

Reducing Food Waste, Addressing Hunger, Saving Money

October 24, 2022, NJSBA Workshop

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Presenters

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Presentation Outline

- Introduction to Sustainable Jersey for Schools and food waste project
- The case for reducing food waste with overview of pilot studies in NJ schools
- Delran Pilot: Recycling/composting and educational activities to reduce food waste
- Long Branch Pilot: Cost savings and other benefits of food waste reduction practices
- Q&A: We will hold questions at the end for all presenters

Sustainable Jersey for Schools

A free, voluntary program that provides tools, training, and grants to New Jersey public schools to help them implement sustainability initiatives and achieve certification.





- Identifies actions to become more sustainable
- Provides tools, resources, and guidance to make progress
- Provides access to grants for schools and school districts
- Recognizes accomplishments
- Awards certification to individual schools but requires School Board and district level support







Sustainable & Scalable Food Waste Solutions for Schools

Sustainable Jersey and Rutgers Cooperative Extension

Research on best practices for K-12 food waste reduction with pilot studies at 3 schools:

- George L. Catrambone School, Long Branch
- Halsted Middle School, Newton
- Delran Middle School

Project outcomes:

- Comprehensive K-12 Food Waste Toolkit
- New and upgraded food waste actions embedded in the School Certification program
- Outreach and technical assistance to K-12 schools to spur widespread adoption.

Funded by NJ Department of Environmental Protection



Food waste facts

- Approximately 30 to 40 percent of the U.S. food supply, ends up as food waste.
- In 2019, an estimated 108 billion pounds of food from U.S. retail food stores, restaurants, and homes–valued at approximately \$408 billion went uneaten.
- The land, water, labor, energy and other inputs used in producing, processing, transporting, preparing, storing, and disposing of discarded food is wasted.



Frost & Sullivan

In 2019, the cost of disposing of food in landfills was more than \$3.3 billion.



Environmental impact

- Food waste is responsible for 6% of all greenhouse gas emissions globally
 - 3rd largest emitter
- More than 25% of the world's freshwater use goes to wasted food
 - More than 45 trillion gallons of water
- 38% of the energy used in global food systems is utilized to produce food that is either lost or wasted

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Supply chain loss/waste



Food and Agriculture Organization of the United Nations-Sustainability Pathways http://www.fao.org/nr/sustainability/food-loss-and-waste/en/ Gunders, Dana. (2012). Wasted: How America Is Losing Up to 40 Percent of Its Food from Farm to Fork to Landfill. Retrieved from Washington, D.C.



New Jersey Agricultural Experiment Station

How to reduce?



www.epa.gov

Rutgers

New Jersey Agricultura Experiment Station

Sustainable Jersey for Schools Pilot Study

Study Objectives

Reduce food waste in schools



- Increase the amount of fruit and vegetables consumed
- Reduce flavored milk consumption



Study design

Competitive application process to select three schools to participate in this study; one to represent **north**, **central**, and **southern** New Jersey

- Halstead Middle School, Newton North
- George L. Catrambone Elementary School, Long Branch - Central
- Delran Middle School, Delran South



Food waste was measured for a **three-day** period to determine ways to reduce food waste.

Items leftover on individual food trays were separated by food group and weighed at the end of each lunch period.



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Pre-intervention waste



www.usda.gov

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What does this mean?



 37,500 pounds of waste/year/school



Interventions

Offer vs. Serve Guidelines

- Allows students to DECLINE some food
- Does not affect the unit price for breakfast or lunch
- School is reimbursed if a student takes:
- 3 or 4 of the 5 components offered
- Fruit or vegetable





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Interventions



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Interventions



favorable amongst students Offer ½ portions of sandwiches and preassembled bagels Offer additional seasonings or condiments for students to add flavor





*** HAVE NOT FINISHED POST-INTERVENTION AUDITS FOR PILOT SCHOOLS ***

Results for Paterson – schools that prepare and cook their food in-house

- 350 pounds of waste reduced
 - 150 pounds of fruit saved
 - 80 pounds of vegetables saved
 - 98 pounds of milk saved
 - 22 pounds of grain/protein saved

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Impact



 90,720 pounds of food waste SAVED for the whole district for the year.



The Problem with Food Waste and What WE Can Do to Make a Difference

Delran Middle School Green Teams Presentation April 2022 & September 2022

How did the question about food waste start?

