

Nutrition Effects on Future Forest Productivity

Harvest by Site Quality Study

Intermountain Forest Tree Nutrition Cooperative

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Harvest by Site Quality Study

Objective

To evaluate the effects of harvest type operations on forest nutrient status and productivity by site quality types.



Harvest by Site Quality Study

Basic Design

Harvest Treatments:

Bole Only - Slash Retention

Whole Tree – Slash Removal

Site Quality:

High Quality – Basalt (Good Nutrient Productivity)

Low Quality – Quartzite (Poor Nutrient Productivity)

Adequate Soil Moisture (Xeric-Frigid - Grand Fir Series)



Harvest by Site Quality Study

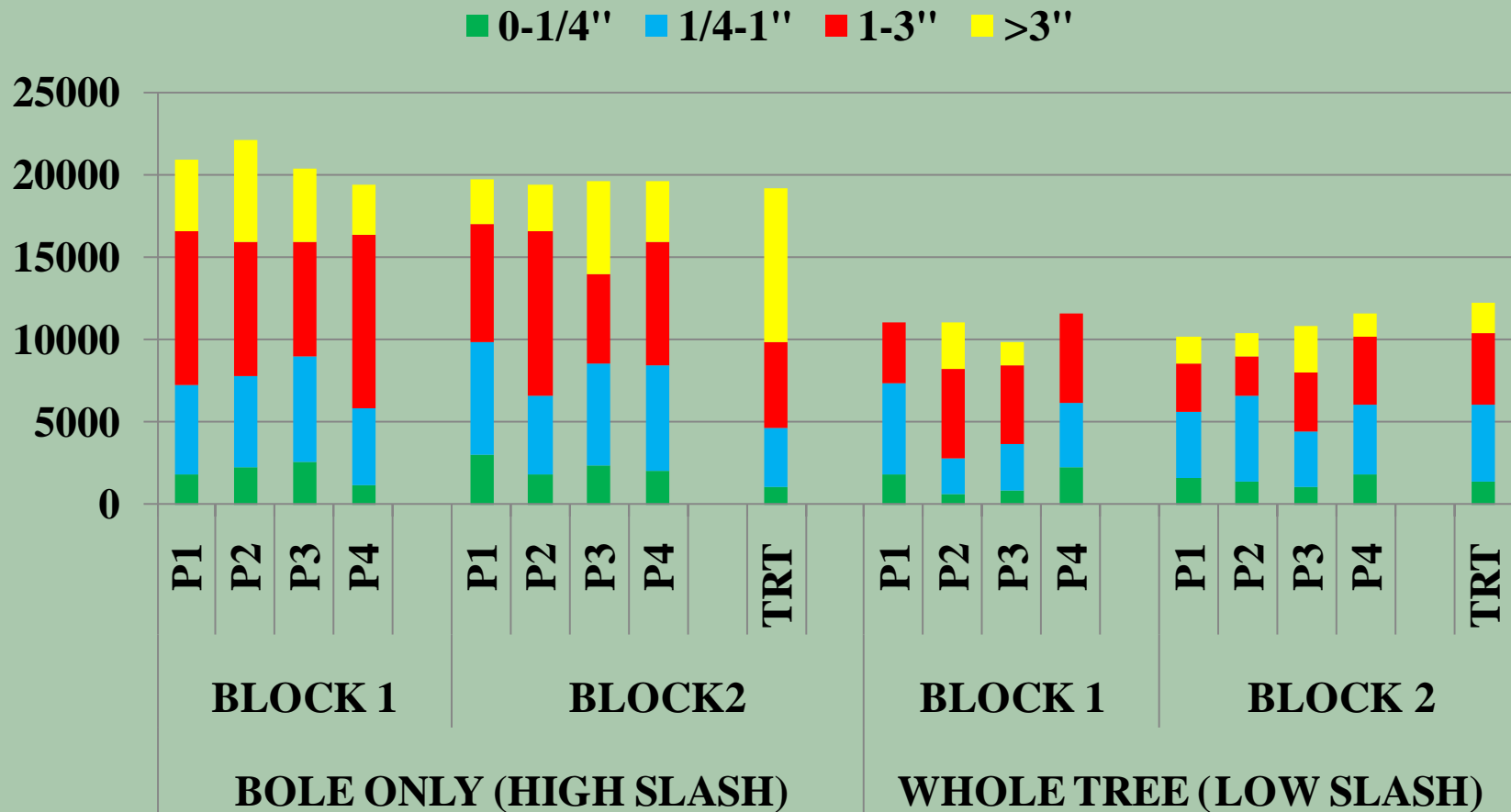
Harvest Treatment by Slash Loading Design

Block 1 Bole Only	Block 2 Whole Tree	Block 3 Bole Only	Block 4 Whole Tree
High Slash	Low Slash	High Slash	Low Slash
High Slash	Low Slash	High Slash	Low Slash
High Slash	Low Slash	High Slash	Low Slash
High Slash w/veg control	Low Slash w/veg control	High Slash w/veg control	Low Slash w/veg control
No Slash	No Slash	No Slash	No Slash
No Slash w/veg control	No Slash w/veg control	No Slash w/veg control	No Slash w/veg control

