The Economics of Composting

Introduction

The Economics of Composting is a challenging discussion because there are so many variables involved and because every stable and small farm is unique in how it operates. This article explores several topics under the category of “Economics”, with an over-arching emphasis placed on horse owner responsibility. Additional articles about marketing compost can be found on the O2Compost Blog. Click Here

The Cost of Manure Management

The cost of manure management can be divided into four categories, including: 1) hard costs; 2) soft costs; 3) intangible costs, and 4) lost opportunity costs. Hard Costs are those that can be tallied from a check register or bookkeeping program. These include the cost of stall bedding; labor to clean stalls; and disposal cost. For those who subscribe to a pick-up service, the disposal costs can be further sub-divided into roll-off container rental, weekly pick-up, tipping fee and occasionally a dubious “environmental compliance fee”. Occasionally this picked up manure is recycled however quite often it is deposited in a regional landfill.

Soft Costs include those items that are more difficult to measure, such as the stable manager or owner’s time; wear and tear / maintenance on the tractor or truck used to handle the manure; the cost of fuel for a multi-purpose vehicle; labor spent hauling the manure instead of working on other value-added projects around the stable, etc. Soft costs may also include the expense for fertilizer used in managing pastures instead of a lesser amount of fertilizer (or no fertilizer) used when applying compost to the pasture.

Intangible Costs are those that can’t be measured and that we seldom stop to think about. These include such items as adverse impacts on surface water and ground water resources; odors and neighbor complaints; farm aesthetics and potential lost business or undervalued stall rental rates; environmental compliance liability; decreased property value; and the eventual cost of site clean-up. In this latter case, it may be noted that a large pile of manure and shavings will roughly double in volume when excavated from the pile and transferred to a truck, thereby doubling the cost of transport and disposal.

The Lost Opportunity Cost primarily includes any revenues that have not been generated through the sale of finished compost. A well composted manure product will result in a modest profit center for the farm or a source of donations to a favorite charity. With additional revenues, all types of hard, soft and intangible costs listed above can be off-set thereby improving the small farm or stable’s bottom line.

Expense vs. Investment

One of the objectives with the O2Compost Training Program is to reduce the amount of labor involved in composting, thereby saving both time and money. Some time does need to be committed to the composting process; however this can be minimized by employing a systematic approach.

With aerated composting, a timer operates a blower, typically set for a 2- to 3-minute On-cycle followed by a 20- to 30-minute Off-cycle. (Keep in mind that Aerated Composting requires no turning of the pile). The blower cycles On/Off 24-hours a day and the only additional labor includes periodically taking pile temperatures and then removing finished compost from an aerated bay to make room for the next batch. Depending on the size of the blower and location of the site, electrical power costs will typically range between $5 and $10 per month.

With manure disposal, there is a never ending expense, month after month, year after year. With composting, there is the initial investment in the O2Compost Training Program and the construction of an aerated bay system; however both of these can be written off as a business expense, amortized, or otherwise justified by eliminating the perpetual disposal expense. As such, a compost system is unusual in that it actually generates a return on investment, unlike most other investments on a farm.

Cost of Construction

The cost of constructing a compost system will range widely depending on the type and size of system that is constructed, the materials that are used for construction and whether or not a contractor is used to do the work. As can be seen in other sections of this web site, there are many different styles of composting systems, with the two basic styles being the On-Grade Compost System and the Top-Down Compost System.

The On-Grade Composter is the simplest, least expensive system to build and is particularly well suited to flat ground. The Top-Down approach requires considerably more excavation and site preparation as well as a retaining wall placed up against the hillside. While this approach is ideal for moderately sloping ground conditions, it will roughly double the cost of construction. In addition to these two basic approaches, additional area under roof can be provided for curing and storage of the finished product, and additional concrete aprons and driveways can be added to facilitate all weather conditions.

