

SMC Quarterly News

Stand Management Cooperative
College of Forest Resources, University of Washington

1st Quarter 2008

www.standmgt.org



Dave Briggs, SMC Director

From the Director

I am writing this on the last day of 2007 which was quite an eventful year. The January – April period was dominated by the sawmilling phase of the AGENDA 2020 non-destructive testing study and the normal workload of visiting installations for scheduled measurements. We held the Spring meeting on April 26-27; many components of the Strategic Plan were completed and we had excellent discussions concerning development of new fertilization trials. These discussions continued over the summer and agreement on a plan was achieved at the Fall Meeting. Details regarding installation selection criteria were developed at a subsequent joint meeting of the Nutrition and Silviculture TAC's. The preceding issue of the SMC Quarterly provides a summary of the study design.

During the summer, through the Corkery Family Chair and various research grants, we were able to fund a summer crew, consisting of five students, that visited installations for site characterization, vegetation and habitat surveys, soil sampling, and other tasks. The database continues to grow and the update containing the 06/07 re-measurements was delivered in June. The database staff, has also been busy with a contract to develop an integrated database system for the national system of long term site productivity (LTSP) sites, and creating an integrated database for the non-destructive testing study. In terms of accomplishments, Masters students Cindy Flint and Nick Vaughn both completed their theses, SMC researchers produced 15 publications and had 10 presentations at various regional, national and international meetings. The BC Ministry of Forests Research Branch was successful in receiving a competitive grant of \$70,652 per year for the next 3 years from the BC

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Forest Science Program to support re-measurements of the SMC installations in BC. SMC researchers have also received about \$140,000 of external grant funds. The UW Gessel Fund and the Corkery Family Chair provided a combined total of about \$110,000 support for graduate students and the summer field crew.

As we start the new year of 2008, we look forward to working with the members in creating another eventful and productive year.

IN THIS ISSUE

The feature article presents some highlights from the recently completed SMC Owner Survey. The full report plus a Powerpoint containing all of the tables and slides can be downloaded from the SMC website, www.standmgt.org.

Please note the dates for the SMC meetings in 2008:

- √ Spring Meeting: April 22-23. It will be held at the Gifford Pinchot National Forest Headquarters in Vancouver, WA. We are planning to devote a portion of the meeting to a workshop on the young stand model.

- √ Fall Meeting: will be held in September on the Olympic Peninsula and will feature a field tour to visit one of the Genetic Gain Type IV installations and the Matlock Long Term Site Productivity Installation. We are presently reviewing location and date options.

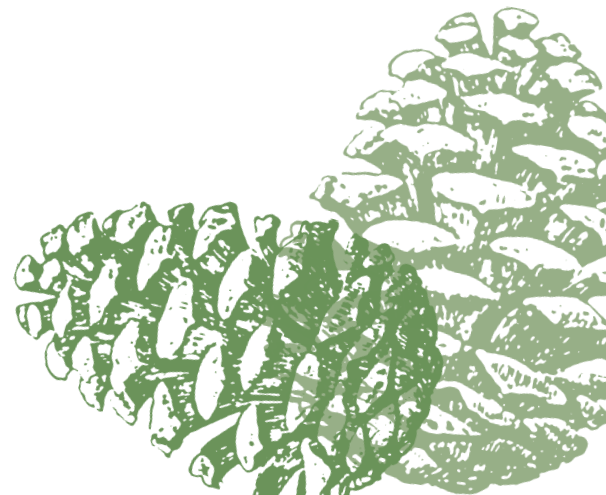
New Paired Tree Fertilization Study

In December and January, four Paired Tree Study plots were installed in Washington. The four plots are located near Elma and Adna in Western Washington. These plots were established by Bob Gonyea and Bert Hesselberg. We hope to install more of these plots by Spring. If you are interested in offering sites for these fertilization trials contact Rob Harrison (robh@u.washington.edu). Each contains 24 pairs (48 trees total) matched as closely as possible by DBH, height and height-to-live crown. One of each pair is randomly selected to be fertilized with 200 lb/ac N and the other is an untreated control.



Mark Your Calendars

The SMC Spring Meeting will be on April 22-23, 2008, at the Gifford Pinchot National Forest Headquarters in Vancouver, WA.



Management Practices on the Pacific Northwest West-side Industrial Forest Lands. 1991-2005: With Projections to 2010

Dave Briggs, SMC Director

Owner surveys were sent to SMC members in 2001 and 2006 to gather data on west-side silviculture practices from 1991 -2000 and 1996-2005 respectively. Members were also asked to provide projections of practices for the next 5 years. This report combines the data provided by 9 private sector respondents to the 2001 survey (Briggs & Trobaugh 2001) with data provided by 6 private sector respondents to the 2006 survey. Data from the respondents to each survey was pooled; hence, each survey considers the data as if it were the profile of a single composite private sector entity with holdings in Western Oregon and Washington, hereafter referred to as the “west side”. This summary focuses on aggregate trends and patterns for net timberland. Further details can be found in Briggs (2007).

