

**Sarasota County
1998 –1999 Innovative Grant Project #2**

**Florida's Online Composting Center
Tutorial and Information Website**

<http://www.compostinfo.com>



**Final Report to the Florida Department of Environmental Protection
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A. Introduction

Sarasota County Government utilized Florida Innovative Recycling Grant funds to develop, program, field test, promote, and troubleshoot a home/backyard composting self-tutorial and information website (Website). The Website is offered on the Internet at <http://www.compostinfo.com> and <http://compost.ifas.ufl.edu> to allow maximum distribution statewide. The result of this project is a powerful educational tool that can be maintained with minimal effort for on-going use.

The project team included Sarasota County Government, the University of Florida Cooperative Extension Service (Sarasota and Hillsborough Counties), and the consulting firms of R. W. Beck, Inc. (Orlando) and Resource Management Group, Inc. (Sarasota). The Website was designed by R. W. Beck based on content developed by Resource Management Group. Sarasota County Government managed the project and provided guidance and direction. The Website's "Full Tutorial" is based on the Florida Master Composter Handbook developed by Hillsborough County Cooperative Extension Service. Sarasota and Hillsborough County Cooperative Extension Service agents provided technical review. The website is hosted on the web server of the University of Florida Institute of Food and Agricultural Sciences.

A-1. Project Background

Sarasota County sought an opportunity to cost-effectively teach home composting and provide on-going training and support for composting to its residents. The County has supported sales of backyard composter bins; however, it has not offered formal training or on-going support in the proper use of composters, and has no Master Composter program. As a result, the County believed that residents lacked the information and support necessary to begin and sustain backyard composting. This need for information and support led to this project.

A-2. Goals and Objectives

The County's goal in undertaking this project was to provide support for County residents' composting efforts to help divert compostable solid waste from collection, processing, and/or disposal. To meet this goal, the County's objectives included:

- Use the latest communication and marketing technology to offer composting information and support through an attractive, user-friendly, and technically sound website.
- Provide information in a format that is available to Florida residents with Internet access.
- Integrate learning tools that allow the viewers to learn and test knowledge as they progress through the website.
- Integrate interactivity to the learning process so users can customize their progress through the site to their needs and level of expertise.

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- Promote the site to County residents.

In addition, the County set a goal of disseminating information about the Website to other Florida counties to broaden the reach of the program.

A-3. What's Innovative About this Project?

This project is innovative because it addresses all five evaluation criteria that the Florida Department of Environmental Protection (FDEP) defined for the innovative grant program: Advanced Technologies, Technology Transfer, Cost Effectiveness, Nontraditional Materials, and Regional Programs.

Advanced Technologies. The Website is offered on the Internet, which is the latest advance in communication technology. Using the best available multimedia technology, the Website engages users better than circulars or videos. Using the Internet attempts to reach a population of residents that may not participate in traditional composting resources, such as Extension Service or County circulars. For advanced or return users, the Website offers a site map and searchable database for use as an on-going resource for reference information.

Technology Transfer. The beauty of the Internet is that the Website is available on the world wide web (www) to all Florida residents (and anyone world-wide with access to the Internet). To facilitate access, other Florida counties have been encouraged to provide links to the Website from county or extension service web sites. These pointers/links can be established with minimal effort.

Cost Effectiveness. The program is self-sustaining and easily transferable to other counties at virtually no cost. This makes the Website very cost effective, as it can serve the whole State of Florida now that it is established. Home composting is inherently cost effective as waste reduction, because when materials are diverted at the source the County avoids collection costs, transportation costs, processing costs, marketing costs, and disposal costs.

Nontraditional Materials. The Website targets the following non-traditional materials for recycling: food waste, yard trash, and paper that is not collected in curbside recycling programs, such as wet paper and paperboard.

Regional Programs. All Florida counties are able to access the Website on the Internet. Other counties are able to utilize the Website for their own regions and residents, with minimal effort and cost. The project also has inter-county support, including Extension Service agents and the Florida Organics Recycling Association (FORA).

A-4. Sharing What We Learned.

The project team has been accepted for and will share what we learned while conducting this project at the National Recycling Coalition's Annual Congress (September 1999). Other presentations may be made at Florida SWANA's Annual Summer Meeting (August 1999) and Biocycle's East Coast Conference (September 1999).

