US WOODY CROP YIELD SUMMARY – 2010

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DRAFTS

Woody Crop Yield Tables
For SRWCOWG meeting attendees
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Multiple publications
Will be completed and published soon

Your feedback and addition of data would be greatly welcomed!!!

Table 1 Maximum annual yields from published growth curves of willow and hybrid poplar in silviculture and clone trials in Northeast grouped by culture intensity level.

Culture Intensity[1] ; Location	**Genotypes[2]**	**Yield (dry)[3] Mg ha^{-1} yr^{-1} (t ac^{-1}yr^{-1})**	**Stem age [4] (rotation)**	**Total rotation N, P, K kg^{-1} ha^{-1}**	**Plant density trees ha^{-1} (trees ac^{-1})**	**Plant Year**	**Reference source**
	Very High Intensity - irrigation, high fertilizer						
T,W, I, HF Tully, NY	SV1	19.3 (8.6) 15.0 (6.7)	1 (1) [5] 1 (1) [5]	224, 112,112 224, 112,112	111,111 (44,967) 15,151 (6132)	1990	[1] Kopp et al, 1997
T,W, I, HF Tully, NY	SV1 coppice	17.4 (7.8) 17.4 (7.8)	2 (1) [5] 4 (2) [5]	448, 224,224 448, 0,0	37,037 (14,989)	1990	[1] Kopp et al, 1997
T,W, I, HF Tully, NY	SV1 coppice	23.8 (10.6) 27.5 (12.3)	3 (1) [5] 3 (1) [5]	672, 224, 224 672, 224, 224	37,037 (14,989)	1990	[1] Kopp et al, 1997 [8] [2] Adegbidi et al, 2001 [8]
T,W ,I,HF Tully, NY	NM5 coppice SV1 coppice	8.8 (3.9) 11.6 (5.2)	1 (3-10)[7] 1 (3-10)[7]	336, 112, 224 336, 112, 224	107,600 (43,560) “	1987	[3] Kopp et al 2001
T,W, I,F Huntingdon Co, PA	NE388 single stem NE388 coppice	10.5 (4.7) 11.4 (5.1)	4 (1) [5] 3 (2)	non-limiting non-limiting	21,570 (8729) “	1981	[4] Strauss, Grado, Blankenhorn, 1990a
	High Intensity – high fertilizer, no irrigation						
T,W, HF Tully, NY	SV1 coppice	8.9 (4.0)	3 (1)[6]	672, 224, 224	37,037 (14,989)	1990	[2] Adegbidi et al, 2001[*]
T,W, F Tully, NY	SV1 coppice	13.25 (5.9)	1 (1)	Sludge- mulch 1200, 0, 0	15,200 (6151)	1995	[5] Adegbidi et al, 2003
T,W, F Tully, NY	SV1 coppice	11.6 (5.2)	2 (1)	Slow release 100, 0, 0	15,200 (6151)	1995	[5] Adegbidi et al, 2003
T,W, F Huntingdon Co, PA	NE388 single stem NE388 coppice	10.10 (4.5) 12.9 (5.8)	4 (1) [5] 3 (2)	non-limiting non-limiting	21,570 (8729) “	1981	[4] Strauss, Grado, Blankenhorn, 1990a
	Medium Intensity – irrigation, no fertilizer						
T,W, I Tully, NY	NM5 coppice SV1, coppice	9.8 (4.4) 10.0 (4.5)	1 (3-10) [7] 1 (3-10) [7]	0,0,0 0,0,0	107,600 (43,560) “	1987	[3] Kopp et al, 2001
T,W, I Huntingdon Co, PA	NE388 single stem NE388 coppice	8.3 (3.7) 10.0 (4.4)	4 (1) [5] 3 (2)	0,0,0 0,0,0	21,570 (8729) “	1981	[4] Strauss, Grado, Blankenhorn, 1990a
	Low Intensity or experimental controls – no irrigation, no fertilizer						
T,W Tully, NY	SV1 coppice	8.4 (3.7)	3 (1) [6]	0,0,0	15,200 (6151)	1995	[5] Adegbidi et al, 2003
T,W SW of Montreal	NM6 single stem SX64 coppice	18.1 (8.1) 16.9 (7.5)	4 (1) [5] 4 (1) [5]	0,0,0 0,0,0	18,000 (7285) “	1999	[6] Labrecque et al. 2005
T,W Huntingdon Co, PA	NE388	9.4 (4.2)	4 (1) [5]	0,0,0	107,600 (44375)	1970	[7] Bowersox and Ward, 1976
T,W Huntingdon Co, PA	NE388 single stem NE388 coppice	8.4 (3.7) 10.3 (4.6)	4 (1) [5] 3 (2)	0,0,0 0,0,0	21,570 (8729) “	1981	[4] Strauss, Grado, Blankenhorn, 1990a

