a pesticide, do not eat or drink until you have washed. In case a pesticide is swallowed or gets in your eyes, follow the first-aid treatment given on the label, and get prompt medical attention. If a pesticide is spilled on your skin or clothing, remove clothing immediately and wash skin thoroughly.

Do not clean spray equipment or dump excess spray material near ponds, streams, or wells. Because it is difficult to remove all traces of herbicides from equipment, do not use the same equipment for insecticides or fungicides that you use for herbicides.

Dispose of empty pesticide containers promptly according to Federal, State, and local laws and regulations.

NOTE: Some States have restrictions on the use of certain pesticides. Check your State and local regulations. Also, because registrations of pesticides are under constant review by the Federal Environmental Protection Agency, consult your county agricultural agent or State extension specialist to be sure the intended use is still registered.

Miller, James H.; Zutter, Bruce D.; Zedaker, Shepard M.; Edwards, M. Boyd; Newbold, Ray A. 1995. A regional framework of early growth response for loblolly pine relative to herbaceous, woody, and complete competition control—The COMProiect. Gen. Tech. Rep. SO-117. New Orleans, LA: U.S. Department of Agriculture, Forest Service, Southern Forst Experiment Station. 48 p.

A common study design has been installed at 13 locations throughout the South to track the growth of loblolly pine (*Pinus taeda* L.) plantations established with 4 different competition control treatments: no control (only chopping-burning), woody control for 5 years, herbaceous control for 4 years, and total control after site preparation. This regionwide investigation is known as the Competition Omission Monitoring Project (COMP), a coordinated study with the Auburn University Silvicultural Herbicide Cooperative (Study HB-4F). Data summaries for each location are presented for loblolly pine growth and competition intensities for the first 8 years. Approximately 10,000 loblolly pine seedlings have been measured annually. Responses from this network of studies should be useful in assessing and reporting relative growth of loblolly pines for other studies and operational plantings. These data sets should be useful also for future forest growth modeling efforts.

Keywords: Forest, growth and yield modeling, herbicides, plant interference, roller-drum chopping, silviculture, site preparation, vegetation management, weed control.

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