



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 CAST.

## In This Issue....

- [Animal Agriculture News](#)
- [Food Science & Safety News](#)
- [Plant & Environmental News](#)
- [International News](#)
- [General Interest News](#)

## Announcements



[Pfizer](#) and [BioNTech](#) announced a COVID-19 vaccine that was more than 90% effective in trials. A [British vaccine](#) is apparently close, and other groups--such as [Moderna](#)--are claiming possible breakthroughs. However, [some recommend caution](#) and patience.

The USDA announced its [OneUSDA Internship Program](#) for Summer 2021, and its Scholars Programs for [students at Historically Black and Tribal Land-Grant Colleges and Universities](#).

The USDA will host a series of [four webinars on CME specifications and live cattle and beef carcass grading](#) on Nov. 17, Dec. 1, Dec. 8, and Dec. 15.

The USDA announced its "[Updated Conservation Practice Standards](#)" this week.

## CAST College Corner

This [University of Kentucky](#) student and U.S. Army veteran

## November 13, 2020

# Robotics, Artificial Intelligence, and Agriculture

From early science fiction to today's science practicalities, robots have affected our folklore and our work places. Artificial Intelligence and robotics are now influencing agriculture and food production.



The following links lead to a few of the many examples: (1) A new generation of [autonomous robots](#) is helping crop growers, (2) this UC-Davis site looks at a wave of agricultural [robotics and sensors](#), (3) the first [firefighting robot](#) in America was called into immediate action, (4) a science fiction-looking [robotic vehicle](#) works a Kansas State agronomy farm, (5) Cal Poly received a National Science Foundation Award to [study small robots](#), (6) and this Iowa State video shows that the pandemic can't slow down a [robotic lab assistant](#).

The CAST Issue Paper, [Ground and Aerial Robots for Agricultural Production: Opportunities and Challenges](#), will be released November 16 with a webinar November 17. See page 2 below for details.

## News and Views

**Pandemic Effects:** As coronavirus rates [rise around the world](#), in the United States, [rural areas](#) are experiencing a surge in cases, and [various types of gatherings](#) seem to be spurring community spread. This USDA site looks at [COVID-19 economic implications](#) for agriculture, food, and rural America, while this CDC site provides [suggestions to fight the virus](#).

**Radio News:** The USDA's [weekly radio features](#) include a look at robotics, oyster farming, and turkey preparation.

**WASDE Report and Crop Projections:** Check here for the latest USDA [World Agricultural Supply and Demand Estimates](#). The [USDA also trimmed projections](#) for 2020 U.S. corn and soybean production and ending stocks.

**Rural Marketing Economics:** The Creighton University [Rural Mainstreet Index](#) has increased for six straight months—with

gets results—and comfort—from his research plots.

The [University of Florida](#) provides its *Florida Vegetable Gardening Guide* in English and Spanish—and as a downloadable app.

The [Tuskegee University](#) College of Veterinary Medicine hosted its one health symposium virtually.

**Check throughout *Friday Notes* to see more featured articles from member universities.**

## CAST Social Media

Visit our  
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CAST [welcomes ideas](#) for future publications and projects.

improvements in agriculture commodity prices, federal farm support, and low interest rates.

## News from the Far Side of the Barn

### TGIF--Even If It's the 13th:

Friday the 13th is perceived as an ominous day, so the *Farmers' Almanac* provides [13 ways to improve your luck](#). Maybe it's time to carry an acorn in your pocket.



### Wow, If This Is Practice!

(**video**): Check out the physics--and luck?--of a [magical hole-in-one](#) by this golfer during his Masters practice round.

**Cry Wolf (video)**: A Japanese town deployed [robot wolves to scare away bears](#) that have become increasingly dangerous—and apparently, it works.

## CAST Updates

### Upcoming Publications



**Santosh Pitla, Ph.D.**  
Biological Systems Engineering,  
University of Nebraska-Lincoln



**Dennis Buckmaster, Ph.D.**  
Ag and Biological Engineering,  
Purdue University



**Tami Brown-Brandl, Ph.D.**  
Biological Systems Engineering,  
University of Nebraska-Lincoln



**Todd Janzen, J.D.**  
Janzen Ag Law



**Michael Sama, Ph.D., P.E.**  
Biosystems and Ag Engineering,  
University of Kentucky



**Scott Shearer, Ph.D., P.E.**  
Food, Ag, and Biological Engineering,  
The Ohio State University

The new CAST Issue Paper, *Ground and Aerial Robots for Agricultural Production: Opportunities and Challenges*, will be released on November 16, with a webinar on November 17 at Noon Central. You can sign up for the [free webinar here](#).

