Business Plan: Waste Wizardry

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EXECUTIVE SUMMARY

Currently, 40% of the total waste being thrown away is organic/food waste. Instead of sending organic waste to landfills (where it emits greenhouses gases as it decomposes), this waste can be composted aerobically (using a thermophilic compost system, and worm system) without producing greenhouses gases, foul odours, or attracting pests. Our business model is simple: a spoke-and-hub, mid-scale composting operation that is located directly within communities. We see the value in food waste, and want to turn 'garbage' into something valuable while enhancing environmental and community health.

Waste Wizardry is proposing to close the loop on food and food waste by creating a centrally located compost facility within a community. Our clients will consist of businesses that produce food waste (Eg. Restaurants, cafes, grocery stores). Waste would be processed on-site, within the community-based compost hub. Finished compost would be distributed to boutique garden stores in Vancouver where it could be purchased by consumers and used in the production of more food.

Currently, mid-scale compost operators based in the community do not exist, as most organic food waste ends up in the landfill, or is processed by large-scale operations located outside of the community. There is a growing need for mid-scale, community-based composting within the City of Vancouver. Our services will fill this gap, helping clients comply with regional policy changes on organic waste diversion from landfills. Organic waste diversion to mid-scale composting is in the introduction stage of the product life cycle, and there is great potential for market growth in this area, especially since a ban on organic waste in the landfill is mandated for 2015. The demand for worm compost is also in the introduction stage of the product life cycle, with projections to grow, since worm compost has a reputation for being high quality, and is sought after by gardening enthusiasts, farmers, and landscapers.

Waste Wizardry aims to start with one community compost hub in its first year, and effectively manage the organic waste from approximately 6 clients. Our goal is to expand to other communities, adding at least one community compost hub every year.

Waste Wizardry is made up of a team of four science students from the Land and Food Systems Faculty at the University of British Columbia. The team is responsible for the implementation of a mid-scale, on-site worm compost project (in the Student Union Building on UBC campus), and is currently implementing a scaled-up project. The large-scale operation will open in September 2013 in the New Student Union Building. It will consist of a thermophilic compost system (TCS), and worm system. It is designed to process all of the organic food waste produced in the building, while generating high-quality finished worm compost.

As a social enterprise we are committed to the development and engagement of community. Social marketing will target behaviour and attitude change (by raising awareness through education) towards the production and use of compost from food waste. By keeping the food/waste/compost cycle local, Waste Wizardry will enhance local food systems, contribute to healthy soil development, and strengthen community bonds. By processing waste within the community, we present clients with cost-savings on waste pick-up services, and reduce environmental impacts associated with long-distance transportation. Our services help clients achieve the regional targets (Greenest City 2020 Action Plan) for sustainability, and waste reduction.

PURPOSE OF THE BUSINESS PLAN

We are looking for funding to start-up our business venture. The purpose of this business plan is to help us apply for grants available to social enterprises (Eg. VanCity) and/or acquire low-interest loans (Eg. Farm Credit Canada, Business Development Bank of Canada).

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BUSINESS DESCRIPTION

Mission Statement

To provide the municipality of Vancouver with affordable, convenient, and community-based solutions for the processing of organic waste materials while also producing high quality compost. Our services will benefit our clients, the local community, and the environment, while maximizing profitability and growth. We will maintain a strong presence within local communities, providing opportunities for engagement, education, and support.

Short Term Goals

- Source biodegradable bags for packaging finished compost product by 3rd month of operation
- Follow through with packaging labeling requirements by 3rd month of operation
- Source and purchase electric flat-bed utility truck in 2nd year of operation
- Create and streamline signage and source separation instructions within first 6 months
- Have our product carried in boutique garden shops in Vancouver by end of the 1st year; expand to organic grocery stores, farmer's markets etc. by 2nd year of operation

Long Term Goals

- Build our own worm bins by the 5th year of operation
- Service 5 communities by the 5th year of operation
- Service multi-family dwellings in the first 10 years of operation
- Reach solvency by end of 1st year

Critical Success Factors for the Business

- Participating businesses are within a short distance (1 km radius) of our centralized composting facility
- Minimum number/size of clients in order to meet the break-even
- That there is a growing need for organic waste diversion within the Lower Mainland; growing social and political concern over environmental issues associated with waste management
- Cultural acceptance of community-based composting
- First-move advantage for mid-scale, community-based composting
- Proof of concept (NEW Student Union Building [SUB] composting project), and association with UBC

Business Structure

Worm Wizardry is a social, for-profit enterprise, comprised of a general partnership (sharing in the management and risks of the business) between 4 partners. Each partner will have equal ownership in the business. Income generation is anticipated to be low enough for the first few years that a general partnership will be more suitable than a corporate structure. Each partner brings a different set of skills that complements the business, and each partner will have a specialization within the business. Each partner will maintain a portion of direct control over business activities and decisions. No shares will be offered externally.

MARKETING PLAN

Product/Service Business Idea

1. Organic Waste Pick-up and Processing Service

- Includes pick up and on-site/off-site waste processing (using thermophilic compost systems [TCS] and worms)
- *Service Features*:
    - Customizable – frequency of pick-up, style of bins etc. suited to clients' needs
    - Compliant – 100% organic waste diversion, in line with City of Vancouver's 2015 ban on organics
    - Cost-effective compared to traditional waste management options
    - Marketable – Enhances client's public image
    - Sustainable – minimizes transportation costs and environmental impact

