



So, we have planted; now what?

3/7/2017



**Hancock
Forest
Management®**

*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*

Patrick Marolla
Silviculture Manager

1604 27th Street
La Grande, OR 97850

www.hancocktimber.com



Where did we start?

HFM's story

- Large fires – varying intensity
- Salvage Logging
- Aggressive Site Prep
- Planting



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*



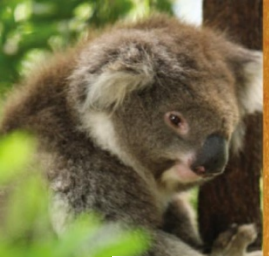
HFM's Goals

- Capture any salvage value
- Reforest as quickly as possible
- Keep costs low
- 90%+ Survival



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*

Starting Point – post fire/ logging



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*



Do we need to site prep?



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*



No Site Prep – 1 year after fire



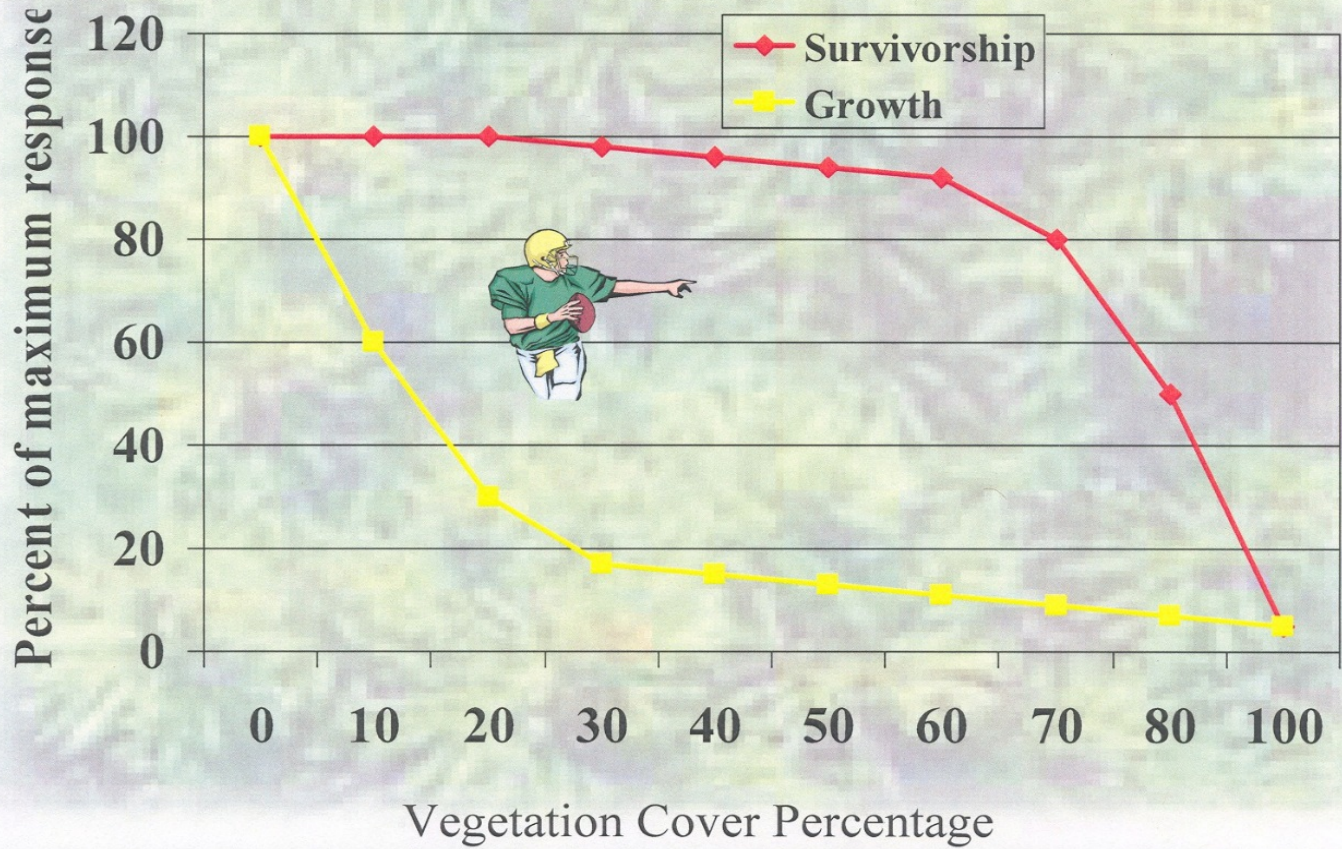
*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*



Impacts of veg control

Competition Football

(Wagner et al.)





