Analysis of SC Forest Resource Trends at FIA Sub-Unit Levels

(*A Technical Review of DBH & Stand Age Conditions from Recent SC FIA 2014*)

today, 6-10” near break-even, excess 12”+

unbalanced pine age classes!

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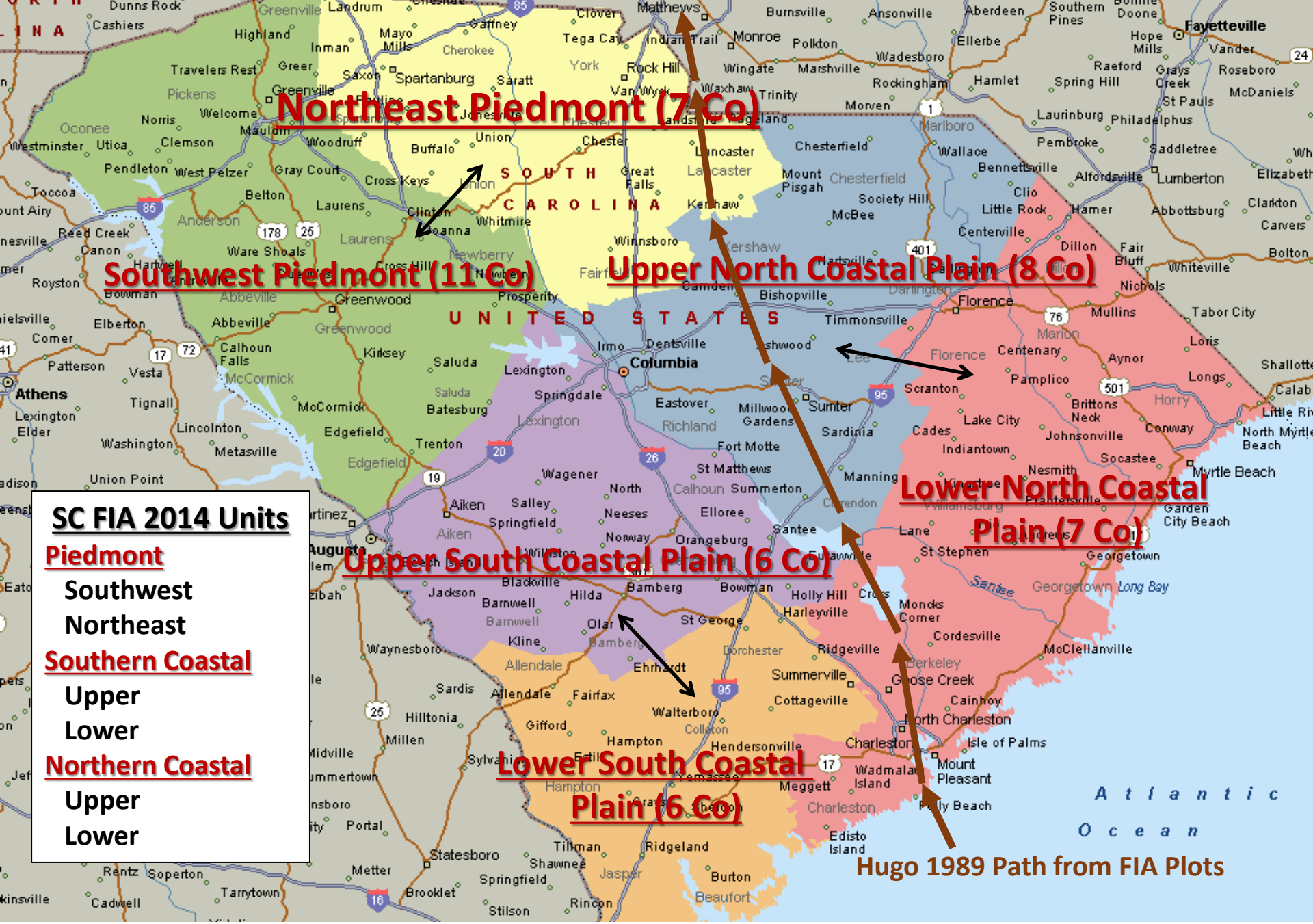

Northeast Piedmont (7 Co)
Southwest Piedmont (11 Co)
Upper North Coastal Plain (8 Co)
Lower North Coastal Plain (7 Co)
Upper South Coastal Plain (6 Co)
Lower South Coastal Plain (6 Co)
Hugo 1989 Path from FIA Plots
SC FIA 2014 Units
Piedmont
Southwest
Northeast
Southern Coastal
Upper
Lower
Northern Coastal
Upper
Lower
SOUTH CAROLINA
UNITED STATES
Columbia
Atlantic Ocean

SC Forest Condition in Tons, Private Timberland, All-Live Trees, 6" dbh & larger, FIA 2014						
	Inventory	Annual Growth	% Growth Rate	Annual Removal	Surplus	G/R Ratio
All Species	749,694,731	42,541,097	5.7%	25,453,931	17,087,166	1.67

I've seen $100+ million dollar plants built to use just pine pulpwood with the forest resource study including all species & tree sizes as above!

FIA System Characteristics and Presentation Guidelines

- **One FIA plot = 6,000 acres; 2,464 acres for timberland; SC 5-yr cycle (20% plots annually)**
- **Annual growth volume distribution by DBH corrected by FIA March 2013**
- **Criteria for data presented in this analysis:**
  - **Availability:**
    - **Timberland and excludes public, removals very low %**
    - **All-live verses growing stock, 5% high softwood, +25% hardwoods**
    - **No adjustments for owner sell decision or logging/ground conditions; 100%**
  - ***Tree Utilization:***
    - ***Pine*:**
      - **Small wood, pulpwood: 6-10" dbh nominal, actually 5.0"+, 12" blends**
      - **Large wood, sawtimber: 12"+ dbh nominal, actually 11.0"+**
    - ***Hardwoods:***
      - **Small wood, pulpwood: 6-12" dbh nominal, also 14-16" blend sales**
      - **Large wood, sawtimber: 14"+ dbh nominal**

SC Forest Condition in Tons, Private Timberland, All-Live Trees, FIA 2014						
	Inventory Avg Plot Yr 2012	Annual Growth Avg Plot Yr 2009-10	% Growth Rate Plot Years 2009-10/2012	Annual Removal Avg Plot Yr 2009-10	Surplus Avg Plot Yr 2009-10	G/R Ratio Avg Plot Yr 2009-10
All Species	749,694,731	42,541,097	5.7%	25,453,931	17,087,166	1.67

Correct Dating of FIA Plot Measurements

SC & GA 5-yr cycle, 20% annually

2005
2006 Previous
2007 Cycle
2008
2009

2010
2011 Current
2012 Cycle
2013
2014

0-5 Age Class
Plot Call 5 yrs
2010 Avg Yr

Standing Inventory
2012

Annual Growth
Annual Removal
2009-10

No plots are grown forward

NC, 7-cycle state, 2014
Missed 2008, Inventory 2010
Growth/Removal &
0-5 yrs at 2007

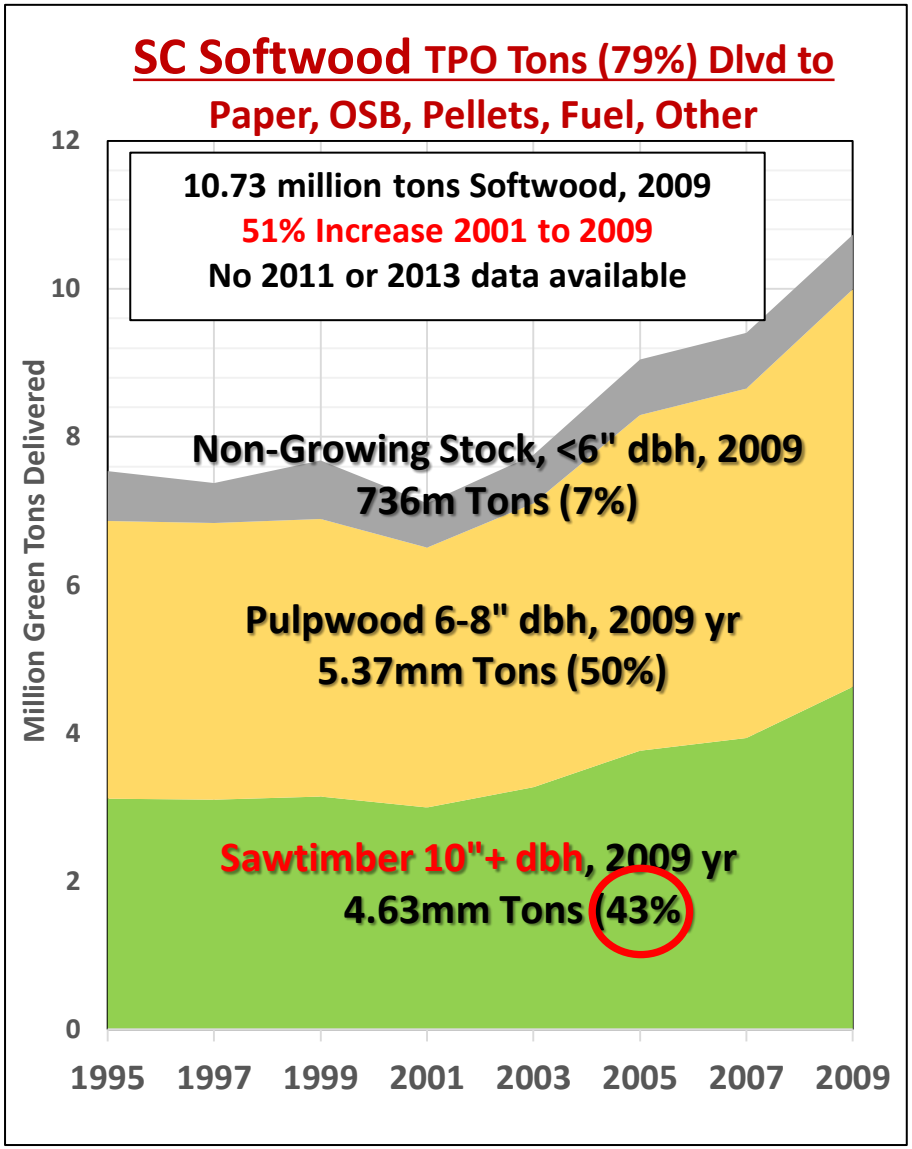
Some might include a species break-down!

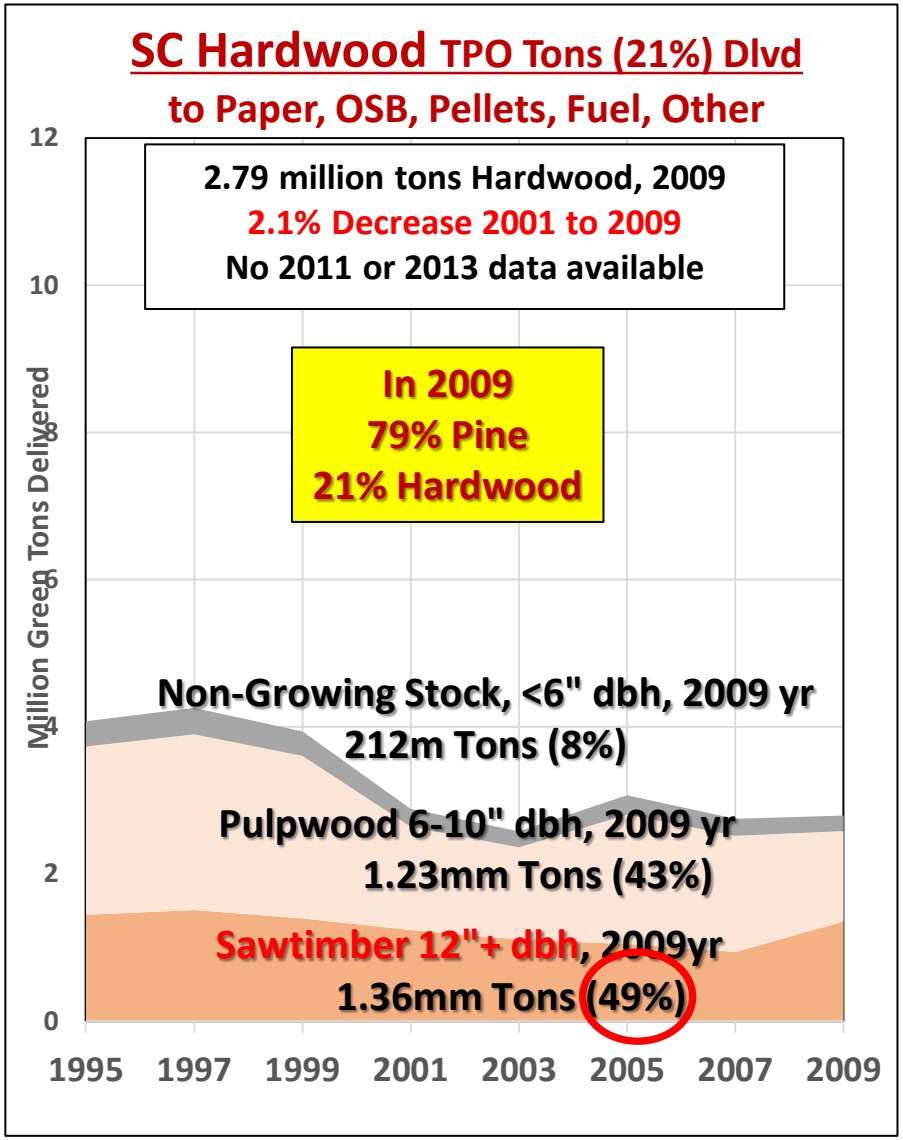
SC Forest Condition in Tons, Private Timberland, All-Live Trees, FIA 2014					
Species	Inventory Avg Plot Yr 2012	Annual Growth Avg Plot Yr 2009-10	Annual Removal Avg Plot Yr 2009-10	Surplus Avg Plot Yr 2009-10	G/R Ratio Avg Plot Yr 2009-10
Pines	351,292,645	31,952,172	20,005,557	11,946,615	1.60
Other softwoods	17,249,498	574,632	341,414	233,218	1.68
Soft hardwoods	193,964,836	6,254,758	3,243,570	3,011,188	1.93
Hard hardwoods	187,187,753	6,428,695	1,863,389	4,565,306	3.45
Grand Total:	749,694,731	45,210,257	25,453,931	19,756,326	1.78
All Yellow Pines	350,172,706	29,091,339	20,000,420	9,090,919	1.45
Annual Growth Rates for Pines: Natural 6.7%; Planted 10.1% (51% Greater)					

Other Resource Questions to Ask:

- What % volume sawtimber is delivered to paper & OSB? See TPO!
- Is volume delivered to mills defined by tree sizes? DBH break-out!
- Has data been correctly dated per plot dates? FIA to list in 2016!
- Want to see past 10 year trends? Use SC's 10 annuals!
- Future concern? Use FIA harvesting & silvicultural past data!

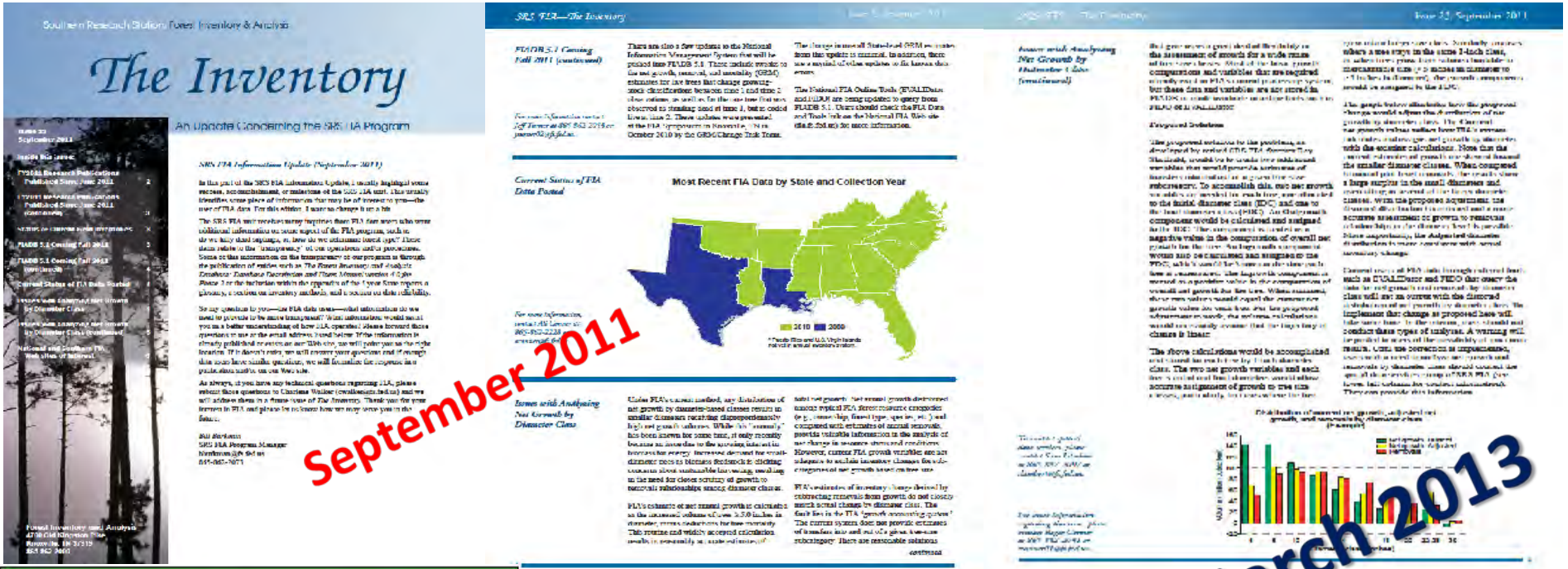
Sawtimber Has Been Part of Paper, OSB and now Pellet Delivered Mix For Years!





Roundwood, In-woods Chipping/Grinding Separations

1. Pine Small Roundwood – to Paper, OSB, Pellets, some Boiler Fuel
   6-10" dbh & larger
2. Pine Large Roundwood – to Sawmills, Plywood, Veneer, Export Logs, Poles & Piling
   12" dbh & larger
3. Hardwood Small Roundwood – to Paper, some OSB, Pellets, some Boiler Fuel, some Firewood
   6-12" dbh & larger
4. Hardwood Large Roundwood – to Sawmills, Plywood, Veneer, some Export Logs
   14" dbh & larger
5. Pine In-woods Clean Chips – to Paper, Export Chips, Pellets, some Boiler Fuel, other
6. Hardwood In-woods Clean Chips – to Paper, Pellets, some Boiler Fuel, other
7. Chipped/Hogged Fuel – to Paper, Biomass Boilers, OSB fuel
   from logging residues, tops, residuals



User Alerts:

- SRS FIA Alert (Reference below)
- FIADB 51 - has been released. You may notice changes in FIADB tables, FIDO, EVALIDator and the DataMart. Some new tables may not contain data until the 2011 field data are processed.

Special alert - On-line tool issue

Users are advised that all FIA on-line tools (FIDO, EVALIDator, etc.) currently assign accrued volume growth to a single diameter class (current or previous diameter) in a way that results in a distorted and inaccurate distribution. Smaller tree diameter classes receive a disproportionately high percentage of the growth and the larger classes a lower percentage than should be assigned. When compared with removal volumes arrayed by the same diameter classes, unrealistic estimates of inventory change by tree size are obtained. Procedures that correctly distribute tree growth to both the previous and current diameter classes are being developed. We advise our clients not to use net growth by diameter class estimates produced by these on-line tools, but rather to contact their regional offices for corrected estimates. All other estimates by diameter class are calculated correctly. For further details, please review the September 2011 SRS FIA Inventory Update available on the SRS-FIA program information web page.

Web Site Warning – Final Correction March 2013

10-6-2011 September 2011

Resource Issues To Consider!

1. **Forest Resource Sustainability Defined**: ***Everybody in this room probably has a different idea!***

2. **Old School (Europe)**: ***Annual removal equals annual net growth, or 1.0 growth/removal ratio***

3. **Sawtimber Harvest during 1990's**: ***Growth/removal ratio's were .80 to .90, lumber boom, owl!***
   But huge planted acres from CRP were evident!

