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Abstract Swine IMF Model for Exago Ultrasound Scanner 2016

Biotronics, Inc. contracted with The Maschhoffs, a USA swine genetics company, to receive Exago-captured longitudinal ultrasound images on test animals destined for harvest and carcass analysis. All animals scanned were Duroc-sired commercial pigs out of York-Landrace dams. The scanning segment of the project was initiated 9/15/2015, and the last group of pigs was scanned on 10/27/2015. Chemical IMF, marbling score, and color scores were received April 8, 2016, on 1,227 carcasses. Chemical IMF was extracted from the samples using a chloroform methanol procedure. Scan date and RFID ID were included in the data. Data were allocated to two groups: a validation data set with relatively even distribution across IMF levels of 0.74 to 6.51% (164 observations) and a model development set (971 observations) where chemical IMF ranged from 0.43 to 7.22%. All images were scored for texture acceptability. Images with unacceptable texture issues were not included in either data set. Stepwise regression procedures were used on the development data set to determine candidate texture parameters ($P=0.01$). The full regression analysis included scan date as a fixed effect. Frequency weighting was also used by class level of the chemical IMF. The “best” prediction model used eight (8) texture parameters and resulted in a model R^2 of 0.54 ($r=0.73$) and RMSE of $\pm 0.85\%$ when applied to the independent “validation” data set. A distribution plot of actual chemical IMF and predicted IMF is shown in Figure 1 for the validation data set. **Note:** Ultrasound IMF prediction models are specific to ultrasound equipment type, console settings and location of the probe on the animal.

Figure 1.