B. Project Implementation

B1. Equipment and Services Utilized

No equipment was purchased for this project. The project did, however, require the use of professional consulting services provided by R. W. Beck, Inc. and Resource Management Group, Inc. R. W. Beck designed the Website based on content developed by Resource Management Group.

B2. Intergovernmental Cooperation

From the start of this project, the project team worked closely with Cooperative Extension Service agents from Sarasota and Hillsborough Counties who have provided continual support, feedback, and guidance regarding the content of the web-site. Furthermore, feedback was obtained from Florida's county recycling coordinators and others regarding improvements to the Website. The resulting Website has been designed to be a Florida-wide resource, and is not specific to Sarasota County.

Initially Sarasota County Government anticipated hosting and maintaining the Online Composting Center on a Sarasota County Government computer server. However, it became clear that a more natural host for this type of information resource would be a server at the University of Florida Cooperative Extension Service. A Sarasota County cooperative extension agent has been assigned to sponsor and address composting related queries that may be generated from the Website.



What is the Cooperative Extension Service?

A cooperative service of both the State of Florida (through the University of Florida) and local county governments to provide information and conduct educational programs on issues such as sustainable agriculture, competitiveness in world markets, natural resource conservation, energy conservation, food safety, child and family development, consumer credit counseling, and youth development.

The University of Florida Cooperative Extension Service is located in Gainesville. Extension agents are located in county offices throughout Florida.

B3. Project Elements and Timeline

There were five primary project elements:

- Develop Curriculum (Months 1-4)
- Prepare Interactive Internet Website (Months 4-6)
- Field Test Website (Months 6-12)
- Finalize and Fine Tune Website (Months 6-12)
- Monitor Site Usage (Months 10-12)

These project elements are described below in more detail.

Develop Curriculum (Months 1-4)

Targeted Literature Search. The project team, conducted a targeted literature search to survey the existing curricula and other resources used to teach backyard composting. The literature search included reviewing circulars, brochures, and publications of the University of Florida, Institute of Food and Agricultural Sciences (IFAS) and other academic institutions as well as commercial publications including books, guides, and journals/magazines. The project team also referenced the Florida Master Composter Handbook, which ultimately was used as a core template for the Website's Full Tutorial section.

In addition to print media, the project team examined Internet resources for comparison, reference, and to reduce duplication of efforts. In addition to content, the project team reviewed sources for presentation and ease of use. Appendix A, "Targeted Literature Search," includes a list of reference material.

Focus Groups. The project team conducted four focus groups and one composting seminar to evaluate potential formats, content, and services to provide via the Website. Overall, twenty-six Florida residents participated in these public sessions. The project team recruited focus group participants by placing newspaper ads, handing out flyers at the local farmers' market, sending email to neighborhood associations and computer clubs, as well as word of mouth.

Focus group participants completed a background survey to assist the project team with determining potential users level of technical ability and computer hardware support. Focus group participants were also asked six questions relating to composting to help the project team develop a targeted curriculum for Florida residents and to add keywords for easy identification by internet search engines.

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At a composting workshop conducted for the Hillsborough County master composter program, the project team staff recorded questions raised by workshop participants. These questions were passively recorded, during the natural course of conducting a backyard composting training session.

As a result of the focus groups and composting seminar, the project team drafted, and then finalized a written curriculum for the Website. A review of the curriculum was conducted by the Hillsborough County and Sarasota County Cooperative Extension Service agents.

Prepare Initial Internet Website (Months 4-6)

After completion of an approved curriculum and integration of the initial focus group comments, the project team converted the written curriculum to an Internet ready, computer based tutorial. This step included developing the conceptual framework for how information should be organized (site layout), determining which concepts should be illustrated, and designing the site to facilitate easy access and information flow. Technical aspects of this stage included identifying web infrastructure necessary for organizing, storing and accessing data to be used in the Website.

Based on the initial focus groups, the project team opted to design the website for a user on a "486" IBM compatible personal computer or Apple MacIntosh 6100, with a 33.6 kbs modem, technology readily available in 1996. The project team determined to make the site compatible with software at least 1-2 years old. These assumptions were made to accommodate the largest possible audience. As a result of these decisions, the site does not use "frame" technology, which places certain features on a part of the computer screen so these features do not scroll when information is accessed.

