fields planted to trees, CRP 1985-92

multiple thinnings of pines

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

unbalanced pine age classes!

63% of 12"+, natural

final harvest, site prep, planting down 62%

a rare scene

by Mac Lupold for SC Lupold Consulting, Inc.
803-669-0783, macc@truvista.net
August 18, 2015

increased sawtimber demand needed!
### SC Forest Condition in Tons, Private Timberland, All-Live Trees, 6" dbh & larger, FIA 2014

<table>
<thead>
<tr>
<th></th>
<th>Inventory</th>
<th>Annual Growth</th>
<th>% Growth Rate</th>
<th>Annual Removal</th>
<th>Surplus</th>
<th>G/R Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Species</td>
<td>749,694,731</td>
<td>42,541,097</td>
<td>5.7%</td>
<td>25,453,931</td>
<td>17,087,166</td>
<td>1.67</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>Inventory</th>
<th>Annual Growth</th>
<th>% Growth Rate</th>
<th>Annual Removal</th>
<th>Surplus</th>
<th>G/R Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Avg Plot Yr 2012</td>
<td>Avg Plot Yr 2009-10</td>
<td>Plot Years 2009-10/2012</td>
<td>Avg Plot Yr 2009-10</td>
<td>Avg Plot Yr 2009-10</td>
<td>Avg Plot Yr 2009-10</td>
</tr>
<tr>
<td>All Species</td>
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<td>42,541,097</td>
<td>5.7%</td>
<td>25,453,931</td>
<td>17,087,166</td>
<td>1.67</td>
</tr>
</tbody>
</table>

### 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

**0-5 Age Class**

- Plot Call 5 yrs
- 2010 Avg Yr

**Annual Growth**

- 2009-10

**Annual Removal**

**Standing Inventory**

- 2012

**NC, 7-cycle state, 2014**


Lupold Consulting, Inc.
Some might include a species break-down!

### SC Forest Condition in Tons, Private Timberland, All-Live Trees, FIA 2014

<table>
<thead>
<tr>
<th>Species</th>
<th>Inventory Avg Plot Yr 2012</th>
<th>Annual Growth Avg Plot Yr 2009-10</th>
<th>Annual Removal Avg Plot Yr 2009-10</th>
<th>Surplus Avg Plot Yr 2009-10</th>
<th>G/R Ratio Avg Plot Yr 2009-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pines</td>
<td>351,292,645</td>
<td>31,952,172</td>
<td>20,005,557</td>
<td>11,946,615</td>
<td>1.60</td>
</tr>
<tr>
<td>Other softwoods</td>
<td>17,249,498</td>
<td>574,632</td>
<td>341,414</td>
<td>233,218</td>
<td>1.68</td>
</tr>
<tr>
<td>Soft hardwoods</td>
<td>193,964,836</td>
<td>6,254,758</td>
<td>3,243,570</td>
<td>3,011,188</td>
<td>1.93</td>
</tr>
<tr>
<td>Grand Total:</td>
<td>749,694,731</td>
<td>45,210,257</td>
<td>25,453,931</td>
<td>19,756,326</td>
<td>1.78</td>
</tr>
<tr>
<td>All Yellow Pines</td>
<td>350,172,706</td>
<td>29,091,339</td>
<td>20,000,420</td>
<td>9,090,919</td>
<td>1.45</td>
</tr>
</tbody>
</table>

**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!

### SC Softwood TPO Tons (79%) Dlvd to Paper, OSB, Pellets, Fuel, Other

- **10.73 million tons Softwood, 2009**
- **51% Increase 2001 to 2009**
- **No 2011 or 2013 data available**

- **Pulpwood 6-8" dbh, 2009 yr**
  - 5.37mm Tons (50%)

- **Non-Growing Stock, <6" dbh, 2009 yr**
  - 736m Tons (7%)

- **Sawtimber 10"+ dbh, 2009 yr**
  - 4.63mm Tons (43%)

### SC Hardwood TPO Tons (21%) Dlvd to Paper, OSB, Pellets, Fuel, Other

- **2.79 million tons Hardwood, 2009**
- **2.1% Decrease 2001 to 2009**
- **No 2011 or 2013 data available**