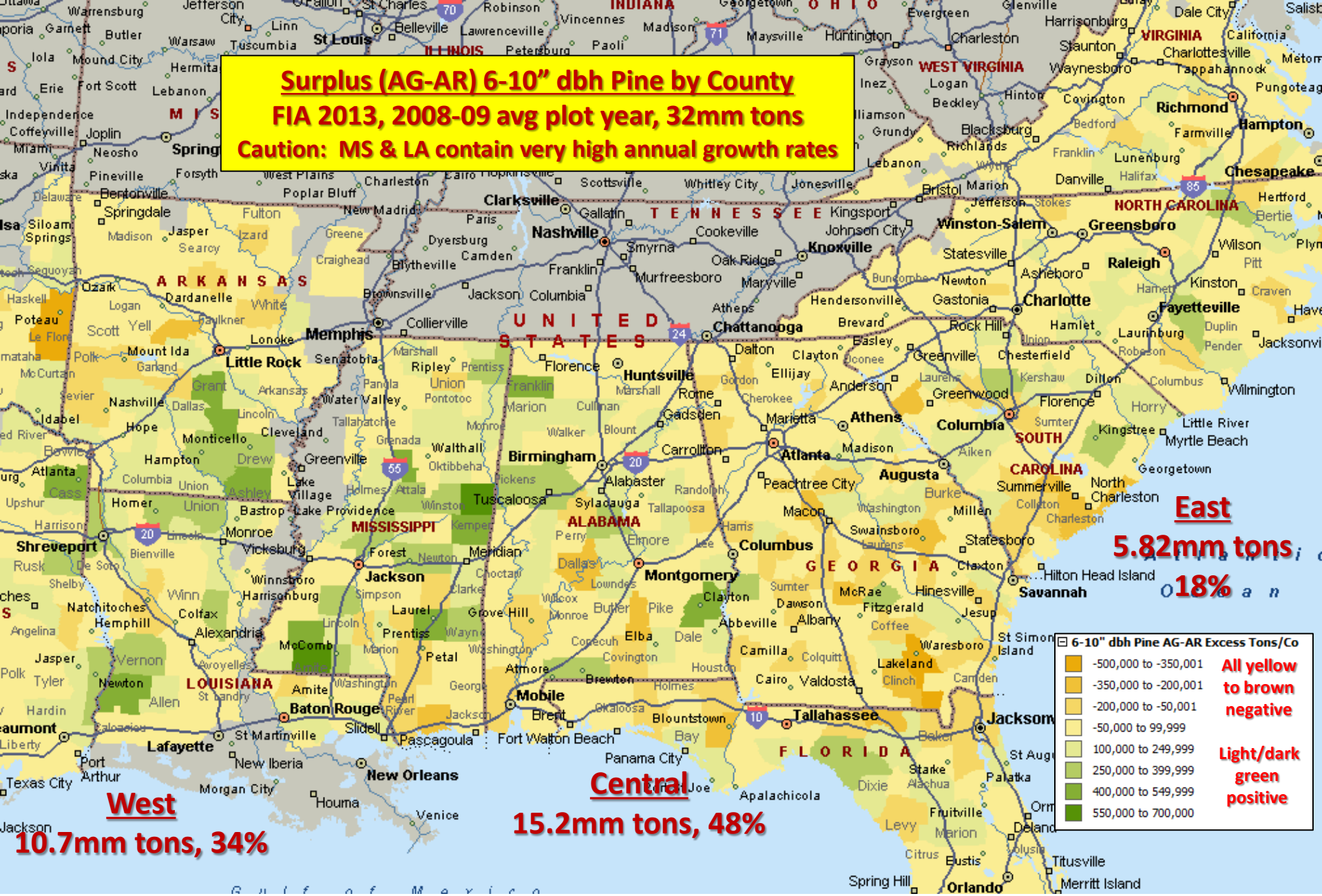
4. **Sawmill Facility Investments Today in Select Areas in Central & West side of South**:
   Growth/removal ratio's .85-.90 now & for past 30 years,
   but these same areas have experienced the most consistent tree planting in South

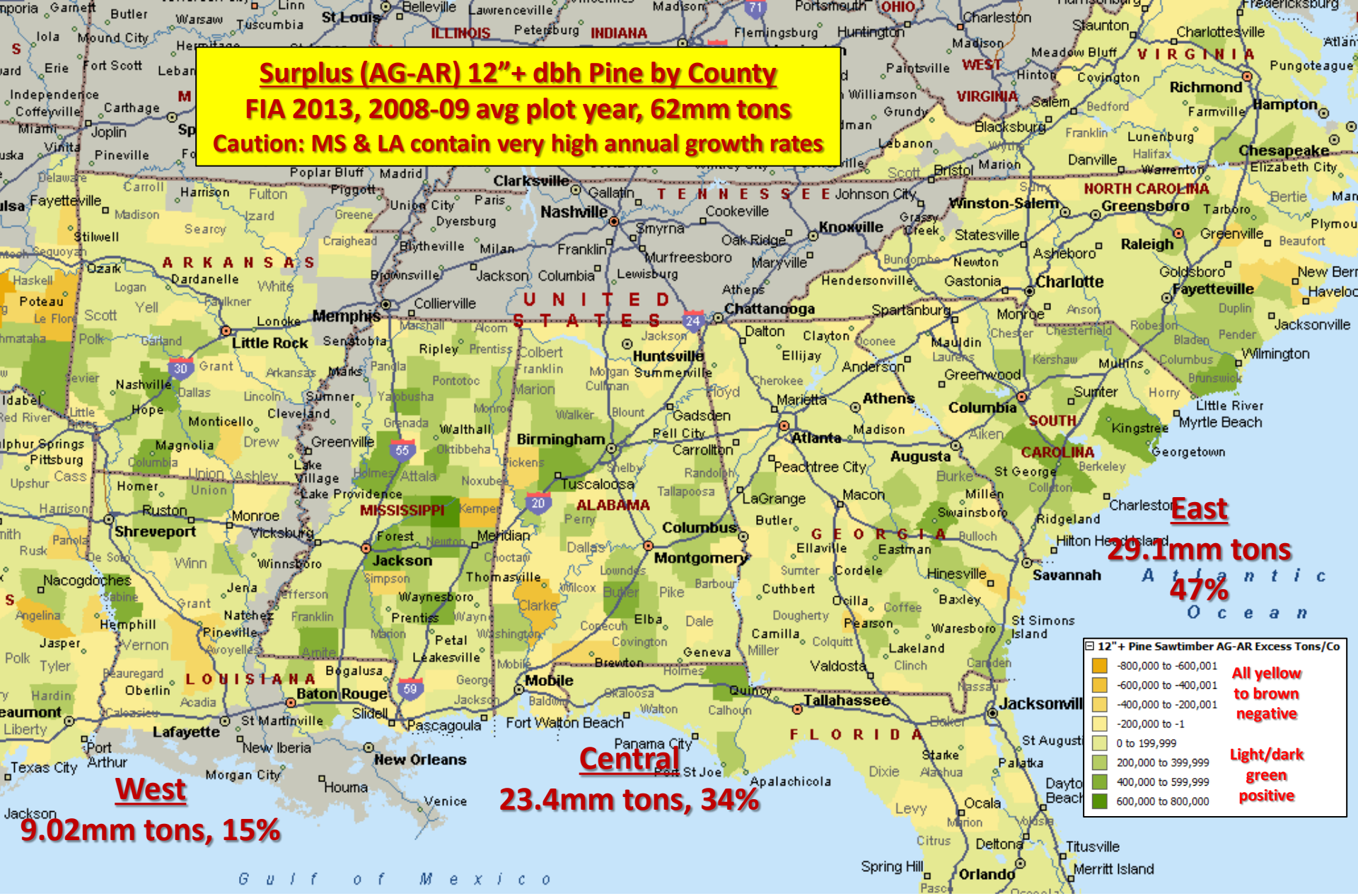
5. **Today's Resource Analysis**: ***Private timberland, all-live pine, 6-10", 12"+, natural & planted***
   Six FIA Sub-Units, FIA 2014 with correct dating

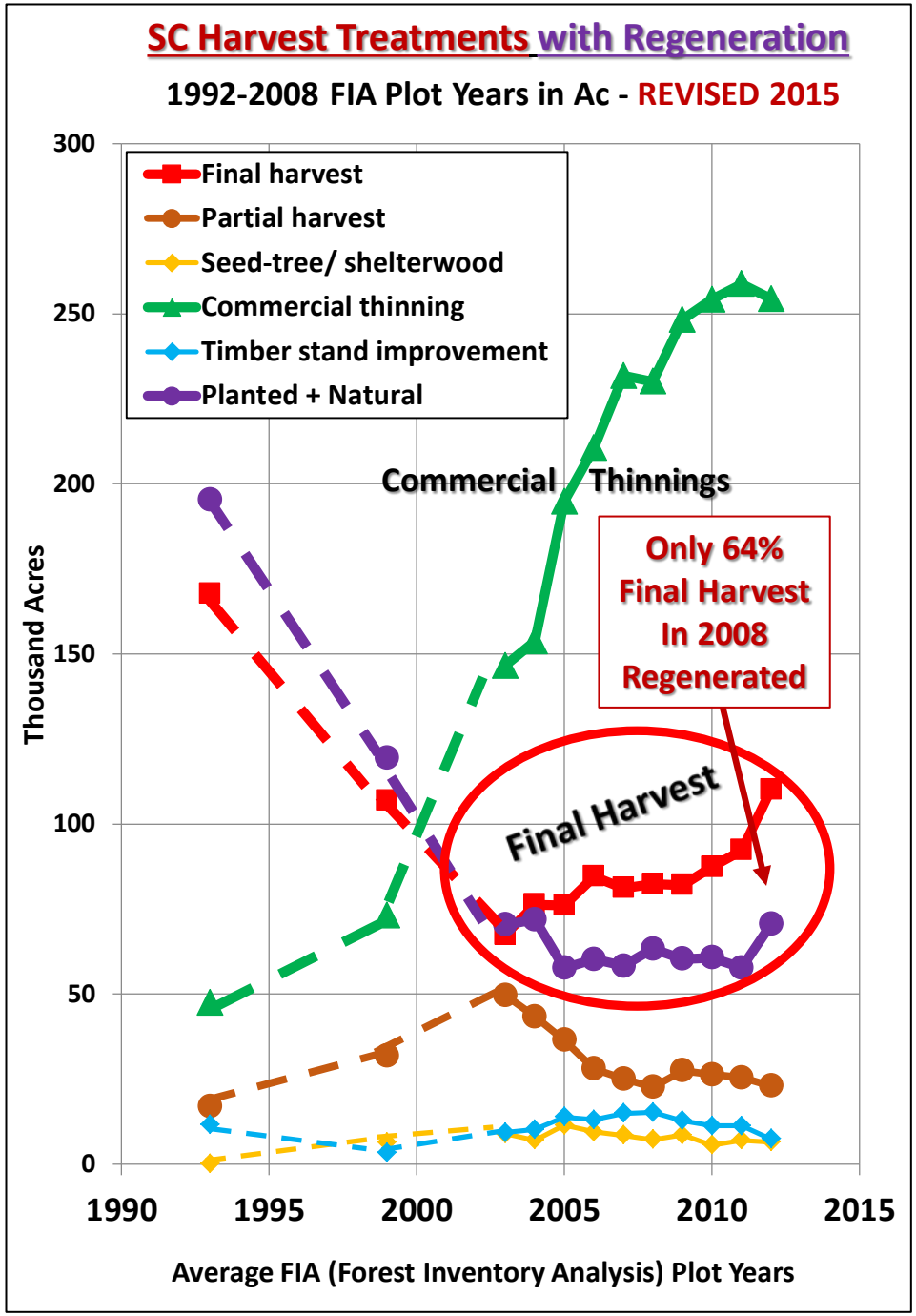
6. **Sub-Unit Growth/Removal Ratio**: ***6-10" all pines, .90 to 1.29, planted .87 to 1.95, 2009-10 avg yr***
   12"+ all pines, 1.59 to 2.56, planted 1.14 to 6.33, 2009-10 avg yr

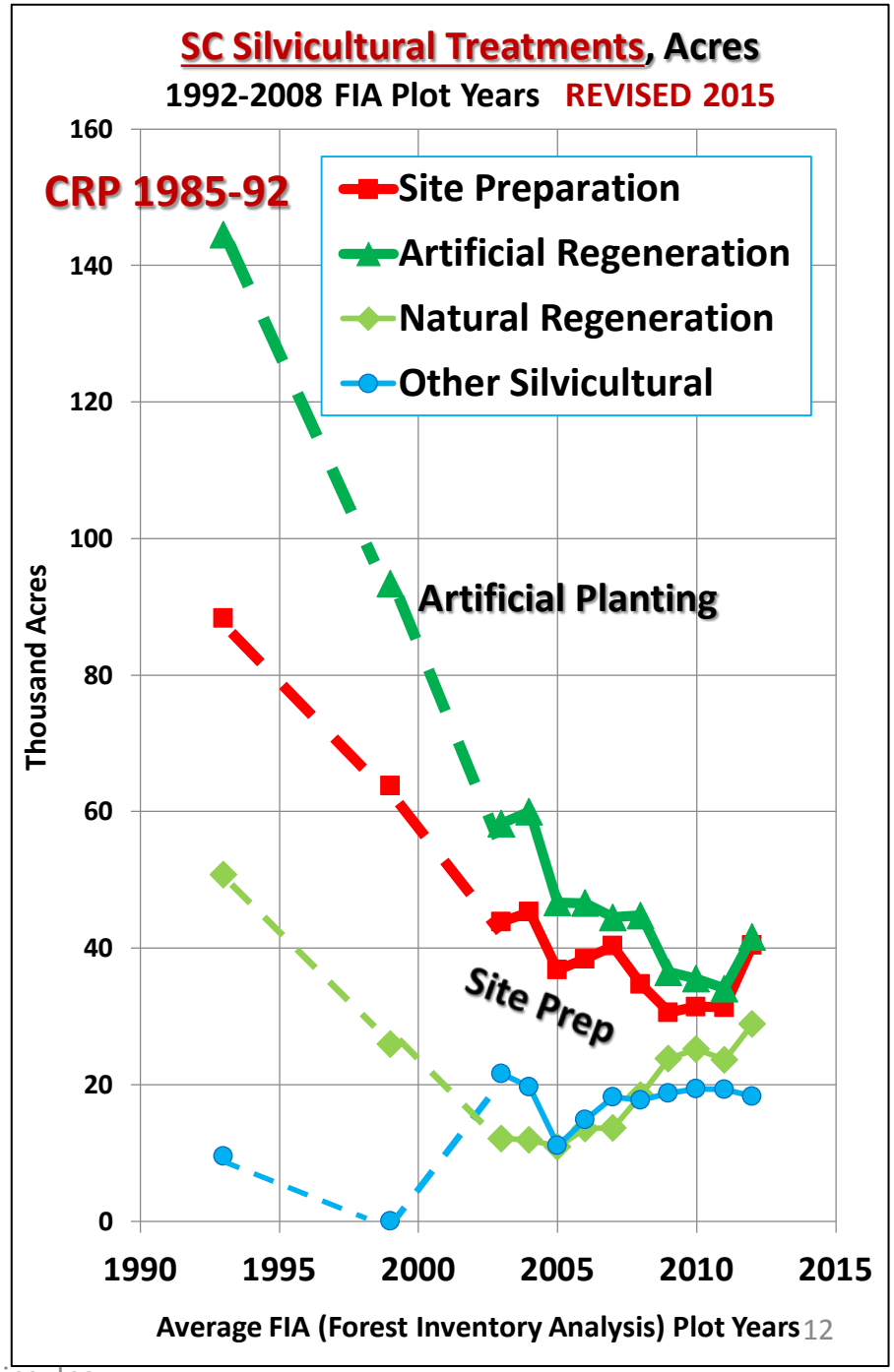
7. **Decline Tree Planting Acres, 1990 to 2010 avg years**: ***-32%, -52%, -55%, -74%, -82%, -83%***

8. **TPO % Small Wood (6-10") Harvested to the Total**: ***57%, 57%, 61%, 69%, 77%, 79%***


Surplus (AG-AR) 6-10" dbh Pine by County
FIA 2013, 2008-09 avg plot year, 32mm tons
Caution: MS & LA contain very high annual growth rates
West
10.7mm tons, 34%
Central
15.2mm tons, 48%
East
5.82mm tons
18%
6-10" dbh Pine AG-AR Excess Tons/Co
-500,000 to -350,001
-350,000 to -200,001
-200,000 to -50,001
-50,000 to 99,999
100,000 to 249,999
250,000 to 399,999
400,000 to 549,999
550,000 to 700,000
All yellow to brown negative
Light/dark green positive
ARKANSAS
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
LOUISIANA
TENNESSEE
KENTUCKY
NORTH CAROLINA
SOUTH CAROLINA
VIRGINIA
WEST VIRGINIA
UNITED STATES
Little Rock
Memphis
Nashville
Clarksville
Knoxville
Chattanooga
Huntsville
Birmingham
Atlanta
Augusta
Columbus
Montgomery
Mobile
Tallahassee
Jackson
Baton Rouge
New Orleans
Lafayette
Shreveport
Raleigh
Charlotte
Greensboro
Winston-Salem
Richmond
Hampton
Chesapeake
Savannah
Jacksonville
Orlando
Tuscaloosa
Columbia
Athens
Fayetteville
Wilmington
Myrtle Beach
Hilton Head Island
Pensacola
Panama City
Fort Walton Beach
Apalachicola
Gulf of Mexico


Surplus (AG-AR) 12"+ dbh Pine by County
FIA 2013, 2008-09 avg plot year, 62mm tons
Caution: MS & LA contain very high annual growth rates
West
9.02mm tons, 15%
Central
23.4mm tons, 34%
East
29.1mm tons
47%
Atlantic Ocean
Gulf of Mexico
12"+ Pine Sawtimber AG-AR Excess Tons/Co
-800,000 to -600,001
-600,000 to -400,001
-400,000 to -200,001
-200,000 to -1
0 to 199,999
200,000 to 399,999
400,000 to 599,999
600,000 to 800,000
All yellow to brown negative
Light/dark green positive

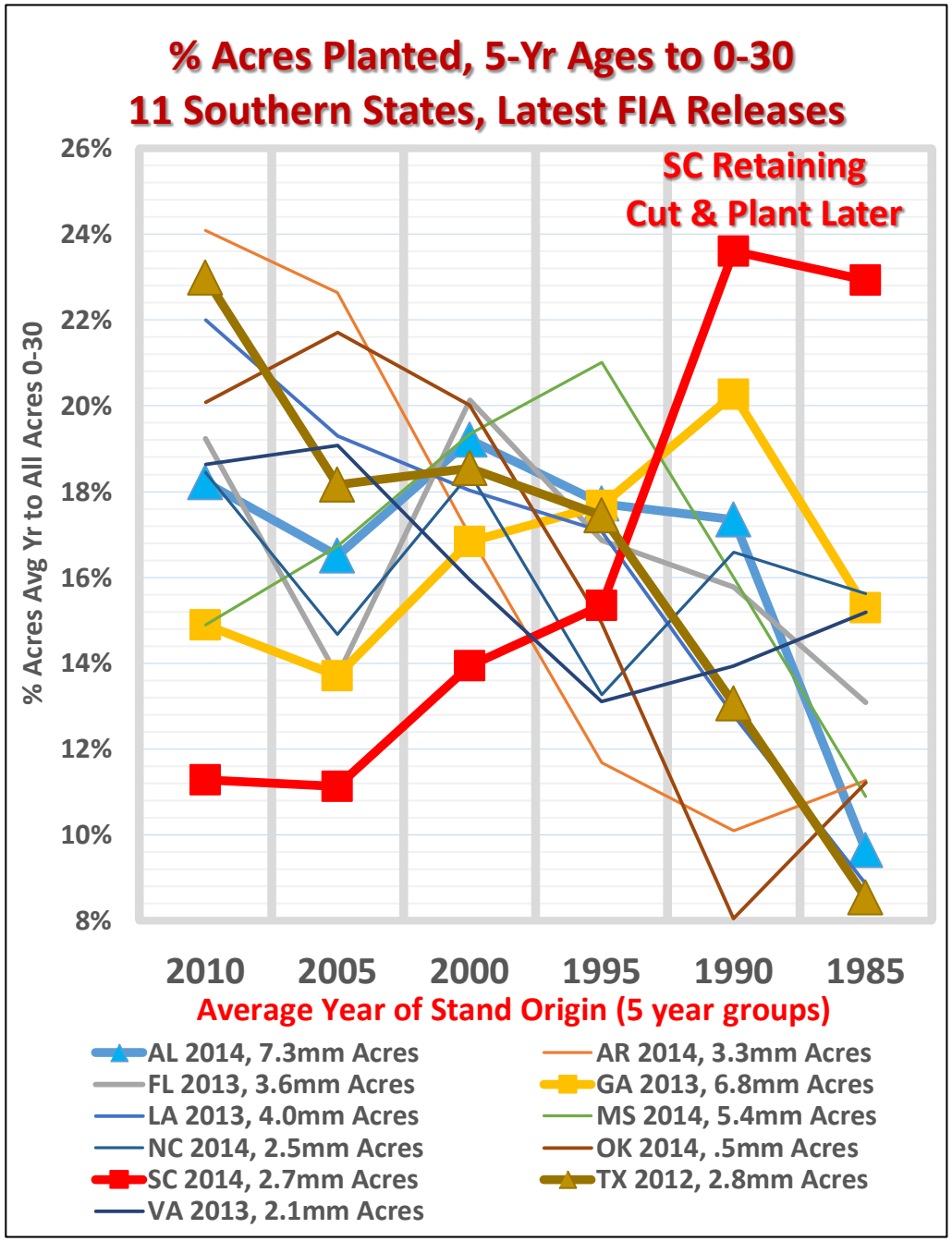

SC Harvest Treatments with Regeneration
1992-2008 FIA Plot Years in Ac - REVISED 2015
Final harvest
Partial harvest
Seed-tree/ shelterwood
Commercial thinning
Timber stand improvement
Planted + Natural
Commercial Thinnings
Only 64% Final Harvest In 2008 Regenerated
Final Harvest
Thousand Acres
300
250
200
150
100
50
0
1990
1995
2000
2005
2010
2015
Average FIA (Forest Inventory Analysis) Plot Years