Two of the site's features, the Virtual Composter and the Site Map, are more intensive, but the user is given information that the feature requires additional downloading time so as to reduce frustration among users with slower equipment.

Field Test Website (Months 6-12)

During this project phase (from January 1999 to March 1999) the project team hosted the Website on its development web server. This was a practical way to manage the daily updates to the Website based initially on project team feedback and later based on focus group and user feedback. In April 1999 the site was transferred to its permanent location on a web-server at the University of Florida. In addition to the university's assigned URL: <http://compost.ifas.ufl.edu>, the project team registered the site for its own domain name, "compostinfo.com," which is easier to remember. Therefore, the site can be reached at: <http://www.compostinfo.com> or <http://compostinfo.com>, while being housed on the University's server.

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To field test the Website, the project team held eight focus groups and one composting seminar with a total of 72 participants. This round of focus groups was held at the Sarasota's main public library. This facility's new computer training room has six Internet accessible terminals, which allowed the project team to go live on the Internet to test the Website. The focus groups were kept small so no more than two people had to share a computer terminal.

The project team designed this focus group to see how well the Website replaces human instruction in teaching the methods of composting. The focus group was advertised as a "composting workshop." When participants arrived, they were given a short description of the project and then asked to log on and use the Website to learn how to compost. Each participant was given a comment sheet to comment on specific pages or overall content. After 45 minutes, the group was debriefed to see how well the Website worked.



Focus Group Participants Accessing the Website

Participants came to the workshop with a wide range of computer and composting expertise. Overall, the participants enjoyed the site and found it helpful. In fact, so many people began accessing the Website after they left the workshops, that the development server was temporarily overloaded by excessive use. This was quickly addressed to accommodate the increased traffic.

Participants stated that the site was well organized and easy to follow, and filled with a wealth of information. However, some participants felt lost in certain sections. Others asked for more specific content in one area or another. The project team worked to address all the comments and feedback during the finalization and fine tuning phase of the project.

Focus group participants also provided their opinions on the Website name and domain name (URL address).

Finalize and Fine Tune Website (Months 6-12)

At the conclusion of the focus group workshops, the project team finalized the Website's online identity, naming it "Florida's Online Composting Center." The project team also registered and posted in on the world wide web with its own memorable domain name of "compostinfo.com."

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The Website can be accessed on the Internet at <http://www.compostinfo.com>, <http://compostinfo.com>, or <http://compost.ifas.ufl.edu>.

During this period the project team also collected and evaluated many comments and recommendations from a variety of individuals, including comments by the original focus group participants as well as individuals who visited the site and replied on-line with their comments. Serious bugs or errors were corrected immediately that required an immediate fix.

Promote Site Usage (Months 10-12)

The project team worked to promote the Website to Sarasota County residents, all of Florida's Recycling Coordinators, and the broader environmental community. Promotion of the site was through a diversity of mechanisms, including the media, professional conferences, and electronic means.

Media Promotion. The goal of media promotion is to make the media aware of a newsworthy occurrence, so they can report it to their audience at "no cost" to you. In April 1999, the project team prepared and distributed a media release to coincide with Compost Awareness Week, May 2-7, 1999. Releases were faxed and emailed to local media (print and broadcast), as well as national media such as Waste News, Resource Recycling Magazine, Biocycle Magazine, Composting News, Waste Age Magazine, and World Wastes Magazine. Regional publications were also contacted, including the following newsletters: the MassRecycler (Massachusetts Recycling Coalition), RFT (RecycleFlorida Today – Summer 1999 issue), Hillsborough Master Composter (Spring 1999), and Georgia's organics recycling association.

In general, media promotion was not very effective for this project as not very many media made mention of the Website. To ensure that Sarasota County residents were informed of the Website, the project team also produced a stuffer to be placed in Sarasota County utility bills, and a local newspaper advertisement.

