IOWA STATE UNIVERSITY
Agricultural and Biosystems Engineering

Charles R. Hurburgh, Jr.

Professor, Agricultural and Biosystems Engineering
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

Honors and Awards
Grain Elevator and Processing Society, Industry Leader Award, 2002

Andersen Research Award, 2000

Pro Farmer Man of the Year–Iowa, 1998

Recent Publications
Roussel, S.A., C.L. Hardy, C.R. Hurburgh, Jr., and G.R. Rippke. 2002. Detection of Roundup Ready™ soybeans by near-infrared spectroscopy. *Applied Spectroscopy* 55(10): 1425-1430.

Roussel, S.A., G.R. Rippke, and C.R. Hurburgh, Jr. 2002. Comparison of PLS, locally weighted regression and artificial neural networks for grain quality assessment using NIR spectrometers. *Applied Spectroscopy* (In press).

Siska, J., C.R. Hurburgh, Jr. and P. Siska. 2002. The standardization of near-infrared instruments using master selection and Wiener filter methods. J.N.I.R.S. 9:97-105.

Siska, J., C.R. Hurburgh, Jr. and P. Siska. 2002. The impact of engineering parameters on the accuracy of calibration transfer. J.N.I.R.S. 9:102-116.

Chang, Ching-Wen, D. Laird, M.J. Mausbach, and C.R. Hurburgh, Jr. 2001. Near-Infrared Reflectance Spectroscopy–Principal Component Regression Analysis of Soil Properties. *Soil Sci. Soc. Am. J.* 65:480-490.

Singh, S., L.A. Johnson, L.M. Pollak, and C.R. Hurburgh, Jr. 2001. Compositional, physical and wetmilling properties of accessions used in the germplasm of maize project. *Cereal Chemistry* 78(3):330-335.

Singh, S., L.A. Johnson, L.M. Pollok, and C.R. Hurburgh, Jr. 2001. Heterosis in compositional, physical and wetmilling properties of adapted X exotic corn crosses. *Cereal Chemistry* 78(3):336-341.

Steenhoek, L.A., M.K. Misra, C.R. Hurburgh, Jr., and C.J. Bern. 2001. Implementing a computer vision system for corn kernel damage evaluation. *Transactions of the ASAE* 17(2):235-240.

Millmeir, A.C., J. Lorimor, C. Hurburgh, C. Fulhage, J. Hattery, and H. Zhang. 2000. Near-infrared sensing of manure nutrients. *Transactions of the ASAE* 43(4): 903-908.

Extension
Dr. Hurburgh is the professor-in-charge of the Iowa Grain Quality Initiative (GQI), a cutting-edge grain quality information (and research) program. Current issues of GQI include public and private development of biotechnology policies, standards, marketing incentives, and supply organizations. The GQI also is developing country grain elevator management practices, TQM management, and ISO certification for agriculture.

Research
Dr. Hurburgh is also the professor-in-charge of the Grain Quality Laboratory, which provides analyses of the chemical and physical properties of grain, primarily corn and soybeans. This lab is recognized as a world leader in basic measurement science. Dr. Hurburgh's research interests include the physical and chemical properties of biological materials, chemical and electronic instrumentation, near-infrared reflectance analysis and sensors, chemometrics, metrology, and statistics of very large databases.

Other Professional Interests
The Iowa Grain Quality Initiative and the Grain Quality Laboratory provide leadership for rapidly growing specialty grain markets. By pursuing ISO 9000 and other certification systems, U.S. food producers can achieve important competitive advantages. Additionally, precision sensing combined with rigorous quality control documentation can be used to restructure markets and to meet more individualized needs.