SC Silvicultural Treatments, Acres
1992-2008 FIA Plot Years REVISED 2015
CRP 1985-92
Site Preparation
Artificial Regeneration
Natural Regeneration
Other Silvicultural
Artificial Planting
Site Prep
Thousand Acres
160
140
120
100
80
60
40
20
0
1990
1995
2000
2005
2010
2015
Average FIA (Forest Inventory Analysis) Plot Years

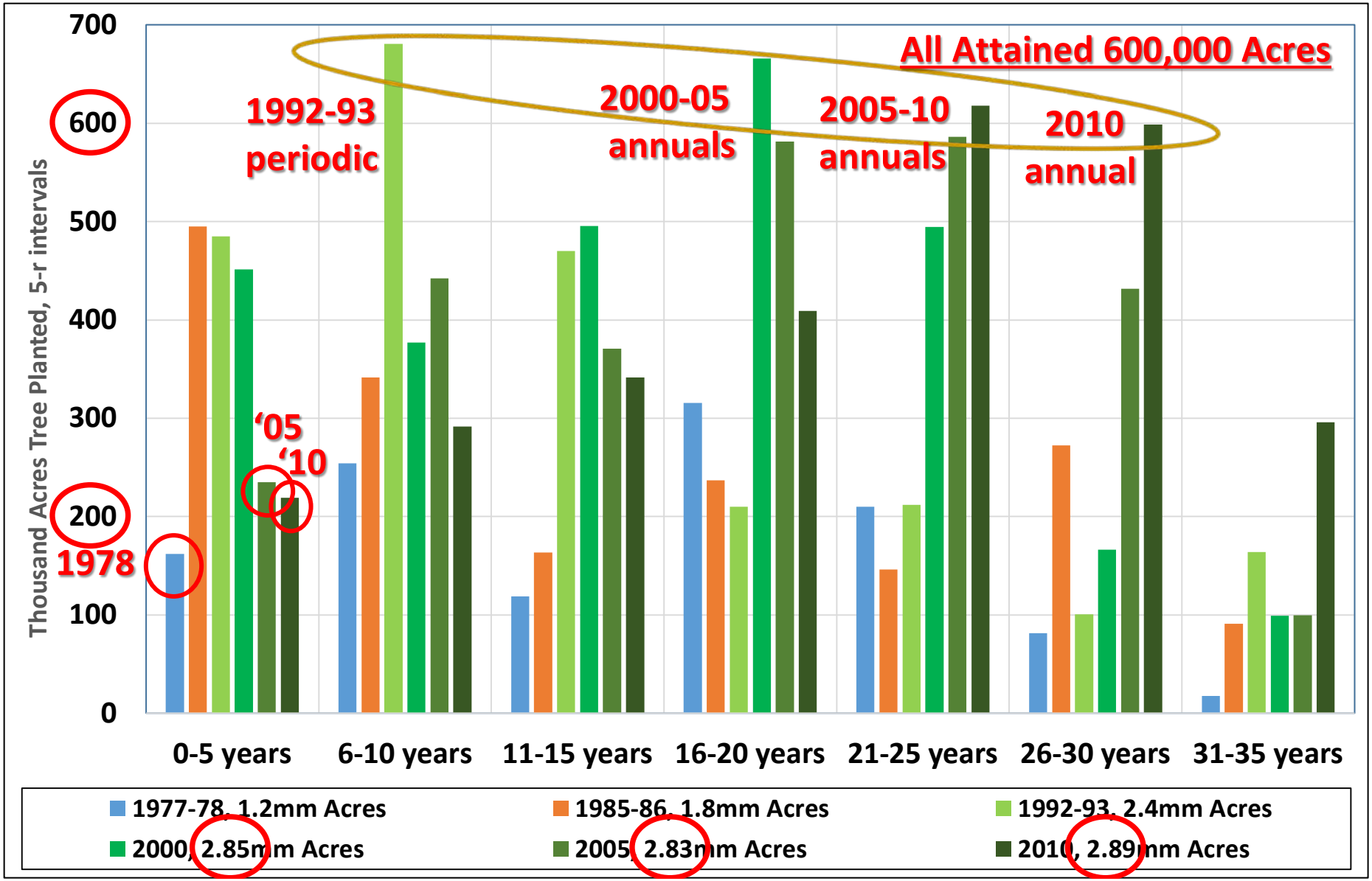
SC Tree Planting lowest in South past 15 plus years, graph shows % acres planted (red line) in 0-5, 6-10 and 11-15 year age classes, compared to total 0-30 years of planted pine.

Meanwhile, private landowners contain the most 21-25 and 26-30 acres, waiting on increased sawtimber demand and value, before converting back to planted stands. Still, *"no space to plant"!*

Sou States, % 5-Yr Age Class Ac to 0-30 Age Planted Acres						
Latest State FIA Year Acres Planted Pine 0-30 Ages / 5-yrs Noted	0-5 years Avg Yr 2010	6-10 years Avg Yr 2005	11-15 years Avg Yr 2000	16-20 years Avg Yr 1995	21-25 years Avg Yr 1990	26-30 years Avg Yr 1985
AL 2014, 7.3mm Acres	18%	17%	19%	18%	17%	10%
AR 2014, 3.3mm Acres	24%	23%	17%	12%	10%	11%
FL 2013, 3.6mm Acres	19%	14%	20%	17%	16%	13%
GA 2013, 6.8mm Acres	15%	14%	17%	18%	20%	15%
LA 2013, 4.0mm Acres	22%	19%	18%	17%	13%	9%
MS 2014, 5.4mm Acres	15%	17%	19%	21%	16%	11%
NC 2014, 2.5mm Acres	18%	15%	18%	13%	17%	16%
OK 2014, .5mm Acres	20%	22%	20%	15%	8%	11%
SC 2014, 2.7mm Acres	11%	11%	14%	15%	24%	23%
TX 2012, 2.8mm Acres	23%	18%	19%	17%	13%	9%
VA 2013, 2.1mm Acres	19%	19%	16%	13%	14%	15%



How Long Will It Take SC To Return To 600,000 Acre Level?
This Level Supplied Existing/New Mills for 25+ Years!



Estimate for Average annual net growth of live trees (at least 5 inches d.b.h./d.r.c.), in cubic feet, on timberland

All Pines Natural & Planted, Lower Southern Coastal

Diameter class: 2 inch class to 29 (based on values from the Accounting Inventory)	Total	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0+
RSCD=33 EVALID=450503 SOUTH CAROLINA 2002;2003;2004;2005	121,242,338	5,475,149	25,585,587	33,134,801	24,612,275	13,215,950	7,351,184	691,237	1,45[illegible],959	9,720,195	0
RSCD=33 EVALID=450603 SOUTH CAROLINA 2002;2003;2004;2005;2006	134,069,042	7,675,352	29,127,201	35,587,925	28,280,881	11,277,941	8,025,381	926,[illegible]95	3,[illegible]17,705	9,649,762	0
RSCD=33 EVALID=450703 SOUTH CAROLINA 2002;2003;2004;2005;2006;2007	145,712,941	9,737,513	25,495,564	41,946,748	28,267,920	15,793,378	7,0[illegible]7,3[illegible]8	2,569,588	5,829,309	9,045,573	0
RSCD=33 EVALID=450803 SOUTH CAROLINA 2002;2003;2004;2005;2006;2007;2008	144,604,337	9,625,190	26,028,564	38,200,871	28,4[illegible]9,325	1[illegible]73,7[illegible]9	8,446,754	4,918,907	3,830,648	5,936,235	2,392,050
RSCD=33 EVALID=450903 SOUTH CAROLINA 2002;2003;2005;2006;2007;2008;2009	140,512,356	10,336,059	25,037,40[illegible]	34,61[illegible]72	23,489,478	14,647,379	10,378,655	5,688,517	2,741,920	6,268,154	2,305,065
RSCD=33 EVALID=451003 SOUTH CAROLINA 2002;2003;2006;2007;2008;2009;2010	147,375,323	12,[illegible],930	26,[illegible]7,715	32,825,093	28,828,204	20,967,464	11,819,925	5,781,388	8,245,978	3,649,237	2,235,391
RSCD=33 EVALID=451103 SOUTH CAROLINA 2007;2008;2009;2010;2011	1[illegible],1[illegible],350	11,000,312	21,768,048	34,359,573	26,499,867	23,749,213	10,090,886	5,586,437	6,031,996	5,762,909	2,202,109
RSCD=33 EVALID=451203 SOUTH CAROLINA 2007;2008;2009;2010;2011;2012	151,708,127	10,025,709	24,058,671	30,077,607	31,234,510	26,134,995	12,499,296	7,019,539	2,193,943	6,201,808	2,262,048
RSCD=33 EVALID=451303 SOUTH CAROLINA 2008;2009;2010;2011;2012;2013	157,484,034	8,873,956	24,794,847	32,579,332	28,027,375	30,059,911	16,141,944	6,351,954	619,781	10,081,898	-46,963
RSCD=33 EVALID=451403 SOUTH CAROLINA 2009;2010;2011;2012;2013;2014	149,914,350	6,627,477	22,439,995	33,349,523	22,572,780	29,891,748	16,657,435	6,617,651	888,453	10,910,236	-40,949

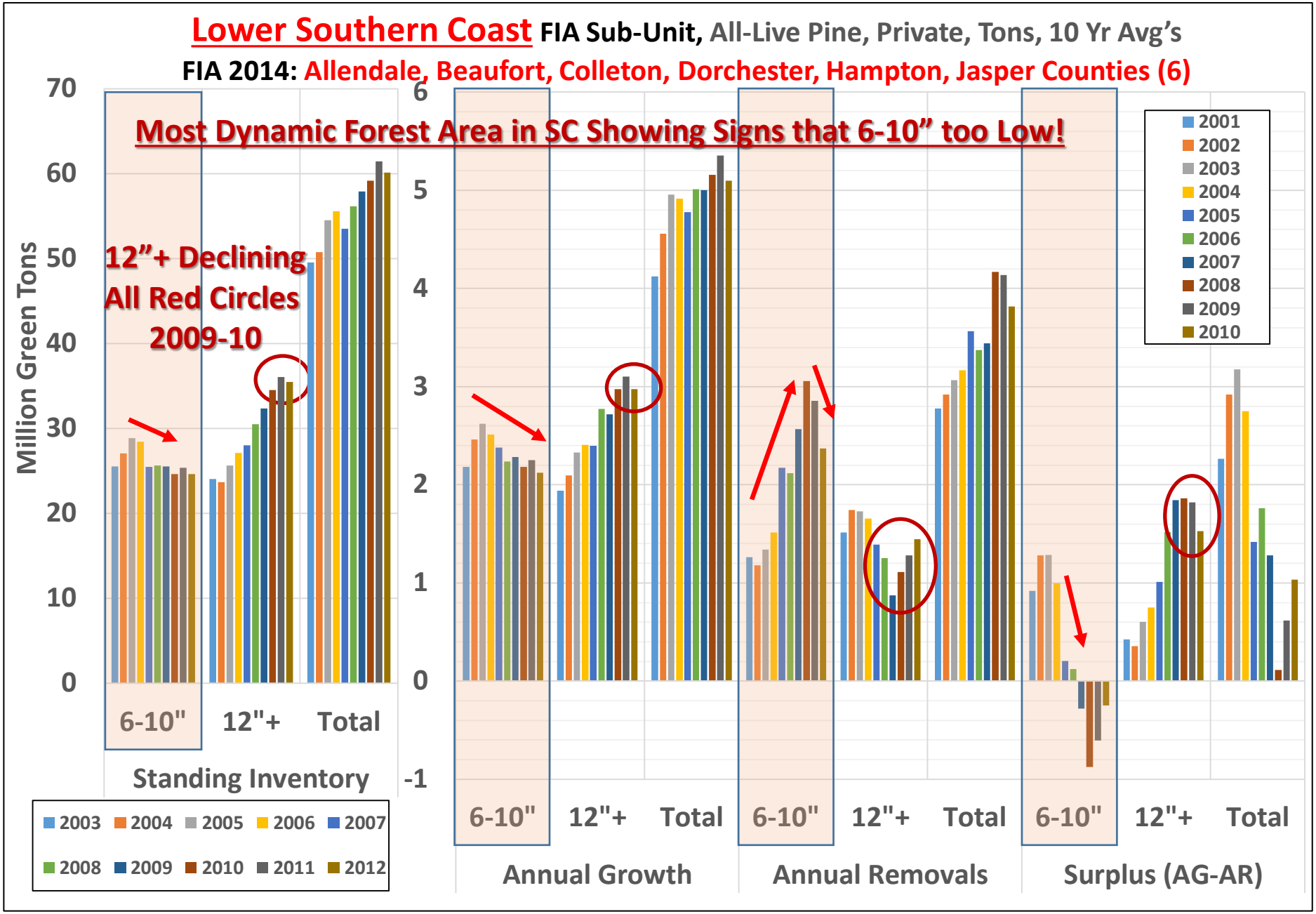
Estimate for Average annual net growth of live trees (at least 5 inches d.b.h./d.r.c.), in cubic feet, on timberland

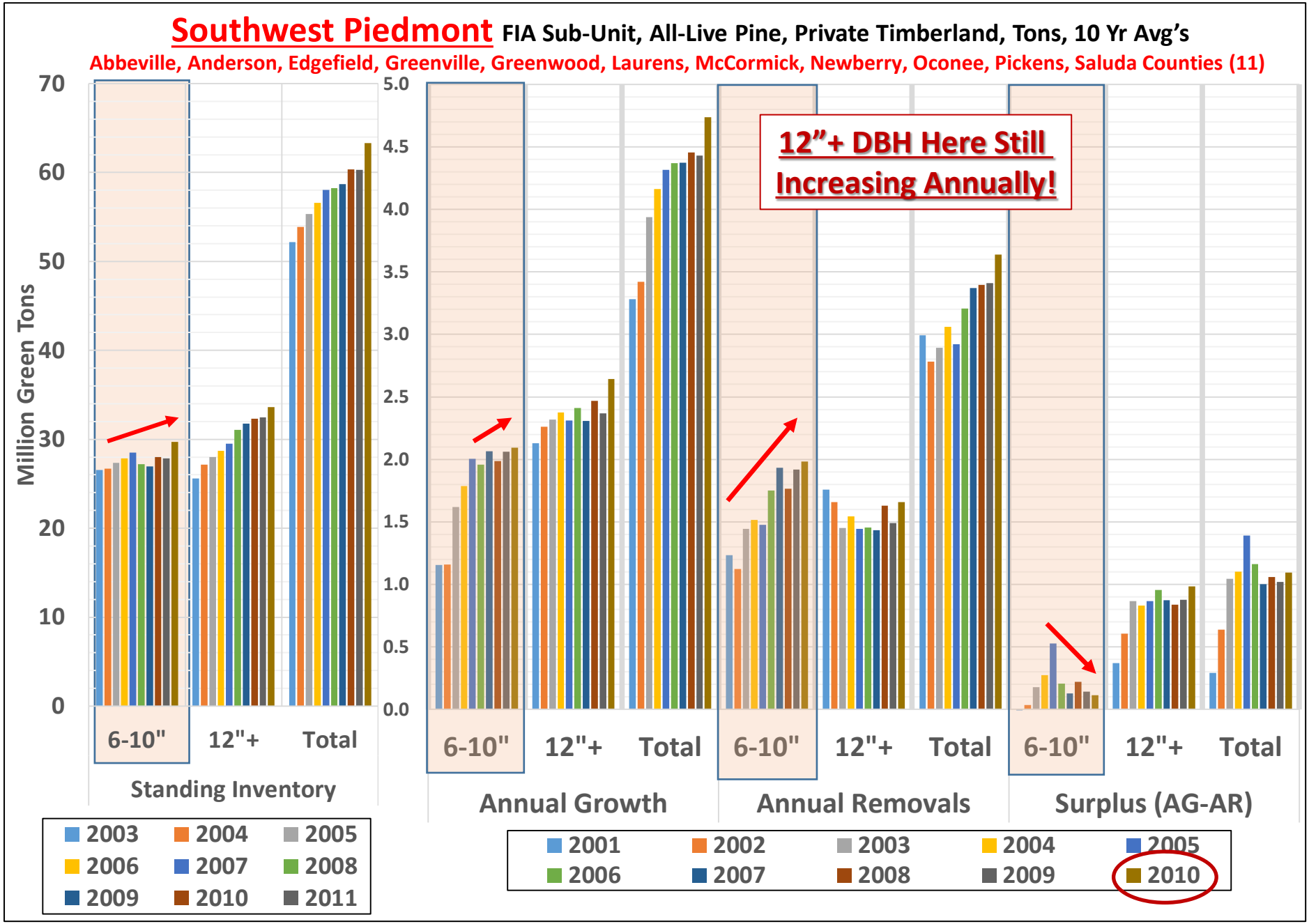
All Planted Pine

Diameter class: 2 inch class to 29 (based on values from the Accounting inventory)	Total	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0+
RSCD=33 EVALID=450503 SOUTH CAROLINA 2002;2003;2004;2005	85,461,745	1,645,751	18,807,021	25,658,901	18,088,147	10,146,080	6,279,643	1,868,039	951,058	2,017,097	0
RSCD=33 EVALID=450603 SOUTH CAROLINA 2002;2003;2004;2005;2006	98,979,629	4,362,525	23,687,511	28,936,446	21,781,019	10,052,569	4,766,210	2,751,823	510,026	2,131,480	0
RSCD=33 EVALID=450703 SOUTH CAROLINA 2002;2003;2004;2005;2006;2007	107,584,330	6,347,256	19,774,286	35,652,559	19,396,264	14,303,819	4,671,920	4,212,268	1,117,313	2,015,644	0
RSCD=33 EVALID=450803 SOUTH CAROLINA 2002;2003;2004;2005;2006;2007;2008	107,780,289	7,123,605	19,031,007	34,529,776	19,558,365	15,351,900	4,922,669	4,993,236	466,768	1,792,963	0
RSCD=33 EVALID=450903 SOUTH CAROLINA 2002;2003;2005;2006;2007;2008;2009	98,540,747	6,819,103	18,165,471	29,241,155	20,389,430	11,397,790	6,032,967	4,640,224	350,803	1,503,805	0
RSCD=33 EVALID=451003 SOUTH CAROLINA 2002;2003;2006;2007;2008;2009;2010	99,741,657	8,159,622	14,450,871	27,621,464	20,406,892	14,845,755	6,135,347	6,305,926	91,083	1,425,297	0
RSCD=33 EVALID=451103 SOUTH CAROLINA 2007;2008;2009;2010;2011	99,430,450	6,811,033	15,353,045	28,295,425	19,062,513	16,680,253	6,224,162	4,395,829	1,632,539	975,651	0
RSCD=33 EVALID=451203 SOUTH CAROLINA 2007;2008;2009;2010;2011;2012	103,362,880	5,977,838	18,354,278	23,541,700	23,229,315	18,722,600	7,206,532	4,201,050	706,657	1,422,911	0
RSCD=33 EVALID=451303 SOUTH CAROLINA 2007;2008;2009;2010;2011;2012;2013	107,995,629	5,255,499	22,217,743	23,146,014	21,651,259	20,590,057	9,089,172	3,569,850	25,806	2,450,229	0
RSCD=33 EVALID=451403 SOUTH CAROLINA 2009;2010;2011;2012;2013;2014	104,118,841	4,996,611	22,496,822	23,627,660	17,645,350	20,784,868	9,176,363	2,852,881	411,009	2,127,278	0