No site prep vs site prep

Impact on trees



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*



Post-fire site prep

- Re-growth of veg occurred very fast
 - Perennials returned by fall of same year
 - Large flush of veg next spring
- Need soil residuals and foliar products
- Wait for re-sprouting of woody brush
- Similar to post-logging site prep



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*



Tools – aka **chemicals**

Common site prep chemicals

■ Foliar Products

- Glyphosate
- Impazapyr
- 2,4-D
- Escort

■ Soil Residual Products

- Atrazine
- Oust
- Velpar



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*



Know your chemicals..

- Roundup Pro Concentrate vs Accord XRT II vs Rodeo vs Gly 5.4?
- Polaris SP vs Polaris AC?
- Oust XP vs Oust Extra?
- AI%
- Name brand vs generic
- Surfactants
- **READ THE LABEL**

Common Site Prep Rx

2 qtrs. Accord XRTII
10-16 oz Polaris SP
16 oz MSO



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*



Chemical labels

Know what your spraying

Nufarm

Polaris® SP

Herbicide

For control of undesirable vegetation on forestry sites, pasture, rangeland and industrial noncropland areas including railroad, utility, pipeline, highway rights of way, utility plant sites, petroleum tank farms, pumping installations, storage areas, non-agricultural fence lines, non-irrigation ditchbanks, road rights-of-ways, transmission right-of-ways, and industrial bareground areas, and for the establishment and maintenance of wildlife openings.

ACTIVE INGREDIENT:

Isopropylamine salt of Imazapyr (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid)..... 27.6%

OTHER INGREDIENTS:..... 72.4%

TOTAL:..... 100.0%

* Contains 2.45 lbs/gal of the isopropylamine salt of imazapyr, or 2.0 lbs/gal of imazapyr acid equivalent.

KEEP OUT OF REACH OF CHILDREN
CAUTION

SEE INSIDE BOOKLET FOR FIRST AID AND ADDITIONAL PRECAUTIONARY STATEMENTS

EPA Reg. No. 228-536

For Chemical Spill, Leak, Fire,
or Exposure, Call CHEMTREC
(800) 424-9300

For Medical Emergencies Only,
Call (877) 325-1840

Manufactured for
Nufarm Americas Inc.
11901 S. Austin Avenue
Alsip, IL 60803



A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company



Site Prep Timing

Spring vs Fall

- Pre-spray units same year as planting
 - Veg actively growing
 - Post-application moisture for some chemicals
- Avoids site prep to planting delay
 - Prevents re-invasive of many species
- 1st year of growth is weed free improvement
- Maybe less successful with high brush



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*



Post site prep



- Spring Spray
- 1 gal Atrazine
- 0.5 gal Round Up Pro Concentrate
- Aerial and hand

Fall after spring spray



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*

Fall – 1 year after fire





No planned seedling?

- Unplanned harvesting
- Spike in reforestation acres
- Have trees but wrong species or seed zones
- Options:
 - Defer reforestation?
 - Other options?



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*



Learning from Southern Oregon

- Learned about styro 4 ponderosa pine in CA
- Small trial in Medford
- Cal Forest Nurseries
- How fast can we grow an styro 4 PP?



