

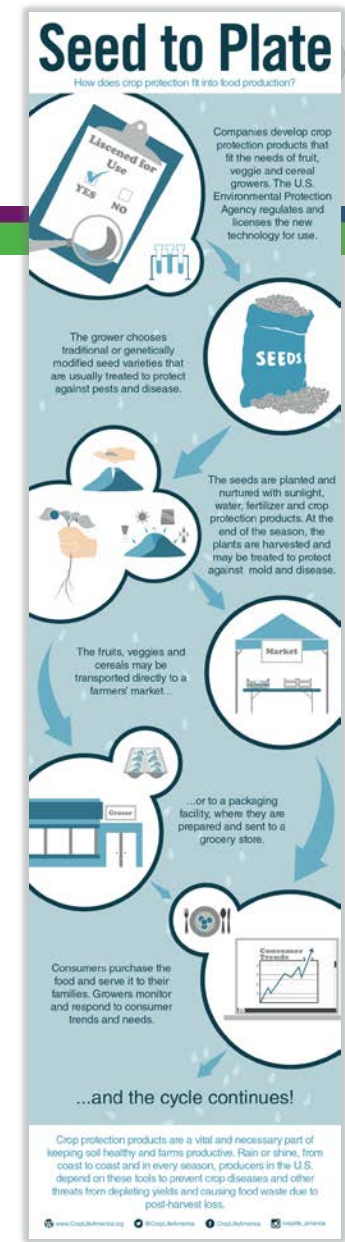
Food Loss and the Role Pesticides Play from Field to Market: Free Resources for the Classroom

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Manager of New Media
CropLife America



What is CropLife America?

- National trade association for the crop protection industry (both organic and conventional)
- Headquartered in Washington, DC
- Members include some of the major manufacturers, formulators and distributors



Today's Agenda



- What is food loss?
- When & where does it occur?
- How do pesticides help reduce food loss on the farm and beyond?
- A lesson plan on reducing food loss
- Other CropLife America Resources from the *Tell Me More* program





What is food loss?



“Food is lost or wasted throughout the supply chain, from initial agricultural production down to final household consumption.”

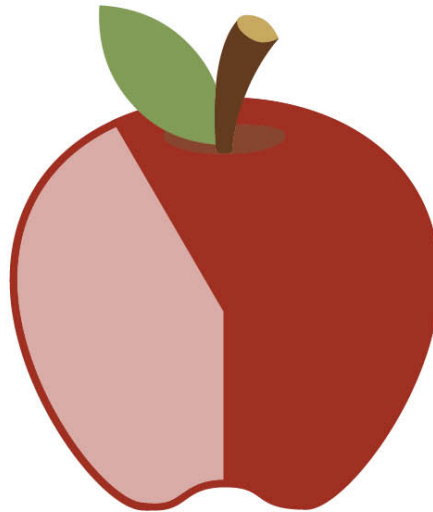


“Food losses refer to the decrease in edible food mass throughout the part of the supply chain that specifically leads to edible food for human consumption. Food losses take place at production, postharvest and processing stages in the food supply chain (Parfitt et al., 2010). Food losses occurring at the end of the food chain (retail and final consumption) are rather called “food waste”, which relates to retailers’ and consumers’ behavior. (Parfitt et al., 2010).”

