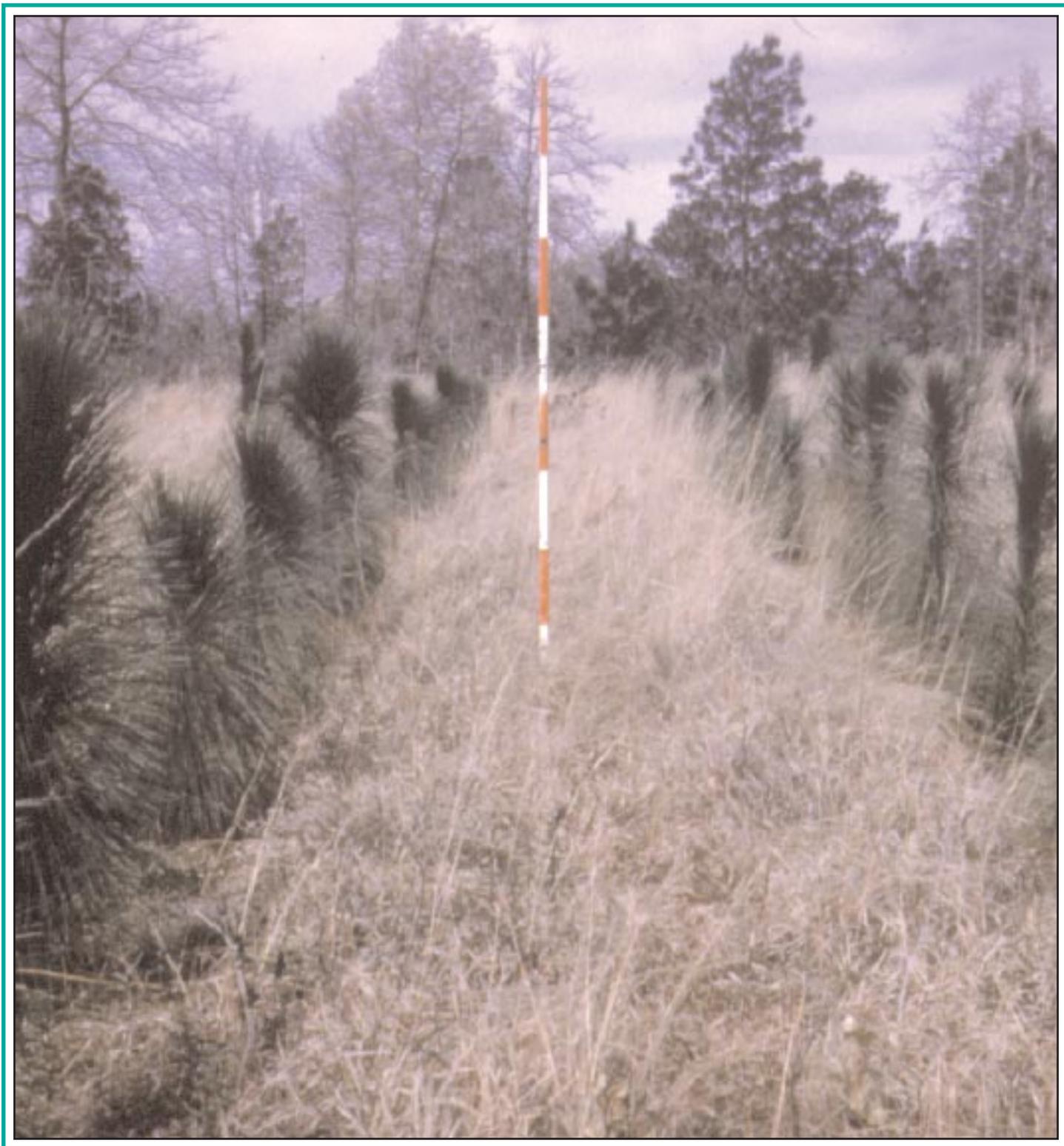


Tree Planters' Notes

U.S. Department of Agriculture—Forest Service



Volume 49, No. 1—1999



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Tree Planters' Notes

Dedicated to technology transfer and publication of research information relating to nursery production and outplanting of trees, shrubs, and native plants for reforestation, restoration, and conservation.

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Individual authors are responsible for the technical accuracy of the material in ***Tree Planters' Notes***. The mention of commercial products in this publication is solely for the information of the reader, and endorsement is not intended by the Forest Service or the U.S. Department of Agriculture.

Where Do We Go From Here?

Is there still a need for the USDA Forest Service to be involved in the transfer of technology about forest tree seedling production? Non-industrial private forest (NIPF) lands account for half of the timber harvested in the United States. In the South, which I know best, it has been reported that forest removals have exceeded growth for the first time in 30 years. Less than 20% of NIPF lands are managed under professionally developed management plans. The importance of harvest from NIPF lands will increase as harvest levels on federal lands continue to decrease. State nurseries, which are the major source of seedlings used in NIPF reforestation projects, produced 21% of the 1.5 billion seedlings grown in the United States in 1998. In the South there is presently a significant shortage of pine seedlings, estimated at 125 million. Fires, drought, and landowners who want to plant but haven't planned—all have led to an increased demand for high-quality genetically improved nursery seedlings with a known provenance. Additionally, there is an increased need for tree seedlings for use in bottomland hardwood forest habitat, ecosystem restoration, and wildlife enhancement programs as well as an increased interest in using native species. New technologies, new machines, new pests, and new techniques all generate the need for technology transfer. In all regions of the United States, a new generation of nursery workers and managers are stepping into leadership roles. As long as the United States is in need of wood and fiber, the USDA Forest Service must continue to take the lead in ensuring a steady supply of timber. NIPF landowners thus must have high-quality tree seedlings to regenerate their lands. State nurseries must have current and accurate information so that they can provide these seedlings. For these reason, the USDA Forest Service must remain involved in the transfer of technology about forest tree seedling production. ***Tree Planters' Notes*** has long been one of the means for disseminating this kind of information.

Is *Tree Planters' Notes*, after 50 years of publication still useful for technology transfer? I personally believe that ***Tree Planters' Notes*** is still one of the best tools that the USDA Forest Service has for fulfilling its technology transfer mission of making available current scientific information about the production of high-quality forest tree seedlings to the growers in forest tree nurseries. Happily, I have been given the opportunity to prove that this is true.

