



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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[Scientific Insights about Gene Editing--P. 2](#)

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The Beauty Beyond



We see the beauty of earth with this iconic photo taken from the moon, but in these videos, [we see what the rest of the sky looks like](#) beyond the filtered haze of the world's growing light pollution.

Bungle in the Ag Tech Jungle

This [Rabo report explores the status of precision farm/digital ag](#) under the heavy umbrella of current commodity prices.

Food Evolution



Narrated by Neil deGrasse Tyson,

May 19, 2017

Still Dazed and Confused?

New surveys reflect consumer opinions about food

The International Food Information Council (IFIC) released its 12th annual [Food and Health Survey](#), and the key findings show that doubt and uncertainty still haunt the aisles when buyers select food items. As the report states, "Americans are consuming food information from more sources than ever before, yet our nutritional literacy is sorely lacking." The IFIC survey also looks at trust, misinformation, age discrepancies, and "the halo effect."



In a recent blog, [Jayson Lusk analyzed the results from another consumer survey](#)--the May 2017 edition of the *Food Demand Survey* (FoodDS). He looked at various issues including the consumer's (1) willingness to pay for various types of meat, (2) concerns about antibiotic use, (3) food expenditures at home versus away from home, and (4) views about the efficiency of the varied types of animal production systems.

News and Views

****USDA and Sec. Perdue:** Agriculture Secretary Sonny Perdue [defended his reorganization plan](#) for the USDA. Perdue says a [stronger international trade presence](#) is imperative. But some ag organizations are [calling for a stop to rural development reorganizations](#) within the USDA, and one editorial says reorganization [could have a negative impact on food safety](#). This [AgriTalk interview with Secretary Perdue](#) occurred on a Midwest farm and covered many pertinent topics.

****Beef Exports:** This expert says America's robust beef export market will get even better with [China set to begin importing U.S. beef](#) in July.

****Trade Deals:** TPP trade talks are dead and [some farmers are worried](#)--others are hopeful new trade deals will work in their favor. And this article reports that U.S. Trade Representative Robert Lighthizer

this important new film explores the [controversies surrounding GMOs](#) and food--it features varied opinions from Mark Lynas, Jeffrey Smith, Alison Van Eenennaam, and others.

Students Check Out Ag Careers

These students were able to [tour four agriculture zones](#)--animal science, plant science, end products, and technology and equipment--featuring more than 50 exhibitors.

Scar Tissue for the Soul?

This blog looks at a new book about work, values, and adolescence--and the way [growing up on a farm can include both scars and joys](#).

CAST Social Media

Click here for [links to CAST sites](#): Twitter, Facebook, Pinterest, LinkedIn, videos, and blogs.

formally notified Congress about specifics on how the Trump Administration [intends to renegotiate NAFTA](#).

News from the Far Side of the Barn

A Lovable Cyclopean Goat (video): This extremely rare goat--born in India--is being regarded as a blessing by its owner. The kid was born with only one eye, one ear, and barely a nose, [due to a condition called cyclopia](#) that occurs in the womb when the brain's two hemispheres do not separate.



Doesn't care who won burger battle, as long as he gets supersized.

Burger Battle: Five Guys finally overtook In-N-Out in a battle of the burger brands. The [chain received the top spot](#) in the Harris Poll's annual *EquiTrend Study*.

Spreading Peanut Butter on Manta Rays (video): When researchers tried [sticking cameras to giant manta rays](#), they found that their skin was too smooth for traditional methods, so researchers had to come up with something a bit more creative.

Genome Editing Paper

Looking at "the rudimentary pencils and erasers for ultimately rewriting the code of life"

Note: A major review paper, *Genome Editing of Plants*, appeared in the March 2017 issue of *Critical Reviews in Plant Sciences*. Check the bottom of this page for a list of the authors. A [free download of the paper is available here](#), and an overview of the report is below.

Genome Editing of Plants

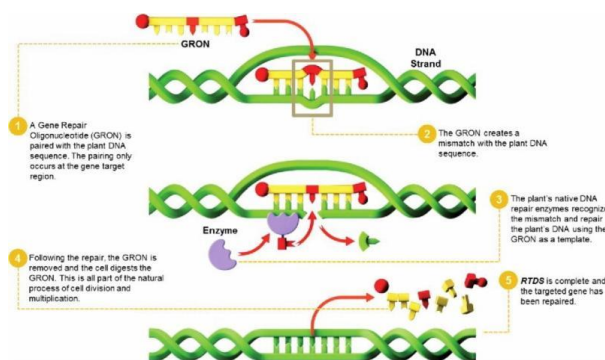
The science of plant breeding started more than 10,000 years ago when early civilizations recognized the benefits of collecting seed from the best performing plants and cultivating it to produce the following season's crop. Over hundreds of years plant breeders have selected varieties that were better tasting, more productive, and easier to manage to produce the crops we grow today. "When it comes to increasing productivity, diversity, and quality, plant breeders have an impressive record that is well documented," said Dave Songstad, one of the report's authors. With a global population expected to approach ten billion by 2050, increases in productivity will need to grow even more rapidly to meet this new demand. Songstad added, "These challenges and the question of how to accelerate the breeding process to deliver results found in nature faster and more efficiently are inspiring plant biologists, geneticists, and agronomists to innovate."