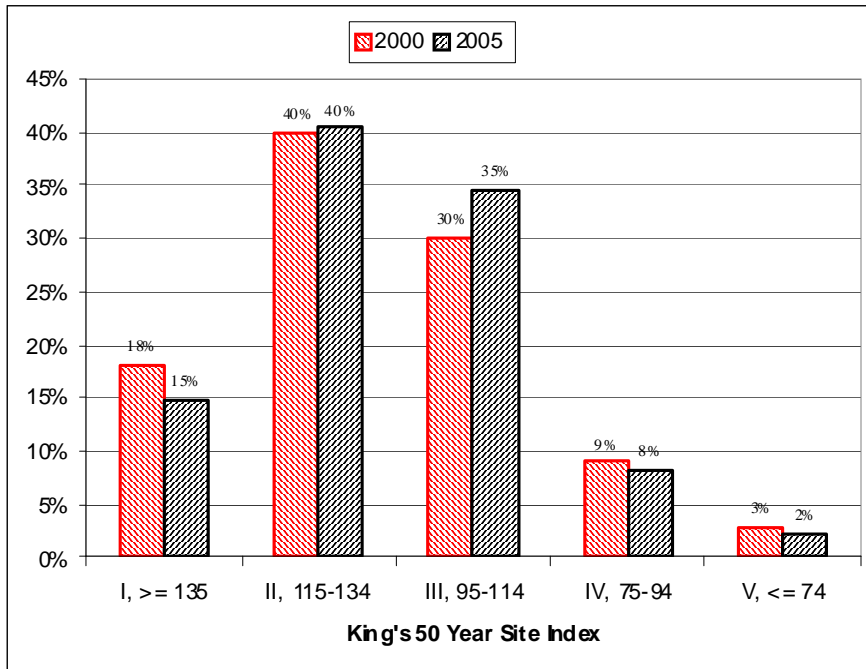
1. SMC industrial landowner members owned 5.2 of the 7.7 million acres of west-side industrial timberland. This 68% representation was the same in both surveys.

SMC Owner Survey Representation of Industrial Timberland in Western Oregon and Washington

	2000	2005
SMC % of gross West side industrial timberland	68%	68%
Average respondent, acres timberland	267191	256806
Respondents % of SMC land	45%	30%
Respondents % of West side industrial timberland	31%	20%
# Respondents, % of # SMC industrial landowners	53%	38%

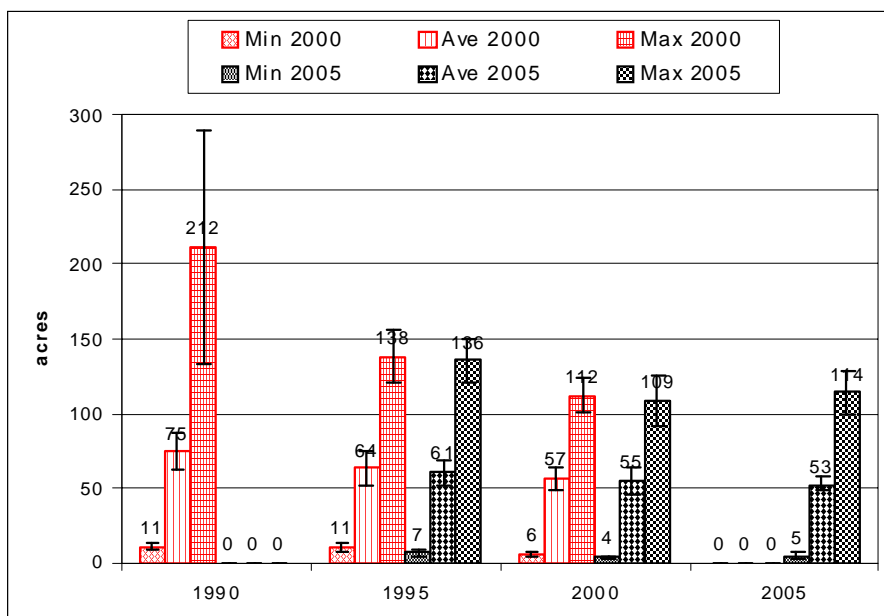
2. 53% of the SMC industrial landowners responded to the 2001 survey, representing 45% of the SMC industrial landowner acreage; the average respondent owned 267,000 acres. 38% of the SMC industrial landowners responded to the 2006 survey, representing 20% of the SMC industrial landowner acreage; the average respondent owned 257,000 acres.
3. 90% of 2001 and 88% of 2006 respondent timberland is in site classes I, II, and III.

SMC Owner Survey Respondent Net Timberland by Site Index (King 1966)



