Community Composting in Colorado

Presented by

Compost Queen

A Public Benefit Corporation

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RECYCLE COLORADO

Meet Jamie

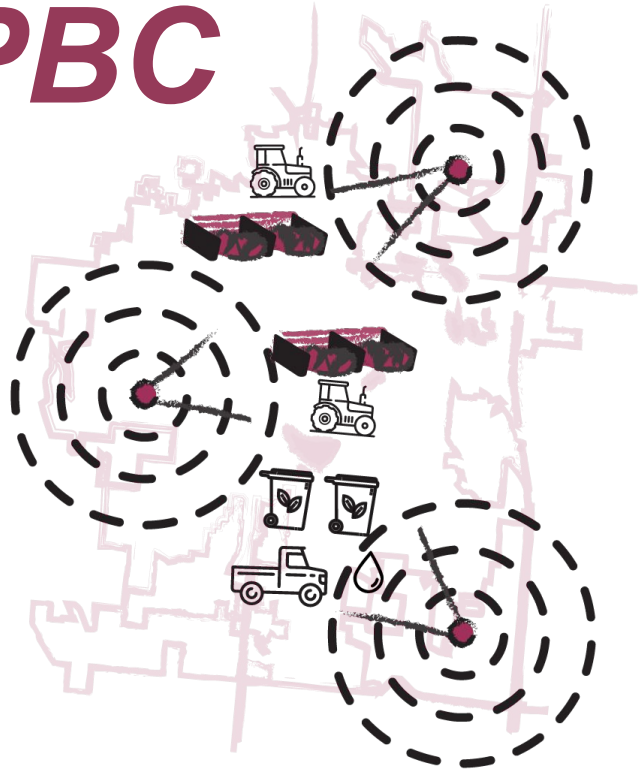
Jamie Blanchard-Poling is an environmentalist, loving mother and entrepreneur with a focus on making sustainable impacts to her local community in Fort Collins. She is a Certified Compost Operations Manager and uses this knowledge to own and operate Compost Queen, PBC.

CQ
Compost Queen

Compost Queen PBC

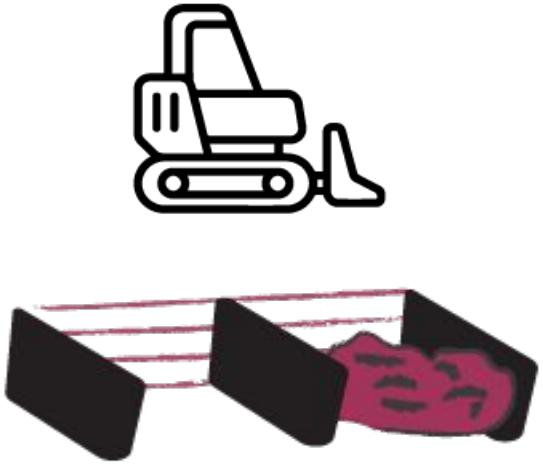
After moving to Colorado in 2015, we spent three years learning all about home composting in the Colorado climate, and Compost Queen was born in 2018.

Compost Queen PBC



Composting requires space, carbon inputs, and local access, so we reached out to a family farm in North Fort Collins as our first partner site. We quickly realized that on farm composting could work to serve Larimer County.

Compost Queen PBC



The service is simple: customers fill their buckets with food waste, we haul and compost at a local farm. Farmers get access to high quality soil amendments for regenerative agriculture, and customers get access up to twice a year

Compost Queen PBC

Compost Queen

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2021 Certified Compost Operations Manager

