IMPACT

University of Idaho Extension

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Recycling food waste reduces school environmental impact, teaching ag concepts

AT A GLANCE

This program has significantly reduced the amount of organics sent to the landfill by three schools. The Ag Technology class uses the program as a hands-on teaching tool.

The Situation

The Gooding School District has a campus with three schools (elementary, middle, and high) served by two kitchens. In 2009, their Child Nutrition Program was the first to win the USDA "Healthier US School Challenge" receiving a Gold with Distinction award for their healthy menu that incorporates increased fruits and vegetables. This results in an increased volume of organic scraps disposed to the waste collection system, ultimately ending at the regional landfill. Food waste is the second largest category of municipal solid waste (MSW) sent to landfills in the United States, accounting for approximately 21% of the waste stream. Food wastes increase landfill air emissions (methane, hydrogen sulfide) and liquid emissions, increasing construction and operation costs, and impacting the environment. Source organic diversion programs are encouraged nationwide to reduce the amount of organics that waste collection and disposal services, including landfills, need to process.

Our Response

In 2010, the University of Idaho Gooding County Extension Office teamed up with the Gooding High School Ag Technology teacher and the School District Child Nutrition Director to develop and implement an organic waste diversion program. The Extension Educator was awarded two University of Idaho internal grants to implement and expand the program,

UI Extension Gooding County Educator talking to High School Ag students about the forced aerated composter operation.

and a local metal manufacturing company loaned a vermicompost (composting using worms) reactor. After its implementation, intern students from the University of Idaho helped to develop Standard Operating Procedures to improve the system. Gooding High School students run the system on a daily basis during the school year as part of a hands-on classroom experience. The "Food Scraps Recycling Program" includes the organic source separation performed by the two kitchen personnel, the collection of those wastes by the students who first dump the organics in a forced aerated composter for a composting pre-treatment that kills most possible pathogens. Then, the pre-composted material is fed to red worms in a flow-through reactor. This process kills any other remaining pathogens. From the reactor, a humus-rich product, vermicompost, is harvested. Vermicompost is high in nutrients, microorganisms, and beneficial components for plant growth and health. During the summer months, when school is

University of Idaho, U.S. Department of Agriculture, and Idaho counties cooperating.
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out, the Extension Educator keeps the vermicompost reactor working at capacity by feeding worms with screened dairy manure. This also demonstrates the versatility of the vermicompost process and highlights alternative agricultural uses.

Program Outcomes

The two kitchens serve a total of 1,550 meals per day. The food scrap recycling program processes 1,000 pounds per month of organic waste for a total of approximately 4.5 tons per year. This diversion not only reduces the amount and costs of waste the school needs to dispose, it also reduces air emissions by approximately 8,000 lb of CO_2 equivalent/year. That is equivalent to eliminating the CO_2 emissions of approximately one passenger vehicle for a year, or 20% of a garbage truck volume/year of mixed solid waste not sent to the landfill. To put these values in perspective, if every school lunch program in Idaho would process their food scraps the same way, it would result in a reduction of approximately 574 tons of CO_2eq emissions, or the same as pulling 110 vehicles a year from the road or 27 trucks of mixed waste not thrown to the landfill, with significant environmental and economic savings for their communities.

The educational component of the project includes teaching high school and college students about composting and vermicomposting techniques, the agricultural benefits of compost and vermicompost, and the community and environmental benefits related to source waste diversion. Students receive presentations from the University of Idaho Extension Educator and have hands-on experience operating the forced aerated composter and the vermicompost reactor, as well as working with vermicompost in their Ag class. The vermicompost generated by the project is used by the Ag Technology teacher in their school greenhouse projects. It is also donated for the use by gardeners at the Gooding Community Garden. The University of Idaho Extension Educator and UI student interns use the vermicompost in research and demonstration trials that showcase the agronomic benefits and challenges of using the product. Diverse members of the community and the region, including vermicompost producers and others, visit the system to gain insight on how to develop their own food scraps recycling programs or implement a commercially viable vermicomposting enterprise. After visits from College of Southern Idaho students in two consecutive years, the college has started their own food scraps diversion program.

Additional small vermicompost bins are maintained at the high school and used by the Extension educator and the Ag teacher as teaching tools in presentations for schools and other clientele around the Magic Valley.

The Future

In the immediate future UI Extension and the Ag teacher will work on increasing the pre-compost capacity and simplify management of the system to be able to increase the waste processing capacity. The Extension Educator will work on developing materials to communicate the program results to a wider audience, allowing others to learn from our experience to develop their own waste diversion and recycling programs using the Gooding Schools system as a model.

Cooperators and Co-Sponsors

The University of Idaho Extension Gooding County wants to thank collaborators who make this project possible. University of Idaho Extension for providing initial funding. Mr. Tom Woodland, Agricultural Technology Teacher, Gooding High School. All kitchen personnel at the Gooding Elementary/Middle and High Schools. Anji Baumann, Director of Child Nutrition, Gooding School District. Hatfield Manufacturing Inc. and Mr. John Bonneau for the vermicompost reactor loan. And especially the Gooding High School students for their volunteer time and efforts to keep the system running.

Gooding High School Ag students transplant seedlings for a UI Extension vermicompost research project at the school greenhouse. Note the vermicompost reactor on the upper left. Photo, M.E. de Haro-Martí.

FOR MORE INFORMATION

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