[1] Culture intensity notations are as follows: T = tillage used in site preparation, W=chemical weed control, F = fertilization, I = irrigation, P = pest control, VH = very high, H = high.
[2] NM5, NE388, NM6 are selected poplar clones. SV1, SX64 are selected willow clones imported from Sweden.
[3] Yields are expressed as the mean annual increment of the total aboveground dry weight without foliage for hardwoods but with foliage for softwoods. When original data was reported as wet weight, stem dry weight, or stem volume, appropriate conversion factors and expansion factors were used (see appendix). In cases of where wood was harvested annually over several years, yield is averaged over all yearly harvests (rotations).
[4] Stem age represents the growth year in which the stand reached maximum mean annual increment (MAI max) based on published growth curves unless footnoted.
[5] Age of MAI max not verifiable but stand had reached expected harvest age for the planting density and was believed to be close to MAI max..
[6] Age of MAI max not verifiable but data were deemed worthy to include for comparison.
[7] Annually harvested coppice growth over multiple rotations; yield reported is “peak” average yield of annual harvests, not the maximum current annual increment.
[8] Two separate papers reported data from the same experimental trial, but different subplots may have been measured.

Table 2 Maximum annual yields of cottonwood, hybrid poplar, and silver maple in silvicultural and clone trials in North Central and Mid-western US grouped by culture intensity level.