Harvest by Site Quality Study

Slash Retention by Plot

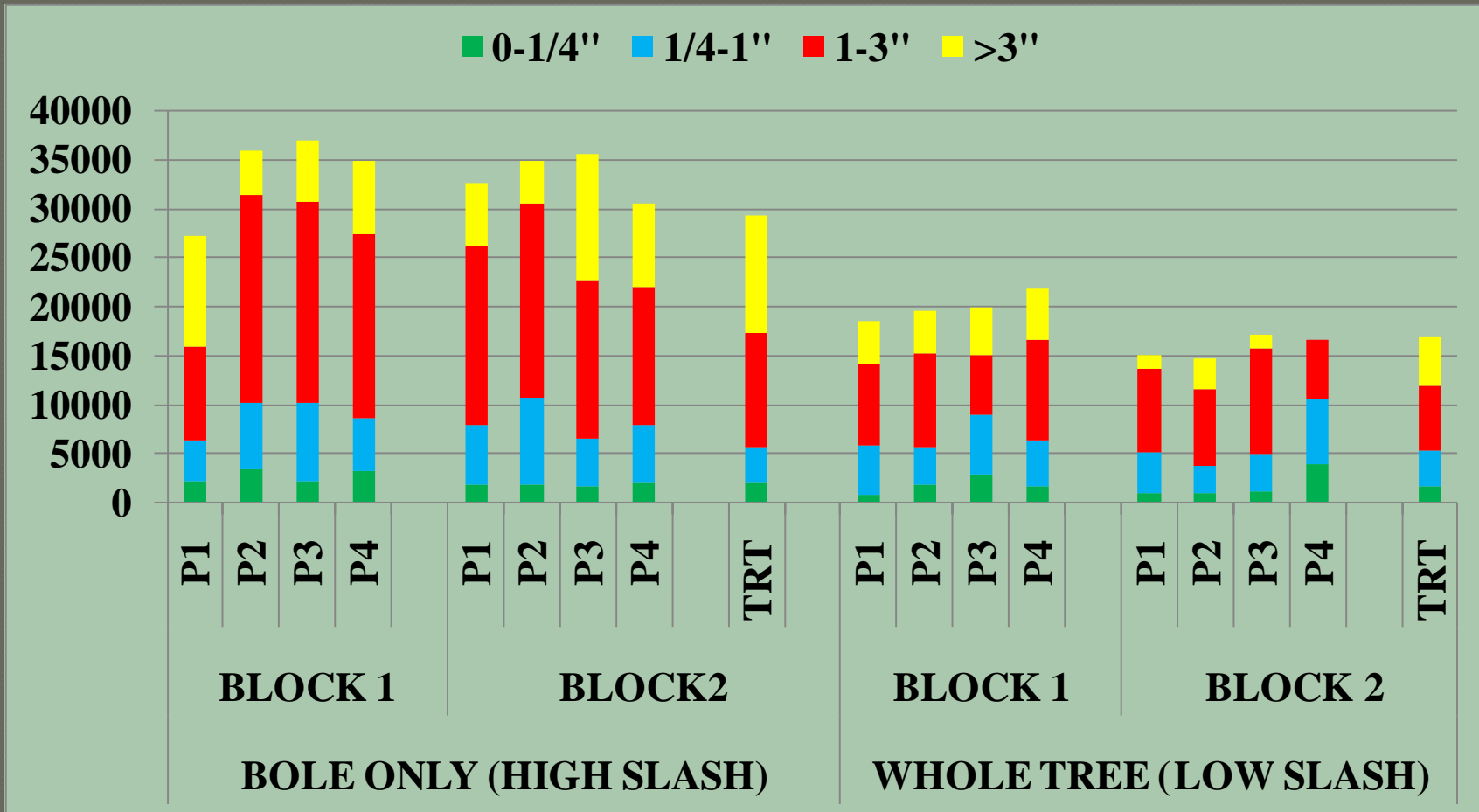
at Phill Study Site



Harvest by Site Quality Study

Slash Retention by Plot

at Slice Study Site

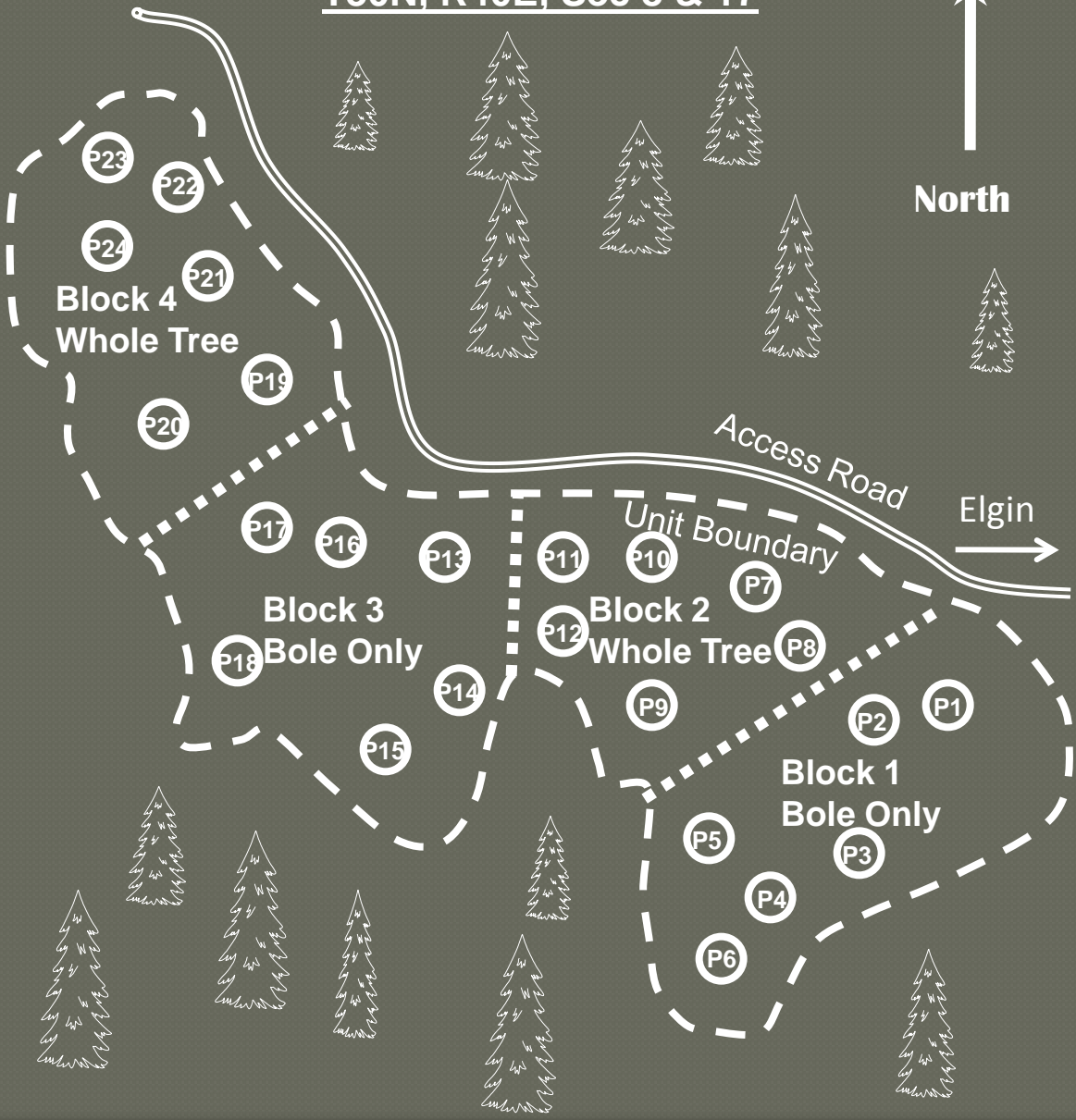


Harvest by Site Quality Study Slash Loading



Canus Nutrient Management Research Site

T30N, R40E, Sec 8 & 17



Harvest by Site Quality Study

Site Characteristics

Site	Region/ Owner	Soil Parent Material	Site Quality
Canus	NEO/ Forest Capital	Ash/Loess/Basalt	High
Lovell	NID/ IDL	Loess/Quartzite	Low
Ruby	NID/ Potlatch	Loess/Ash/Quartzite	Low
Slice	NEWA/ WADNR	Ash/Glacial/Quartzite	Low
Phill	NID/ Bennett Lumber	Ash/Loess/Basalt	High