- **Non-Growing Stock, <6" dbh, 2009 yr**
  - 212m Tons (8%)

- **Pulpwood 6-10" dbh, 2009 yr**
  - 1.23mm Tons (43%)

- **Sawtimber 12"+ dbh, 2009yr**
  - 1.36mm Tons (49%)

In 2009
- **79% Pine**
- **21% Hardwood**
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

Lupold Consulting, Inc.
Special alert - On-line tool issue

Users are advised that SRS 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.
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%

Caution: MS & LA contain very high annual growth rates
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%
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

SC Silvicultural Treatments, Acres
1992-2008 FIA Plot Years - REVISED 2015

- Site Preparation
- Artificial Regeneration
- Natural Regeneration
- Other Silvicultural

1992-2008 FIA Plot Years

Commercial Thinnings

Only 64%
Final Harvest
In 2008
Regenerated

Final Harvest

Artificial Planting

Site Prep

Lupold Consulting, Inc.
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**

<table>
<thead>
<tr>
<th>Latest State FIA Year Acres Planted Pine 0-30 Ages / 5-yrs Noted</th>
<th>0-5 years Avg Yr</th>
<th>6-10 years Avg Yr</th>
<th>11-15 years Avg Yr</th>
<th>16-20 years Avg Yr</th>
<th>21-25 years Avg Yr</th>
<th>26-30 years Avg Yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL 2014, 7.3mm Acres</td>
<td>2010 18%</td>
<td>2005 17%</td>
<td>2000 19%</td>
<td>1995 18%</td>
<td>1990 17%</td>
<td>1985 10%</td>
</tr>
<tr>
<td>AR 2014, 3.3mm Acres</td>
<td>2010 24%</td>
<td>2005 23%</td>
<td>2000 17%</td>
<td>1995 12%</td>
<td>1990 10%</td>
<td>1985 11%</td>
</tr>
<tr>
<td>FL 2013, 3.6mm Acres</td>
<td>2010 19%</td>
<td>2005 14%</td>
<td>2000 20%</td>
<td>1995 17%</td>
<td>1990 16%</td>
<td>1985 13%</td>
</tr>
<tr>
<td>GA 2013, 6.8mm Acres</td>
<td>2010 15%</td>
<td>2005 14%</td>
<td>2000 17%</td>
<td>1995 18%</td>
<td>1990 20%</td>
<td>1985 15%</td>
</tr>
<tr>
<td>LA 2013, 4.0mm Acres</td>
<td>2010 22%</td>
<td>2005 19%</td>
<td>2000 18%</td>
<td>1995 17%</td>
<td>1990 13%</td>
<td>1985 9%</td>
</tr>
<tr>
<td>MS 2014, 5.4mm Acres</td>
<td>2010 15%</td>
<td>2005 17%</td>
<td>2000 19%</td>
<td>1995 21%</td>
<td>1990 16%</td>
<td>1985 11%</td>
</tr>
<tr>
<td>NC 2014, 2.5mm Acres</td>
<td>2010 18%</td>
<td>2005 15%</td>
<td>2000 18%</td>
<td>1995 13%</td>
<td>1990 17%</td>
<td>1985 16%</td>
</tr>
<tr>
<td>OK 2014, .5mm Acres</td>
<td>2010 20%</td>
<td>2005 22%</td>
<td>2000 20%</td>
<td>1995 15%</td>
<td>1990 8%</td>
<td>1985 11%</td>
</tr>
<tr>
<td>SC 2014, 2.7mm Acres</td>
<td>2010 11%</td>
<td>2005 11%</td>
<td>2000 14%</td>
<td>1995 15%</td>
<td>1990 24%</td>
<td>1985 23%</td>
</tr>
<tr>
<td>TX 2012, 2.8mm Acres</td>
<td>2010 23%</td>
<td>2005 18%</td>
<td>2000 19%</td>
<td>1995 17%</td>
<td>1990 13%</td>
<td>1985 9%</td>
</tr>
<tr>
<td>VA 2013, 2.1mm Acres</td>
<td>2010 19%</td>
<td>2005 19%</td>
<td>2000 16%</td>
<td>1995 13%</td>
<td>1990 14%</td>
<td>1985 15%</td>
</tr>
</tbody>
</table>
How Long Will It Take SC To Return To 600,000 Acre Level? 
This Level Supplied Existing/New Mills for 25+ Years!

