



Friday Notes is designed to enhance communication among various agricultural sectors, educators, students, and the public who are interested in a variety of plant, animal, food, and environmental issues. *Friday Notes* advocates the pursuit of credible, unbiased, science-based information. Material contained in linked articles is from the original authors and does not necessarily reflect the views of the CAST organization.

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The Science of Cherry Blossoms



[Blossoms can sustain damage](#) if the temperature drops, and fully developed ones are the most susceptible.

Biotechnology Report

This National Academies of Sciences, Engineering, and Medicine site includes a [video and paper about the new report](#) called *Preparing for Future Products of Biotechnology*.

Ag Education Diversity

The university members of CAST's [education program](#) offer outstanding options--students from diverse backgrounds pursue agriculture, and this article from UC-Davis provides an [example of why agricultural science is the backbone of education](#) for many students.

March 17, 2017

Feeding the World

"Numbers and figures, questions of science... nobody said it was easy."

The mantra has been steady for several years: we need to face the challenge of feeding 9.7 billion people by 2050. The projections might vary, and the methods are often up for debate. As this article demonstrates, the [Global Harvest Initiative and Penn State University researchers dispute the numbers](#). Should goals be revised? How can we best improve agricultural productivity?



The future is one thing--but the world now is facing what the UN calls its [largest humanitarian crisis since 1945 with famine](#) in Yemen, Somalia, South Sudan, and Nigeria. No doubt everyone agrees that food security is a right--all should have access to basic nutrition. Two factors that weigh in strongly with this premise--both now and for the future--are (1) innovation that is effective and sustainable, and (2) methods to deal with current food waste and distribution problems.

For some insight into these two challenges, check out CAST's [series of forthcoming papers about ag innovation](#)--the first issue paper about plant breeding will be [available on March 22](#). And for an examination of "[Food Waste Across the Supply Chain](#)," look into the publication from CAST and the University of Pennsylvania.

News and Views

****Federal Budget Proposals and Ag:** This article looks at ten ways President Trump's budget [might affect the USDA](#), and this story considers the effects that [could occur for government programs overall](#).



Submit an Idea

Do you have an idea for a CAST publication, video, or project? CAST

[welcomes suggestions, ideas, and recommendations.](#)

World Food Prize Nominations

[Nominations are open until May 1](#) for an individual or individuals who demonstrate exceptional achievement in any field involved in enhancing food production and distribution and increasing food availability and accessibility to those most in need.

Saving Orphaned Calves

A Kansas 4-H Club rallied supporters in the state and surrounding states to take in [orphaned calves whose mothers were victims of the wildfires](#) that raced across several western counties

Beetles, Piranha, and Sharks

Cornell University students perform [global research for Earthwatch.](#)



CAST Social Media

Click here for [links to CAST sites](#): Twitter, Facebook,

Pinterest, LinkedIn, videos, and blogs.

****Ag Research Funding:** The world's largest farm exporter, the United States, is also a global leader in agricultural innovation. However, China now leads the U.S. by a large margin in [government funding of food and agriculture research](#) and development.



****ECHA Glyphosate Finding:** Check here for the report from the European Chemicals Agency regarding the [status of glyphosate](#).

****Nomination for the FDA:** President Trump [nominated Scott Gottlieb](#), a physician and resident fellow at the American Enterprise Institute, to become commissioner of the Food and Drug Administration, the organization that regulates 80% of the nation's food supply.

****Rural Infrastructure:** An agriculture coalition met with U.S. government officials to [discuss rural infrastructure needs](#).

****EPA Budget Cuts:** The Trump administration considers even deeper [cuts to the Environmental Protection Agency](#) than previous versions of their budget outline suggested, according to a new report. This article touches upon reactions from agency chief Scott Pruitt and others.

News from the Far Side of the Barn

Hyper and Hilarious (video): This [terrier was way too excited](#) to complete the agility course, but the announcer seemed to enjoy it anyway.

Pot for Pets? As more states legalize marijuana for humans, more pet owners are giving [medical-cannabis products to their furry companions](#) to treat everything from arthritis and anxiety to seizures and cancer.

Knitting a Sweater for That Special Chicken in Your Life (video): These Boston retirees hatched a plan to [protect poultry from the New England winter chill](#).

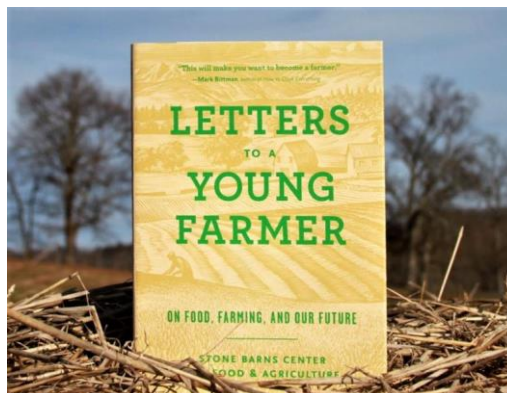


Sweaters? Someone [once tried diapers!](#)

What Would You Say to a Young Farmer?

