

Forest Nursery Seedling Production in the United States—Fiscal Year 2018

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Abstract

Forest nursery production for the 2018 planting season was nearly 1.2 billion forest tree seedlings with more than 2.2 million ac (1 million ha) of trees planted. Similar to previous years, most production and planting occurred in the southern States, and approximately 75 percent of outplanted trees are bareroot stock.

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, Forest Service, Forest Inventory and Analysis (FIA), and State and Private Forestry, this report includes State-by-State breakdowns, regional totals, and an analysis of data trends. Universities in the Southern, Northeastern, 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, caution must be used in drawing inferences.

Methodology

State and Private Forestry, in collaboration with Auburn University, the University of Idaho, and Purdue University, produced the data for this report. 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 13 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-plot data that States collected 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 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 appear in *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 2017-2018 planting year.

State	Hardwood seedlings produced	Hardwood acres planted ¹	Conifer seedlings produced	Canadian conifer imports	Conifer acres planted ¹	Total seedlings produced	Total acres planted ¹	FIA data acres planted ¹⁰
Southeast								
Florida ²	2,551,679	4,639	57,632,500	—	104,786	60,184,179	109,426	152,359
Georgia ²	3,278,636	5,961	327,819,270	—	596,035	331,097,906	601,996	239,619
North Carolina ²	500,000	909	67,758,200	—	123,197	68,258,200	124,106	99,215
South Carolina ²	55,480	101	142,091,539	—	258,348	142,147,019	258,449	76,808
Virginia ²	960,000	1,745	30,180,400	—	54,873	31,140,400	56,619	74,872
Regional Totals	7,345,795	13,356	625,481,909	0	1,137,240	632,827,704	1,150,596	642,873
South Central								
Alabama ²	2,384,089	4,335	90,938,447	—	165,343	93,322,536	169,677	223,021
Arkansas ²	9,092,233	16,531	95,442,900	—	173,533	104,535,133	190,064	117,744
Kentucky ³	986,900	2,269	117,500	—	270.11	1,104,400	2,539	1,155
Louisiana ²	—	—	46,599,000	—	84,725	46,599,000	84,725	160,801
Mississippi ²	1,155,400	2,101	88,022,000	—	160,040	89,177,400	162,141	178,998
Oklahoma ²	385,088	700	3,462,755	—	6,296	3,847,843	6,996	21,521
Tennessee ²	2,309,000	4,198	3,142,000	—	5,713	5,451,000	9,911	28,005
Texas ²	33,800	61	87,463,038	—	159,024	87,496,838	159,085	262,584
Regional Totals	16,346,510	30,195	415,187,640	0	754,943	431,534,150	785,138	993,829
Northeast								
Connecticut ³	2,000	5	500	—	1	2,500	6	—
Delaware ²	25,000	45	43,500	—	79	68,500	125	647
Maine ⁵	3,800	6	19,000	3,180,000	5,332	3,202,800	5,338	8,168
Maryland ²	1,845,900	3,356	1,571,075	—	2,858	3,417,770	6,214	1,445
Massachusetts ³	7,373	17	1,853	—	4	9,226	21	—
New Hampshire ³	23,160	53	184,795	—	425	207,955	478	—
New Jersey ³	139,580	321	111,000	—	255	250,580	576	—
New York ⁵	89,675	149	529,200	—	—	618,875	149	—
Pennsylvania ³	1,045,812	2,404	1,928,062	—	4,432	2,973,874	6,836	2,680
Rhode Island	—	—	—	—	—	—	—	—
Vermont ³	40,800	94	3,100	—	—	43,900	946	—
West Virginia ³	188,647	434	117,184	—	269	305,831	703	870
Regional Totals	3,411,747	6,885	4,510,064	3,180,000	13,656	11,101,811	20,541	13,810
North Central								
Illinois ³	610,440	1,403	104,750	—	241	715,190	1,644	2,498
Indiana ⁴	1,726,813	2,657	623,000	—	958	2,349,813	3,615	1,753
Iowa ⁵	568,710	948	151,075	—	252	719,785	1,200	621
Michigan ^{2,9}	3,328,118	6,051	14,399,441	1,665,000	26,181	19,392,559	32,232	9,467
Minnesota ^{2,9}	504,645	918	3,105,200	3,018,000	11,133	6,627,845	12,051	17,470
Missouri ³	1,227,035	2,821	629,640	—	1,447	1,856,675	4,268	—
Ohio ³	870	2	4,600	—	11	5,470	13	3,018
Wisconsin ^{6,9}	514,636	643	1,996,482	1,417,000	4,229	3,898,118	4,873	10,459
Regional Totals	8,481,267	15,443	20,984,188	6,100,000	44,452	35,565,455	59,895	45,286