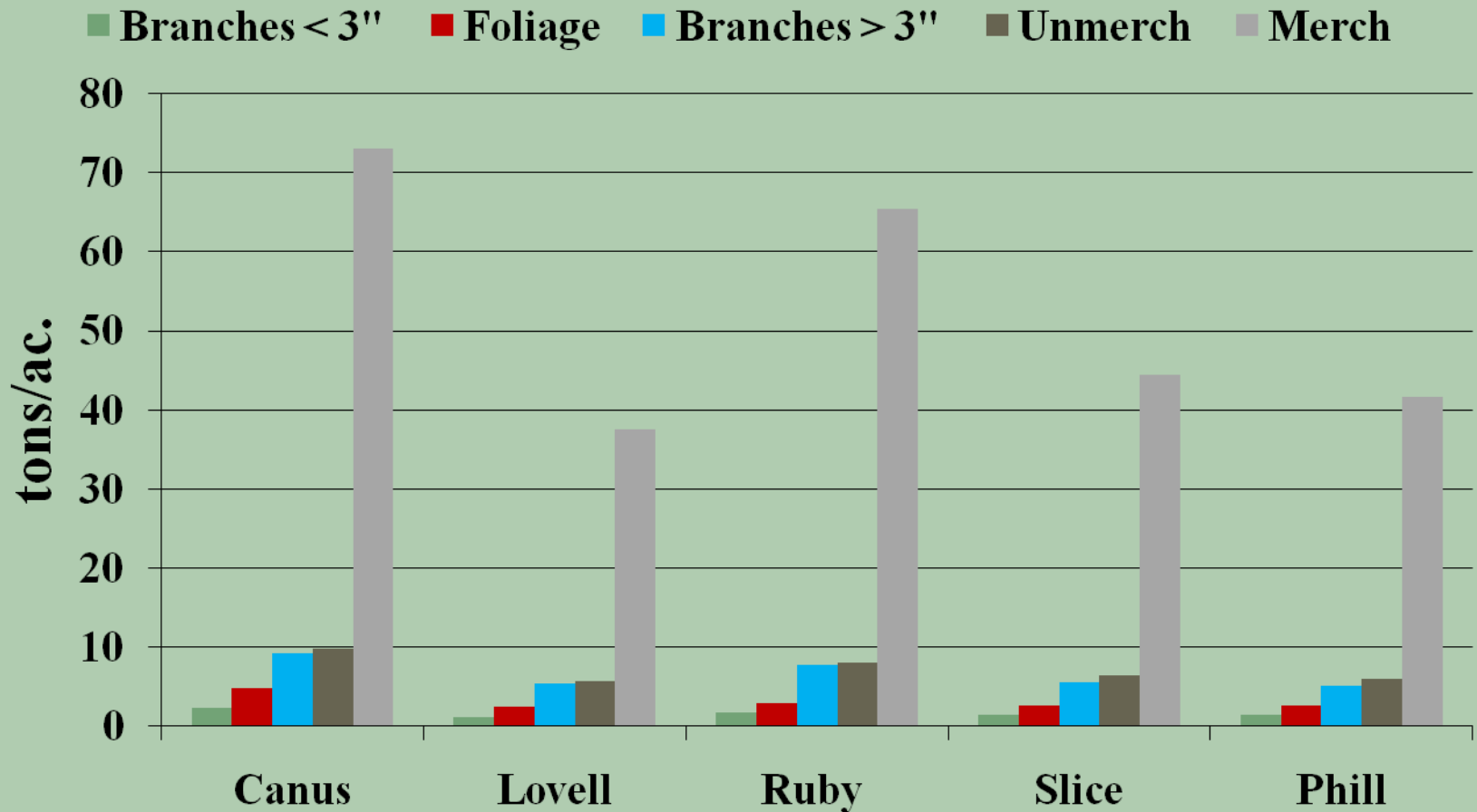
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Stand Characteristics

Site	Site Index	Basal Area	Site Height	QMD	Volume	
					Cu/ft/ac	Bd/ft/ac
Canus	73	134	86	11.9	4,218	22,605
Lovell	77	80	68	11.6	2,224	11,736
Ruby	69	123	80	13.2	3,675	19,858
Slice	57?	90	81	11.8	2,569	13,208
Phill	71	78	89	11.3	2,370	12,646

