

Flower Greenhouses: Success Stories

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Water Smart
Farming Project



- First coalition of its kind, formed in 2012. Whole sector approach – all types of farmers and associated businesses working together.
- Funded by members, sponsors, projects.
- Common goal – building public trust in food and farming.

Why is public trust important?



How do we get our 'social license'?

Definition: The privilege of operating with minimal formalized restrictions based on maintaining public trust by doing what's right.

Public Trust: A belief that activities are consistent with social expectations and the values of the community and other stakeholders.



Why is public trust important?

Unilever, Kellogg, Mars
Drop Major Palm Oil
Supplier After RSPO
Revokes Its Certification





Enviro-Stewards Inc.

Enviro-Stewards Inc. is an engineering firm and Certified B Corporation that helps clients:

- *increase their profits*
- *sustain the environment, and*
- *compellingly benefit society.*

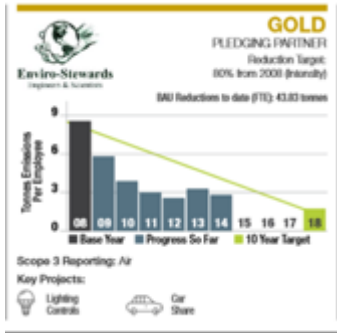
What makes us a better company?

B Impact Report

Certified since: September 2011

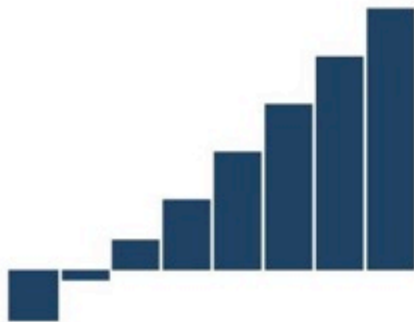
| Summary: | Company Score | Median Score* |
|------------------------|---------------|---------------|
| Environment | 39 | 9 |
| Workers | 33 | 22 |
| Customers | 6 | N/A |
| Community | 42 | 32 |
| Governance | 20 | 10 |
| Overall B Score | 140 | 80 |

80 out of 200 is eligible for certification
 *Of all businesses that have completed the B Impact Assessment
 *Median scores will not add up to overall



Approach

SAVE



Increase Profits

Comprehensive Assessments Save an Average of \$215,000 per Facility (With 1 Year Payback)

SUSTAIN



Sustain the Environment

Team Approach Yields a 90% Implementation Rate and Footprint Reductions of 10 to 90%

SHARE



Benefit Society

Safe Water Project Provides Clean Water and Sustainable Employment

Examples of who we work with:

Sampling of Successful Environmental Projects:

- Campbell Soup
- Chudleighs
- PepsiCo Foods – Frito Lay
- Gay Lea Foods

Environmental Sustainability Recognition:

- Tim Horton's Fruition Fruits & Fills – 2014 Clean 50 Top 5 Projects in Canada
- Andrew Peller (Global Vintners) – 2016 Clean 50 Top 15 Projects in Canada

Water Efficiency Projects In Progress:

- Holland Marsh vegetable processors & irrigators
- Ontario Tender Fruit Growers washing & packaging
- Vegetable greenhouses – Leamington
- Flower greenhouses




Water Smart Assessments | Water Use Efficiency for Greenhouse, Washing Facilities, Irrigation



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Ontario Flower Greenhouses: Good News Stories



- \$787 million in farm gate sales
- 3.9% increase in farm gate sales 2014-2015
- Farm gate per hectare= \$2.2 million (2015)
- Current estimated contribution of \$1.36 Billion to Ontario's economy (through production activities)
- 7,643 direct employees (4,274 seasonal, 3369 permanent)
- Increase in # of permanent employees in 2015
- Exported \$200 million to USA in 2015

Our observations of growers who have successfully accepted the challenge of dealing with waste water



1) Take OWNERSHIP of the Problem: Take the Pledge!



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I, __ (name) __, add fertilizer to water to feed my plants & make them grow.

It's my responsibility to ensure that nutrients do not make their way into any nearby water courses.



2) KNOWLEDGE

You know your systems...

You are the experts!

- Water source(s), storage, recapture
- Fertilizer injection, filters, disinfection
- Control systems (when, how much, how often)
- Drainage where does every drain go
- Tanks, cross-connections
- Strengths, risks and weaknesses
- Contingency and back-up



3) Role of TECHNOLOGY: What might you need to better utilize your systems?

- Better understanding of system (blame it on grandpa):
 - Where does that drain go?
- More tanks or redundancy
- Flexibility to meet changing market
- Does a recirculation system fit?
- Disinfection systems, filters?
- Looking for a “one-step solution”
 - A treatment technology
 - A place to truck it
 - Sewers



4) MANAGEMENT: How might we run the system differently if the goal is zero or minimal discharge?

- Are there trade-offs required to get better wastewater control?
- Are there changes to watering, timing, amounts, zone size, crop order, disinfection, operator training?



Potted Plants – Dan




- Water availability was an issue from day 1
- 5 acres, year round & seasonal production
- Collects all water from planting lines & wash water
- 100% Closed Loop: Trough watering recirculation system
- Treatment: filtration, chlorine dioxide, copper deionization
- Roof water collection – cistern
- Pond = back-up water supply (needed this year)
- Prevent cistern overflow by filling stock tanks

‘We made production decisions that align with good environmental decisions.’