Volumes by Year & DBH for Trends

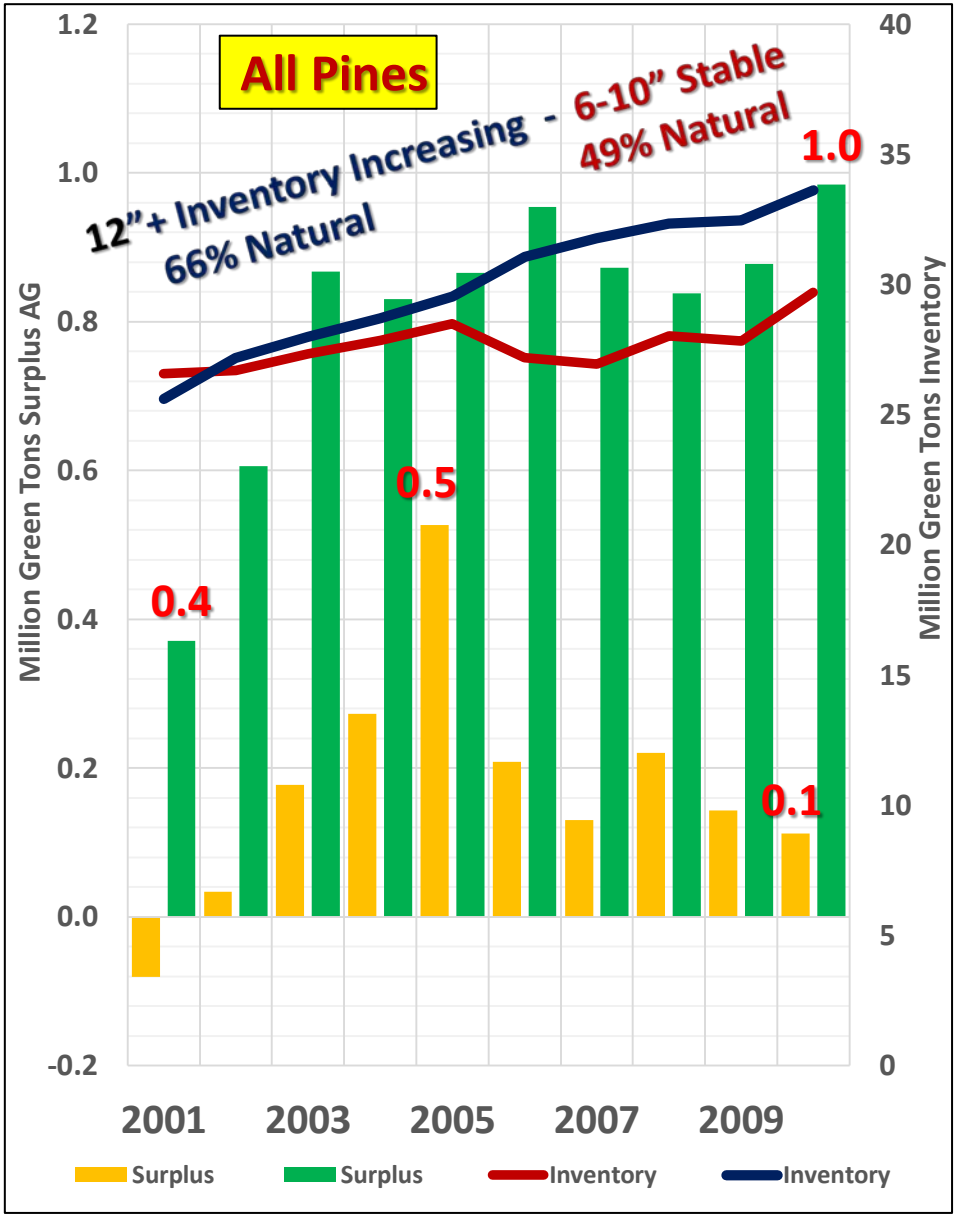
We need more FIA Users across the South looking at stand detail for better future planning!

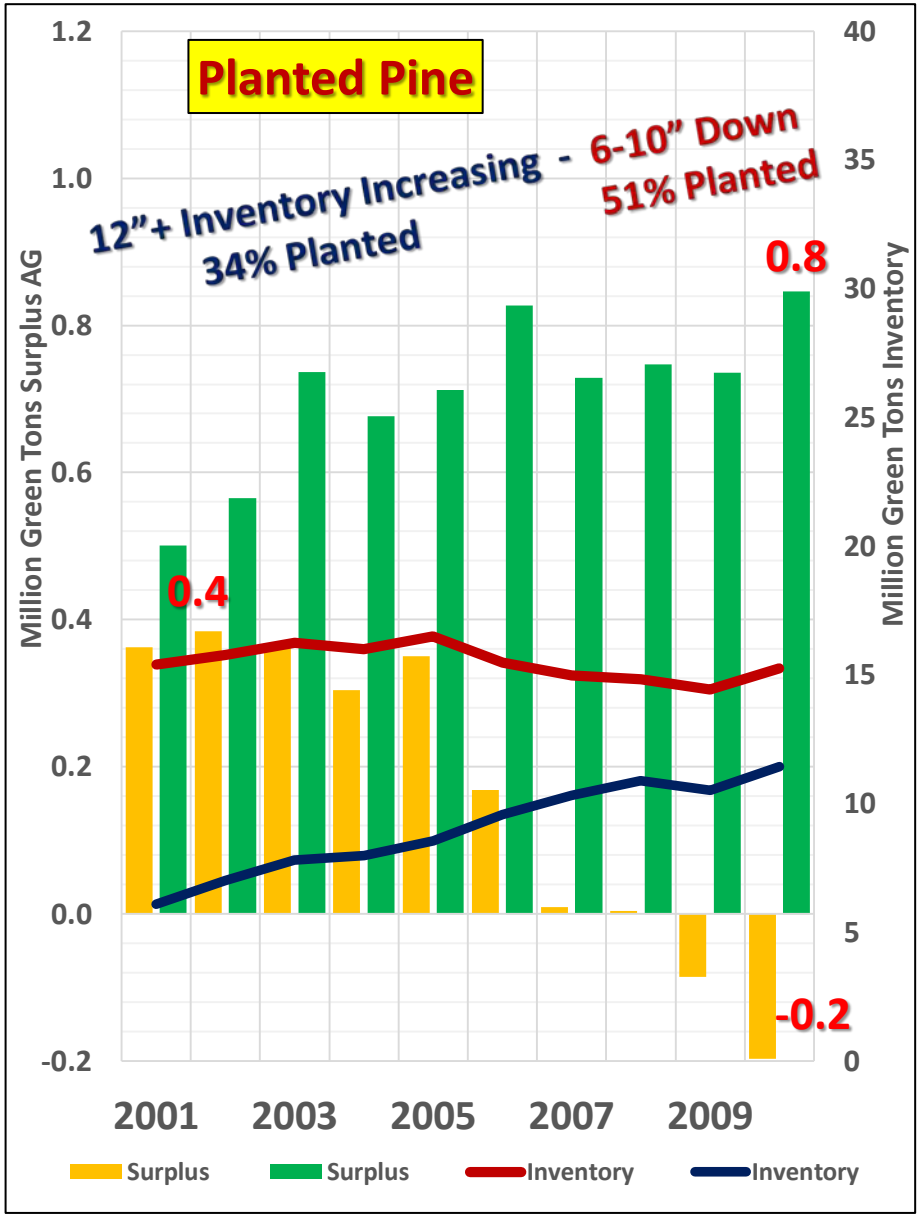

Lower Southern Coast FIA Sub-Unit, All-Live Pine, Private, Tons, 10 Yr Avg's
FIA 2014: Allendale, Beaufort, Colleton, Dorchester, Hampton, Jasper Counties (6)
Most Dynamic Forest Area in SC Showing Signs that 6-10" too Low!
12"+ Declining
All Red Circles
2009-10
Million Green Tons
70
60
50
40
30
20
10
0
6
5
4
3
2
1
0
-1
6-10"
12"+
Total
Standing Inventory
Annual Growth
Annual Removals
Surplus (AG-AR)
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

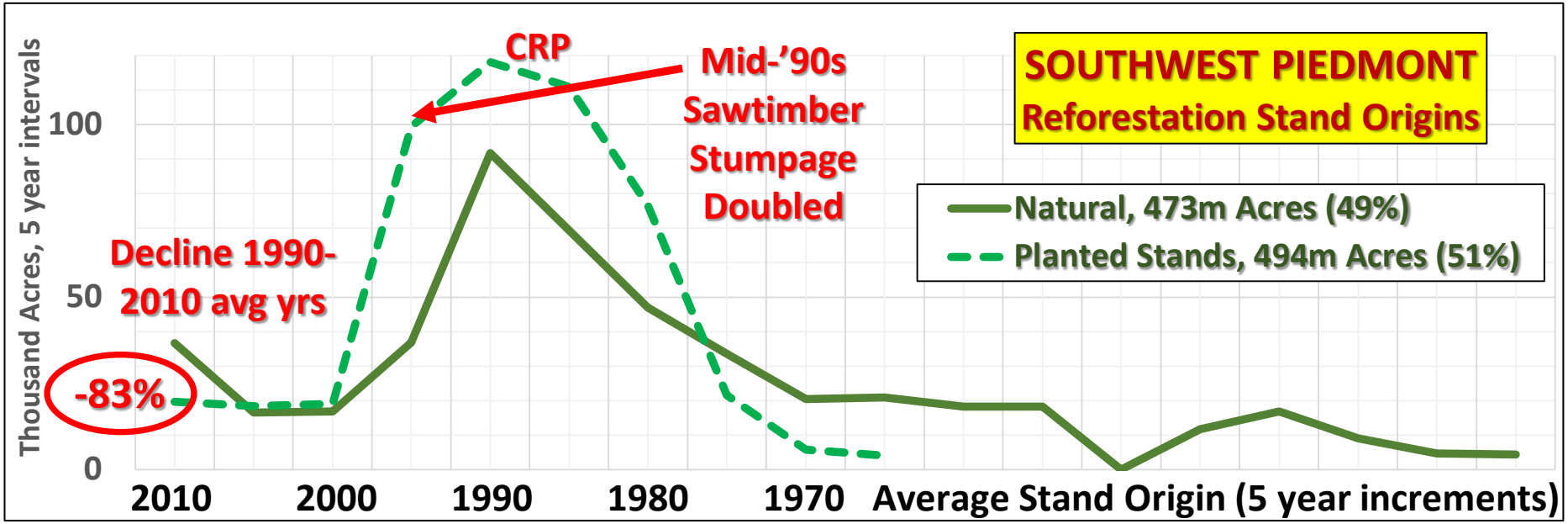

Southwest Piedmont FIA Sub-Unit, All-Live Pine, Private Timberland, Tons, 10 Yr Avg's
Abbeville, Anderson, Edgefield, Greenville, Greenwood, Laurens, McCormick, Newberry, Oconee, Pickens, Saluda Counties (11)
Million Green Tons
70
60
50
40
30
20
10
0
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
12"+ DBH Here Still Increasing Annually!
6-10"
12"+
Total
Standing Inventory
Annual Growth
Annual Removals
Surplus (AG-AR)
2003
2004
2005
2006
2007
2008
2009
2010
2011
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010

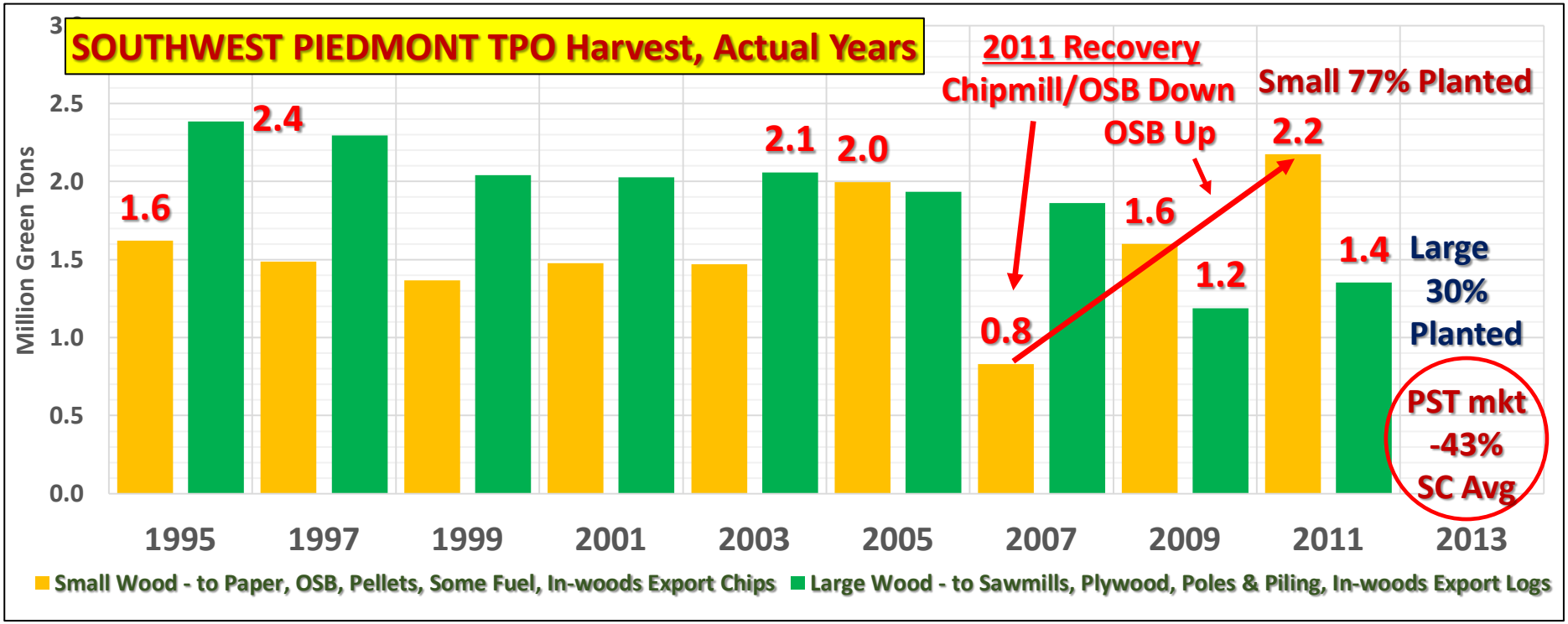
SOUTHWEST PIEDMONT (centered around Ware Shoals to Greenwood)

Abbeville, Anderson, Edgefield, Greenville, Greenwood, Laurens, McCormick, Newberry, Oconee, Pickens and Saluda Co's (11)



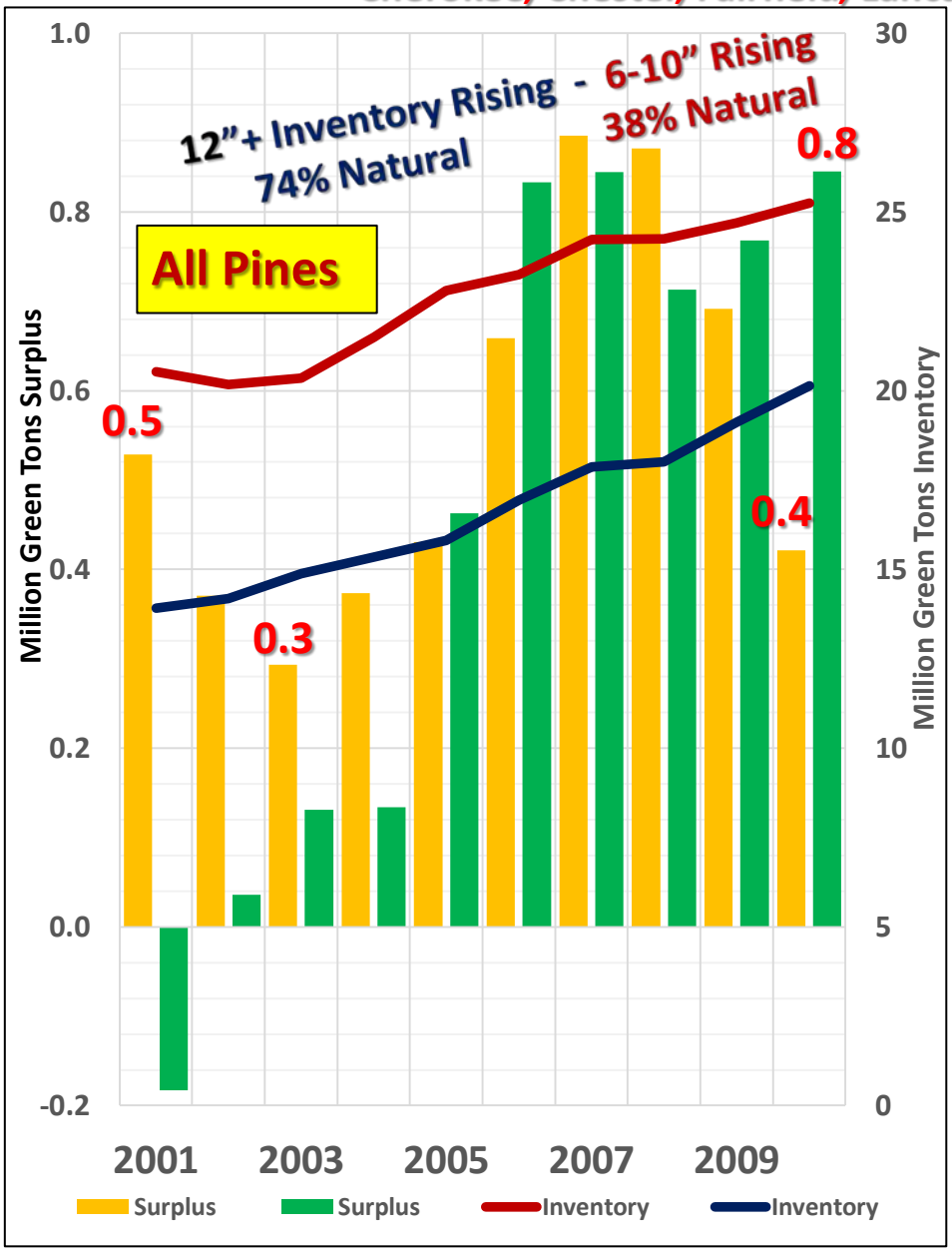


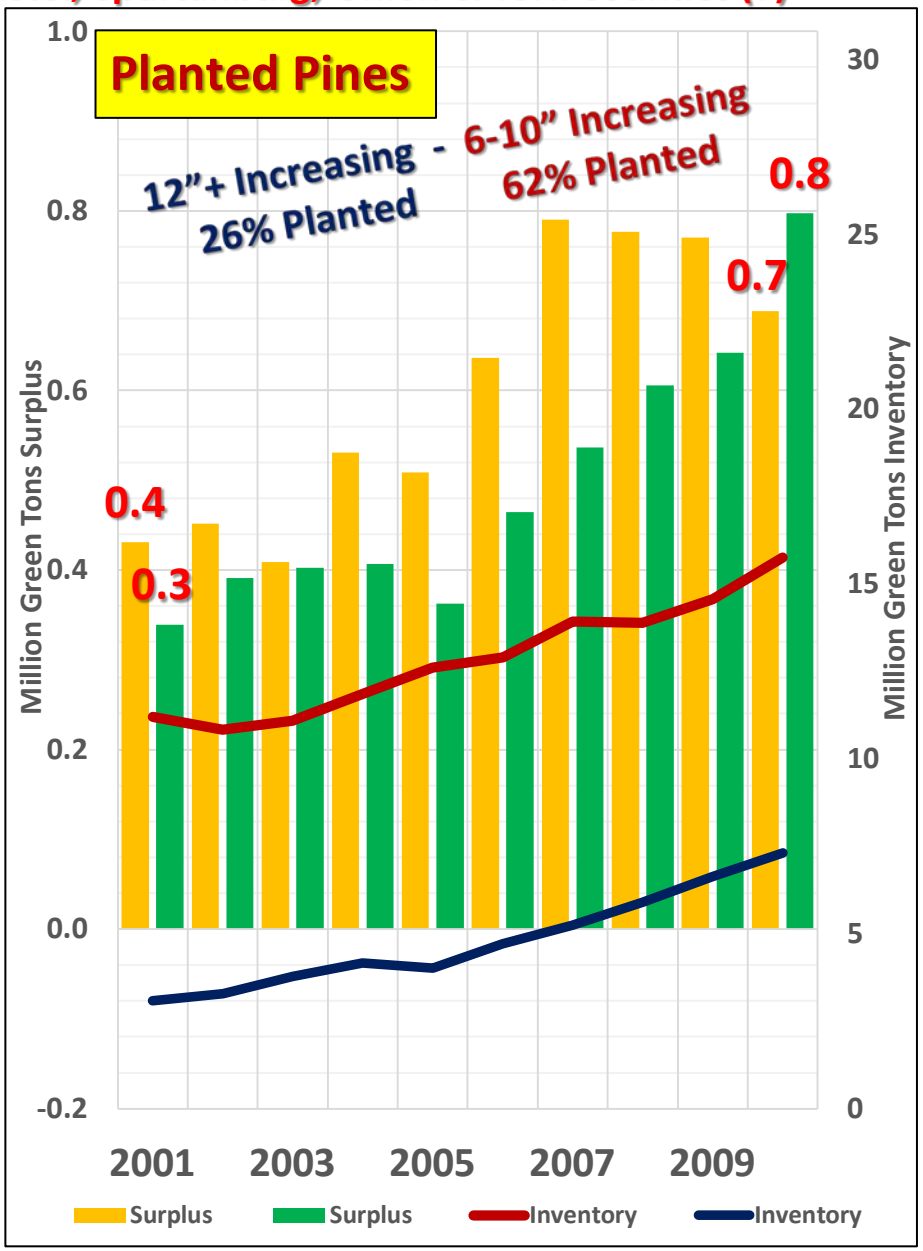

SOUTHWEST PIEDMONT
Reforestation Stand Origins
CRP
Mid-'90s
Sawtimber
Stumpage
Doubled
Decline 1990-
2010 avg yrs
-83%
Natural, 473m Acres (49%)
Planted Stands, 494m Acres (51%)
Thousand Acres, 5 year intervals
100
50
0
2010
2000
1990
1980
1970
Average Stand Origin (5 year increments)