All Attained 600,000 Acres

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

Lupold Consulting, Inc. 14
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

<table>
<thead>
<tr>
<th></th>
<th>5.0-6.9</th>
<th>7.0-8.9</th>
<th>9.0-10.9</th>
<th>11.0-12.9</th>
<th>13.0-14.9</th>
<th>15.0-16.9</th>
<th>17.0-18.9</th>
<th>19.0-20.9</th>
<th>21.0-28.9</th>
<th>29.0+</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSCD=33 EVALID=450703 SOUTH CAROLINA 2002;2003;2004;2005;2006;2007</td>
<td>145,712,941</td>
<td>9,737,513</td>
<td>25,495,564</td>
<td>44,969,748</td>
<td>28,672,920</td>
<td>15,793,739</td>
<td>7,07,73</td>
<td>8,155,588</td>
<td>5,829,309</td>
<td>9,045,753</td>
</tr>
</tbody>
</table>

### All Planted Pine

Diameter class: 2 inch class to 29 (based on values from the Accounting inventory). Total

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<th>9.0-10.9</th>
<th>11.0-12.9</th>
<th>13.0-14.9</th>
<th>15.0-16.9</th>
<th>17.0-18.9</th>
<th>19.0-20.9</th>
<th>21.0-28.9</th>
<th>29.0+</th>
</tr>
</thead>
</table>

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

### Volumes by Year & DBH for Trends

**Lupold Consulting, Inc. 15**
**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**

- **Standing Inventory**

- **Million Green Tons**

- **6-10”**
- **12”+**
- **Total**

- **Annual Growth**
- **AnnualRemovals**
- **Surplus (AG-AR)**

Lupold Consulting, Inc. 16
**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)

**Standing Inventory**

Million Green Tons

- 6-10"
- 12"+
- Total

**Annual Growth**

- 6-10"
- 12"+
- Total

**Annual Removals**

- 6-10"
- 12"+
- Total

**Surplus (AG-AR)**

- 6-10"
- 12"+
- Total

**12”+ DBH Here Still Increasing Annually!**

Lupold Consulting, Inc.
**SOUTHWEST PIEDMONT** (centered around Ware Shoals to Greenwood)

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

### All Pines
- **12”+ Inventory Increasing**
- **66% Natural**
- **6-10” Stable**
- **49% Natural**

### Planted Pine
- **12”+ Inventory Increasing**
- **34% Planted**
- **6-10” Down**
- **51% Planted**

Lupold Consulting, Inc.
**SOUTHWEST PIEDMONT**

**Reforestation Stand Origins**

- **Natural, 473m Acres (49%)**
- **Planted Stands, 494m Acres (51%)**

**Decline 1990-2010 avg yrs**

- 83%

**CRP**

**Mid-'90s Sawtimber Stumpage Doubled**

**Average Stand Origin (5 year increments)**

**SOUTHWEST PIEDMONT TPO Harvest, Actual Years**

- **Small Wood - to Paper, OSB, Pellets, Some Fuel, In-woods Export Chips**
- **Large Wood - to Sawmills, Plywood, Poles & Piling, In-woods Export Logs**

**Small 77% Planted**

**2011 Recovery**

- Chipmill/OSB Down
- OSB Up

**Large 30% Planted**

**PST mkt -43% SC Avg**
**NORTHEAST PIEDMONT**

Reforestation Stand Origins

- **Natural Stands**: 351m Acres (47%)
- **Planted Stands**: 392m Acres (53%)

Decline 1990 to 2010 avg yrs: -82%

**NORTHEAST PIEDMONT TPO Harvest, Actual Years**

- **Small Wood** - to Paper, OSB, Pellets, Some Fuel, In-woods Export Chips
- **Large Wood** - to Sawmills, Plywood, Poles & Piling, In-woods Export Logs

- **Small Wood**: 50% Planted
- **Large Wood**: 15% Planted
- **PST mkt**: -33%

- **OSB Up**: 2.0
- **Planted**: 0.6
**UPPER SOUTHERN COASTAL PLAIN** (centered around Springfield)