Who am I? My name is George Hernandez, and I am the new editor-in-chief of ***Tree Planters' Notes*** (I have replaced Clark Lantz as the Nursery and Tree Improvement Specialist for the South). As editor-in-chief, it is my responsibility to make sure that ***TPN*** continues to provide scientists working in nursery production and forest regeneration with a means to communicate their results with nursery tree growers and tree planters. It is also my responsibility to find a way to make sure that ***TPN*** continues to ensure that growers and planters of forest tree seedlings have a way of sharing their innovations and techniques with each other and with interested scientists.

Currently most of our contributors are scientists. I have always felt that one of *TPN's* strengths was that it was a journal where scientist and practitioners shared information. One of my goals is to increase the number of articles that are submitted by nursery managers and growers. I will need the help of you, our readers, to achieve this goal.

What is being planned for *TPN*? I am working with fellow members of the USDA Forest Service's Reforestation, Nurseries, and Genetic Resources (RNGR) team and the editors of *TPN* to create an editorial system that will ensure the future health, relevance, and timeliness of the journal. We are putting together an editorial team and redefining our editorial board's duties. Each person on this team will have to contribute in order for us to reach this goal. Karen E. Burr of the USDA Forest Service's Coeur d'Alene Nursery has been appointed as the editor and will handle the day-to-day business of receiving and screening manuscripts and getting them reviewed appropriately. Rebecca G. Nisley, our managing editor, will continue to edit and work with graphic designers and printers to produce the magazine. Contributing editors will be expected to write. I will be interacting with nursery managers and workers at meetings and nursery visits to find out what *TPN* readers are interested in hearing about and what they have learned or developed that they are willing to share with their fellow *TPN* readers. In addition, the "Cultural Perspectives" column from *Forest Nursery Notes* written by Tom Landis, Nursery and Tree Improvement Specialist for the West, will be moving to *TPN* and will become a regular feature in future issues. Look for further improvements and refinements in the issues to come.

This issue marks the return of the State & Private Forestry's National Tree Planting Report to *Tree Planters' Notes*. In the "old days," lots of reports like this were published as part of *TPN* and we welcome the opportunity to return this report to our pages. It will be one of three issues of *TPN* now published annually. We plan on publishing only two regular issues a year, issues that we hope will be fat with good articles. **PLEASE NOTE THAT WE ARE SKIPPING THE YEAR 1998, BUT THAT THE VOLUME NUMBERS WILL CONTINUE ALONG IN PROPER SEQUENCE.**

George A. Hernandez
USDA Forest Service
S&PF Southern Nursery Specialist
Atlanta, Georgia

Note: Our concept of this editorial space is that it should be a place to publish opinions and ideas relating to the nursery, reforestation, and restoration professions. We invite you to submit ideas for commentaries. The views expressed here are solely those of the author(s) and do not necessarily reflect those of the *Tree Planters' Notes* editorial staff, the Forest Service, or the U.S. Department of Agriculture. — GAH, KEB, RGN, and the editorial board

This publication reports research involving pesticides. It does not contain recommendations for their use, nor does it imply that the uses discussed here have been registered. All uses of pesticides must be registered by appropriate state and/or federal agencies before they can be recommended. **Caution: Pesticides can be injurious to humans, domestic animals, desirable plants, and fish and other wildlife**—if they are not handled or applied properly. Use all pesticides selectively and carefully. Follow recommended practices for the disposal of surplus pesticides and pesticide containers.

PLEASE NOTE THAT THIS ISSUE YOU ARE READING (VOLUME 49, No. 1) IS THE NEXT ONE AFTER SUMMER/FALL 1997 (VOLUME 48, NOS. 3 & 4). THERE WILL BE NO TREE PLANTERS' NOTES MARKED 1998.

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Cover: Longleaf pine plantation in Louisiana (photograph by Jim Barnett, USDA Forest Service, Pineville, LA).

Tree Planting in the United States—1997

Robert J. Moulton

Senior analyst, USDA Forest Service, State and Private Forestry, Cooperative Forestry, Research Triangle Park, North Carolina

This annual report summarizes tree planting, timber stand improvement, and nursery production activities across all ownerships of forest land in the United States. It includes state-by-state and ownership breakdowns, regional totals, as well as analysis of the trends in the data. It does not include tree planting in urban and community environments. As far as we know, it is the most complete compilation of such data in the country. However, because some of the data are estimated, caution must be used in drawing inferences. Tree Planters' Notes 49 (1): 5-15; 1998.

Tree Planting

Overview

Tree planting (including seeding) on all ownerships in the United States in fiscal year 1997 (FY 1997 = October 1, 1996 to September 30, 1997) totaled 2,636,102 acres. This is an increase of 10% over last year (FY 1996), and the largest acreage planted to trees in any year since FY 1990.

As shown in the accompanying table and graph (page 6), tree planting in the United States has been on a rather steady upward track over the long term, rising from about 140,000 acres in 1930 to the current annual level of 2.6 million acres. Three major peak periods of tree planting activity have occurred over the years, all of which were associated with major federal programs.

The Civilian Conservation Corps (CCC) planted 2.3 million acres of public and private lands to trees from the mid-1930's to the mid-1940's; the Soil Bank Program planted 2.2 million acres of private croplands to trees from 1956 through 1961; and the Conservation Reserve Program (CRP) has planted trees on 2.6 million acres of highly erodible croplands, mostly during the late 1980's.

Actually, none of these major programs was created to plant trees nor to provide other natural resource benefits per se, but rather to address greater societal needs. The CCC was a Great Depression program that provided employment to thousands of unemployed young men. Both the Soil Bank and CRP were prompted by economic crises in agriculture and the need to take surplus crop land out of production to enhance farmers'

1997 SUMMARY

- ▶ Trees were planted on 2,636,102 acres.
- ▶ Timber stand improvement was completed on 1,417,056 acres.
- ▶ Nursery production totaled 1,623,978,000 trees.

incomes and to reduce federal agricultural program costs.

Currently, ever-increasing concerns about global climate change could prompt yet another major reforestation program. Because trees and forests play a vital role in regulating the Earth's carbon cycle, "Accelerated Tree Planting on Nonindustrial Private Lands" was one of the mitigation strategies included in the President's 1993 Climate Change Action Plan, and electric utility companies and others have already launched significant new climate change forestry initiatives, including tree planting projects domestically and overseas.