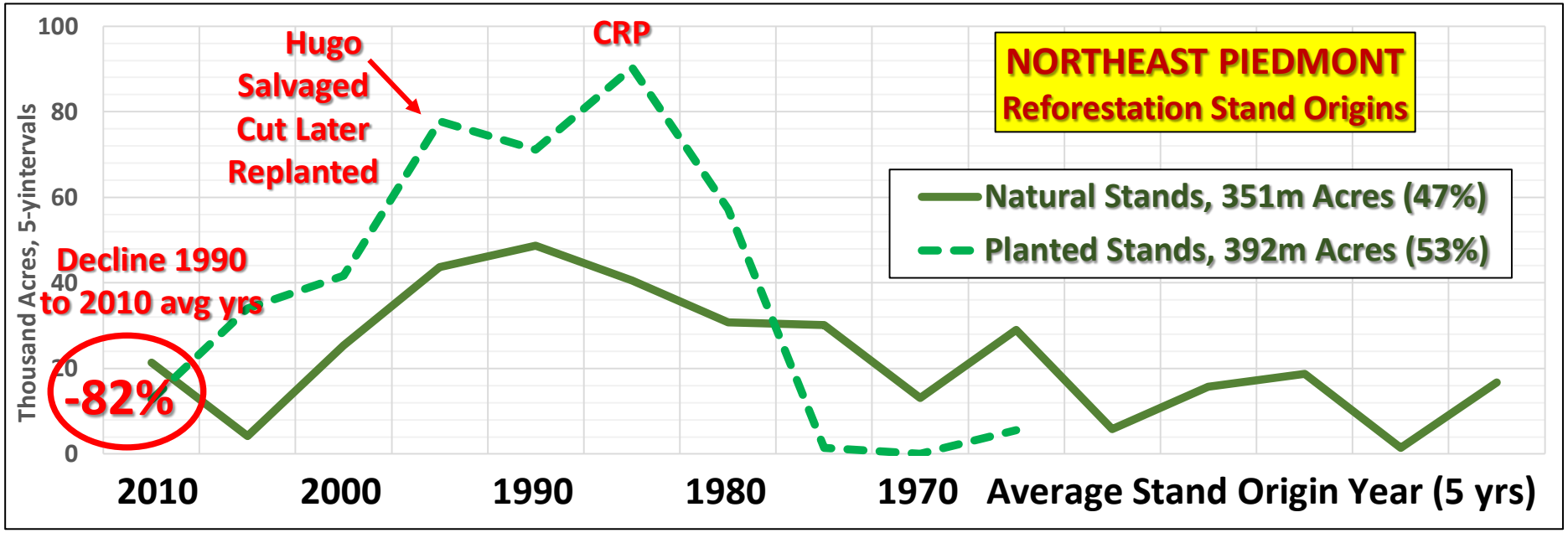

SOUTHWEST PIEDMONT TPO Harvest, Actual Years
2011 Recovery
Chipmill/OSB Down
OSB Up
Small 77% Planted
Large
30%
Planted
PST mkt
-43%
SC Avg
1.6
2.4
2.1
2.0
0.8
1.6
1.2
2.2
1.4
Million Green Tons
2.5
2.0
1.5
1.0
0.5
0.0
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
Small Wood - to Paper, OSB, Pellets, Some Fuel, In-woods Export Chips
Large Wood - to Sawmills, Plywood, Poles & Piling, In-woods Export Logs

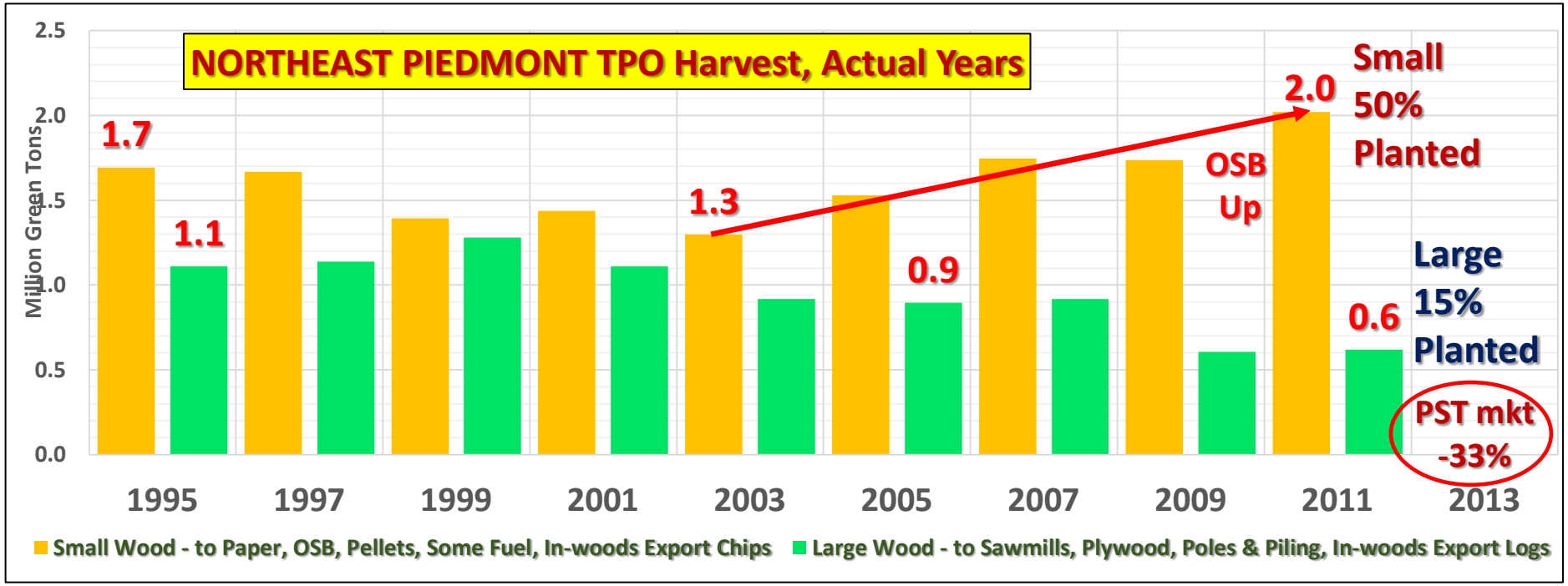
NORTHEAST PIEDMONT (centered around Lockhart)

Cherokee, Chester, Fairfield, Lancaster, Spartanburg, Union & York Counties (7)



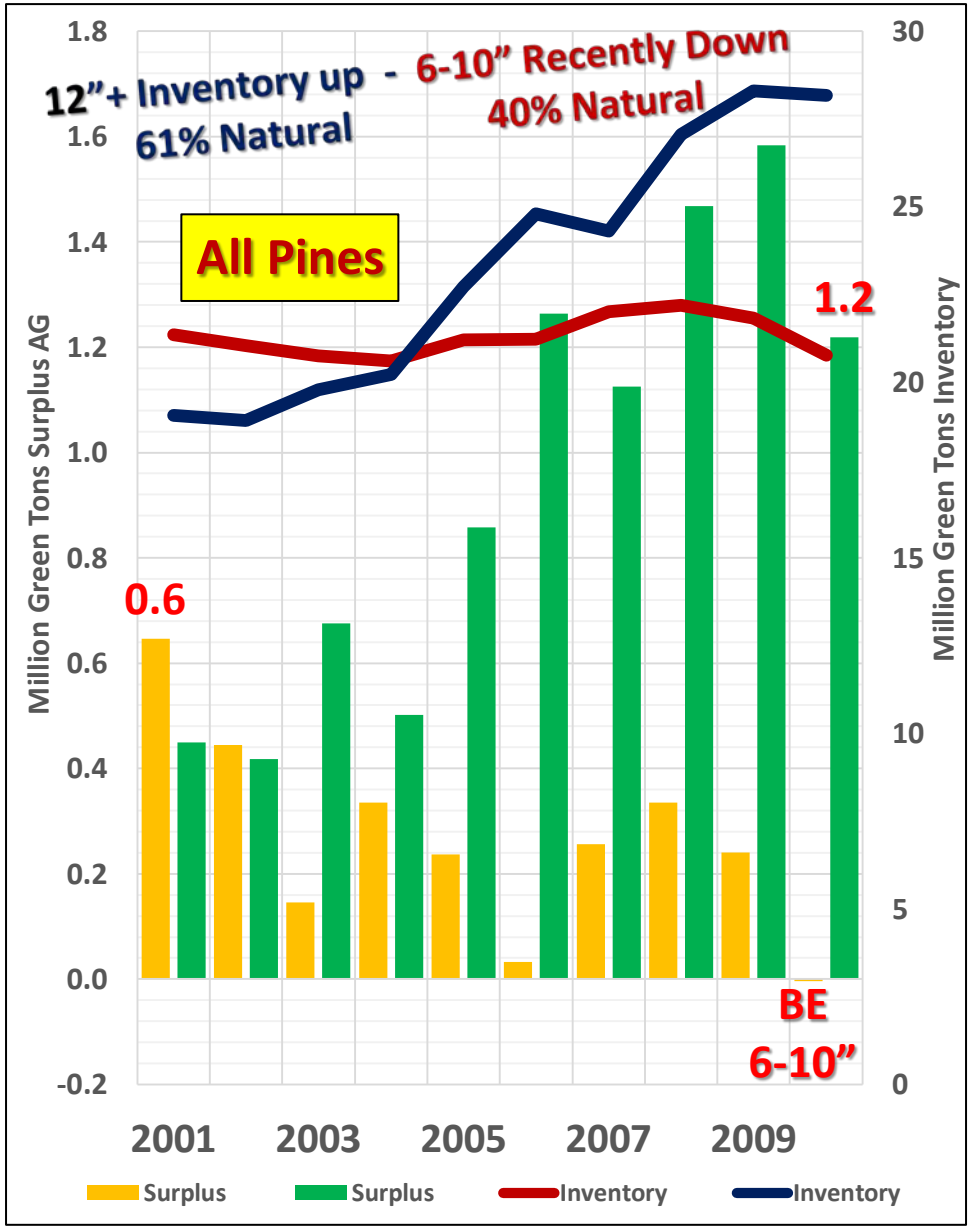


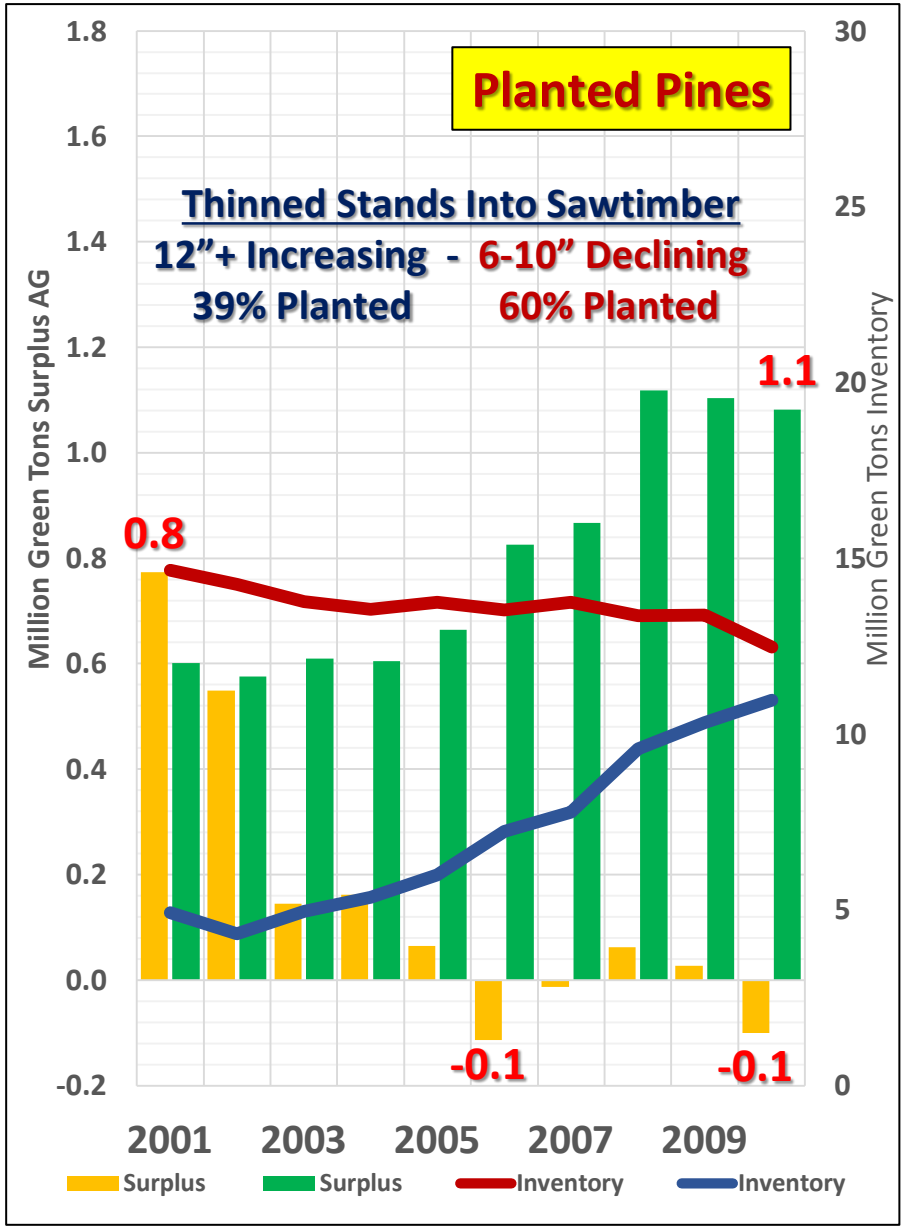

NORTHEAST PIEDMONT
Reforestation Stand Origins
Natural Stands, 351m Acres (47%)
Planted Stands, 392m Acres (53%)
Hugo
Salvaged
Cut Later
Replanted
CRP
Decline 1990
to 2010 avg yrs
-82%
Thousand Acres, 5-yintervals
100
80
60
40
20
0
2010
2000
1990
1980
1970
Average Stand Origin Year (5 yrs)

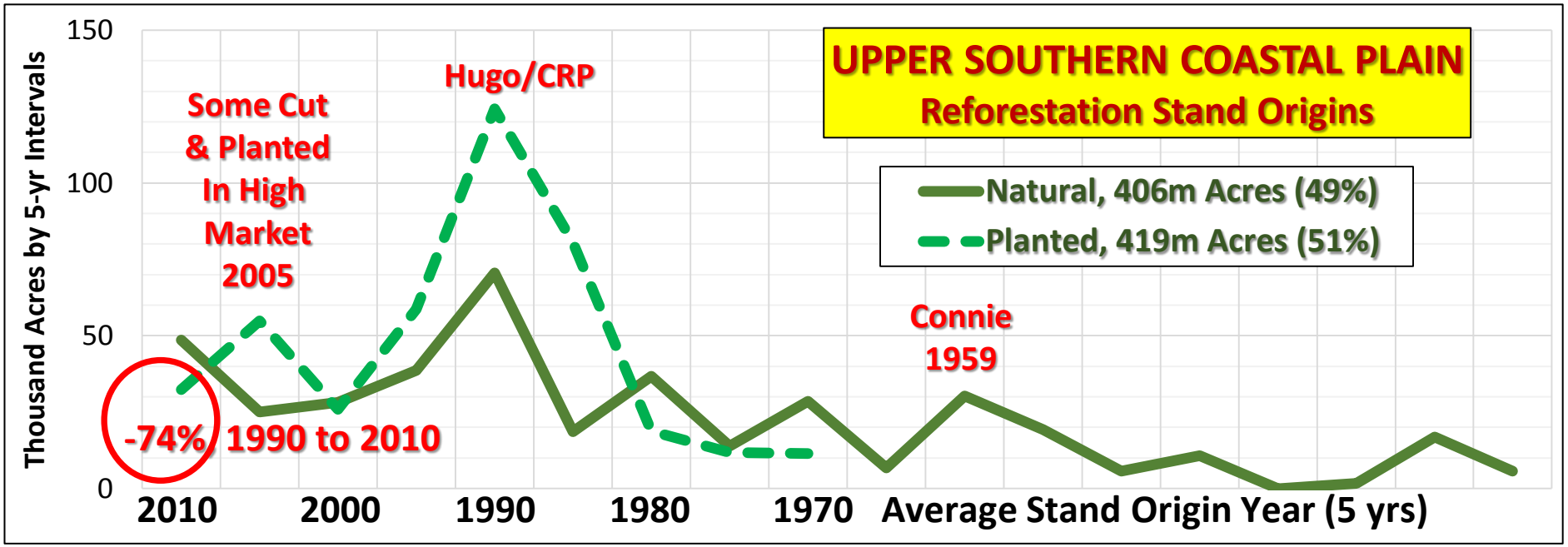

NORTHEAST PIEDMONT TPO Harvest, Actual Years
Million Green Tons
2.5
2.0
1.5
1.0
0.5
0.0
1.7
1.1
1.3
0.9
2.0
0.6
OSB
Up
Small
50%
Planted
Large
15%
Planted
PST mkt
-33%
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
Small Wood - to Paper, OSB, Pellets, Some Fuel, In-woods Export Chips
Large Wood - to Sawmills, Plywood, Poles & Piling, In-woods Export Logs

