Production practice history in the PNW

2020 Christmas Tree Short Course
State College, PA.

Chal Landgren, Oregon State Univ., Christmas Tree Specialist
Outline

• Development of a national Christmas tree industry
• Production moves west and south
• Trends in the PNW
• Solving problems and looking forward
  • (Guessing Really)
The early days

• By rights PA. should be center of Christmas tree production except for-
  • The Alaska Gold Rush
  • Escaping the “cold”
  • Changing consumer tastes.
John Hofert 1855-1834

- Draft horse trainer - Minn.
- Forest trees hauled to town, later Chicago+
- Tired of the cold - moved to LA
- Cut wild trees in CA and OR.
- He and son Alvin built national business.
Alvin Hofert

- Inspecting trees in Shelton, WA. yard.
- + 2 sisters had national markets.
- Alvin’s son, John Jr. had 13 salespeople.
- Sold OR. operation to Holiday Tree Farm in 1992. Corvallis, OR.
Strathmeyer’s – York, PA.

• Early 1900’s
• Wild red cedar and jack pine from the forest.
• “You had to walk and drag a great deal to get enough trees”
G.R. Kirk (L.) and son Paul (R.)
Kirk Co.

• G.R. moved from PA to Seattle, back to PA, Then back to the PNW.
• Steel posts were cutting into his wood business
• “Some stupid guy in TX wants a car load of Christmas trees”
• By 1928- 25,000 trees. Paul was at Univ. of WA.. But no job. Started selling trees in 1931. Added a family
• Kids-Paul Jr., Mac and Ann developed a national company
• Now in Oregon City.
Early competition

• Both companies moved to corner supplies
• Kirk harvested in Montana and B.C., Nova Scotia and Quebec Canada.
• Hofert was in the same areas and WA.
Early visionaries

- Margaret and Andrew Abraczinskas
- 1890 to Shenandoah, PA.
- Started with Norway spruce and pine.
- Developed a shearing technique for shearing pine in the 20’s
Bundling red pine (L) and loading Norway spruce (R) in PA circa 1952
Shipping Douglas-fir from Shelton, WA. to Atlanta, GA. in 1937
“Christmas Tree Capitals” of the nation

- Indiana, Pennsylvania
- Estacada, Or.
- Eureka, Mt.
- Wautoma, Wisc.
- Waushara county, Wisc.
- Shelton, Wa.
- Bethlehem, Pennsylvania
- Grapevine, Tx.
- Portsmouth, N.H.
- And many more
Now on to the 50’s-
some national production “guesses”
**1952. USDA Ag. Bulletin 94**

<table>
<thead>
<tr>
<th>Species</th>
<th>Millions of trees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balsam fir</td>
<td>6.4</td>
</tr>
<tr>
<td>Douglas-fir</td>
<td>5.8</td>
</tr>
<tr>
<td>Black spruce</td>
<td>2.3</td>
</tr>
<tr>
<td>E. Red Cedar</td>
<td>2.1</td>
</tr>
</tbody>
</table>

Total U.S. production = 21.5 million trees

“States boarding Canada produce the most trees”

<table>
<thead>
<tr>
<th>Region</th>
<th># of states</th>
<th>Million of trees</th>
</tr>
</thead>
<tbody>
<tr>
<td>NE Mid Atlantic</td>
<td>11</td>
<td>6.4</td>
</tr>
<tr>
<td>Pacific</td>
<td>5</td>
<td>6.3</td>
</tr>
<tr>
<td>Lake States</td>
<td>3</td>
<td>5.2</td>
</tr>
<tr>
<td>S. States</td>
<td>11</td>
<td>3.2</td>
</tr>
<tr>
<td>Canada</td>
<td></td>
<td>9.7</td>
</tr>
</tbody>
</table>
Wild production moves west

Douglas-fir in Shelton, Washington
The 40’s & 50’s- The industry is growing

• WA. production was 3X, Oregon’s
• 95% of the production was unsheared Douglas-fir in S. Puget Sound
• 1% of the production was sheared plantation trees in Oregon.
• “There’s no way customers will like sheared trees”
  • Annon. Shelton Grower
Experimentation is everywhere

Douglas-fir Christmas tree planting, Aptos, Santa Cruz County, CA. Survival 86% with removal of weeds - no summer irrigation. 1950

"Tree Haven" Farm. Rows of Douglas-firs. Plantation started in 1941 (1946 Metcalf)
Some big changes in the air….