The types of materials used in constructing any of the composting systems include lumber; poured-in-place concrete walls; stackable concrete blocks; and masonry blocks. In addition to these materials, O2Compost is now working on a kit design that involves metal barn building materials. Keep an eye on our Blog for details in early to mid-2008.

The O2Compost Systems do not require roofs, however a roof is strongly recommended to keep excess rain and snow off the pile and to provide shade during the summer months. There is nothing worse than dealing with tarps during the winter months when it's cold, dark and wet outside. If a roof is not in the initial construction budget, we recommend leaving the post "hang high" so that a roof can be added at some later date.

The most significant cost component is the expense of construction. If the owner and some friends or existing staff build the system, the cost of construction will be minimal (perhaps a case of beer and free compost forever). However, if a contractor is brought on-site to build the system, the cost will often be two to three times the cost of materials. All of the O2Compost system designs are simple and use conventional construction methods. That being said, a contractor may provide a somewhat higher bid simply because it's the first time he has constructed a structure that integrates a simple technology such as aeration.

Question - So, how much does a compost system cost? Answer - It depends.

For example:

- For a free standing aerated static pile system; on existing grade with no concrete; without any structural containment; and with easy access to electrical power and water - the cost will be in the range of $100 to $1,000, depending on the type of aeration pipe used.

- For an on-grade 3-bay system; constructed on flat sandy soil; out of lumber; with a roof and minimal concrete; and built by a husband and a brother-in-law - the cost will likely range from $3,500 to $10,000.

- For a top-down system; built with a combination of stackable concrete blocks and lumber; with a roof; and built by a contractor who is familiar with farm construction - the cost will likely range from $15,000 to $25,000.

- For an on-grade or top-down system; constructed out of concrete retaining and divider walls and steel; designed to be architecturally consistent with the other buildings on the farm; with 6-months of storage plus a considerable amount of concrete for aprons and driveways; and built by a home builder - the cost will likely range from $25,000 to $50,000 or more.

The O2Compost design drawings include a detailed materials list as well as a bid sheet for contractors to use in preparing their bids. This approach makes it possible to compare “apples with apples”.

Regardless of the approach that is taken and the ultimate cost of the structure, it is important to keep in mind that your compost system solves a problem and is capable of generating revenue. In addition, your compost system will retain its value when it comes time to sell the farm, just as a barn or other out building will add to the value of the farm. Finally, if you choose to sell your compost, part of the asset value is in the fact that you have already set up a clientele and a distribution network. This would be “like magic” to anyone who is thinking about buying your farm.

Small Farm Grants

In many areas of the United States, the local Resource Conservation Districts (RCD’s) have grant money to help you with the cost of construction. O2Compost has worked with several RCD’s and landowners to construct grant-funded systems. Typically, the RCD’s contribution will be approximately 50% of the hard cost, however in Maryland and possibly other states, grants can be for as much as 87% of the cost. This is definitely worth doing. It is our experience that the grant does not cover non-construction costs such as the O2Compost Training Program.

A grant is not free money, unfortunately. What we have learned from the several RCD projects that we’ve constructed is this:

1. Grants are available on a cyclic basis and it may take a year or two for grant money to become available.

2. Grants are awarded on a competitive basis, going first to those farms where there will be the greatest return on their investment - from a water quality and regulatory compliance standpoint.

3. There is a considerable amount of time consuming paperwork involved in seeking a grant of this type, followed by long periods of waiting (and wondering what the heck is going on).

4. The design standards are considerably more rigid than for conventional farm construction and therefore your portion of the expense will be for higher grade materials, thicker concrete, etc. In other words, you will be spending 50% of a higher price and will actually save perhaps 15% to 25% when all is said and done. This is not necessarily a bad thing because the final structure will likely be there 30 years from now.

