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Measuring multiple attributes of single grain kernels using NIRS. Floyd Dowell (1), Jim Psocka (2), Elizabeth Maghirang (1), Duane Walker (1), Donghai Wang (3), and Feng Xie (4). (1) USDA, ARS, Grain Marketing and Production Research Center, Manhattan, KS, 66502; (2) American Institute of Baking, Manhattan, KS 66502; (3) Department of Biological and Agricultural Engineering, Kansas State University, Manhattan, KS 66506; (4) Department of Grain Science and Industry, Kansas State University, Manhattan, KS 66506.

Near infrared spectra were collected from single kernels of wheat and used to detect multiple attributes that affect mill performance and end use quality. NIR spectra were correlated to attributes such as color class, protein, vitreousness, scab damage, vomitoxin, and internal insects. Some attributes were predicted from spectra collected manually from single kernels, whereas others were collected from automated equipment including the Perten SKCS 4170 that automatically collects spectra from single kernels. The accuracy and precision of predicting these various attributes will be reported. Preliminary investigations of adapting this technology to detecting single corn kernel attributes such as BGYF fluorescence, aflatoxin, fumonisin, fusarium, and transgenic corn will also be discussed.



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