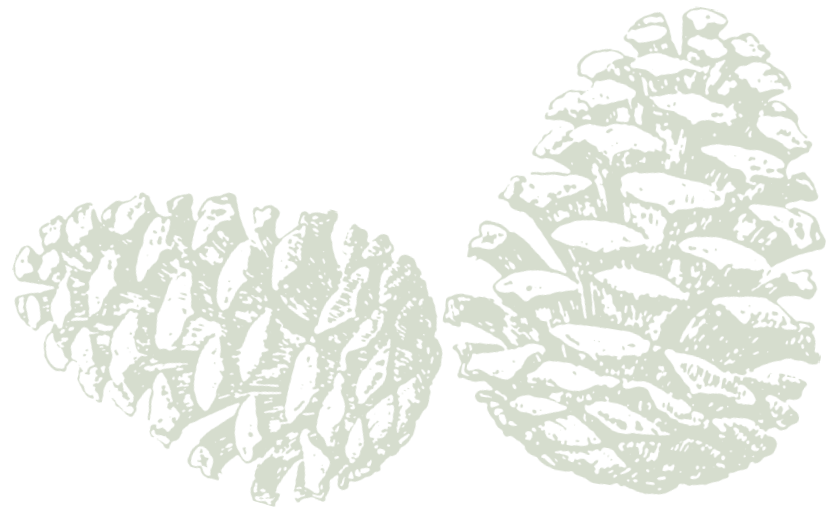
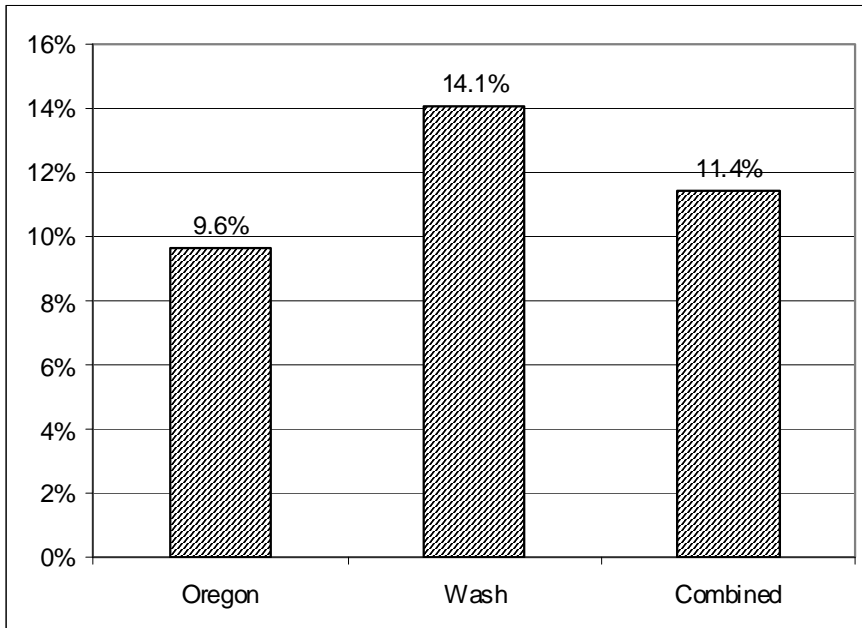
4. The average harvest unit size of the 2001 and 2006 respondents was 55 and 53 acres respectively.

Minimum, Average, and Maximum Harvest Unit Size, Acres, Reported in the 2000 and 2005 Surveys (±se)



5. Approximately 11.4% of west-side net timberland of 2006 respondents is either occupied by infrastructure (roads, etc.) or is constrained by regulations. Western Oregon had a lower (9.6%) reduction of net timberland than in western Washington (14.1%). These reductions are somewhat higher than those reported by the 2001 respondents.

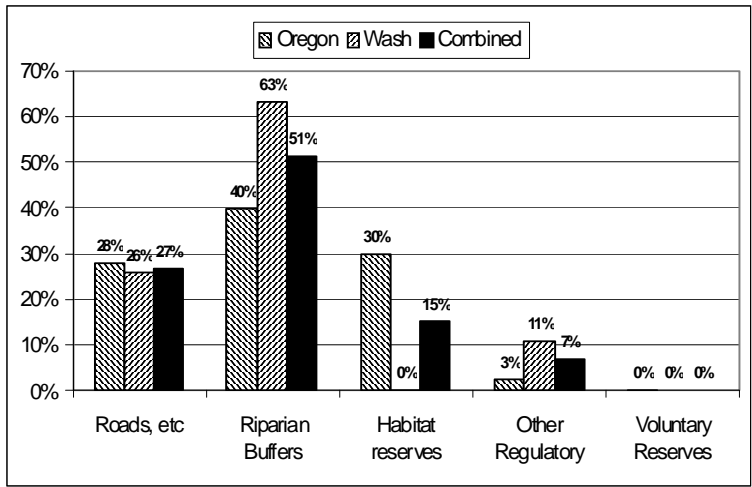
Unmanaged Net Timberland, % by State, 2006 Survey Respondents





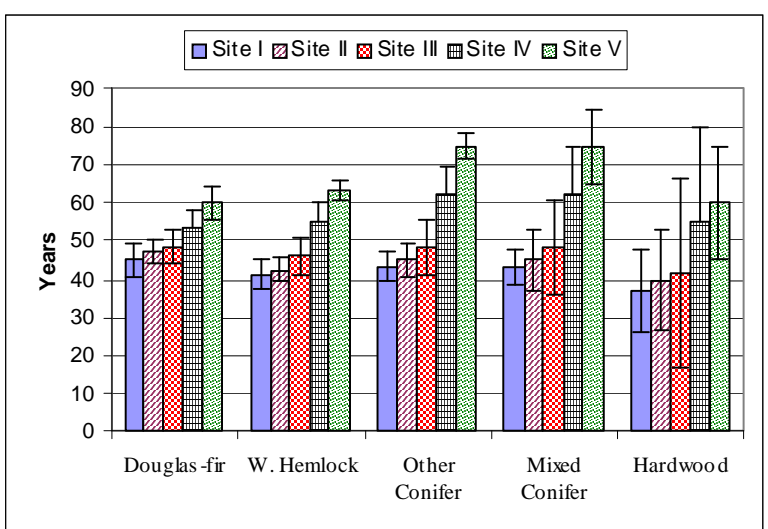
- 6. While net timberland reductions due to infrastructure were about the same in western Oregon (28%) and western Washington (26%), reductions due to riparian buffers (40% in western Oregon, 63% in western Washington) and habitat reserves (30% in western Oregon, 15% in western Washington) were very different.