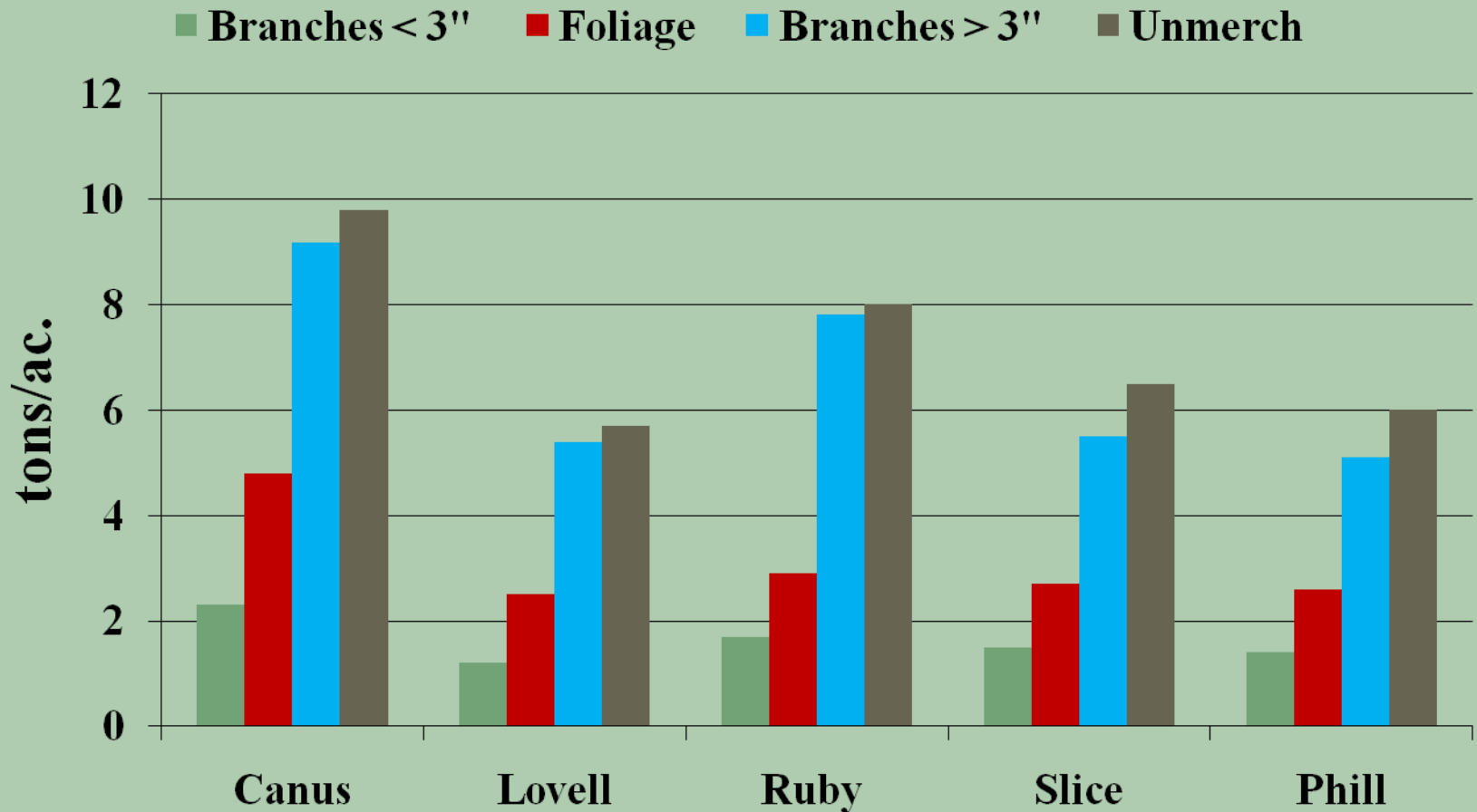
Harvest by Site Quality Study

FVS Projected Stand Biomass



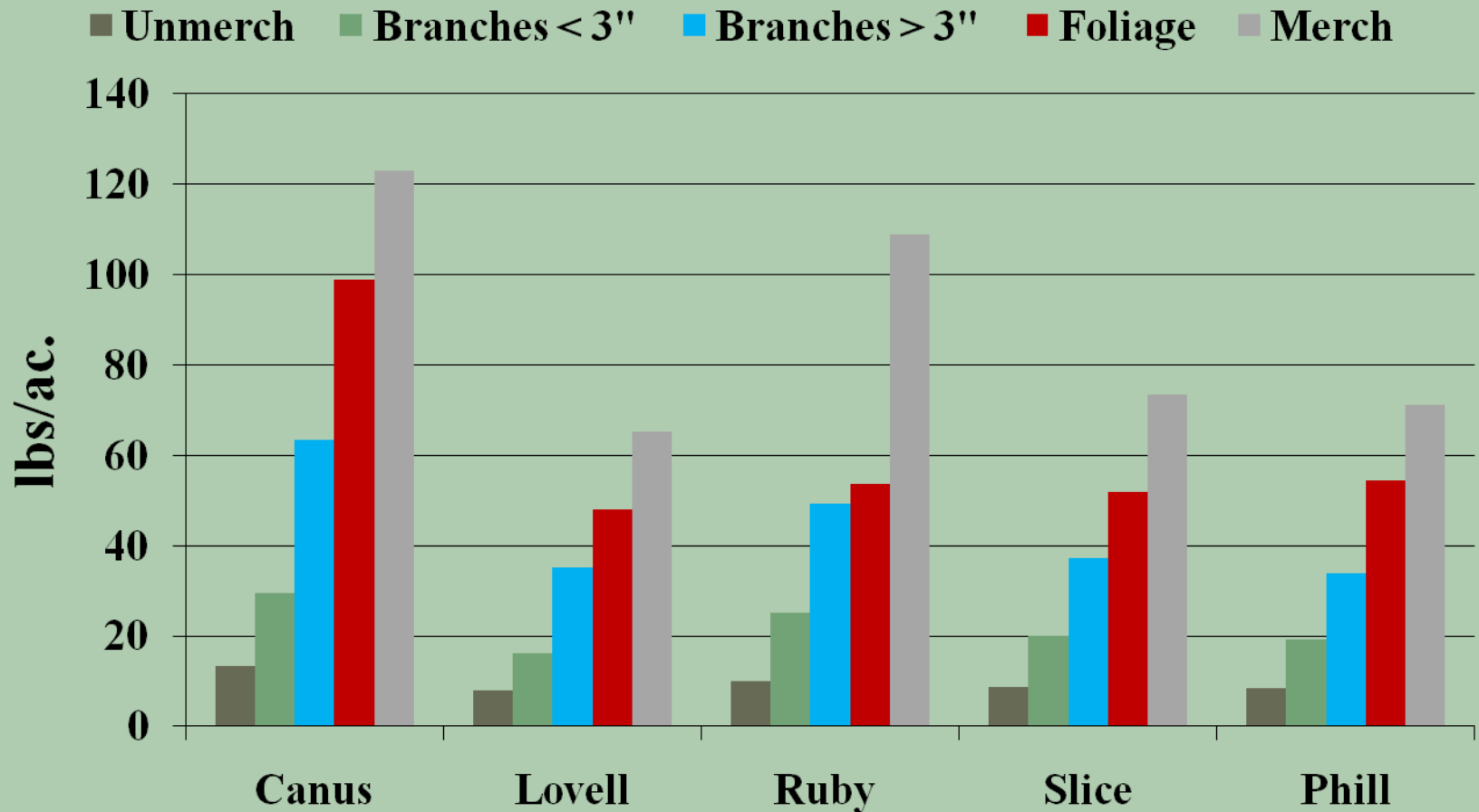
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FVS Projected Stand Biomass