5. The RCD will not reimburse you for any costs incurred prior to you signing the grant cnotract and being given the go ahead with construction. You will be responsible for payment for the full cost of construction and you will be reimbursed with the RCD's share once they have signed off that construction has been completed in accordance with project specifications. You must submit all receipts with your reimbursement request so paper management is critical. When dealing with a contractor, it is also critical that he meets the construction specifications exactly. To this end, it is a very good idea to keep a large retainage (say 15%) until the work is finally signed off. This will motivate him to see it through to the very end. If you give him his full amount due before getting signed off, you may end up paying for the entire amount.

6. Occasionally, the construction window that you are given is somewhat narrow, leading to a scenario that reads: "hurry up and get your paperwork submitted; and then wait and wait and wait; and then hurry up and get 'er built". We have also had an experience where money is not available one day and then is available the next. Where money is granted to other farms, it can be rescinded by the RCD if the farm owner does not take action in a reasonable amount of time. In this case, the RCD may face a "Use It or Lose It" situation which will hinder their ability to obtain future grant money for their district. As a result, your project may get turned down initially but come back to life at a less than opportune time. My friends with the RCD's openly admit that this is a problem with the system - and a reality.

7. When you have received an RCD Grant, your state and local representatives may feel obliged to drop by periodically to see how everything is going. The folks with the RCD are non-regulatory and in fact they truly are there to help you. If you don't mind visitors or being part of a farm tour from time to time, then this will likely not be a problem.

8. Is it worth all the trouble? Yes, in most cases it is worth the effort. However, it is important to consider the points made above before committing to a potentially long and drawn out process.

Marketing Compost Products

Every activity on the production side of composting is prescriptive and systematic. The goal is always to produce a high quality finished product that is safe to use in any application while minimizing the time and effort that goes into the production process.

On the other hand, marketing your compost is a very creative process. Your marketing strategy will depend on several factors, including:

- The volume and quality of your finished product;
- The amount that you want to net from selling your compost; and
- The amount of time you are willing to devote to the marketing / sales process.

While marketing can take many forms, the following observations generally apply to all scales of operation:

1. While you can begin marketing your compost immediately, your sales will follow production of a finished product. As a friend of mine says, "You can't sell out of an empty wagon".

2. Compost sales are seasonal, typically beginning in early March and ending in mid- to late October. This seasonal range will shrink, expand or shift somewhat depending on your region and climate. The winter months between the growing season are your opportunity to cure and store your compost. "Older compost is better compost".

3. Most of your marketing energy will be spent in the first year of start-up. This is because once people begin to buy it, they will return year after year and your market will expand by word of mouth. Initially, you will need to build consumer confidence; however, this challenge will be replaced by sales that exceed your production capacity.

4. Larger volume sales to a single buyer will yield lower profits. Conversely, smaller volume sales to many buyers will yield higher profits. I call this the Mayonnaise Effect – you can buy 5-gallons of mayonnaise at Costco or a pint of mayonnaise at your corner grocery store for about the same amount.

5. If you have 50 or more horses, you will be producing a large volume of compost. Therefore, your best strategy may be to have a single buyer such as a local farmer, landscaper or nursery man take all of it at a lower price.

6. If you have 5 to 10 horses, you will produce enough for local garden club members and home owners and your strategy might be to sell it on Saturdays between 10:00 AM and 4:00 PM, loading out small trucks and trailers thereby yielding a higher return.

7. You may hate the idea of selling anything, in which case you will be tempted to give your compost away. Please don't do this. Compost has value and people won't appreciate it if you don't receive something in exchange for it. One idea that might work for you is to have your customers make out a check to a local non-profit organization (i.e., a horse rescue facility or therapeutic riding center). They can write it off their taxes and you can feel good about contributing to your community. Similarly, you can offer 10 cubic yards for a local auction.

8. You will at some point run out of well-cured compost, in which case you may be tempted to sell a "hot" batch because people will be clamoring for it. Unless they are friends and you know for a fact that they will set it aside until it's ready to use, I strongly advise against selling it before its ready. Your reputation for selling a well cured, weed seed free product needs to be nurtured and protected at all costs.