Culture Intensity[1] ; Location (s)	**Genotypes[2]**	**Yield (dry)[3] $Mg\ ha^{-1}\ yr^{-1}$ $t\ ac^{-1}yr^{-1}$**	**Stem age [4] (rotation)**	**Total rotation N, P, K $kg^{-1}\ ha^{-1}$**	**Plant density trees ha^{-1} trees ac^{-1}**	**Plant Year**	**Reference source**
Very High Intensity – irrigation and non-limiting fertilizer							
T,W,I,F, Rhinelander, WI	NC5260	13.6 (6.1)	4 (1)[5]	Non-limiting N, P & K + micronutrients	191,358 (77,440)	1970	[8]Zavitkovski et. al. 1976
T,W,I,F, Rhinelander, WI	NC5260	15.2 (6.8)	4 (1)[5]	Non-limiting N, P & K + micronutrients	107.689 (43,582)	1970	[8]Zavitkovski et. al. 1976
High Intensity – irrigation + fertilizer + high density							
T, W, I, F Rhinelander, WI	NC5260	9.9 (4.4)	5 (1)	560, 0, 0	111,100 (44,962)	1973	[9]Strong and Hansen, 1993
T,W,I,F Rhinelander, WI	NC5260	8.7 (3.9)	9 (1)	996 ,0, 0	3,100 (1.255)	1977	[9]Strong and Hansen, 1993
T, W, I, F Rhinelander, WI	NE299	10.8 (4.8)	6 (1)	666, 0, 0	27,800 (11,251)	1977	[9]Strong and Hansen, 1993
T,W,I,F Rhinelander, WI	NE299	10.7 (4.8) 11.6 (5.2)	6 (1) 5 (2)	550,0,0 550,0,0	26,910 (10,890) “	1981 1978	[10]Strong 1989 & [11]Netzer et al. (2002)
Medium to High Intensity – irrigation + high density							
T, W, I Rhinelander, WI	NE41 NE386	12.8 (5.7) 11.4 (5.1)	6 (1) 7 (1)	0, 0, 0 0, 0, 0	10,000 (4047) “	1981	[9]Strong and Hansen, 1993
T, W, I Rhinelander, WI	NE41 NE386	11.4 (5.1) 9.2 (4.1)	6 (1) 7 (1)	0, 0, 0 0, 0, 0	5,000 (2024) “	1981	[9]Strong and Hansen, 1993
Medium Intensity - no fertilizer, limited irrigation							
W, I (1st year) New Franklin, MO Fertile floodplain	26C6R51 2059 1112	10.6 (4.8) 11.6 (5.2) 10.6 (4.8)	5 (1)[5] 5 (1)[5] 5 (1)[5]	0, 0, 0 0, 0, 0 0, 0, 0	10,000 (4047) “ “	2000	[12] Dowell, 2009
T, W: Arlington, WI, Ames , IA	NM6, DN34 controls	10.8 (4.8) 7.7 (3.2)	6 (1)[6] 6 (1)[6]	0, 0, 0 0, 0, 0	1076 (435) “	1995	[13] Riemenschneider, et al, 2001 [14] Zalesney et a.l, 2009
T, W: Arlington, WI, Ames, IA	Best 5 hybrid poplar clones	15.0 (6.7) 13.5 (6.0)	6 (1)[6] 6 (1)[6]	0, 0, 0 0, 0, 0	1076 (435) “	1995	[13] Riemenschneider, et al, 2001 [14] Zalesney et al., 2009
T, W Arlington, WI Ames, IA	Best single hybrid poplar clone	16.8 (7.5) 17.2 (7.7) 20.9 (9.3) 20.9 (9.3)	6 (1)[6] 6 (1)[6] 7 (1)[6] 7 (1)[6]	0, 0, 0 0, 0, 0 0, 0, 0 0, 0, 0	1076 (435) “ 1076 (435) “	1995	[13]Riemenschneider, et al, 2001 [14] Zalesney et al,. 2009
Low Intensity or experimental controls							
T, W WI (2), SD (1), ND (1), MN (2)	Avg of DN17, DN34, DN182	4.0 - 8.7 (1.8 – 3.9)	7 – 10 (1)	0, 0, 0	1682 (681)	1987[7]	[11]Netzer et al. 2002
T, W WI (2 sites),	Avg of DN17, DN34, DN182	4.8 – 8.9 (2.1 – 4.0)	6 (1)	0, 0, 0	1682 (681)	1988	[11]Netzer et al. 2002
T, W SD (1 site),	Avg of DN17, DN34, DN182	5.4 (2.4)	7 (1)	0, 0, 0	1682 (681)	1988	[11]Netzer et al. 2002
T, W MN (3 sites);	Avg of DN17, DN34, DN182	6.0 – 9.5 (2.7 – 4.2)	7 & 9 (1)	0, 0, 0	1682 (681)	1988	[11]Netzer et al. 2002
T, with pest control & Ames, Iowa, US	*P. deltoids* 91x04-03	11.5	8(1)	0,0,0	2500	1998	[15] Coyle et al, 2008
T, Tuttle Creek, KA	*P. deltoids* ‘Missouri’ Silver Maple	8.9 (3.9) 10.6 (4.7)	2 (2)[6] 2 (2)[6]	0, 0, 0 0, 0, 0	13,437 (5438) “	1976	[16]Geyer et al, 1981
T, Tuttle Creek, KA	Black locust Cottonwood	9.1 (4.1) 6.3 (2.8)	1 (2)[6]	0, 0, 0	13,437 (5438) 107.500 (43,582)	1976	[16]Geyer et al, 1981

[1] Definitions of culture intensity notations are as follows: T = tillage used in site preparation, W=chemical weed control, F = fertilization, I = irrigation, P = pest control, VH = very high, H = high.