Conference Promotion. The purpose of promoting the Website at professional conferences is to make environmental professionals aware of the Website so that they can include it in their outreach to their local citizens. The project team presented a project update at the January 1999 RFT Issues Forum in Tallahassee, and has been invited to present at the National Recycling Coalition's Congress and Exposition (September 1999). The project team may also present at Florida SWANA's Annual Summer Meeting (August 1999), and the Biocycle East Coast Conference (September 1999). In cooperation with RFT, the project team distributed flyers and "bookmarks" announcing the site in at RFT's Annual Conference (May 1999). The project team also set up a booth at the Hillsborough Eco-Gardening Conference (April 1999).

Electronic Promotion. The project team emailed press releases and short targeted notes to over 1,000 electronic message accounts (e-mail). Announcements have also been sent to several list serves, including the GreenYes, composting, organic gardening, pollution prevention, waste management list servers. Furthermore, the site has been registered with several Internet search

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engines, such as Alta-vista, Yahoo, and Infoseek. The project team has also encouraged Florida counties and other organizations to provide links to the Website from other web sites. Some of the organizations that have linked to the site include the National Recycling Coalition (from the May calendar of events part of their website) and the Sarasota County Cooperative Extension Service.

Promoting the site has had positive results. In April 1999, the first month of operation on the University's server, approximately 1,100 different users were tracked in the site's record keeping log. Unfortunately, a corrupted file prevented us from tracking the usage in May, but judging from overall hits, the usage in May is estimated to be 1,500 different users. The data for June was not yet available at the time of this report preparation, but early indications continued to show increasing traffic at the site.

See Appendix B – Feedback from Users, for a summary of comments emailed to the project team by visitors to the Website.

Ongoing Site Maintenance (post grant period)

The cost to maintain the Website is low because the Website's content generally doesn't change, and the only periodic maintenance that must be done is to keep links to other sites current. Furthermore, over the long term the Website should save on educational costs because individuals self-guide through the tutorial, and staff do not have to respond directly to the majority questions. However, as part of the Website users may obtain an individual response from experts by clicking on a response link. This generates an email that is forwarded to composting experts to respond directly to the individual.

One of the project team partners, Resource Management Group, Inc. (RMG) has offered to provide this service for the first six months after the conclusion of the grant period. Sarasota County's long term plan is to train a County Extension Master Gardener / Master Composter volunteer to fill this role as email expert.

A volunteer with computer expertise, county staff or a consultant will be utilized to maintain and update links within the site on a quarterly basis. This activity involves updating links from the Tutorial to external sites or repairing internal broken links. Links may be added as well, to increase the competitiveness of bin suppliers or to increase information exchange. This cost to maintain the site is estimated to be at most a couple of hundred dollars per quarter.

Other maintenance issues include paying the annual Domain name registration fee. The initial fee covers the first two years (through March 2001). Sarasota County Government will budget for this \$35 annual fee for subsequent years. Because the Website was developed as a statewide educational resource, it is hosted on a server at the University of Florida at no ongoing cost to Sarasota County. Host fees on commercial servers vary widely, and can be as much as \$75 per month or more.

B4. Description of the Website

General Website Organization. The Website is organized into nine main categories. Each of these categories is listed as interactive hot buttons on the left side of the computer screen and links on the bottom of each web-page. These buttons/links are found on all pages of the Website for ease of navigation. A description of the nine categories, and what is found under each of them is listed below.

Home – The main (first) web-page introduces the Website, and provides users with basic information about the site’s content and how to use the Website. The core sections of the Website include:

Quick Tutorial – A 5-step overview of the composting process, designed to give web “surfers” the basic information on how to compost, and to provide serious users a general sense of composting to help orient them to the concepts that will be covered in more depth in the Website.

Full Tutorial – The core Florida’s Online Composting Center is this eight-section tutorial on the components of successful backyard composting. Tutorial pages include:

- A) What is Composting and Compost?
- B) What Can Be Composted?
- C) Elements of Composting
- D) Meet Your Microbes
- E) Composting Methods
- F) Build a Pile
- G) Managing a Compost System
- H) How To Use Compost

Compost Bins – This page provides information on types of compost bins, how they are used, and how to build or purchase bins of various types.

Learn More – The Learn More pages are interactive learning tools, reference materials, and supporting documentation. Users link to the Learn More pages as they go through the Website, or browse through them by clicking on the page titles.