Several observations can be made regarding 1997 tree planting accomplishments:

- ▶ Since achieving an all-time record high of 3.4 million acres at the peak of the CRP program in 1988, annual planting has been relatively constant at about 2.5 million acres from 1991 through 1996. This year's increase to 2.6 million acres (+10%) may be an indication that annual planting will again resume an upward trend.
- ▶ Private landowners are leading the way by doing 89% of all tree planting and by increasing their rate of planting.
- ▶ Tree planting on the national forests (6% of the U.S. total) is at its lowest level since 1960.
- ▶ Federal financial assistance for tree planting on non-industrial private forest lands has declined sharply in recent years—only one-third as many acres were planted on private lands with federal programs in FY 1997 as in FY 1995.

Summary of tree planting 1930–1997

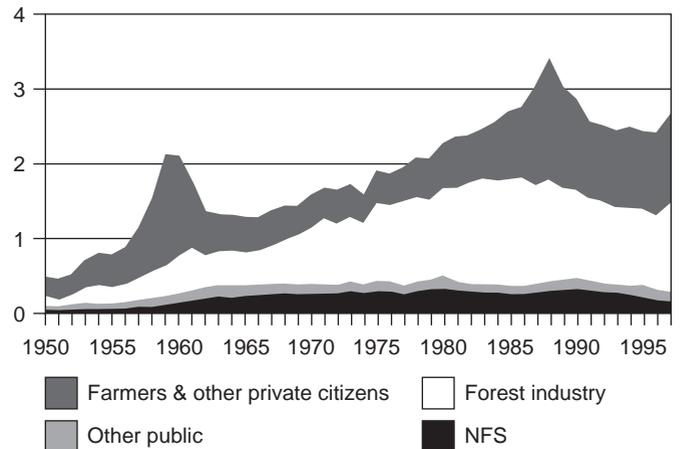
Fiscal year	Acres
1930	138,970
1935	292,033
1940	519,051
1945	138,944
1950	497,507
1955	812,588
1960	2,137,460
1965	1,325,063
1970	1,599,819
1975	1,930,468
1976	1,892,309
1977	1,978,170
1978	2,088,568
1979	2,061,373
1980	2,266,956
1981	2,351,389
1982	2,374,794
1983	2,453,386
1984	2,553,029
1985	2,695,423
1986	2,753,176
1987	3,033,159
1988	3,394,478
1989	3,021,948
1990	2,862,207
1991	2,558,025
1992	2,544,862
1993	2,419,691
1994	2,477,479
1995	2,421,861
1996	2,406,700
1997	2,636,102

Tree Planting by Ownership Group

Private landowners planted 2,344,944 acres of trees in FY 1997, 89% of all tree planting in the United States for the year, and an increase of 12% over planting on private ownerships in FY 1996. Moreover, increases in planting occurred for all reported private ownership categories (page 7).

Forest industry. Companies in the forest products industry reported the planting of 1,188,362 acres of trees in FY 1997 (45% of the U.S. total), the most of any ownership group, and an increase of 182,560 acres (18%) over their 1996 accomplishments. This large increase is largely due to accelerated tree planting by forest indus-

Tree planting trends 1950-1997:



try companies in Alabama, as described in more detail in the “State and Regional Highlights” of this report.

In addition, American Forest and Paper Association (AF&PA) member companies provided free seedlings to more than 12,500 non-industrial private landowners for reforestation on 140,000 acres in FY 1997. AF&PA landowner assistance programs have contributed to planting of more than 1 million acres of land in NIPF ownerships since 1990.

Non-industrial private forest (NIPF) landowners.

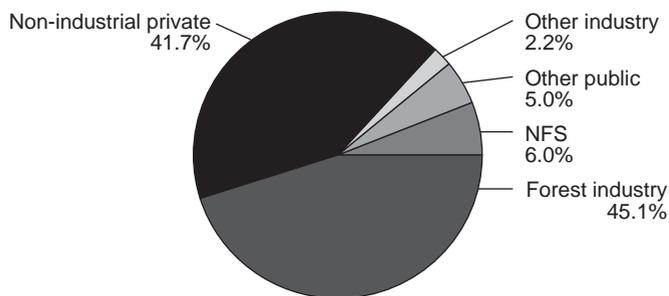
Private landowners, with the exception of companies in the forest products industry, planted 1,156,582 acres (44% of U.S. total), the highest acreage planted to trees by these owners since 1990. As the term is used in this paragraph, NIPF owners include “other industries (insurance companies, investment funds, mining companies, etc.)”. These NIPF landowners planted 56,971 acres in FY 1997, an increase of about 2,500 acres (5%) over their reported planting levels in FY 1996.

Federal incentive programs of the U.S. Department of Agriculture and the USDA Forest Service, operated with the cooperation of the state foresters, contributed to planting of 144,000 acres of trees in FY 1997. The Forestry Incentives Program (FIP) planted 106,000 acres and the Stewardship Incentive Program (SIP) planted 38,000 acres. Federal assistance for tree planting on private ownerships has declined sharply in recent years. In FY 1995, for example, federal programs planted 419,000 acres on NIPF ownerships. Of this total, 199,000 acres were planted under the Agricultural Conservation Program (ACP), 79,000 acres were planted under SIP, and 141,000 acres under FIP. ACP was eliminated by the 1996 Farm Bill, and funding for FIP and SIP has been greatly reduced in recent years.

National forests. Tree planting on National Forest System (NFS) lands administered by the USDA Forest

Total planting and seeding by ownership category in FY 1997:

	Acres	Percent of all planting
Federal Government		
National Forest System*	158,918	6.0
Department of the Interior	13,956	0.5
Other federal agencies	15,571	0.6
Total	188,445	7.1
Non-federal public		
State forests	37,430	1.4
Other state lands	15,732	0.6
Local government	49,551	1.9
Total	102,713	3.9
Private		
Forest industry	1,188,362	45.1
Other industry	56,971	2.2
Non-industrial private	1,099,611	41.7
Total	2,344,944	89.0
Grand total	2,636,102	100.0



Service totaled 158,918 acres in FY 1997. This was 15,441 fewer acres (-9%) than were planted on NFS lands in FY 1996; half of the acreage planted on NFS lands in the record-high years of FY 1990 and 1991; and the lowest acreage planted on these lands in any year since FY 1960.

This decrease in tree planting on NFS lands in recent years is primarily a reflection of reduced timber harvesting—especially of harvests of old-growth timber in the Pacific Northwest—on NFS ownerships, which

decreased from a record high of 12.71 billion board feet in FY 1987 to 3.72 billion board feet in FY 1996. The Forest Service has also made a significant shift to the use of natural regeneration, instead of planting, on the stands now being harvested.

