

SYSTEMATIC CLASSIFICATION OF CARCASSES

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INTRODUCTION

There are several criterions to determine the monetary value of a pig carcass, that is essential for the setting of the price.

Traditionally some of these characteristics are assessed subjectively. In many countries the evaluation/classification is layed down by law by given features to be evaluated with the intention to make the meat market transparent and the trade more easy.

To reach this aim the regulations must be kept as standardized and comprehensible as possible. This cannot be guaranteed in general by subjective classification. To classify pig carcasses objective methods, such as classification instruments, have been prooved internationally in recent years. Their success encouraged people to support developements in the field of classification of cattle, in order to increase objectivity and market lucidity.

At the same time, the introduction of instrumental classification created new possibilities, to register a variety of data of each individual animal by computer. In this way, recording and administrative tasks can be done efficiently. The large amount of data means optimal conditions for management tasks (f.ex. calculations), that have not been existent in that way up to now. In order to evaluate exactly the essential characteristics,

special instruments have been developped. The value of the features is assessed in the slaughter line where it is most apt to be registered. The data is controled by computer.

SYSTEMATIC CLASSIFICATION

Systematic classification means:

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- To employ new techniques, sticking to biological facts
- *
- To employ new techniques suited to the market
- *
- To employ new techniques suited to business management

that is:

- *
- Precise registration of relevant characteristics in order to evaluate the carcass comprehensively
- *
- To work as economic as possible in spite of "highest technology"
- *
- Variable techniques (use of given buildings and devices)
- *
- Fit for international use

UNIT CONSTRUCTION SYSTEM

It is important, that the classification systems can be integrated in nearly every existent slaughter line.

Unit construction system means:

- 1) existent units, f.ex. evaluation instruments for the lean meat content or measuring devices for meat quality can be taken over.

2) start with one unit, f.ex. a probe instrument PG 200 for the classification of lean meat percentage, and continue step by step up to the fully automatic classification.

SYSTEMATIC CLASSIFICATION - PG 500/1000 FOR PORC

Twenty years experience leaded to the development of the PG 500/1000. To come to a quick classification result is not our main objective when classifying porc, but rather to classify in conformity to the market. The SKG II leaded the way for the future classification. The trend has been continued.

In general, there are two sorts of classification of pig carcasses from now on:

PG 500: semi-automatic version. The lean meat percentage will be determined by a probe, operated traditionally by men.

PG 1000: fully automatic version. The lean meat percentage will be determined by a probe, controlled by the computer.

THEORETICAL BASIS

Following order of the different features of value can be established concerning the evaluation of pig carcasses:

1. weight of carcass
2. lean meat percentage
3. conformation
4. meat quality
5. comfortable operation/ level of manual operation

PG 500/1000 standard

The standard version registers the following features:

- * weight of carcass
- * lean meat percentage
- * conformation

The recording of data, data processing and the coordination and control of the procedure is executed by the purpose made computer IR 10.

Additional to the semi-automatic and fully automatic registration of the inner measurements, there are the following options:

- * veterinary input
- * capture of the live weight
- * expanded evaluation of conformation
- * meat quality
- * remote indicator for interim and final results

RESULTS

The classification instruments of TEPCRO offer options that enable the user to register and print-out weight and inner measurements appropriately for verification.

All results will be printed out as a classification record by the IR 10. At the same time a data set will be started, that makes possible to work on the data by means of another computer. Concerning the software for sorting, controlling and reckoning up, time won't be enough today.

Lean meat percentage

Registered according to the regulations of the national

government.

Conformation

As type number or type class. Type assessment can be adapted to national regulations by a new system, called "associative store".

Percentage of precious parts

Correlates highly with lean meat percentage and type. The percentage of precious parts is a criterion for the calculation of dissection. Adaptations to the national regulations of dissection or custom-made alterations are possible. Example: the Federal Republic of Germany layed down the DLG-dissection. A slaughter house in Linz/Austria ordered a custom-made solution.

Stomach evaluation

The quality of stomach has great influence on the carcass value. Only the stomach shows such a great price margin between working quality and barbecue quality/fresh meat quality. Basis of the assesment is the lean meat percentage in the stomach.

Meat quality

Besides the feature of quantity, meat quality receives more and more attention. Three sorts of methods are apt to register meat quality in the slaughter line:

- * reflexion value
- * (electrical) conductivity
- * pH-value

By the way, meaningful values of quality can be assessed 35 minutes after slaughtering at the earliest. These values help to pre-sort the material.