2. Sale of Finished Compost Product

- A high quality growing medium usable for any horticultural application (including germination)
- A peat-like material that enhances aeration, porosity, and drainage capacity of the soil, while preventing compaction, erosion, and nutrient leaching
- Significantly enhances plant growth by increasing nutrient availability (N/P/K, Ca etc.), water-retention capacity, permeability, and organic content of the soil
- Contains an increased quantity of biota, which speeds up the overall breakdown process and increases the fertility of the compost, resulting in a far superior product (Edwards, 2010)
- Due to its unique and incredible potential to amend soil, it is highly sought after by farmers, urban farmers, home gardeners, and landscapers.
- *Product Features*:
    - HIGH QUALITY: stable, non-toxic, no pathogens, low salinity, high nutrient content, improved cation exchange capacity, increased microbial activity (including bacteria, fungi, and actinomycetes), increased nutrient availability and quantity (Edwards, 2010). Compost quickens seed germination rates, and enhances growth of seedlings and plants (increases leaf area, plant height, quantity of flowers, fruits, and overall yield).
    - CONVENIENT: ready to use biodegradable packaging; usable in every soil type and growing environment; only needed in small quantities Eg. Typically used in a 1:5 ratio (1 part vermicompost to 5 parts other medium)
    - SUSTAINABLE ALTERNATIVE: replaces chemical fertilizer dependence; replaces fungicides, and other harsh chemicals since it naturally suppresses fungal and human pathogens in plants (Edwards, 2010); greater potential for plant disease suppression than other types of compost (Edwards, 2004).

3. Provision of Expertise (2 targets):

A. Businesses – in transitioning their organizations to 100% organic waste diversion.
    - Consultation with building and waste managers to assess organic waste management needs (determine frequency of pick-up, needs-based processing options, collection infrastructure, source separation etc.)
    - Highlight on organizational change management (staff behavior change, training, education, signage etc.)

- Includes tour of UBC's SUB demonstration facility
- *Service Features*:
    - Informative, custom-tailored to the client
    - Highlights best practices for organic waste diversion

B. Individual consumers – in generating interest, awareness, and education for home composts
- Workshops to include provision of worms and know-how, trouble-shooting etc.
- Includes tour of UBC's SUB demonstration facility
- *Service Features*:
    - Educational, informative, custom-tailored to different types of users (condo dwellers, single family homes, small workplace etc.)

SWOT Analysis

Strengths	**Opportunities**
• Economic: low overhead costs; less expensive composting method; equipment has long, useful life, and is easy and affordable to maintain • Backing and support from UBC lends credibility • Functional, demonstration model at UBC serves as test ground for establishing best practices, efficient work methods etc. • Social marketing opportunity targeting positive behavior change; focus on benefits to user, society & environment; will ultimately increase social acceptance of community-scale worm composting	• Growing political and social interest in organics diversion; mandated for 2015 by local/regional governments • Traditional waste management hasn't focused on organics diversion at the community scale • There is a growing need for mid-scale community-based composting; gap in industry • Growing interest in sustainable agricultural practices (Eg. urban farming, soil conservation, organic etc.); growing demand for high quality compost • Compost regulations currently under revision; opportunity to inform policy makers, and affect resulting amendments • Less technologically complex system is viewed by government as less risky; easier to obtain licensing & permits
Weaknesses	**Threats**
• Unreliable cash flow in the early stages; cash flow related to compost sales will be seasonal • Few established models to follow; must pave the way for a new type of business; must build reputation and consumer-base from scratch • Current model relies on in-kind arrangements with Parks Board (community centres, schools)	• Lack of awareness (food waste issues, composting) • Social stigma, misconceptions around compost (odours, pests Eg. Flies, fruit flies, rats, mice) • Regulations may change, requiring stricter certification; current lack of clarity in policies regarding composting, and compost sales • Developments in technology may alter the industry

SWOT Analysis cont.

Strategies to Address Weaknesses	Strategies to Address Threats
• Keeping costs as low as possible especially in early stages; maximizing assets purchased (Eg. Composters must run at full capacity) • Maintaining tight spokes around the central hubs to minimize transportation costs and time; maximizing efficiency of pick-up logistics • Building key relationships with community partners; establishing mutually beneficial arrangements Eg. In-kind contribution of space for composting facilities in exchange for in-kind contribution of waste processing services, and compost supply	• Social marketing can be used to overcome social stigma, misconceptions, and lack of awareness around food waste management and composting • We can leverage our position as a community-based social enterprise to help advocate for regulations that support mid-scale, community-based composting operations; build key relationships with policy makers/government • Capitalize on having the first-move advantage by establishing a quality reputation early on; this ensures a steady client-base, and establishes trust within the community; also establishing our financial progression earlier than other companies will enable us to invest in innovative technologies as soon as they become available

