Vegetation Management: How Much Is Enough?

June 4, 2014

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Douglas-fir

7 Years Old

Vegetation Management: How Much Is Enough?

June 4, 2014

4 years old

7 years old

Summary

Every organization will look at silvicultural costs differently.

Every organization will define how much silvicultural investment Is enough.

You are usually competing for capital dollars. Southern pine is a tough competitor.

Be thoughtful about any investments. Be careful with fads.

The treatment package gives the yield.

Continue to push knowledge, techniques and yields forward. Support good research and gather good data for decision making.

Supporting Culture

Managers may change frequently. Most are log/logging oriented. They should question treatments and costs.

Develop staff with expertise on treatment response and finances that managers trust and respect.

Develop an organizational understanding to the importance of intensive silviculture for future yields.

Develop a systems for budgeting and operations to ensure treatments are made.

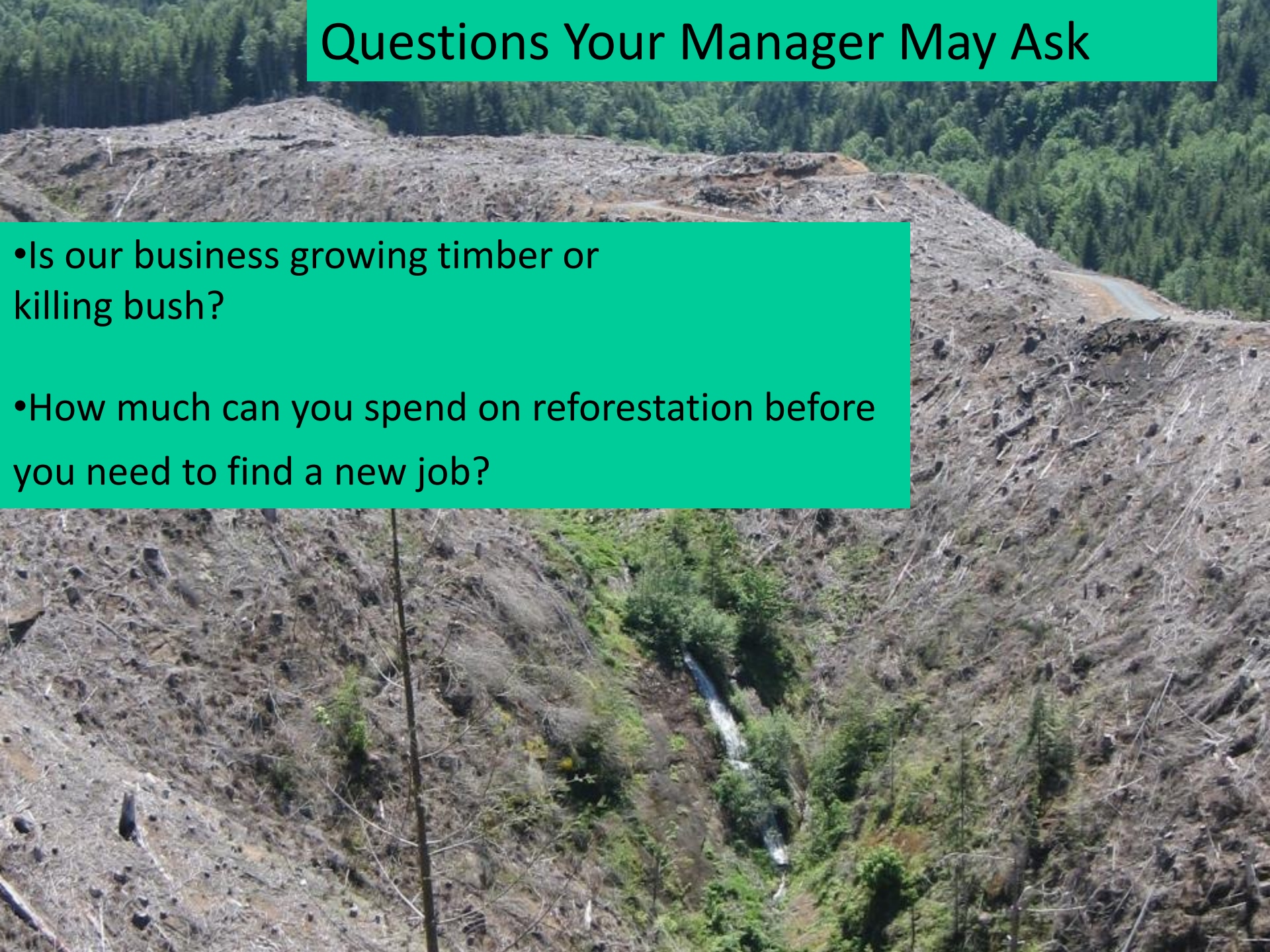
Develop some visual field examples of response. Have a maximum production site.