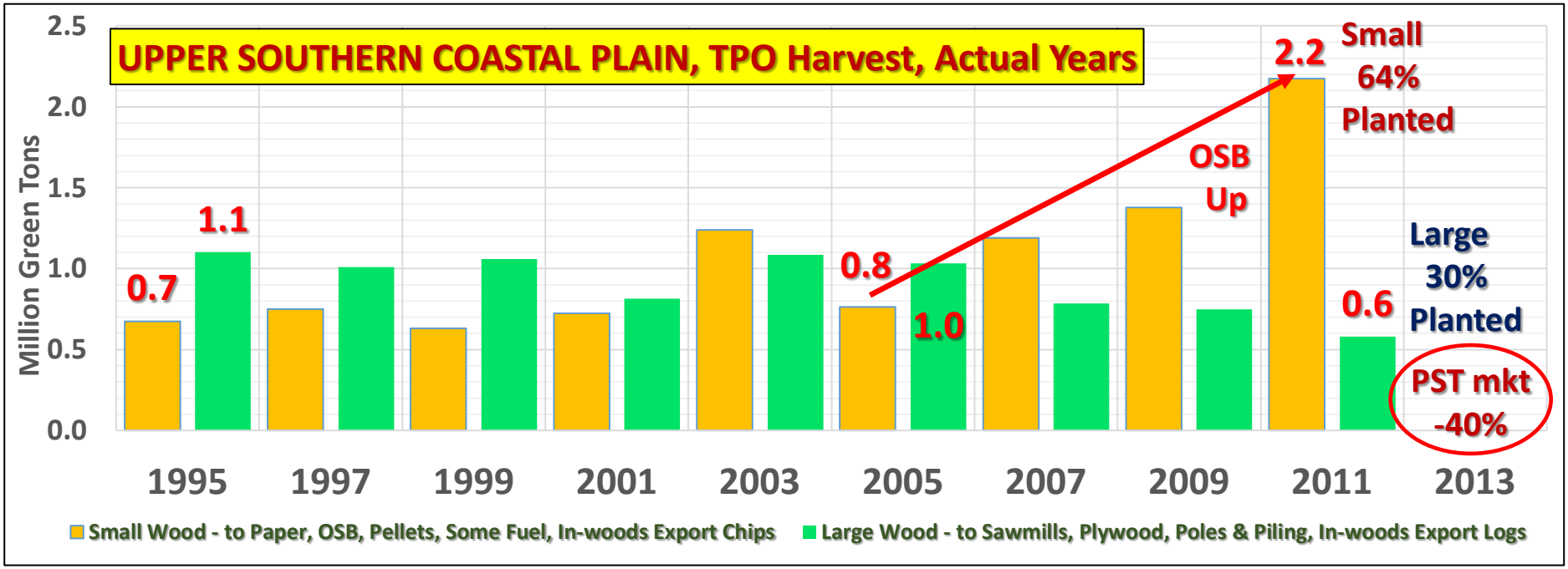
UPPER SOUTHERN COASTAL PLAIN (centered around Springfield)

Aiken, Bamberg, Barnwell, Calhoun, Lexington & Orangeburg Counties (6)



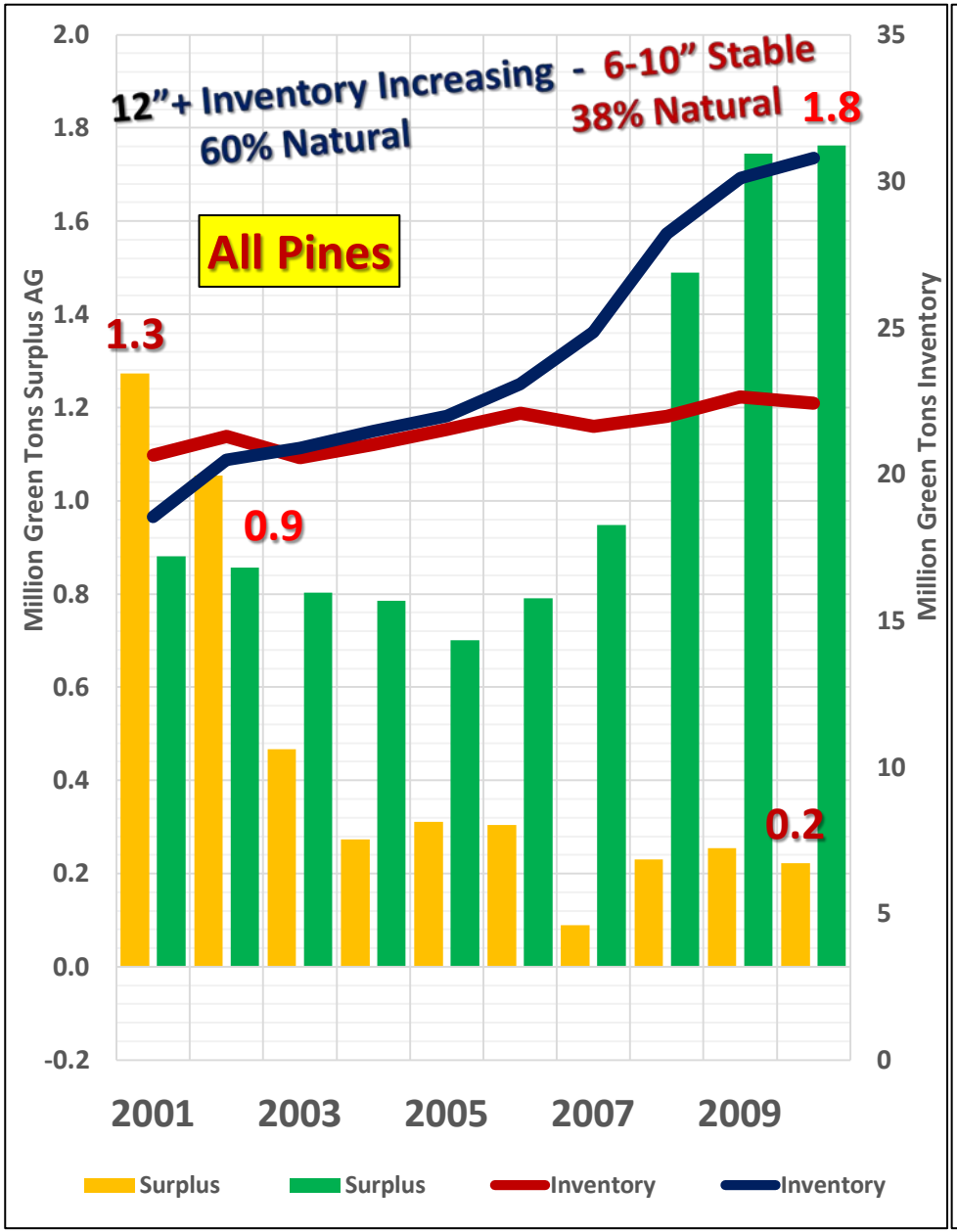


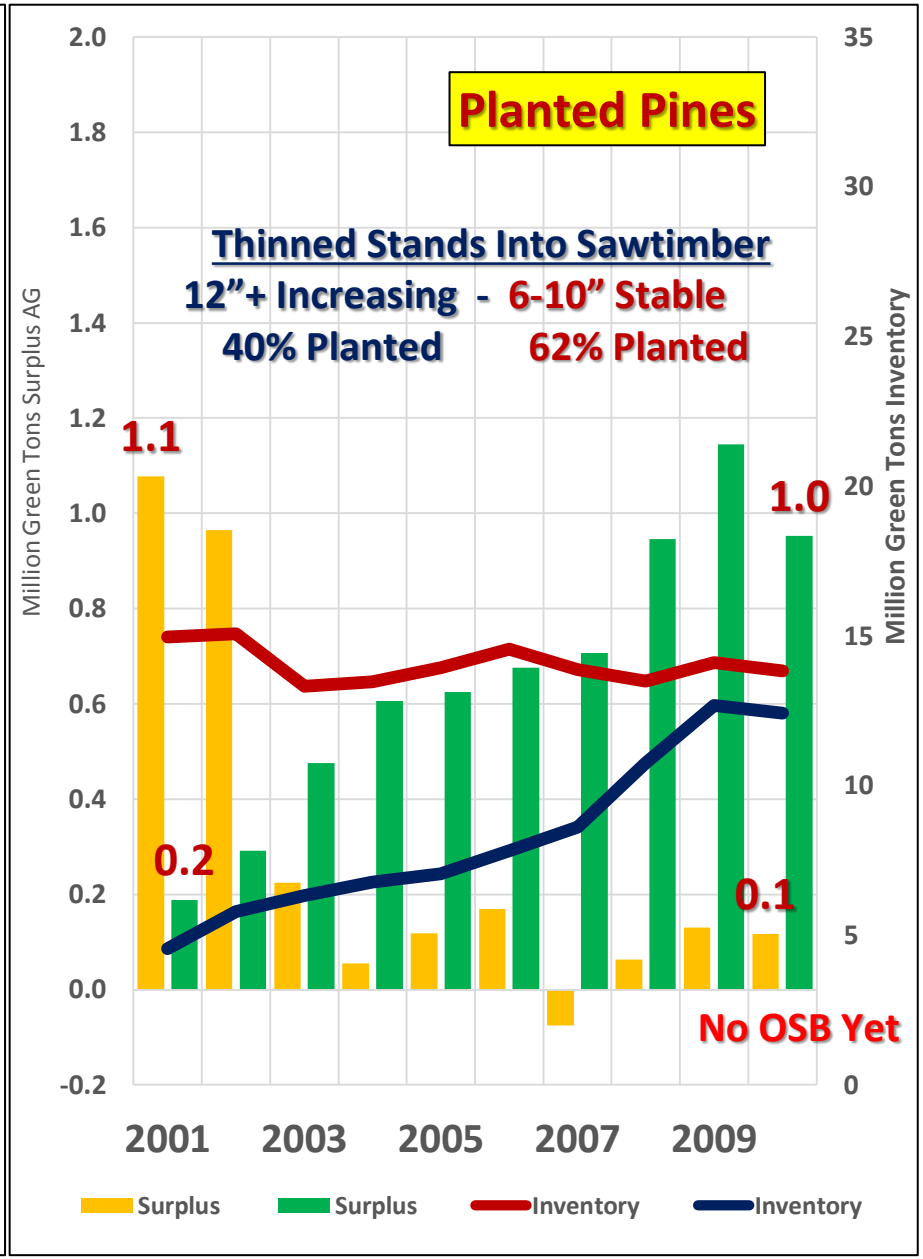

UPPER SOUTHERN COASTAL PLAIN
Reforestation Stand Origins
Natural, 406m Acres (49%)
Planted, 419m Acres (51%)
Thousand Acres by 5-yr Intervals
150
100
50
0
Some Cut & Planted In High Market 2005
Hugo/CRP
Connie 1959
-74% 1990 to 2010
2010
2000
1990
1980
1970
Average Stand Origin Year (5 yrs)

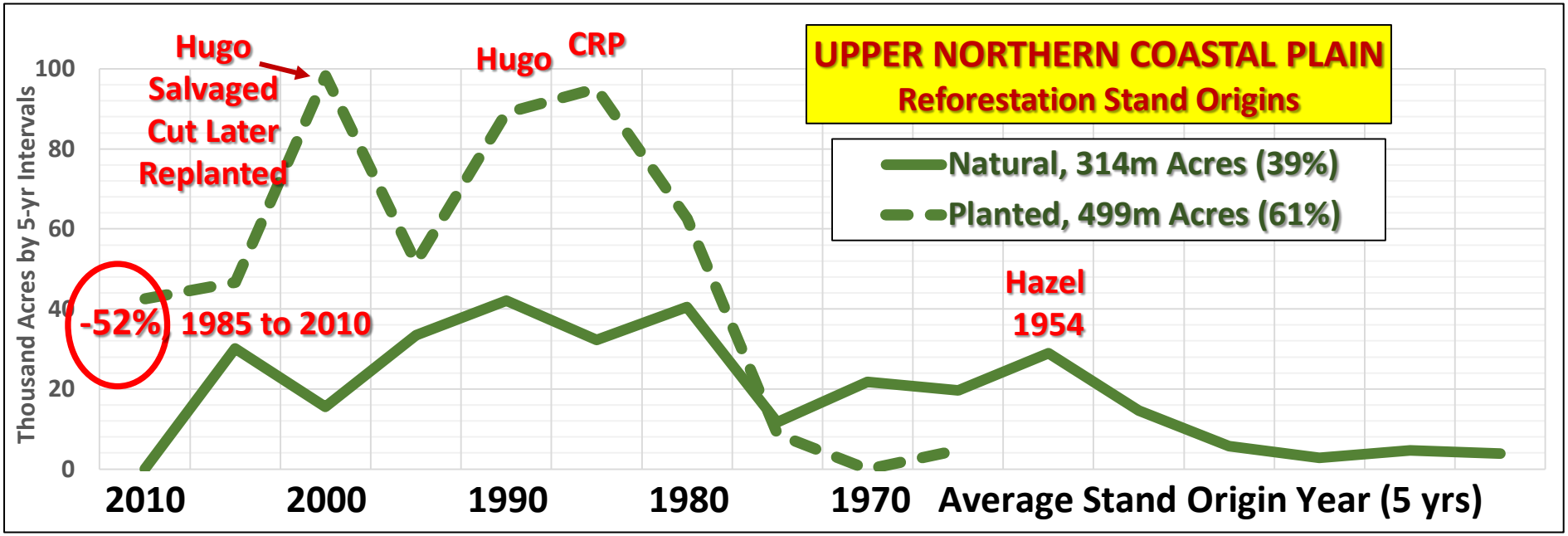

UPPER SOUTHERN COASTAL PLAIN, TPO Harvest, Actual Years
Million Green Tons
2.5
2.0
1.5
1.0
0.5
0.0
0.7
1.1
0.8
1.0
2.2
0.6
OSB Up
Small 64% Planted
Large 30% Planted
PST mkt -40%
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
Small Wood - to Paper, OSB, Pellets, Some Fuel, In-woods Export Chips
Large Wood - to Sawmills, Plywood, Poles & Piling, In-woods Export Logs

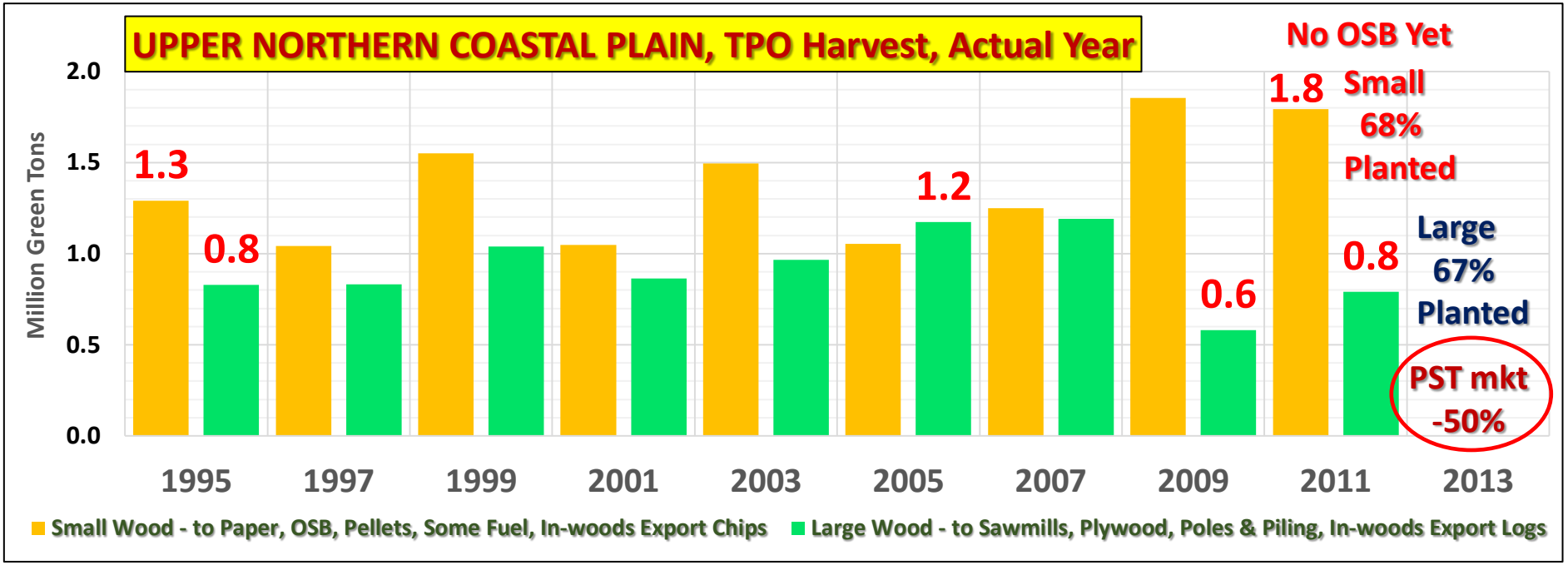
UPPER NORTHERN COASTAL PLAIN (centered around Bishopville)

Chesterfield, Clarendon, Darlington, Kershaw, Lee, Marlboro, Richland & Sumter Counties (8)



