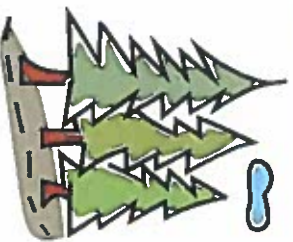


Managing Insects & Disease in Commercial Plantations



by Bill Morrison
Soper-Wheeler Company



SW Ownership

97,000 acres in CA

10 Counties

2/3 Sierra

1/3 Coastal

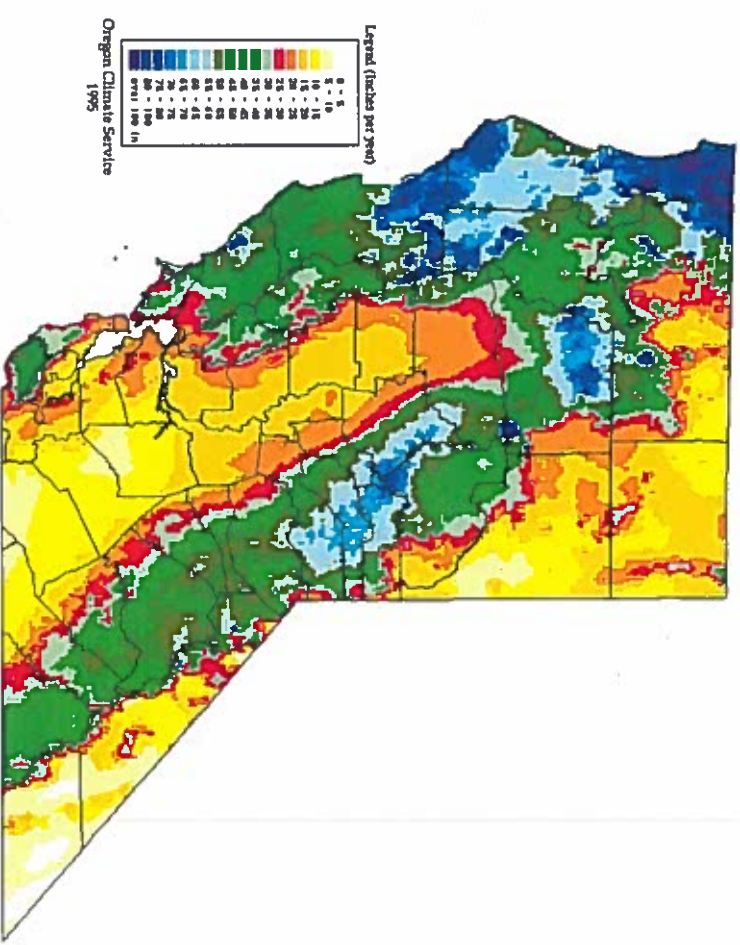
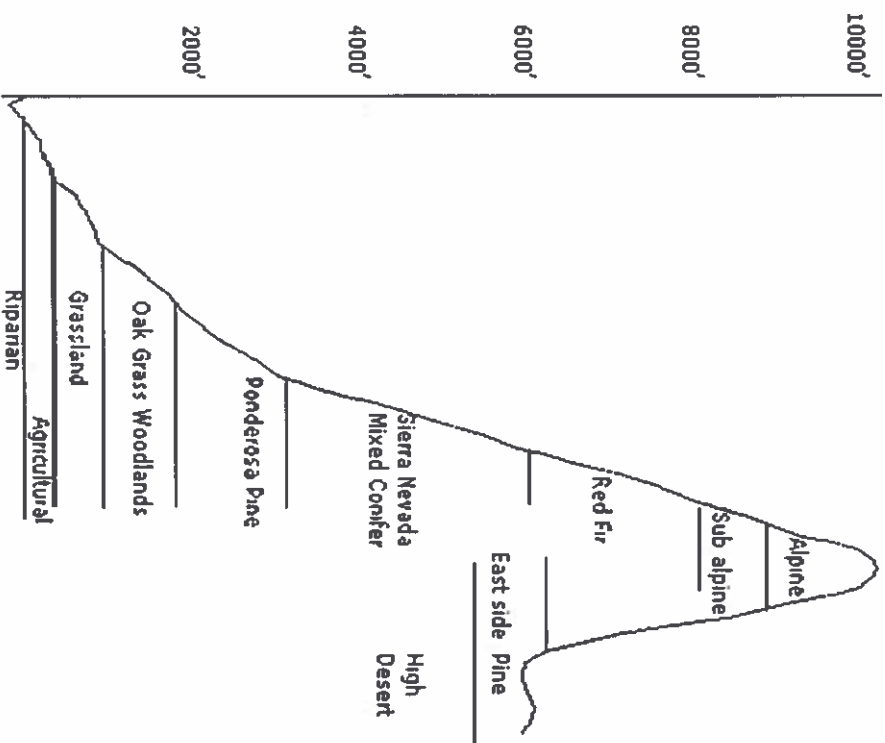
6,500 ha in NZ



