

Composting On-Site at Lufa Farms Urban Rooftop Greenhouse *Montreal, QC*

**Catherine Church
Compost Manager,
Plant Science Assistant at
Lufa Farms**





An aerial photograph of an urban area. The image shows several large, multi-story buildings with flat roofs. There are numerous parking lots filled with cars, and streets with some traffic. The overall scene depicts a dense urban environment.

2008 : 50% of world population live
in urban areas.

2050 : Projected **70%** of world
population will live in urban areas.

Welcome to Lufa Farms

The World's First Commercial Rooftop Greenhouse



What We Grow

20 varieties of tomato

Bell peppers

Hot peppers

Conical peppers

Eggplants

English Cucumbers

Lebanese Cucumbers

Salad Greens

Microgreens

Cut & live herbs



NO Harmful
Synthetic
Pesticides,
Fungicides,
or Herbicides





Rainwater Harvesting
+
Water Recirculation
=
80% less water usage
than a conventional
greenhouse

State-of-the-art energy saving techniques

+

Residual heat from building below

=

50% + Less Energy Usage than a conventional greenhouse





120+ Pick-up Points for
our 2000+ CSA Members

Customizable Baskets




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BASKET OPTION



CUSTOMIZE
YOUR

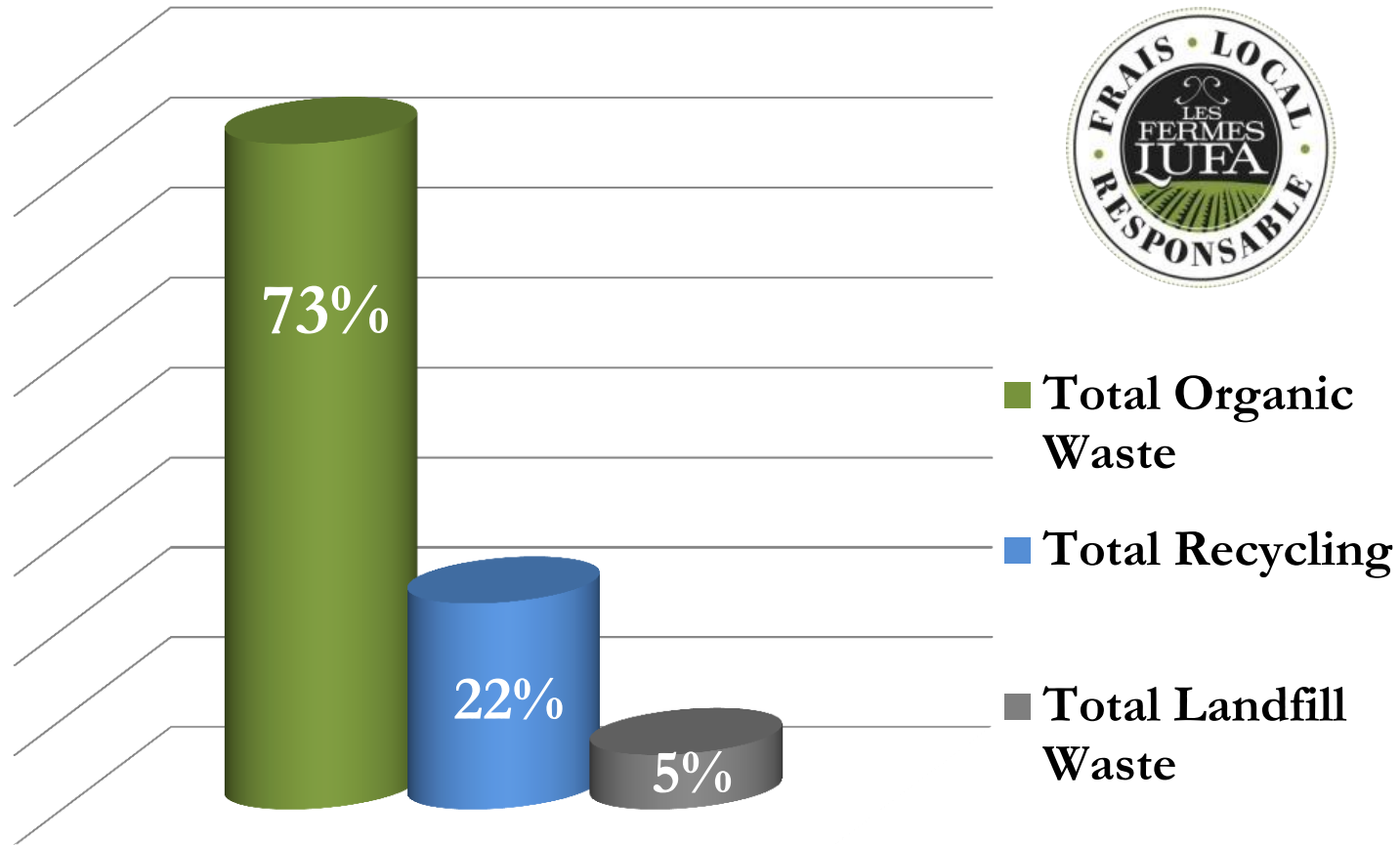


COLLECT
YOUR BASKET



DELIGHT
IN FRESH FOOD

Lufa's Total Waste



From 800-1000kg per week – mostly fresh leaves from our plants.



Starting our On-Site Composting Program

- Choosing a composter
- Determining a recipe
- Profitability considerations
- Marketing our compost
- Challenges to address

Choosing a Composter

Fits in parking garage



GROUPE COMMERCIAL
Paul Larouche inc.

Continuous system –
allows daily inputs.