[2] NC5260. NE299,NC5331, NM6, NE41, NE388, DN17, DN34, DN182, are older selected hybrid poplar clones. 26CR51, 2059, 1112 are pure *Populus deltoides* clones collected and distributed by Missouri Department of Conservation. 91x04-03 is a pure *Populus deltoides* selected by Iowa State University breeders.

[3] Yields are expressed as the mean annual increment of the total aboveground dry weight without foliage for hardwoods but with foliage for softwoods. When original data was reported as wet weight, stem dry weight, or stem volume, appropriate conversion factors and expansion factors were used (see appendix).

[4] Stem age represents the growth year in which the stand reached maximum mean annual increment (MAI max) based on published growth curves unless footnoted.

[5] Age of MAI max not verifiable but stand had reached expected harvest age for the planting density and was believed to be close to MAI max..

[6] Age of MAI max not verifiable but data were deemed worthy to include for comparison.

[7] Yields in multi-state plots planted in 1987 showed similar variation with location as plots planted in 1988, age at maximum MAI was 1 to 2 years later and yields slightly lower because competing vegetation control was not as well done in the first planting year.

Table 3 Maximum annual yields from published growth curves of cottonwood and hybrid poplar in silvicultural and clone trials in Pacific Northwest grouped by culture intensity level.

Culture Intensity[1] ; Location	**Genotypes[2]**	**Yield (dry)[3]** **Mg ha^{-1} yr^{-1} (t $ac^{-1}yr^{-1}$)**	**Stem age [4] (rotation)**	**Total rotation N, P, K kg^{-1} ha^{-1}**	**Plant density trees ha^{-1} (trees ac^{-1})**	**Plant Year**	**Reference source**
Very High Intensity – very high fertilizer							
T, W, F; fertile Puyallup, WA	15-029 44-133	30.5 (13.6) 31.2 (13.9)	4 (1) [5] 4 (1)[5]	500, 0, 0 500,0 ,0	2,222 (899) “	1987	[17] Heilman and Fu-Gaung, 1993
High Intensity – multiple scenarios							
T, W, I; fertile Puyallup, WA	(5 best of 12) 11-05 11-11, 19-56 44-136 55-258	 23.1 (10.3) 29.4 (13.1) 23.2 (10.3) 24.2 (10.8) 29.2 (13.0)	 4 (1) [5] 4 (1)[5] 4 (1)[5] 4 (1)[5] 4 (1)[5]	fertile site 0 ,0 ,0 0, 0, 0 0, 0, 0 0, 0, 0 0, 0, 0	 10,000 (4047) “ “ “ “	 1985	[18] Heilman et al., 1994
T, W, F ; fertile Puyallup, WA	*P. trichocarpa* 50 clone avg.	27.8 (12.4) 32.8 (14.6)	4 (1) [6] 4 (2) [5]	225, 0, 0 133, 0, 0	6944 (2810) “	1979	[19] [20] Heilman and Stettler, 1985, 1990, [21] Weber et al, 1985.
T,W,F ; fertile Puyallup, WA	11-11 Best clone	27.5 (12.3) 43.5 (19.4)	4 (1)[6] 4 (2) [5]	225, 0, 0 133, 0, 0	6944 (2810) “	1979	[19] [20] Heilman and Stettler, 1985, 1990, [21] Weber et al, 1985.
T,W,F; fertile Puyallup, WA	HY 05 2nd best clone	27.8 (12.4) 33.5 (14.9)	4 (1)[6] 4 (2)[5]	225, 0, 0 133, 0, 0	6944 (2810) “	1979	[19] [20] Heilman and Stettler, 1985, 1990, [21] Weber et al, 1985.
T, W ,I, F Olympia, WA	11-11 D-01	7.1 (3.2) 7.4 (3.3)	1 (1-3)[7] 1 (1-5)[7]	200, 43, 74 200, 43, 74	310,000 (125,457) “	1986	[22] Debell et. al., 1993
T, W ,I, F Olympia, WA	11-11 density trial	17.7 (7.9) 18.4 (8.2) 17.1 (7.6)	5 (1) 5 (1) 7 (1)	200, 43, 83 200, 43, 83 300, 43, 83	40,000 (16.188) 10,000 (4047) 2500 (1020)	1986	[23] Debell et. al., 1996
T, W, F Mt Vernon, WA	*Populus trichocarpa*	10.4 (4.6) 9.4 (4.2) 9.2 (4.1)	4 (3) [5] 4 (3) [5] 4 (3) [5]	Multiple levels – no effect*	107,600 (43,546) 26, 874 (10,876) 6944 (2810)	1967	[24] Heilman, Peabody, et al. 1972, [25] Heilman and Peabody, 1981
Low Intensity or experimental controls							
T, W, Sumner, WA Weed competition a problem	*Populus trichocarpa* density trial	7.9 (3.5) 9.6 (4.3) 6.6 (2.9) 5.6 (2.5) 7.6 (3.4)	8 (1) [6] 8 (1) [6] 8 (1) [6] 8 (1) [6] 8 (1) [6]	0,0,0 0,0,0 0,0,0 0,0,0 0,0,0	107,600 (43,546) 26, 874 (10876) 6944 (2810) 1815 (735) 1210 (490)	1971	[25] Heilman and Peabody, 1981
T, W ; fertile Puyallup, WA	15-029 44-136	25.9 (6.6) 27.5 (12.3)	4 (1) [5] 4 (1) [5]	0,0,0 0,0,0	2,222 (899) “	1987	[17]Heilman and Fu-Gaung, 1993