Price group

Normally, two or more classification results are relevant for the trade value, f.ex. lean meat percentage, type and weight. Mostly, market-able characteristics are combined to (price)classes. These price groups are determined by the computer and serve as calculation basis.

SYSTEMATIC CLASSIFICATION - RKG FOR CATTLE

Systematic classification means, that it is aplicable for cattle in a similar way. But different stress is layed on the different characteristics of value.

The standard version takes the following features into account:

- * weight
- * lean meat percentage
- * conformation

The advantages concerning the comfort, mentionned with the PG 1000, are applicable, too, as well as another scale to weigh the skin. Skin weight makes out the "fifth quarter" of the total weight. The meaning of registered meat quality of cattle in the slaughter line must be looked into in the future.

Results

The standard measures will be recorded and printed in a format appropriate for verification. A sort of a new scale, integrated in the IR 10, registers all relevant measures centrally.

Lean meat percentage

There is the possibility to determine the lean meat percentage by means of a probe. TECPRO works on a

method basing exclusively on weight measurements.

Basis is the following theory:

A carcass consists of three components:
lean meat, fat and tendons, bones

The percentage of bones can be estimated by considering weight of the forefoot. The percentage of fat can be estimated by considering the renals. The leaving part corresponds to the percentage of lean meat.

Important ist that ...

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the registration of the characteristics does not diminish the value of the carcass.

*

breeding is not orientated to the selection of the above-mentioned features (as it is the case with the back fat of pigs).

Conformation

As type or type class, f.ex. EUROP. Type assessment can be adapted to the national regulations by the "associative store".

Percentage of precious parts

The evaluation of the precious parts receives more and more attention. The intramuscular fat (marble) can not be cut off when dissecting cattle as it is possible with pig carcasses. Research has proved that the calculation of precious parts, when highly correlating with lean meat percentage, show a close relationship to the market value of the carcass.

Meat quality

The long-lasting ripening of beef does not permit a definite, early judgement about meat quality in the slaughter line. There are tests concerning the aptitude of different features, as pH-value and meat colour.

Price group

The individual classification results are combined in a market-orientated assessment scheme.

Why did TECPRO choose that way of proceeding?

The first plants will be soon taken into action in Germany, Austria and the USA. The following items gained acceptance:

*

Modern but robust and simple technique

*

Adequate costs in relation to efficiency

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Objectivity by the possibility of fully automatic classification

*

The "unit construction system" shows a clear line. It can be employed depending on one's interests and possibilities. A "common denominator" can be established. That means a chance for the EC market from the year 1993 on to create a common basis, that takes the traditions of the individual countries into account.