Reasons for Unmanaged Net Timberland, by State, 2006 Survey Respondents



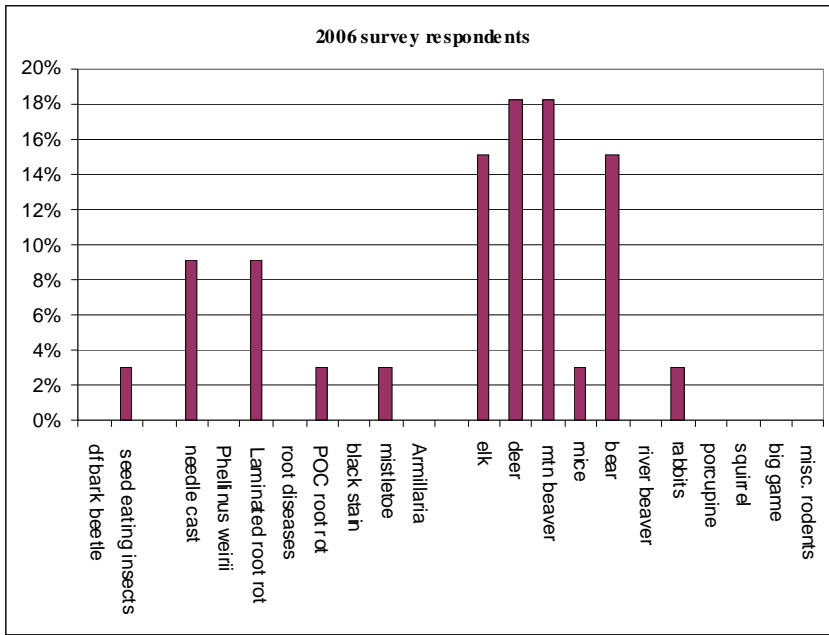
- 7. The average rotation length, over all site classes, of the 2001 respondents was 50-55 years for conifers and slightly more than 40 years for hardwoods. 2006 respondents were asked to provide rotation length by site class. For site classes I-III, the average rotation for conifers was less than 50 years and decreased with increasing site index. The average rotation for hardwoods has also shortened and also decreases with increasing site index.

Rotation age by Species and Site Class: 2006 Survey Respondents. (±se)



8. The four pests most frequently cited in both surveys were mammals (bear, deer, elk, mountain beaver). The next most commonly cited problem was Swiss needle cast.

Frequency of Pest Issues, 2006 Survey Respondents



9. The following table presents approximate 5-year ranges of the percentage of net timberland on which various silvicultural practices were conducted. Further details with respect to trends over time and differences among species can be found in the chapters on these practices.

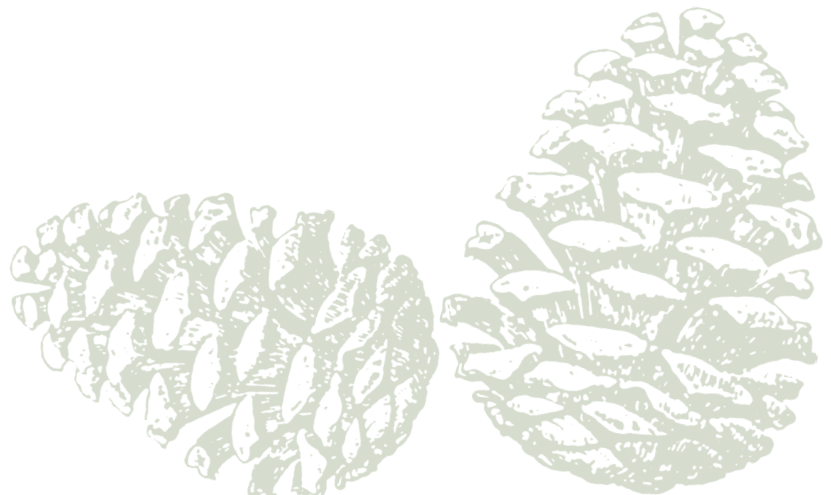
Practice	1991-1995	1996-2000	2001-2005	2006-2010 est.
Site preparation	0.8-1.2%	0.9-1.6%	1.4-2.0%	2.4%
Regeneration	2.3-2.6%	1.5-2.3%	1.6-2.4%	2.5%
Vegetation management	2.3-2.7%	1.5-2.9%	2.0-2.4%	1.8%
Pre-commercial thinning	0.5-0.8%	0.15-0.48%	0.22-0.38%	0.22-0.68%
Commercial thinning	0.3-0.6%	0.38-0.78%	0.1-0.28%	0.2-0.33%
Fertilization	0.5-1.2%	1.5-3.5%	0.5-2.5%	1.5%
Pruning	0.000-0.016%	0.001-0.020%	0.001-0.005%	0.002-0.005%



10. Minimum, average, and maximum costs for silvicultural practices reported by survey respondents. Mean values and standard errors.