THE NEW ZEALAND
REDWOOD COMPANY™



Forest type & precipitation



Legend (Inches per year)

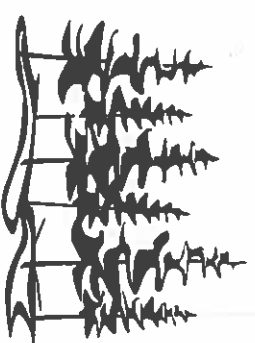
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970 - 980
980 - 990
990 - 1000

Oregon Climate Service
1995

Annual Average Precipitation (Inches),
Northern California
Period: 1961-1990

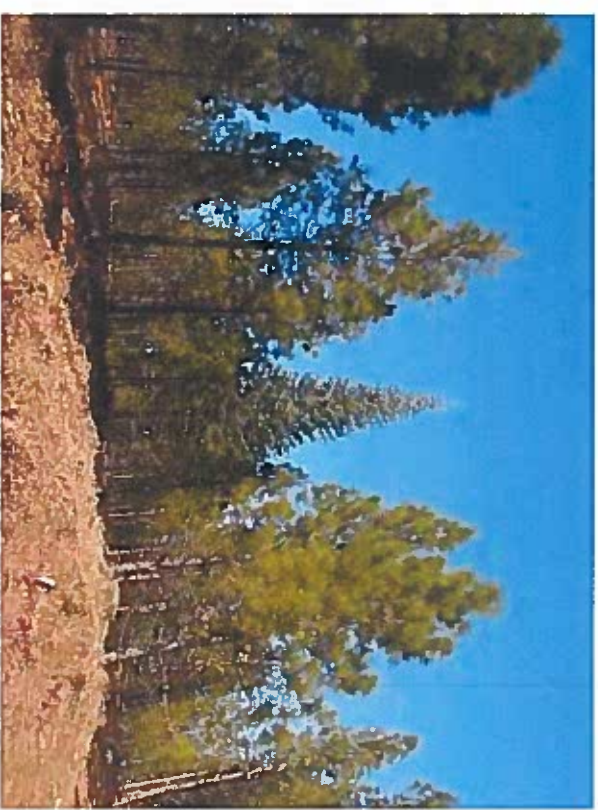
Commercial Plantations

- Achieve Maximum Sustained Production
- Minimize \$\$\$
- Deliver diversified commodities
- Manage for forest stand health
- Manage for desired fuel type
- Aesthetics



Maximum Sustained Production

- Tree Improvement
- Vegetation Control
- Stand Density



Strawberry Valley Tree Farm Major Insects and Pathogens in Commercial Plantations

- *Ips*
- *Dendroctonus*
- *Scolytus*
- *Eucosma*
- *Rhyacionia*
- White Pine Blister Rust
- Western Gall Rust



Tree Farm Records

- 1975-76 Drought related increased mortality with *Dendroctonus (brevicomis)* & *ponderosae*) even some mortality associated w/ *valens*.
- 1987 Tussock Moth
- Ips. – ongoing management practices & low elevation pine plantations (off site)