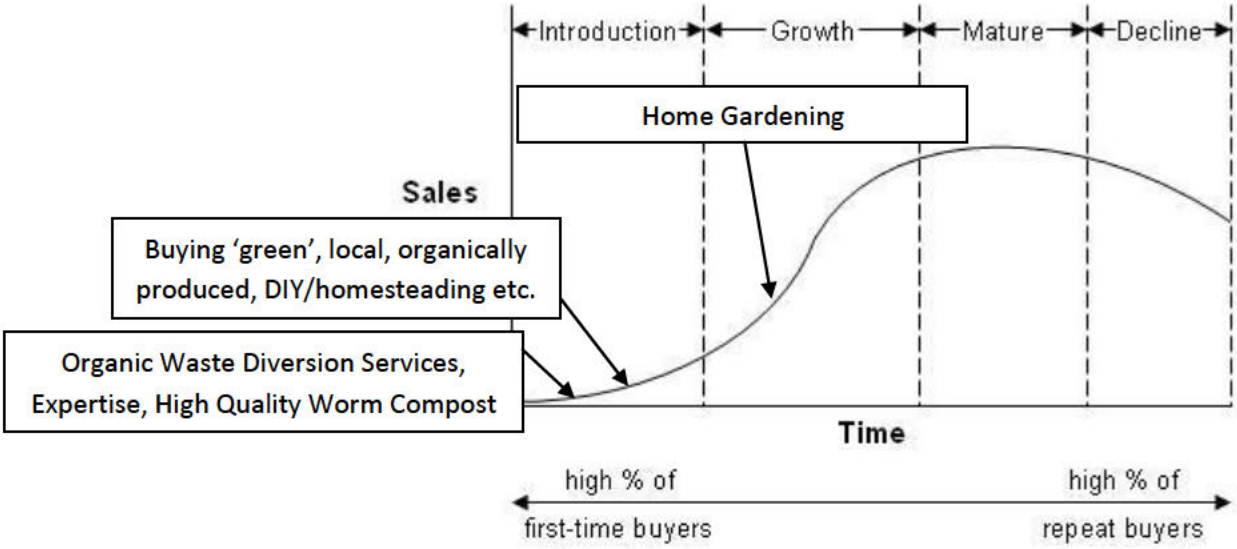
Product Life Cycle

Organic waste diversion through composting has to date been under-utilized in the Lower Mainland. In Metro Vancouver, it is estimated that ~43% of the landfill stream is organic, and could be made available for composting (RCBC, 2008). There is a growing need for mid-scale, community-based composting, as well as the provision of expertise in this specialized field. Our company is an innovator, filling the need for customizable, mid-size waste diversion services, and expertise within the community. Organic waste diversion to mid-scale composting, and the provision of expertise in this field are both in the introduction stage of the product life cycle. There is great potential for market growth in this area, especially since a ban on organic waste in the landfill is mandated for 2015.

Worm composting technology is becoming ever more popular as a socially acceptable means of diverting waste from the landfill, significantly reducing GHG emissions, and landfill gases associated with the breakdown of buried organic wastes. Worm castings have a reputation for being of the highest quality, and there is definite demand from agriculturists, gardeners, and landscapers. Worm compost production is still in the introduction stage of the product life cycle. There is great potential for market growth in this area.

The product and services we will be providing fit into larger product categories such as sustainable products/buying ‘green’, buying locally-made/grown, organically produced, do-it-yourself/homesteading, home gardening etc. These larger product categories are also in the introduction phase of their product life cycle, although

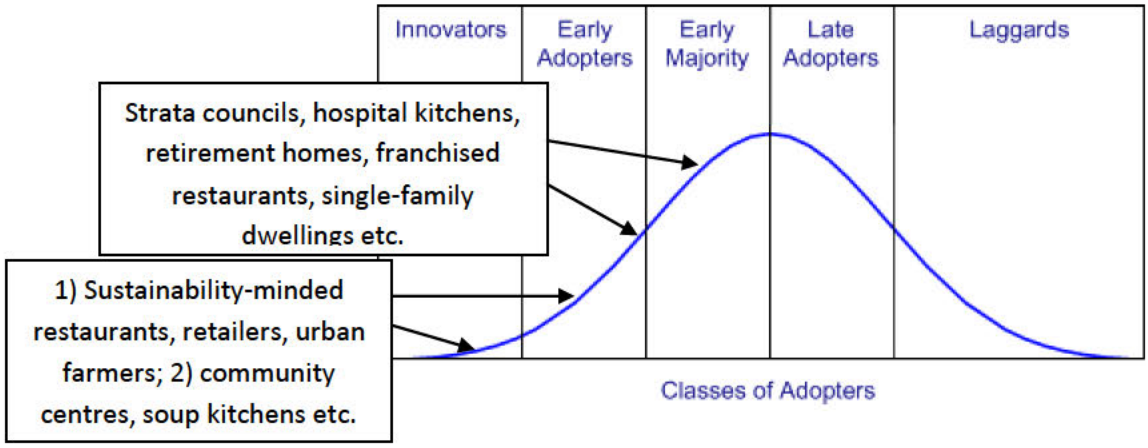
slightly further ahead. The trend towards purchasing from these product categories is growing, and the products and services we provide will follow nicely in the wake of other leading product categories.



Product Adoption Process

Since the industry for mid-scale, community-based organic waste diversion and compost production is relatively new, we will be targeting innovators and early adopters with our products and services first. Our target will include businesses that value environmentally sustainable practices and local community partnerships. Types of businesses could be non-franchised restaurants (Eg Chefs with a reputation for buying organic, local, etc), fresh food retailers, food production facilities, and urban farmers.

Once we've established a foothold in the marketplace, capturing a significant portion of the primary and secondary segments, we can then move towards targeting the early majority, which will likely be multi-family dwelling strata councils, hospital kitchens, retirement homes, single-family dwellings etc.



Segment

Organic Waste Pick-up and Processing Service

1. PRIMARY: Produce Stores, restaurants producing large amounts of food waste
   - Geographic: Within the City of Vancouver
   - Psychographic: Companies interested in reducing their ecological footprint, strengthening their community food system, and incorporating sustainability into their waste management practices
   - Benefits & usage: Lower waste disposal costs, access to high-quality compost product at a discount (to either sell, or to use), access to expertise, enhanced public image

2. SECONDARY: Community centre kitchens, soup kitchens etc.
   - Geographic: Within the City of Vancouver
   - Psychographic: Communities and community groups interested in reducing their ecological footprint, strengthening their community food system, and incorporating sustainability into their waste management practices
   - Benefits & usage: Lower waste-disposal costs, access to high-quality compost product for community farming initiatives, access to expertise, a sustainable waste diversion initiative, enhanced public image

MEANINGFULNESS OF SEGMENTS:
- Identifiable and measurable through performing neighbourhood scans (count potential clients)
- Potential clients can be approached directly to assess demand for our services
- Overall demand for organic waste diversion will increase drastically as the organics ban (2015) approaches, ensuring our segments will be both sufficient and durable
- A growing interest in environmentally beneficial practices, sustainability awareness and education, and composting
- Members of segments are mindful of sustainability, their public image & regulatory compliance
- Heterogeneity: benefits to primary segment: cost-savings, organic waste diversion, and improving their public image; benefits to secondary segment: additional benefit of strengthening community food system.