Other public lands. Department of Interior agencies reported planting 13,956 acres of trees in FY 1997, as compared with 20,844 acres in 1996. All other federal agencies (excluding USDA and USDI), planted 15,571 acres in FY 1997, an increase of 4,535 acres over reported FY 1996 accomplishments.

State and local governments reported the planting of 102,713 acres of trees in FY 1997, 9,937 fewer acres than were planted in FY 1996.

State and Regional Highlights

The top states. Eleven states each planted more than 100,000 acres in FY 1997. Collectively, these states—9 in the South and 2 in the Pacific Northwest—planted 2.2 million acres, 85% of the U.S. total (below).

States that planted more than 100,000 acres of trees in FY 1997

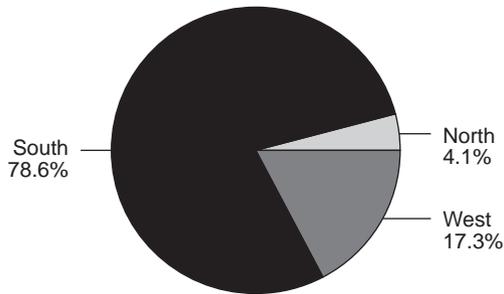
Alabama	438,000
Georgia	397,000
Mississippi	282,000
Florida	193,000
South Carolina	166,000
Washington	158,000
Louisiana	144,000
Oregon	134,000
North Carolina	114,000
Arkansas	110,000
Texas	108,000

Alabama moved to the top of the list this year, replacing Georgia, which has been the long-standing leader in tree planting. This was due to a serious effort by forest industry in Alabama to replant company lands damaged by Hurricane Opal in October 1995. Forest industry in Alabama planted over 294,000 acres in FY 1997, as compared with 122,000 acres in FY 1996.

Regional notes. The 13 states in the South (see definitions, page 15) planted and seeded 2,070,849 acres of trees in FY 1997 (page 8), 79% of the U.S. total and 13% more acreage than was reported last year. The West ranked next, with 457,023 acres (17% of the U.S. total) and 8% more than were planted in FY 1996. Finally, the states in the North reported the planting of 108,230 acres (4% of the U.S. total) and 35,406 fewer acres than were planted last year (page 8).

Total planting and seeding by region in FY 1997:

	Acres	Percent of all planting
North	108,230	4.1
South	2,070,849	78.6
West	457,023	17.3
Total	<u>2,636,102</u>	<u>100.0</u>



Direct Seeding

The use of seeds to establish trees in the field (planting by direct seeding) was reported on 21,044 acres (less than 1% of all planting) in FY 1996. This is 2,583 fewer acres than were reported for direct seeding last year and is primarily attributable to less direct seeding being reported on forest industry ownerships. Seeding acreages are included in all planting values in this report.

Appendix Tables

Tree planting acreages for all states by ownership categories are listed in tables 1 through 5 in the appendix of this report. Direct seeding acreages are listed in table 4.

Timber Stand Improvement

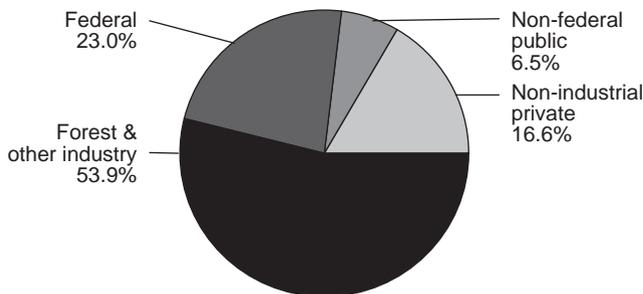
Timber stand improvement was reported for 1,417,057 acres in FY 1997, as contrasted with 2,633,075 acres in FY 1996. The decrease of 1,216,018 acres (- 46%) appears to be a function of the nonreporting or underreporting of FY 1997 accomplishments, rather than an actual change in the amount of timber stand improvement that took place.

Table 6 in the appendix lists the reported timber stand accomplishments by ownership and State for this year.

CAUTION: *These data may not be accurate for several states due to non-reporting or underreporting for some ownerships.*

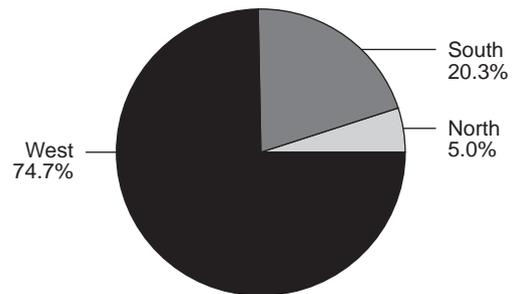
Timber stand improvement by ownership category in FY 1997:

	Acres	Percent of total
National Forest System	260,639	18.4
Other federal	65,579	4.6
Non-federal public	91,326	6.5
Non-industrial private	235,779	16.6
Forest & other industry	763,733	53.9
Total	1,417,056	100.0



Timber stand improvement by region in FY 1997:

	Acres	Percent of total
North	71,204	5.0
South	287,885	20.3
West	1,057,967	74.7
Total	1,417,056	100.0

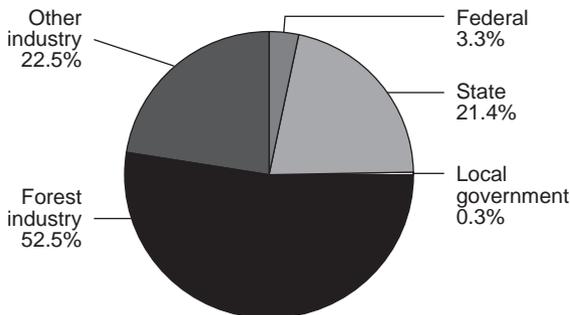


Nursery Production

A total of 1,623,978,000 trees were produced (shipped) by forest tree nurseries in the United States in FY 1997. This is an increase of 94 million trees (6%) over the 1,529,534,000 nursery trees reported for FY 1996.

Nursery production of tree planting stock by public, industrial, and other private nurseries in FY 1997:

	Million seedlings	Percent of total
Nurseries		
Federal	53	3.3
State	348	21.4
Local government	5	0.3
Forest industry	852	52.5
Other industry	366	22.5
Total	1,624	100.0



By Sector

Forest industry. Nurseries owned by forest product companies produced 852 million trees in FY 1997, 53% of all production, and 26 million more than in FY 1996.

