Effects of early herbaceous and woody vegetation control on eastern white pine
Sponsors – Thanks!

- Canadian Ecology Centre – Forestry Research Partnership (Tembec, Canadian Forest Service, Ontario Ministry of Natural Resources)
- Living Legacy Trust
- Enhanced Forest Productivity Science Program (Forestry Futures Trust)
- Canada Foundation for Innovation
- Ontario Innovation Trust Fund
- Monsanto Canada Inc.
- Forest Protection Limited (FPL)
- Dow AgroSciences Canada Inc.
- Domtar Wood Products Inc.
- Nipissing Forest Resource Management Inc.
- J.D. Irving Limited
- U.S. Forest Service
Goals

Advance awareness and understanding

*How* and *when* to target vegetation management efforts to maximize white pine growth and quality…
Questions

- What are the impacts of low-growing “herbaceous” vegetation?
Questions

Does woody vegetation provide any benefits? If so, for how long and at what density?

Does herbaceous vegetation interact with the above?
Questions

Does vegetation management influence conditions that favor pests?
Installations

- Doug Pitt – CWFS
- Bill Parker, Andree Morneault, Wayne Bell, Michael Irvine – OMNR
- Al Stinson – FRP
Ontario white pine shelterwood site
New Brunswick white pine shelterwood site

Len Lanteigne – CWFS
Greg Adams – JD Irving Ltd.
Dave Davies – Forest Protection Ltd.
Design
50% veg. cover / 22% pine cover
84% veg. cover / 5% pine cover
74% veg. cover / 18% pine cover
93% veg. cover / 6% pine cover
SVI (cm³) – Year 6, Clearcut

Year of woody release vs. Years of herbaceous suppression.
SVI (cm³) – Year 6, Clearcut

Year of woody release

Years of herbaceous suppression

60% 34% 22%

2000 2002 2005 none
SVI (cm³) – Year 6, Clearcut

Year of woody release

Years of herbaceous suppression

- 2000
- 2002
- 2005
- none

- 0
- 2
- 4

SVI (cm³)
SVI (cm³) – Year 6, Clearcut

- Year of woody release
- Years of herbaceous suppression

- 2000: 5.8x
- 2002: 3.4x
- 2005: none
- none: 5.8x
SVI (cm³) – Year 6, Clearcut

Year of woody release

Years of herbaceous suppression

0 2 4

2000 2002 2005 none

5.8x 3.4x
SVI (cm³) – Year 6, Clearcut

- Continuous complete vegetation removal

Year of woody release:
- 2000: 7x
- 2002: 12x
- 2005: 10x
- none: 5.8x

Years of herbaceous suppression:
- 0
- 2
- 4

Bar chart showing the change in SVI over different years and levels of herbaceous suppression.
SVI (cm³) – Year 6, Clearcut

Year of woody release

Years of herbaceous suppression

Continuous complete vegetation removal

Operational release (2002)
Height (cm) – Year 6, Clearcut

Operational release (2002)

Weevil Attack!

Continuous complete vegetation removal

Operational release (2002)

Years of herbaceous suppression

Year of woody release

2000 2002 2005 none

24% 45% 60% 37% 5% 7% 4% 11% 26%

0% 0% 3% 0% 3% 4% 0% 3% 7% 11% 26%
Height (cm) – Year 6, Clearcut
Height (cm) – Year 6, Clearcut

Maximize height

Year of woody release

Years of herbaceous suppression

Height (cm) – Year 6, Clearcut
Diameter (mm) – Year 6, Clearcut

Maximize diameter

Maximize height

Years of herbaceous suppression

Year of woody release

Years of woody release

Diameter (mm) – Year 6, Clearcut
SVI (cm³) - Year 6, Shelterwood ON

Stem volume index (cm³) - year 6, 2007

Operational release (2002)

Year of woody release:
- 2001: 177
- 2003: 180
- 2006: 80
- none: 73
- 2006: 141
- 2001: 162

Years of herbaceous suppression:
- 2001: 0
- 2003: 2
- 2006: 4
- none: 1

120 cm x 13 mm
Stem volume index (cm³) – year 6, 2007

Operational release (2002)

Year of woody release

Years of herbaceous suppression

140 cm x 19 mm

2001 2003 2006 none

177 180 80 73

534 2.4x 7

997 242 240 141 162 408

0 2 4

(2002)
SVI (cm$^3$) – Year 6, Shelterwood ON

Stem volume index (cm$^3$) – year 6, 2007

Year of woody release

Years of herbaceous suppression

- 2001: 177
- 2003: 180
- 2006: 80
- none: 73

- Operational release (2002)
- > 190 cm x 31 mm
SVI (cm³) – Year 6, Shelterwood NB

Stem volume index (cm³) – year 6, 2007

- Operational release (2002)
- Continuous complete vegetation removal
- Operational release (2002)

Year of woody release

- 2001
- 2003
- 2006
- none

Years of herbaceous suppression

- 0
- 2
- 4

- 9x
- >5x
- 50-80%
- >3x
Conclusions

1) Weed control is important
2) Act early – “the longer we delay, the more we pay”
3) Clearcut – herbaceous control
4) Shelterwood – early herbaceous AND woody control
Options for early herbaceous control…

…or spot spraying, through modified application technology.

Directed application w. glyphosate (hexazinone?, imazapyr?)
Jul. 17, 2006, Shelterwood ON