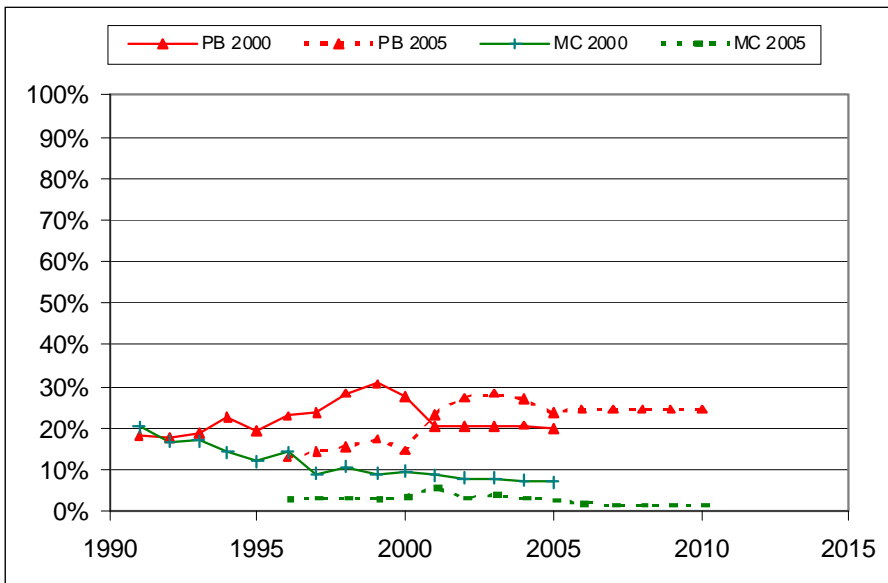
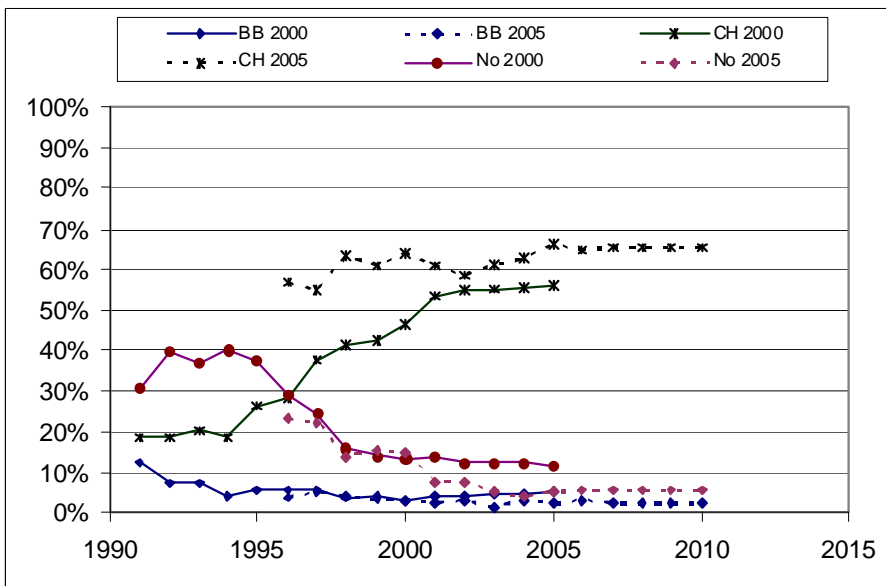
Minimum, Average, and Maximum Costs for Silvicultural Practices: 2000 and 2005.
All costs are per acre except as noted.

	2000 Survey						2005 Survey					
	Minimum		Average		Maximum		Minimum		Average		Maximum	
	mean	se	mean	se	mean	se	mean	se	mean	se	mean	se
Site Preparation												
Broadcast Burn	\$ 120	\$ 42	\$ 217	\$ 60	\$ 330	\$ 119	\$ 162	\$ 148	\$ 205	\$ 105	\$ 230	\$ 80
Pile & burn	\$ 106	\$ 20	\$ 140	\$ 26	\$ 241	\$ 45	\$ 127	\$ 32	\$ 140	\$ 38	\$ 178	\$ 15
Chemical	\$ 63	\$ 10	\$ 82	\$ 6	\$ 108	\$ 10	\$ 56	\$ 3	\$ 69	\$ 5	\$ 83	\$ 11
Other	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 127	\$ 124	\$ 140	\$ 135	\$ 149	\$ 142
Planting												
6x6 1210 tpa												
8x8 680 tpa												
9x9 540 tpa							\$ 138	\$ 32	\$ 148	\$ 37	\$ 168	\$ 39
10x10 440 tpa							\$ 78	\$ 6	\$ 98	\$ 14	\$ 118	\$ 14
11x11 360 tpa							\$ 70	\$ 0	\$ 90	\$ 0	\$ 105	\$ 5
12x12 300 tpa												
15x15 200 tpa												
21x21 100 tpa												
Vegetation Control												
year 1 herbaceous	\$ 47	\$ 2	\$ 61	\$ 3	\$ 77	\$ 5	\$ 30	\$ 10	\$ 54	\$ 3	\$ 72	\$ 4
year 2 herbaceous	\$ 46	\$ 2	\$ 56	\$ 2	\$ 75	\$ 4	\$ 29	\$ 9	\$ 57	\$ 10	\$ 75	\$ 2
woody release	\$ 29	\$ 4	\$ 53	\$ 7	\$ 100	\$ 15	\$ 28	\$ 5	\$ 56	\$ 8	\$ 95	\$ 12
other	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
Thinning												
pre-commercial	\$ 62	\$ 4	\$ 96	\$ 3	\$ 167	\$ 15	\$ 81	\$ 13	\$ 104	\$ 14	\$ 152	\$ 23
commercial	\$ 793	\$ 169	\$ 950	\$ 172	\$ 1,100	\$ 195	\$ 900	\$ 300	\$ 1,138	\$ 463	\$ 1,875	\$ 1,125
Fertilization												
	\$ 59	\$ 2	\$ 64	\$ 2	\$ 69	\$ 3	\$ 88	\$ 10	\$ 97	\$ 8	\$ 98	\$ 12
Pruning												
per acre	\$ 279	\$ 79	\$ 308	\$ 51	\$ 350	\$ 100	\$ 225	\$ 125	\$ 363	\$ 63	\$ 520	NA
per tree	\$ 1.95	\$ 0.05	\$ 2.04	\$ 0.19	\$ 2.45	\$ 0.05	\$ 2.20	NA	\$ 2.70	\$ 0.30	\$ 2.60	NA