Finished Compost Product

PRIMARY: Smaller, boutique-style, high-end gardening shops Eg. Figaro's, UBC Farm, Sprouts, The Homesteader's Emporium, David Hunter Garden Centre, Southlands Nursery etc.

- Geographic: Vancouver (there are boutique-style gardening shops in various neighbourhoods)
- Psychographic: Stores that carry eco-friendly products, cater to consumers interested in reducing their environmental impact, locally-made products, sustainability, and gardening.
- Demographic: Our segment crosses many demographic boundaries. Many different types of people garden. This segment is growing considerably
- Benefits & usage: High end product that promotes healthy soil and healthy plants that can be used essentially as a soil amendment to improve overall quality of soil, or as a high quality growing medium for starting seeds or keeping potted plants

MEANINGFULNESS OF SEGMENT:

- Identifiable through neighbourhood scans (count potential clients) and online research
- Homogenous – the retail stores we are targeting cater to consumers interested in high quality, organic soil amendments, sustainability, and reduced ecological impact
- Demand for high quality compost will increase in the near future due to awareness, and the gradual phasing out of harsh chemical products (Packaged Facts, 2009); this ensures durability, and sufficiency in profitability

Industry and Competitive Landscape

Industry Analysis

Key features: Waste Diversion Industry

1. Currently, waste diversion is provided to single family dwellings, and members of the IC&I sector (Industrial, Commercial & Institutional) by large-scale collection and processing companies under contract with the City of Vancouver. Very few of them focus on collecting and processing organic wastes separately especially on a community scale.
2. The City of Vancouver encourages organic waste diversion through including food scraps with yard trimmings pick-ups. 100% organic waste diversion has been mandated for 2015 (Greenest City 2020 Action Plan, 2012). Currently, composting is self-regulated, and self-imposed.
3. There is a lack of understanding about composting practices by consumers, and members of the IC&I sector. There is also a lack of infrastructure for 100% organics collection and processing.
4. Regulations around composting are currently under review by local/regional governments. There may be amendments that could positively affect the industry by supporting community scale composting.
5. Existing models for community scale organic waste management are very limited, which is a challenge. However, it's also an opportunity to demonstrate an innovative, successful model of organic waste diversion.

Based on the key features of the waste diversion sector it can be seen that there is an increasing need for smaller scale innovative waste diversion systems, especially in regards to organic wastes.

Key Features: Garden Supplies

1. There is a significant expansion in the market for green products and services, of which the main drivers for this growth will be changes to legislation, consumer conscience and the influence of media and NGOs (The Green (and Variegated) Consumer, 2008). Projected sales for organic lawn and garden supplies for 2013 are $775 million, up an estimated 20% from projected 2012 sales (Packaged Facts, 2009). These numbers are based on the US market however we can infer similar trends in Canada.
2. Synthetic fertilizer and pesticide use for lawns and gardens is slowly being phased out through bans and regulation revisions, to the benefit of organic alternatives. (Packaged Facts, 2009).
3. The demand for garden supplies is seasonal; heavy in the spring and fall, but slow in the winter. Compost is typically applied in the spring, so demand for compost will be heavy in the spring. Also cash flow for small retailers may vary depending on the season.
4. Smaller boutique style garden stores want premium products, but don't have large floor/shelf space for storing large amounts of product.
5. Large scale garden supply stores are tied to their commercial supply chains which does not allow them to purchase specialized smaller scale products.

Based on the above key industry features, it can be seen that there is a growing need for sustainably produced garden/soil amendments, such as our worm compost. Since boutique garden stores want premium products, and aren't bound to their supply chain, they make an excellent target for our product. Required floor space for stocking our compost in retail stores will be minimal due to our small packaging (5kg bags); also, because we are local, we will be able to deliver more frequently without incurring high transportation costs.

Industry Analysis: Steeple

Factor	Topic and Descriptions	Analysis
Political	Regulations for waste diversion through composting and compost production are currently under revision by local and regional governing bodies	Political support at regional levels exists for organic waste diversion through composting
Economic	National/global recession – consumers spend less, governments, lower interest rates encourage business activity	Premium pricing for compost product may inhibit buyers, however studies have shown that consumers are still willing to pay higher prices for

		green products (Packaged Facts, 2009)
Social	Lack of awareness and social acceptance around changes in policy around organic waste	Social marketing strategy will raise awareness and address negative stigmas surrounding organic waste diversion
Technological	Technological advances in TCS and other composting systems are likely to occur	Establishing our financial progress early on will enable us to invest in innovative technologies as soon as they become available. Advanced technologies will not render worm composting systems obsolete
Environmental	Growing concern over climate change effects, and environmental impacts.	Focus on environmentally beneficial practices, and reduction of environmental impacts through the business model
Legal	There are 3 government levels that regulate compost practices and production	Our business will have to abide by regulatory standards for compost production and labeling
Ethics	Growing concern for sustainability, and fair/ethically made products; growing support for local business	Be an economically and environmentally sustainable business that is promoting awareness of organic waste diversion by creating local community composting hubs and providing fair wages and job opportunities

Based on our STEEPLE analysis it can be seen that our business is in line with social and political trends concerning the environment and sustainability. Even though there is an economic recession there continues to be a growing demand for our services.

Competitive Analysis

Porter Five Forces: Organic Waste Processing Service

Force	Analysis
1. Ease of New Entry	• Low in general due to start-up costs, and required expertise
2. Bargaining Power of Buyers	• Substitutes increase buyers' bargaining power (Eg. Throw away with garbage, use City green bins, start own on-site compost) • Will decrease over time with mandated ban in 2015
3. Bargaining Power of Suppliers	• Cost of worm bins. We anticipate constructing our own bins as our business grows, which will decrease the power of suppliers • Price of worms is set high, and non-negotiable, so power of suppliers is high. However, worm purchase is only required as initial cost. Worms reproduce.
4. Substitutes	• Non-compliance, self-managed compost
5. Rivalry Among Competitors	• Rivalry is low, since the industry is still in the introduction phase

Based on our Porter 5-Forces analysis, profit potential for waste management services is high due to the necessary and increasing need for waste diversion, overall non-threatening bargaining power of suppliers, and an anticipated decrease

in bargaining power of buyers. Competition is low due to low rivalry, difficult ease of entry, and growing segments with room for many streams of waste diversion. For our business, ease of entry is not an issue as we will have an established reputation through our work with the UBC SUB demonstration project and negligible rental costs due to our community partnerships.