Questions Your Manager Will Ask

- What are our essential treatments and what are our non-essential treatments for successful new stands?
- How much additional volume will that treatment yield at final harvest?
- What will 1,000 acres of that treatment do to our cash flow for the year?
- Given our business outlook for the year, what treatments can we skip while maintaining our basic productivity for the future?

Questions Your Manager May Ask

- Is our business growing timber or killing bush?
- How much can you spend on reforestation before you need to find a new job?



Discounted Cash Flow Analysis

Basic Tools:

- **Net Present Value**
- **Bare Land Value**
- **Internal Rate of Return**

Ability to rank investment options

Evaluate the risk of an investment

Formulas

Future Value: $$fv = pv * (1+i)^n$$

Net Present Value: $$NPV = \sum \frac{fv}{(1+i)^n}$$ - Establishment Costs

Bare Land Value: $$BLV = NPV + \frac{NPV}{(1+i)^t - 1}$$

Internal Rate of Return (IRR): Interest Rate at which $NPV_{\text{Revenues}} = NPV_{\text{Costs}}$

Rotation Age

Value of Investment

Interest	$/Acre	25	30	35	40
6%	$ 80	$ 343	$ 459	$ 615	$ 823
7%	$ 80	$ 434	$ 609	$ 854	$ 1,198
8%	$ 80	$ 548	$ 805	$ 1,183	$ 1,738

Additional MBF Needed to Breakeven at $250/MBF Stumpage

Interest	$/Acre	25	30	35	40
6%	$ 80	1.4	1.8	2.5	3.3
7%	$ 80	1.7	2.4	3.4	4.8
8%	$ 80	2.2	3.2	4.7	7.0

Additional MBF Needed to Breakeven at $350/MBF Stumpage

Interest	$/Acre	25	30	35	40
6%	$ 80	1.0	1.3	1.8	2.4
7%	$ 80	1.2	1.7	2.4	3.4
8%	$ 80	1.6	2.3	3.4	5.0

Formulas

Future Value: $$fv = pv * (1+i)^n$$

Net Present Value: $$NPV = \sum \frac{fv}{(1+i)^n}$$ - Establishment Costs

Bare Land Value: $$BLV = NPV + \frac{NPV}{(1+i)^t - 1}$$

Internal Rate of Return (IRR): Interest Rate at which $NPV_{\text{Revenues}} = NPV_{\text{Costs}}$