[1] Definitions of culture intensity notations are as follows: T = tillage used in site preparation, W=weed control, F = fertilization, I = irrigation, P = pest control, H = high, VH = very high.

[2] 15-029, 44-133, 11-05, 11-11, 19-56, 44-136, 55-258 are selected hybrid poplar clones many resulting from breeding by Reini Stettler at the University of Washington in the 1970’s. D-01 is a hybrid poplar clone of unknown origin deployed by a nursery (Dula’s nursery) in Washington or Oregon.

[3] Yields are expressed as the mean annual increment of the total aboveground dry weight without foliage for hardwoods but with foliage for softwoods. When original data was reported as wet weight, stem dry weight, or stem volume, appropriate conversion factors and expansion factors were used (see appendix).

[4] Stem age represents the growth year in which the stand reached maximum mean annual increment (MAI max) based on published growth curves unless footnoted.

[5] Age of MAI max not verifiable but stand had reached expected harvest age for the planting density and was believed to be close to MAI max..

[6] Age of MAI max not verifiable but data were deemed worthy to include for comparison.

[7] Annually harvested coppice growth over multiple rotations, yield reported is “peak” average yield of annual harvests, not the maximum current annual increment.

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Table 4 Maximum annual yields from published growth curves of hardwoods evaluated in the southern US grouped by culture intensity level.