• 1954- Hal Schudel and Paul Goodmonson start Holiday TF. A new approach.

• A host of growers are experimenting with shearing, fertilization, genetic selections, site preparation/selection and true fir production, just to name a few ideas.
Production using forest and agricultural tools, and science

• From Hal Schudel- “I asked Paul Kirk how he developed a national following for wild trees”. He said “I’d just follow John Hofert around and pick off some of his customers. I learned from him.”
The Douglas Fir Christmas Tree Company with Bob Stohr, Metcalf, Fred Peste (r). Inspecting the 100 ac. farm. Shelton WA. 1952
Good ideas may go way back

1950 Nordmann fir in Lodi- 10 yrs. old
Excellent Christmas tree
Collecting wild firtrees in the Cascades and Sierra Nevada
The 1960’s

• Shelton Douglas-fir still #1, but now 20% are wild, 80% cultured.
  • The D.F. Christmas Tree Co. Alpine, Kirk, Hofert, Holiday and others are shearing, fertilizing etc....
• Big plantations are coming!
1970’s

- The first buyers market hit PNW in 1974
- DF is still king but...
- Noble fir is now 20% of sales
- Grand fir is 10%
- Scotch Pine is dropping out of favor
- Lot’s of volunteer action, exciting new ideas
The rise of large producers

• Crown Zellerbach and the start of Noble Mountain Tree Farm
Oregon expands production

• A number of 1000’s acre sized operations, predominately in Oregon

• Holiday, McKenzie, Yule, Noble Mountain, Silver Mountain
Trends over 2 decades - Oregon

Oregon Christmas Tree Harvests and Plantings. (Million)

Harvested-mm  Planted-mm
# Christmas Trees Planted, by Variety and Year Planted — Oregon: 2010 and 2015-2016

<table>
<thead>
<tr>
<th>Variety</th>
<th>2010 (1,000 trees)</th>
<th>2015 (1,000 trees)</th>
<th>2016 (1,000 trees)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Douglas fir</td>
<td>2,327</td>
<td>1,220</td>
<td>1,416</td>
</tr>
<tr>
<td>Noble fir</td>
<td>2,579</td>
<td>2,182</td>
<td>2,329</td>
</tr>
<tr>
<td>Grand fir</td>
<td>255</td>
<td>69</td>
<td>112</td>
</tr>
<tr>
<td>Nordmann/Turkish fir</td>
<td>449</td>
<td>202</td>
<td>310</td>
</tr>
<tr>
<td>Other species ¹</td>
<td>22</td>
<td>5</td>
<td>22</td>
</tr>
<tr>
<td><strong>All species</strong></td>
<td>5,632</td>
<td>3,678</td>
<td>4,189</td>
</tr>
</tbody>
</table>

¹ Includes Fraser, Balsam, and Pine trees.
**Christmas Trees Sold by Variety - Oregon: 2010 and 2015**

- **Douglas fir**: 2,500 (2010), 1,500 (2015)
- **Noble fir**: 3,500 (2010), 2,500 (2015)
- **Grand fir**: 250 (2010), 150 (2015)
- **Nordmann/Turkish fir**: 250 (2010), 300 (2015)
- **Other species**: 50 (2010), 100 (2015)
Oregon trends past 20 yrs - trees harvested and growers

<table>
<thead>
<tr>
<th>Year</th>
<th>Harvest - million trees</th>
<th>ODA licensed Growers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>8</td>
<td>1025</td>
</tr>
<tr>
<td>2006</td>
<td>6.9</td>
<td>775</td>
</tr>
<tr>
<td>2017</td>
<td>4.7</td>
<td>366</td>
</tr>
</tbody>
</table>
Looking ahead-
……current challenges, some responses and
future options
Labor always a challenge
Competition for land

• Shift to less labor intensive crops-
  • Hazelnuts
  • Grass seed

• Or, higher rental value crops
  • Wine
Bugs, slugs, diseases and disorders

• Make friends with your local pathologist/entomologist.
• Stress= new pest and disease issues
• Expanding shipping likely to introduce something.
• Climate changes.
Monitoring plant health

• Temperature & soil moisture - easy to do
• More devices are coming
• Genetic ID for diseases used in the field
Slugs and Christmas trees

- What species are contaminating trees?