State	Hardwood seedlings produced	Hardwood acres planted ¹	Conifer seedlings produced	Canadian conifer imports	Conifer acres planted ¹	Total seedlings produced	Total acres planted ¹	FIA data acres planted ¹⁰
Great Plains								
Kansas ²	8,825	16	48,400	—	88	57,225	104	—
Nebraska ²	649,700	1,181	1,270,925	—	2,311	1,920,625	3,492	1,182
North Dakota ²	41,236	75	836,490	—	1,521	877,726	1,596	—
South Dakota ²	—	—	—	—	—	—	—	—
Regional Totals	699,761	1,272	2,155,815	—	3,920	2,855,576	5,192	1,182
Intermountain								
Arizona ²	480	1	1,260	—	2	1,740	3	597
Colorado ²	182,000	331	146,000	—	265	328,000	596	—
Idaho ²	118,613	216	8,919,843	1,672,000	19,258	10,710,456	19,474	7,108
Montana ²	19,325	35	807,550	—	1,468	826,875	1,503	8,082
Nevada ²	2,451	4	527	—	1	2,978	5	—
New Mexico ²	9,222	17	27,212	—	49	36,434	66	872
Utah ²	135,000	245	57,000	—	104	192,000	349	—
Wyoming	—	—	—	—	—	—	—	997
Regional Totals	467,091	849	9,959,392	1,672,000	21,148	12,098,483	21,997	17,656
Alaska								
Alaska ²	8,000	15	30,000	265,000	536	303,000	551	—
Pacific Northwest								
Oregon ^{7,9}	1,892,190	5,406	20,769,069	72,000	59,546	22,733,259	64,952	133,374
Washington ^{7,9}	420,402	1,201	23,606,224	172,000	67,938	24,198,626	69,139	97,872
Regional Totals	2,312,592	6,607	44,375,293	244,000	127,484	46,931,885	134,091	231,246
Pacific Southwest								
California ⁸	105,020	233	13,917,812	—	30,928	14,022,832	31,162	33,657
Hawaii ⁸	40,000	89	2,000	—	4	42,000	93	—
Regional Totals	145,020	322	13,919,812	0	30,933	14,064,832	31,255	33,657
Totals	39,217,783	74,944	1,136,604,113	11,461,000	2,134,312	1,187,282,896	2,209,256	1,979,539

¹ Acres planted were estimated assuming:

² 550 stems/acre

³ 435 stems/acre

⁴ 650 stems/acre

⁵ 600 stems/acre

⁶ 800 stems/acre

⁷ 350 stems/acre

⁸ 450 stems/acre

⁹ Totals include an estimate of container conifers produced in Canada for distribution to neighboring States; bareroot imports for Maine and containers for other States.

¹⁰ FIA = Forest Inventory and Analysis; average annual acreage planted estimated for all States (2017) on 5-year cycles, except for Alabama, Louisiana, Mississippi, and North Carolina, which are on 7-year cycles, and for Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, and Washington, which are on 10-year cycles. Data generated by Andy Hartsell, USDA Forest Service.

Table 2. Bareroot and container tree seedling production for each State and each region during the 2017-2018 planting year.

