Comparison of two methods for longissimus muscle area measurements

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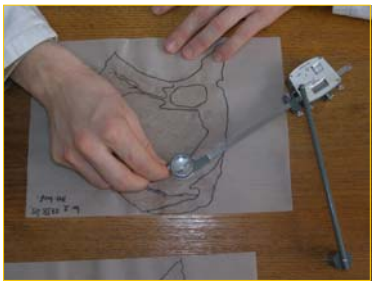
Introduction:

Longissimus muscle area (LMA):

positive correlation with
- carcass weight
- carcass dressing-out proportion
- carcass muscle tissue share

negative correlation with
- carcass fat tissue share



Standard method of LMA measurement is planimetry by polar planimeter after the tracing the muscle borders on acetate paper by hand.

Objective: to determine the variance of LMA measurements associated with the standard use of polar planimeter and Image tool® software program.

Materials and Methods:

Measurements were conducted on six dorsal samples taken between 7th and 9th rib of the right halfs of beef carcasses. LMA was traced on acetate paper and measured using a planimeter (REISS Precision 3005, Germany). The images of longissimus muscles for computer analysis were obtained by scanning (UMAX PowerLook II) dorsal samples in ratio 1:1. LMA size was determined with Image tool® software. Triplicate measurements of LMA were performed by six measurers for each sample and method. Variance components for LMA measurement method associated with measurer, sample and measurement replicates (error) were estimated by REML.

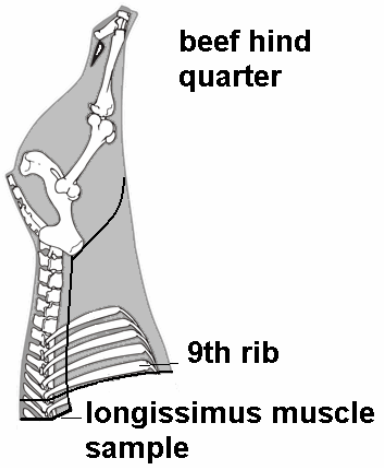


Image tool® software

Conclusions:

- **it is possible to use Image tool ® software for LMA measurement**
- **application of Image tool® showed greater precision in measuring LMA than standard planimeter method**
- **for practical application the usage of digital camera is require**

Results:

Variance components of Longissimus muscle area (cm²) measurements for planimetry and ¨Image tool¨ software

Method	n	Variance due to:			Percentage (%) of total variance due to:		
		Measurer	Sample	Error	Measurer	Sample	Error
Planimeter p1	108	0.3619	102.72	3.3711	0.34	96.49	3.17
Planimeter s2	108	0.8914	131.32	3.3330	0.66	96.88	2.46
¨Image tool¨	108	0.1773	144.66	0.1275	0.12	99.79	0.09

[1] acetate paper; [2] scan