

Title Detection of sprouted wheat kernels using soft X-ray image analysis
Author S. Neethirajan, D.S. Jayas and N.D.G. White
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Abstract

Sprouted wheat kernels adversely affect bread and pasta making quality, thus lowering the grade and value to millers, bakers and grain dealers. In this study, the potential of using soft X-ray system in detecting the sprouted wheat kernels was evaluated. Sprouted kernels were produced by germinating seeds. Both the sprouted and healthy samples were X-rayed using a soft X-ray system. White specks were observed in all the sprouted kernel X-ray images. Algorithms were written to extract 55 image features including gray level modeling and histogram from the scanned images. Identification of sprouted and healthy kernels was determined using statistical and neural network classifiers. A four-layer back propagation neural network model correctly classified 90% and 95% of the sprouted and healthy kernels, respectively. Statistical classifier correctly identified 87% and 92% of the sprouted and healthy kernels, respectively.