Assumptions

All financial analyses depend upon good assumptions

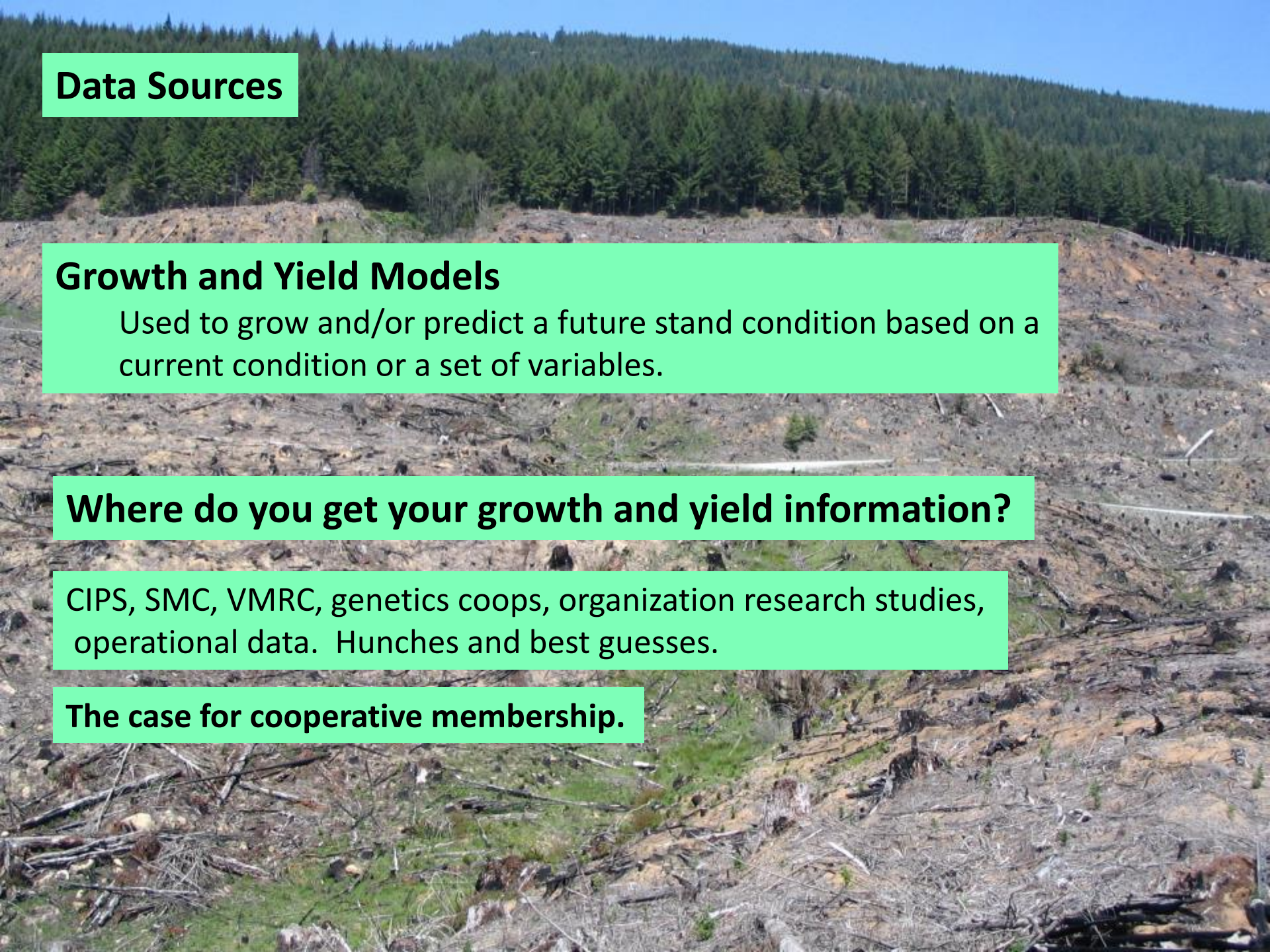
Interest Rate (discount rate, hurdle rate, etc)
- Nominal or “Stated” (with inflation) or Real or “Today’s Prices” (no inflation)

Product Pricing
- Regional Markets, Price Appreciation

Annual Revenues and Costs
- Lease payments, Easements, etc
- Taxes, Administration

Silviculture treatment timing and stand growth response

Site Index values of the current stand and the next stand



Data Sources

Growth and Yield Models

Used to grow and/or predict a future stand condition based on a current condition or a set of variables.

Where do you get your growth and yield information?

CIPS, SMC, VMRC, genetics coops, organization research studies, operational data. Hunches and best guesses.

The case for cooperative membership.

We have reached the point where intensive silviculture and the associated treatments are the norm for industrial forest management.

In the PNW, yields by treatment are just being defined. A group of treatments should be considered the base case for establishing a new uniform well-stocked stand that fully utilizes site resources. Bare ground is a key along with increasing genetic gain.

The treatment package gives us the yield.

