Non-destructive determination of fat content in green hams using ultrasound and X-rays

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Abstract

This work addresses the use of ultrasound (US) and medical dual energy X-ray absorptiometry methods to predict the fat content in green pork hams. Ultrasonic velocity (υ) and X-ray absorption were measured in 78 green hams. An increase in the fat content involved an increase in υ and a decrease in the X-ray attenuation measured at 2 °C. Models developed to predict the fat content from the ultrasonic velocity or X-ray parameters provided errors of 2.97% and 4.65%, respectively. The combination of both US and X-ray technologies did not improve prediction accuracy. These models allowed green hams to be classified into three levels of fatness, with 88.5% and 65.4% of the hams correctly classified when using models based on ultrasonic and X-ray parameters, respectively. Therefore, US and X-rays emerge as useful quality control technologies with which to estimate the fat content in green pork hams.