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*



Cal Forest Styro 4 time line

- Property burned August 2015
- Salvage logged October-December 2015
- Trees Sowed early January 2016
 - 285M seedlings for 2 regions
- Hot Lifted and Planted May 2016

Cal Forest Nurseries



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*



Monitoring performance of styro 4s



- 6 plots
 - 3 NEO
 - 3 NEWA
 - Simple row plots
 - Measured
 - caliper
 - Height



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*



Monitoring performance underground

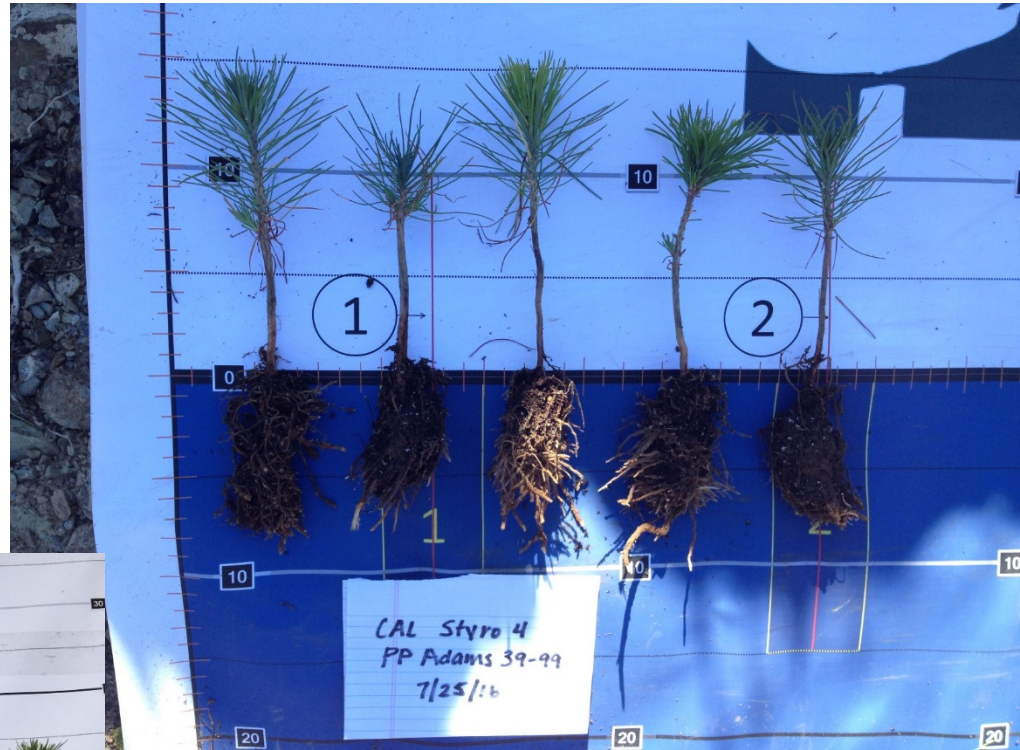


A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company

Monitoring performance underground



Site Prep with **No Oust**



Site Prep with **Oust**





1st year performance results

- Survival – 98% on plots and operational units
- Caliper – 3.8mm
- Height growth – 2 cm
- Root growth faster than traditional pine



A Manulife Asset Management Company



Lessons learned

- Communicating and working with nurseries
- Seed Inventory
- Need proper site prep
- Logistics can be challenging
- Higher risk
- Seedling handling care



Monitoring and follow up

- Questions to answer:
 - What is my **seedling survival** rate?
 - Where/what are my **best performing sites**?
 - Did my **herbicide** treatment work?



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*



Setting performance **expectations**

- Impacts to growth
 - What you did before planting
 - Species
 - Site Index
 - Site Location
- Survival
 - Should be the same



Performance expectations



**Hancock
Forest
Management**

*A Division of Hancock Timber
A Manulife Asset Management*



Monitoring - stocking surveys

- Grid units with plots
 - 1/50 or 1/100
- Only record information you will use
 - Species
 - Height
 - Planted or Natural
- Rely on statistics
 - Rarely need more than 20 plots
- Spatial component?
 - GPS plot locations
 - Helps identify problem areas/ partial units



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*



Monitoring - permanent regen plots

- Pros
 - Better data
 - Multiple measurements on the same trees
- Cons
 - Long-term commitment
- 20 per unit
- 1/100 ac plots
- Recorded at:
 - Planting
 - Year 1
 - Year 2



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*



Monitoring - vegetation

- Pre spray conditions?
 - Existing vegetation
- When and how was it sprayed?
 - Timing, weather
- What was sprayed (Rx)?
- Monitor through out the following year
 - Species missed?
 - Species reinvading?
 - Tree damage?
- Look at the same areas over time