70% funding
available from
Recyc-Quebec

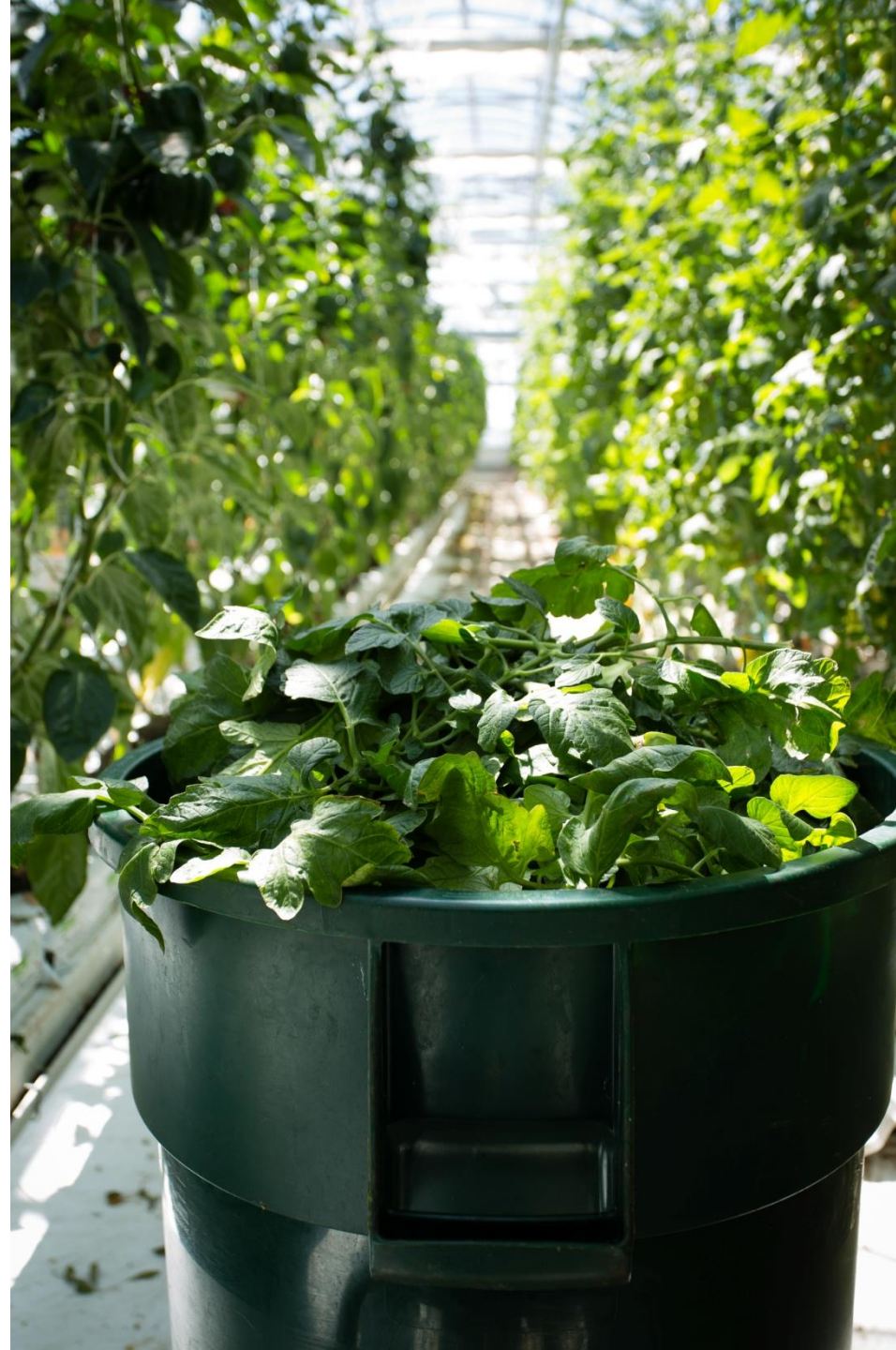
Produced locally



- 
- 4 – 6 weeks in machine
 - No leachate produced
 - Mature at output

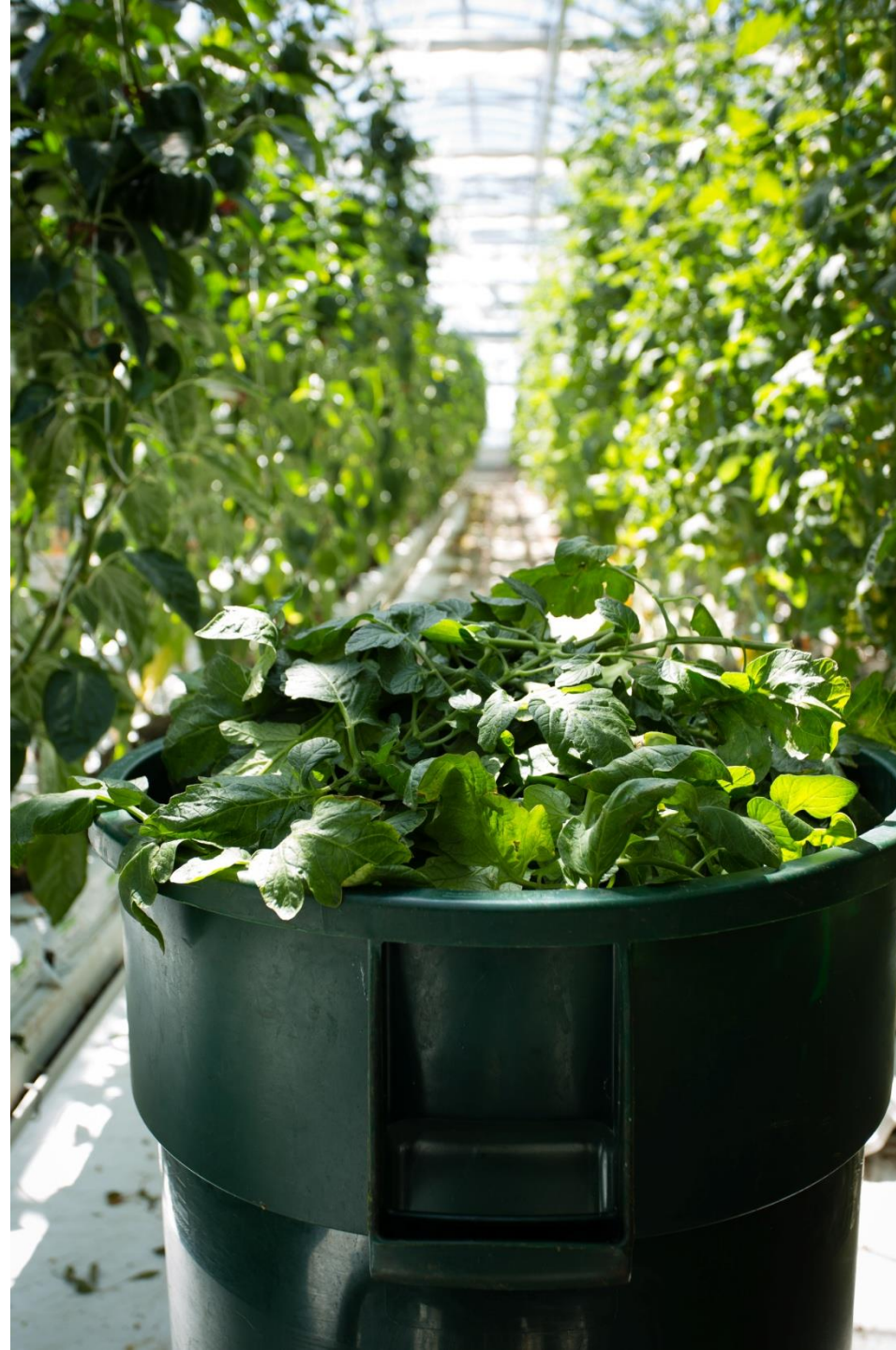
Determining a Recipe

- Main N input is plant bio-mass
 - Tomato, pepper, cucumber leaves
 - High in lignin, difficult to reach high temperatures.
 - Fresh leaves have high volume and moisture
 - lessens our daily weight capacity.
- Started using wood shavings
 - Woodier finished product, more like mulch
- Switched to wood pellets
 - Finer product, but adjusted for higher C:N to address moisture/porosity concerns



