

Countertop

Composters:

A solution for Multi-Unit and Small Business

Organics?

Lisa Howse, SWRC



Purpose

Why did we want to do this?

- Dealing with organics waste is an important and **challenging** part of waste management.
- Finding diversion options for multi-unit residences and businesses/institutions – especially those without a green cart pick-up – is an ongoing process.
- The SWRC has received many direct inquiries about countertop composters and their effectiveness.
- Some Canadian communities have investigated giving out countertop composters to residents as an organic waste management strategy. (I.e. Nelson, BC, Red Lake, ON.)

What did we want to find out?

- Are these units reliable?
- How do they transform organic waste?
- How do households, institutions, and businesses feel about using them?
- **Are countertop composters an effective tool in SK for organic waste management?**



FOODCYCLER FC-50

\$555 CAD - ~0.66 KWH/BATCH -
2L CAPACITY





FOODCYCLER

ECO 5

\$805 CAD

~1.5 KWH/BATCH

5L CAPACITY





LOMI

\$615 CAD

~0.62 KWH/BATCH

3L CAPACITY





REENCLE

\$760 CAD - ~1.05 KWH/DAY
1 KG/DAY CAPACITY





Methodology

SWRC testing – two months of heavy, continuous use, focused on reliability.

Household/small business testing – two months of typical use, focused on user experience. Supplemented by interviews with other users from outside the study.

Testing finished samples – samples from each type of unit subjected to germination tests, mould tests, and lab analysis (A&L Canada Laboratories).

Household/small business testers:

Foodcycler FC-50:

- 2 households
- 1 small office
- 4 additional interviews

Foodcycler Eco 5:

- 1 large office
- No households
- No additional interviews

Pela Lomi:

- 2 households
- 1 medium institution
- 4 additional interviews

Reencle:

- 2 households
- 1 small office
- No additional interviews

Results

Reliability during SWRC stress testing?

Foodcycler FC-50:

- Very reliable
- Processed all blends with ease
- Carbon filters used up

Foodcycler Eco 5:

- Somewhat reliable
- Large loads often needed multiple cycles to dry
- Carbon filters used up

Pela Lomi:

- Very reliable
- Processed all blends with ease
- Carbon filters used up

Reencle:

- Borderline reliability
- Mechanical failure in 1 out of 3 units
- Carbon filters not used up

User experience?

Foodcycler FC-50:

- Positive!
- Easy to use, "clean"
- Happy to continue

Foodcycler Eco 5:

- Positive!
- Easy to use, "clean"
- Happy to continue

Pela Lomi:

- Positive!
- Easy to use, "clean"
- Happy to continue

Reencle:

- Mixed
- Odour and flies
- 2 of 3 units were returned after study



**HOW WAS
WASTE
TRANSFORMED?**

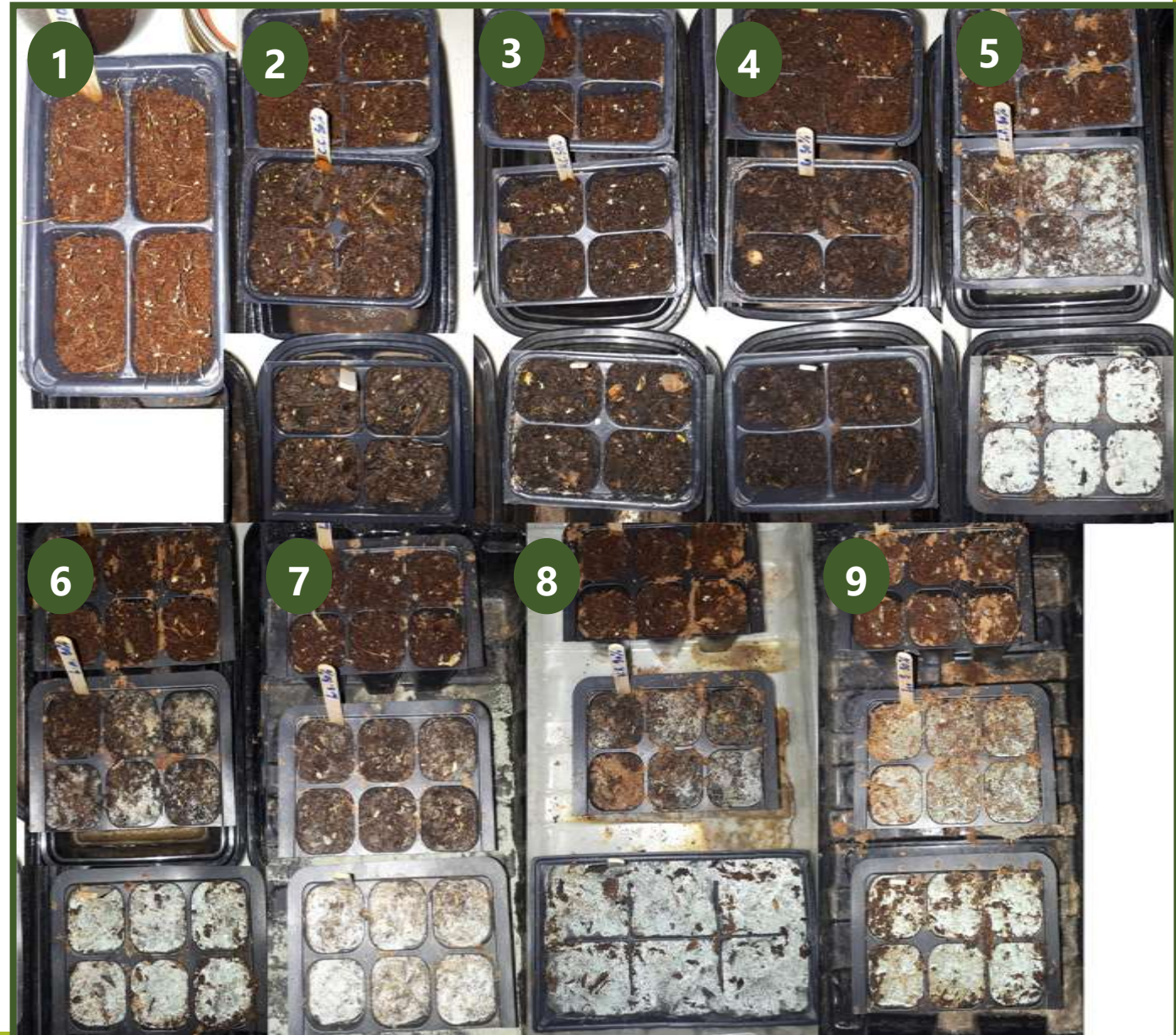
Mould test



1. Coconut coir
2. Industrial compost
3. Home compost
4. Reencle sample
5. Lomi fast cycle sample
6. Lomi medium cycle sample
7. Lomi slow cycle sample
8. Foodcycler FC-50 sample
9. Foodcycler Eco 5 sample

Germination test

	90% coir, 10% test sample	50% coir, 50% test sample	100% test sample
1. Coir	-	-	90-100% germination
2. Industrial compost	90-100% germination	80-90% germination	10-20% germination
3. Home compost	50-60% germination	50-60% germination	10-20% germination
4. Reencle	50-60% germination	10-20% germination	10-20% germination
5. Lomi fast cycle	0-10% germination	No germination	No germination
6. Lomi medium cycle	0-10% germination	No germination	No germination
7. Lomi slow cycle	10-20% germination	0-10% germination (single sprout)	No germination
8. Vitamix Foodcycler FC-50	0-10% germination	No germination	No germination
9. Vitamix Foodcycler Eco 5	0-10% germination	No germination	No germination



Lab Analysis:

	Industrial Compost	Home compost	Reencle	Pela Lomi (fast cycle)	Pela Lomi (medium cycle)	Pela Lomi (slow cycle)	Vitamix Foodcycler FC - 50	Vitamix Foodcycler Eco 5
pH	7.7	7.7	7.2	4.4	4.7	6.5	4.8	4.8
C:N ratio	*n/a	27:1	48:1	51:1	52:1	45:1	47:1	46:1
Moisture - %	11.5	34.4	7.5	4.8	4.2	21.2	7.3	4.7
Total nitrogen (%)	0.5	1.6	2.1	2.0	2.1	2.0	2.0	1.9
Nitrate (NO3) - ppm	53	664	5	15	52	3	76	45
Soluble salt - ms/cm	2.2	4.4	6.0	3.3	3.9	3.9	5.0	4.3
Phosphorus - ppm	534	658	829	711	940	827	1060	1139
Potassium - ppm	2349	2977	3494	2835	3099	2710	3026	2883
Magnesium - ppm	1003	1111	718	573	754	607	650	652
Calcium - ppm	4322	4792	1907	1181	1878	1481	2653	1856

Conclusions

#1

- **The Pela Lomi, Foodcycler FC-50, and Foodcycler Eco 5 simply dehydrate waste. Additional steps are needed to make these units an organic waste solution.**
- **The Reencle makes compost. No additional steps are necessary.**

#2

- **Users enjoyed using the Pela Lomi, Foodcycler FC-50, and Foodcycler Eco 5. These units felt easy, clean, and safe to use.**
- **Users had mixed feedback on the Reencle. Some found it difficult and smelly to use.**

#3

- **The Pela Lomi and Foodcycler FC-50 stood up well to heavy use. The carbon filter did need replacing after processing ~75 putrescent batches.**
- **The Foodcycler Eco 5 had some design flaws.**
- **The Reencle was not consistently reliable. One units out of three had a mechanical failure.**

SWRC

Recommendations

When onsite composting and green cart pick-up isn't available, countertop composters can be a good way to dry and shrink organic waste *until it can finished being processed.*

This has limited application for multi-unit residences.

This can be helpful for businesses and institutions that have relatively small amounts of organic waste. (Not enough to make a green cart collection cost-efficient.)



FOODCYCLER FC-50

\$555 CAD - ~0.66 KWH/BATCH -
2L CAPACITY



Questions?

August-September 2023:

- Foodcycler FC-50:
 - 226 total batches
 - 134 kg
 - 293 L
 - Became 34 kg, 99 L
 - 75% weight reduction
 - 66% volume reduction
 - 4 “jams”
- Foodcycler Eco 5:
 - 77 total batches
 - 47 kg
 - 107 L
 - Became 12 kg, 36 L
 - 74% weight reduction
 - 66% volume reduction
 - 1 terrible “jam,” 2 wet loads
- Lomi:
 - 229 total batches
 - 134 kg
 - 305 L
 - Became 33 kg, 101 L
 - 75% weight reduction
 - 67% volume reduction
 - 1 terrible “jam,” noisy batches
- Reencle:
 - 155 additions
 - 49 kg
 - 104 L
 - Harvested 5 L, 10 L remains in machines
 - 86% volume reduction
 - 2 serious mechanical issues