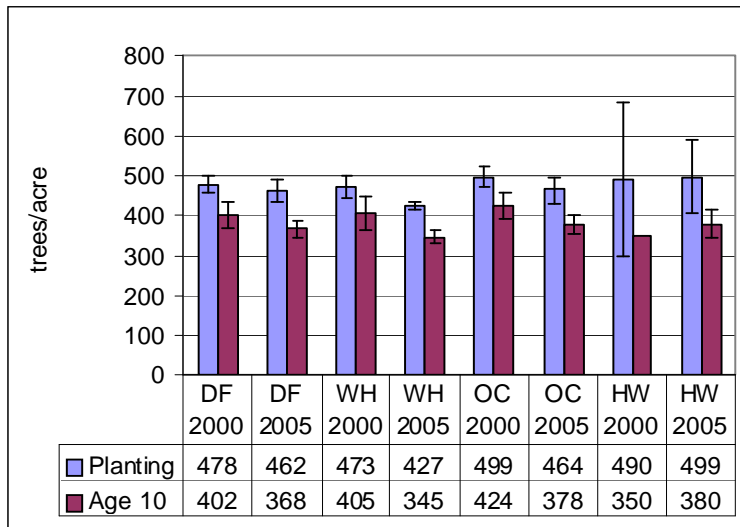
11. In the early 1990's, no site preparation was conducted on about 20% of units, about 20% received chemical site preparation, 20% pile and burn and the balance was split between mechanical and broadcast burning. This has shifted dramatically, only 10% have no site preparation, 60% are chemically treated, 20% pile and burn and mechanical and broadcast burn have dropped to about 5% each. Chemical site preparation is almost entirely based on pre-emergent herbicides.

Site Preparation Trends for the 2001 and 2005 Surveys, Percent by Method. No site preparation (No), Broadcast burn (BB), pile & burn (PB), mechanical (MC), chemical (CH)



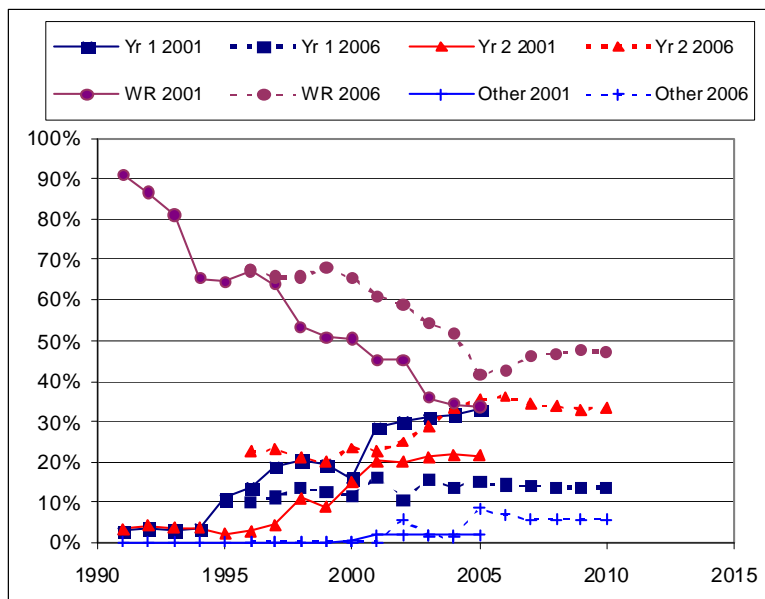
12. Regeneration stocking targets at planting and age 10 dropped slightly between the surveys. Mean planting stocking ranged from 427-499 trees/acre depending on species. At age 10 the means of desired stocking targets ranged from 345-424 trees per acre.

Regeneration Stocking Targets by Species (\pm se). Douglas-fir (DF), Western hemlock (WH), other conifer (OC), hardwood (HW)