Other industry. Private nurseries not owned by forest industry produced 366 million trees in 1997, an increase of 161 million trees (79%) over last year.

Increased production, as compared with last year, was reported for a number of states, including Arizona (up almost 50 million), Georgia (up 90 million), Louisiana (up 24 million) and Oregon (up by almost 16 million).

State nurseries. State nurseries produced 348 million trees (21% of U.S. total) in FY 1997, as compared with 396 million in FY 1996.

Other public nurseries. Federal nurseries produced 53 million trees in FY 1997, 3% of the U.S. total, and 11 million fewer trees than they grew in 1996.

Only 5 million trees were reported as being produced by nurseries operated by local governments in FY 1997, as contrasted with 38 million trees last year. This difference is due to no production being reported in this ownership category for Louisiana, Mississippi, North Dakota, and Wisconsin for FY 1997.

State and Regional Highlights

The top states. Ten states each produced 50 million or more trees in their nurseries in FY 1997 (see page 11). Georgia topped the list with 251 million trees, followed closely by Alabama with 237 million. Florida, Texas, Arkansas, and North Carolina each produced over 100 million trees.

States with nursery production of 50 million or more trees in FY 1997

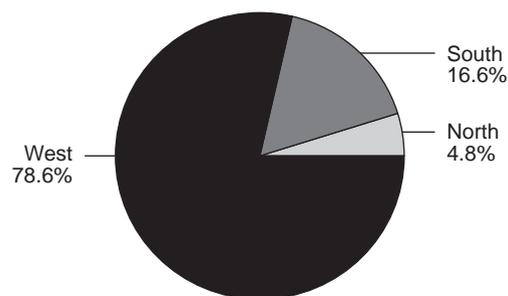
Georgia	251 million
Alabama	237 million
Florida	160 million
Texas	126 million
Arkansas	120 million
North Carolina	104 million
South Carolina	99 million
Oregon	87 million
Washington	85 million
Louisiana	67 million

Together, these 10 states produced 82% of the nursery trees in the United States.

Regional notes. The South produced almost 1.3 billion forest trees (79% of the U.S. total) and 71 million more than last year. Nursery output was also up in the West by 72 million, as compared with last year, and totaled 270 million (17% of U.S. total). However, tree production at nurseries in the North was reported at only 77 million (5% of U.S. total) as compared with 125 million in FY 1996.

Nursery production by region in FY 1997:

	Million seedlings	Percent of total
North	77	4.8
South	1,277	78.6
West	270	16.6
Total	<u>1,624</u>	<u>100.0</u>



Appendix Table

Table 7 in the appendix gives nursery production figures for all states by owner.

This report, *Tree Planting in the United States*, is published annually by the USDA Forest Service, State and Private Forestry, Cooperative Forestry Staff, Washington, DC. Additional copies can be obtained by contacting the author.

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Acknowledgments

This report reflects the input of many people, and I gratefully acknowledge their individual contributions. I have been helped by personnel in the state forestry agencies in obtaining data from companies in the forest products and other industries, all state and local agen-

cies, individual private landowners, and the assistance of USDA Forest Service field offices and the Reforestation, Nursery, and Genetic Resources National Team in verifying the accuracy of submissions. Frank Burch, USDA Forest Service Forest Management Staff, Washington, DC, provided data for all National Forest System lands. Department of Interior data were furnished by Dwight Fielder, Bureau of Land Management, and Bill Downes, Bureau of Indian Affairs. Scott English, U.S. Army Environmental Center, and Denise Y. White, U.S. Army Corps of Engineers, provided Department of Army entries. Jack A. Muncy reported for the Tennessee Valley Authority.

The author also thanks Kareem Macom, Diane Riggsbee, and Rita Goldstein of the Forestry Science Laboratory, Research Triangle Park for their assistance in preparing the appendix tables, graphics sections, and other aspects of this report.

Table 1—Acreage of tree planting, including seeding, on Federal land (October 1, 1996–September 30, 1997)

	National Forest System	Department of the Interior	Other federal	Total
Alabama	1,604	0	579	2,183
Alaska	781	60	15	856
Arizona	710	303	0	1,013
Arkansas	4,091	0	1,500	5,591
California	36,812	201	0	37,013
Colorado	709	1,143	12	1,864
Connecticut	0	0	0	0
Delaware	0	0	0	0
Florida	2,973	0	3,972	6,945
Georgia	1,029	0	2,429	3,458
Hawaii	0	0	0	0
Idaho	20,108	239	0	20,347
Illinois	200	0	85	285
Indiana	0	0	541	541
Iowa	0	0	0	0
Kansas	0	0	0	0
Kentucky	589	0	25	614
Louisiana	847	0	196	1,043
Maine	0	40	0	40
Maryland	0	0	0	0
Massachusetts	0	0	0	0
Michigan	3,377	0	0	3,377
Minnesota	1,845	591	1,000	3,436
Mississippi	6,273	117	1,503	7,893
Missouri	317	0	20	337
Montana	12,217	643	0	12,860
Nebraska	0	232	0	232
Nevada	0	0	0	0
New Hampshire	11	0	0	11
New Jersey	0	0	0	0
New Mexico	729	1,273	0	2,002
New York	0	0	0	0
North Carolina	747	0	581	1,328
North Dakota	0	20	0	20
Ohio	67	0	0	67
Oklahoma	0	45	50	95
Oregon	41,583	1,460	0	43,043
Pennsylvania	191	0	0	191
Rhode Island	0	0	0	0
South Carolina	1,164	0	1,584	2,748
South Dakota	0	115	0	115
Tennessee	606	0	110	716
Texas	496	0	150	646
Utah	1,242	0	0	1,242
Vermont	232	0	0	232
Virginia	333	0	743	1,076
Washington	14,862	7,065	476	22,403
West Virginia	110	0	0	110
Wisconsin	835	409	0	1,244
Wyoming	1,228	0	0	1,228
American Samoa	0	0	0	0
CNMI	0	0	0	0
FSM	0	0	0	0
Guam	0	0	0	0
Marshall Islands	0	0	0	0
Palau	0	0	0	0
Puerto Rico	0	0	0	0
Grand total	158,918	13,956	15,571	188,445

Note: CNMI = Commonwealth of the Northern Mariana Islands, FSM = Federated States of Micronesia.