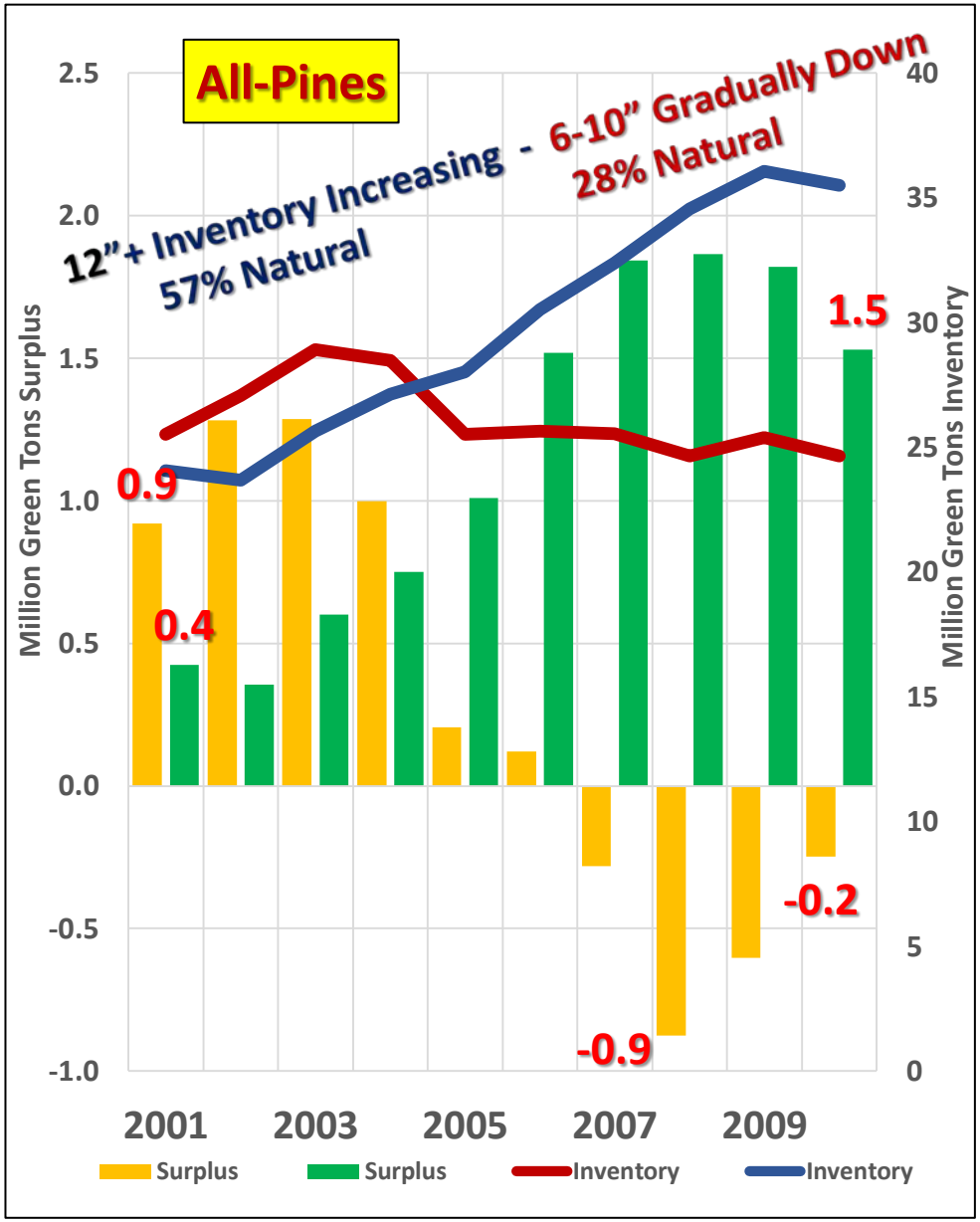


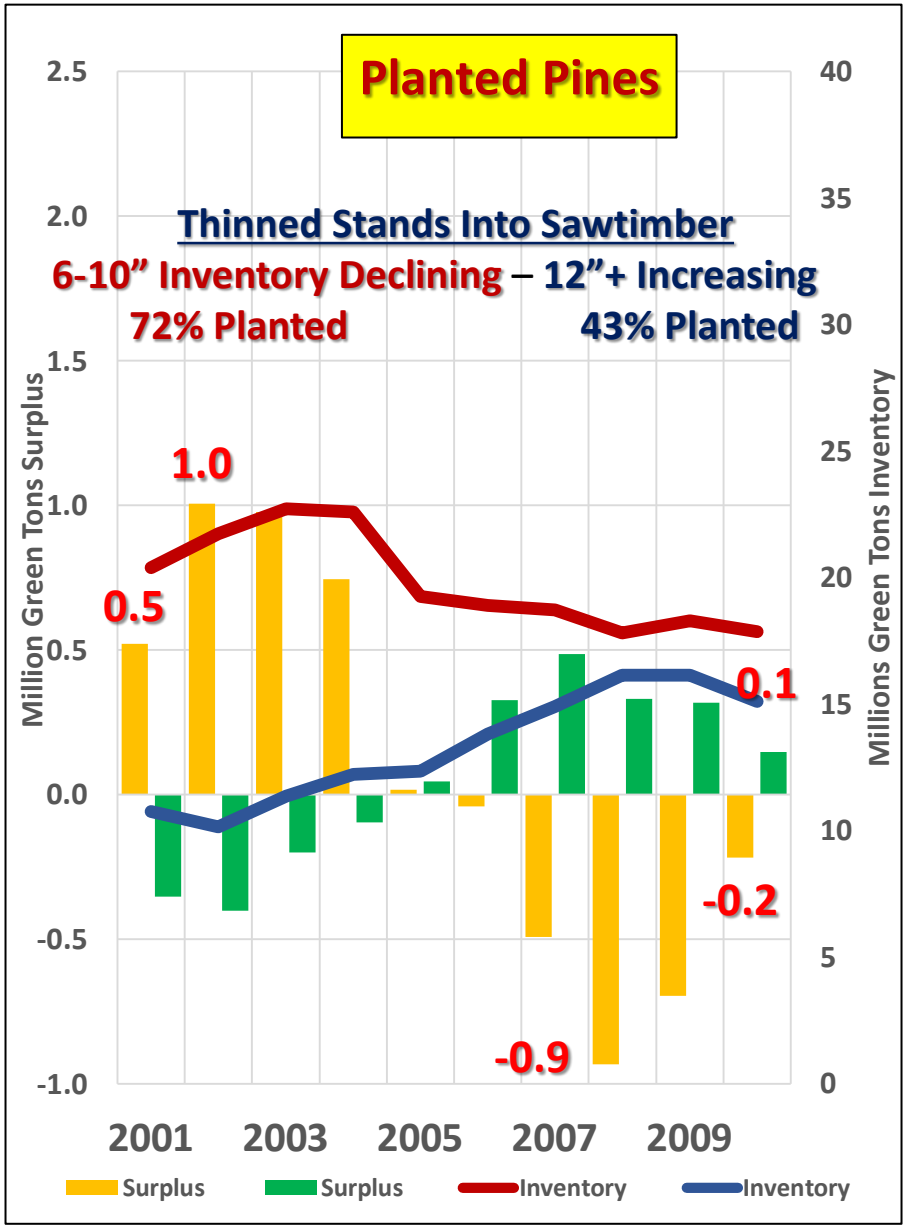

UPPER NORTHERN COASTAL PLAIN
Reforestation Stand Origins
Natural, 314m Acres (39%)
Planted, 499m Acres (61%)
Hugo
Salvaged
Cut Later
Replanted
Hugo
CRP
-52%, 1985 to 2010
Hazel
1954
Thousand Acres by 5-yr Intervals
100
80
60
40
20
0
2010
2000
1990
1980
1970
Average Stand Origin Year (5 yrs)

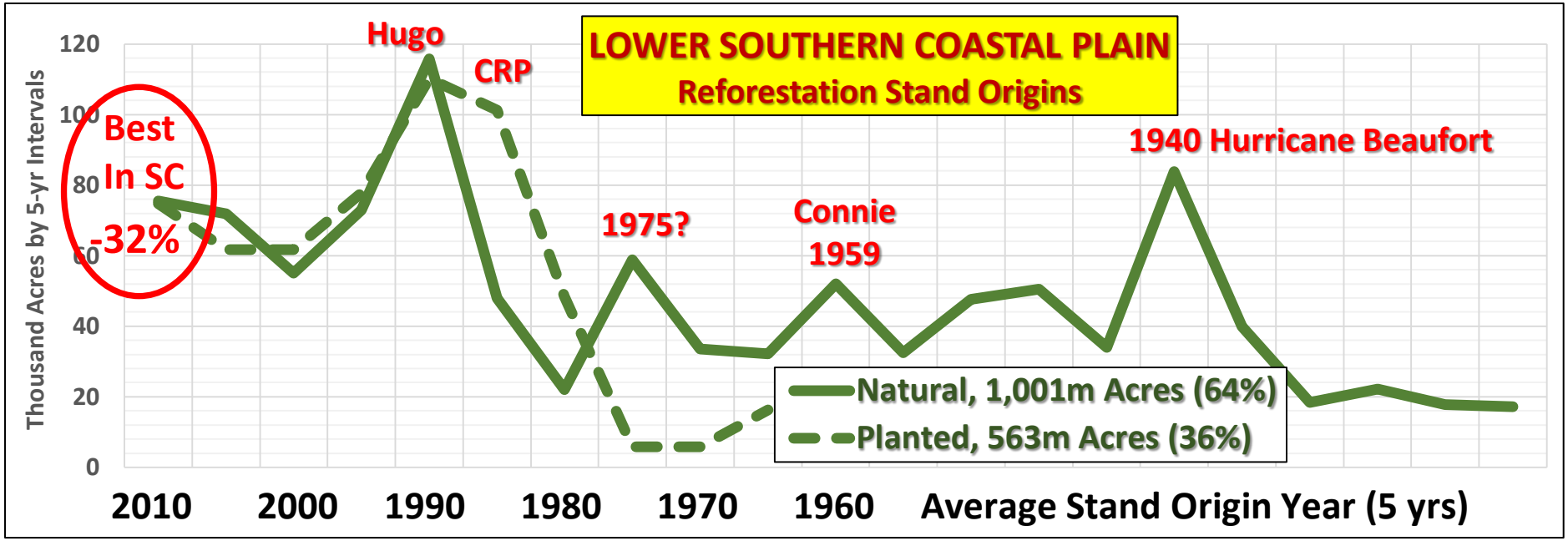

UPPER NORTHERN COASTAL PLAIN, TPO Harvest, Actual Year
No OSB Yet
Small
68%
Planted
Large
67%
Planted
PST mkt
-50%
1.3
0.8
1.2
0.6
1.8
0.8
Million Green Tons
2.0
1.5
1.0
0.5
0.0
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
Small Wood - to Paper, OSB, Pellets, Some Fuel, In-woods Export Chips
Large Wood - to Sawmills, Plywood, Poles & Piling, In-woods Export Logs

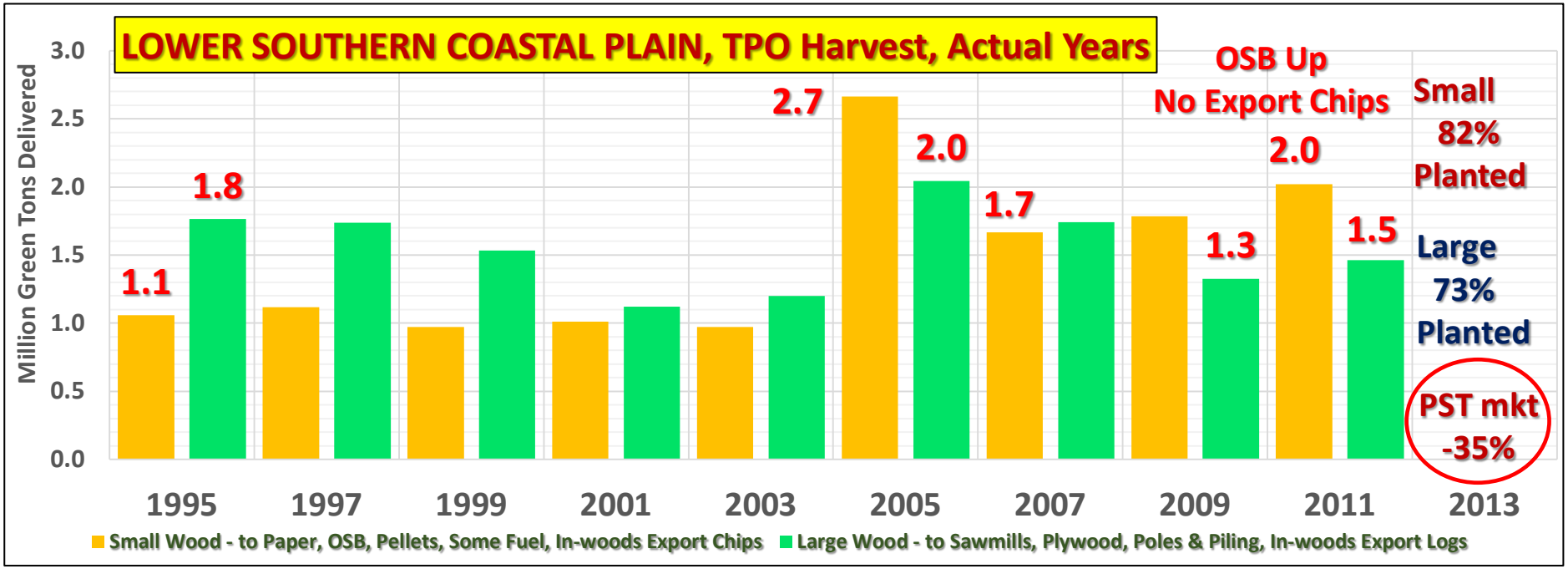
LOWER SOUTHERN COASTAL PLAIN (centered around Walterboro)

Allendale, Beaufort, Colleton, Dorchester, Hampton and Jasper Counties (6)



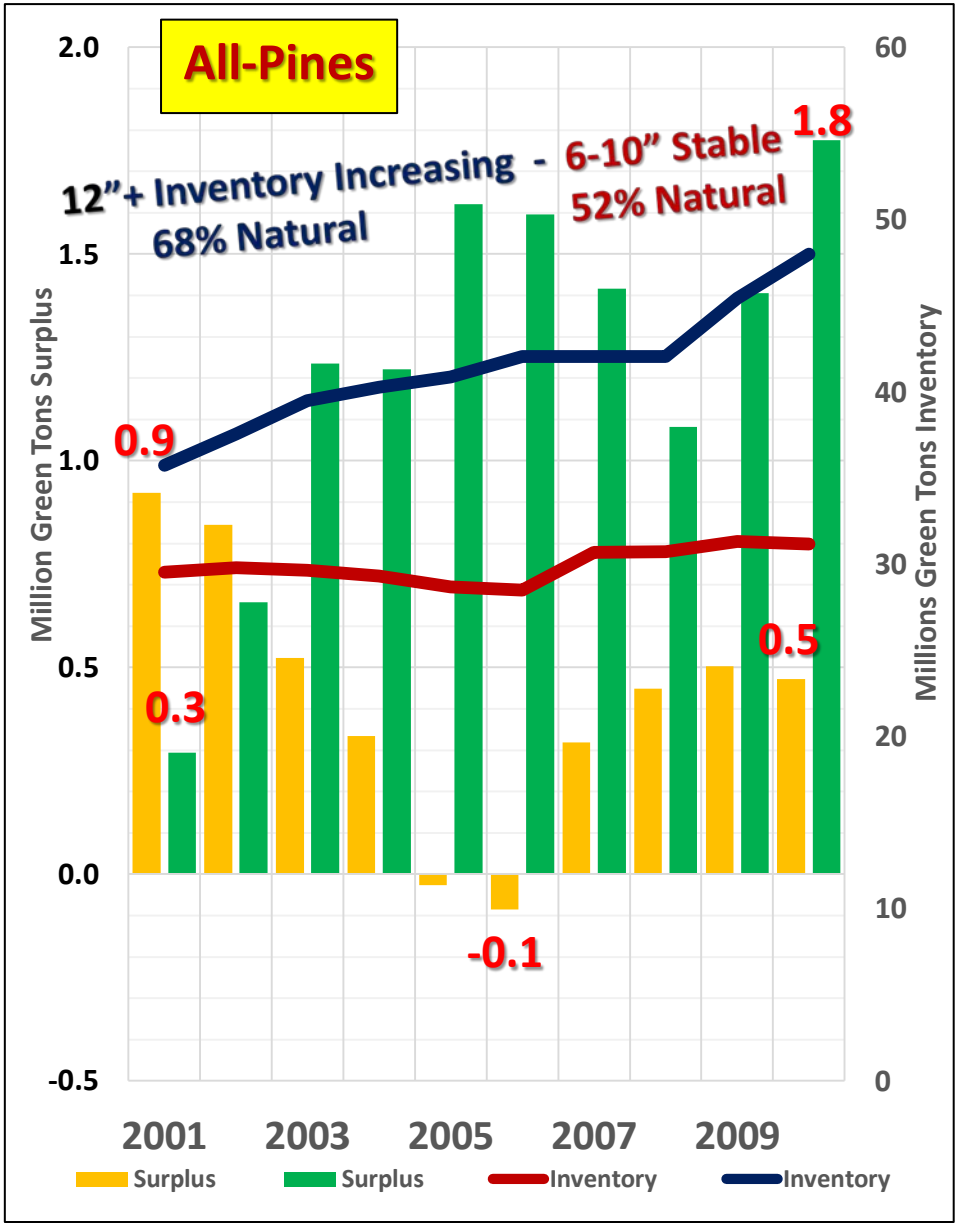


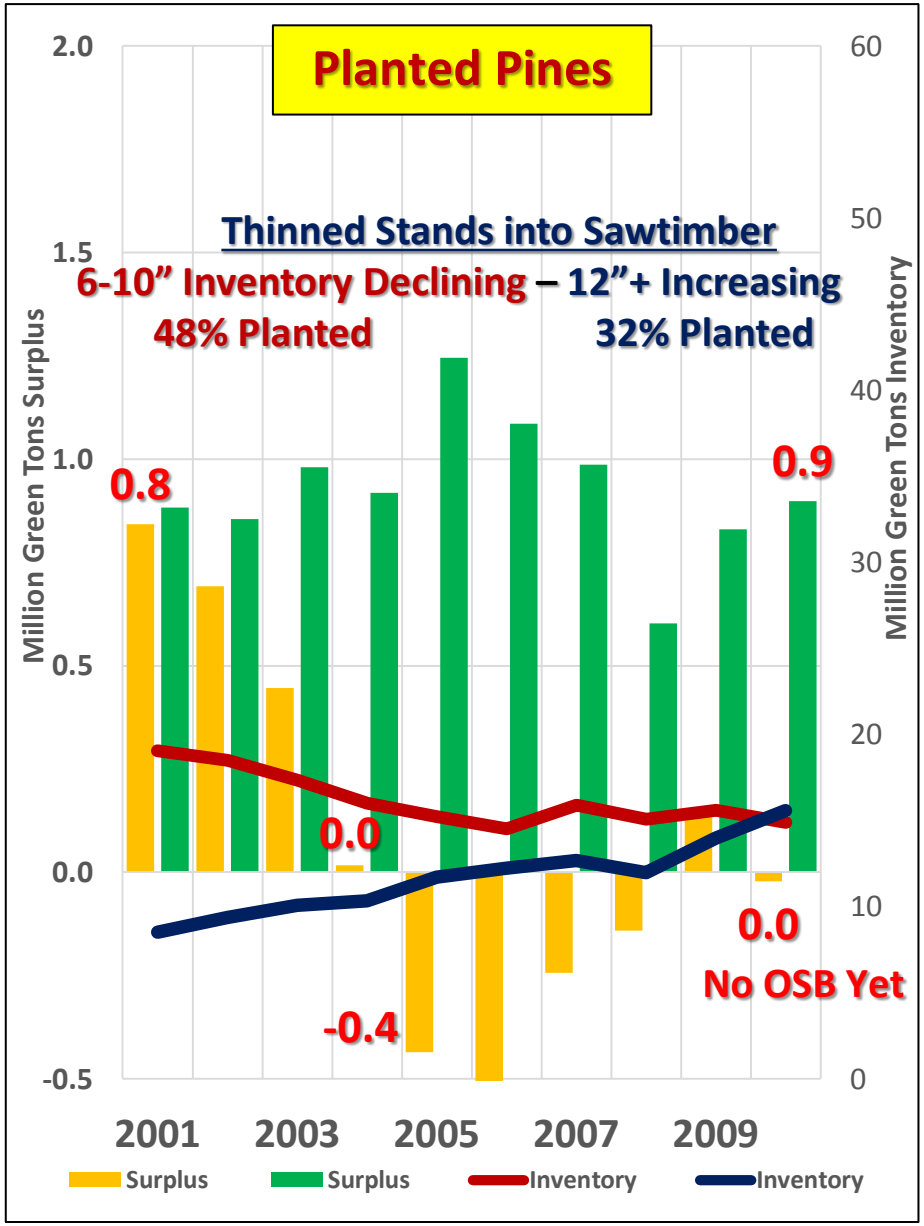

LOWER SOUTHERN COASTAL PLAIN
Reforestation Stand Origins
Thousand Acres by 5-yr Intervals
120
100
80
60
40
20
0
Hugo
CRP
Best
In SC
-32%
1975?
Connie
1959
1940 Hurricane Beaufort
Natural, 1,001m Acres (64%)
Planted, 563m Acres (36%)
2010
2000
1990
1980
1970
1960
Average Stand Origin Year (5 yrs)

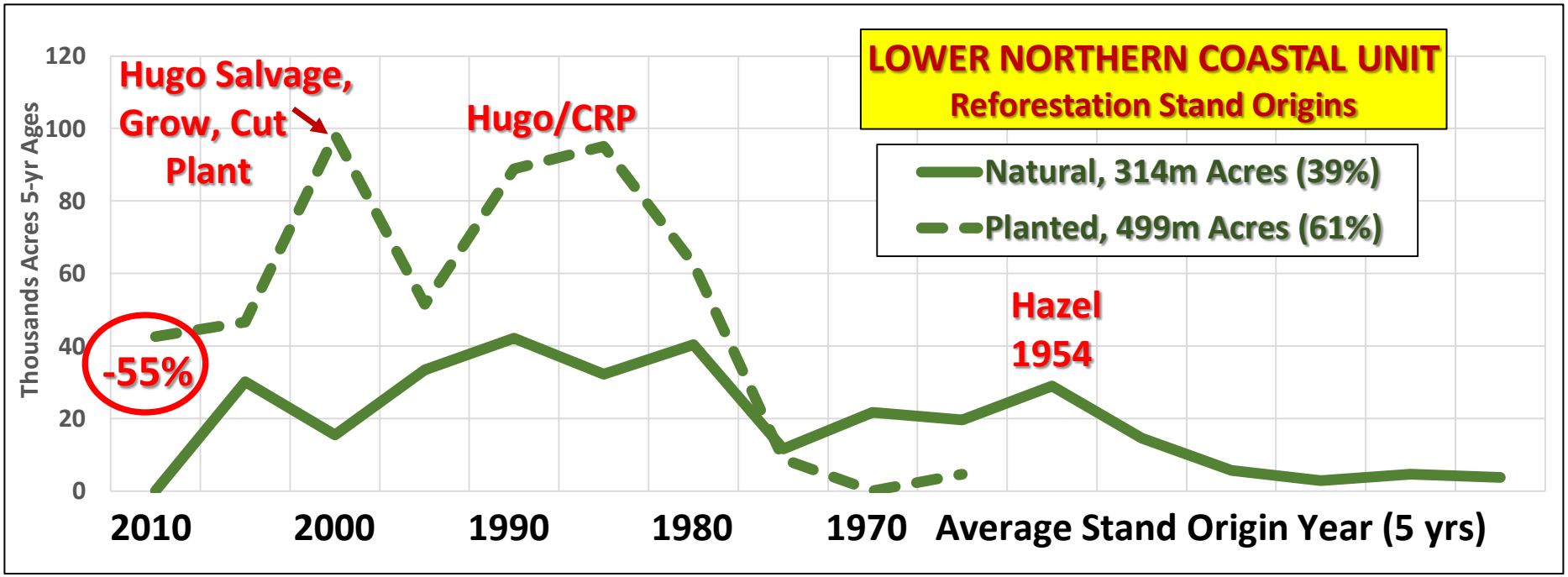

LOWER SOUTHERN COASTAL PLAIN, TPO Harvest, Actual Years
Million Green Tons Delivered
3.0
2.5
2.0
1.5
1.0
0.5
0.0
1.1
1.8
2.7
2.0
1.7
1.3
2.0
1.5
OSB Up
No Export Chips
Small
82%
Planted
Large
73%
Planted
PST mkt
-35%
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
Small Wood - to Paper, OSB, Pellets, Some Fuel, In-woods Export Chips
Large Wood - to Sawmills, Plywood, Poles & Piling, In-woods Export Logs

