

# Forest Nursery Seedling Production in the United States— Fiscal Year 2014

George Hernández, Richard A. Harper, Kea J. Woodruff, Scott Enebak, Ronald P. Overton, Jennifer Lesko,  
and Diane L. Haase

*Regional Regeneration Specialist, U.S. Department of Agriculture (USDA), Forest Service, Atlanta, GA; Forest Resource Analyst (retired), USDA Forest Service, Clemson, SC; Nursery Production and Logistics Associate, Center for Forest Nursery and Seedling Research, University of Idaho, Moscow, ID; Director, Southern Forest Nursery Management Cooperative, School of Forestry and Wildlife Sciences, Auburn University, Auburn, AL; Area Regeneration Specialist, USDA Forest Service, West Lafayette, IN; Graduate Student, Purdue University, West Lafayette, IN; Western Nursery Specialist, USDA Forest Service, Portland, OR*

## Background

This annual report summarizes forest nursery seedling production in the United States. The number of seedlings reported is used to estimate the number of acres of forest planting per year. Prepared by the U.S. Department of Agriculture (USDA), Forest Service, Forest Inventory and Analysis (FIA) and State and Private Forestry (S&PF), this report includes State-by-State breakdowns, regional totals, and an analysis of data trends. Universities located in the southern, northeast, and western regions of the United States made an effort to collect data from all the major producers of forest and conservation seedlings in the 50 States. Forest and conservation nursery managers provided the information presented in this report. As far as we know, it is the most complete compilation of such data in the country. Because all data are provided voluntarily by outside sources and some data are estimated, however, caution must be used in drawing inferences.

## Methodology

The empirical data for this report were produced by S&PF in collaboration with Auburn University, the University of Idaho, and Purdue University. All of these universities collected forest tree seedling production data directly from the forest and conservation nurseries that grow forest tree seedlings in their region of the United States (Auburn University collected from 12 States in the Southeast, the University of Idaho collected from 17 States in the West, and Purdue University collected from 21 States in the Northeast and Midwest). The approximation of planted acres for each State is derived from FIA estimates of tree planting area based on ground plots collected by States during 5-, 7-, or 10-year periods and compiled as an average annual estimate for the associated period. FIA estimates of acres of trees planted by State may not correlate with the estimates produced by nursery production surveys because nurseries do not report shipments across State lines. Total acres by region, however, provide a reasonable comparison between the two methods. Data collected are reported by hardwood and conifer seedlings produced and acreage planted of each (table 1) and by bareroot and container seedlings produced (table 2). A complete list of the assumptions used in compiling this report appears in the *Forest Nursery Seedling Production in the United States—Fiscal Year 2013* (Harper et. al. 2014).

**Table 1.** Hardwood and conifer tree seedling production and acres planted for each State and each region during the 2013–2014 planting year.