Competitive Grid: Organic Waste Pick-up and Processing

Key Success Factor	**Waste Wizardry**	**Waste Processing companies: Eg. Harvest Power Canada**	**Pick-up companies: Eg. Food Waste Recyclers, Recycling Alternative**
Local	HIGH	MEDIUM	MEDIUM
Environmental Soundness	HIGH	MEDIUM	MEDIUM
Affordability	HIGH	MEDIUM	MEDIUM
Flexibility of Service	HIGH	LOW	LOW
Reputation	LOW	HIGH	HIGH
Community Engagement	HIGH	MEDIUM	MEDIUM
Convenience	HIGH	LOW	MEDIUM
Expertise	HIGH	HIGH	HIGH
Economies of Scale	LOW	HIGH	MEDIUM
TOTAL	**21**	**17**	**18**

High = 3 points; Medium = 2 points; Low = 0 points

Though our competitors are large, well established, and have higher economies of scale, we differentiate our service through providing excellent quality service and product, flexibility in our service, and cost-savings to the client. Furthermore, we are very focused on building community and improving the environment, qualities our segments value.

Competitive Grid: Garden Supplies – Organic Soil Amendments

Key Success Factors	**Waste Wizardry**	**City of Vancouver**	**Sea Soil**	**Other Worm Castings**	**Other Organic Fertilizer**
Affordability	LOW	HIGH	MEDIUM	LOW	MEDIUM
Quality	HIGH	LOW	HIGH	HIGH	MEDIUM
Convenience	HIGH	MEDIUM	HIGH	HIGH	HIGH
Locally Sourced/Based	HIGH	HIGH	MEDIUM	MEDIUM	MEDIUM
Community Engagement	HIGH	MEDIUM	LOW	LOW	LOW
TOTAL	**12**	**10**	**7**	**8**	**6**

Our compost ranks highly compared to our competitors. Our higher price is reflective of the compost's high quality. Our product is different than other products: locally based/sourced, environmentally sound, engaged with the community.

Price, Product, Place/Distribution and Promotion Strategies (4Ps)

Organic Waste Pick-up and Processing Service

Price	Strategies for segment 1: • Cost plus/Mark-up – based on our Break-even and Sensitivity Analysis • Competitive Pricing – offered at below the price of competitors • We will be able to maintain profit, while offering competitive pricing for our clients Strategies for segment 2 • Segment discounts – payments from this segment will be an in-kind contribution (Eg. Space for compost facilities in exchange for compost product and waste diversion services)
Product	• We are the only organic waste diversion company that is locally based, with a focus on environmentally sound practices, and operating at a community scale
Place / Distribution	Strategies for segment 1: • Selective Distribution – compost hub facilities will be located near our clients to minimize transportation & maximize efficiency; sustainable practices (Eg. electric vehicle) appeals to clients Strategies for segment 2: • Selective Distribution- community partner to host centralized community compost hub (includes TCS and worm system)
Promotion	• Personal selling – building relationships with clients to promote word of mouth referrals • Publicity – involvement with demonstration project at UBC, and novelty of business idea • Printed Materials – brochures (printed on recyclable paper) for selected potential clients • Direct Market – special events (for community engagement), tours, signs, logo

Finished Compost Product

Price	Strategies: • Prestige Pricing – Price high to establish favourable price-quality relationship • Competitive Pricing – Keeping in mind competitors' prices • Also keeping in mind retailer's mark-up; we are aiming for a retail price of ~15$/5kg; therefore wholesale price is ~$7.50/5kg
Promotion	Strategies: • Personal selling – building relationship with clients to promote word of mouth referrals • Push Strategy – Approaching retailers of our segment before spring • Pull Strategy – Through social marketing and community engagement year-round (workshops, events, community compost hub) • Direct Market – Logo, packaging, label, signage

Place / Distribution	Strategies: • Selective distribution to boutique garden supply stores – simple marketing channel where we sell our compost to retailers, who will then sell to consumers. No wholesalers involved. Limited to Vancouver.
Product Strategies	Strategies: • Biodegradable package (5kg bags), environmentally sound practices • High quality

PRODUCTION PLAN

Site and Facilities:

- Site locations for the centralized compost hub are dependent on two things: 1) sufficiency for client-base within a close proximity (Eg. Main Street, Commercial Drive, Broadway); 2) presence of community partner to host our facility (Eg. Community centre, school, parks facility)
- Clients (cafes, restaurants, grocery stores etc.) will be located within 1km radius in order to keep pickup distances short and maintain maximum efficiency using a spoke and hub model (see Figure 1)

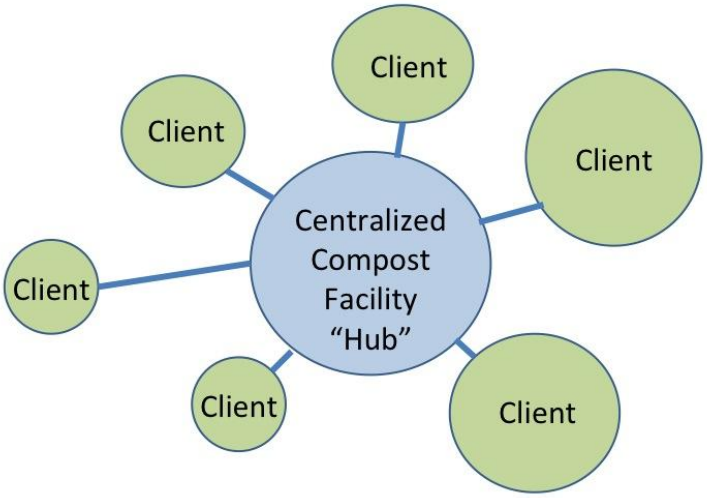


Figure 1: Spoke and Hub Model

- Compost hub to include:
  - Sufficient floor space for compost equipment
  - Electrical capacity for TCS hook-up
  - Processing space (for harvesting, bagging, storage)

