Abstract no.: 6791

Session 08

The use of EUROP classification traits and X-ray computed tomography (CT) measurements of rib samples from six cattle breeds to predict slaughter value

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Background

- Accurate assessments and prediction of carcass tissue and value are of great importance for suppliers of meat to consumers.
- The S/EUROP system is currently in use for cattle carcass classification in Europe.
- A number of different technologies for measuring the composition of carcass are available.
- X-ray computer tomography (CT) provides good carcass composition measurements in medium sized animals.
- CT scanning of rib cuts may deliver accurate information on beef carcass composition.

Aim

The EUROP classification scores and the tissue composition of rib samples determined by CT-scanning were used to investigate the best method for prediction of carcass composition of young fattening bulls from different genotypes.

Materials and Methods

Fattening

Young BULLS
Angus (A), Charolais (CH), Holstein (H), Hungarian Simmental (HS), Hungarian Grey (HG) crossbred Hungarian Grey (CHxHG)

Slaughter

600 kg LW, under commercial slaughterhause

EUROP grading

with a scale ranging from 1 (very poor conformation) to 18 (very good conformation); fatness score was measured with a 15-point scale

Dressing

24 h postmortem right half carcasses weighed and dissected into muscle, fat and bone, tendons

CT scanning

11–13th rib cuts scanned (SIEMENS EMOTION 6), muscle, bone fat tissue determinated

Results–descriptive statistics

	Minimum	Maximum	Mean	Std. Deviation
EUROP $_{meat}$	3	12	7.77	2.00
EUROP $_{fat}$	5	11	6.73	1.13
Lean%	63.27	78.95	71.35	3.07
Bone %	15.30	23.16	18,53	1.75
Fat %	1.71	15.03	7.16	3.03
Muscle%	54.44	78.97	68.38	4.81
Bone %	8.20	16.68	12.18	2.05
Fat%	4.22	21.48	10,81	4.08

Results Coefficients of determination (R^2) by regression analysis and standard errors of estimate (SEE)

Dep. variable	Predictors	R^2 (P-value)	SEE
Meat, kg	$CT_{\text{fat area}} + CT_{\text{muscle area}} + CCW$	0.94(***)	2.73
Meat, %	$CT_{\text{muscle \%}}$	0.72(***)	1.63
Bone, kg	$CT_{\text{bone pixelsum}} + CCW$	0.72(***)	4.34
Bone, %	$CT_{\text{bone \%}}$	0.51(***)	1.22
Fat, kg	$CT_{\text{fat area}}$	0.84(***)	2.10
Fat, %	$CT_{\text{fat \%}}$	0.85(***)	1.17

Results Relation between real carcass composition and EUROP categories

Carcass	EUROP-muscle score	EUROP-fat score	CT muscle %	CT fat %
Fat, %		0.69		0.92
Meat, %	0.34		0.85	

Variable	R^2	SEE	Parameters in equation
Meat %	0.09	2.94	EUROP-muscle score
	0.72	1.63	Ctmuscle%
	0.75	1.57	Ctmuscle%+EUROP-muscle score

Conclusion

- Findings confirmed that the prediction of carcass composition can be achieved more objectively with the CT data inclusion into EUROP carcass classification system.