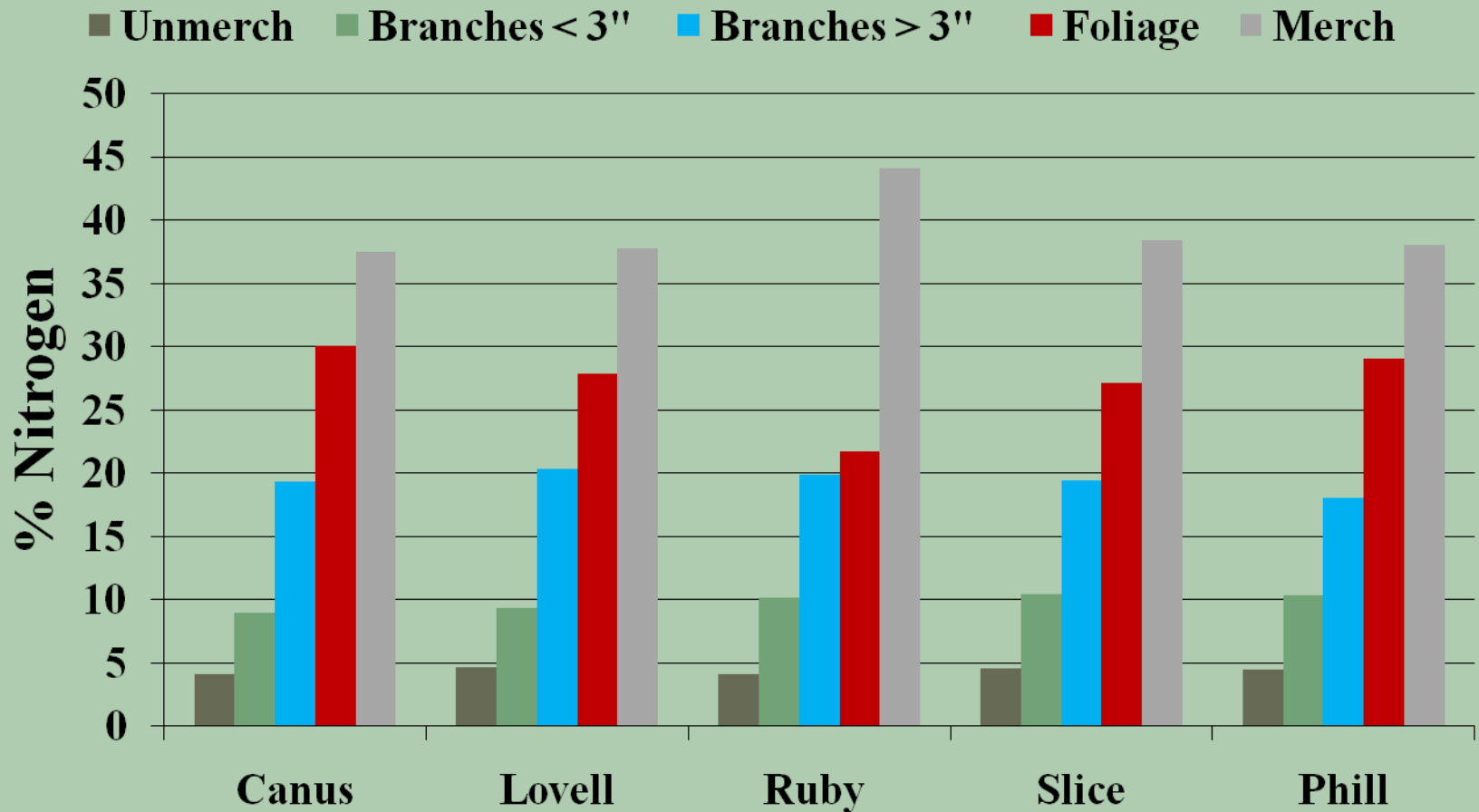
Harvest by Site Quality Study

FVS and NutCal Estimated Above Ground Nitrogen Content



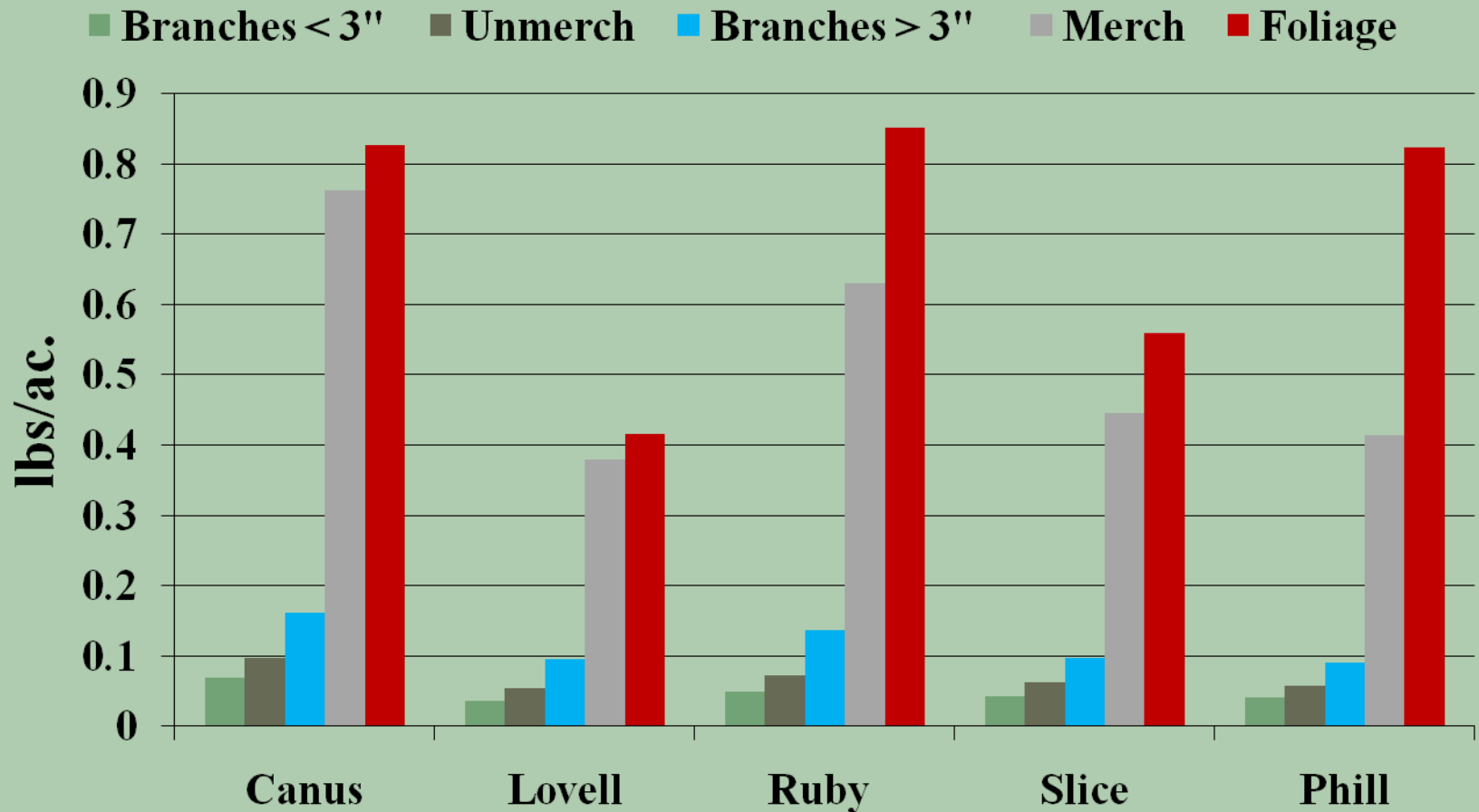
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FVS and NutCal Estimated Above Ground % Nitrogen