2022 Emerging Composter of the Year

2022 NextCycle Colorado Graduate

2022 FRWD Grant Recipient

2022 USCC Small Compost Manufacturer of the Year

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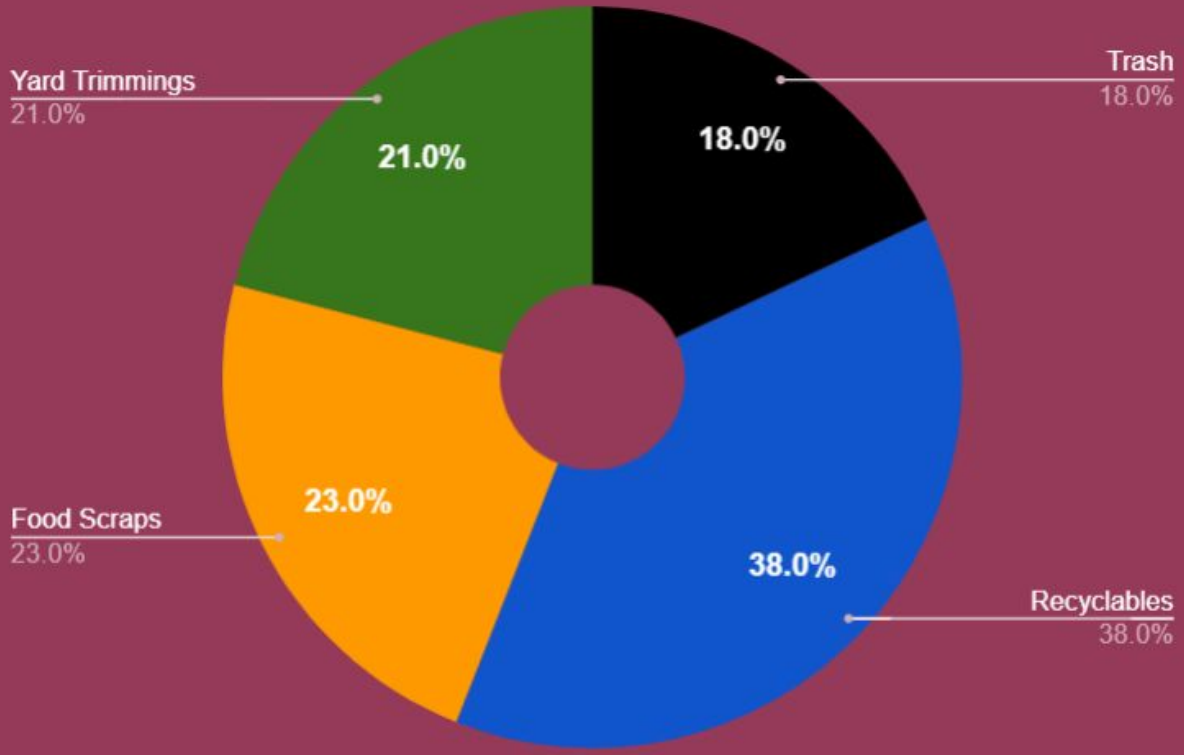
The Organics Problem



Larimer County Landfill is closing this year, and over 40% of it's contents could be diverted to organics recycling programs.

Data courtesy of Larimer County

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Community Composting

What is composting?

Composting is...

the controlled decomposition of raw organic materials (such as food scraps and dry leaves) that creates compost, a valuable soil amendment. This process is driven by fungi, bacteria, and other microorganisms.

There are 5 key ingredients:

Microbial activity causes the pile to heat up. Monitoring temperature can reveal how well the composting process is progressing.

Finished compost is dark, crumbly, and earthy smelling.

1 Water

Like us, composting microbes need water to thrive! They require a thin layer of water around materials in the compost pile in order to be active.

2 Air

Composting is an aerobic process—the microbes need air to live!

Air flow in the pile can be maintained by regular re-mixing or use of a special fan.

Recipe

1 part greens

2 parts browns

3 "Greens"

These are materials relatively high in nitrogen, providing microbes with protein to grow and reproduce.

4 "Browns"

These are materials relatively high in carbon, providing microbes with carbohydrates for energy.

Bulky browns help make space for air in the pile.

5 Living Organisms

Microbes

Microorganisms, or microbes, are the powerhouses of your compost pile. Bacteria are the most numerous and diverse, and consume a wide variety of materials. Actinobacteria and fungi both work to break down leaves, stems, nut shells, bark, and wood.

Macroorganisms

These larger organisms eat microbes and shred materials into smaller pieces.

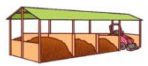
Organisms don't need to be added! They show up on their own.

Lots of ways and sizes!

Home Composting

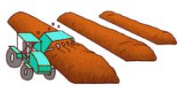
In-vessel

Aerated Static Piles (ASPs)



Bays or Bunkers

Windrows



Vermi-composting

Note: This is a different process as worms don't like to get hot!

Learn more about how to compost:

ILSR INSTITUTE FOR Local Self-Reliance

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Static Pile Composting

Large, carefully crafted piles are watered and turned as needed to produce a finished compost material.

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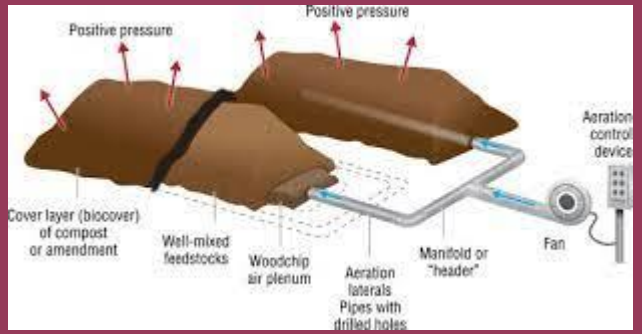
Covered Aerated Static Pile Composting

Happy Trash Compost - Bozeman, MT

Air is forced through a tube in the center of the pile and a cover is used, keeping water retention and removing the need to turn the pile. Up to 50% faster composting than static piles.



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Windrow Composting

A1 Organics - Keenesburg, CO

Elements Mountain Composting - Salida, CO

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In Vessel Composting

Compostable wastes go into a container that allows good control of the environmental conditions such as temperature, moisture, and airflow. The material is mechanically turned or mixed to make sure the material is aerated.