- DMS was chosen as ONE of THREE schools in NJ to pilot a food waste initiative in the fall of 2021
- NJDEP Grant funded \$25,000 for the work with our Green Teams and Sustainable Jersey for Schools
- Rutgers Cooperative Extension is using the data for a national program



The State of New Jersey School Food Waste Guidelines



K-12 Schools Edition

Why is it important that we discuss food waste? "In the US throw out of the foo

Food Recovery Hierarchy

Source Reduction Reduce the volume of surplus food generated

€EPA

Feed Hungry People Donate extra food to food banks, soup kitchens and sheiters

Feed Animals Divert food scraps to animal food

Industrial Uses Provide waste oils for rendering and fuel conversion and food scraps for digestion to recover energy

> Composting Create a nutrient-rich soil amendment

> > Landfill/ Incineration

"In the US, we throw out 40% of the food we grow."

"Food is the single largest municipal solid waste going into landfills."

Defining the Problem WHY IS FOOD WASTE AN ISSUE?

According to the Food and Agricultural Organization (FAO) approximately one third of all food produced globally for human consumption is lost or wasted. That is approximately 1.3 billion tons of food per year. In the United States we throw out about 40% of the food we grow (Gunders, 2012), with food being lost and wasted at every step of the food supply chain, from growing the food at the farm to throwing away food in our refrigerators. The majority of our food waste. approximately 31% happens at the retail and consumer level, equating to approximately 133 billion pounds and \$161 billion of food wasted annually.(Gunders, 2012)

Food that is wasted and uneaten has a significant environmental cost, considering that agriculture takes up approximately 80% of US fresh water consumption, 50% of US land, and 10% of US energy consumption. Additionally in 2010, the economic cost of disposing of food into landfills was more than \$2 billion. (Gunders, 2012)



This is because "food is the single largest component of municipal solid waste going to landfills, accounting for over 20% by weight."

Finally, food waste is contributing to current concerns related to climate change. Food waste creates methane, a greenhouse gas which is 21 times more potent than carbon dioxide. Decreasing food waste will not only save the land, water, labor, and energy used to produce food, it will also improve our greenhouse gas emissions.

Institutions such as K-12 schools and higher education institutions are ideal settings to reduce food waste. Food waste is expected in school settings due to the individual food preferences and differing caloric needs of students. By establishing best management practices for reducing, recovering and recycling food waste schools can be an instrumental venue to meet the food waste goals set by EPA and USDA. That is why the EPA and USDA created a U.S. Food Waste Challenge, with focus on high waste producers such as K-12 schools and consumers.(U.S. Food Waste Challenge, 2017)

Remember our food waste audit in October 2021?







2021-2022 **SUSTAINABLE** AND SCALABLE FOOD WASTE SOLUTIONS FOR SCHOOLS

PREPARED BY

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New Jersey Agricultural Experiment Station



DELRAN MIDDLE SCHOOL **DELRAN, NJ**

What did the data reveal from that audit in October 2021?



What have we done so far? Food audit, Destined for Trash: Life of a Strawberry, Waste Not Want Not Survey



Destined for Trash: Life of a Strawberry Contest





Our winners won \$25 gift cards thanks to the Delran PTA!!!

6A: Isabella Hailey and Francisco Chaves6B: Emma Charney, Olivia Gabor, Lisha Patel and Tristan Grissam

7A: Lydia Avalone and Alyson Whitmeyer

7B: Sohum Patel, Lucas Pantano, Emma Wynn, Sophia Malatesta, Jaila Williams, Molly Mormando and Lauren Cooney

8A: Kylie Adams and Lalayla Schwaeble 8B: Ryan Regan

Waste Not Want Not Survey Results

I think recycling is important.

92.7% of you agree or strongly agree

Strongly Disagree

Disagree

Agree

I don't know

Strongly agree

1. I think recycling is important. 664 responses



I believe much of the recycling ends up in the trash?

60.2% of you agree or strongly agree 31.8% didn't know

2. I think a lot of recycling ends up in the trash at my school. 664 responses

Strongly Disagree
Disagree
I don't know
Agree
Strongly agree

I would like to learn how to recycle more and produce less waste.

59.8% of you agree or strongly agree

Strongly Disagree

Disagree

Agree

I don't know

Strongly agree

3. I would like to learn how to recycle more and produce less waste. 664 responses



I would like my family to produce less waste.

73.8% of you agree or strongly agree



Strongly Disagree
Disagree
I don't know
Agree
Strongly agree

Waste Not Want Not Survey Results

5. Which of these can be recycled? (Check all the boxes that you believe are recyclable.) 664 responses



Which of these can be recycled?