Links – The links page allows the user to access additional information from other web-sites on the Internet with related information.

Credits – As a value added feature, we included hot links for each of the contributors from the credits page to the individual’s email (if known) and/or links to organizational web sites.

Site Map – This feature enables a user to see the overall site layout.

Search – The Website includes a searchable reference section. This feature enables a user to search within the site for the specific information that is important to the user. This enables

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users to use the site as a reference and support base after they have started composting at home.

Engaging and Interacting with the User. Florida's on-line composting center uses multimedia presentations such as pictures, text, and user prompts to convey information and examples. Through user input, the tutorial adapts to individual user needs, user's level of knowledge, and user's time constraints.

Each page includes links to other resource pages within the site. For example, unusual words are highlighted in blue, this indicates that these words link to another page. By "clicking" on the highlighted words, the user is linked to the Glossary page where the word is defined. The user may then navigate back to the tutorial using clearly defined "back/previous" buttons within the Website.

The following list illustrates some special areas of the Website that were specifically designed with interactivity in mind.

Virtual Pile - Calculates C:N ratios for the user. Includes an innovative drag and drop feature that allows the user to pick from a list of compostables and build a compost pile on the computer. The computer then provides the user with information about composting those materials. The virtual pile may take a minute or two to load on slow connection speed or older computers.

Frequently Asked Questions (FAQ) Quiz - Contains questions and answers. The user may choose to be quizzed or to see just the answer.

Choose the Right Composting System - Takes the user through a series of questions to determine the most appropriate composting system for his or her needs.

Compost Maturity Test – Offers a procedure for testing for compost maturity, and the computer figures out the germination rate.

In addition, each page is outfitted with a link for users to email the webmaster to ask questions or provide comments.

Informative Resources. The nine main topic headings form the core of the tutorial. To provide users with more in-depth knowledge, Florida's Online Composting Center offers additional information resource pages. Several of the key pages are outlined below:

Can I Compost It? - Contains a table of compostable and non-compostable materials.

Grasscycling - Some tips on what to do with grass clippings.

Managing Problematic Materials - Materials such as diseased plants, pesticides, and large amounts of grass may cause problems. This page addresses them.

Troubleshooting – Provides suggestions for managing the most typical composting problems, including trouble with pests, odor, or pile not heating up.

When Is Compost Ready? – Focus group participants asked, “when is the compost, ‘done’?” We created this page to help users identify when compost is ready for use.

Compost Maturity Tests – Offers tests that users may use to determine if compost is ready.

Bin Construction and Ordering Information – Provides a summary of bin types and how to obtain them.

Vermicomposting (Composting with worms) – Offers in-depth information on a special composting method!

Compost Critters - Contains descriptions of some of the decomposers that may inhabit the compost system.

Glossary of Composting Terms - Contains definitions for compost related terms.

B5. Problems Encountered

There were no major problems that jeopardized the success of the Website. One "problem" that the project team noted was the one-year project timeline imposed by the Florida Department of Environmental Protection. The project team would have liked to have a two-year implementation period to allow more time to gather and address public input, and refine promotional activities. More time also would have allowed an increased number of cooperative links from and to the Website.

Promotion of the site through electronic media also requires more ongoing attention than originally anticipated. For instance, a search in AltaVista showed the Website in the #42 slot. Later in the project, compostinfo.com did not show up in the top 50 hits in the search engine. This is the reality of a media that is expanding by 20,000+ web pages a day. Furthermore, search engine registry is complicated by the search engine’s policy to constantly change the ranking criteria. An extended timeline could help improve this element, because every change to the site’s search registry takes one to several weeks to become effective. So the evaluation and reaction time is greatly extended.

C. Project Results

C1. Meeting The Project's Goal

The project has successfully achieved the County’s goal and objectives.

Goal: The County's goal was to provide support for County residents’ composting efforts, and therefore help divert compostable solid waste from collection, processing, and/or disposal. The Website does this on a 24 hour per day basis because it is Internet based. The

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information is available on weekends and holidays when residents are likely to be doing yard projects, and when County staff are not typically available.

Objective 1: The County's first objective was to use the latest communication and marketing technology, the Internet, to offer composting information and support. The Website does this in an attractive, interactive, user friendly, and technically sound manner.