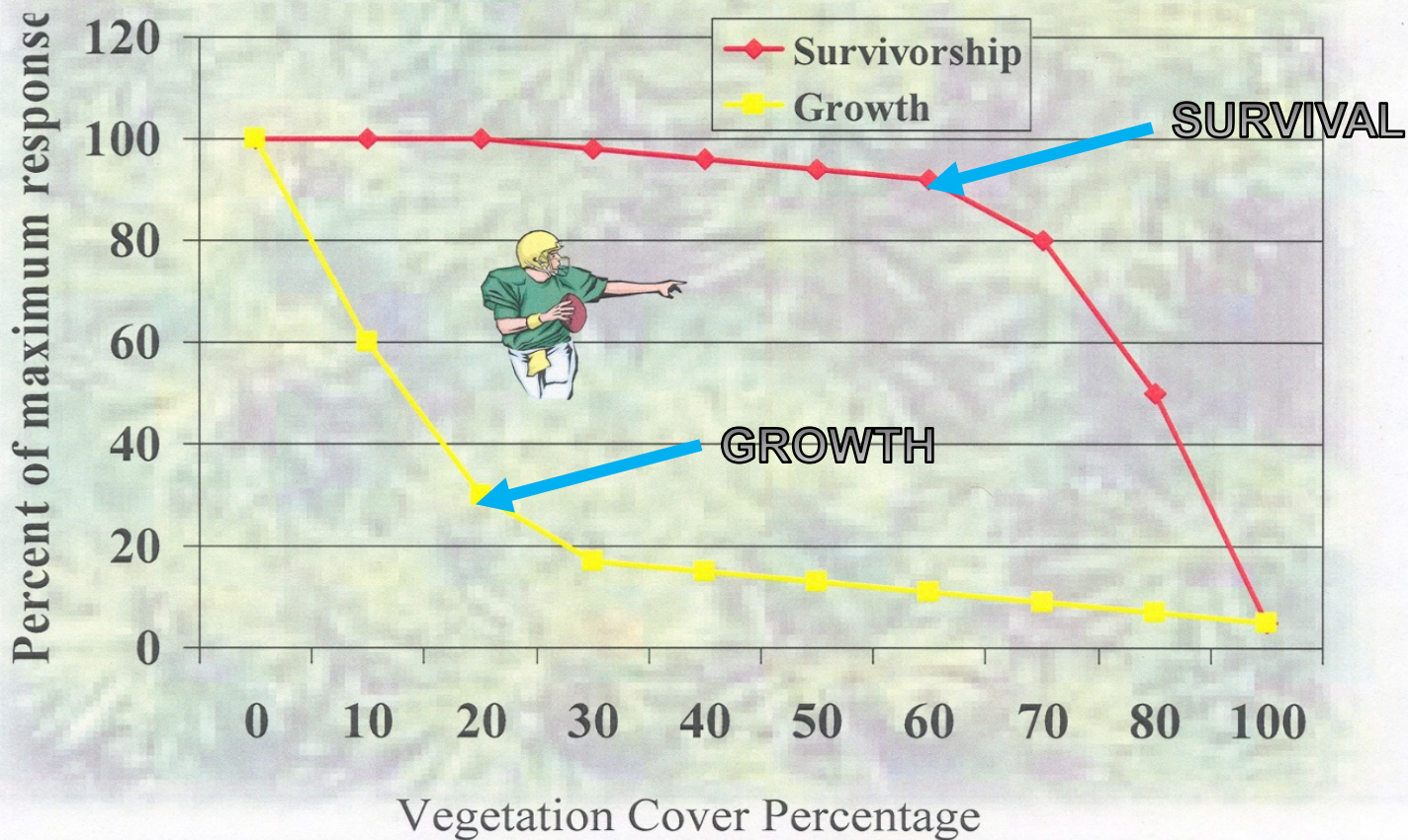
A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company



Do I need a release treatment?