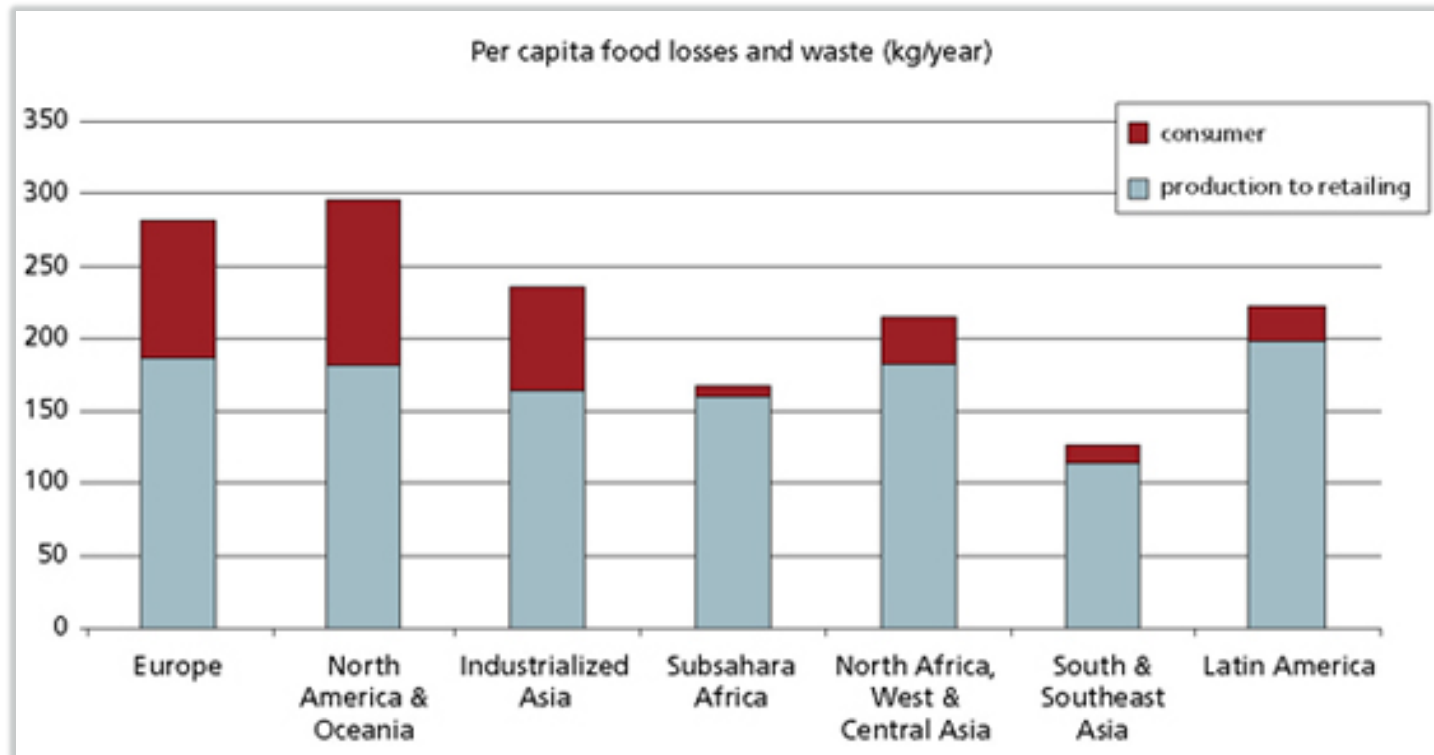
How much food is wasted?



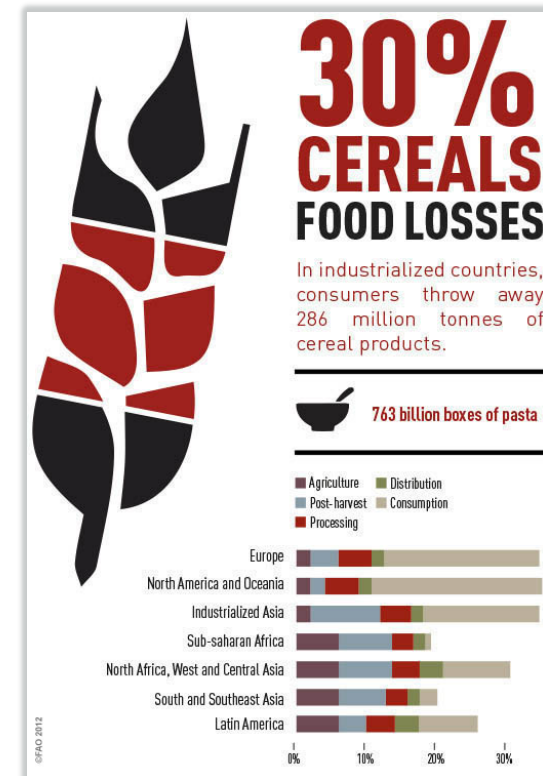
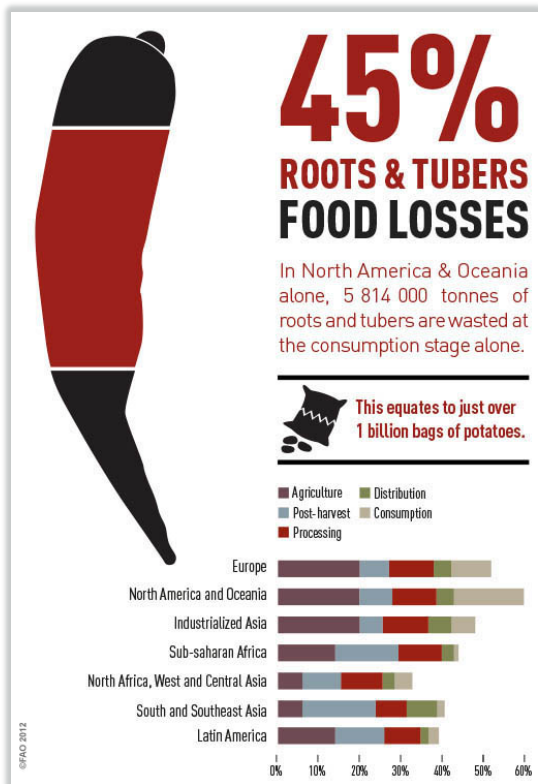
About one-third of the food produced in the world for human consumption every year is lost or wasted—that's 1.3 billion tons.¹



How much food is wasted? (cont.)