Equipment, Materials and Supplies:

- Compost hub to include:
  - Worm bins, TCS
  - harvesting tools, storage bins, bags, work tables
- Clients to have:
  - Organic waste collection bins

Production Strategies and Procedures

Compost Production

- The TCS processes post-consumer waste[1] within a 24 hour period, producing worm feedstock
- Pre-consumer (fresh fruit and vegetable waste) waste, and worm feedstock (from the TCS) is put into the worm compost bins. Complete breakdown can take between 1-3 weeks
- Harvesting of finished compost (from the first cycle) will happen around the 3rd month, after which a bi-monthly harvest and packaging schedule will be established. See Figure 2.

Figure 2: Compost production

[1] Post-consumer waste refers to food waste materials discarded after food materials have reached the consumer. Eg. uneaten remains of food, which has usually been cooked and/or seasoned/dressed, and likely contains fats, dairy and meat. This waste is best processed with a TCS.

Compost Distribution:

- Deliveries will be larger, and more frequent in early spring
- Deliveries will be made using a business partner's ½ ton truck (until purchase of a company vehicle)

Organic Waste Pick-up:

- For the first 2 years of operation we will utilize the ½ ton truck
- Client waste streams will be assessed, and frequency of pick-up determine
    - High (average 3.5 pick-ups/week)
    - Medium (average 2 pick-ups/week)
    - Low (average 0.5 pick-ups/week)

HUMAN RESOURCES

Management Functions:

- Establish strategic community partner relationships for compost hub
- Secure client-base within range of compost hub
- Assess clients' organic waste stream, determine volumes and pick-up schedule/logistics
- Scheduling of compost production, pick-ups, harvesting, distribution, and hours
- Waste pick-ups, compost production, harvesting, bagging, distribution
- Sales of finished compost to retailers
- Marketing activities (new sales/clients, producing printed materials, publicity etc.)
- Accounting and finances

Hours:

- Waste pick-ups – 50 hours/month
- Administration (scheduling, marketing activities, and accounting/finances) – 48 hours/month
- Sales – as needed (could fall into Administration hours)
- Harvest, Production, and Distribution – 20 hours/month

The four partners will be dividing the workload and wages equally. There is not yet a full time position or any employees required. Hourly wage for all activities will be $20/hour.

Total hours required per month are approximately 120 hours. This is approximately 30 hours/month/partner, or 7-8 hours work/week/partner. As business increases, work hours will also increase.

FINANCIAL PLAN

Start-up Capital Required

Startup Capital Costs, YR 1	**Cost ($)**
Worm Bin	15,000
Worms	2000
Harvesting Tools/Hand Tools	150
Plastic storage totes	200
Folding tables X4	240
Thermophillic compost system (TCS)	32,410
Total Capital Costs	50,000

Funds Requested and Used, Loan Summary & Payment Schedule

It is our goal to secure $50,000 of financing through loans, investment capital, and/or grants through Farm Credit Canada, Business Development Bank of Canada, local credit unions and interested investors[2].

Assume: Money is borrowed from a financial institution for a term of 5 years at 6%

Equalized payment on $50 000 loan (using amortization table 16.1, 0.2374) = $11,870/year

Assume: Payments start in month 1; cost of loan is accrued to the year of production

Total loan payment	11,870	Year 1 Interest	3,000
Year 1 principal	8,870	Total Interest (5 years)	9,350
Total amount paid (5 years)	59,350		

We may need to secure an operating loan or line of credit to cover some initial costs before we start collecting revenue from compost sales. We will use this money only if necessary and pay it back as soon as possible.

[2] Investors cannot own part of the company as we may later decide to incorporate as a non-profit organization.

Net Worth/Balance Sheet (day 1)

Net Worth Statement/Balance Sheet, (Day 1)			
Current Assets		**Current Liabilities**	
Accounts Receivable	0	Accounts Payable	0
Inventory	0	Interest Owed	0
Savings	0	Principal due	0
Supplies on hand	590		
Worms	2,000		
Total current assets	**2,590**	**Total current liabilities**	**0**
Intermediate Assets		**Intermediate Liabilities**	
TCS	32,410	Loan	50,000
Long Term Assets		**Long Term Liabilities**	0
Worm Bins	15,000		
Total Assets	**50,000**	**Total Liabilities**	**50,000**
		Net Worth	**0**

The Net Worth and Balance Sheets for Day 1 are the same since asset book value = market value on Day 1.

Balance Sheet (end of year 1)

Balance Sheet, (end of year 1)			
Current Assets		**Current Liabilities**	
Accounts Receivable	0	Accounts Payable	0
Inventory	0	Interest Owed	3,000
Savings*	14,032.72	Principal due	8,870
Supplies on hand	590		
Worms	2,000		
Total current assets	**16,622.72**	**Total current liabilities**	**11,870**
Intermediate Assets		**Intermediate Liabilities**	
TCS	29,169	Loan	41,130
Long Term Assets		**Long Term Liabilities**	0
Worm Bins	14,000		
Total Assets	**59,791.72**	**Total Liabilities**	**53,000**
		Owner's Equity	**6,791.72**

*The savings comes from the net income from the year ($14,032.72)

Net Worth/Balance Sheet

Our net worth/balance sheet shows that on Day 1 we are at zero. As time progresses, compost production will add to our net worth because we will increase revenue to pay down our debt and increase inventory.