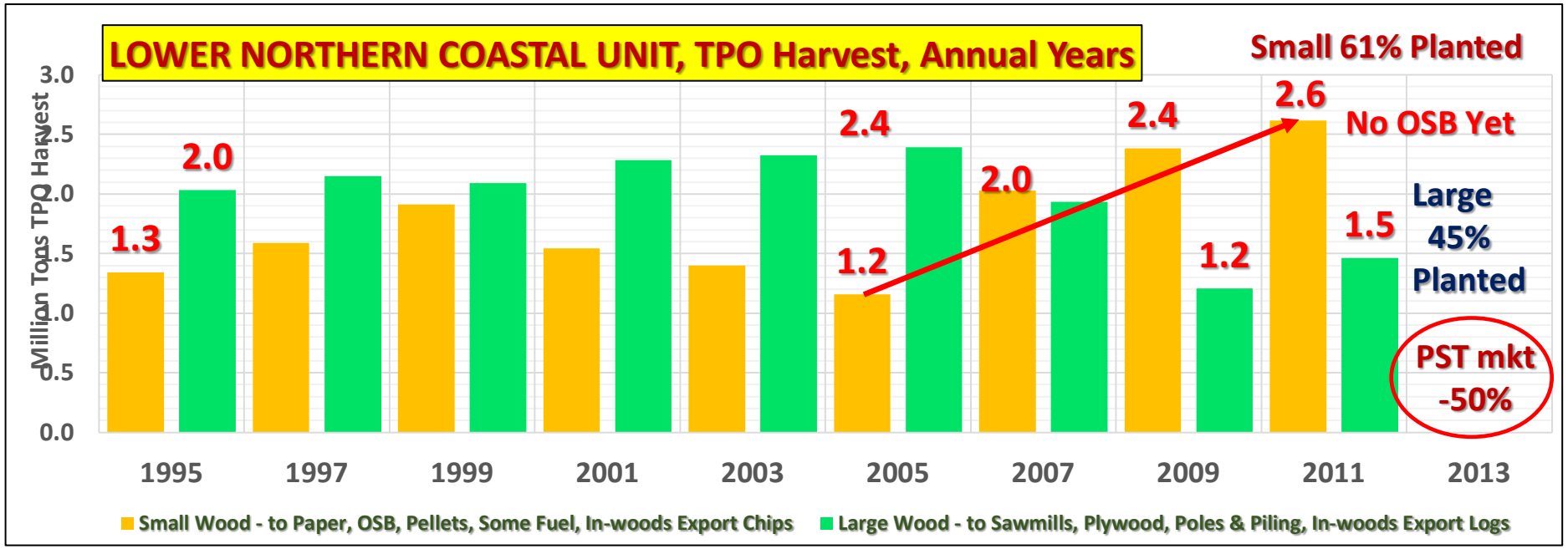
LOWER NORTHERN COASTAL PLAIN (centered between Hemingway & Andrews)

Berkeley, Charleston, Dillon, Florence, Georgetown, Horry, Marion & Williamsburg Counties (8)



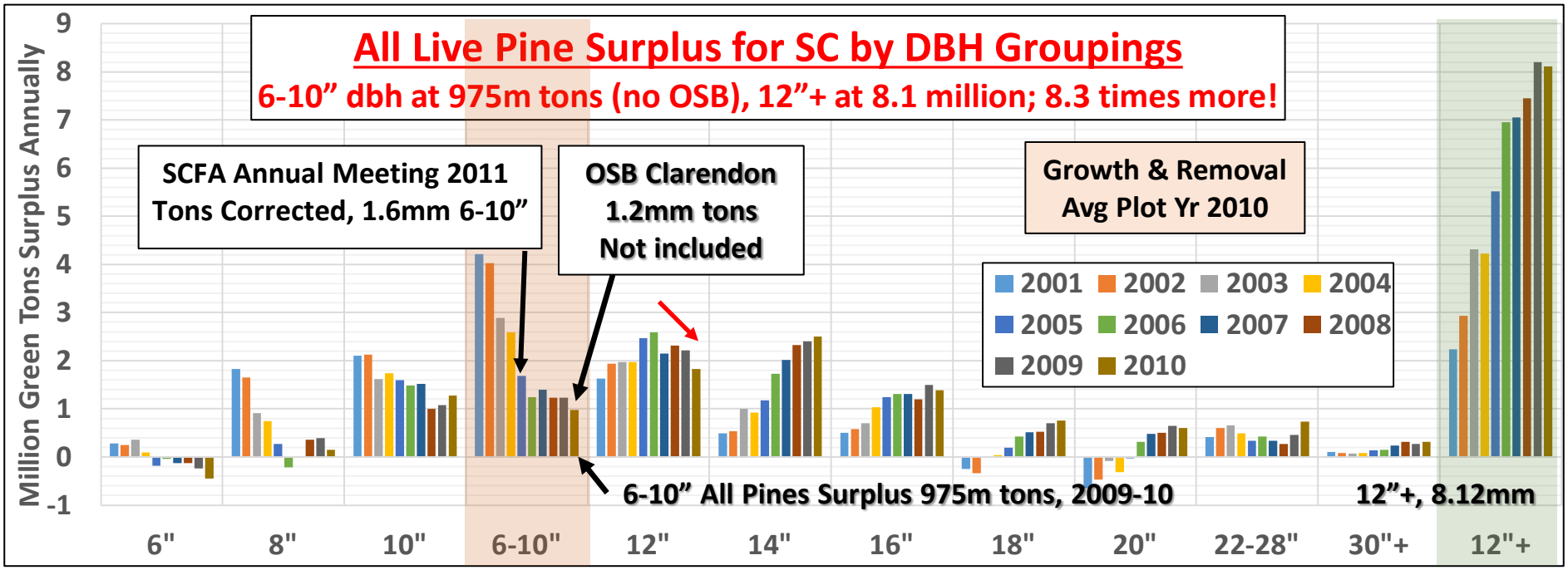


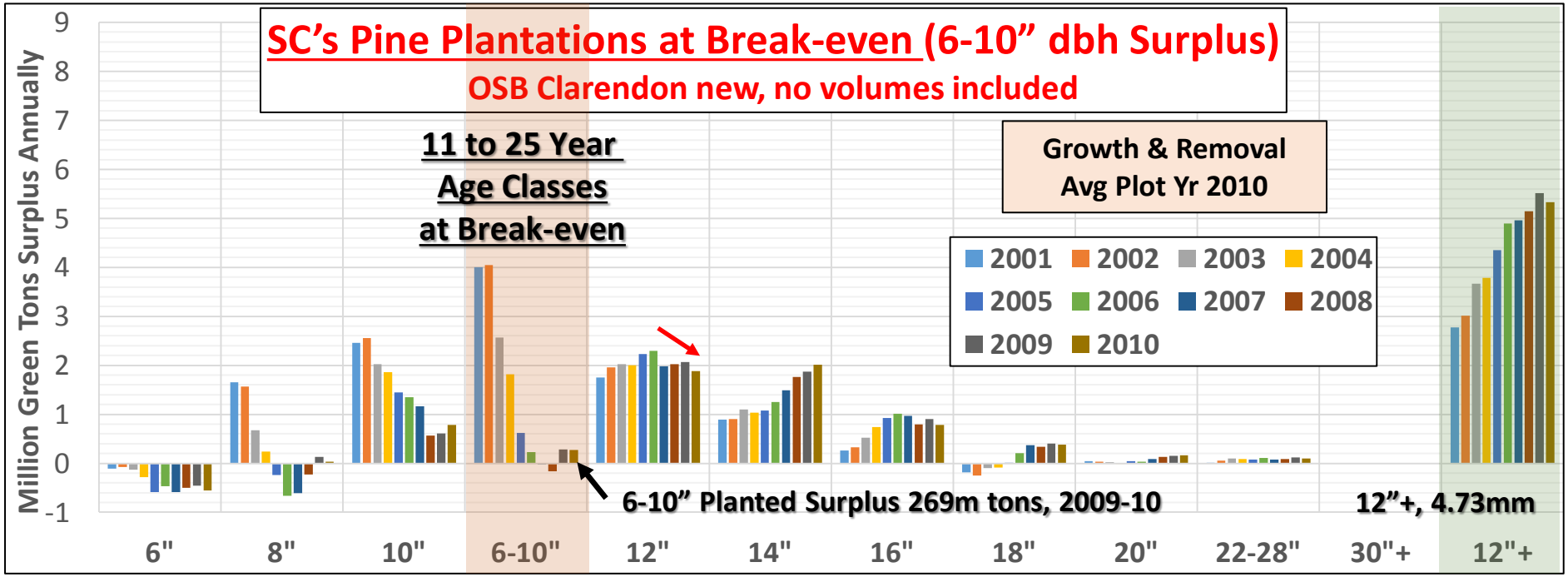

LOWER NORTHERN COASTAL UNIT
Reforestation Stand Origins
Natural, 314m Acres (39%)
Planted, 499m Acres (61%)
Hugo Salvage, Grow, Cut Plant
Hugo/CRP
Hazel 1954
-55%
Thousands Acres 5-yr Ages
120
100
80
60
40
20
0
2010
2000
1990
1980
1970
Average Stand Origin Year (5 yrs)


LOWER NORTHERN COASTAL UNIT, TPO Harvest, Annual Years
Small 61% Planted
No OSB Yet
Large 45% Planted
PST mkt -50%
1.3
2.0
1.2
2.4
2.0
2.4
1.2
2.6
1.5
Million Tons TPO Harvest
3.0
2.5
2.0
1.5
1.0
0.5
0.0
1995
1997
1999
2001
2003
2005
2007
2009
2011
2013
Small Wood - to Paper, OSB, Pellets, Some Fuel, In-woods Export Chips
Large Wood - to Sawmills, Plywood, Poles & Piling, In-woods Export Logs

FIA Sub-Units Define SC All-Live Private Pine Stand Conditions (FIA 2014 Release); Next Look at Tree Planting for Future Trend										
	Standing Inventory		Annual Growth		Annual Removals		Surplus (AG-AR)		G/R Ratio	
FIA Sub-Unit	6-10", 2012	12"+, 2012	6-10", 2009-10	12"+, 2009-10	6-10", 2009-10	12"+, 2009-10	6-10", 2009-10	12"+, 2009-10	6-10", 2009-10	12"+, 2009-10
SW Piedmont	29,687,745	33,618,578	2,093,721	2,641,501	1,981,469	1,657,417	112,252	984,083	1.06	1.59
NE Piedmont	25,241,197	20,130,465	1,857,942	1,854,959	1,436,891	1,009,844	421,051	845,115	1.29	1.84
Upper Sou Coast	20,778,394	28,165,313	1,552,332	2,475,217	1,555,978	1,256,616	-3,646	1,218,602	1.00	1.97
Upper No Coast	22,426,014	30,790,626	1,638,594	2,892,754	1,416,751	1,130,803	221,842	1,761,951	1.16	2.56
Lower Sou Coast	24,656,335	35,493,416	2,122,178	2,974,910	2,370,551	1,444,792	-248,373	1,530,118	0.90	2.06
Lower No Coast	31,181,349	48,003,273	2,754,433	4,232,799	2,282,671	2,456,637	471,762	1,776,162	1.21	1.72
Grand Total:	153,971,034	196,201,671	12,019,200	17,072,139	11,044,312	8,956,108	974,888	8,116,031	1.09	1.91
% Category by DBH	44%	56%	7.8% GR	8.7% GR	55%	45%	11%	89%		

Planted Pine Tons - 59% Standing 6-10", 11.9% GR Sawtimber, 68% Removals 6-10", ony 28% 6-10" Surplus										
	Standing Inventory		Annual Growth		Annual Removals		Surplus (AG-AR)		G/R Ratio	
FIA Sub-Unit	6-10", 2012	12"+, 2012	6-10", 2009-10	12"+, 2009-10	6-10", 2009-10	12"+, 2009-10	6-10", 2009-10	12"+, 2009-10	6-10", 2009-10	12"+, 2009-10
SW Piedmont	15,259,296	11,435,921	1,331,673	1,341,086	1,528,635	494,791	-196,962	846,295	0.87	2.71
NE Piedmont	15,755,466	7,307,610	1,410,747	947,171	722,055	149,678	688,692	797,493	1.95	6.33
Upper Sou Coast	12,464,335	10,968,605	896,260	1,458,868	996,716	376,876	-100,456	1,081,992	0.90	3.87
Upper No Coast	13,838,090	12,420,283	1,085,227	1,714,805	968,395	761,529	116,832	953,276	1.12	2.25
Lower Sou Coast	17,863,859	15,117,906	1,738,117	1,201,982	1,955,536	1,053,697	-217,419	148,285	0.89	1.14
Lower No Coast	14,912,716	15,591,369	1,371,058	2,014,974	1,392,828	1,117,140	-21,770	897,834	0.98	1.80
Grand Total:	90,093,763	72,841,695	7,833,083	8,678,885	7,564,165	3,953,710	268,917	4,725,175	1.04	2.20
% Planted of Total	59%	37%	8.7% GR	11.9% GR	68%	44%	28%	58%		

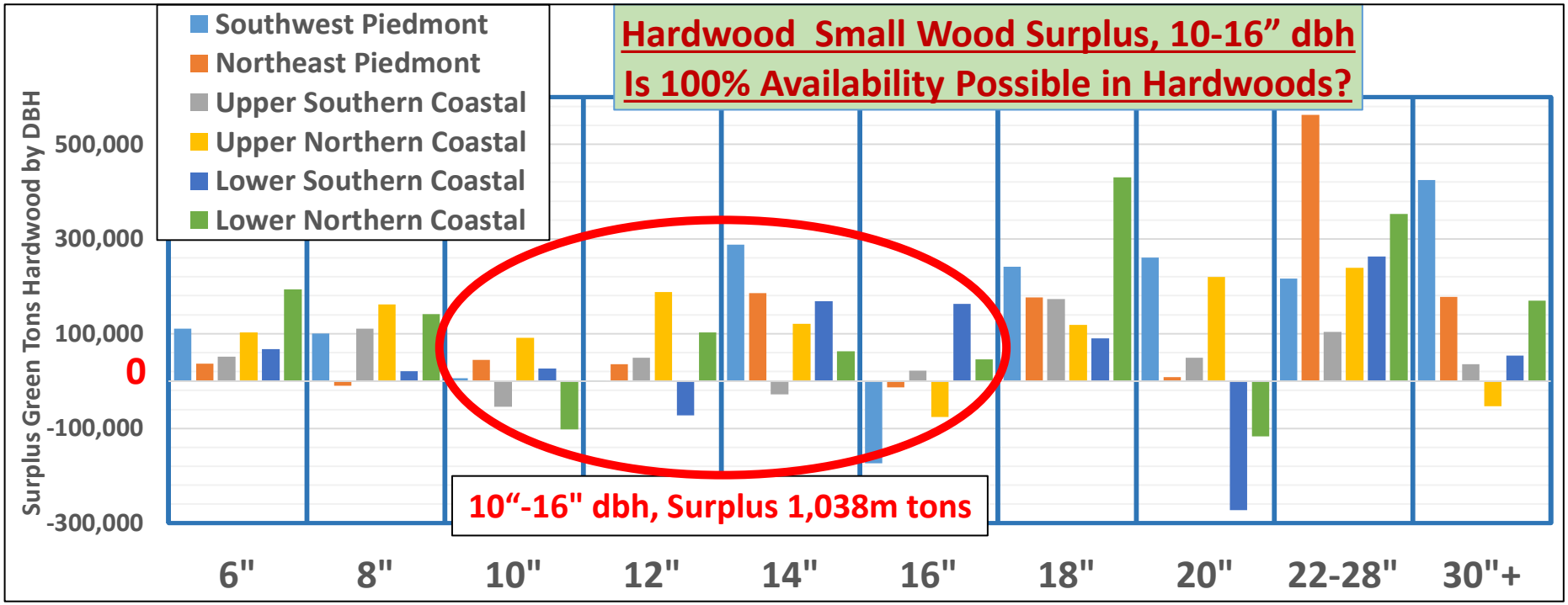

All Live Pine Surplus for SC by DBH Groupings
6-10" dbh at 975m tons (no OSB), 12"+ at 8.1 million; 8.3 times more!
SCFA Annual Meeting 2011
Tons Corrected, 1.6mm 6-10"
OSB Clarendon
1.2mm tons
Not included
Growth & Removal
Avg Plot Yr 2010
2001 2002 2003 2004
2005 2006 2007 2008
2009 2010
6-10" All Pines Surplus 975m tons, 2009-10
12"+, 8.12mm
Million Green Tons Surplus Annually
9 8 7 6 5 4 3 2 1 0 -1
6" 8" 10" 6-10" 12" 14" 16" 18" 20" 22-28" 30"+ 12"+


SC's Pine Plantations at Break-even (6-10" dbh Surplus)
OSB Clarendon new, no volumes included
11 to 25 Year
Age Classes
at Break-even
Growth & Removal
Avg Plot Yr 2010
2001 2002 2003 2004
2005 2006 2007 2008
2009 2010
6-10" Planted Surplus 269m tons, 2009-10
12"+, 4.73mm
Million Green Tons Surplus Annually
9 8 7 6 5 4 3 2 1 0 -1
6" 8" 10" 6-10" 12" 14" 16" 18" 20" 22-28" 30"+ 12"+

SC Hardwood Replacement for Pine 6-10” Limited, Volumes 100% Availability!

SC Hardwood All-Live Surplus AG-AR by DBH & FIA Sub-Unit, Tons (74#/cf), Private Timberlands, FIA 2014 (Avg Plot Yr 2010)

FIA Sub-Units:	6"	8"	10"	12"	14"	16"	18"	20"	22-28"	30"+	Total	6-12"	14"+
Southwest Piedmont	110,201	100,438	6,547	1,812	287,474	-173,790	241,099	260,756	216,914	424,534	1,475,984	218,997	1,256,986
Northeast Piedmont	37,176	-10,033	45,018	36,078	185,155	-13,414	176,547	7,971	562,392	177,542	1,204,433	108,239	1,096,193
Upper Southern Coastal	51,695	111,116	-54,187	49,115	-28,019	22,069	172,597	48,883	103,425	34,983	511,675	157,738	353,937
Upper Northern Coastal	103,094	161,978	91,122	188,374	121,116	-75,561	118,052	219,616	238,653	-53,097	1,113,346	544,568	568,778
Lower Southern Coastal	67,170	20,641	26,576	-72,273	168,880	162,888	89,903	-272,656	263,347	53,981	508,457	42,114	466,343
Lower Northern Coastal	193,649	141,220	-101,865	102,263	63,019	45,371	430,046	-116,772	352,577	169,351	1,278,859	335,267	943,592
Totals	562,985	525,360	13,211	305,369	797,625	-32,438	1,228,243	147,797	1,737,308	807,295	6,092,754	1,406,924	4,685,831



How do we "Create Space" to "Plant Trees" in SC?"

1. **PST Market Improvements Still Uncertain? Housing Recovery, Export Log and Lumber Demand Varies**
2. **Standing PST Excess Supply, Moderate Demand, Supply/Demand Value Issues**
3. ***PST Stands Final Harvest, Timing Key, Plant to Trees***
4. **PPW Reduced Supply, Increased Usage, New Users, Value Issues**
5. ***PPW Stands Final Harvest, Timing Key, Plant to Trees***
6. **Accelerate Final Harvest in PPW & PST Stands Begins to Improve Age Class Balance Pine for SC's Future, *SC Tree Planting Acres Down 62%, 1990 to 2010***
7. **Select Forest Managers Group Provide Guidelines to Landowners with Volunteer Harvest and Silvicultural Alternatives (Similar to Hugo guidelines)**
8. ***Those that Plant Trees Now, will be the First to have Small Wood in Future!***