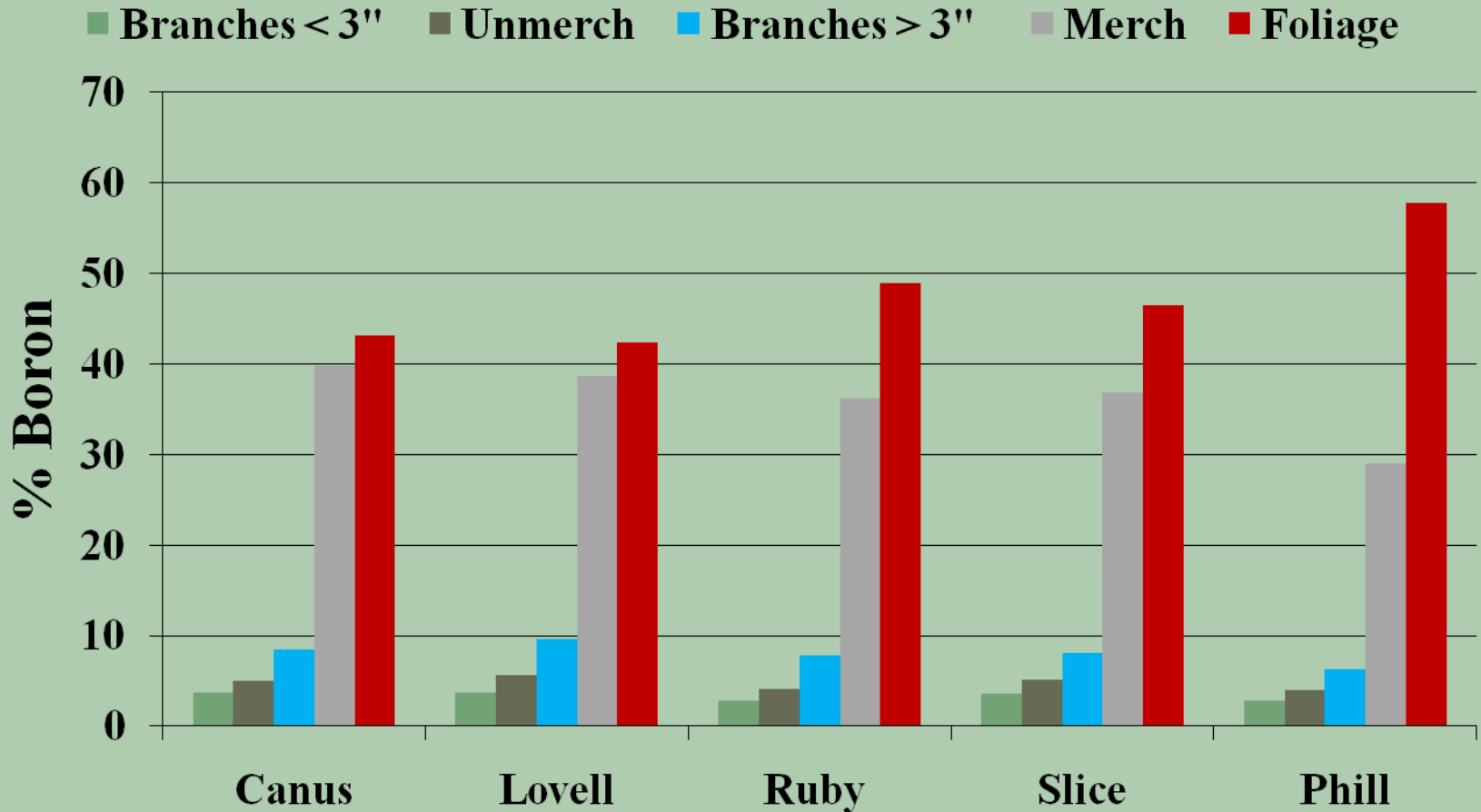
Harvest by Site Quality Study

FVS and NutCal Estimated Above Ground Boron Content



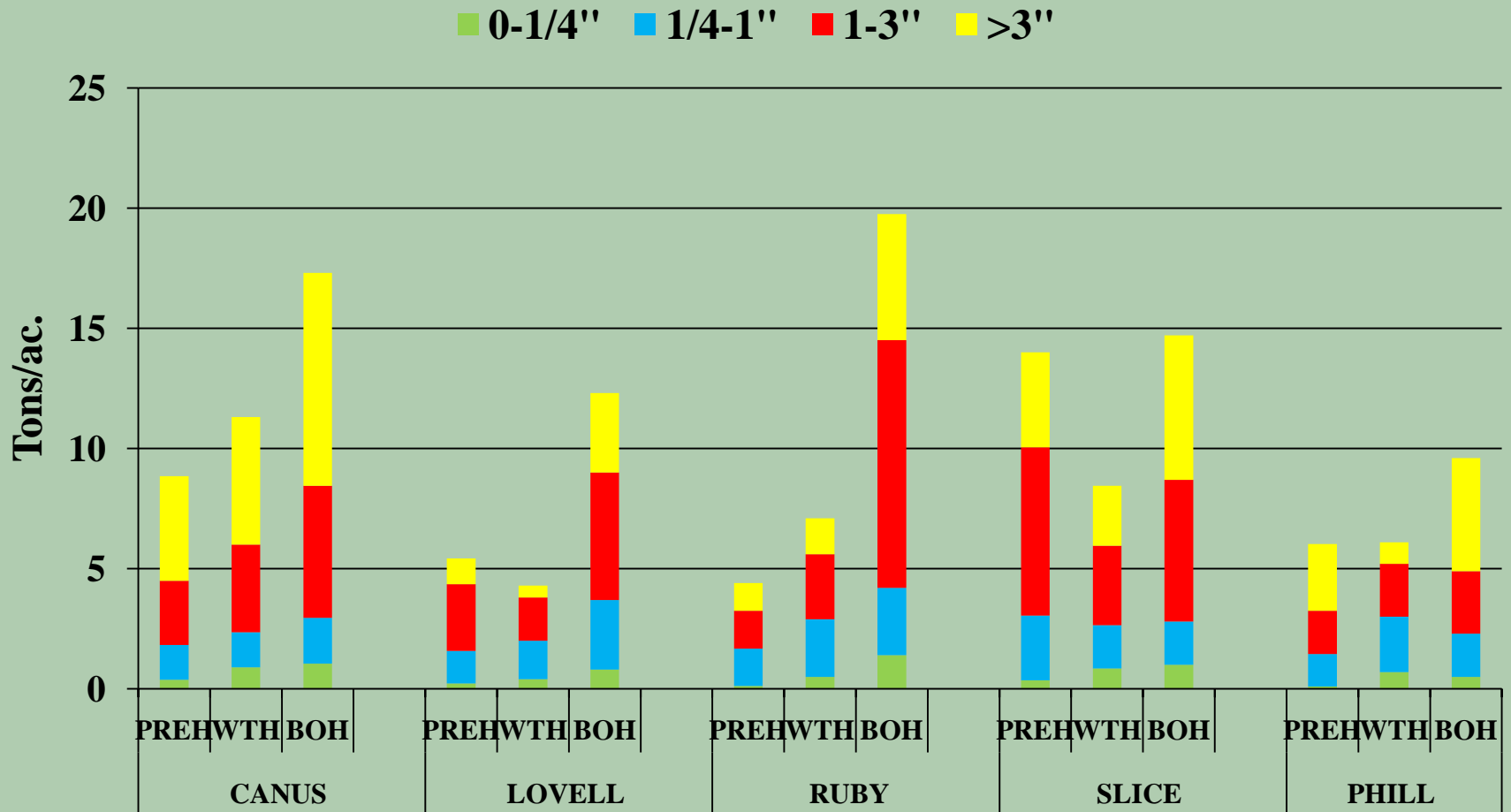
Harvest by Site Quality Study

FVS and NutCal Estimated Above Ground % Boron



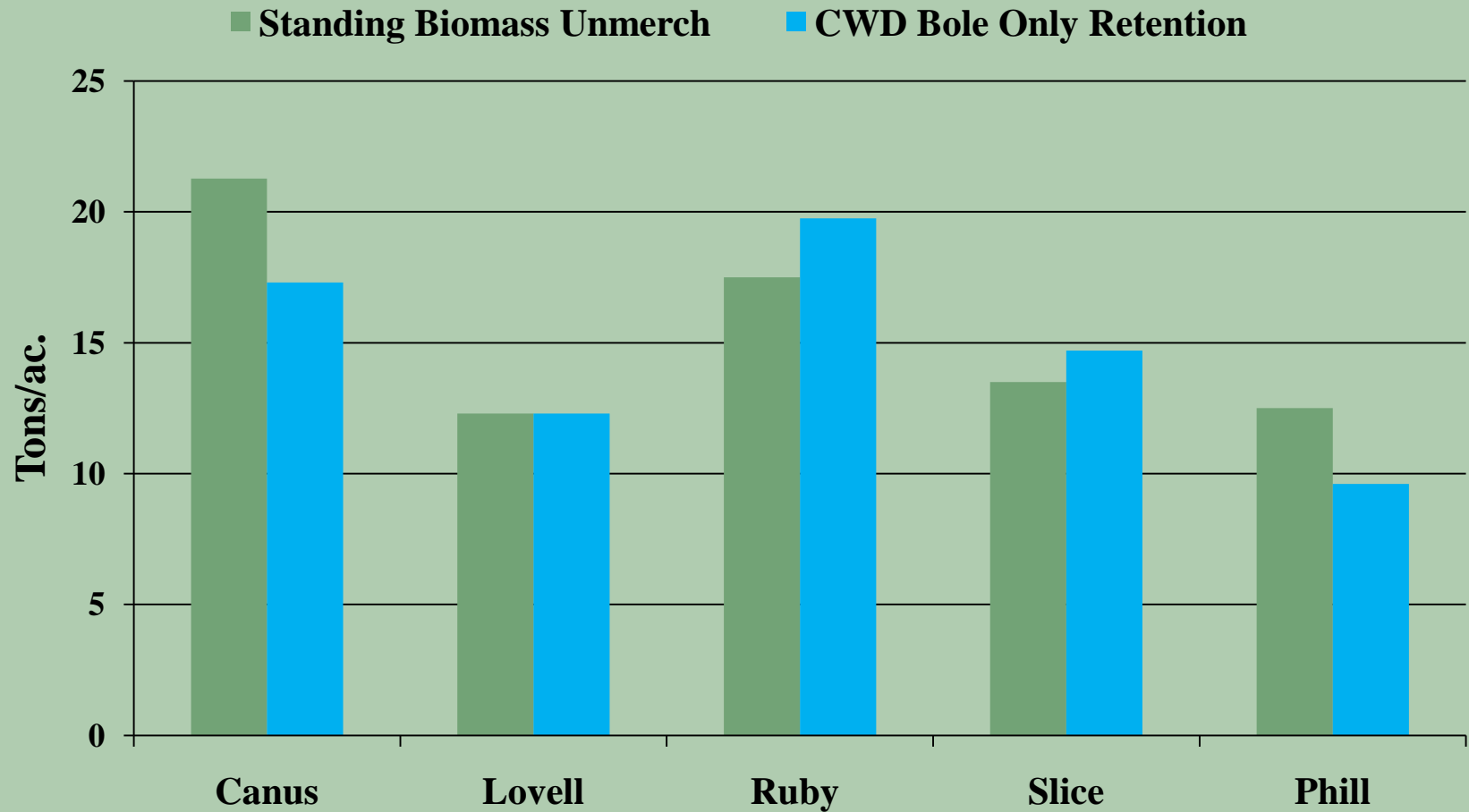