Determining a Recipe

- We developed customized application to track inputs, calculate C:N ratio, keep records.
 - Sent samples of all inputs to lab for analysis.
 - Helps keep records, track problems.





Profitability

- Labour requirements
 - Daily maintenance
 - Packaging for sale
- Sales potential
 - Marketing requirements
- Cost-benefit of composting vs. landfilling

Labour Requirements

- Get waste to the basement ← Chute vs. elevators
 - Gather loading/monitoring equipment (thermometer, shovel, scale, etc.) ← Keep equipment in loading area
 - Take and record temperature in 3 places
 - Chop and load materials ← Use mechanical shredder
 - Lock machine, put away equipment
 - Sweep area around the machine
 - Rinse collection buckets
- =30minutes/day
- (+ Sifting once per week) ← Use mechanical sifter

WEED FREE LOCAL ODOURLESS

If the grass is greener
on the other side...

*It must be all the compost
fertilizer they are using!*

Made from
LUFAs
FARMS
vegetable & plant
ORGANIC
WASTE

IT IS A
MISCONCEPTION
THAT ORGANIC
RESIDUES
ARE A WASTE
PRODUCT,
THEY ARE
IN FACT
A VALUABLE
RESOURCE!



Guaranteed analysis:

Moisture Content: 73.9%
Organic Matter: 79.5%
Medium texture mature
compost with a C:N
ratio of 33:1, high in
macronutrients Mg,
P, K and a CEC of
30meg/100g.