How much food is wasted? (cont.)



UN FAO, *Key facts on food loss and waste you should know!* <http://www.fao.org/save-food/resources/keyfindings/en/>



When does food loss occur?



- In the field (weeds, diseases)
- Post-harvest in storage (mold, rot)
- In the separation of food for transport (due to consumer quality preferences, such as regarding color and size)
- In transport (mold, rot)
- At the grocery store (mold, rot)
- In the kitchen at home or in a restaurant
- After meal-time



Types of Food Loss



Agricultural production: losses due to mechanical damage and/or spillage during harvest operation (e.g. threshing or fruit picking), crops sorted out post harvest, etc.

Postharvest handling and storage: including losses due to spillage and degradation during handling, storage and transportation between farm and distribution.

Processing: including losses due to spillage and degradation during industrial or domestic processing, e.g. juice production, canning and bread baking. Losses may occur when crops are sorted out if not suitable to process or during washing, peeling, slicing and boiling or during process interruptions and accidental spillage.

Distribution: including losses and waste in the market system, at e.g. wholesale markets, supermarkets, retailers, etc.

Consumption: including losses and waste during consumption at the household level.

How do pesticides fit in?



Loss on the farm



- All farmers and ranchers deal with pests and disease.
- Synthetic and organic pesticides help farmers keep yields high and prevent massive losses.
- Growers carefully monitor the conditions of their fields to determine the most effective, efficient and precise way to deal with various crop threats.
- Mold, fungus and diseases threaten produce after harvest.

Why Do Farmers Use Pesticides?

Farmers use crop protection technology to fight invasive insects, weeds and plant diseases that attack fruit, vegetable, grain and fiber crops, such as...



Thrips



Fruit Flies



Aphids



Pigweed



Foxtail



Soybean Rust

For more information on how crop protection products help farmers protect against threats, visit...

 www.CropLifeAmerica.org

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Loss on the farm (cont.)



Black Rot on Kale

<https://commons.wikimedia.org/wiki/File:UncinulaNecatorOnGrapes.jpg>



Peach Scab

https://en.wikipedia.org/wiki/Peach_scab



Cabbage Moth

<https://en.wikipedia.org/wiki/Cabbage>

Loss on the Farm (cont.)



Tomato Fruitworm

https://en.wikipedia.org/wiki/Tomato#/media/File:Tomato_fruitworm.jpg



Apple Blight

<https://pixabay.com/en/apple-blight-decay-disease-455436/>



Powdery Mildew on Grapes

<https://commons.wikimedia.org/wiki/File:UncinulaNecatorOnGrapes.jpg>

WHAT'S FOR DINNER?

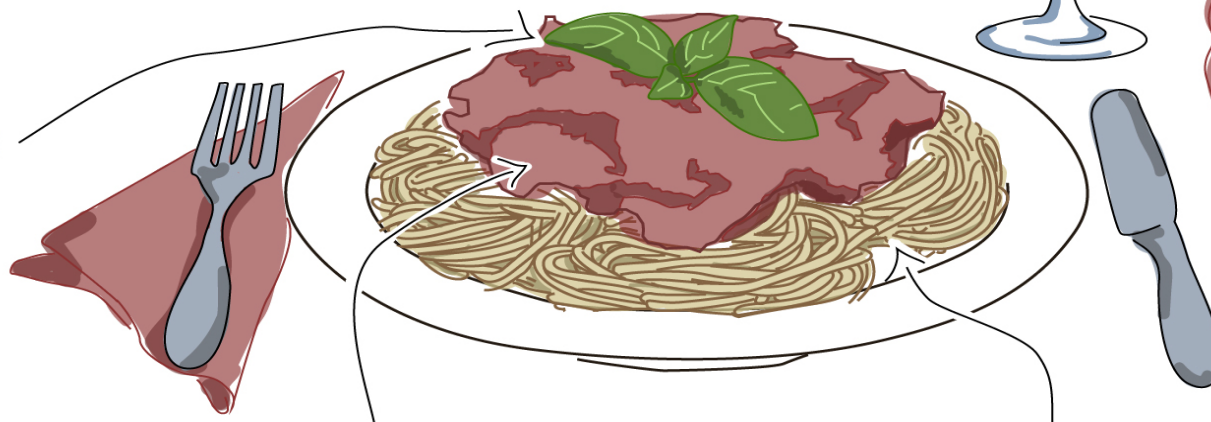
Health organizations, scientists and doctors advise consumers to eat a balanced diet with a focus on fresh fruits and vegetables to enjoy a healthy and long life. A study¹ found that eating up to seven servings of fruit and vegetables a day can

reduce the risk of premature death by 42%.