All of these CAN be, but what CAN we recycle in Burlington County?



Focus on What We Can Recycle:

- Flattened paper and cardboard
- Gently cleaned:
 - Plastic food containers #1,
 #2, #5
 - Glass bottles and jars
 - Metal cans with labels removed
 - Juice and milk cartons
- No plastic caps

Waste Not Want Not Survey Results

6. Which of these can be composted? (Check all the boxes that you believe are compostable.) 664 responses



Which of these can be composted?

First of all, what is composting?

What is it called when used materials are turned into new products?

53.3% of you thought "recycling"

7. What is it called when used materials are turned into new products? ⁶⁶⁴ responses



What is the benefit of recycling?

89.2% of you thought Less trash filling up landfills, Fewer natural resources used and Less pollution is the benefit to recycling

Less trash filling up landfills

Less pollution

All of the above

Fewer natural resources used

8. What is a benefit of recycling?





98.8% of you knew this was the recycling symbol

9. Which of these is the typical recycling loop symbol? 664 responses



There are 3Rs to help you remember the process of using fewer natural resources and wasting less. What are they?

94.3% knew the 3R's as "reduce, reuse, recycle"

How can waste from school lunch be reduced?

80.7% of you knew: Do not take food that you know you will not eat, When bringing lunch from home, pack it in reusable containers, Save unopened food you don't want for others who would like to eat it.

Less trash filling up landfills

Less pollution

All of the above

Fewer natural resources used

10. There are 3Rs to help you remember the process of using fewer natural resources and wasting less. What are they? 664 responses



Restore, reduce, restar Research, renew, rethink Remove, redo, realize Reduce reuse recycle



664 responses

True or False: Plastic bottles take a long time to breakdown in a landfill.

90.2% of you knew plastic takes a long time to break down in a landfill

12. Plastic bottles take a long time to break down in a landfill. 664 responses

> True False 90.2%

True or False? Food that cannot be eaten should be composted.

80% of you knew that food that cannot be eaten should be composted True or False? Items should be cleaned before you put them in the recycling bin.

64.3% of you knew that items should be rinsed before going in a recycle bin.

14. Items should be cleaned before you put them in the recycling bin. 664 responses



True or False: Cardboard boxes should be flattened before going in a recycle bin.

93.4% of you knew that boxes should be flattened.

15. Cardboard boxes should be flattened before you recycle them. 664 responses



13. Food that cannot be eaten should be composted. 664 responses



True or False? Plastic bottles and containers can be composted.

72.1% of you knew that plastic CANNOT be composted

True

False

True or False? Reusing an item uses less energy than recycling it.

77.4% of you knew that reusing an item uses less energy.

16. Plastic bottles and plastic containers can be composted. 664 responses







I know which items can be recycled.

75.6% strongly agreed or agreed that you knew which items can be recycled.

18. I know which items can be recycled. 664 responses

True

False



I know how to reduce waste at school and at home.

90.8% of you strongly agreed or agreed that you know how to reduce waste.

It is important to be less wasteful.

90.8% of you strongly agreed or agreed that it's important to be less wasteful.

Strongly Disagree

Disagree

Agree

I don't know

Strongly agree

I would like my family to produce less waste.

76.5% strongly agreed or agreed that you'd like to produce less waste as a family.

19. I know how to reduce waste at school and at home. 664 responses



20. It is important to be less wasteful.



21. I would like my family to produce less waste at home. 664 responses



I would like the other kids at school to produce less waste.

77.8% of you strongly agreed or agreed that you'd like the DMS community to produce less waste.

I plan on recycling more and reducing my waste.

72.9% of you strongly agreed or agreed that you will individual recycle more and waste less.

I plan on showing other people how to recycle more and to reduce waste.

71.7% strongly agreed or agreed that you'd like to educate others.

22. I would like the other kids at school to produce less waste. 664 responses



23. I plan on recycling more and reducing my waste.



Strongly Disagree
Disagree
I don't know
Agree
Strongly agree

24. I plan on showing other people how to recycle more and to reduce waste. 664 responses



What can we do about food waste?

#1. We will change our cafeteria waste collectionprocess.

#2. We will compost ALLcompostable food waste inthe cafeteria.





Pictured on the right is the new EcoRich food composter, near the dumpsters outside the cafeteria. Plumbing, electric and a roof are all being added on right now, and training for the food and support services staff is occurring in April 2022.