I often get the question, "How much can I ask for my compost?" Assuming that you sell your compost in smaller quantities (e.g., trailer loads) for a higher return, you can reasonably ask $15 to $30 per cubic yard. I have a client in South Carolina who delivers his compost to the "ladies in the garden club" for $80 per 2-cy trailer load.

Aside: One cubic yard (cy) is a volume that measures 3-feet by 3-feet by 3-feet. A cubic yard is equivalent to 27 cubic feet and approximately 200 gallons. A standard pick-up truck bed will hold roughly 2 cy when heaped up. Also, 1 cy will fill approximately (40) 5-gallon buckets. If you set up shop at your local farmers market, and you sell a 5-gallon bucket of compost for (let's say) $1.50, you will earn $60 per cy. To do this however, you will want to train your customers to bring their own buckets.

For planning purposes, it is reasonable - if not somewhat conservative - to assume $20 / cy loaded out at your facility. As you develop your market, you will at some point be unable to meet the market demand. That's when your price should go up … and up … and up. Please remember that "Compost has Real Value" and follows the principles of supply and demand. Don't be afraid to ask a premium price for a premium product.

The O2Compost Training Program provides assistance with developing and implementing a personalized marketing strategy and we are always interested in hearing your success story and your challenges. For more ideas on marketing compost, keep an eye on the O2Compost Blog.

The Business of Composting

Several of our clients have taken the O2Compost Training Program and created a home-based or commercial business from it. I love this part of what we do.

In this context, the Business of Composting often involves bringing together a wide range of organic residuals from off site to a central production plant. In some cases, these materials are picked up for a fee and/or received at the facility for a fee. They are then prepared for composting (i.e., shred if necessary and mixed together in desired proportions); composted and cured; and post-processed (i.e., screened) to produce a finished product. In some cases, these materials are bagged. However, going from a bulk product to a bagged product is a very large step and should be carefully researched before making the necessary investment in equipment and infrastructure.

In my workshops, I offer the following recommendations to everyone who is thinking about entering the business of composting:

1. Evaluate your Motives and Strategies

- Problem Resolution
- Cost Avoidance
- Convert an Expense into Profits
- Create a Value Added Finished Product
- Establish Product Differentiation (e.g., blended potting mixes)
- “Boutique” – Small Volumes, Highest Quality, Local and/or Internet Markets
- “Big Dog” – Large Volume, Good Quality / Regional Market

2. Develop a Business Plan

- State your Business Concept in Writing
- Define your Business Strategy
- Analyze Markets / Competition
- Describe Operations, Facilities & Equipment
- Run the Numbers
- Seek Professional Assistance (i.e., Account, Attorney, O2Compost)

3. Get Started

- Define your Objectives and Set Goals
- Start Small and Grow in Planned Increments
- Don’t be Afraid to Make Mistakes - but realize...
- Small Scale Mistakes are Better than Large Ones
- Strive to Produce a GREAT compost product
- Provide Excellent Service to your customers
- Always Think “Safety First”

4. Manage Production

- Develop a Systematic Approach to Operating Your Facility
- Identify Constraints in your System, and …
- Resolve those Constraints Wherever Possible
- Plan, Monitor, and Make Adjustments.
- Talk to Other Composters (outside of your market area)
- Learn from Their Successes and Mistakes!
- Be a Good Neighbor
- Work with your Local / State Regulators (“the Fish Always Win”); and
- Have Fun!

O2Compost - Our Mission

As environmental engineers, scientists and educators, O2Compost’s mission is to teach the art and science of aerated composting, and in so doing empower our world community to become committed stewards of our land and water resources and bold leaders in sustainable agriculture.

It is O2Compost’s objective to convert our collective thinking from “Organic Waste Problem” to “Natural Resource Opportunity” and to positively impact the world for generations to come.