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

---

### Thinned Stands Into Sawtimber

- **12"+ Increasing**
- **6-10" Declining**
- **39% Planted**
- **60% Planted**

### Planted Pines

- **12"+ Inventory up**
- **6-10" Recently Down**
- **61% Natural**
- **40% Natural**

---

**All Pines**

- **Million Green Tons Inventory**
- **Million Green Tons Surplus AG**

---

**Lupold Consulting, Inc.**

22
UPPER SOUTHERN COASTAL PLAIN
Reforestation Stand Origins

- Natural, 406m Acres (49%)
- Planted, 419m Acres (51%)

Some Cut & Planted
In High Market
2005

-74%, 1990 to 2010

UPPER SOUTHERN COASTAL PLAIN, TPO Harvest, Actual Years

Small Wood - to Paper, OSB, Pellets, Some Fuel, In-woods Export Chips
Large Wood - to Sawmills, Plywood, Poles & Piling, In-woods Export Logs

OSB Up

Small 64% Planted
Large 30% Planted
PST mkt -40%

1995 1997 1999 2001 2003 2005 2007 2009 2011 2013

Million Green Tons

0.7 1.1 1.0 0.8 0.6
0.5 0.7 0.8 1.0 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2

Lupold Consulting, Inc.
**UPPER NORTHERN COASTAL PLAIN (centered around Bishopville)**

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

---

**All Pines**

1.3

12”+ Inventory Increasing - 6-10” Stable

60% Natural

38% Natural

1.8

---

**Planted Pines**

1.1

Thinned Stands Into Sawtimber

12”+ Increasing - 6-10” Stable

40% Planted

62% Planted

---

0.2

No OSB Yet

---

Lupold Consulting, Inc.
UPPER NORTHERN COASTAL PLAIN
Reforestation Stand Origins

- Natural, 314m Acres (39%)
- Planted, 499m Acres (61%)

Hugo
Salvaged
Cut Later
Replanted

-52% 1985 to 2010

UPPER NORTHERN COASTAL PLAIN, TPO Harvest, Actual Year

- Small Wood - to Paper, OSB, Pellets, Some Fuel, In-woods Export Chips
- Large Wood - to Sawmills, Plywood, Poles & Piling, In-woods Export Logs

No OSB Yet
PST mkt -50%
LOWER SOUTHERN COASTAL PLAIN (centered around Walterboro)
Allendale, Beaufort, Colleton, Dorchester, Hampton and Jasper Counties (6)

**All-Pines**
- 6-10” Gradually Down
- 12”+ Increasing
- 57% Natural

**Planted Pines**
- Thinned Stands Into Sawtimber
- 6-10” Inventory Declining
- 12”+ Increasing
- 72% Planted
- 43% Planted

Lupold Consulting, Inc. 26
LOWER NORTHERN COASTAL PLAIN (centered between Hemingway & Andrews)
Berkeley, Charleston, Dillon, Florence, Georgetown, Horry, Marion & Williamsburg Counties (8)

**All-Pines**
- 12”+ Inventory Increasing - 68% Natural
- 6-10” Stable - 52% Natural

**Planted Pines**
- Thinned Stands into Sawtimber
- 6-10” Inventory Declining – 12”+ Increasing
- 48% Planted
- 32% Planted
- No OSB Yet

Lupold Consulting, Inc.
LOWER NORTHERN COASTAL UNIT
Reforestation Stand Origins

- Natural, 314m Acres (39%)
- Planted, 499m Acres (61%)

Hugo Salvage, Grow, Cut, Plant

Hugo/CRP

-55%
Hazel 1954

Average Stand Origin Year (5 yrs)

LOWER NORTHERN COASTAL UNIT, TPO Harvest, Annual Years

- Small 61% Planted
- Large 45% Planted
- No OSB Yet
- PST mkt -50%

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, All-Live Private Pine Stand Conditions (FIA 2014 Release); Next Look at Tree Planting for Future Trend

