

"A PRELIMINARY REPORT ON A GEORGIA CITY'S INNOVATIVE COMPOSTING PROJECT COOPERATION BETWEEN THE CITY OF DOUGLAS AND THE UNIVERSITY OF GEORGIA, COLLEGE OF AGRICULTURE."

By

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(Complete addresses at back of paper)

INTRODUCTION

Cities across Georgia and this nation are challenged and sometimes even mandated, to operate more efficiently and effectively. Likewise we are all forced to serve a more populated community whether in an urban setting or in rural America.

About four (4) years ago, we started to dream about how to reduce our city contributions to the Coffee County operated landfill. It wasn't just a cost savings approach, it was a common sense approach to our landfill's future - and yes, to our future.

The dream began with a yard trimmings grinding project, then a distribution of the ground yard trimmings to residents, then to the development of our compost and finally to distribution or completed compost to our customers.

We were interested in developing a project that would work in rural America and not just a mega project that could only be afforded by our urban counterparts.

OUR BACKGROUND

We are a rural community in extreme south Georgia. Douglas is the county seat of Coffee County Georgia. Our city population is estimated at approximately 14,000 presently and our county overall population is just under 35,000.

We are situated between Valdosta and Waycross, Georgia and about 70 miles north of the Florida line.

Our community generates 35 tons of yard trimmings every day. This is an extremely large amount of trimmings for our size community, comparatively speaking. As in every community, we looked at all of our community's available waste products, as we began the project.

AVAILABILITY

Although we don't refer to everything officially as waste, at one time or another it is considered as waste in most communities. In Douglas we looked at nine (9) different waste elements. Our major waste products for consideration, however, were:

Yard Trimmings - including pine straw, leaves, grass clippings, azalea trimmings, limbs, sticks, trees, and other such trimmings from yards. We average 35 tons per day.

Cotton Gin Trash - As cotton has returned as "king" in rural south Georgia, also has cotton gin trash been generated as a by product. Douglas has two (2) modern cotton gins operating within its city limits. Cotton trash is, at best, used as a low grade roughage for cattle.

Tobacco Trash - Douglas has been known for years as tobacco capitol of Georgia. Along with this, significant quantities of tobacco trash are generated by the market warehouses.

Municipal Sludge - We installed a dewatering system at the Douglas Water Pollution Control Plant in 1997. We are generating between 6-11 dry tons of sludge on a daily basis. This dried sludge requires proper disposal. Although the cost at our landfill is only \$12.00 per ton, to have and dispose of sludge the cost is near \$35.00 per ton.

Poultry Litter - Douglas is the second largest poultry producer in Georgia. Although the poultry houses are not in the city, there is a large amount of poultry litter produced daily in our county. At the present time, farmers are able to spread the poultry litter on farmland and there is no excess litter available. This could change in future years as state agriculture and environmental rules might dictate, and therefore would be a great asset to add poultry litter to our composting operation.

THE RESEARCH AGREEMENT CONTRACT WITH UGA

The City of Douglas contracted with the University of Georgia, College of Agriculture, on the 15th day of April 1997 to develop this conceptual plan. The contract agreement was for \$28,544.

This project was under the supervision of:

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AGREEMENT CONTENTS

* **Project Title:** "Pilot Scale Evaluation and Demonstration

of Composting Biosolids, Yard Wastes and Cotton Gin Trash"

- * **Project Duration:** 9 months
- * **Overall Objective:** To develop a work plan based on laboratory investigations of the waste streams and to perform a field sized pilot demonstration of the composting of mixed waste streams.
- * **Our Planned Objective:** To look at all available waste products in the Douglas-Coffee County area and determine through laboratory tests, on-ground tests and windrowing, the best compost mix.

IN THE BEGINNING

As we began the project, I feel that no one on the "team" had any preconceived idea as to what our mixture nor end product would resemble. This was important for the project to be a success.