To improve productivity, taste, and other desirable characteristics, breeders have needed to find and enrich for useful genetic variation. In the early years, variation occurred randomly and infrequently. Generations of useful diversity were augmented by tools such as chemical and physical mutagenic agents. These agents resulted in the development of more than 3,000 products that have benefited agriculture and humankind. "When you think about it, this is amazing since each of these arose from researchers screening through thousands of treated

plants looking for that needle in a haystack--never knowing if they would find any beneficial changes," Nancy Reichert, also an author, said.

Most recently, the diversity that breeders select for has been further accelerated through a variety of technologies such as zinc-finger nucleases, TALENs (transcription activator-like effector nucleases), and CRISPRs (clustered regularly interspaced short palindromic repeats) alone or in combination with various repair templates (ODM or oligonucleotide directed mutagenesis). The tools of precision gene editing are inspired by and can help accelerate random and infrequent natural variation. According to Dr. Petolino, an early adopter of genome editing in plants, "these technologies can be thought of as the rudimentary pencils and erasers for ultimately rewriting the code of life."



The report's authors include Dr. David Songstad, Past President of CAST and Cibus' Director, Cell Biology; Dr. Joseph Petolino of the Biotechnology Department at Ivy Tech Community College (formerly a Research Fellow at Dow AgroSciences); Dr. Nancy Reichert from the Department of Biological Sciences at Mississippi State University and President-Elect of CAST; and Dr. Dan Voytas of the Department of Genetics, Cell Biology and Development at the University of Minnesota.

Friday Notes News Categories

Photos courtesy of the Agricultural Research Service (top masthead); TopLatest News (globe at right). P. 1 earth pic from earthcycle.jpg and burger pic from msn.jpg. P. 2 scissors pic from news.mit.edu.jpg. Animal Sec. pig pic from dailymail.com. Food Sec. big cup pic from precisionnutrition.com. Plant Sec. corn pic from fuelreducer.jpg. Inter. Sec. plant pic from dengarden.com. Unless otherwise noted, photos courtesy of the USDA Agricultural Research Service.



Animal Agriculture and Environmental News

Data, Innovation, and Hog Housing: These Iowa State researchers say measurement and data are essential to [moving beyond a one-size-fits-all approach](#) to swine housing.

Pig Power: This Kansas State University swine scientist says that [advances in how pigs are raised](#) have led to enormous improvements in pork production, including increased litter sizes and growth rates.

Thumbs Up or Down? These [experts discuss the GIPSA rule](#)--the chances it will die or the possibilities it will be implemented.

Hormonal: A recent survey revealed that 77% of Americans believe that chicken contains added hormones. The reality? [No chicken sold or raised in the United States is given added hormones](#).

Label Confusion: This research indicates that [consumers](#)



This writer has a problem with the terms "[micro](#), [pixie](#), [nano](#), or [teacup](#)" when it comes to describing mini pigs.

[are confused about terms](#) commonly found on labels such as "grass-fed" and "organic." These fact sheets might help.

Microbes and Antibiotics: At a Cornell University symposium, Dr. Srinivasan spoke about the [threats of the increasing resistance of infectious microbes](#) relating to antibiotic use in animals and humans.

Livestock Health: Increased use of vaccines and better sanitation and biosecurity are the two most common changes U.S. pig, cattle, and poultry producers are making in [response to the loss of shared-use antibiotics](#).

Roots and Wings: In addition to her love of ranching, this woman spent 30 years in the fashion industry. She worked in [New York fashion during the week and on her family ranch in Texas on weekends](#).



Food Science and Safety News

Had Milk, Got Milk, Get Milk: The U.S. dairy industry will feature a [national, multi-year pro-dairy campaign](#) called "Undeniably Dairy" to better engage with consumers.

Bacon, Seaweed, and Taste Buds (videos): Dulse, a red marine alga, is highly nutritious, fast-growing, and [supposedly tastes like bacon](#) when fried. These taste testers aren't so sure.

Food Waste Innovations: Beer cookies, coffee flour, and bananas that don't brown are just some of the [innovations on offer to fight food waste](#).

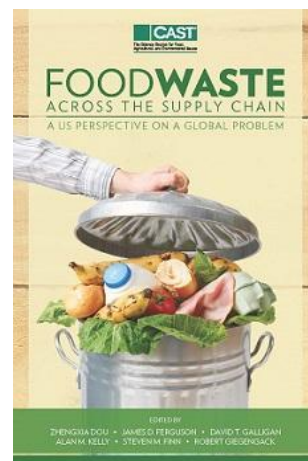
Shame on Food Shamers (opinion): This writer contends that it is hard enough navigating the adolescent landmines in school--so [shaming kids in the cafeteria is inexcusable](#).