State	Hardwood seedlings produced	Hardwood acres planted	Conifer seedlings produced	Canadian conifer imports	Conifer acres planted <sup>1</sup>	Total seedlings produced	Total acres planted <sup>1</sup>	FIA data acres planted <sup>12</sup>
<b>Southeast</b>								
Florida <sup>2</sup>	1,760,000	3,200	40,696,000	—	73,993	42,456,000	77,193	140,247
Georgia <sup>2</sup>	8,762,500	15,932	316,180,800	—	574,874	324,943,300	590,806	196,602
North Carolina <sup>2</sup>	576,800	1,049	72,223,000	—	131,315	72,799,800	132,363	108,286
South Carolina <sup>2</sup>	3,950,420	7,183	119,182,430	—	216,695	123,132,850	223,878	55,479
Virginia <sup>2</sup>	507,000	922	28,728,000	—	52,233	29,235,000	53,155	92,707
<b>Regional totals</b>	<b>15,556,720</b>	<b>28,285</b>	<b>577,010,230</b>	<b>—</b>	<b>1,049,110</b>	<b>592,566,950</b>	<b>1,077,394</b>	<b>593,320</b>
<b>South Central</b>								
Alabama <sup>2</sup>	483,500	879	117,530,500	—	213,692	118,014,000	214,571	263,720
Arkansas <sup>2</sup>	9,222,700	16,769	102,195,500	—	185,810	111,418,200	202,579	156,973
Kentucky <sup>2</sup>	1,472,200	2,677	133,904	—	243	1,606,104	2,920	1,479
Louisiana <sup>2</sup>	1,771,700	3,221	12,731,000	—	23,147	14,502,700	26,369	166,984
Mississippi <sup>2</sup>	972,400	1,768	82,173,000	—	149,405	83,145,400	151,173	192,746
Oklahoma <sup>2</sup>	535,300	973	2,281,900	—	4,149	2,817,200	5,122	25,434
Tennessee <sup>2</sup>	1,654,000	3,007	5,949,000	—	10,816	7,603,000	13,824	22,489
Texas <sup>2</sup>	65,000	118	83,825,900	—	152,411	83,890,900	152,529	113,125
<b>Regional totals</b>	<b>16,176,880</b>	<b>29,413</b>	<b>406,820,540</b>	<b>—</b>	<b>739,674</b>	<b>422,997,504</b>	<b>769,086</b>	<b>942,949</b>
<b>Northeast</b>								
Connecticut	—	—	—	—	—	—	—	—
Delaware	—	—	—	—	—	—	—	—
Maine <sup>2, 11</sup>	—	—	—	3,220,000	5,855	3,220,000	5,855	8,284
Maryland <sup>2</sup>	2,223,300	4,042	1,255,700	—	2,283	3,479,000	6,325	—
Massachusetts	—	—	—	—	—	—	—	—
New Hampshire <sup>2</sup>	11,085	20	145,500	—	265	156,585	285	—
New Jersey <sup>2</sup>	102,800	187	84,900	—	154	187,700	341	—
New York <sup>9</sup>	118,000	131	644,000	—	716	762,000	847	203
Pennsylvania <sup>2</sup>	1,701,035	3,093	2,639,061	—	4,798	4,340,096	7,891	1,391
Rhode Island	—	—	—	—	—	—	—	—
Vermont	—	—	—	—	—	—	—	—
West Virginia <sup>2</sup>	679,850	1,236	91,525	—	166	771,375	1,403	—
<b>Regional totals</b>	<b>4,836,070</b>	<b>8,709</b>	<b>4,860,686</b>	<b>3,220,000</b>	<b>14,237</b>	<b>12,916,756</b>	<b>22,947</b>	<b>9,878</b>
<b>North Central</b>								
Illinois <sup>8</sup>	1,044,660	2,402	210,600	—	484	1,255,260	2,886	5,062
Indiana <sup>4</sup>	2,898,428	4,459	1,098,713	—	1,690	3,997,141	6,149	1,331
Iowa <sup>5</sup>	797,200	1,329	92,700	—	155	889,900	1,483	—
Michigan <sup>10, 11</sup>	2,044,774	3,718	38,630,896	450,000	39,081	41,125,670	42,799	11,899
Minnesota <sup>5, 11</sup>	721,000	1,311	8,245,000	4,000,000	20,408	12,966,000	21,719	20,059
Missouri <sup>3</sup>	1,310,610	3,013	582,665	—	1,339	1,893,275	4,352	—
Ohio <sup>3</sup>	13,000	30	—	—	—	13,000	30	3,775
Wisconsin <sup>6, 11</sup>	1,418,910	1,774	7,008,505	2,200,000	11,511	10,627,415	13,285	9,413
<b>Regional totals</b>	<b>10,248,582</b>	<b>18,035</b>	<b>55,869,079</b>	<b>6,650,000</b>	<b>74,669</b>	<b>72,767,661</b>	<b>92,703</b>	<b>51,540</b>
<b>Great Plains</b>								
Kansas <sup>2</sup>	88,925	162	146,000	—	265	234,925	427	—
Nebraska <sup>2</sup>	112,000	204	1,493,249	—	2,715	1,605,249	2,919	—
North Dakota <sup>2</sup>	20,500	37	1,252,000	—	2,276	1,272,500	2,314	—
South Dakota <sup>2</sup>	661,156	1,202	351,364	—	639	1,012,520	1,841	—
<b>Regional totals</b>	<b>882,581</b>	<b>1,605</b>	<b>3,242,613</b>	<b>—</b>	<b>5,896</b>	<b>4,125,194</b>	<b>7,500</b>	<b>0</b>
<b>Intermountain</b>								
Arizona <sup>2</sup>	46,000	84	—	—	—	46,000	84	—
Colorado <sup>2</sup>	40,000	73	550,000	—	1,049	590,000	1,122	—
Idaho <sup>2</sup>	354,792	645	4,572,175	—	8,313	4,926,967	8,958	4,287
Montana <sup>2</sup>	249,934	454	816,002	—	1,484	1,065,936	1,938	5,142
Nevada <sup>2</sup>	5,500	10	4,000	—	7	9,500	17	—

**Table 1.** Hardwood and conifer tree seedling production and acres planted for each State and each region during the 2013–2014 planting year. (continued)