The Wine
Cin cin! Powdery mildew has long plagued wine-grape vineyards, but farmers are able to fight this harmful fungus with fungicides. Without the use of crop protection, this mildew can affect **UP TO 80%** of wine grapes.⁵

The Herbs
What's pasta without fresh basil? Basil downy mildew was first discovered in 2007 and in 2009, **100% LOSSES** occurred on some farms in New Jersey and elsewhere in the United States. Farmers rely on fungicides to grow healthy herbs.⁴



The Sauce
Prior to the development of effective insecticides, the tomato pinworm caused annual losses of \$25 million in tomatoes in Florida and can **REDUCE CROPS BY 25%.**³

The Noodles
Stripe, leaf and stem rust are three different diseases that threaten wheat farmers' crops (and your pasta) in the U.S. Without the use of fungicides, yields can be reduced by **AS MUCH AS 50%.**²

Farmers use today's agricultural methods and tools to grow produce for communities across the U.S., and these methods help bring fresh and healthy produce to your plate three times a day. Healthy produce = a healthy you!

¹<http://www.sciencedaily.com/releases/2014/03/140331194030.htm>

²<https://croplifefoundation.files.wordpress.com/2012/07/19-wheat.pdf>

³https://croplifefoundation.files.wordpress.com/2012/07/combined_document_tomato.pdf

⁴<http://vegetablemdonline.ppath.cornell.edu/NewsArticles/Basil%20DM%20Cultivar%20Evaltn%20in%20HortSci.pdf>

⁵<https://croplifefoundation.files.wordpress.com/2012/07/19-grapes.pdf>



A Lesson Plan: Overview



Grade Level(s)

- 9 - 12

Purpose

- This lesson plan provides students with concepts to help them both reduce waste as a consumer and as a learn how farmers use pesticide technology to prevent damage to crops.

Supplementary Materials

- Vocabulary
- Facts
- Resources

A Lesson Plan: Activities



Interest Approach and Activity 1: Loss and Waste Along the Food Chain

- Discussion Questions
- Handouts (5)

Activity 2: Having The Talk on Crop Protection

- Need projection screen or Internet/personal computers
- Give A Crop videos
- Master's in Modern Ag Specialty Certification: Reducing Food Loss

Activity 3: School Food Waste Audit

- Brings students outside of the classroom for a collaborative school-wide effort
- Need to organize with cafeteria staff/school nutritionist



- Food loss vs. waste
- When does food loss and waste occur?
 - ✓ Agricultural production
 - ✓ Post-harvest handling and storage
 - ✓ Processing
 - ✓ Distribution
 - ✓ Consumption

Facts



- About one-third of the food produced in the world for human consumption every year is lost or wasted — that's 1.3 billion tons.
- If we were able to save a quarter of the food currently lost or wasted around the world, it would be enough to feed 870 million hungry people.
- Globally, annual food loss and waste stands at: 30% for cereals; 40-50% for root crops, fruits and vegetables; 20% for oil seeds, meat and dairy; and 35% for fish.
- The UN Food and Agricultural Organization (FAO) estimates that, globally, 20-40% of crops are lost each year to pests and disease.

Resources



- [With or Without Pesticides?](#) – From the European Crop Protection Association
- [Food Waste Reduction Alliance](#)
- [ReFED](#)
- [Sustainable Management of Food](#) (which includes the Food Recovery Hierarchy) – From the U.S. Environmental Protection Agency
- [Let's Talk Trash](#) – From the U.S. Department of Agriculture
- [Save the Food Campaign](#) – From the Ad Council and the Natural Resources Defense Council
- [Harvard Food Law and Policy Clinic](#)

Interest Approach & Activity 1: Loss and Waste Long the Food Chain



Begin the first activity with a few conversation starters.

- Who has grown some of your own food? What did you learn? Were there any surprises?
- Why do you think so much food is wasted in America?
- Why is it important not to waste food? Consider: ethics, environment, economy etc.

Then, pass out the diagram on when food loss/waste occurs throughout the food production chain. Discuss the different stages of the food chain and ask how students think food loss could be reduced at different steps. Encourage a brainstorm session.