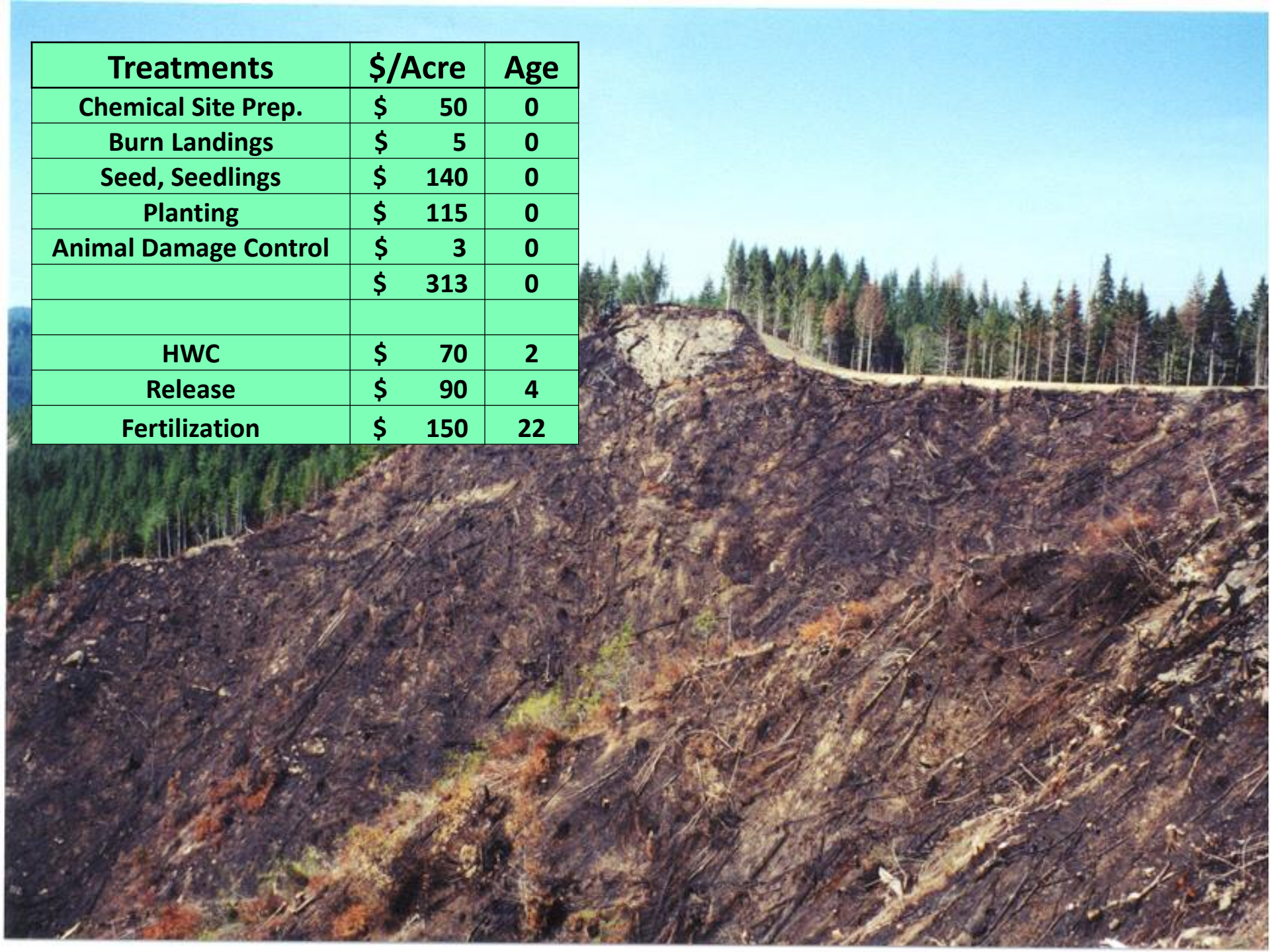
Essential Treatments: Basic treatments to establish a new stand.

Landing burning, Seed, Seedlings, Planting, Chemical site preparation, some mechanical site preparation, animal control, first year herbaceous weed control, release.

Non-essential treatments: Treatments to increase growth

Slash burning, seedling fertilization, release, PCT, fertilization.

Treatments	$/Acre	Age
Chemical Site Prep.	$ 50	0
Burn Landings	$ 5	0
Seed, Seedlings	$ 140	0
Planting	$ 115	0
Animal Damage Control	$ 3	0
	$ 313	0
HWC	$ 70	2
Release	$ 90	4
Fertilization	$ 150	22



Timberland Decision Support System

Stumpage $350

Interest Rate 7%
Site Index 120

Age	MBF	$	IRR %	NPV	BLV
32	18	$ 6,300	9.00	$ 307.35	$ 339.11
35	22	$ 7,700	8.81	$ 305.69	$ 337.28

2 nd year HWC, 10% volume increase

32	19.8	$ 6,930	8.85	$ 318.50	$ 359.78
35	24.2	$ 8,470	8.67	$ 316.67	$ 349.39

2 nd year HWC, 15% volume increase

32	20.7	$ 7,245	9.01	$ 354.64	$ 400.61
35	25.3	$ 8,855	8.82	$ 352.73	$ 389.18

http://tfsfrd.tamu.edu/tdss/

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Questions?

THREE YEARS OLD
Six feet tall
Free to grow