Authors interview Temple Grandin and many other experts

This new book, [*Letters to a Young Farmer*](#), draws on the collective wisdom of three dozen of the most respected figures in agriculture today--farmers, chefs, writers, philosophers, and activists--to answer a single question: "What would you say to young people just starting out to farm?" The answers range from personal stories to practical advice, including wise reflections on how to grow healthy food in ways that treat land, animals, and people with respect.



CAST Issue Paper Rollout on March 22

CAST is releasing an issue paper titled *Plant Breeding and Genetics--A paper in the series on The Need for Agricultural Innovation to Sustainably Feed the World by 2050*. Dr. P. Stephen Baenziger and Dr. Rita Mumm, cochairs for the team of authors, [will present the highlights and key findings of this paper at three venues](#) in Washington, D.C., on Wednesday, March 22, 2017.

News and Info? Contact CAST

Do you have a newsworthy ag-science item you would like shared? CAST includes a number of education links in *Friday Notes* and also communicates through Twitter, Facebook, and other pertinent social media channels. If you have a student event, research breakthrough, or educational opportunity we can amplify through CAST channels, please contact Dan Gogerty, Managing Communications Editor, at dgogerty@cast-science.org.

Friday Notes News Categories

Photos courtesy of the Agricultural Research Service (top masthead); TopLatest News (globe at right). P. 1 cherry blossom pic from [pbs.twimg.com](#), food globe pic from [feedingtheworld.jpg](#), research pic from [agra-net.net](#), and chicken pic from [npr.org](#). Page 2 book pic from [civileats.com](#). Animal Sec. pig pic from [twicsy.com](#). Plant Sec. infographic from [biofortified.org](#). Inter. Sec. snow road pic from [atlasobscura.com](#). Gen. Sec. corn symbol pic from [etschfarms.com](#). Unless otherwise noted, photos courtesy of the USDA Agricultural Research Service.



Animal Agriculture and Environmental News

Prevention Is the Best Medicine (video): This hog producer says [taking care of animals properly](#) should have prevention as the best option.

Avian Flu Update: Alabama Department of Agriculture officials are investigating [three possible cases of avian influenza](#). Update: Alabama agriculture officials are [banning poultry sales](#) over concerns about avian influenza.

Labor Situation (opinion): This U.S. dairy organization says the industry has faced labor shortage issues for years, but the situation may become [tighter due to new immigration policies](#).

Gag the Gag Laws? (opinion): This Ohio State Univ. pig expert says so-called ag-gag laws [are the cause of controversy](#) and don't appear to help farmers.

Chicken Manure and Sustainability: This site from the Maryland Dept. of Ag explains [how chicken farming there is sustainable](#), environmental, and successful--including the proper use of manure for soil enrichment.



It's for medicinal purposes.

Beef Booster: According to research by livestock sustainability consultant Jude Capper, [grain-fed beef production is more environmentally friendly](#) than the emotion-driven marketing campaigns indicate.

More on Beef (related to above): Jude Capper chaired the task force for CAST's Issue Paper, [Animal Feed vs. Human Food: Challenges and Opportunities in Sustaining Animal Agriculture Toward 2050](#).

Faux Chicken? A Bay Area food-technology startup says it has successfully developed the world's first [chicken strip grown from self-reproducing cells](#)--not much said yet about the cost.

Losing Animals: This photo collection portrays 15 [animals that could face extinction](#) because of climate change.



Food Science and Safety News

Food Labeling Update: This UC-Davis expert and others consider the new [label guidelines a positive step](#) that could help consumers and the environment.

Hunger and Education: According to this report, one in five children in the United States lives in [food insecure households](#)--and hungry kids do not achieve as well as those with access to food.

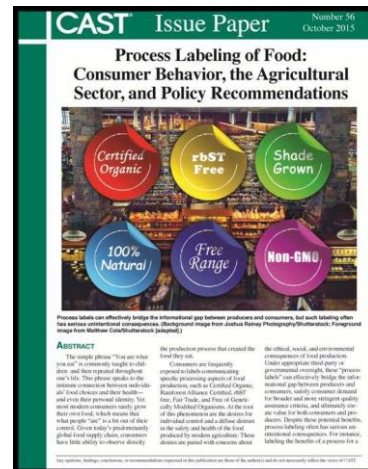
Food Safety Budget: Several major food companies and trade associations sent a letter to the offices of the four top budget writers on Capitol Hill [requesting appropriate funding for the food safety budget](#).

Say Cheese--Those Foodie Photos: This research suggests that [photographs of food](#) are good for more than just entertaining friends on social media--they might even help improve health.