Interest Approach & Activity 1: Loss and Waste Long the Food Chain (cont.)



Next, distribute the four handouts below produced by members of the Food Waste Reduction Alliance and CLA. Ask the students to divide into groups and create a flyer with five facts on reducing waste at home (consumer level).

- Food Manufacturers and Food Waste
- Grocery Stores and Food Waste
- Restaurants and Food Waste
- Reducing Food Loss Starting on the Farm



Reducing Food Loss Starting on the Farm



According to the UN Food and Agricultural Organization,
20-40%
of crops are lost each year
to pests and disease.¹

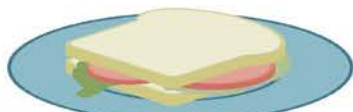
Fungicides, herbicides, insecticides, and other crop protection tools help growers reduce food loss starting on the farm.

The stronger the produce, without bug bites, mold or other damage...

The more likely it reaches a grocery store and consumers choose to purchase it.

How Much Do Crop Protection Products Help Farmers Increase Yields?

By mitigating the effects of crop feeding insects, U.S. farmers produce 144 billion pounds of additional food, feed, and fiber and reap \$22.9 billion in farm income increases.²



Food



Feed



Fiber

For every dollar spent on fungicides and their application, U.S. growers gain \$14.60 in increased production value.³

What is the Crop Protection Industry Doing to Continue to Reduce Food Loss?

Collaboration

Working with others in the food chain to support research, develop strategies and advance products.

Advocacy

Making sure the farmer's voice is heard and their crop protection needs are met.

Outreach

Providing education about agricultural tools through online platforms.



¹UN FAO. Keeping plant pests and diseases at bay: experts focus on global measures. March 16, 2015. www.fao.org/news/story/en/item/230459/code/
²CropLife Foundation (CLF). The Value of Insecticides in U.S. Crop Production. March 2009. Page 3. <https://croplife.foundation/files/wordpress.com/2012/07/Insecticide-Benefits-Execsum.Pdf>
³CLF. The Value of Fungicides in U.S. Crop Production. September 2005. Page 3. <https://croplife.foundation/files/wordpress.com/2012/07/fungicide-executive-summary.pdf>

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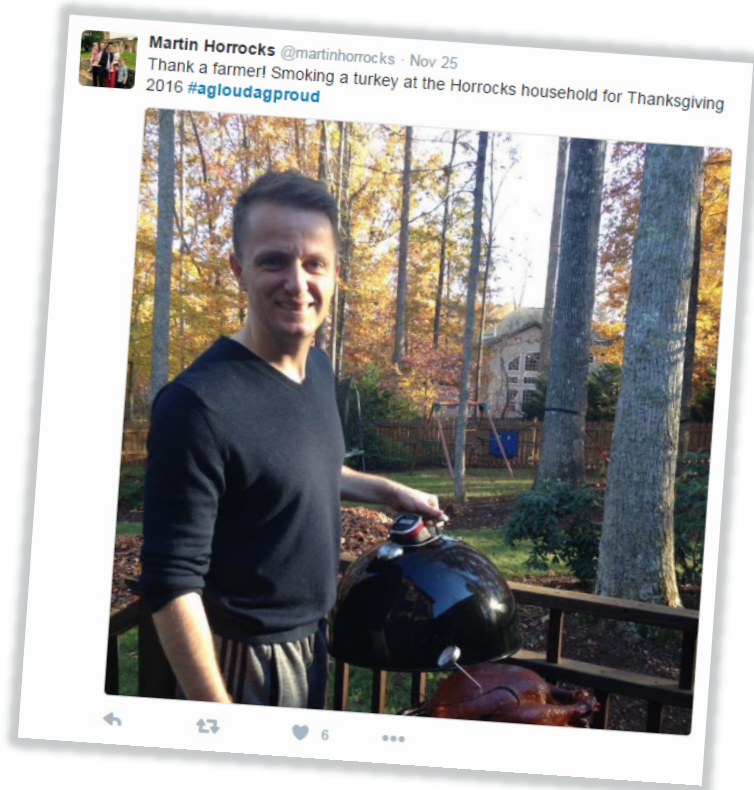
 [AmericanFarmBureau](https://www.facebook.com/AmericanFarmBureau)

 [americanfarmbureau](https://www.instagram.com/americanfarmbureau)

Exit Activity: Speaking up on Social Media



- How would promote reducing food loss online?
- What hashtags would you use?
- Writing a mock posting for:
 - ☐ Twitter
 - ☐ Instagram
 - ☐ Facebook



Activity 2: Having the Talk on Crop Protection



Prepare your projection screen. Go to www.GiveACrop.org. Play, *Wild Oats*.