Table 2—Acreage of tree planting, including seeding, on non-federal public land (October 1, 1996–September 30, 1997)

	State forest land	Other state land	Local government	Total
Alabama	—	356	—	598
Alaska	870	580	0	1,450
Arizona	—	—	—	0
Arkansas	—	400	50	450
California	200	100	50	350
Colorado	21	35	203	259
Connecticut	0	0	0	0
Delaware	0	2	0	2
Florida	3,272	—	—	3,272
Georgia	2,069	—	1,203	3,272
Hawaii	—	70	—	70
Idaho	3,533	0	0	3,533
Illinois	0	0	0	0
Indiana	—	—	—	0
Iowa	0	—	—	0
Kansas	0	25	0	25
Kentucky	—	195	—	195
Louisiana	0	1,915	—	1,915
Maine	0	0	0	0
Maryland	45	125	150	320
Massachusetts	—	—	1	1
Michigan	3,000	—	—	3,000
Minnesota	3,600	—	2,462	6,062
Mississippi	—	9,662	36,346	46,008
Missouri	0	0	0	0
Montana	351	0	0	351
Nebraska	—	217	—	217
Nevada	—	1	3	4
New Hampshire	0	0	0	0
New Jersey	30	25	0	55
New Mexico	—	—	—	0
New York	0	0	0	0
North Carolina	160	445	760	1,365
North Dakota	16	0	0	16
Ohio	16	0	0	16
Oklahoma	0	150	10	160
Oregon	2,087	113	448	2,648
Pennsylvania	578	—	—	578
Rhode Island	0	0	10	10
South Carolina	1,264	524	5,586	7,374
South Dakota	—	105	—	105
Tennessee	115	227	—	342
Texas	—	—	—	—
Utah	—	448	—	448
Vermont	10	0	0	10
Virginia	—	—	—	0
Washington	15,000	—	—	15,000
West Virginia	8	0	2	10
Wisconsin	1,100	0	2,250	3,350
Wyoming	—	—	—	—
American Samoa	—	12	—	12
CNMI	1.3	0	4.5	6
FSM	15	0	2.5	18
Guam	67	0	0	67
Marshall Islands	—	—	—	0
Palau	—	—	10	10
Puerto Rico	2	—	—	2
Grand total	37,430	15,732	49,551	102,713

Note: CNMI = Commonwealth of the Northern Mariana Islands, FSM = Federated States of Micronesia; — indicates unknown information or data not available.

Table 3—Acreage of tree planting, including seeding, on private land (October 1, 1996–September 30, 1997)

	Non-industrial private	Forest industry	Other industry	Total
Alabama	140,435	294,118	420	434,973
Alaska	550	0	0	550
Arizona	367	—	—	367
Arkansas	45,000	57,558	1,000	103,558
California	10,000	30,000	400	40,400
Colorado	5,865	—	29	5,894
Connecticut	250	0	0	250
Delaware	579	1,280	0	1,859
Florida	70,069	112,554	—	182,623
Georgia	221,276	168,720	—	389,996
Hawaii	9	460	—	469
Idaho	1,014	8,744	0	9,758
Illinois	6,831	0	0	6,831
Indiana	1,666	714	—	2,380
Iowa	6,017	0	—	6,017
Kansas	1,781	3	0	1,784
Kentucky	1,802	2,474	3,857	8,133
Louisiana	48,123	93,002	—	141,125
Maine	0	0	0	0
Maryland	6,640	1,500	0	8,140
Massachusetts	6	—	—	6
Michigan	3,000	—	—	3,000
Minnesota	5,629	3,790	—	9,419
Mississippi	138,138	89,790	—	227,928
Missouri	1,108	0	0	1,108
Montana	497	7,900	0	8,397
Nebraska	3,680	—	—	3,680
Nevada	475	—	—	475
New Hampshire	0	0	0	0
New Jersey	626	0	0	626
New Mexico	—	—	—	0
New York	1,650	0	312	1,962
North Carolina	75,976	35,309	—	111,285
North Dakota	2,696	0	0	2,696
Ohio	1,710	1,600	3,220	6,530
Oklahoma	3,715	9,855	45	13,615
Oregon	31,078	55,857	1,362	88,297
Pennsylvania	12,829	—	—	12,829
Rhode Island	18	0	0	18
South Carolina	56,493	53,210	45,936	155,639
South Dakota	3,499	—	—	3,499
Tennessee	6,147	—	—	6,147
Texas	43,161	64,006	—	107,167
Utah	202	—	240	442
Vermont	45	—	—	45
Virginia	68,001	21,614	—	89,615
Washington	46,800	74,200	—	121,000
West Virginia	1,171	104	150	1,425
Wisconsin	22,500	0	0	22,500
Wyoming	10	—	—	10
American Samoa	24	—	—	24
CNMI	4.1	0	0	4
FSM	28.5	0	0	28
Guam	21	0	0	21
Marshall Islands	10	—	—	10
Palau	40	—	—	40
Puerto Rico	349	0	—	349
Grand total	1,099,611	1,188,362	56,971	2,344,944

Note: CNMI = Commonwealth of the Northern Mariana Islands, FSM = Federated States of Micronesia; — indicates unknown information or data not available.

Table 4—Average of direct seeding by ownership category; included in tables 1, 2, & 3 (October 1, 1996–September 30, 1997)

	Federal	Non-federal public	Non-industrial private	Forest & other industry	Total
Alabama	0	—	0	—	0
Alaska	0	0	1,000	0	1,000
Arizona	0	—	—	—	0
Arkansas	407	—	500	—	907
California	10	0	0	0	10
Colorado	152	—	—	—	152
Connecticut	0	0	0	0	0
Delaware	0	0	0	0	0
Florida	3,685	183	100	—	3,968
Georgia	41	—	—	—	41
Hawaii	0	—	—	—	0
Idaho	0	0	0	5	5
Illinois	0	0	186	0	186
Indiana	0	—	—	—	0
Iowa	0	0	139	0	139
Kansas	0	0	30	0	30
Kentucky	0	—	—	—	0
Louisiana	60	0	—	—	60
Maine	0	0	0	0	0
Maryland	60	0	0	0	60
Massachusetts	0	—	—	—	0
Michigan	447	1,000	—	—	1,447
Minnesota	556	5,896	—	—	6,452
Mississippi	241	—	2,507	—	2,748
Missouri	0	0	0	0	0
Montana	20	0	0	700	720
Nebraska	0	—	—	—	0
Nevada	0	—	—	—	0
New Hampshire	0	0	—	0	0
New Jersey	0	0	0	0	0
New Mexico	0	—	—	—	0
New York	0	0	85	0	85
North Carolina	0	—	104	—	104
North Dakota	0	0	0	0	0
Ohio	0	0	0	0	0
Oklahoma	0	0	250	0	250
Oregon	0	0	0	0	0
Pennsylvania	0	—	25	—	25
Rhode Island	10	0	0	0	10
South Carolina	0	—	—	—	0
South Dakota	0	0	0	0	0
Tennessee	0	—	—	—	0
Texas	0	0	17	0	17
Utah	2,122	—	—	—	2,122
Vermont	14	—	0	0	14
Virginia	0	—	—	—	0
Washington	50	0	0	0	50
West Virginia	0	0	0	0	0
Wisconsin	64	25	150	0	239
Wyoming	197	0	0	0	197
American Samoa	0	0	3	—	3
CNMI	—	3	—	—	3
FSM	—	0	0	0	0
Guam	—	0	0	0	0
Marshall Islands	—	—	0	—	0
Palau	—	—	—	—	0
Puerto Rico	0	—	0	—	0
Grand total	8,136	7,107	5,096	705	21,044