Composting with EcoRich Elite II





Food waste that winds up in landfills is a major contributor to global warming.



Reducing that waste has always been a confusing and costly problem to solve.



Having an EcoRich Composter at your site makes it easy to go green.

START

Simply load your food waste into the composter, press start, and the waste is converted in 24 hours to a nutrient-rich composting material.

24 HOURS

Use it on gardens, landscaping and similar applications in just 21 days.





What can be turned into compost at DMS?



• Our specific composter can take ANY of these things! Even bones. What can it not take? PLASTIC **AND PACKAGING!**

What's the benefit and what will we do with the compost?

- Compost and a school garden will be the end product of this program.
- A possible profit stream to sell our excess compost?
- With reduced carbon dioxide emissions from our food waste and a sense of opportunity for students to take small steps to reduce waste, we will have reached yet another goal in the Green Team program.
- For Nutriserve, it's a way to reflect on their practice, make changes with student voice and ultimately throw away less.



Are you interested in becoming a Food Waste Warrior?

- Food Waste Warrior Interest Survey due by 4/24/22 at 3pm- this link will be posted in Canvas by your Science Teacher
- Duties:
 - Sign in each period you are "on duty"
 - Observe and direct students for their lunch waste distribution
- Rewards:

Receive front of the line pass
 \$10 gift card sponsored by the PTA at the end of the year



What's Next?...

DMS Food Waste Education Week April 25th-29th



Fall 2022 a second audit, once we have students trained on food waste and composting is in full swing.

DMS Food Waste Education Week April 25-29

Day	Morning announcement	On the screen during lunches	Other
Monday 4/25	According to feedingamerica.org, IO8 billion pounds of food is wasted each year in the United States. That equates to I30 billion meals and more than \$408 billion in food thrown away each year. At DMS, we will be working to reduce food waste. On Friday we will be having a kickoff to composting at DMS. Please show your support by wearing green on Friday. The more green you wear, the higher your chance to win a green prize.	The Compost Story-by Kiss the Ground 6:47	Earth Day was 4/22
Tuesday 4/26	25% of the world's freshwater supply is used to grow food that is never eaten. Throwing away one burger wastes the same amount of water as a 90-minute shower. As DMS starts to compost, choose your amount of food wisely so we can reduce our waste. Remember to wear your green Friday! The more green you wear, the higher your chance to win a green prize.	Food insecurity affects students 3:18 What is food insecurity and why is it a problem? 1:54 All videos might need to be shared same day in cafeteria	Food Waste [™] Wµrrior training during BEAR
Wednesday 4/27	Composting is the natural process of recycling organic matter, such as leaves and food scraps, into a valuable fertilizer that can enrich soil and plants. Composting can even be used to heat greenhouses and homes! Remember to wear your green Friday! The more green you wear, the higher your chance to win a green prize.	Video w teen news 3:50 Composting for kids 5:56 (here or Fri?)	
Thursday 4/28	The average cost to landfill municipal solid waste (MSW) in the United States was 53.72 U.S. dollars per ton in 2020. On average, each American produces about 4.9 pounds of waste a day. Composting at school and home allows us to divert some of that waste from landfills and turn it into something practical for our yards. Remember to wear your green tomorrow! The more green you wear, the higher your chance to win a green prize.	I/2 day- no lunch	Clean-up day for Green Team
Friday 4/29	Composting makes rich soil, which helps plants grow, so doing this could make crops grow better around the world! The compost we produce at DMS will help to grow healthy plants. Thank you for wearing green today! Be on the lookout for information on how to compost your food in the cafeteria.	Food Waste Warriors introduced? <u>DMS</u> <u>Green Team Google</u> <u>Slide show</u> option to also show in science classes	Wear green day Make up day for waste warrior training

CONSERVATION

BEGINS WITH "C" BUT IN THE END IT REALLY STARTS WITH... "



Works Cited

WORK CITED



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This Project could not have been possible without the hard work and dedication of Food Service Director Erica DeMichele, Rutgers Assistant Professor Jennifer Shukaitis, and Sustainable Jersey for Schools Director Heather McCall, and the Delran Green Team.

Burlington County;

Thank you!







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Delran MS/HS PTA





Delran Township

Home of the BEARS!





Let's Talk Money, Cost and \$avings!!

