

WASTE STREAM REDUCTION THROUGH ON-SITE GRASS CLIPPING RECYCLING¹

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Abstract. Florida's 1988 Solid Waste Management Act requires counties to meet a 30 percent recycling goal by 1994. According to a waste composition study conducted in Pinellas County, Florida, 22 percent of the solid waste generated consists of yard waste. A further composition study of yard waste indicated that half of the 22 percent, or 11 percent, constitutes grass clippings. The "Don't Bag It" Program was begun in order to document the waste reduction potential and the amount of grass clippings not entering the waste stream. The Pinellas County Department of Solid Waste Management contracted with the Pinellas County Cooperative Extension Service to conduct the study. The methodology for documenting the amount of grass clippings was approved by the Florida Department of Environmental Regulation.

As a result of the 1990-1993 "Don't Bag It" or Grass Clipping Recycling Program, it was found that each single-family household produces just under three-quarters of a ton of grass clippings per year and represents a significant amount of yard waste that can be recycled on site.

Pinellas County has the second smallest land area of all the counties in Florida but the third largest population. It has one remaining landfill. Therefore, waste reduction and recycling are important components in extending the life of disposal facilities.

Research done at the beginning of this project indicated that a demonstration project on grass clipping recycling had been completed in Texas but very little significant data had been collected on how much the waste stream could be reduced. Growing conditions there are also different than those in Florida.

Waste Reduction Through On-site Grass Clipping Recycling

A 2-1/2 year educational demonstration/research project took place in Pinellas County between October 1990

and March 1993. Approximately 300 households participated. The purpose of the project was three-fold:

- * To collect data to document the recycling and waste reduction potential of grass clippings that had been going to Pinellas County disposal facilities;
- * To educate the public about the benefits to their lawn of recycling grass clippings on site; and
- * To document the beneficial effects on turf by recycling grass clippings and reducing the amount of water and fertilizer as recommended by the project because the public generally believes that leaving grass clippings on the lawn creates thatch build-up.

Methodology

An on-site demonstration project was designed by the Pinellas County Cooperative Extension Service and adapted to the urban setting. For over 75 years, the land grant universities of the United States have used demonstration projects for research and to educate farmers, but in urban areas more creative efforts have had to be used.

In order to approve grant funding for the study, the Florida Department of Environmental Regulation (now Department of Environmental Protection) required that data be collected from at least 200 yards. Once the project received approval, a program coordinator was hired, volunteers were recruited, and supplies were ordered. The participants in the project received free fertilizer, a colorful T-shirt with the "Don't Bag It" program logo, bumper stickers and signs for their yards. Those who did not bag grass clippings had full-color signs, and those participants bagging grass clippings had a black-and-white sign in their yards. A group of 200 volunteers was selected each year with half bagging their grass clippings (control group) and half recycling the clippings on their yards.

Each participant had to adhere to the following methodology prescribed by the Extension Service. This included:

- * watering a maximum of two times per week during dry periods;
- * fertilizing twice a year (March and September) with 12-4-12 fertilizer (provided by the project)
- * mowing as needed but never removing more than one-third of the grass height at a time; and
- * weighing the bags of clippings and keeping a record of the number of bags they produced and the weight of each bag.

Because of Pinellas County's varying micro climates, the households and several commercial properties were selected to include some in north, central and south county, as well as inland and coastal areas. The "Don't Bag It" coordinator performed the training, collected and analyzed all the data, tested the soil in all the plots and acted as the liaison with the volunteer participants.

During the first year, 200 demonstration plots were tested countywide with another 100 new plots added the following year. In each test the square footage was recorded and the soil pH was tested, both at the beginning

¹Operating costs for this project were funded with grant funds received by the Pinellas County Department of Solid Waste Management from the Florida Department of Environmental Regulation; leadership and support staff were provided by the Pinellas County Cooperative Extension Service and the Department of Solid Waste Management.

and end of the year. Visual evaluation for turf disease, insect problems and thatch build-up was noted in the spring, summer and fall. Each non-bagging test yard had a counterpart using the bagging method.