Note: CNMI = Commonwealth of the Northern Mariana Islands, FSM = Federated States of Micronesia; — indicates unknown information or data not available.

Table 5—Total acreage of tree planting, including seeding, by ownership category (October 1, 1996–September 30, 1997)

	Table 1 (Federal)	Table 2 (Non-federal public)	Table 3 (Private)	Total acres planted
Alabama	2,183	356	434,973	437,512
Alaska	856	1,450	550	2,856
Arizona	1,013	0	367	1,380
Arkansas	5,591	450	103,558	109,599
California	37,013	350	40,400	77,763
Colorado	1,864	259	5,894	8,017
Connecticut	0	0	250	250
Delaware	0	2	1,859	1,861
Florida	6,945	3,272	182,623	192,840
Georgia	3,458	3,272	389,996	396,726
Hawaii	0	70	469	539
Idaho	20,347	3,533	9,758	33,638
Illinois	285	0	6,831	7,116
Indiana	541	0	2,380	2,921
Iowa	0	0	6,017	6,017
Kansas	0	25	1,784	1,809
Kentucky	614	195	8,133	8,942
Louisiana	1,043	1,915	141,125	144,083
Maine	40	0	0	0
Maryland	0	320	8,140	8,460
Massachusetts	0	1	6	7
Michigan	3,377	3,000	3,000	9,377
Minnesota	3,436	6,062	9,419	18,917
Mississippi	7,893	46,008	227,928	281,829
Missouri	337	0	1,108	1,445
Montana	12,860	351	8,397	21,608
Nebraska	232	217	3,680	4,129
Nevada	0	4	475	479
New Hampshire	11	0	0	11
New Jersey	0	55	626	681
New Mexico	2,002	0	0	2,002
New York	0	0	1,962	1,962
North Carolina	1,328	1,365	111,285	113,978
North Dakota	20	16	2,696	2,732
Ohio	67	16	6,530	6,613
Oklahoma	95	160	13,615	13,870
Oregon	43,043	2,648	88,297	133,988
Pennsylvania	191	578	12,829	13,598
Rhode Island	0	10	18	28
South Carolina	2,748	7,374	155,639	165,761
South Dakota	115	105	3,499	3,719
Tennessee	716	342	6,147	7,205
Texas	646	—	107,167	107,813
Utah	1,242	448	442	2,132
Vermont	232	10	45	287
Virginia	1,076	0	89,615	90,691
Washington	22,403	15,000	121,000	158,403
West Virginia	110	10	1,425	1,545
Wisconsin	1,244	3,350	22,500	27,094
Wyoming	1,228	—	10	1,238
American Samoa	—	12	24	36
CNMI	—	6	4	10
FSM	—	18	28	46
Guam	—	67	21	88
Marshall Islands	—	0	10	10
Palau	—	10	40	50
Puerto Rico	0	2	349	351
Grand total	188,445	102,713	2,344,944	2,636,102

Note: CNMI = Commonwealth of the Northern Mariana Islands, FSM = Federated States of Micronesia; — indicates unknown information or data not available.

Table 6—Acreage of timber stand improvement by ownership category (October 1, 1996–September 30, 1997)

	Non- industrial private	Forest & other industry	Non- federal public	National Forest System	Other Federal	Total
Alabama	75,044	—	—	2,688	15	77,747
Alaska	4,494	208	400	3,886	393	9,381
Arizona	295	—	—	7,632	3,184	11,111
Arkansas	—	103,559	—	6,742	0	110,301
California	2,000	3,100	262	71,035	468	76,865
Colorado	624	22	788	4,352	296	6,082
Connecticut	318	0	35	—	0	353
Delaware	0	0	0	—	0	0
Florida	1,153	—	260	238	0	1,651
Georgia	—	—	—	3,558	0	3,558
Hawaii	—	—	—	—	0	0
Idaho	2,215	13,313	2,055	21,503	454	39,540
Illinois	0	0	0	210	0	210
Indiana	6,647	—	—	48	0	6,695
Iowa	—	—	—	—	0	0
Kansas	247	0	0	—	0	247
Kentucky	2,788	—	27	156	0	2,971
Louisiana	—	—	600	2,152	0	2,752
Maine	0	0	0	—	157	157
Maryland	6,825	2,400	475	—	0	9,700
Massachusetts	500	—	—	—	0	500
Michigan	500	—	2,000	1,130	148	3,778
Minnesota	2,937	—	2,100	2,640	643	8,320
Mississippi	31,540	—	—	1,594	407	33,541
Missouri	0	0	0	5,646	0	5,646
Montana	1,270	11,475	73	9,063	2,634	24,515
Nebraska	157	—	20	—	0	177
Nevada	62	—	40	0	376	478
New Hampshire	0	0	0	0	0	0
New Jersey	4,794	0	0	—	0	4,794
New Mexico	—	—	—	7,408	6,694	14,102
New York	0	0	0	—	18	18
North Carolina	5,292	6,533	314	4,519	0	16,658
North Dakota	452	0	0	—	0	452
Ohio	5,834	0	486	90	0	6,410
Oklahoma	3,633	7,980	40	675	388	12,716
Oregon	27,161	430,568	41,083	66,626	21,126	586,564
Pennsylvania	760	—	0	543	0	1,303
Rhode Island	8	0	0	—	0	8
South Carolina	6,341	—	7,123	2,549	0	16,013
South Dakota	112	—	335	8,358	0	8,805
Tennessee	1,090	—	—	881	44	2,015
Texas	4,234	—	—	1,529	0	5,763
Utah	1,160	—	—	3,402	0	4,562
Vermont	4,745	—	0	100	0	4,845
Virginia	—	—	—	2,188	0	2,188
Washington	16,400	184,000	32,500	12,237	18,659	263,796
West Virginia	2,828	575	230	1,338	0	4,971
Wisconsin	3,938	0	0	329	9,229	13,496
Wyoming	1,168	—	2	3,594	246	5,010
American Samoa	17	—	—	0	0	17
CNMI	—	—	13	0	0	13
FSM	196	0	0	—	—	196
Guam	—	—	41	—	—	41
Marshall Islands	6,000	—	—	—	—	6,000
Palau	—	—	12	—	—	12
Puerto Rico	—	12	—	—	12	—
Grand total	235,779	763,733	91,326	260,639	65,579	1,417,056