Samples of all types of available waste material from our waste-stream were furnished to the University of Georgia. Dr. K.C. DAS and his Athens team developed the best "recipe" for the compost. Larger amounts or samples were also delivered to the University of Georgia Experiment Station at Tifton, Georgia - (Contact Dr. Glen Harris).

EARTH WATCH KICKS IT OFF

This "dream" began over five (5) years earlier. The City of Douglas hosted an "Earth Watch" program in the local gymnasium. This program gave citizens and students an opportunity to view mulching, composting and generally to leave with ideas about saving the earth. This program was important as it gave our citizens a true hands-on approach to how they could get involved.

The University of Georgia Extension Service and City of Douglas followed this with visual and training assistance on how to start back yard composting projects. Printed brochures were also provided by the Extension offices.

DEMONSTRATION SITES DEVELOPED

City and Extension officials developed city operated demonstration sites adjacent to the Community Services Department and Satilla Regional Library. School led groups and private citizens took advantage of the location to learn more about composting.

Both local newspapers assisted by writing articles of back yard composting. But - even with all this effort, very few people were known to have developed any backyard compost sites. The type

of development was minimally successful.

MULCHING

The city was generating 35 tons of yard trimmings per day on the average. At that time, it was all being hauled to the Coffee County landfill for disposal.

The city considered and even accepted bids to purchase a 12 foot tub grinder. This would allow the city to grind its own yard trimmings. The Board of Commissioners and City Manager of the City felt it would be more cost efficient to contract the services on an annual basis. Thus a considerable savings was realized due to this arrangement.

Annually the city currently contracts with GreenCycle of Smyrna, Georgia, to grind its yard trimmings. (Contact Charlie Slade 770-435-9490).

As the process of grinding evolved, the general public began requesting the ground trimmings for weed control and general mulching of flower beds. The city began loading trucks and trailers on Saturday mornings at no charge. The city also agreed to deliver mulch to city residents at no charge. About 50% of all grindings were being given away. (Note: Other cities will not load for citizens and others indicated they will load for free and deliver within the city limits for \$40.00 per load, as example).

At about the same time, the State of Georgia began restricting yard trimmings from the landfills in Georgia. Even though, the city had already eliminated its yard trimmings for approximately two (2) years before the mandate.

Mulching proved to be effective. It was not a free program to the city - but we made it a free program to our constituents. It was a highly favorable program to our citizens. The elected officials, likewise, received high marks from constituents.

But it wasn't 100% effective, remember we were only distributing 50% of our grindings. Therefore, a surplus was being realized.

DEWATERING PROGRAM BEGINS

The City Commission gave authority to the City Manager to contract with Jordan, Jones & Goulding to develop a dewatering plant at the Water Pollution Control Plant (WPCP). Sawcross Inc. was contracted to install a dewatering system. The contract was completed in January 1998 for a cost of \$1,500,000.00.

COMPOSTING PROGRAM BEGINS

Now the fun began, as we contracted with UGA officials to

develop the composting "recipe" for this pioneer program.

Samples were furnished to Athens and Tifton offices and the project was ready to begin.

EQUIPMENT

The following equipment is needed to operate the mulching/composting project in Douglas. (This could vary in other communities based on needs or size of your project):

- ** 1 Tub Grinder - 12 foot
- ** 1 Rubber Tire Loader
- \$ 48,000. per year for contract of services
- ** Contract Equipment not owned by City

EXPENSES - CITY EQUIPMENT:

* 1 Aeromaster Windrow Compost Turner	\$ 28,250.
* 1 Rubber Tire Loader - Cat Model 914G	\$ 74,000.
* 2 Side Discharge Trailers #SC1000-1	\$ 59,286.
* 1 Top Dresser/Small Spreader #F12D	\$ 6,657.
* 1 John Deere Tractor 6400JD 85-+ HP	\$ 37,968.
* 1 1 1/2 Ton Dump Truck	<u>\$ 33,373.</u>
Equipment Purchases	\$239,534.
UGA Technical Assistance	<u>28,544.</u>
Total Expenses	\$268,078.
* Actual Purchases by City	

FUNDING

GEFA Grant	\$ 200,000.
City Funds	<u>68,078.</u>
Total Revenues	\$ 268,078.