<table>
<thead>
<tr>
<th>FIA Sub-Unit</th>
<th>Standing Inventory</th>
<th>Annual Growth</th>
<th>Annual Removals</th>
<th>Surplus (AG-AR)</th>
<th>G/R Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW Piedmont</td>
<td>29,687,745</td>
<td>33,618,578</td>
<td>2,093,721</td>
<td>2,641,501</td>
<td>1,981,469</td>
</tr>
<tr>
<td>NE Piedmont</td>
<td>25,241,197</td>
<td>20,130,465</td>
<td>1,857,942</td>
<td>1,854,959</td>
<td>1,436,891</td>
</tr>
<tr>
<td>Upper Sou Coast</td>
<td>20,778,394</td>
<td>28,165,313</td>
<td>1,552,332</td>
<td>2,475,217</td>
<td>1,555,978</td>
</tr>
<tr>
<td>Upper No Coast</td>
<td>22,426,014</td>
<td>30,790,626</td>
<td>1,638,594</td>
<td>2,892,754</td>
<td>1,416,751</td>
</tr>
<tr>
<td>Lower Sou Coast</td>
<td>24,656,335</td>
<td>35,493,416</td>
<td>2,122,178</td>
<td>2,974,910</td>
<td>2,370,551</td>
</tr>
<tr>
<td>Lower No Coast</td>
<td>31,181,349</td>
<td>48,003,273</td>
<td>2,754,433</td>
<td>4,232,799</td>
<td>2,282,671</td>
</tr>
<tr>
<td>Grand Total:</td>
<td>153,971,034</td>
<td>196,201,671</td>
<td>12,019,200</td>
<td>17,072,139</td>
<td>11,044,312</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>% Category by DBH</th>
<th>44%</th>
<th>56%</th>
<th>7.8% GR</th>
<th>8.7% GR</th>
<th>55%</th>
<th>45%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>11%</td>
<td>89%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Planted Pine Tons: 59% Standing 6-10", 11.9% GR Sawtimber, 68% Removals 6-10", only 28% 6-10" Surplus

<table>
<thead>
<tr>
<th>FIA Sub-Unit</th>
<th>Standing Inventory</th>
<th>Annual Growth</th>
<th>Annual Removals</th>
<th>Surplus (AG-AR)</th>
<th>G/R Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW Piedmont</td>
<td>15,259,296</td>
<td>11,435,921</td>
<td>1,331,673</td>
<td>1,341,086</td>
<td>1,528,635</td>
</tr>
<tr>
<td>NE Piedmont</td>
<td>15,755,466</td>
<td>7,307,610</td>
<td>1,410,747</td>
<td>947,171</td>
<td>722,055</td>
</tr>
<tr>
<td>Upper Sou Coast</td>
<td>12,464,335</td>
<td>10,968,605</td>
<td>896,260</td>
<td>1,458,868</td>
<td>996,716</td>
</tr>
<tr>
<td>Upper No Coast</td>
<td>13,838,090</td>
<td>12,420,283</td>
<td>1,085,227</td>
<td>1,714,805</td>
<td>968,395</td>
</tr>
<tr>
<td>Lower Sou Coast</td>
<td>17,863,859</td>
<td>15,117,906</td>
<td>1,738,117</td>
<td>1,201,982</td>
<td>1,955,536</td>
</tr>
<tr>
<td>Lower No Coast</td>
<td>14,912,716</td>
<td>15,591,369</td>
<td>1,371,058</td>
<td>2,014,974</td>
<td>1,392,828</td>
</tr>
<tr>
<td>Grand Total:</td>
<td>90,093,763</td>
<td>72,841,695</td>
<td>7,833,083</td>
<td>8,678,885</td>
<td>7,564,165</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>% Planted of Total</th>
<th>59%</th>
<th>37%</th>
<th>8.7% GR</th>
<th>11.9% GR</th>
<th>68%</th>
<th>44%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>28%</td>
<td>58%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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

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

Lupold Consulting, Inc.
**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)

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

**Surplus Green Tons Hardwood by DBH**

- **Southwest Piedmont**
- **Northeast Piedmont**
- **Upper Southern Coastal**
- **Upper Northern Coastal**
- **Lower Southern Coastal**
- **Lower Northern Coastal**

**Hardwood Small Wood Surplus, 10-16” dbh Is 100% Availability Possible in Hardwoods?**

**10”-16" dbh, Surplus 1,038m tons**

Lupold Consulting, Inc.
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!**