Culture Intensity[1] ; Location	**Genotype [2]**	**Yield (dry) [3]** **Mg ha^{-1} yr^{-1} (t ac^{-1}yr^{-1})**	**Stem age [4] (rotation)**	**Total rotation N, P, K kg^{-1} ha^{-1}**	**Plant density trees ha^{-1} (trees ac^{-1})**	**Plant Year**	**Reference source**
Very High Intensity – Irrigation plus high fertilizer							
R,W,I,F,P Bainbridge, FL	Select sweetgum	9.6 (4.3)	6 (1)[6]	480, 126, 510	1126 (456)	1995	[26] Williams & Gresham, 2006
R, W, I, F Mt Pleasant, GA	sweetgum sycamore	6.9 (3.1) 8.2 (3.7)	6 (1)[5] 6 (1)[5]	510, 75, 284 510, 75, 284	1790 (724) “	1997	[27] Cobb, Will et al, 2008
High Intensity – either very high fertilizer, or very high density and moderate fertilizer, or irrigation and moderate fertilizer							
T, W, F Oak Ridge, TN	sycamore	14,5 (6.5)	3 (1)[6]	450, 50, 0	3333 (1349)	1988	[28] Van Miegroet et al., 1994
T,W,F; Muck soil Belle Glade, FL	*Eucalyptus grandis*	14.4 (6.4) 23.8 (10.6)	2.5 (1) 1.5 (1	0, 0, 0 0, 0, 0	1,600 (648) 10,000 (4047)	1980	[29] Rockwood et. al, 1985
T, B, Lakeland, FL	E. grandis E. amplifolia	25.2 (11.2) 27.8 (12.4)	3.2 (1) 3.2 (1)	53, 0, 0 53, 0, 0	8400 (3399) “	2001	[30] Langholtz et. al, 2007
R, W, I, F Mt Pleasant, G	sweetgum sycamore	4.6 (2.0) 5.5 (2.5)	6 (1)[6] 6 (1)[6]	342, 50, 189 342, 50, 189	1790 (724) “	1997	[27] Cobb, Will et al, 2008
T, W, I, F, South Carolina	Sycamore P. deltoids S7C15	6.3 (2.8) 3.2 (1.3)	3 (1)[6] 3 (1)[6]	240,0,0 240,0,0	1333 (539) 1333 (539)	2000	[31] Coyle and Coleman, 2005
R,W(poor), F Mayesville, SC	sycamore, trt 1 sycamore, trt 2	5.5 (2.4) 6.1 (2.7)	7 (1) 6 (1)	452, 103, 0 349, 92, 0	1388 (562) “	1996 1996	[32] Davis & Trettin, 2006
Low Intensity or experimental controls – no N fertilizer,							
T, B, Lakeland, FL	*E. grandis* *E. amplifolia*	20.1 (9.0) 25.5 (11.4)	3.2 (1) 3.2 (1)	0, 0, 0 0, 0, 0	8400 (3399) “	2001	[30] Langholtz et. al, 2007
T, B, Lakeland, FL	*E. grandis* *E. amplifolia*	11.1 (4.9) 5.2 (2.3)	3.2 (1) 2.5 (1)	0, 0, 0 0, 0, 0	4200 (1700) “	2001	[30] Langholtz et. al, 2007
R, T, W Monroeville, AL	sweetgum, 3 densities	10.2 (4.6) 7.5 (3.3) 5.0 (2.2)	5 (1) 5 (1) 6 (1)[6]	0, 0, 0 0, 0, 0 0, 0, 0	5556 (2249) 2778 (1124) 1852 (750)	1982	[33] Torreano & Frederick, 1988
R, T, W Monroeville, AL	sycamore, 3 densities & 2 rotations	8.5 (3.8) 9.4 (4.2) 6.9 (3.1) 6.6 (2.9) 6.7 (3.0) 5.9 (2.6)	5 (1) 2 (2) 3 (1) 3 (2)[5] 4 (1)[6] 3 (2)[6]	0, 0, 0 0, 0, 0 0, 0, 0 0, 0, 0 0, 0, 0 0, 0, 0	5556 (2249) “ 2778 (1124) “ 1852 (750) “	1982	[33] Torreano & Frederick, 1988
R, T, W Monroeville, AL	water-willow oak	9.5 (4.2) 10.9 (4.8) 7.1 (3.1) 6.5 (2.9)	5 (1) 2 (2) 6 (1)[6] 2 (2)	0, 0, 0 0, 0, 0 0, 0, 0 0, 0, 0	5556 (2249) “ 2778 (1124) “	1982	[33] Torreano & Frederick, 1988
R,W Bainbridge, FL	select sweetgum	3.3 (1.5)	6 (1)[6]	0, 0, 0	1126 (456)	1995	[26] Williams & Gresham, 2006
R, W Mt Pleasant, GA	sweetgum sycamore	0.6 (0.3) 0.9 (0.4)	6 (1)[6] 6 (1)[6]	0, 0, 0 0, 0, 0	1790 (724) “	1997	[27] Cobb, Will et al, 2008
T, W Oak Ridge, TN	sycamore	9.5 (4.2)	3 (1)[6]	0, 0, 0	3333 (1349)	1988	[28] Van Miegroet et al., 1994

[1] Definitions of culture intensity notations are as follows: T = tillage used in site preparation, W=chemical weed control, F = fertilization, I = irrigation, P = pest control, VH = very high, H = high.