FACILITY

The city already owned a 4.5 acre site which was a portion of the site already EPD permitted for our Water Pollution Control Plant (WPCP). It had been used for two (2) years previously at the city - operated mulch site.

Actually, after the project started it was determined to expand the site to its present size. It is important to have expansion capability on any site selected.

Also water is important to a compost operation. Our site has a 16 acre pond on the southern boundary and has city water on site. It might be necessary to add water or even water with inoculates or chemicals during the process. Our suggestion is to use pond water in lieu of city (chlorinated) water.

It is important to catch any drainage from the site and return to the WPCP for retreatment. We are doing it through a 4" sewer

line and a small retention pit. The drainage from the property ends in the pit and is transported to the head end of the WPCP for retreatment.

THE PROCESS

Use the greenest possible mulch available. (Do not believe that the older the mulch the quicker the process will work - won't happen). We use 2/3 green material and 1/3 brown (dewatered sludge).

The mulch is ground and stored for no more than a period of three (3) months during which time its moisture content is about 16%. The moisture content of the sludge is about 84%. The mix of 2/3 to 1/3 provides an initial moisture about 50% and a C/N ratio of 70. These parameters have been the best for successful composting under rapid heating conditions.

Our windrows are approximately 200 yards long and about 6 feet wide at the ground level and about 3 feet wide at the top. We usually have 9 to 11 windrows.

We put down about 2 1/2 feet of green material then 1 1/2 feet of dewatered (to about 18-20%) brown material and then top with about 2 feet of additional green material.

Now the windrows are developed, we began our turning process with our compost windrow turner. It is of utmost importance that your tractor have a crawler gear. (not just a turtle gear, but a special crawler gear!). If it's turned too quickly, it will defeat the process.

Typically the windrow is well mixed on the first day and allowed to sit for three (3) to five (5) days. Depending on environmental conditions (such as rainfall) the temperature exceeds 131 F within two (2) to four (4) days. Once the temperature had reached this point we turned the windrow once every three (3) days for about three (3) weeks. At the end of the 21 days, regulatory requirements relating to pathogens are completed and turning further is based on temperature of the windrow.

THE PRODUCT

When composting is completed, the product will be usable as a soil amendment, overspread as fertilizer on pasture land and hay fields, turf builder in borrow pits, mulch around plants, plant material mixture for nurseries and floral growers, top dressing for croplands like cotton, corn and soybeans, etc.

We are presently considering bagging and selling the product to individuals and lawn/garden shops. This process could be by city crews or thru private contractors.

Our parks department and grounds maintenance departments are

considering what are the best uses for the finished product. The small spreader/top dresser will be used by the parks department for application.

THE DISTRIBUTION PLAN

The local Extension Office is working to determine the best way to distribute the product. The City really doesn't want to be involved with the distribution "beyond the gate".

(Contact): Rick Reed or Randy Roberts
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Phone (912) 384-1402 - FAX (912) 389-4007

The Extension Service is also conducting field trials and land application test to help us evaluate and market the product. This should aid us in determining the agronomic value and establishing agriculture markets.

We probably will still load for private individuals. The farmer will probably contract to have it spread on his property or spread it using his own vehicle or equipment.

The primary mode of dispersement will most likely be:

- 1) By bag if private contractor bags and sells.
- 2) By private vehicle.
- 3) By spreader truck.
- 4) In bulk truck.

THE COST

It is the city's intention to distribute it at NO COST in 1998 (the initial year). We then will make a determination as to the future costs, if any.

SUMMARY

It is a great idea, that took much planning and minimal cost compared to the annual rewards to the city and its constituents.

There are many more "Douglas" in the world than metro Atlantas. If it works for Douglas, why not in all communities.

It would not have been possible without the cooperation of the University of Georgia and City of Douglas Mayor and Board of Commissioners. It has truly been a team effort.

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