Answer will be critical for designing effective controls
Slug survey

• 10 Douglas fir plantations and 6 holding yards throughout OR and WA

- Plantations – monthly sampling; October 2017 to December 2018
- Holding yards – fortnightly; Nov and Dec only
Survey Results

- **Plantations** – 799 slugs from 5 different species
- **Yards** – 465 slugs from 5 different species

- *Arion intermedius*, *A. subfuscus* and *Prophysaon andersoni* are actionable species

- **Plantations**
  - Arion intermedius: 60.6%
  - Arion subfuscus: 15.0%
  - Deroceras laeve: 8.6%
  - Deroceras reticulatum: 13.8%
  - Prophysaon andersoni: 2.0%

- **Yards**
  - Arion intermedius: 89.0%
  - Arion subfuscus: 9.0%
  - Deroceras laeve: 0.2%
  - Deroceras reticulatum: 0.4%
  - Prophysaon andersoni: 1.3%
Pesticide testing - new products as old ones disappear
Technology- UAV/Drones

• A few growers are using them
Drought avoidance

Test Layout 2018

Row treatments for RootTex, MoistureLoc, water dips- 1,264 trees
Shade tents were overlaid on treatment rows-298
Evaluation consisted of dead, maybe, and healthy.
Temp. monitoring- 2 with shade; 2 without. Hourly temps. for 6 months.
Summary-2018

Mid Aug. = 27% mortality (across all treatments)
Mid Oct. = 31% mortality

By treatment (excluding “maybe alive” trees) in Oct.
Shade = 13% mortality
RootTex = 28% mortality
MoistureLoc= 31% mortality
Max Temp (F) by Month
Shade vs No shade

Max. Temp (No Shade)
Max. Temp (Shade)
Next Steps
New ideas-2019

• Bark /wood chip mulch
• Fall planting
• Continue with shade
• Bio Stimulants
• Water holding treatments
• Water-how, when, how much?
CBM May 7th
Results

Site 1 Treatment Comparison

- **UTC**: 80.4% survival, 19.6% mortality
- **Shade only**: 88.4% survival, 11.6% mortality
- **Mulch only**: 97.3% survival, 2.7% mortality
- **Shade & mulch**: 94.8% survival, 5.2% mortality
- **Root dips**: 80.2% survival, 19.8% mortality

**Legend**
- %survived
- %mortality
Results

Site 2 Treatment Comparison

<table>
<thead>
<tr>
<th>Treatment</th>
<th>% Survived</th>
<th>% Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTC</td>
<td>94.7</td>
<td>5.3</td>
</tr>
<tr>
<td>Shade only</td>
<td>96.3</td>
<td>3.7</td>
</tr>
<tr>
<td>Mulch only</td>
<td>96.6</td>
<td>3.4</td>
</tr>
<tr>
<td>Shade &amp; Mulch</td>
<td>95.3</td>
<td>4.7</td>
</tr>
<tr>
<td>B-1 only</td>
<td>96</td>
<td>4</td>
</tr>
<tr>
<td>Solid Rain only</td>
<td>97.1</td>
<td>2.9</td>
</tr>
<tr>
<td>B-1 / Solid Rain</td>
<td>96.2</td>
<td>3.8</td>
</tr>
</tbody>
</table>
In 5 years, ....PGR’s will be used w/ Turkish and noble
OSU-Turkish Fir Height Growth Using S-ABA (cm)

- UTC
- 200w/.5ml
- 300w/0
- 300w/1ml
- 400w/1ml
OSU-Turkish Fir Damage using S-ABA

- UTC
- 200w/.5ml
- 300w/0
- 300w/1ml
- 400w/1ml
Christmas tree seed orchards more important

• It all starts with seed
• Fewer wild stand collectors.
Seed Technology - Somatic Seedlings
Nordmann maybe Fraser?
Helps to look back too….

• In the 1980’s
• High hopes for Douglas-fir rooted cuttings
  • ID clones
  • Beds for cuttings
  • Heated/misting propagation houses.
• Too expensive- cutting beds matured quickly
• Never worked well for noble
Find ways to increase market share

• More Taylor Swift pop songs
• Table top trees (Trailer trees in the 50’s)
• Cheaper trees
• Lighter trees
• Easier delivery/pick up
• More recycling places
• Organic trees
• Tie to tradition, authenticity
Sustainable research community

• With many products in many countries research is in-house, not shared.
In 20 years...

- Trojan fir will be a viable Christmas tree !!!