Dr Jim Moore Lecture Series: Keynote Address - The History and Importance of Integrating “Innovation” in to Forging Successful Forestry Businesses

by David New Growing Excellence Inc.
“Ingredients of Innovation” - One Foresters Career Learnings

• #1 sustained improvement of profitability in forestry is all about maintaining a passion for improving cost efficiency through productivity improvements and outpacing your competitors in bringing new value to your customers

• #2 Innovation is a culture of developing tension based partnerships between science, economics and implementation

• #3 Organizations in which innovation are part of the culture invest significantly in benchmarking global best practices

• #4 Organizations that forge public private innovation partnerships succeed
Why Innovations Matter - Lessons From Agriculture?

Global gains in productivity of major food grains decline while demand grows =

- GMOs
- Precision field management
- Increases in acres irrigated and efficiency
- Acres converted to arable ag

Innovators that invest in beating the trends are highly profitable
The History of Innovations in New Zealand and US SE Pine Plantations

<table>
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<tr>
<th>Era</th>
<th>1950</th>
<th>1980</th>
<th>2000</th>
<th>2020</th>
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<tbody>
<tr>
<td>NZ</td>
<td>18</td>
<td>23</td>
<td>28</td>
<td>28</td>
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<td>SE</td>
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Sources: US SE - Stanturf, Kellison, Broerman, and Jones  NZ - New & MAF National Annual Exotic Forest Description
So Were These Productivity Gains All Just Good Luck?
First Steps in a Journey: US South
Innovation Partnerships
Evolved as Part of the Sector’s
Culture =

US SE 1960-2010 enduring partnerships, major contributors and global proteges:

Dr Bruce Zobel NCSU - Global tree improvement
Dr. Lee Allen NCSU - Nutrition and tree productivity
Bill Baughman (Westvaco) - Implementation and economic value of innovation
Drs Clutter and Clutter UGA - Forest planning
Dr Dale Greene UGA - Harvesting productivity
Dr Bob Kellison (Champion) - Forest productivity
John Manz (WEYCO) - Mechanized harvesting
Over Time These Partnerships Created - Enduring Networks of Learning

Dr Bruce Zobel N.C. State 1956 -2011
First Director of Southern Tree Improvement Cooperative
In 1979 formed Zobel and Associates
Founded CAMCORE International Cooperative at N.C. State

Companies or agencies dominated by dozens of former students of Dr. Zobel working in tree improvement and members of multiple cooperatives

International Paper, WEYCO, Westvaco, Champion International, Union Camp
Boise Cascade, Plum Creek, Rayonier, Aracuz, SAPPI, Fletcher Challenge, Riocell
USFS, Queensland Forestry Commission, SAFCOL, Mondi, Arauco, Arborgen
New Zealand Innovation Journey = An Era of Economic Debates + FRI’s Innovators + An Industry of “Yes We Can” Implementers

H. Bunn, Dr W Sutton, B. Fenton FRI - Economics, Silviculture and Global Trade
Drs Shelbourne and Carsons - Tree and Nursery Improvement
Drs Will, Paige & Jacks FRI and MAF - Tree Nutrition and Site Preparation
Allison, Poole, Grayburn, NZFP
Andrews, Neilson, Heard, Gleed, Darling - Fletchers Olson PF Olsen Consulting
Hector Lisboa Arauco

Seven major cooperatives. Perpetual debates on priorities leading to industry alignment on research priorities

FRI now SCION staff Integrated in to Implementation

Rotation long integrated improvements in fact pay for investments in innovation
### Fletcher Forests of NZ Capturing Early Economic Benefits Through Integrating Tree Improvement into Reforestation and Silviculture

<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
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<tbody>
<tr>
<td>1973</td>
<td>Common Planting Stocking was 1600 trees per hectare. Normally at least two weed control operations.</td>
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<tr>
<td>1980-82</td>
<td>Planting Stocking Drops to 1000-1200 seedlings per ha (today 800-1000)</td>
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<td>1984</td>
<td>Weed control drops to 1.2 times per rotation for all hectares planted saving &gt;$NZ90/ha</td>
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<tr>
<td>1985</td>
<td>PCT and 1st Pruning cost drop by &gt;$NZ180 per ha</td>
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<td>1987</td>
<td>Savings in Reforestation + Silviculture Pay for R&amp;D investments by 145 dollars for each dollar invested in innovation</td>
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New Zealand’s Decades of Innovation

Brief History of NZ Tree Improvement

NZ Multiple Rotation Improvements
Benchmarking = How Practitioners Become Innovators

Lessons and legacies - John Manz formerly of Weyerhaeuser and Hector Lisboa formerly of Arauco S.A.

Pruned trees - WEYCO Forests - US South
Radiata Pine Chile
Lessons and Opportunities for Western US

- Refocus cooperatives to focus on innovation and more importantly the process of innovation
- Increase investments from sector in implementation partnerships
- Increase collaborative benchmarking ahead of R&D
- Researchers are assigned sector implementation mentors
- Sector encourages career long time invested in practitioners R&D
- Government refocus to innovation performance based R&D funding