[2] Most trees used in these experiments were unselected, open pollinated seedlings. Poplar hybrids tested in South China were imported from the US.

[3] Yields are expressed as the mean annual increment of the total aboveground dry weight without foliage for hardwoods but with foliage for softwoods. When original data was reported as wet weight, stem dry weight, or stem volume, appropriate conversion factors and expansion factors were used (see appendix). In case of annual harvests over several years, yield is averaged over all yearly harvests (rotations).

[4] Stem age represents the growth year in which the stand reached maximum mean annual increment (MAI max) based on published growth curves unless footnoted.

[5] Age of MAI max not verifiable but stand had reached expected harvest age for the planting density and was believed to be close to MAI max..

[6] Age of MAI max not verifiable but data were deemed worthy to include for comparison.

Table 5 Maximum annual yields from published growth curves of loblolly pine evaluated in southeastern silvicultural trials grouped by culture intensity level.

Culture Intensity[1] Location	**Genotype[2]**	**Yield (dry)[3] Mg ha^{-1} yr^{-1} (t ac^{-1}yr^{-1})**	**Stem age [4] rotation**	**Total rotation N, P, K kg^{-1} ha^{-1}**	**Plant density trees ha^{-1} (trees ac^{-1})**	**Plant Year**	**Reference source**
Very High Intensity							
W, I, F, P Bainbridge GA	Improved 2nd gen fam 7-56	18.2 (8.1)	11[5]	980, 241, 953	1121 (454)	1995	[34] Samuelson, Butnor et al., 2008
W , I , F Bainbridge GA	Improved 2nd gen fam 7-56	19.0 (8.5)	11[5]	980, 241, 953	1121 (454)	1995	[34] Samuelson, Butnor et al., 2008
W, I, F, P Bainbridge GA	4 improved 2nd gen families	15.2 (6.8)[2]	6[6]	537, 126, 510	1121 (454)	1995	[26] Williams and Gresham, 2006
W, F (Wet site) Waycross, GA	Improved 2nd gen fam 7-56	17.0 (7.6)	15[5]	1254, 200, 181	1660 (670)	1987	[35] Borders, Will et al., 2004
W, F (Dry site) Waycross, GA	Improved 2nd gen fam 7-56	16.4 (7.3)	15[5]	1254, 200, 181	1660 (670)	1987	[35] Borders, Will et al., 2004
W, I, HF Mt Pleasant, GA	Improved 2nd gen fam 7-56	12.0 (5.4)[3]	6[6]	684, 100, 378	1790 (725)	1997	[27] Cobb, Will et al., 2008
W, HF Waverly, GA	7 full-sib 1st gen fam +mix	13.9 (6.2)[4]	5[5]	369, 128, 121	2990 (1210)	2000	[36] Ruth, Jokela et al., 2007
W, HF Sanderson, FL	7 full-sib 1st gen fam +mix	13.2 (5.9)[4]	5[5]	369, 128, 121	2990 (1210)	2000	[36] Ruth, Jokela et al., 2007
High Intensity							
W, I Bainbridge, GA	Improved 2nd gen fam 7-56	16.0 (7.1)	11[5]	0, 0, 0	1121 (454)	1995	[34] Samuelson, Butnor et al., 2008
W, I, F Bainbridge, GA	4 improved 2nd gen families	11.5 (5.1)[2]	6[6]	537, 126, 510	1121 (454)	1995	[26] Williams and Gresham, 2006
W, F Gainsville, FL	Improved 1st gen fam	11.9 (5.3)	13	360, 143, 317	1495 (605)	1983	[37] Jokela and Martin, 2000