Myth: “There is only one right way to farm, and that’s organic or non-GMO or conventional or biotech, and the list goes on.”

Fact:

Can't we all just get along? The truth is there is no “best way to farm.” The myriad tools and practices U.S. farmers and ranchers use highlight the efficiency of the U.S. food system. Each growing method has benefits, and farmers should have the freedom to choose the production method best suited for their needs whether it be conventional, biotech or organic practices.

Discussion Questions

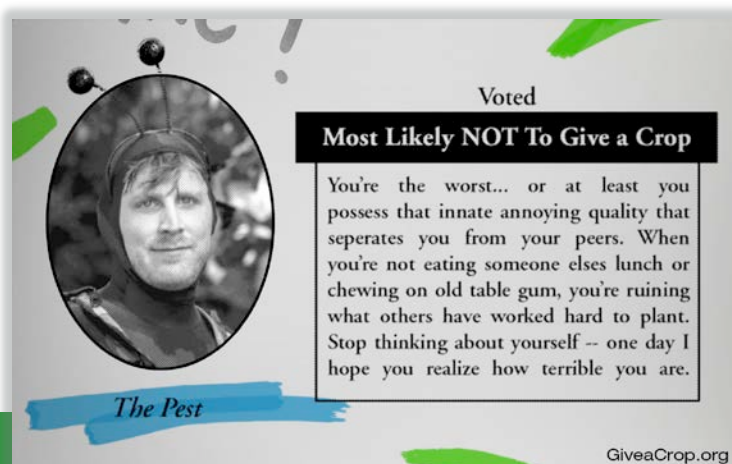


After playing, ask a few discussion questions:

- What is crop protection?
- What other things do we protect ourselves from? (sun lotion, bug spray, medicine/anti-biotics, car insurance, door locks, security guards, etc.)
- Why should farmers use crop protection if it may be risky?
- Name other items that we use or activities we do every day that carry a level of risk (shampoo, soap, driving a car, using electricity, etc.)

Play two more videos:

- *Backyard Barbeque*
- *Office Pest*



Straight Talk from a Farmer



Kacie Lockett

Grower from Central and Pride Louisiana

<http://www.croplifeamerica.org/blog/reducing-food-loss-farm-kitchen-table/>

Test Your Knowledge!



Ask the students to test their new knowledge gained from activities 1 & 2 by completing the online quiz: [Master's in Modern Ag Specialty Certification: Reducing Food Loss](#) (passkey: MMA2016). Students can learn more about crop protection and sustainable agriculture by completing the six other available quizzes available once they log in.

- Master's in Modern Ag
- Reducing Food Loss Starting on the Farm
- The Talk
- Supporting Soil Health
- Founders of Modern Ag
- Protecting Our Pollinators
- Lab to Label
- Growing Nutritious Produce



Activity 3: School Food Waste Audit



Taken from [*Teaching kids to waste less food*](#) by Elise Warner and Jonathan Bloom, posted on MSNBC (4/6/15).

- Work with your school's cafeteria to weigh the food that is thrown away at the end of each lunch period.
- Next, have students catalog what kinds of food are being wasted.
- At the end of one or two weeks have the students report their findings (in a report or chart).

More CLA Resources: Tell Me More



- CLA's educational program that highlights the many societal benefits that crop protection products provide
- Tell Me More materials are designed to enhance employees' knowledge of the important role that crop protection products play in improving public health, promoting conservation and helping to protect the environment.



Shareable Resources & Social Media Kits



- **Tell Me More Resources**

- Posters
- Infographics
- Holiday communications toolkits
- Social media library

- **Annual Reports**

- **Videos**

- **Social Media Campaigns**

- #GiveACrop
- #AgLoudAgProud
- #FoodForward





June 3rd is National Doughnut Day

Have you ever tried a doughnut made without flour or sugar? That sounds like the opposite of a delicious breakfast treat! Crop protection products help produce the wheat and sugar cane that is used to make those deliciously-fried fastnachts.