Competition Football

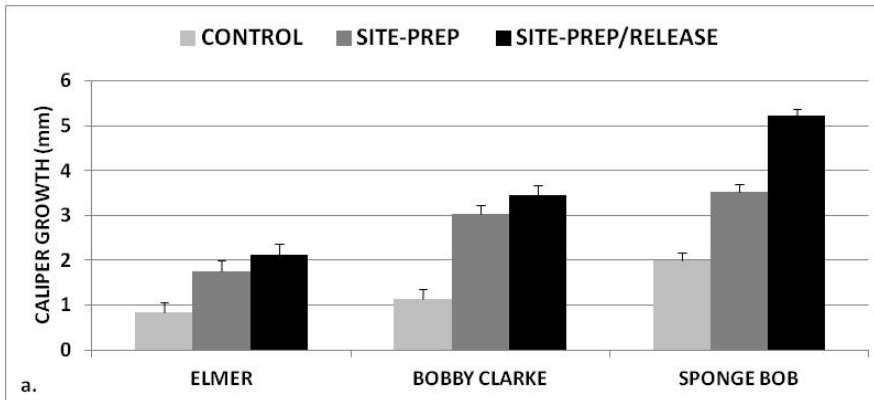
(Wagner et al.)



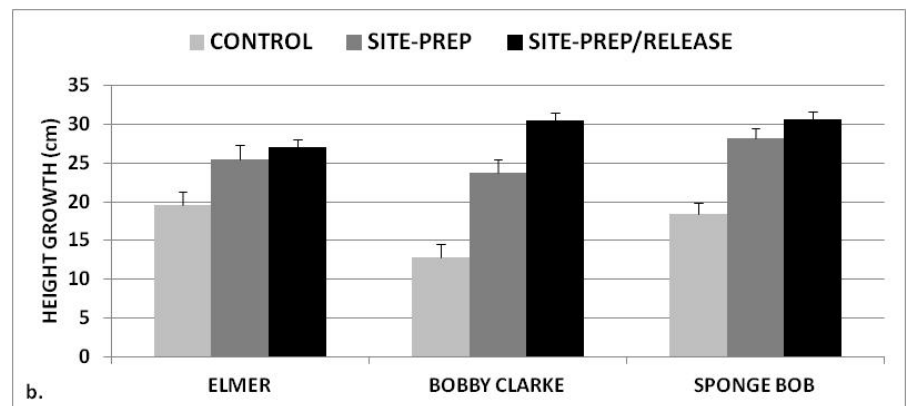


Growth benefits on larch

Caliper



Height



A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company



Herbicide release treatments

- Goal is typically survival
 - 2nd impact is growth
- Catch and treat early
 - 1st year
 - Before mortality
- Identify unit during the 1st growing season
- Treat fall of year 1 or spring of year 2
 - Before moisture stressed



Release Treatments

- Larch Release Rx
 - 8 oz Transline
 - 2 oz Oust
- DF Release Rx
 - April by hand
 - 1 gal Velpar L





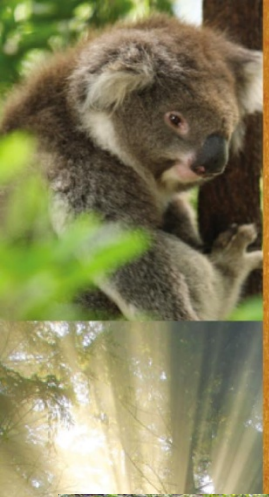
Common chemicals for release Rx's

■ Larch

- Transline
- Oust
- Atrazine

■ DF

- Atrazine
- 2,4 D
- Velpar
- Transline
- Oust



Tree Damage

- Need to know chemical's/ rates
 - Tree safety
- Timing
 - Before bud break





Where did my trees go?

Do I need to just start over ?

- Trigger points
 - Low stocking
 - Low survival
 - Veg out of control
 - >60% cover
 - Do not meet state requirements
- Can cost less money in the long run
- Can be higher net present value



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*



Starting over?

- Determine what went wrong?
 - Species?
 - Veg?
 - Stock type/ Seedling?
- Start with proper site prep
 - Understand and use the right Rx
- May have to sacrifice survivors



doing the same thing over and over again and expecting a different result?



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*



Continued monitoring and follow up

- Documentation
- Mapping
- Revisit sites
- Trust your data (Stocking/ regen data)



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*

Questions???



*A Division of Hancock Timber Resource Group,
A Manulife Asset Management Company*