State	Hardwood seedlings produced	Hardwood acres planted	Conifer seedlings produced	Canadian conifer imports	Conifer acres planted <sup>1</sup>	Total seedlings produced	Total acres planted <sup>1</sup>	FIA data acres planted <sup>12</sup>
<b>Intermountain (continued)</b>								
New Mexico <sup>2</sup>	17,900	33	35,000	—	64	52,900	97	—
Utah	—	—	—	—	—	—	—	—
Wyoming	—	—	—	—	—	—	—	—
<b>Regional totals</b>	<b>714,126</b>	<b>1,229</b>	<b>5,977,177</b>	<b>—</b>	<b>10,917</b>	<b>6,691,303</b>	<b>12,216</b>	<b>9,429</b>
<b>Alaska</b>								
Alaska	—	—	—	—	—	—	—	806
<b>Pacific Northwest</b>								
Oregon <sup>7, 13</sup>	1,335,000	3,814	49,343,302	5,272,227	156,044	55,950,529	159,858	88,379
Washington <sup>7, 13</sup>	969,169	2,769	53,021,617	5,272,227	166,554	59,263,013	169,323	54,179
<b>Regional totals</b>	<b>2,304,169</b>	<b>6,583</b>	<b>102,364,919</b>	<b>10,544,454</b>	<b>322,598</b>	<b>115,213,542</b>	<b>329,181</b>	<b>142,558</b>
<b>Pacific Southwest</b>								
California <sup>8</sup>	—	—	16,300,000	—	36,222	16,300,000	36,222	29,535
Hawaii <sup>9</sup>	82,281	183	—	—	—	82,281	183	—
<b>Regional totals</b>	<b>82,281</b>	<b>183</b>	<b>16,300,000</b>	<b>—</b>	<b>36,222</b>	<b>16,382,281</b>	<b>36,405</b>	<b>29,535</b>
<b>Totals</b>	<b>50,801,409</b>	<b>94,041</b>	<b>1,172,445,244</b>	<b>20,414,454</b>	<b>2,253,322</b>	<b>1,243,661,191</b>	<b>2,347,433</b>	<b>1,779,209</b>

<sup>1</sup> Acres planted were estimated assuming:<sup>2</sup> 550 stems/ac.<sup>3</sup> 435 stems/ac.<sup>4</sup> 650 stems/ac.<sup>5</sup> 600 stems/ac.<sup>6</sup> 800 stems/ac.<sup>7</sup> 350 stems/ac.<sup>8</sup> 450 stems/ac.<sup>9</sup> 900 stems/ac.<sup>10</sup> 1,000 stems/ac.<sup>11</sup> Totals include an estimate of conifers produced in Canada for distribution to neighboring States; bareroot imports for Maine and container for other States.<sup>12</sup> Average annual acreage planted estimated for all States (2012) on 5-year cycles, except Alaska, Louisiana, Mississippi, and North Carolina are on 7-year cycles and Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, and Washington are on 10-year cycles; data generated by R. Harper.<sup>13</sup> Totals include an estimate of conifers imported from Canada to Oregon and Washington (total amount divided evenly between the two States).**Table 2.** Bareroot and container tree seedling production for each State and each region during the 2013–2014 planting year.

State	Bareroot	Container	Total seedlings produced
<b>Southeast</b>			
Florida	36,787,000	5,669,000	42,456,000
Georgia	171,533,500	153,409,800	324,943,300
North Carolina	55,342,800	17,457,000	72,799,800
South Carolina	121,637,850	1,495,000	123,132,850
Virginia	29,235,000	—	29,235,000
<b>Regional totals</b>	<b>414,536,150</b>	<b>178,030,800</b>	<b>592,566,950</b>
<b>South Central</b>			
Alabama	111,846,000	6,168,000	118,014,000
Arkansas	111,418,200	—	111,418,200
Kentucky	1,534,104	72,000	1,606,104
Louisiana	14,052,700	450,000	14,502,700
Mississippi	75,190,400	7,955,000	83,145,400
Oklahoma	2,743,400	73,800	2,817,200
Tennessee	7,603,000	—	7,603,000
Texas	83,890,900	—	83,890,900
<b>Regional totals</b>	<b>408,278,704</b>	<b>14,718,800</b>	<b>422,997,504</b>

**Table 2.** Bareroot and container tree seedling production for each State and each region during the 2013–2014 planting year. (continued)