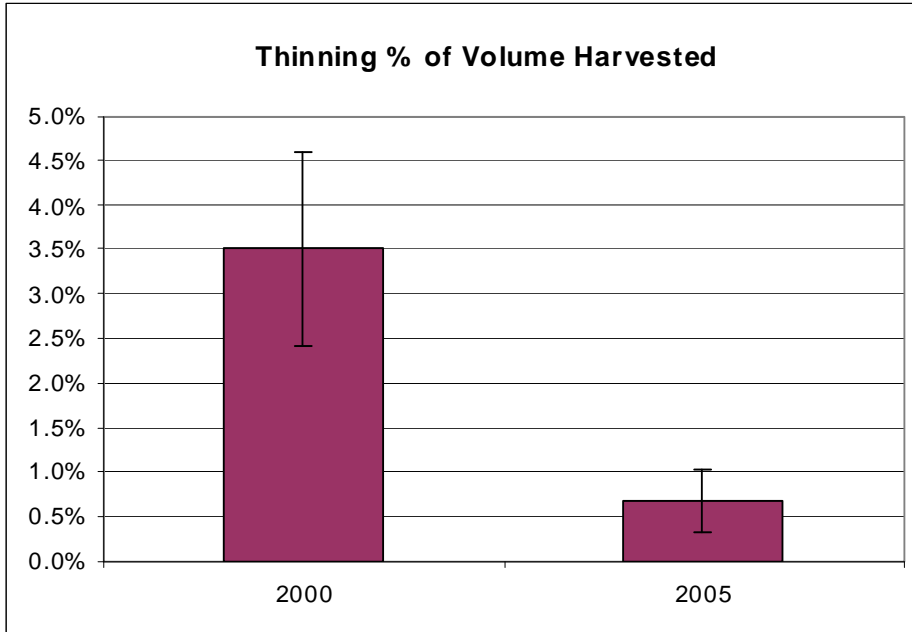
13. Competing vegetation management was about 90% woody release in 1991 which has dropped to 40-50% today. The use of chemical herbicides in year 1 and/or year 2 following planting account for most of the change.

Vegetation Management, Percent by Method. Year 1 herbicide (Y1), Year 2 herbicide (Y2), woody release (WR), Other



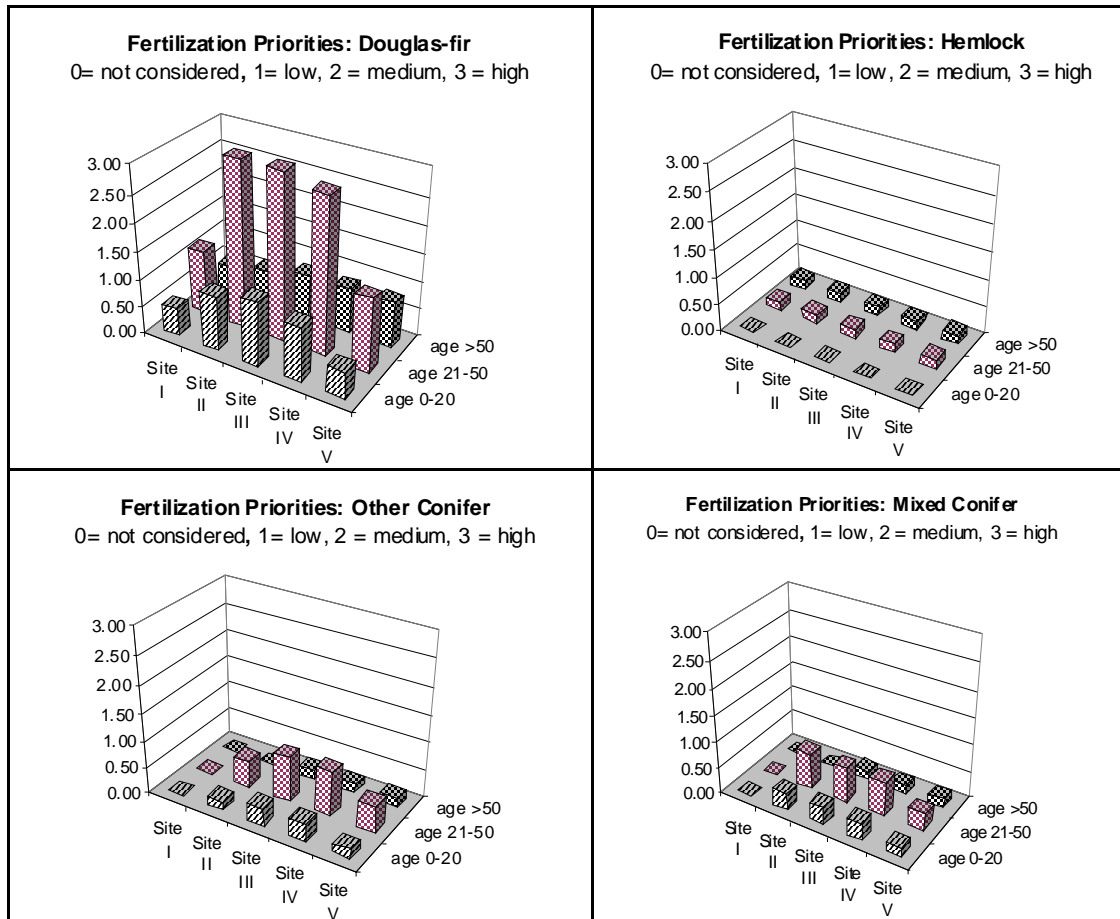
14. Commercial thinning has dropped from 3.5% to about 0.67% of harvest volume. The reduced level of commercial thinning may be the result of the combination of trends toward lower early stand density, (wider planting spacing and use of PCT) shortening of the rotation, and high cost of thinning.

Commercial Thinning Volume as a % of Total Harvest Volume (\pm se)



15. Fertilization was done almost exclusively on Douglas-fir, mainly age 21-50 stands on sites II-IV, and with 200 lb/acre N as urea.

Fertilization Priority Rankings of 2006 Survey Respondents by Species, Age Class, and Site Class



16. Pruning has dropped from relatively high levels at the time of the pruning symposium in 1992 to negligible levels today.