Today, highly automated systems are employed in crop and animal industries to enhance agricultural input efficiency and thus increase agricultural output with reduced adverse impact on the environment. Ground and aerial robots combined with artificial intelligence techniques are able to tackle the rising

food, fiber, and fuel demands of the rapidly growing population that is slated to be around 10 billion by the year 2050. This issue paper presents opportunities provided by ground and aerial robots for improved crop and animal production, and the challenges associated with their progress and adoption.

Join Dr. Santosh Pitla, chair and lead author for this publication, as he presents highlights of CAST's new Issue Paper followed by Q&A with a panel of task force authors.

### Past, Present, and Future CAST Presidents



**Juan Tricarico**  
Past President



**David Baltensperger**  
President



**Anna Dilger**  
President-Elect

On October 28, 2020, CAST outgoing President [Juan Tricarico](#) added to the many valuable types of input he has provided during the past years by finishing his portion of the annual meeting with his usual upbeat, thoughtful comments. Incoming President [David Baltensperger](#) then began his official responsibilities, but he had already been leading webinars and performing many other crucial roles for CAST. [Anna Dilger](#) was voted in as the President-Elect, and through committees, webinars, and task force writing, she will no doubt continue to contribute in an important way. CAST thanks these leaders and the many board members and volunteers who help CAST fulfill its mission.

Be sure to check out the [new CAST mission and vision](#) statements on the website.

## Nominations Open for 2021 Borlaug CAST Communication Award

Nominations are now open for the 2021 Borlaug CAST Communication Award, an honor that recognizes professionals actively working in the agricultural, environmental, or food sectors who are promoting agricultural science in the public policy arena. Learn [how to nominate](#) someone for the 2021 BCCA and download the 2021 [nomination packet form here](#).

## Animal Agriculture and Environmental News

**CRISPR Calf Called Cosmo (video):** This 30-minute clip follows the scientific journey of UC-Davis PhD student Joseph Owen, Dr. Alison Van Eenennaam, and others as they document this [amazing genetic advancement](#).

**Feed Particle Size:** Research shows optimum [particle size is critical](#) to obtaining maximum poultry performance.

**Fluctuating Pork Exports:** U.S. [pork exports](#) have risen as African swine fever affected China's hog herd, but some think that could be changing.

**Disease Response:** The National Pork Board announced the launch of AgView, technology designed to help the U.S. pork industry [respond quickly in the event of a foreign animal disease outbreak](#).

**Steer-production Tips:** Kansas State experts are [advising first-time cattle feeders](#) as they raise calves to eventually produce increasingly popular locally sourced food.

**Cattle Vaccine:** Researchers at the University of Nevada-Reno and UC-Davis developed a new vaccine for cattle [to protect against fetal calf loss](#).



**Beg Your Pardon: The White House turkeys don't need to worry, but most turkeys are nervous this time of year. Farmers and grocers are also anxious about [what people will want on their holiday tables during this unique pandemic era](#).**

## Food Science and Safety News

**New Sandwich Both Anticipated and "McMocked" (two videos):** McDonald's developed a [plant-based patty it will dub the McPlant](#). Consumers will judge the food, but social media participants are already [poking fun at the name](#).

**A Matter of Taste:** The Beef Checkoff site gives us a look at U.S. beef products that are not in demand in the United States (tongue, liver, heart, intestine, etc.), but they are [highly desired by international markets](#).

**Brain Food:** Researchers discovered that a [specific brain region monitors food preferences](#) that can be shifted by targeting relevant neurons.

**Food, Inflammation, and Heart Health:** This study examines [connections between inflammation and heart disease](#) related to consuming certain foods.

**Sweet Heart?** French researchers investigated the relationship between [the risk of cardiovascular disease](#), sugary drinks, and artificially sweetened drinks.

**Got More than Milk:** A \$6 million grant from the USDA's AMS will provide [educational opportunities to help dairy businesses manage financial risk](#) by developing value-added dairy products.



Three decades of research have gone into this variety of onion that is hitting retail shelves this week. Sunions are [tearless and sweet](#), and they become sweeter with every additional day in storage.

## Plant Agriculture and Environmental News

**Yield Lessons from 2020:** These agronomists cite [five yield lessons](#) from 2020 for corn and soybean production.

**Booming Bean Output:** A Nebraska farmer uses a recipe of low population, biologicals, and nutrient application timing toward [repeated yield success and savings](#).

**Tech and Drought:** This study indicates that the methods farmers use to get a decent [corn crop during drought years](#) should not leave the impression that innovation will make bad weather inconsequential.

