

# Field Day: CENSA – A circular economy approach for reducing nitrogen use inefficiencies in integrated livestock production systems.



American farmers and ranchers produce food and energy that powers the world. Although today's agricultural production systems produce high-quality protein from nitrogen compounds at a low cost, the process is grossly inefficient. About 87% of the nitrogen compounds produced by legumes or synthetic processes are lost before it reaches the consumer as protein. These inefficiencies have massive cost, security risks, and environmental impacts. However, we now have the tools and expertise in agriculture to use **circular** nitrogen economies in croplands and livestock management and **shift** the use of the nitrogen currently being applied as synthetic fertilizers to specially designed animal nitrogen diets. Over time, this should reduce environmental impact, dramatically reduce nitrogen fertilizer demand, and break the strong linkages between agricultural production and volatile energy markets.

Today we talk about how: **Crops** (like corn) can be genetically optimized for spring growth, for high starch to low protein ratios, and remobilization of nitrogen to the soil, which together facilitates in field recycling of nitrogen and more effective rotations and healthier soils. **Livestock** nutrition systems are optimized for the increased use of methane inhibitors, synthetic nitrogen compounds and reduced plant-supplied protein through improved genetics, microbiomes, and management. The goal of CENSA is to focus this approach specifically on reducing nitrogen use, improving nitrogen use efficiencies, improving feed efficiency and protein nutrition in livestock, and higher quality end protein products for consumers.



**Presenter:**

**Edward S. Buckler** is a Research Geneticist at the USDA-ARS and an Adjunct Professor of Plant Breeding and Genetics at Cornell University. He is recognized as a leader in the integration of quantitative and statistical genetics with genomic approaches, applying these tools to maize and other crops.



**Presenter:**

**Mark Boggess** grew up on a farm in rural Iowa and attended Iowa State University where he received his B.S. (Animal Science) and Ph.D. (Animal Breeding) degrees. He is currently the Director of the US Meat Animal Research Center in Clay Center, Nebraska.

**April 19, 2023**

**10:30 AM–12:00 PM**  
(Central Time, UTC–5)

**Purpose:** Describe a vision for more sustainable integrated crop and livestock production systems.

**Register for this Zoom virtual meeting:**

<https://tinyurl.com/AG2PI-FD26>

Upon registration, you will receive a confirmation email with information about joining the meeting.

A recording will be available at a later date at: [ag2pi.org/](https://ag2pi.org/)



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