State	Bareroot	Container	Total seedlings produced
<b>Northeast</b>			
Connecticut	—	—	—
Delaware	—	—	—
Maine	—	—	—
Maryland	3,479,000	—	3,479,000
Massachusetts	—	—	—
New Hampshire	156,585	—	156,585
New Jersey	187,700	—	187,700
New York	735,500	26,500	762,000
Pennsylvania	3,629,096	711,000	4,340,096
Rhode Island	—	—	—
Vermont	—	—	—
West Virginia	771,375	—	771,375
Canada	3,220,000	—	3,220,000
<b>Regional totals</b>	<b>12,179,256</b>	<b>737,500</b>	<b>12,916,756</b>
<b>North Central</b>			
Illinois	1,252,500	2,760	1,255,260
Indiana	3,833,891	163,250	3,997,141
Iowa	889,900	—	889,900
Michigan	40,009,550	666,120	40,675,670
Minnesota	6,176,000	2,790,000	8,966,000
Missouri	1,893,275	—	1,893,275
Ohio	—	13,000	13,000
Wisconsin	8,424,765	2,650	8,427,415
Canada	—	6,650,000	6,650,000
<b>Regional totals</b>	<b>62,479,881</b>	<b>10,287,780</b>	<b>72,767,661</b>
<b>Great Plains</b>			
Kansas	—	234,925	234,925
Nebraska	870,000	735,249	1,605,249
North Dakota	1,200,000	72,500	1,272,500
South Dakota	997,501	15,019	1,012,520
<b>Regional totals</b>	<b>3,067,501</b>	<b>1,057,693</b>	<b>4,125,194</b>
<b>Intermountain</b>			
Arizona	—	46,000	46,000
Colorado	—	590,000	590,000
Idaho	1,856,792	3,070,175	4,926,967
Montana	18,050	1,047,886	1,065,936
Nevada	—	9,500	9,500
New Mexico	—	52,900	52,900
Utah	—	—	—
Wyoming	—	—	—
<b>Regional totals</b>	<b>1,874,842</b>	<b>4,816,461</b>	<b>6,691,303</b>
<b>Alaska</b>			
Alaska	—	—	—
<b>Pacific Northwest</b>			
Oregon	26,914,219	23,764,083	50,678,302
Washington	31,720,283	22,270,503	53,990,786
Canada	—	10,544,454	10,544,454
<b>Regional totals</b>	<b>58,634,502</b>	<b>56,579,040</b>	<b>115,213,542</b>
<b>Pacific Southwest</b>			
California	—	16,300,000	16,300,000
Hawaii	—	82,281	82,281
<b>Regional totals</b>	<b>—</b>	<b>16,382,281</b>	<b>16,382,281</b>
<b>Total</b>	<b>961,050,836</b>	<b>282,610,355</b>	<b>1,243,661,191</b>

## Data Trends

A total of 1,217,607,888 forest tree seedlings were shipped from forest and conservation nurseries in the United States in fiscal year (FY) 2014, an increase of 36,053,353 (3 percent) over the forest nursery seedling reported for FY 2013 (Harper et al. 2014). Based on the total number of seedlings shipped and the average number of seedlings planted per acre in each State, we estimate that approximately 2,347,957 ac (950,184 ha) of trees were planted during the fall 2013 through spring 2014 planting season, a 3-percent increase compared with the number of acres reported for the previous planting season (Harper et al. 2014). Trends by regions (table 3) are as follows:

**West**—The 17 States in the USDA Forest Service western regions produced approximately 45 million more seedlings than in the FY 2013 planting season and 11 percent of the U.S. total. This increase, however, is overestimated, because Canadian import estimates were not available for the FY 2013 report.

**East**—The 20 States in the USDA Forest Service North-eastern Area reported 85 million seedlings, a decrease of 16 million seedlings over the FY 2013 planting season and 7 percent of the U.S. total. The decrease in seedlings reported appears to be a normal fluctuation.

**South**—The 13 States in the USDA Forest Service Southern Region produced more than 1 billion forest tree seedlings (82 percent of the U.S. total), an increase of 32 million over the FY 2013 planting season.

Overall, forest nursery seedling production increased during the past 3 years (table 3). This trend seems consistent with the steady improvement in the economy during this period. Timber markets continue to be sluggish.

**Table 3.** Total forest nursery seedling production in each region from FY 2012 to FY 2014.

Year	Total seedling production	West	East	South
FY 2014	1,243,661,191	142,412,320	85,684,417	1,015,564,454
FY 2013	1,181,554,535	96,344,063	102,066,671	983,143,801
FY 2012	1,190,552,819	170,975,830	81,672,547	936,918,542

FY = fiscal year.

Sources: This report and Harper et al. (2013, 2014)

## Address correspondence to—

George Hernández, Regional Regeneration Specialist, U.S. Department of Agriculture, Forest Service, State and Private Forestry, 1720 Peachtree Road NW, Atlanta, GA 30309; e-mail: gherandez@fs.fed.us; phone: 404-347-3554.

## Acknowledgments

The authors thank the U.S. Department of Agriculture, Forest Service, Washington Offices of the Forest Inventory and Analysis program and the State and Private Forestry Deputy Area for their support.

---

## REFERENCES

- Harper, R.A.; Hernandez, G.; Arsenault, J.; Bryntesen, M.; Enebak, S.; Overton, R.P. 2013. Forest nursery seedling production in the United States—fiscal year 2012. *Tree Planters' Notes*. 56(2): 72–75.
- Harper, R.A.; Hernandez, G.; Arsenault, J.; Woodruff, K.J.; Enebak, S.; Overton, R.P.; Haase, D.L. 2014. Forest nursery seedling production in the United States—fiscal year 2013. *Tree Planters' Notes*. 57(2): 62–66.