

Irrigation Systems for Green Roofs

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What is a Green Roof?

A roof that is covered with plants and grown in specialized media. These plants can range from small sedums to complete gardens with trees and other ornamental features.



Starting January 31, 2010, a bylaw in Toronto will require green roofs in all commercial, institutional and residential development with an area exceeding 2,000m²



Some Benefits of Green Roofs

- Reduced water run-off
- Lowers surrounding temperature
- Reduction in energy costs
- Increases bio-diversity
- Improves living spaces








Part 1 - Plant Establishment

Conducted by the class of 2009




- Establishment of plant material in modules.
- Native and sedum plants were selected for the trial
- Two drip irrigation systems from *Dramm* were compared

Irrigation systems used

Dramm Ring - Generation 2

Dramm Line Prototype







Part 1 – Results

Ring Irrigation	Line Irrigation
Water Distribution:	
- Distinct ring formation	- Uniform water
- Longer time to fully irrigate through the module	- Half the time to irrigate through the module
Success of Plant Material:	
- 10% of plants were lost	- 1% of plants were lost
- Corners and centers most affected by lack of water	

Best plants in Part 1:



- Upland Aster
- Prairie Smoke
- Poor Robin's Plantain
- Hairy Beard Tongue
- Nodding Wild Onion
- **Sedums- various**

Part 2 -Outdoor Evaluation

Conducted by: Joanna VanLuttikhuisen, Ernie Morimoto, Mark Russell

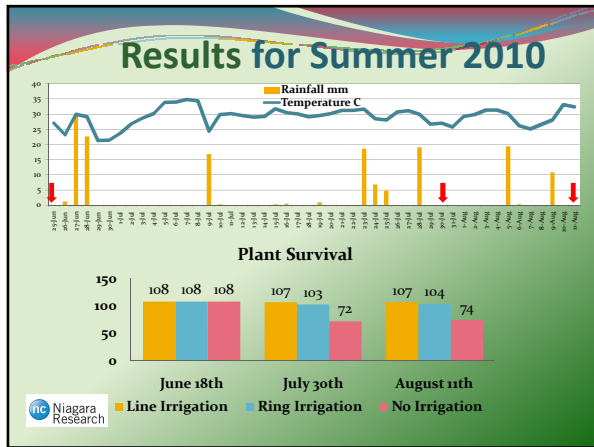
Project goal:
Are irrigation systems necessary for preventing plant death in Ontario green-roofs ?

Project Set-up

- Three structures built to regular guidelines for green roofs.
- Each with 9 modules 2ft x 2ft and 4" deep.
- **Ring and line irrigation installed**



Pennsylvania Sage - *Carex pensylvanica*

Irrigation vs. No Irrigation





Sedums - various




Irrigation vs. No Irrigation





Pussy Toes - *Antennaria parvifolia*

Irrigation vs. No Irrigation

The two irrigation systems- Any winner?

Dramm Ring Generation 2




Dramm Line Prototype




Conclusion

- *Irrigation significantly improved plant survival*
- Line prototype and the ring system are not significantly different in the field
- Sedums survived better than native plants without irrigation
- *Irrigation is needed when native plants are used in conditions like the Summer of 2010*



Acknowledgments









What this means for Greenhouse Growers...

If your client loses 30% of their plant material due to no irrigation, can this effect your overall reputation as a grower?