Objective 2: The County's second objective was to make the Website available to all Florida residents with access to the Internet. The Website was designed so that it is not Sarasota County specific (or Florida specific for that matter). The Website has also been placed on the University of Florida's world wide web server for universal access.

Objective 3: The County's third objective was to integrate learning tools into the Website. The Website does this with a tutorial module and interactive elements that allow the viewers to learn and test knowledge as they progress through the website.

Objective 4: The County's fourth objective was to use interactivity to allow visitors to customize their visit at the site to their experience level and information needs. The Website does this with a search function that allows visitors to directly access answers to specific questions. It also includes both a quick and long version of the tutorial, with the opportunity for visitors to learn more or use interactive tools to arrive at customized solutions for their individual compost needs.

Objective 5: The County's fifth objective was to promote the Website to County residents. The project team has done some initial promotion, and will continue to do so at upcoming professional conferences. Ongoing promotion of the site will be required by Sarasota County to increase the use of the Website by more County residents.

C2. Demonstration of Advanced Technology

The Website is offered on the Internet, which is the latest advance in communication technology. There is no other educational website like this one in use by other Florida counties or communities. Using the best available multimedia technology, the Website engages users better than circulars or videos. Using the Internet attempts to reach a population of residents that may not participate in traditional composting resources, such as Extension Service or County circulars. For advanced or return users, the Website offers a site map and searchable database for use as an on-going resource for reference information.

The site also includes the "Virtual Pile," which uses new software technology in a new and exciting way. This software enables the computer user to "drag & drop" materials into a compost bin. The Virtual Pile then calculates carbon to nitrogen ratio (C:N), an important indicator of how materials will compost together. In addition to the C:N calculation, the Virtual Pile also provides reminder messages to the user, such as "remember to add water as you build your pile."

This successful implementation of emerging technology has been so well received, that the project team has already fielded inquiries from composting organizations as far away as Germany and Australia wishing to adopt and adapt Sarasota's model.

C3. How Project Led to Greater Quantity of Recovered Materials

It is virtually impossible to quantify how much diversion through backyard composting can be attributed to the **compostinfo.com** website. A preliminary estimate is that 1 out of every 10 visitors to the site will start composting as a result of the information provided. If April 1999 was a typical month in terms of visitation, the site will inspire 100-1,550 new composters a month. By the end of the first year, if all these new composters continue their efforts, the diversion rate could be as high as 600,000 lbs. of materials.¹ Because this is an on-going effort with continued commitment from the County to promote and utilize the Website, the project team is confident that over time, the Website will help educate residents on how to divert thousands of tons of material from disposal.

While this diversion estimate is hypothetical, we do have qualitative information. We know that people love using the site (see Appendix B, Feedback). We also know that people are increasingly using the internet to make business and purchasing decisions. The 1999 Internet Report (www.c-prompt-dev.com), estimates that "62% of the people online said that information they found online directly influences their purchases." Online resources will have a significant impact on behavior, and **compostinfo.com** is at the forefront of this trend.

C4. Transferability

All Florida counties are able to utilize the Website as part of their educational outreach for backyard composting. Other Florida counties and communities can learn from and replicate this project if they desire to produce additional websites that address other environmental topics in addition to backyard composting. Virtually all the lessons learned and the project methodology are generic to web site production and not specific to backyard composting.

C5. Analysis of Improvements in Recycling Program Cost Effectiveness

This project had a total cost of \$75,450. The greatest portion of funds for the project was provided by the Florida Recycling Innovative Grant Program, in the amount of \$72,450. Sarasota County purchased and contributed compost bins at a cost of \$3,000 as gifts to individuals who participated in focus group sessions. Sarasota County also provided administrative oversight of the project, although the cost associated with the oversight has not been accounted for.

¹ On average, every Florida resident generates about 930 lbs. per year of food waste, yard waste, and paper waste (excluding newspaper, office paper, and corrugated paper) per the FDEP. The estimate assumes that each new composter is a Floridian. The estimate also assume that only 1/3 of the total compostables will be diverted (i.e. ~310 lb. per person per year).

