Abstract

Varietal purity is one of the important factors in grain grading. In the laboratory, wheat classes and varieties are determined by trained professionals. For online classification of wheat classes and varieties, several approaches have been made with image processing technology, but the classification efficiency was poor and inconsistent. The capability of thermal imaging system for the identification of wheat classes was investigated. In this study, eight classes of western Canadian wheat were subjected to heating and cooling treatments. During treatment, the sample was heated or cooled one kernel at a time and then surface temperatures were imaged with the thermal camera. In both treatments, the temperature profiles were dissimilar for all classes. The rate of heating and cooling of the germ end was slower than that of other parts of the kernel for all classes. The average temperature of the kernel was in the range of 37.1 (CPSW) to 45.6 °C (CWRS) during heating and 18.9 (CWRW) to 22.3 °C (CWAD) during cooling treatments. The temperature difference between kernel average and germ average was 1.7 to 4.1°C in heating and 0.8 to 1.6 °C in cooling treatments. The performance of this system must be studied for bulk grain to evaluate the suitability for online application in grain handling facilities.