HF (Wet site) Waycross, GA	Improved 2nd gen fam 7-56	16.4 (7.3)	15[5]	1254, 200, 181	1660 (670)	1987	[35] Borders, Will et al., 2004
HF (Dry site) Waycross, GA	Improved 2nd gen fam 7-56	15.2 (6.8)	15[5]	1254, 200, 181	1660 (670)	1987	[35] Borders, Will et al., 2004
W, I, F Mt Pleasant, GA	Improved 2nd gen fam 7-56	13.2 (5.9)[3]	6[6]	510, 75, 284	1790 (725)	1997	[27] Cobb, Will et al., 2008
W, I, F Mt Pleasant, GA	Improved 2nd gen fam 7-56	11.0 (4.9)[3]	6[6]	342, 50, 189	1790 (725)	1997	[27] Cobb, Will et al., 2008
Medium Intensity							
W Bainbridge GA	Improved 2nd gen fam 7-56	11.6 (5.2)	11[5]	0, 0, 0	1121 (454)	1995	[34] Samuelson, Butnor et al., 2008
W (Wet site) Waycross, GA	Improved 2nd gen fam 7-56	9.1 (4.1)	15[5]	0, 0, 0	1660 (670)	1987	[35] Borders, Will et al., 2004
W (Dry site) Waycross, GA	Improved 2nd gen fam 7-56	11.2 (5.0)	15[5]	0, 0, 0	1660 (670)	1987	[35] Borders, Will et al., 2004
F at planting, Waverly, GA	7 full-sib 1st gen fam +mix	11.5 (5.1)[4]	5[5]	50, 56, 0	2990 (1210)	2000	[36] Ruth, Jokela et al., 2007
F at planting, Sanderson, FL	7 full-sib 1st gen fam +mix	8.1 (3.6)[4]	5[6]	50, 56, 0	2990 (1210)	2000	[36] Ruth, Jokela et al., 2007
Low Intensity or experimental controls							
W Bainbridge, GA	4 improved 2nd gen families	8.1 (3.6)[2]	6[6]	0, 0, 0	1121 (454)	1995	[26] Williams and Gresham, 2006
T Gainsville, FL	Improved 1st gen fam	3.5 (1.5)	13[6]	0, 0, 0	1495 (605)	1983	[37] Jokela and Martin, 2000
T (Wet site) Waycross, GA	Improved 2nd gen fam 7-56	7.5 (3.4)	15[5]	0, 0, 0	1660 (670)	1987	[35] Borders, Will et al., 2004
T (Dry site) Waycross, GA	Improved 2nd gen fam 7-56	8.4 (3.8)	15[5]	0, 0, 0	1660 (670)	1987	[35] Borders, Will et al., 2004
T Mt Pleasant, GA	Improved 2nd gen fam 7-56	7.3 (3.3)[3]	6[6]	0, 0, 0	1790 (725)	1997	[27] Cobb, Will et al., 2008

[1] Definitions of culture intensity notations are as follows: T = tillage used in site preparation, W=chemical weed control, F = fertilization, I = irrigation, P = pest control, VH = very high, H = high

[2] Specific family or generation of selection (or both) given if known.

[3] Yields are expressed as the mean annual increment of the total aboveground dry weight without foliage for hardwoods but with foliage for softwoods. When original data was reported as wet weight, stem dry weight, or stem volume, appropriate conversion factors and expansion factors were used (see appendix).

[4] Stem age represents the growth year in which the stand reached maximum mean annual increment (MAI max) based on published growth curves unless footnoted.

[5] Age of MAI max not verifiable but stand had reached expected harvest age for the planting density and was believed to be close to MAI max..

[6] Age of MAI max not verifiable but data were deemed worthy to include for comparison.

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