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Post Harvest Slash Retention by Treatment and Site



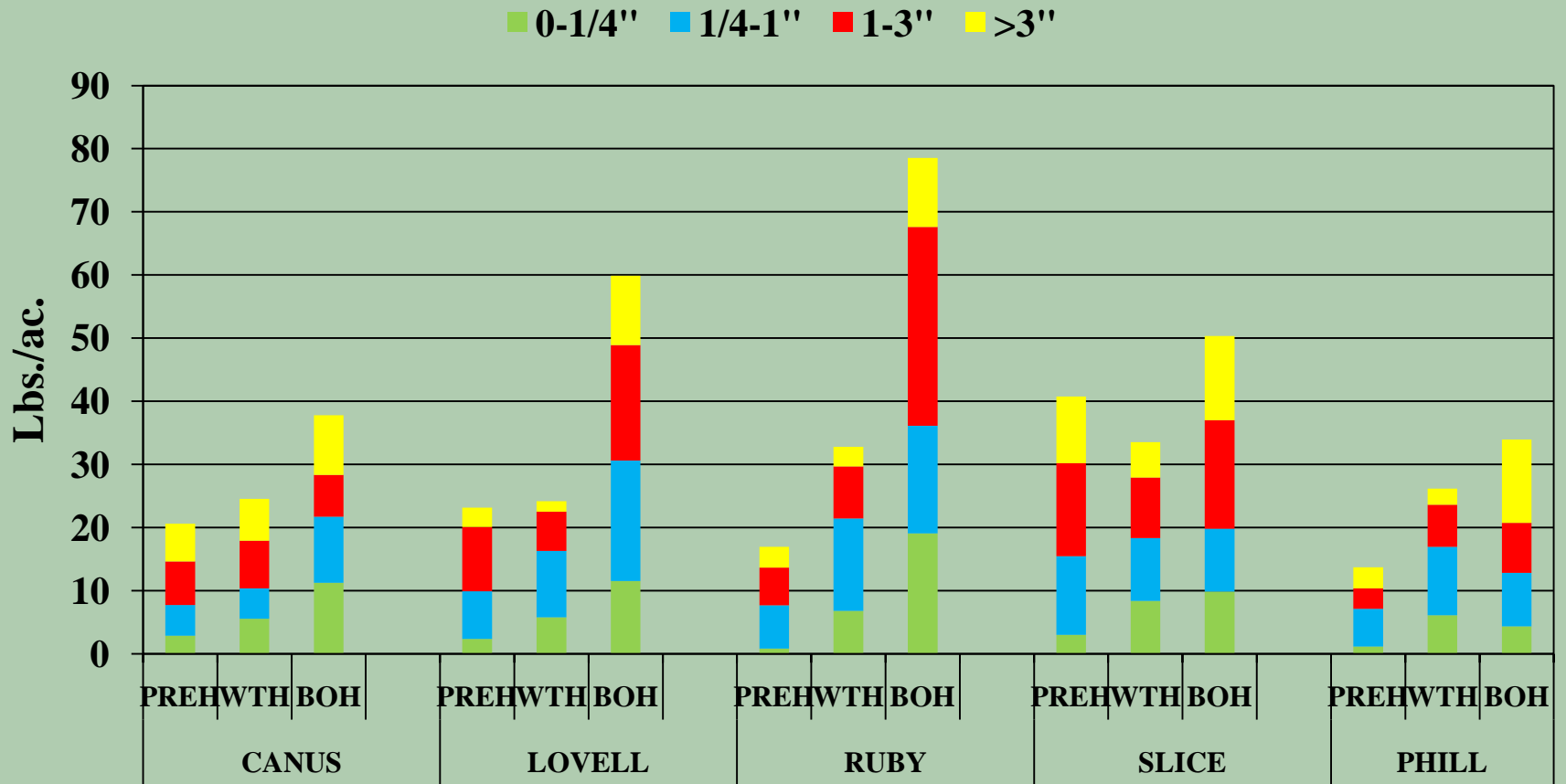
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Post Harvest Slash Retention by Treatment and Site