Our balance sheet for the end of year/start of year two shows that our business has made financial progression of $6,791.72 in the first year by increasing assets and decreasing liabilities. Owner's Equity at the end of year one is $6,791.72.

Net Income

Accrued Net Income Year 1			
REVENUE			
	Compost Sales		41,472
	Pick-up Fee		17,856
		Total Revenue	**59,328**
EXPENSES			
Variable Costs	**Operating Costs**		
	Packaging		7336.20
	Pick-up Wage		12,000
	Truck (pick-up service)		1198.08
		Total variable cost	**20,534.28**
		Contribution margin	**38,793.72**
Fixed Costs	**Rent**		0
	Depreciation		
	TCS		3241
	Worm Bins		1000
	Operating Costs		
	Administration		11,520
	Harvest wage		4800
	Truck (compost distribution)		1200
	Interest		3000
		Total fixed costs	**24,761**
		Total Expenses	**45,295.28**
		Net Income	**14,032.72**

Assumptions:

1. Compost sales:
    a. We will donate half of the compost we produce to community partners
    b. We will sell at $1.50/kg
    c. We are servicing 6 medium sized clients
2. Pick-up fee:
    a. Estimated at 48 pick-ups/month; $31/pick-up
    b. 0.8 hours/trip X $20/hour= $16; $15/trip gas and truck fee
    Total= **$31/trip**
3. Wages:
    a. Pickup and harvest wages are estimated at $20/h
    b. Admin at 48h a month @ $20/h = $11,520
4. Truck (Pick-up service):
    a. 9km per round trip servicing all 6 clients will use 1.2 L of fuel
    b. Estimated at 7.6km/L and fuel prices at $1.50/L
    c. This will cost the business $1.08 in gas per round trip.
    d. With a truck fee of $1.50/km (Rate charged by UBC Forestry) or $11.40
    e. Truck total: 11.40 + 1.08 = $12.48 maximum per round trip
5. Rent:
    a. Rent is provided in-kind

The accrued net income statement shows that the business is profitable.

Sales Forecast

Compost Sales

Volume of Compost Produced

Assumptions:

- A mid-sized restaurant (Eg. Trafalgar's) produces 240 kg/week of food waste (Andrea Thorgilsson, Trafalgar's Bistro, personal communication, November 20, 2012)
- Volume reduction is 20%, yielding 192 kg finished compost /restaurant
- X 6 restaurants = 1152 kg times 4 weeks= 4,608 kg/month
- Annual total: **55,296 kg/year**

Potential sales per month

- Prices range: $0.50/kg (wholesale, pick-up only); $1.50/kg (mail delivery, packaged) ; $5/kg upwards (retail shops, packaged)
- Assumption: our wholesale price will be $1.50/kg or $7.50/5kg bag
- Assumption: retailers will mark-up 100% and retail at $15/5kg bag
- Assumption: 50% of compost produced will be available for wholesale; 50% will be in-kind contribution to community partners
- Income generated through selling 50% of compost produced wholesale to retail stores = $3,456/month

Monthly Sales Forecast

Kg of Compost Sold (% of Total Product)	Worst Case Price $0.50/kg	Most Likely Price $1.50/kg	Best Case Price $5.00/kg
2,304 (50% of total)	1,152	**3,456***	11,520
3,686 (80% of total)	1,843	5,529	18,430
4,608(100% of total)	2,304	6,912	23,040

*Anticipated monthly sales based on assumptions

Annual Sales Forecast

Kg of Compost Sold (% of Total Product)	Worst Case Price $0.50/kg	Most Likely Price $1.50/kg	Best Case Price $5.00/kg
27,648 (50% of total)	13,824	**41,472***	138,240
44,232 (80%)	22,116	66,348	221,160
55,296(100%)	27,648	82,944	276,480

*Anticipated annual sales based on assumptions

There is a potential for increased sales if we sell more than 50% of finished compost product, and if we retail ourselves (Farmer's Markets, UBC Farm)

Organic Waste Pick-up Service

Annual Sales Forecast: Waste Pick-up Service Fees

- Assumption: 2 High, 2 Medium & 2 Low Frequency Clients = 6 clients

	Worst Case 3 clients	Most Likely 6 clients	Best Case 9 clients
Projected Revenue	8,928	**17,856**	26,784

Budget Scenarios

Changing Factors	Net Income No Change Applied	Net Income Change Applied
Increase Variable Cost (10%)	**14,032.72**	11,979.29
Increase Variable Cost (20%)	**14,032.72**	9,925.86
Increase client base to 9	**14,032.72**	22,960.72
Decrease client base to 3	**14,032.72**	5,104.72
Sell same volume of compost at $0.50/kg	**14,032.72**	(13,615.28)
Sell same volume of compost at $5/kg	**14,032.72**	110,800.72
Decrease wage rate to $15/hour	**14,032.72**	21,112.72
Increase all labour hours by 10%	**14,032.72**	11,200.72
Increase pick-up charge by 10%	**14,032.72**	15,818.32
Decrease pick-up charge by 20%	**14,032.72**	10,461.52

The budget scenario depicts that the business will remain profitable in a variety of scenarios. One exception is if we have to sell our compost at too low of a price, in this case, the business is not profitable.

Cash Flow Summary

Cash Flow Statement Year 1			
Operating	**Inflow**		
	Compost Sales		41,472
	Pickup Fee		17,856
		Total	59,328
	Outflow		
	Packaging		7336.20
	Truck		2398.08
	Wages		28,320
		Total	38,054.28
		Net Operational	**21,273.72**
Financial	**Inflow**	0	
	Outflow		
	Principal		8870
	Interest		3000
		Net Financial	**11,870**
		Net Cash Flow	**9,403.72**

As a result of paying off a large loan quickly cash flow is modest but positive. The cash flow budget shows that the business is liquid. However, due to the seasonal nature of compost sales, an operations loan may be required to cover expenses in months where revenues are lower.