Commercial Plantation Insects



● *Ips*

- Thin early
- Seasonal timing of PCT
- No lopping

Ips - PCT

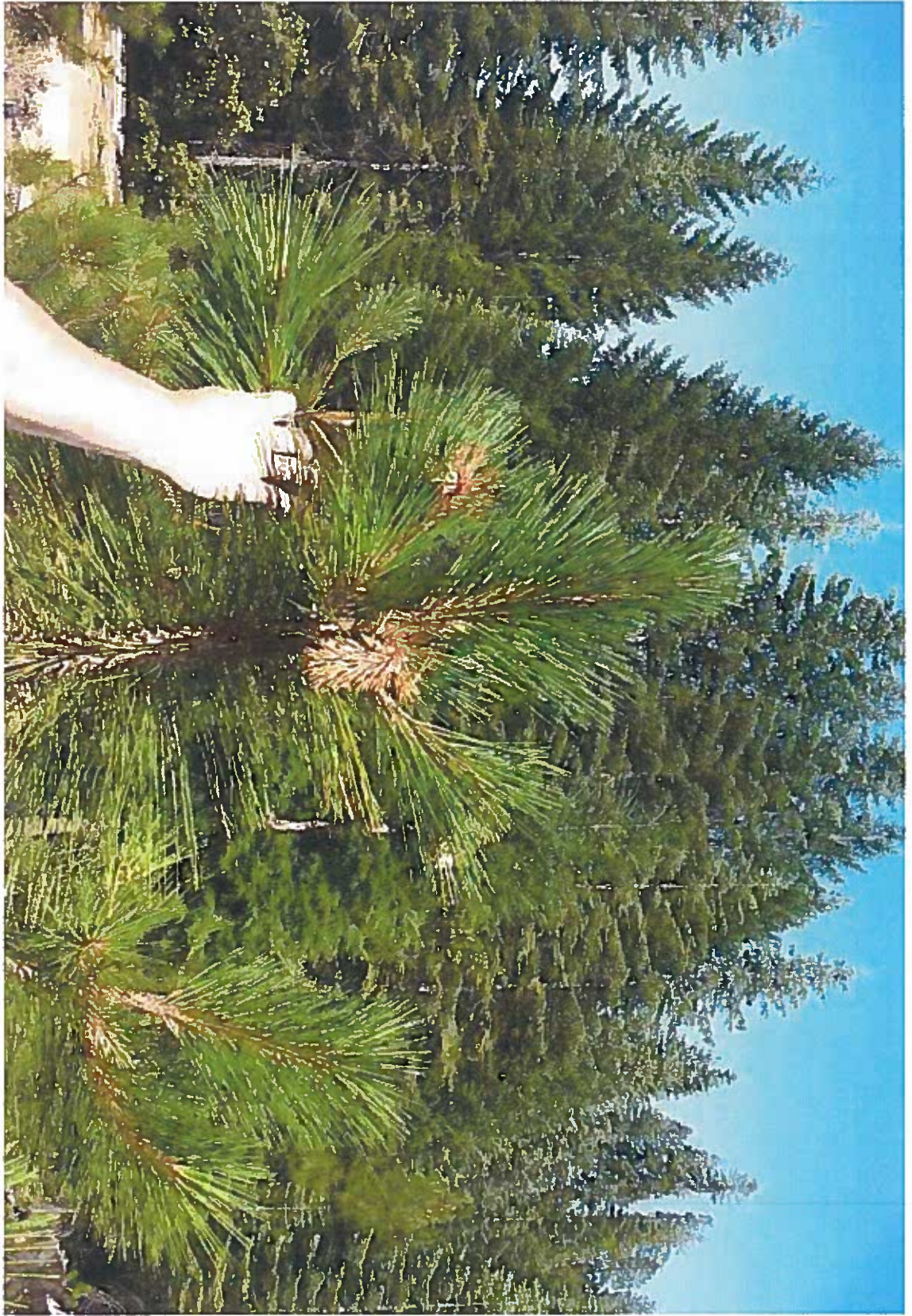


Commercial Plantation Insects



- *Eucosma*
- Species Diversity
- Monitoring
- Treatment w/ pheremone/insecticide (Permethrin)



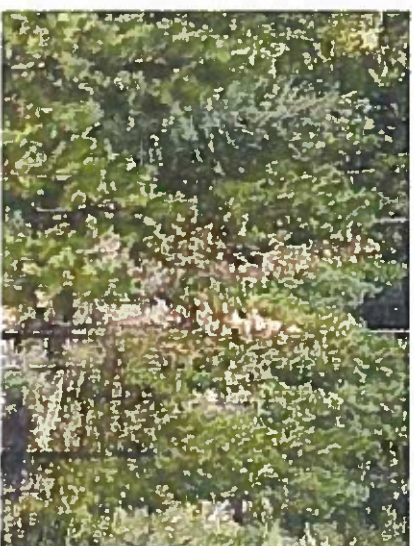


Rhyacionia





Commercial Plantations – management activity



Sanitation-Salvage Harvest



Seed Production Area



Cone Insects

- Contarinia – cone midges
- Megastigmus – Douglas-fir seed chalcid



Commercial Plantations - Pathogens



- White Pine Blister Rust
- Sanitize adjacent stands
- Resistance Screening
 - 47 trees identified





Commercial Plantations - Pathogens

- Western Gall Rust
 - Severe defect
 - Sanitize adjacent stands!!!!
- Species Diversity
- Pruning
- Pre-commercial thin
- Treatment w/ fungicide
- Future Resistance Screening?



Western Gall Rust Implications



Western Gall Rust Implications



Western Gall Rust - Sanitation



Western Gall Rust - Species Diversity



Western Gall Rust - Pruning & PCT



Western Gall Rust - Fungicide Treatment

TRIADIMEFON



Resistance??

- NSTIA Progeny testing
- Detection of progeny showing repeated resistance?



Managing Insects and Disease in Commercial Plantations

- Managing Commercial Plantations to minimize negative impacts from insects and disease
 - Adjacent Stand Management
 - Tree Improvement
 - Vegetation Control
 - Stand Density Control
 - Species Diversity

Acknowledgements



- NSTIA
- SCIFEMRC
- CFPC
- FVMC

THE END