Courtesy of Green Mountain Technologies

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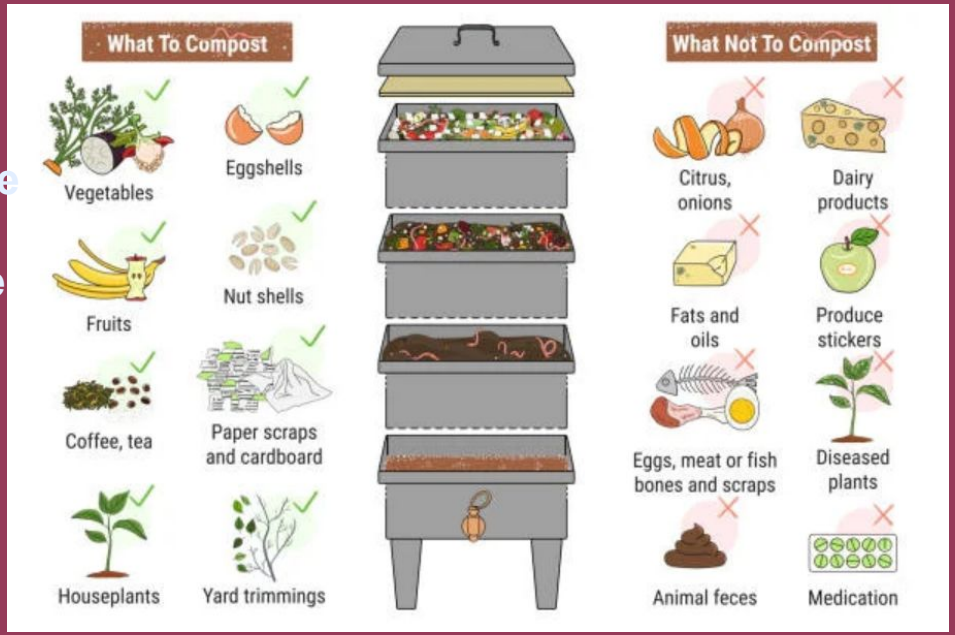
Vermicomposting

Vermicomposting is a process that relies on earthworms and microorganisms to help stabilize active organic materials and convert them to a valuable soil amendment and source of plant nutrients.



Food Waste

Worm Bin

Worm Castings

Not traditionally used for large scale operations

Issues with a “worm diet”

GARDEN

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Bokashi Composting

Bokashi is the anaerobic breakdown of organic materials with specialized microorganisms. Typically, this involves lowering the PH and removing oxygen to allow for the bokashi to break down organics. The byproduct is bokashi tea, a liquid extract, CO_2 and biopulp.

This method is small scale and typically ideal for home application.

Bokashi tea being harvested

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Colorado Composting Permits

Class III - : Biosolids, mixed solid waste, fats, oils, greases, dairy manufacturing wastes, paunch and any other compostable material

Class II - Animal waste, manure, and vegetative waste.

Class I - Vegetative waste, OR only composting what is generated onsite (CSU)

Conditionally Exempt Small Quantity (CESQ) - under 5 cubic yards of food waste or 10 yards in vessel

EDOP (Engineering Design and Operation Plan), CD (Certificate of Designation), Stormwater/groundwater control plan, site surveys, access control, and more!

Community Compost Equipment: Hauling

Recepticles
Buckets for households, carts for commercial

Transport
Trailers or light utility trucks, dump truck with lift gate or cart tipper

Community Compost Equipment: Processing

Operations
How are you going to compost? Power needs, infrastructure needs

Water
All compost needs water; where is it coming from, how will it get added into your process?

Shovel vs. Tractor
Shovels and pitchforks will work, but the time savings with a front loader is almost 15X.

Community Compost Equipment: Sifting

Manual Trommel
Often home brewed to various sizes that can fit wheel barrels or sifting boxes but require turning by hand.

Screening Box -
Though extremely manual, these systems allow for intimate connection with the end product and allow another inspection point

Small Screens -
These can fit on top of 5 gallon buckets and allow for material to be screened at a very slow rate

Community Compost Equipment: Sifting

Automated trommel
These allow for rapid, high powered sorting of materials into various sizes and at high volumes

Powered Trommels
Often the most efficient, these units rotate and screen at the same time, producing a finished product and overs

Shaker Table
Different panel sections can allow for up to three different sizes, including fine, medium and overs

Community Compost Equipment: Distribution

Bagging

Using a commercial or industrial grade bagger to seal in humidity and protect product quality can be expensive

Containers

Burlap and sandbags lose moisture over time and leak compost during transit. Low shelf life but good portability

BYOC/Bulk

Customers can reuse containers of their own or use vehicles and trailers to transit material to their property

Funding Community Composting

Personal Savings -
Leverage your personal finances to secure funding. Works well for small startups

Grants -
Whether through your state, county, city or other private entities, grants for green businesses can be difficult to secure and require other capital expenditures

Investors -
Bringing in additional capital can dilute ownership but provide rapid acceleration for business expenses

Partnerships -
Like minded businesses can share common goals, including rent and equipment sharing

Questions?

Thank you!

Jamie Blanchard-Poling
Owner, Compost Queen PBC
jamie@compostqueenfc.com