

Continuing Project

Stand and Tree Responses to Late-Rotation Fertilization

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Objectives

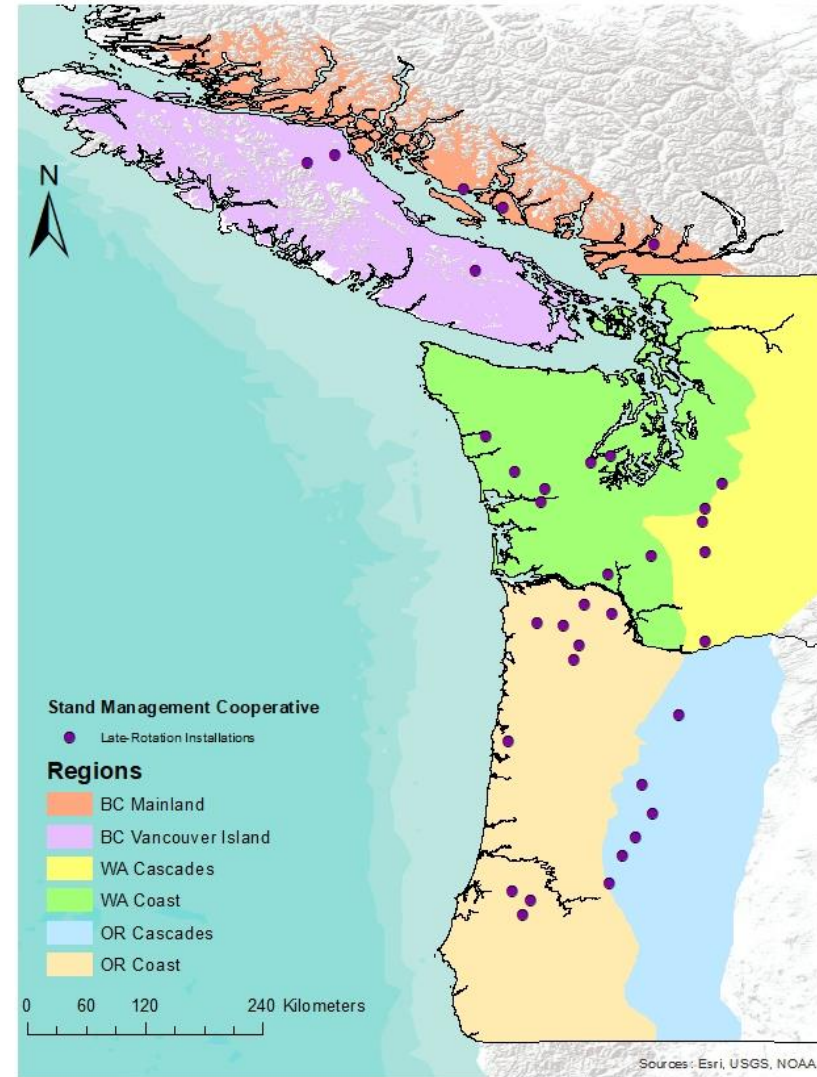
- Determine the average, area-based volume response to late-rotation fertilization
- Estimate the regional economic returns of late-rotation fertilization
- Validate the models developed from the CAFS-supported Paired-Tree Study
- Assess the ability to predict response to fertilization using plant root simulator (PRS) probes

Methods

- Established randomly located paired-plot Douglas-fir installations in BC, WA, and OR
- Sampled soil and installed Plant Root Simulator probes prior to fertilization
- Fertilized with urea at 200 lb N/acre
- Measure fertilizer response over 2-8 years and at harvest



Project Overview



Current Progress

- 30/34 installations measured for four-year response
 - 4 installations measured for six-year response
- Combined Paired-tree, Late-rotation, and other SMC installations and compared predicted responsive and non-responsive regions
- Predicted response regions contained significantly lower PRS NO₃, foliar N, and site index
 - Greater forest floor and surface soil C:N ratio and tree volume response

Variable	Predicted Response Regions	Predicted Non-Response Regions
PRS NO ₃	14 μg/10cm ² /12 weeks	69 μg/10cm ² /12 weeks
Forest Floor C:N Ratio	41	34
Surface Soil C:N Ratio	27	22
Foliar N	1.21%	1.29%
Site Index	132 ft	141 ft
Tree Volume Response	19%	6%



Future Plans

- Remaining 4 installations in BC will be measured for four-year response in Fall 2022
- Four new installations will be established by Spring 2023
- Spring 2023: Prepare manuscript describing relationships between PRS nutrient adsorption, soil and site productivity, and 4-year fertilizer response