Note: CNMI = Commonwealth of the Northern Mariana Islands, FSM = Federated States of Micronesia; — indicates unknown information or data not available.

Table 7—Nursery production, in thousands of trees, by ownership category (October 1, 1996–September 30, 1997)

	Federal	State	Local government	Forest industry	Other industry	Total
Alabama	0	26,625	—	185,000	25,000	236,625
Alaska	0	0	0	0	0	0
Arizona	0	—	—	—	49,668	49,668
Arkansas	0	10,000	0	110,000	0	120,000
California	9,485	2,350	—	—	—	11,835
Colorado	0	2,009	—	—	7	2,016
Connecticut	0	650	0	0	0	650
Delaware	0	0	0	0	0	0
Florida	0	23,045	0	67,000	70,000	160,045
Georgia	0	49,232	—	66,460	135,670	251,362
Hawaii	0	374	—	—	—	374
Idaho	12,240	650	—	7,690	—	20,580
Illinois	0	0	0	0	0	0
Indiana	0	4,000	—	—	1,500	5,500
Iowa	0	—	—	—	—	0
Kansas	0	317	0	0	0	317
Kentucky	0	7,800	0	200	0	8,000
Louisiana	0	43,078	—	—	24,000	67,078
Maine	0	0	0	0	0	0
Maryland	0	4,572	0	0	0	4,572
Massachusetts	0	—	—	—	—	0
Michigan	4,046	5,000	2,000	10,000	13,000	34,046
Minnesota	0	10,000	300	2,136	8,000	20,436
Mississippi	6,184	36	—	—	—	6,220
Missouri	0	0	0	0	0	0
Montana	0	672	500	1,800	—	2,972
Nebraska	1,982	1,472	—	—	—	3,454
Nevada	0	190	—	—	—	190
New Hampshire	0	0	0	0	0	0
New Jersey	0	360	0	0	600	960
New Mexico	0	144	—	—	20	164
New York	0	0	0	0	0	0
North Carolina	0	26,000	—	78,000	—	104,000
North Dakota	0	1,219	0	0	3,000	4,219
Ohio	0	6,266	0	0	0	6,266
Oklahoma	0	6,524	0	35,000	0	41,524
Oregon	13,131	14,500	0	43,638	15,532	86,801
Pennsylvania	0	1,213	—	—	—	1,213
Rhode Island	0	0	37	0	0	37
South Carolina	0	17,415	—	81,977	46	99,438
South Dakota	0	1,392	0	0	0	1,392
Tennessee	0	8,079	—	—	—	8,079
Texas	0	13,600	—	112,300	—	125,900
Utah	0	900	—	—	—	900
Vermont	0	0	—	—	—	0
Virginia	0	37,552	—	10,868	—	48,420
Washington	5,712	17,000	2,100	40,000	20,000	84,812
West Virginia	0	3,500	0	0	200	3,700
Wisconsin	0	0	0	0	0	0
Wyoming	0	0	0	0	0	0
American Samoa	0	8	0	0	0	8
CNMI	0	5	—	—	0.7	6
FSM	0	18	1	0	0.4	19
Guam	0	48	0	0	0	48
Marshall Islands	0	2	1	0	3	6
Palau	0	23	—	—	—	23
Puerto Rico	0	104	0	0	0	104
Grand total	52,780	347,943	4,939	852,069	366,247	1,623,978

Note: CNMI = Commonwealth of the Northern Mariana Islands, FSM = Federated States of Micronesia; — indicates unknown information or data not available.

Definitions

The following terms and/or assumptions used in the text are defined in this section:

South—Includes: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas, and Virginia.

North—Includes: Connecticut, Delaware, Illinois, Indiana, Iowa, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, West Virginia, and Wisconsin.

West—Includes: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington, Wyoming, and the territories of American Samoa, Commonwealth of the Northern Mariana Islands (CNMI), Federated States of Micronesia (FSM), Guam, Marshall Islands, and the Republic of Palau.

Other federal—Lands administered by the Department of Energy, the Tennessee Valley Authority, the Department of Defense, and the U.S. Army Corps of Engineers (table 1).

Other state—State-owned lands other than those designated as state forests. Examples include state wildlife management areas, recreation areas, state school lands, and lands owned in connection with state correctional facilities or other institutions (table 2).

Local government—Lands (table 2) or nurseries (table 7) owned by counties, municipalities, and other units of local government.

Non-industrial private—Land owned by private owners, farmers, and Indian Nations, but excluding industrial owners (tables 3, 4, and 6).

Forest industry—Private lands owned by companies or individuals operating wood-using plants (tables 3, 4, and 6).

Other industry—Private lands owned by companies other than those in the forest industry. Major examples are lands owned by mining, railroad, and utility companies; insurance companies; pension funds; and investment companies (tables 3, 4, and 6) or private growers outside of the forest industry (table 7).

Non-federal public—Lands owned by state and local governments (table 4).

Direct seeding—Sowing tree seeds (instead of planting seedlings) to establish stands of trees in the field.

Timber stand improvement (TSI)—Practices to enhance timber production in existing stands of trees, such as control of unwanted, competing vegetation; thinning to control spacing; and pruning.

Fiscal year (FY)—A 12-month period established for accounting and reporting purposes, which for the USDA Forest Service runs from October 1 through September 30 of the following year.

Note: 1 acre = .405 hectares; 1 hectare = 2.47 acres.

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