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Project expenditures are summarized below:

	County	Private Sector
<i>Administration</i>	not accounted for	
<i>Equipment</i>		\$250
<i>Operations</i>		
<i>Advertising</i>		\$1,500
<i>Education</i>		
<i>Professional Services</i>		\$68,950
<i>Other Expenses</i>	\$3,000 *	\$1,750
<i>Total</i>	\$3,000	\$72,450

* Compost bins

Avoided tipping fees cannot be readily calculated for this project because the amount of diversion attributable to this project is difficult to estimate, and because users of the Website could live anywhere (not just in Sarasota County). However, project costs may be compared with the cost to set up, manage, and maintain a master composter program. Assuming \$ 20,000 per year for staffing a master composter program, the project has a 3.5 year payback period.

Another way to look at the cost effectiveness of the program is to estimate the cost to educate each person who visits the site. Assuming the Website has a three year life before it requires a major overhaul, and assuming the trend of 1,000-1,500 new visitors per month continues, then the Website will have reached 36,000 – 54,000 people in three years, or a cost of approximately \$1.33 - \$2.00 per visitor.

Although estimating diversion associated with the Website is difficult, if we assume a diversion rate of just 100 lbs. per year per visitor, the Website will help divert 1,800 to 2,600 tons per year of material (100 lbs. per year is approximately 1/10th of the per capita generation rate for food, yard, and unrecyclable paper waste). Using the per capita cost figure from the previous paragraph, this project is estimated to only cost from \$27 to \$40 per ton of compostables diverted to backyard composting. For comparison purposes, average reported Florida tip fees (not including collection costs) are reported to be \$30 per ton for yard trash and \$43 per ton for Class I landfills.

Other non-quantified benefits of backyard composting include:

- Reduced fuel consumption, air pollution, and wear on roadways because less trucks are needed for recycling and disposal collection;
- Reduced water and fertilizer usage where compost is used in cultivation; and
- Better plant health for plants grown with compost.

C6. Diversion of Nontraditional Materials

The Website targets the following non-traditional materials for backyard composting: food waste, yard trash, and paper that is not collected in curbside recycling programs, such as wet paper and paperboard.

The project team also believes that promoting backyard composting of organics improves the general market for commercially produced compost. The hypothesis is that when residents make and use compost, they realize the benefits of compost in the landscape, which prompts them to seek out commercially available compost to supplement the limited amount of compost they make from their own compostable discards.

Although the project team has not quantified this hypothesis, supporting evidence has come from comments made by focus group participants. Two of the more common questions were about sources for additional material, such as: “where can I get more materials to compost?” and “how do I make enough compost for my whole landscape?” When residents answer these questions for themselves, we hope they will look first into their own waste stream and dig deeper to divert all compostable materials, and then we hope they will purchase compost from local nursery and garden centers.

Appendix A

Targeted Literature Search

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Appelhof, Mary. Worms Eat My Garbage. Flower Press: Kalamazoo, 1997.

Backyard composting : Your Complete Guide to Recycling Yard Clippings. Harmonious Press : Ojai, 1992.

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- Hanlon, E.A; Kidder, G and McNeal, B.L. "Soil and Container Media Electrical Conductivity Interpretations." University of Florida: Gainesville, June 1993.
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- Noyes, Nick. Easy Composters You Can Build. Storey Pub: Pownal, 1995.
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- Smith, Wayne H. "Recycling Composted Organic Materials in Florida." University of Florida: Gainesville, July 1994.
- Stephens, James M. "Organic Vegetable Gardening." Florida Cooperative Extension Service Circular 375, The University of Florida: Gainesville, July 1989.

Appendix B Feedback From Users

The Website includes an interactive email system. Visitors to the site may ask additional questions by clicking on a response link. This directs email to the project team's designated contact person.

The following emails are sequenced chronologically. The emails are unedited except for cleaning up extraneous and irrelevant information to make reading easier. For example, we have removed tracking information, original questions/responses, history of correspondence, etc. However, we have left spelling errors and other content related information in its original form.

Each different email is separated by a line.

From: Peter Kessler [pkessler@home.com]
Sent: Tuesday, June 08, 1999 9:14 PM
To: Jesse White
Subject: Re: Composting

Your site has helped me a great deal in the development of my compost bin. There is a lot of practice information on it for immediate application. This information is organized in a way that makes it easily accessible. I often visit it for reference and to refine my technique.