Faux Meat and a Committed Carnivore: One of the most [committed carnivores in the world has conceded](#) that plant-based "meats" have a place on future kitchen tables.

Cutting Waste Is Smart Investing: This report claims that the average business will earn a \$14 return for every \$1 [invested in food loss and waste reduction](#).

Students Help Cut Waste and Food Insecurity: A University of Kentucky undergraduate student shows that a student-led program is succeeding in efforts to [reduce the rate of food waste and food insecurity](#).



[Click here to access](#) the CAST Issue Paper--*Process Labeling of Food: Consumer Behavior, the Agricultural Sector, and Policy Recommendations*.



Plant Agriculture and Environmental News

Mountain Trees from the Flatlands (video): This Nebraska biologist and his company are on a mission to [preserve and repopulate national forests](#) in the Rockies.

Insect Resistance: Bt traits

GMOs Revealed

How Does it Work?

There are various Bt proteins, which target specific types of insects. However, their mechanisms of action are generally the same.

- 1 The Bt protein (shown in blue) is absorbed by receptors in the lining of the gut of the insect.
- 2 The activated proteins (shown in green) form a complex which bores into the content of the gut (green) to spill out, which eventually kills the insect.

Pests

Examples of pests targeted by insect resistant crops

- Corn rootworm
- Cotton bollworm
- Soybean Looper

Trait Features

There are many different Bt proteins, each of which target different insects. All proteins are derived from the soil bacteria *Bacillus thuringiensis*.

Reduces yield loss to pests, fungal toxins from infection, pesticide use, and the carbon footprint associated with pesticide application.

Targets specific species and does not have health impact in mammals.

Requires resistance management to reduce the risk that pests resistant to the trait will proliferate.









Modified Crops

Corn Cotton Soy Eggplant

Resources

biofortified.org/info/gmo/bt

Version 1.0
By Layla Kottirae (000074262040) in collaboration with Adh An Entomologist (000074262040) and Biology Fortified, Inc. (000000000000)
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Corn and Cancer? This University of Florida expert describes an [evolutionary link between the processes](#) that govern cell identity in a kernel of corn and those that turn a blood stem cell into a cancerous threat.

Fighting Deadly Toxins: Maize plants have been genetically modified to deliver strands of so-called interfering RNA that [silence toxin-producing genes in a fungus](#) that commonly grows on the crop.

Enriching Soil: Scientists are studying how to make poorer soils perform better, as they respond to a growing problem of the loss of prime farmland to urbanization.



International News

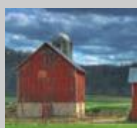
Reef Rescues: Ninety percent of the world's coral reefs are expected to disappear by 2050 due to climate



A snow removal company's dream.

change, pollution, and poor fishing practices, but a [plan is under way to save many of them](#).

Free Food Year: This New Zealand family has a [goal of spending zero dollars on food](#) in 2017.



General Interest News

"A Drone Is a Flying Smartphone" (video): This [drone engineer shows how tech can help](#) farmers deal with water problems, climate changes, and other issues--including "hot spots" and "cold spots" in each field.

Diversifying for Financial Reasons: A New Jersey family has successfully [diversified their farm and expanded their revenue](#) opportunities--a corn maze, outdoor movies, and educational presentations all help.

Environmental and Profitable Farming (opinion): This specialist says that [sustainability and profitability](#) can and must go hand in hand.

Tick Toc, Call the Doc: Parts of the United States [might have a bad year for ticks](#)--check symptoms, get help early, and watch for Lyme disease.

The Benefits of Conserving Water: Water conservation not only [helps farmers produce more food with less](#) water, it can help them cut costs.

Modern Farming--Big Data: This update explains why [big data has become essential](#) to a modern-day farm's success.

You Don't Have to Run Marathons to Benefit from Exercise: According to this study, even moderate amounts of physical [activity can have significant health benefits](#).



Some farms get truly corny to diversify and boost income.

CAST Information

Check out CAST's page at the [YouTube site](#) to view highly regarded ag-science videos about probiotics, food safety, and water issues--or the latest video dealing with proposed mandatory labeling of GMO food items.



If you have a good idea for a CAST publication, contact us by [clicking HERE for the "Proposal Format](#) and Background Information Form."

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Contact Colleen Hamilton at 515-292-2125, ext. 224 or chamilton@cast-science.org, or [CLICK HERE](#) for CAST membership information.



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- * Northeastern Weed Science Society
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- * Society for In Vitro Biology
- * Soil Science Society of America
- * Syngenta Crop Protection
- * The Fertilizer Institute
- * Tyson Foods
- * United Soybean Board
- * Weed Science Society of America
- * Western Society of Weed Science
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- * University of Nebraska Agricultural Research Division
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