

Solbere/Imasco Trial

Shawn Mansfield, UBC

Planted June 24th





Grown for 3 Weeks Before Treatment



Sprayed with 4% Solution July 18th



Second Application Aug 8th



Second Application Aug 8th



Experimental Design

- Drought trial with Lodgepole pine (*Pinus contorta* var. *latifolia*)
 - 50% water with removal
- Measure Photosynthetic Traits (August 2nd/3rd and Sept 11th/12th)
 - photosynthesis
 - conductance
 - transpiration
- Recorded height growth
- Recorded diameter growth with digital calipers

Experimental Design

- Cycling drought
 - On average watered every 3 days
- 2 by 2 experimental design
 - 100 trees fully watered
 - 100 trees with water limiting
 - 100 trees with 4% application and fully watered
 - 100 trees with 4% application and water limiting
- Measured height and diameter at the start of trial, at the mid-point, and at the termination of the project
- Measured photosynthetic traits at the same time points

Results

- MANOVA

- No interaction
- Conductance – an effect on drying
- Transpiration – almost an effect

- ANOVA

- Treatment on drying**

- Photosynthesis – an effect (reduction) treated versus not treated
 - Conductance – an effect of water versus water limiting
 - Transpiration – almost an effect of water versus water limiting
 - No transpiration or conductance effect by treatment

- Treatment on watered**

- No effect at all

Results

Normal Growth Environment								
	Photosynthesis			Conductance			Transpiration	
	Average	St Dev		Average	St Dev		Average	St Dev
Untreated	13.27	3.57		0.24	0.07		4.14	1.15
Treated	11.61	2.89		0.27	0.07		4.72	1.17
Water-Limiting Growth Environment								
	Photosynthesis			Conductance			Transpiration	
	Average	St Dev		Average	St Dev		Average	St Dev
Untreated	10.86	1.92		0.18	0.08		3.36	1.22
Treated	8.29	3.02		0.17	0.11		3.31	1.78

Results

	Diameter Change	
	Average	St. Dev.
Water Restricted-Untreated	1.34	0.54
Water Restricted-Treated	1.72	0.57
Normal Watering-Untreated	1.51	0.57
Normal Watering-Treated	1.65	0.44
	Height Change	
	Average	St. dev.
Water Restricted-Untreated	4.07	0.54
Water Restricted-Treated	3.60	0.57
Normal Watering-Untreated	4.88	1.73
Normal Watering-Treated	4.68	0.89

Results

	Diameter	Radius	Radius ²	Height	Height/3	Volume
Water Restricted-Untreated	1.34	0.67	0.45	4.07	1.36	1.91
Water Restricted-Treated	1.72	0.86	0.74	3.60	1.20	2.79
Normal Watering-Untreated	1.51	0.76	0.57	4.88	1.63	2.91
Normal Watering-Treated	1.65	0.83	0.68	4.68	1.56	3.33