 Crop protection products protect a variety of plants used to make the sugar that goes into doughnuts. For example, the sugarcane borer can devastate yields, with the potential to destroy 20 percent of a season's sugarcane crop. Insecticides can be used to control this pesky population with about 90 percent effectiveness.¹

 Stripe, leaf and stem rust are three different diseases that threaten wheat farmers' crops (and the flour in your doughnut) in the U.S. Without the use of fungicides, yields can be reduced by as much as 50 percent.²

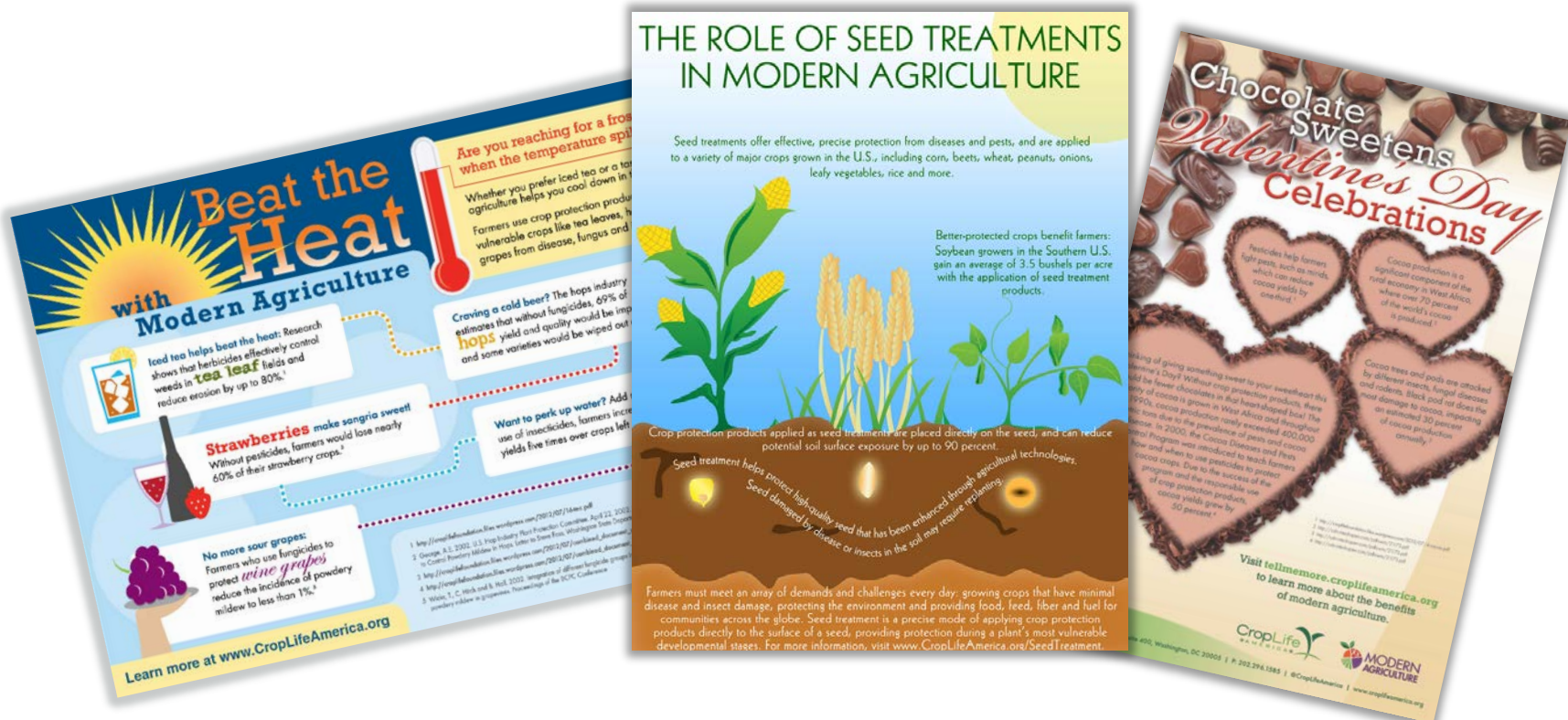
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¹https://croplifefoundation.files.wordpress.com/2012/07/combined_document_sugarcane.pdf
²<https://croplifefoundation.files.wordpress.com/2012/07/19-wheat.pdf>

Posters



- Whether hung in an office kitchen or shared on social media, CLA's posters spread modern agriculture benefits messages.



Infographics



- Quick facts in an eye-catching and easy-to-share format.



Example Toolkit Question



Question: *Isn't "conventional farming" bad for the environment?*

Answer: Modern farming practices, such as the responsible use of herbicides, allows for practices such as conservation tillage. With conservation tillage it has been found that:

- Fuel use drops by 50 percent. Farmers can reduce cultivation in the fields, reducing use of fuel to power tractors in half;
- Erosion of soil drops up to 90 percent;
- This means reducing 558 million gallons of fuel per year, equaling 22.2 billion pounds of carbon dioxide emissions.

#AgLoudAgProud



#AgLoudAgProud

#FoodLoss



Did You Know...

Food loss on the farm and in storage translate into lost income for farmers and into higher food prices for consumers.

[\$ → \$\$\$]

Through the responsible use of crop protection products, growers can minimize the damaging effects of crop diseases, weeds and pests.