From: DAVID G. TAYLOR [phikappa@prodigy.net]
Sent: Monday, June 07, 1999 2:35 PM
To: jessewhite@sprintmail.com
Subject: Compost site

I wanted to let you know that I have enjoyed the information provided on composting for Florida. Having done some composting in Alabama, this site has shown me some differences and techniques for the soil.

Being able to incorporate the "Earth Machine" composter has boosted the time it takes for the compost to break down and keeps the small creatures away.

Connie Taylor

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From: Rona Fried [rfried@bcom.com]
Sent: Friday, June 04, 1999 12:46 PM
To: Jesse White
Subject: Re: composting information

Hi Jesse,

>You can find support for backyard composting at:

>

><http://www.compostinfo.com>

Thanks for letting me know about this great site! As a long-time composter, I appreciate it. Great calculation tool!

Best wishes,

Rona Fried, Ph.D.
Director, Sustainable Business.com
<http://www.sustainablebusiness.com>
516-423-3277
fax: 4725

Sustainable Business.com: The Center for Sustainable Business on the Web.
Read the "Sustainable Business Insider" magazine, post Business Opportunities, find a Green Dream Job, use the comprehensive Links Library.

From: Joyce_LaValle@mail.ifsia.com
Sent: Tuesday, June 01, 1999 6:07 PM
To: Jesse White
Subject: Re: composting information

Thank you . It is great to get this kind of helpful information

From: Cheryl Miller [cherecy@bellsouth.net]
Sent: Friday, May 21, 1999 4:49 AM
To: jessewhite@sprintmail.com
Subject: (no subject)

Jesse,
Love the compost site. Great Job!
Cheryl Miller
City of Deerfield Beach

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Date: 5/10/99 9:05:40 PM Eastern Daylight Time
From: candy_eich@Ameritech.net (Candy A. Johnson-Eich)
To: Jessewhite@aol.com

Hi --

I am one of the recipients to your composting e-mail --what GREAT timing!

My husband and I will be composting and we're beginners -- we're buying a house this year and we're building a greenhouse on the property -- what better way to fertilize and save the landfills!

I just wanted to let you know that at least one of us appreciated this information and will be using it!

Thank you! Candy

Candy A. Johnson-Eich
candy_eich@Ameritech.net

"Walk by faith...not by sight" -- Billy Blanks

From: Heide Feldman [hfeldman@mrwmd.org]
Sent: Monday, May 10, 1999 6:31 PM
To: 'Jesse White'
Subject: RE: Composting Information

Thank you for this very good site. I teach composting so appreciate the detailed info. We will use it as a link on our webpage now under construction.

Heidi Feldman
Public Education Coordinator
Monterey Regional Waste Management District
P.O. Box 1670, Marina, CA 93933
Tel.: 831/384-5313 FAX: 831/384-3567

"Never doubt that a small group of thoughtful committed citizens can change the world. Indeed, it is the only thing that ever has."
Margaret Mead

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From: Karen Gladstone [kgzandherbal@erols.com]
Sent: Friday, April 30, 1999 1:49 PM
To: Jesse White
Subject: Re: compost info, free fertilizer

a good pile going right now and just
got a pick up truck full from a local farm. I have always valued the
"golden dirt" and will pass the address on .

From: John Whiting-Grant [whiting-Grant@prodigy.net]
Sent: Tuesday, April 27, 1999 7:54 AM
To: jessewhite@sprintmail.com
Subject: compost website

Hello Jesse,

Great site!

It is attractive, fun, easy to navigate, and very informative without
overloading the visitor. Yet it also allows the visitor to dig further
if they would like to know more. I especially like the clear and
practical "trouble shooting" section. We have started a compost pile
here which is slow to take off (maybe because it has been so cold), so
this section was helpful

John (and Kristen)

From: Mike Walker [bigroof@christcom.net]
Sent: Friday, April 23, 1999 11:01 PM
To: jessewhite@sprintmail.com
Subject: compost web site

per your request for review on the composters mailing list

I found the web site to be interesting and attractive with a lot of good
information.

now I know where to send folks who want to learn about composting.

Mike