23

Relation among carcass composition, EUROP grading and X-ray computer tomography (CT) data

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Objectives

- to survey the validity of the EUROP-carcass classification system in relation to findings gained through carcass dissection and CT analysis of 11-13th ribs of cattle fed with different feeding regimes.

Introduction

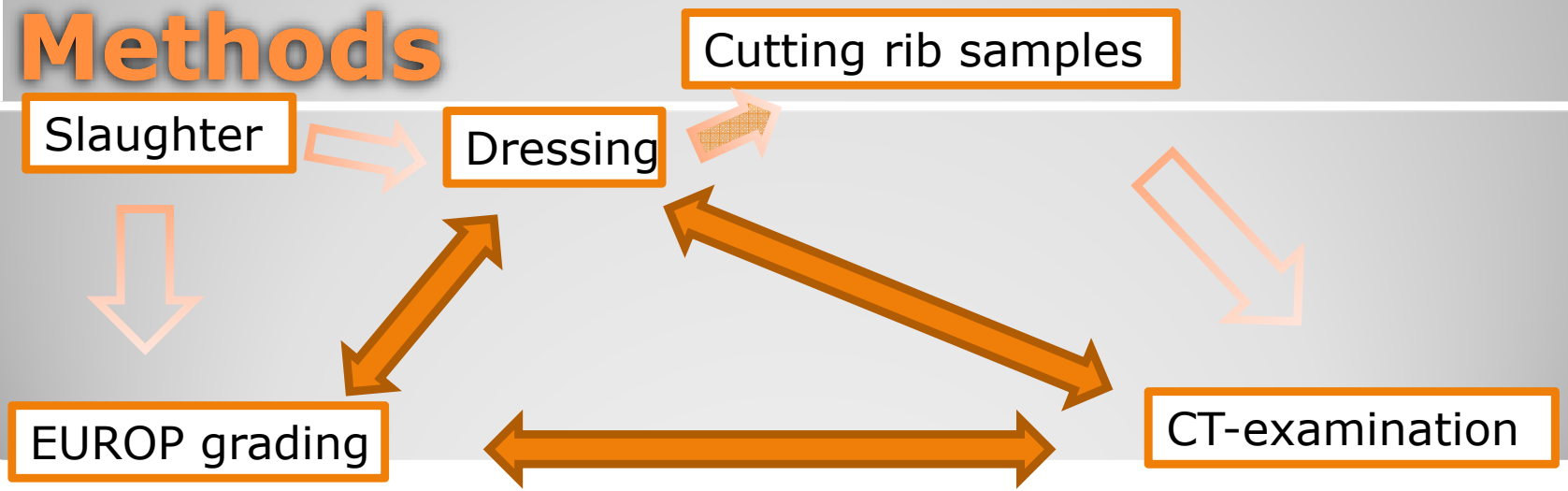
- Cross sectional imaging techniques such as X-ray computer tomography (CT) are suitable to predict body composition of pigs, sheep, poultry with high level of accuracy.

- Due to the size of adult cattle, only calves of the live weight up to 80-100 kg can be analysed. Previous experiments indicate that the tissue composition of intact carcasses can be estimated by CT-determined tissue composition of rib samples.

Materials

group	breed	n	diet
I.	Holstein-Friesian (HF)	10	INTENSIVE Maize silage,hay, 6 kg concentrate (mean slaughter weight:555 kg)
II.	Hungarian Grey (MSZ)	10	
III.	Holstein-Friesian (HF)	10	EXTENSIVE Grass silage,grass, 2 kg concentrate (in the last month linseed supplementation) (mean slaughter weight: 470 kg)
IV.	Hungarian Grey (MSZ)	10	

Methods



Results

Relation between real carcass composition and EUROP categories

	Distribution of carcasses across muscularity categories							
	R	Muscle, %	O	Muscle, %	P	Muscle, %	All	Muscle, %
	n		n		n		N	
Overall	7	70.53±2.6[b]	19	67.76±2.4[a]	14	67.11±2.6[a]	**40**	68.01±2.7

In lean meat content of carcasses more than 5 % difference was found within muscularity class P, whilst in class O the lean meat content in both breed equalled

Distribution carcasses across fatness categories

Diet	Breed	2	Fat, %	3	Fat, %	2+3	Fat, %
		n		n		n	
e	HG	8	4.65±0.9	2	5.50±1.6	10	4.82±1.0
i	HG	9	10.42±1.8	1	12.18±0	10	10.60±1.8
e	HH	1	3.67±0	9	4.29±0.9	10	4.23±0.9
i	HH	3	9.72±0.8	7	8.94±2.0	10	9,18±1,8
Overall		21	7.80±3.2	19	6.55±2.9	40	7.21±3.1

Significant differences were established in fat classes of HG, saying that the Holsteins were fatter. HG carcasses contained higher amount of fat based on the dressing data.

Results

Relation (r) between CT data and composition of real carcass as well as rib samples

Dependent variables		CT-estimations		
		muscle	fat	bone
Half carcass dissected	muscle, kg	0.88***		
	fat, kg		0.93***	
	bone, kg			0.81***
Rib sample dissected	meat g	0.97***		
	fat, g		0.82***	
	bone, g			0.96***

Conclusions

Certainly, the CT analysis can hardly applied in commercial breeding practice due to the relatively high costs associated with CT and technological problems.

Application areas of CT analysis of rib cuts can be on the one hand in progeny testing of different breeds for upgrading of meat yield, on the other hand the carcass value qualification can be achieved more objectively with the incorporation of CT data into the EUROP carcass grading system in the future.