Food Disasters: Explosive cheese, lethal beer, and poisonous orange juice--[when food causes natural disasters](#).

Kids and Caffeine: This 2014 study found an [estimated 73% of children consume some kind of caffeine each day](#). While there is no designated standard for children, some say it can be detrimental--and a recent teen death was blamed on a caffeine overdose.



Cardiac Caffeine? (related to above): In a recent study, [scientists did not find any link](#) between caffeine intake and premature cardiac contractions.



UPenn and CAST [teamed up on this respected book](#).

My Plate: Students at The Ohio State University promoted the messages of MyPlate and the Dietary Guidelines for Americans through their [MyPlate On Campus initiative](#).



Plant Agriculture and Environmental News

Three Things You Should Know about Herbicides: Kate Hall is the managing director of the [Council for Biotechnology Information and GMO Answers](#).

Advocate for "Common Sense" Bio Regulation (opinion): This scientist says the USDA needs to establish a [science-based regulatory system](#) for both GE and gene-edited crops.

The Crop That Ate America: This report [uses photos and infographics to explain](#) the rise of King Corn.

Crop Rotation (opinion): This group says adding combinations of alfalfa, cover crops, and small grains to a typical corn-soy rotation can [increase yields, maintain profits, and reduce chemical use](#).

Using Biotech to Fight Citrus Disease: Florida [farmers hope scientists can beat the pathogen](#) that is wrecking the U.S. orange harvest.

Developing Tougher Rice: University of California-Davis plant geneticist Pamela Ronald wants to create [rice varieties that can survive in harsher conditions](#), including more frequent droughts.

Artificial Plants: An artificial form of photosynthesis that [sucks carbon dioxide from the atmosphere](#) has been invented by a scientist who claims the "breakthrough device" could be used to reduce global warming.

Communities and Forestry: This UN/FAO review looks at the impact of [forty years of community-based forestry](#).

Uncovering Cover Crop Info: This ISU agronomist explains research aimed at finding the [best ways to use cover crops](#) in a cattle grazing system.



Prices and acreage vary year by year, but [corn has stayed on top](#).



International News

A Win-Win Situation: Public and private sector [partners launched a project](#) in Ghana to improve urban sanitation and, at the same time, boost farm productivity.

Scientific Expertise: Thanks to a *ClimaAdapt* project, 90,000 Indian smallholders now have access to extensive knowledge on how they can [adapt their agricultural practices to a changing climate](#).

TB Flare-up Predicted: New research predicts a steady [rise in tuberculosis cases](#) that can't be cured with conventional, first-line antibiotics in four countries--Russia, India, the Philippines, and South Africa.

NAFTA on the Table? A team of Mexican grain industry officials visited the United States to discuss trade. Because of the [controversy surrounding NAFTA](#), they are considering other trade options.

Water Conservation in New Zealand: This report says progress has been made in the three years [since a water accord was adopted](#), but more progress is needed, according to the country's Green Party.

Smart and Sustainable: The world's [farmers have access to information](#) that's changing the way they work with digital devices such as drones, field robots, support software, and smart irrigation systems.



Aussie researchers say [plants listen to find water](#).



General Interest News

My Bank Account? Passwords? OK. Morel Mushroom Spot? No Way (video): Mushroom hunters will tell you that morels are popular and delicious--but they [will not tell you where their patch is](#).

A Passion for Ag: One of USFRA's *Faces of Farming & Ranching*, Emily Buck farms corn and soybeans and raises Southdown sheep in Ohio. She discusses issues and [explains her passion for agriculture](#).

The Indoor Garden State? The "[world's largest indoor farm](#)" is set to rise from a weed-strewn field near Camden, New Jersey.

Organic or Not? The U.S. organic market counts more than \$40 billion in annual sales and includes products imported from about 100 countries--but enforcing the "organic rules" is a [daunting and controversial situation](#).

Agroecology: This book, *Fertile Ground*, presents nine innovative case studies from Africa, Latin America, the Caribbean, North America, and Europe to make [a case for promoting the use of agroecology](#) worldwide.

Salmon Survival Issue? (opinion): Wild Chinook salmon, one of the most prized seafood items on the West Coast, [could all but vanish from California](#) within a hundred years, according to this report.



[How stressed is your rattlesnake?](#) This and more student research covered in this article.

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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- * Monsanto

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- * National Pork Board
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- * Northeastern Weed Science Society
- * Poultry Science Association
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Dan Gogerty (Managing Communications Editor)
The Council for Agricultural Science and Technology
 4420 West Lincoln Way
 Ames, Iowa 50014-3347
 Phone: 515-292-2125, ext. 222; Fax: 515-292-4512; E-mail: dgogerty@cast-science.org



**** With assistance from Carol Gostele (Managing Scientific Editor) and Kylie Peterson**