Abstract

The amount of material other than grain (MOG) is an important quality parameter in grain products. The amount of chaff and straw (MOG) in the harvested grain depends highly on the combine harvester settings. On-line knowledge of the grain cleanness could be used to adapt the settings of the threshing and cleaning section in order to keep the proportion of MOG below a desired set point. To allow on-line monitoring of this proportion of MOG, a multispectral vision sensor is developed which creates a virtual image with maximal contrast between kernels and MOG to allow classification of each individual pixel. By calculating the proportion of MOG pixels, a measure for the weight percentage MOG in the sample is then obtained. In this paper, the selection of a combination of a few wavebands which contain sufficient information for adequate discrimination between kernels and MOG is described. For this purpose, hyperspectral measurements of pure kernels and chaff and straw from different varieties of wheat have been acquired to construct a training set where the pixels in the acquired images serve as the samples and the intensities at the different wavelengths as the variables. Using this training set, the best combination of five wavebands in the range from 400 to 900 nm with respect to the classification of individual pixels in an image as either kernel or MOG has been selected by means of genetic algorithms. This combination of selected wavebands will then be used to build a multispectral vision sensor.