Results - Homeowners

A total of 280 volunteers participated in this program. The ages of the participants were as follows: 14 percent were between 20 and 40; 34 percent were between the ages of 41 and 54; and 52 percent were over 55. Over half, or 55 percent, of the participants were retired. It was encouraging that volunteers of all ages were willing to participate and to change and work to reduce waste for the good of the environment.

Nineteen thousand brochures were given out to nurseries and landscaping companies and also accompanied tabletop displays. The two main brochures distributed were "Let Your Clippings Fall Where They May" and "Yard Waste Recycling Options." A general yard waste recycling brochure and one on home composting were also made available during speeches and training sessions. Two video programs were completed for use in training and informing the public about the benefits of the program. The 30-minute video was used on the University of South Florida public access channel.

A survey was sent to each of the 280 participants at the end of the project. Sixty-five, or 23 percent, were returned. Some participants commented that they were pleased to be involved because they were helping to reduce waste, saving time and money, conserving, saving the planet and helping the environment.

Eighty percent of the participants who did not bag indicated their yards looked healthier. Fifty-five percent were using less water on their yards at the completion of the project. Only 18 percent bought a mulching/recycling mower and 67 percent converted their old mowers in some manner. Eighty percent indicated they saved time with this method.

Results-Commercial Participants

The commercial participants saved as much as 50 percent in mowing time. Also due to cutting mowing time in half, 50 percent less fuel was used and labor costs were saved. In addition, they saved on solid waste tipping fees. The extra weight on the bag side of the mower was eliminated so they also stated that money was saved because there was less wear on the equipment.

Turf Health and Energy Savings

The data for the non-bagging group showed that, although there was no thatch build-up as expected, the pH

seemed unaffected by the added organic matter. In some cases, the pH went up, in some it went down and in some it stayed the same. It is thought that irrigation, water and fertilizer and location in the county had more to do with the variances in pH than the small amount of organic material that was added with the clippings.

Approximately 50 percent of the non-bagging participants used less or no fertilizer on their yards after participating in this program. Twenty-seven percent no longer fertilized and 62 percent found that two times a year is sufficient. Before this program, 60 percent fertilized three to five times a year. The changed fertilization schedule saves one to three bags of fertilizer (50 lbs. each) or the equivalent of two to six gallons of fuel per household.

The turf used in these lawns consisted of the following:

- 60% St. Augustine
- 28% Mixed
- 10% Bahia
- 2% Bermuda

A survey of lawn maintenance companies conducted in 1990 by the Department of Solid Waste Management indicated that, of the 54 percent of the lawn maintenance companies bagging grass clippings, 60 percent did so at the request of their clients. Those who did bag said it took too long to educate clients about the benefits of not bagging grass clippings. With the results of this study, documentation is now available to dispute many of the myths about leaving grass clippings on the lawn.

Conclusion

The average yard in Pinellas County measures 5,000 square feet and produced approximately 1,451 pounds of grass clippings per year. The 1993 annual telephone survey of Pinellas County residents' awareness of recycling showed that 61 percent of the households did not bag their clippings, an increase of 41 percent over 1990. Households in the county with landscapes total 312,900 and at least 175,224 of these do not bag, meaning there is an equivalent of 127,125 tons of clippings being recycled and not entering the waste stream. For the participants who recycled their grass clippings, the project was able to document a 126-ton reduction in amount of yard waste going to a disposal facility. In dollars, disposal cost avoidance would be approximately \$4,767,187 annually from the amount saved by the total households in the County not bagging.

Additional education is needed and will be continued so more of the public will work toward lessening the impact of grass clippings on the waste stream. This project has proved that grass clippings can be recycled on site with minimal effort and with many economical and ecological benefits.