We will Consider Just a Few Items:

- Reducing Food Waste, will lower Costs of Waste Disposal
- Eliminate Disposable Food Ware will lower per student costs in First year
- Upgrading Equipment can lower overall operating costs including water usage

Let's Talk Money, Cost and \$avings!!

Provide a Share Table! This allows students to share any unopened food with a student outside of their Friend Circle! By simply placing it on the table. We place one or two around the Cafe.

> \$aves on Garbage Disposal Costs Plus Side: Helps feed a Hungry Child



Let's Talk Money Cost and \$avings!! Reducing Food Waste!

BED COCO

WHELL THINK

N.O.LAD

Fat Free Milk

CRERM.O.LAND

a hannallest

23

a

Let's Talk Money, Cost and \$avings!!

We recently collected Food waste on Meatball Day!

We collected about **270 Lbs** of Food for ONE LUNCH FOR ONE SCHOOL – estimated Each student created about

> **5.4 oz** Of garbage!

This does NOT include disposable utensils



We Weighed the Garbage To place in new COMPOSTER!

This unit handles 250lbs Daily which does NOT go Into DUMPSTER!

GRANT MONEY FROM SUSTAINABLE JERSEY FOR SCHOOLS!



Let's Talk Money, Cost and \$avings!!

250 lbs of Garbage go in – 12 hours later a 5 pound bucket of sterilized Fertilizer comes out! Cost of Composter -





Let's Talk Money, Cost and \$avings!!







Let's Talk Money Cost and \$avings!!

Ave Number of Students Served Daily	Cost of Disposables Per Student Daily	Annual Cost per Student for 180 Days (some schools are closer to \$8.00)	Total Cost per School Annually
600	\$.1467	\$26.41	\$15,843.60
Ave Number of Students Served Daily	Cost of Trays	Cost of Utensils and racks	Anticipated Savings per School First Year
600	\$0	\$10,000	\$5,843.60
Ave Number of Students Served Daily	Cost of Trays in year 2 and 3	Cost of Utensils in Year 2 and 3 with 20% loss	Anticipated Savings per School Yr 2 and Yr3
600	\$1000	\$4000	\$26,687.20

Let's Talk Money, Cost and \$avings!!

• Other Costs

Cost of Labor 1 PT person 4 Hours Daily	Cost of Labor Annually	Cost of Added Water for Dishwasher	Cost of Electric for Dishwasher 30 KWH x 4 HRs x 180 days x KWH rate of .17)
\$73.20	\$13,176	Reduction**	\$3,672

- Science Behind Dishwashers Today:
 - Recirculating Water in dishwasher
 – not able to keep sink at 110 degrees w/o refills
 - Energy Recovery Units in dishwasher
 - Less labor needed to presoak

Now, Let's Talk Education and Health!!

- And that's not all... Our students are learning lessons they will carry with them.
- Nutrition and making healthy choices
- Food Sharing and feeding those who are hungry
- There are ways to help our planet
- Each of us can make a difference

Students creating a recipe for Top Left Over Chef lesson from Food Waste Warriors.



Let's Talk Education and Health!!

 Waste can create new learning opportunities in Math, ELA, Science, Social Studies, Writing and more.



Vermiculture lessons and growing vegetables from scraps.



Let's Talk Education and Health!!

- Not to mention growing food in the school gardens which can
 - Contribute to lunch room specials
 - Lessons on nutrition, planting, growing, and life cycles
 - Food for families in need
 - Understanding agriculture needs demands
 - Project and problem based learning
 - Critical thinking
 - Collaboration
 - Problem Solving





IN SUMMARY – You are throwing money in the Dumpster!

- Don't Put Good Food in Trash Give away SHARE TABLE
- Don't Put in Trash what you can Recycle cut costs in HALF
- Compost if possible!
- CONVERT to REUSABLE FOODWARE! BEST COST SAVINGS AND ENVIRONMENT SAVER!

Sustainable Jersey for Schools Underwriters and Sponsors



*Digital Schools Underwriters and Sponsors

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SUSTAINABLE JERSEY GRANTS PROGRAM New Funding Cycle Announced!

- \$100,000 is available to New Jersey public schools participating in the Sustainable Jersey for Schools programs
 - -\$2k and \$10k grants to fund sustainability projects and support your green team

Informational	Application	Award	Performance	Learn M
Webinar	Deadline	Notifications	Period	
3-4pm on Thursday, December 15, 2022	By 11:59pm on Friday, March 10, 2023	By early May 2023 with an event in early June 2023	10k Grants:18 months2k Grants:12 months	





Thank You!

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