Directions for Use:

Not to be used as
the only growing medium.
For use as an amendment to
existing medium. Can be used as a top
dressing or to enhance soil structure in clay
soils. Mix in up to a ratio of 1:3 (compost:soil),
or top dress up to 2" and water in.

Cautionary Statements:

Store in a dry area, out of direct sunlight,
away from weeds, seeds and animals.
Wash hands after handling.

**GIVE BACK to
THE EARTH**

Composting keeps organic waste out of
landfills where anaerobic conditions leads
to the production of methane (GHG) and
harmful leachates that enter our water system

Lufa Farms composts over 250kg
of organic waste every week and
has been regularly composting
it's organic waste since April 2012.

Read about our compost program and how
best to use Lufa's compost on our website at
www.lufa.com/compost.



12 kg

Marketing Our Compost

- High CapEx and OpEx for composting on-site
- Relatively affordable garbage tipping fees.
- Lufa already has customer base of sustainability minded “localvores”
 - Makes marketing a higher priced product easier.
 - 100% local, vegetarian
- “Dollar Market” vs. “Value Market”

Marketing Our Compost



- Small-sized bags aimed at apartment dwellers
 - Houseplants/container gardens
- Fully compostable packaging
- Put up informational displays at several Pickup Points.
- Utilized social media
 - “How to Brew Compost Tea”
- Set up “Compost Booth” at openhouses

CQA Reports (Inclusive): C13115-10021, C13115-70000

Results for Sample ID:

Lufa L1, L2, L3 (April 23, 2013)

Date Reported: May 7, 2013

CQA Product Quality Test Requirements

Sample I.D.#	Recommended Product Use	PH	C/N ratio	Moisture	Particle size	Soluble Salts	CO₂ Respiration
Lufa L1, L2, L3 (April 23, 2013)	Landscaping/Soil Amendment, Light topdressing	8.9	22:1	63.2 %	1/4 in.	8.7 ms/cm	(8) Slovita 1.7 mg. CO ₂ -C/g O.M./day

Recommendations for product use are only a suggestion based on the analysis that was performed on this material. This compost has mature properties due to the low CO₂ respiration rate, is fine textured (87 %+ 1/4 in), and could primarily suit for soil mix blending, soil amendment, and light topdressing end-uses. The suggested use is meant only as a guide for interpretation on what the best end use may be based on this sample.

Comments:

Heavy Metals: The results of our testing indicate sample identified as "Lufa L1, L2, L3 (April 23, 2013)" meets both the CCME and BNQ (2005) current standards for maximum allowable trace metal content in Category A compost.

Microbiological: The results of our testing indicate this sample meets the CCME and BNQ (2005) standards for maximum allowable microbiological levels due to an elevated fecal coliform level.

Maturity and Stability: The CO₂ respiration at 1.70 mg CO₂ C/g O.M./day is "low" in comparison to Dewar indicating stable mature compost properties.

Compost Quality Requirements: * Our testing indicates this compost is fine textured at primarily 1/4 in. particle size. The properties of this material would meet criteria best suited for landscaping, soil amendment, and light topdressing purposes due to the texture. The results of our CO₂ maturity test indicate the product is stable with a low CO₂ respiration level. At 1.70 mg.CO₂-C/g O.M./day, in comparison to the guideline of 4.0 mg.CO₂-C/g O.M./day this product meets guidelines. The sodium for landscaping and soil amendment purposes should be less than 2.0 % Na saturation in the final mix, and this material is slightly higher at 2.0 % Na. The sodium level of this compost sample though higher is suitable for agricultural broadcast field applications and are made to improve the organic matter levels and major nutrients phosphorus, potassium and magnesium levels. Due to the sodium, if used as part of a soil mix would require a minimum of-2-3 parts soil blended to each part of this compost to be safe from a higher sodium perspective.

Challenges Going Forward

- Storage
 - Stockpile for spring sale
- Increase input
 - Mechanical shredder, sifter
- More revenue
 - Additional markets
 - Compost tea
- Future facilities



Questions?