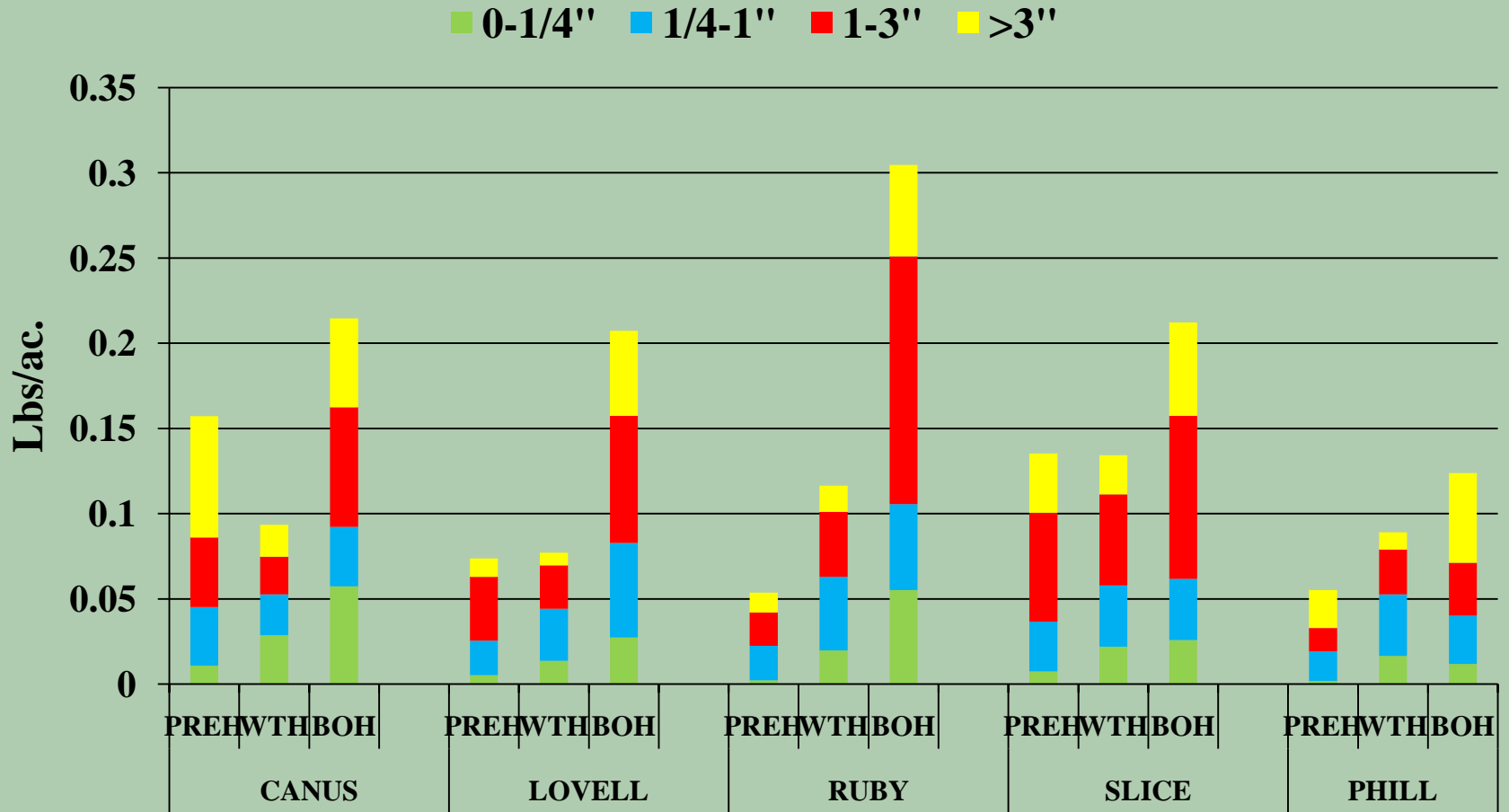
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Post Harvest Nitrogen Retention by Site and Treatment



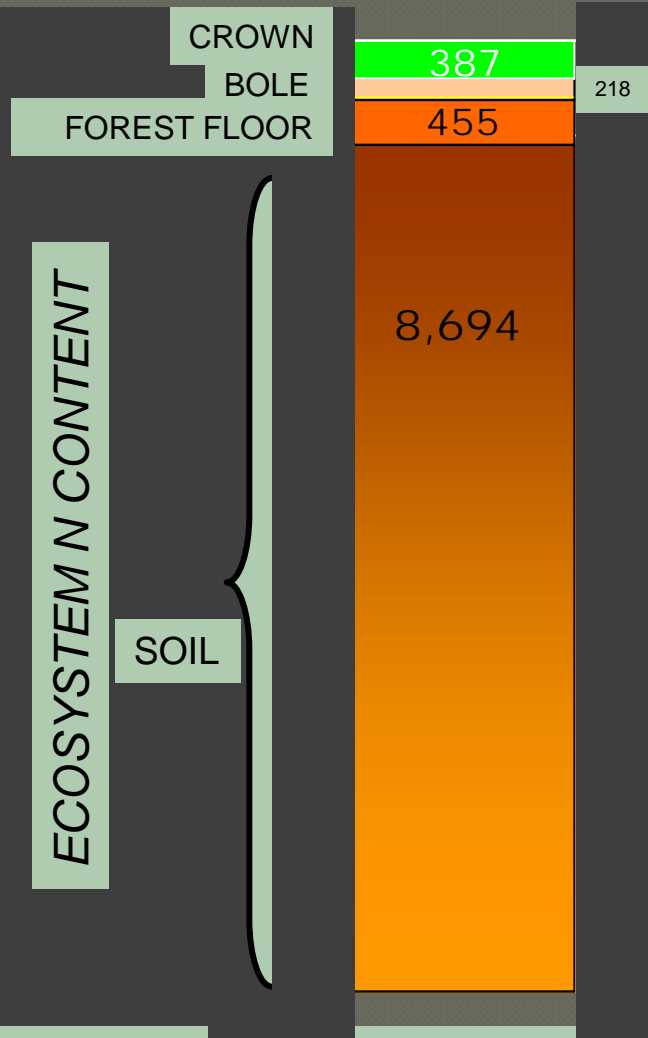
Harvest by Site Quality Study

Post Harvest Boron Retention by Site and Treatment



WHAT'S NEXT

DISTRIBUTION OF NITROGEN (kg/ha) ONE LTSP SITE



ECOSYSTEM
NITROGEN =
9,758 kg ha⁻¹

Powers et al. 2005

California
mixed-conifers

Harvest by Site Quality Study

THINGS TO DO

- Total Ecosystem Biomass (Carbon) and Nutrient Budget
- Surface Soil and Resin Capsule Nutrient Assessment
- Long Term Productivity Assessment
- Soil-Site Disturbance Assessment