Break-even Analysis

Break-even Analysis for Compost Sales

Compost Sales	
FC to be covered by compost	20,103.08
VC associated with compost	7,336.20
Total quantity (kg)	27,648
Variable cost/Unit ($/kg)	0.265

Break-even Price:

B/E P= (FC+VC)/Q
= (20,103.08 + 7,336.20)/27,648
=$0.992

Therefore the minimum price of compost required to break even is $0.99/kg.

Break-even Quantity:

B/E Q= FC/(P-VC)
= 20,103.08/(1.5-0.265)
=16,277.8 kg

Therefore the minimum quantity of compost that must be sold in order to break-even is 16,278kg (which is 29% of total compost produced before in-kind contribution is made).

Assumptions:

1. Total fixed costs for business are $24,761.
2. Pick-up fees revenues remain constant=$17,856
    a. Variable costs associated with pick-up service= $13,198.08
    b. Fixed costs that can be covered by pick-up= $4,657.92
3. Therefore fixed costs that must be covered by compost sales in order to breakeven= $20,103.08

Break-even Analysis for Pick-up Service

Pick-up Service	
FC to be covered by pick-up service	4,657.92
VC associated with pick-up	13,198.08
Total quantity (clients)	6
Variable cost/Unit (cost/client)	2,199.68

Break-even Price:

B/E P= (FC+VC)/Q
= (4,657.92 + 13,198.08)/6
= 2,976

Therefore the minimum price of pick-up required to break even is $2,976/client/year. This means that the break-even price per individual pick-up is $31.

Break-even Quantity:
Since our price is set at $31 (our break-even price) then our break-even quantity is 6 clients.

Assumptions:

1. Fixed costs to be covered by pick-up= $4,657.92

Risk Assessment

Business Risk:

- Price Risk: Seasonality; low demand for product= low price; price of TCS increase; changes in regulations
- Production Risk: Feedstock imbalance (Eg. too salty); contamination; vandalism; pests; seasonality

Financial Risk:

- Being highly leveraged makes our business vulnerable if NI drops since loan payments are quite large and must continue regardless of NI

Strategies to address risks:

- A grant would allow us to take a smaller loan and avoid the extra cost of an operating loan or line of credit
- A longer term loan or lower interest rate would decrease payments
- Scaling up business would generate more income through pick up and compost sales

Financial Indicators

Indicator	Value	Explanation
Current Ratio	1.4:1	At the end of year one, the business is marginally liquid. This will improve over time as debt is paid off. May need to acquire operating loan due to seasonality of sales.
Net working capital	$4,752.72	Working capital is moderate based on projected end of year 1.
Return on Assets	34%	Based on total assets from Day 1, total NI and interest from year 1. ROA is very high.
Owner's Equity	$6,791.72	Financial progression from start to end of year one is OE.
Debt to Asset	0.886:1	On day one, the business owes $0.886 for every $1 asset.
Debt to Equity (Leverage ratio)	7.8:1	Business has $7.8 debt for every $1 equity.

Profitability

The net income of our business shows that we are profitable. Net income for the first year is projected to be $14,032.72.

Solvency

Our net worth statement shows that on day one the business is at zero. Generating inventory and cash through service we will increase our assets. By paying our loan we decrease our liabilities and reach solvency by year end.

Liquidity

We are a new business with little to no equity and therefore cannot extend credit to our clients. Our goal is to always ensure that our current assets are greater than current liabilities. Our current ratio, 1.4:1, demonstrates that at year end, our business is liquid. We may need to acquire a grant or operating loan to account for seasonal variation of sales.

Efficiency

- We aim to improve our pick up efficiency, capturing more clients in the area we service, as well as continual revision of routes to optimize resources and time.
- In the future we would like to purchase an electric or hybrid truck to reduce costs in transport.
- More experience with the compost systems will hone our skills in maximizing the production of worm castings.
- Labeling costs could be reduced and packaging efficiency will improve with experience.

Leveraging

Our business is highly leveraged. ROA is at 34%, much higher than interest rate of 6%. By leveraging, our business is able to make an additional 28% gain on assets. As long as NI is stable or increases over the years, leveraging can be used to our advantage.

CONCLUSION

Based on the financial tables and analysis, we have determined that this business is financially feasible with great potential for growth. Although return on assets is high, the business will not be very liquid in its early stages. Prospects for profitability will be higher if we can:

1) maximize compost sales and price
2) ensure in-kind contribution of space for the compost hub from community partners

We will be looking to acquire grants for social enterprises and minimize loan payments and interest paid.

Our marketing plan demonstrates that demand for our service and product is growing. There is a gap for mid-scale community composting in the Vancouver waste diversion industry and Waste Wizardry would fill the niche, helping clients comply with regional policy changes on organic waste diversion from landfills. The current trend in favour of sustainability and urban farming will encourage Vancouverites to demand high quality worm compost.

Though we will start small, we hope to expand by one community hub every year. Our model is designed to be replicable and scalable.

RECOMMENDATIONS FOR FURTHER RESEARCH

- Marketing:
  - Market demand for finished compost. In our research, specific market research on compost was not available. Our analysis was based on larger product categories, such as sustainability, local products, garden supplies, and organic soil amendments.
  - Specific neighbourhoods should be researched to determine which communities are most suitable for our services
- Production:
  - Quality control of finished compost – determine procedures, ideal standards etc.
  - Establishment of best practices to follow, workflow of business partners, highest-efficiency flow of operations
- Financial:
  - More data on what potential clients currently pay for waste pick-up
  - More data on waste volumes, and types of waste
  - Research other options besides bank loans to finance start-up of operations
  - Research option of incorporating as a not-for-profit organization

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