Visit a farmers market to talk with farmers about the technology they use to grow the foods you eat.

#LoveMyMarket

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Did You Know...

About one-third of the food produced in the world for human consumption every year is lost or wasted—that's 1.3 billion tons.¹

By cultivating stronger plants, growers improve the shelf-life of food, giving restaurants and consumers more time to store, cook and eat produce after they purchase it.

Visit a farmers market to talk with farmers about the technology they use to grow the foods you eat.

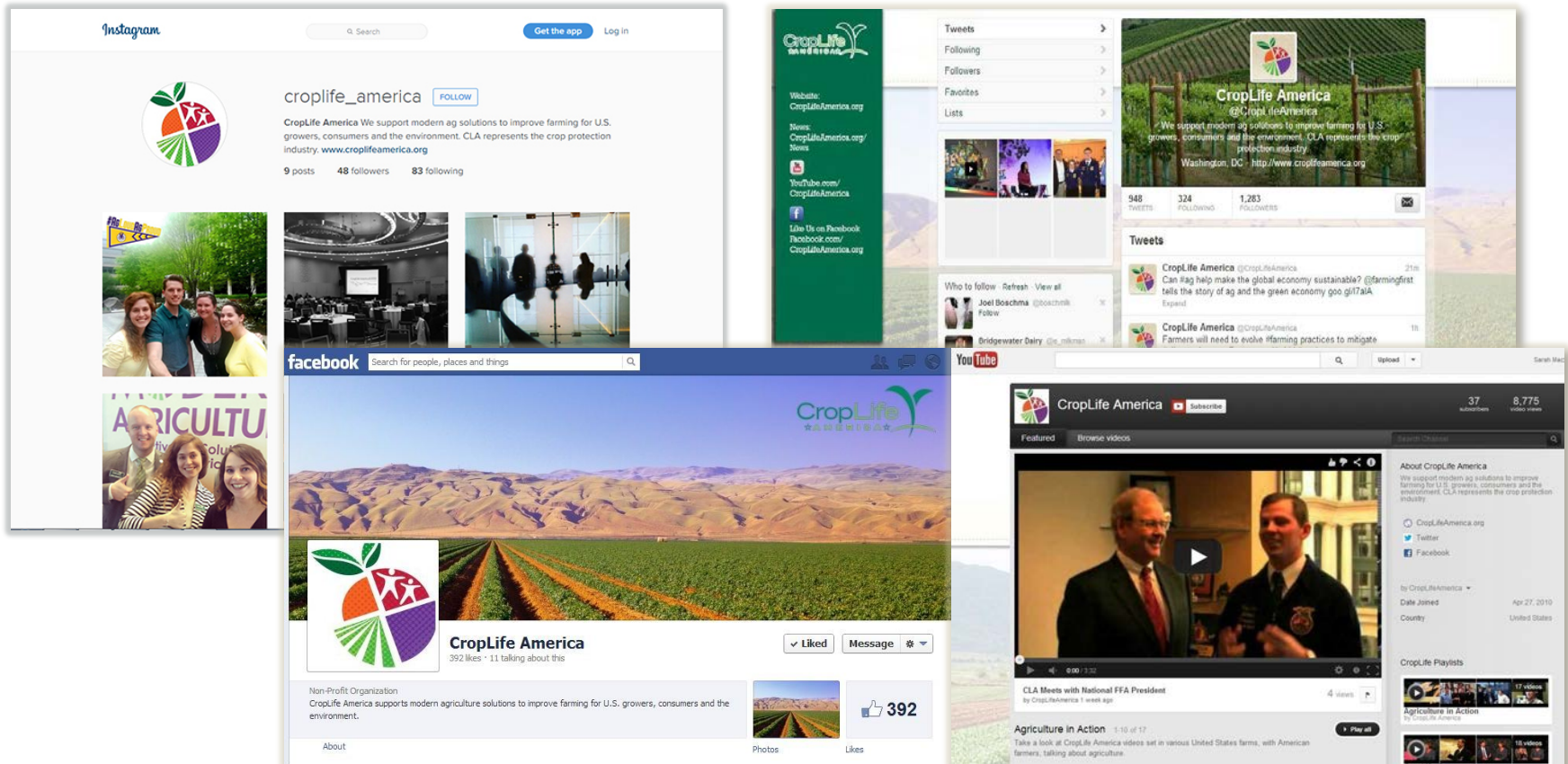
¹Food and Agricultural Organization of the United Nations. Key facts on food loss and waste you should know! <http://www.fao.org/3/a/10467en.pdf>

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Thank You!



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www.croplifeamerica.org/tellmemore

www.giveacrop.org

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Thank you!