State	Bareroot	Container ¹	Total Seedlings Produced	State	Bareroot	Container ¹	Total Seedlings Produced
Southeast				Iowa	698,285	21,500	719,785
Florida	54,800,613	5,383,566	60,184,179	Michigan	17,278,239	2,114,320	19,392,559
Georgia	203,043,197	128,054,709	331,097,906	Minnesota	3,493,945	3,133,900	6,627,845
North Carolina	53,561,200	14,697,000	68,258,200	Missouri	1,856,675	—	1,856,675
South Carolina	141,135,755	1,011,264	142,147,019	Ohio	4,500	970	5,470
Virginia	31,140,400	—	31,140,400	Wisconsin	2,380,118	1,518,000	3,898,118
Regional Totals	483,681,165	149,146,539	632,827,704	Regional Totals	28,749,675	6,815,780	35,565,455
South Central				Great Plains			
Alabama	83,299,933	10,022,603	93,322,536	Kansas	—	57,225	57,225
Arkansas	104,535,133	—	104,535,133	Nebraska	1,106,625	814,000	1,920,625
Kentucky	1,104,400	—	1,104,400	North Dakota	791,000	86,726	877,726
Louisiana	—	46,599,000	46,599,000	South Dakota	—	—	—
Mississippi	79,019,000	10,158,400	89,177,400	Regional Totals	1,897,625	957,951	2,855,576
Oklahoma	3,691,621	156,222	3,847,843	Intermountain			
Tennessee	5,451,000	—	5,451,000	Arizona	—	1,740	1,740
Texas	87,496,838	—	87,496,838	Colorado	121,000	207,000	328,000
Regional Totals	364,597,925	66,936,225	431,534,150	Idaho	2,173,650	8,536,806	10,710,456
Northeast				Montana	128,600	698,275	826,875
Connecticut	—	2,500	2,500	New Mexico	—	2,978	2,978
Delaware	9,500	59,000	68,500	Nevada	—	36,434	36,434
Maine	—	3,202,800	3,202,800	Utah	—	192,000	192,000
Maryland	2,760,670	657,100	3,417,770	Wyoming	—	—	—
Massachusetts	—	9,226	9,226	Regional Totals	2,423,250	9,675,233	12,098,483
New Hampshire	207,855	100	207,95	Alaska			
New Jersey	248,580	2,000	250,580	Alaska	0	303,000	303,000
New York	581,325	37,550	618,875	Pacific Northwest			
Pennsylvania	2,972,674	1,200	2,973,874	Oregon	8,254,914	14,478,345	22,733,259
Rhode Island	—	—	—	Washington	17,479,513	6,719,113	24,198,626
Vermont	42,200	1,700	43,900	Regional Totals	25,734,427	21,197,458	46,931,885
West Virginia	305,831	—	305,831	Pacific Southwest			
Regional Totals	7,128,635	3,973,176	11,101,811	California	—	14,022,832	14,022,832
North Central				Hawaii	—	42,000	42,000
Illinois	696,500	18,690	715,190	Regional Totals	0	14,064,832	14,064,832
Indiana	2,341,413	8,400	2,349,813	Totals	914,212,702	273,070,194	1,187,282,896

¹ Alaska, Idaho, Maine, Michigan, Minnesota, Oregon, Washington, and Wisconsin received container seedlings produced in Canada.

Data Trends

Nearly 1.2 billion forest tree seedlings were shipped from forest and conservation nurseries in the United States in fiscal year (FY) 2018. This production level is a decrease of 97.5 million seedlings compared with seedling production reported for FY 2017 (Hernández et al. 2018). The decrease is attributed to significantly lower reported numbers in the West

and East (table 3). These lower numbers are due, in part, to a few nursery closures and production declines in some nurseries, but is likely an underestimate due to inconsistent participation from nurseries during data collection. Based on the total number of seedlings shipped and the average number of seedlings planted per acre in each State, more than 2.2 million ac (890,000 ha) of trees were planted during the fall 2017 through spring 2018 planting season.

Table 3. Annual forest nursery seedling production in each region for FY 2012 to FY 2018.

Year	Total seedling production	West (17 States)	East (20 States)	South (13 States)
FY 2018	1,187,282,896	76,253,776	46,667,266	1,064,361,854
FY 2017	1,284,824,689	151,321,764	67,595,266	1,065,907,659
FY 2016	1,260,216,076	152,785,327	72,314,630	1,035,094,369
FY 2015	1,302,237,795	175,464,446	95,417,986	1,031,355,363
FY 2014	1,217,607,888	115,620,820	85,684,417	1,015,564,370
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, Harper et al. (2013, 2014), Hernández et al. (2015, 2016, 2017, 2018)

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