**Sorghum as Possible Ethanol Source? (video):** Kansas State University researchers are tracking the nitrous oxide emissions associated with [grain sorghum production and its effect on the carbon intensity score](#).

**Growing Livestock Feed Vertically:** Unlike most vertical farms that grow veggies for consumers, this Utah project [grows feed for livestock](#).

**Insect Versus Weed:** USDA/ARS scientists confirmed they are releasing a [biocontrol insect to fight the invasive weed](#) known as Cape-ivy along the California coast.

**Knotweed Battle (related to above):** For the first time in the Netherlands, an exotic insect species has been released into the wild to [combat a harmful plant species](#).



Corporations make climate pledges and farmers consider how to “go green.” A five-part *Agri-Pulse* series looks at [how reductions in greenhouse gas emissions could have far-reaching effects on American farmers and ranchers](#). Experts such as [Marty Matlock](#) (University of Arkansas and 2018 BCCA winner) provide insights.

## International News

**GM Ban Removed:** South Australia's [ban on genetically modified crops has been removed](#) after 16 years.

**Ebola Virus Research:** Scientists—including UC-Davis experts—found antibodies to the Ebola virus in people up to a year before the 2018 Congo area outbreak, and this leads to [speculation about the nature of the virus](#).

**Opening Offices:** APHIS plans to expand in the [Middle East](#)

[and Africa](#), but the agency will scale back in some of its other offices in the Western Hemisphere.

**New Dairy:** This roundup of some [recent products in British dairy aisles](#) includes types of cheese and yogurt.

**Palm Oil Research:** Nigeria's oil palm research is set to receive its [biggest funding in 10 years](#)

**Here Comes the Sun:** Plans have been drawn up to create a [massive solar farm in England](#) that could generate enough electricity to power thousands of homes.



By the early 1970s, Indian tigers had been hunted and poached to the edge of extinction. This [video looks at the efforts of the "tiger guru" and others to save them.](#)

## General Interest News

**Teaching about Farming--and Life:** This Marine veteran [uses his nonprofit to teach other veterans](#) how to farm in hopes of giving them purpose.

**Brain-based Computing:** Penn State engineers are attempting to pioneer a type of [computing that mimics the efficiency of the brain's neural networks](#) while exploiting the brain's analog nature.

**When the Chlorophyll Stops (video):** This Mississippi State University expert explains [why leaves change color](#).

**Color Genes Identified:** Cornell University researchers have [identified three genes](#) responsible for changing the color of common buckeye butterfly wings.

**Slowing the Virus Spread:** The University of Nebraska--Lincoln finished [upgrades to its heating, ventilation, and air conditioning systems](#) to better prevent the spread of COVID-19 this winter.

**Galactic Neighbors?** This *National Geographic* story says a survey shows that [millions of worlds with similar conditions to Earth](#) are located in the Milky Way galaxy.



As in "Model T days," farmers and ranchers often go for trucks. [Pickup truck sales have risen during the pandemic](#), and younger shoppers may be the reason.

## Photo Credits

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- \* American Dairy Science Association
- \* American Farm Bureau Federation
- \* American Meat Science Association
- \* American Meteorological Society, Committee on Agricultural and Forest Meteorology
- \* American Seed Trade Association
- \* American Society for Nutrition Nutritional Sciences Council
- \* American Society of Agricultural and Biological Engineers
- \* American Society of Agronomy
- \* American Society of Animal Science
- \* American Society of Plant Biologists
- \* American Veterinary Medical Association
- \* Aquatic Plant Management Society
- \* BASF Corporation
- \* Cal Poly State University
- \* Corteva Agriscience
- \* CropLife America

- \* Crop Science Society of America
- \* Entomological Society of America
- \* Innovation Center for U.S. Dairy
- \* Bayer
- \* National Cattlemen's Beef Association, a Contractor to the Beef Checkoff
- \* National Corn Growers Association/Iowa Corn Promotion Board
- \* National Milk Producers Federation
- \* National Pork Board
- \* North Carolina Biotechnology Center
- \* North Central Weed Science Society
- \* Northeastern Weed Science Society
- \* Poultry Science Association
- \* Rural Sociological Society
- \* Society for In Vitro Biology
- \* Soil Science Society of America
- \* Syngenta Crop Protection
- \* The Fertilizer Institute
- \* Tuskegee University
- \* United Soybean Board
- \* University of Nevada-Reno
- \* U.S. Poultry and Egg Association
- \* Weed Science Society of America
- \* Western Society of Weed Science

*CAST, through its network of experts, assembles, interprets, and communicates credible, balanced, science-based information to policymakers, the media, the private sector, and the public.*

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