

# IOWA STATE UNIVERSITY

Agricultural and Biosystems Engineering

## Charles R. Hurburgh, Jr.

**Professor, Agricultural and Biosystems Engineering and Professor, Food Science and Human Nutrition (Courtesy)**

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### Education

Ph.D. Agricultural Engineering, 1981  
Iowa State University  
M.S. Agricultural Engineering, 1980  
Iowa State University  
B.S. Agricultural Engineering, 1973  
Iowa State University

### Recent Awards

Stanley Watson Award, American Association of Cereal Chemists International (2018)

Fellow, American Association of Cereal Chemists (2016)

L.R. Kolmer Applied Research Award, College of Agriculture and Life Sciences (2016)

### Recent Publications

Infante, Pedro, Ken Moore, **Charles Hurburgh**, Paul Scott, Sotirios Archontoulis, Andrew Lenssen and Shui-zhang Fei. 2018. Biomass Production and Composition of Temperate and Tropical Maize in Central Iowa Agronomy 2018, 8(6) <https://doi.org/10.3390/agronomy8060088>

**Hurburgh, C.R.**, Connie Hardy, Princess Tiffany Dantes and Glen Rippke. 2018. IDRC 2018: In review. NIR news 2018, Vol. 29(8) 5–10.

Sharma, R., Schweta Chopra and **C. R. Hurburgh**. 2018. Integration of business management principles for traceability in the bulk commodity supply chain. Proc. Association of Technology, Management, and Applied Engineers annual conference, Kansas City, MO. November 4, 2018.

A. Newman, M & R. **Hurburgh, C** & Patience, John. (2016). Defining the physical properties of corn grown under drought-stressed conditions and the associated energy and nutrient content for swine. Journal of Animal Science. 94. 10.2527/jas.2015-0158.

Mitchell, Nicole., Erin Bowers, **Charles Hurburgh** and Felicia Wu. 2016. Potential economic losses to the US corn industry from aflatoxin contamination, Food Additives & Contaminants: Part A, 33:3, 540-550, DOI: 10.1080/19440049.2016.1138545

Laux, C.M., G.A. Mosher, and **C.R. Hurburgh**. 2015. Application of quality management systems to grain: An inventory management case study. Applied Engineering in Agriculture, 31(2), 313-321.

Medic, J., C. Atkinson, and **C. R. Hurburgh**. 2014. Current Knowledge in Soybean Composition. *J Am Oil Chem Soc* (2014) 91:363–384.

### Extension

Dr. Hurburgh is the professor-in-charge of the Iowa Grain Quality Initiative (GQI), which is the ISU Extension and Outreach program serving the grain handling and processing industries. Current issues of GQI include food and feed safety, standards, marketing incentives, analytical methods, and grain based biofuels. The GQI is developing grain elevator food safety practices, traceability systems for bulk materials, and Food Safety Modernization Act (FSMA) compliance materials.

The Iowa Grain Quality Initiative and the Grain Quality Laboratory (GQL) provide industry training and support for instrumentation, quality management systems and food chain traceability.

Dr. Hurburgh and the Grain Quality Initiative are designing training programs for food safety inspectors and industry personnel for the Food Safety Modernization Act. Dr. Hurburgh is the ISU lead instructor for the FSMA-required Preventive Controls Qualified Individual course.

### Research

Dr. Hurburgh is the professor-in-charge of the Grain Quality Laboratory, which provides analyses of the chemical and physical properties of grain and grain products. This lab is recognized as a world leader in applied measurement science. Dr. Hurburgh's research interests include the physical and chemical properties of biological materials, chemical and electronic instrumentation, near-infrared spectroscopy analysis and sensors, chemometrics, metrology, and statistics of very large databases. The GQL provides calibration and instrument development for manufacturers and users of near infrared spectroscopy

The theory and practice of food safety management systems-traceability are being developed for bulk grain and grain products. Current projects are traceability standards for commodity systems, and the impact of increasing consumer demand for nonGMO fed livestock on the US feed industry.

The Grain Lab/GQI extension and research group currently has 3 full time staff, 3 graduate students and 12 undergraduate lab technicians.