Water security, production needs: driver behind systems chosen



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Wholesale Bedding Plants – Rodd



- As production increased, needed more water
- Rain water sole supply as of 5 years ago with pond backup
- Roof water collection – cisterns
- Flood floor recirculation system, extra capacity
- Closed loop: Feed water to woodchip bioreactor, to silo, to UV & chlorine treatment to cisterns, to recirc system
- Woodchip bioreactor also effective for pathogen control

Production increase, flexibility, crop sensitivity, water supply: drivers behind systems chosen

Flood Floor Benefits: improved product quality, labour savings, increased production, dry environment, shipping easier

Advice to others: plan ahead, start in small pieces, it feels good once it's operating, not as scary once it's done, more is planned



Cut Tulips & Seasonal Plants – John



- Flood bench (tulips) & flood floor (seasonal) recirculation system
- Cut & capped tile drains – everything goes through wetland
- Closed loop: Excess water to constructed wetland to address turbidity/colour before UV treatment, then back to recirc system

Flood Floor Benefits: ship large volumes of production, versatile (off-season storage space), move plants in & out quickly, drivers behind system chosen

Address excess tulip water leaving farm via tile drains: additional driver (water colour/quality)

Advice to others: do your research, had to learn how to grow differently, use less labour. 'It's the way to go.'



Potted Plants – Gerard

- 10 yrs ago started recapturing nutrients
- Heated flood floor recirculation system installed last year
- Closed loop: 100% flood floor water captured, treated, then back to floor
- Propagation: 1st stage (rain) water
- Boiler condensate water blends with irrigation water
- Infrastructure in place for future expansion

Expansion allowed incorporating closed loop & flexibility for the future: driver behind systems chosen

Flood Floor Benefits: flexible, high level of automation possible, more uniform crop with gravel floor, addresses environmental concerns

Advice to others: can you afford to dump water? H₂O, fertilizer & treatment are expensive



Cut Flowers – Glenn



- Drains collect leachate under each bed, to catchment basin, to cistern
- Subsurface infrastructure already in place
- Additional cisterns for separating fresh & return water
- Extra capacity as a contingency
- Filtration & hydrogen peroxide water treatment
- Monitoring system for pathogen levels
- EC monitoring tells you exactly what's going on, mixing & blending valves give flexibility

Tile outlet sampled & found leaching more than we thought. Catch it & reuse it, don't lose it: driver behind systems chosen

Leachate collection benefits: fertilizer & water savings, fine tune control, flexible, more storage capacity

Advice to others: It's the best thing I ever did. It's the way to go. It's better to be ahead of the game than to be legislated.



The good news is:

- Other growers have been successful
- Not one way to solve this issue => creative solutions
- Ontario's knowledge base is growing – start the conversation
- Start planning & building it into your budget
- Yep, this all costs money
- But, it can be done
- It can **BENEFIT** your business



‘When you change the way you look at things, the things you look at change.’

Wayne Dyer

Questions:

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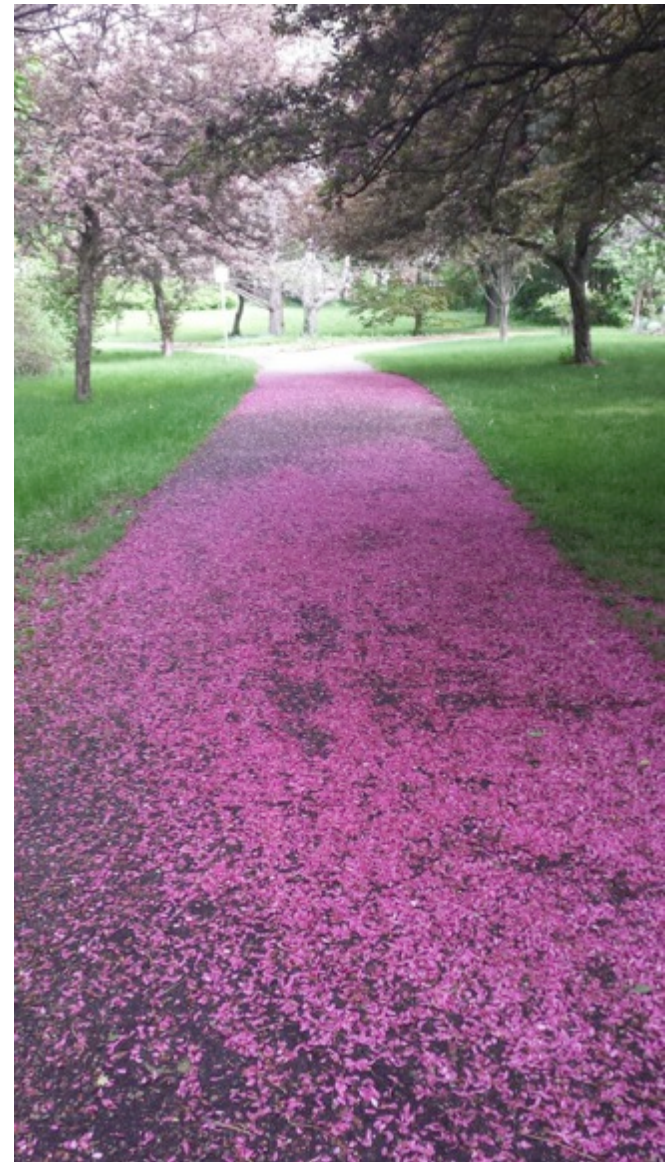
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