References

Briggs, David, John Trobaugh. 2001. Management Practices on Pacific Northwest West-side Industrial Forest Lands: 1991-2001 with Projections to 2005. Working Paper # 2. Stand Management Cooperative. College of Forest Resources, University of Washington, Seattle, WA. 65pp

Briggs, David. 2007. Management Practices on Pacific Northwest West-side Industrial Forest Lands: 1991-2005 with Projections to 2010. Working Paper # 6, Stand Management Cooperative, College of Forest Resources, University of Washington, Seattle, WA. 72pp

Abstracts and Publications

Wood density in *Pinus taeda* x *Pinus rigida* and response 10 years after thinning in Virginia. P. David Jones and Thomas R. Fox. Forest Products Journal; December 2007, Vol. 57 Issue 12 p70 (4)

Abstract

The purpose of this study was to examine the differences between wood density of loblolly pine and selected pitch pine X loblolly pine crosses, differences in density of the different pitch pine X loblolly pine crosses, and to examine the effect of thinning on the hybrid crosses. 153 trees were sampled, including 17 loblolly pines and 136 pitch pine X loblolly pine hybrids grown in the Piedmont of Virginia (USA). The hybrid pines sampled included trees from 16 different crosses released at four different levels based on the free to grow (FTG) value: C = FTG <2, L = FTG 2 to 4, M = FTG 4 to 6, H = FTG >6. There was a significant difference between the wood density of the hybrid crosses and the loblolly pine ($p = 0.0428$). It was also found that there were significant differences between the crosses. The densities ranged from 483 kg/[m.sup.3] to 555 kg/[m.sup.3], with significant differences between many of the crosses ($p = 0.007$). These differences were associated with significant differences in the percentage of latewood produced ($p = 0.015$). The correlation between latewood percentage and wood density was calculated to be $r = 0.825$. Trees released at a FTG >6 were significantly less dense than the other release rates ($p = 0.007$); the difference was related to the percentage of latewood, which was also significantly different ($p = 0.004$). This study indicates that the wood density of pitch pine X loblolly pine hybrids is high enough within crosses with low density and a FTG value >6 to produce wood similar to loblolly pine grown in the Piedmont of Virginia.

Forest thinnings: for integrated lumber and paper production. J.Y. Zhu, C.T. Scott, R. Gleisner, D. Mann, D.W. Vahey, D.P. Dykstra, G.H. Quinn and L.L. Edwards. Forest Products Journal; November 2007, Vol. 57 Issue 11 p8 (6)

Abstract

Integrated lumber and paper production using forest thinning materials from U.S. National Forests can significantly reduce the cost of prescriptive thinning operations. Many of the trees removed during forest thinnings are in small-diameter classes (diameter at breast height [less than or equal to] 6 in) with suppressed growth. These trees produce low lumber yield but can produce quality thermomechanical pulps (TMPs) due to uniformity of wood density and tracheid wall structure and a high mature wood fraction. This was demonstrated in commercial trials conducted at a lumber mill and a newsprint mill in the U.S. Pacific Northwest. Whole log and residual chips from forest thinnings produced at the lumber mill were combined with chips from normal pulping operations to produce newsprint. In all TMP trials, no significant change was found in correlations between the pulp long fraction and the pulp Canadian Standard Freeness.

Abstracts and Publications cont.

The future of Washington's forests and forestry industries-Final report July 31, 2007. Prepared for the Washington Department of Natural Resources as requested by the Washington State Legislature by the College of Forest Resources, University of Washington.
www.ruraltech.org/projects/fwaf/final_report/index.asp

Executive Summary

Forest lands in Washington State have provided many products, services and benefits for its citizens, the nation and other countries. Linked to these forest lands are (i) the forest landowners, (ii) the industry that currently gives forest lands their value, and (iii) local, national and international communities that place both complementing and competing demands on these forest lands. The future of these forest lands and forest industries is the subject of this report.

The report, as requested by the 2005 State Legislature, provides findings of research over the past two years to study the timber availability conditions and management alternatives, the economic contributions the forest lands directly and indirectly make, the competitiveness of the industry in Washington, the land-use pressures that exist for these lands, and the financial returns of State-owned forest lands. The study was implemented by teams of researchers; each team focused on a specific topic.

The study areas are linked by the influences of alternative management options for forest lands and their effects on the economic performance, the industry's competitiveness and impacts of land use pressures. The studies provide a rich array of information from which the Washington Department of Natural Resources (DNR) and the University of Washington, College of Forest Resources (CFR) collaboratively developed policy recommendations for the Legislature. The findings identified issues that require deliberation and actions on the part of policy makers and stakeholders. The issues that are not yet clearly defined and require additional research are noted. With the identification of issues we fulfill a major objective of the study: a discussion of the future conditions of forest lands and forest industries in Washington State.

We briefly introduce the study areas then present a summary of the findings offered in each topical study. Issues and their discussion are then followed by each individual study that provides greater detail of the summarized findings. The reader is invited to peruse these reports for a clear presentation and discussion of the research findings. Citations for findings reported here and attributable to other studies are provided in the studies and discussion papers.



Upcoming Meetings and Events

January 31, 2008, University of Washington Focus the Nation: Global warming solutions for America. University of Washington.
For more info please visit: www.depts.washington.edu/uwfocus/.

April 22-23, 2008, SMC's Annual Spring Meeting. Gifford Pinchot National Forest Headquarters in Vancouver, WA.



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