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coordination and control

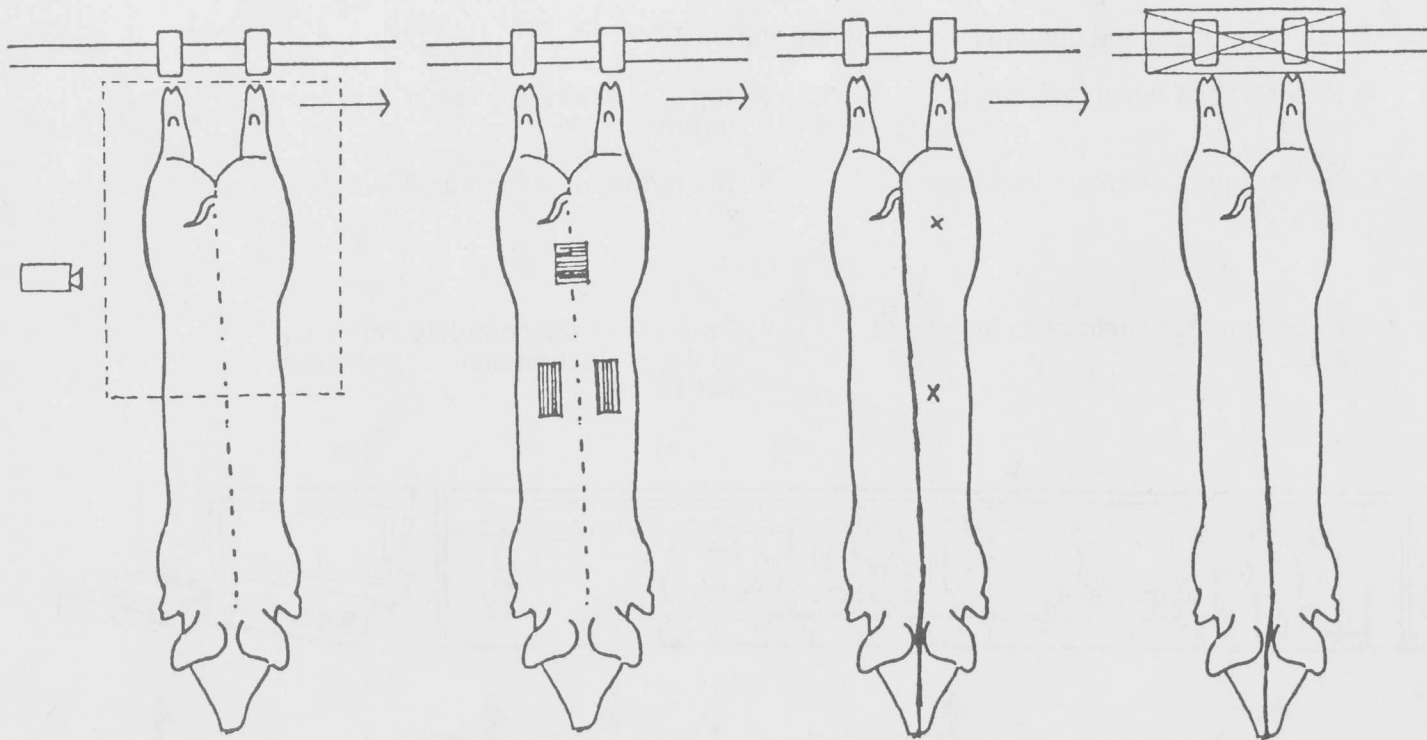


1
measuring of contours

2
capture of inside measurem.

3
meat quality

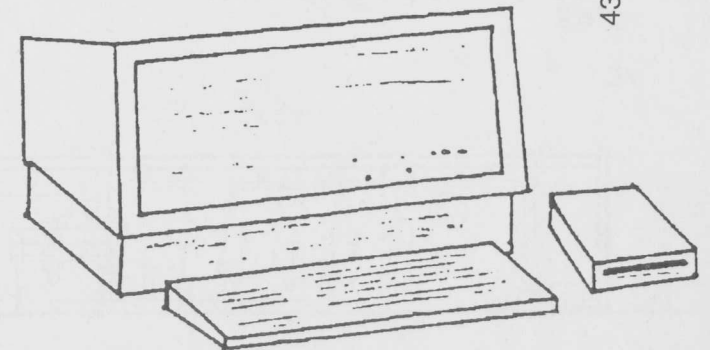
4
weight



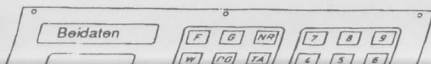
"PG 500"
"PG 1000"

5

industrial PC IR10



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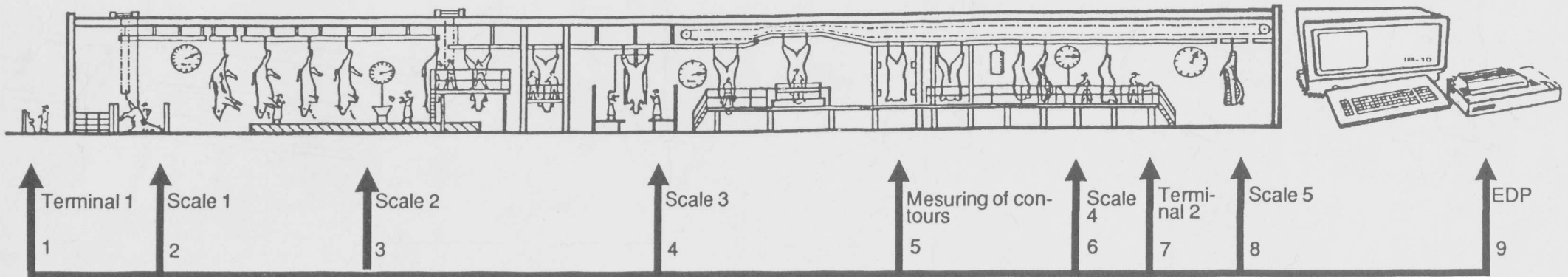


Data Capture

Objective Beef Classification with the Tecpro - RKG

The classification of beef carcasses is done parallel to the slaughtering street and contains the following stations:

- 1) Input of additional information, categorie and breed at the time of delivery at terminal 1
- 2) Weighing of the animals behind the elevator before the debleeding at scale 1 for determination of the individual live weight
- 3) Recording of weight of forefoot at scale 2
- 4) Recording of weight of skin at scale 3
- 5) Measuring of contours by image processing
- 6) Recording of weight of kidney fat at scale 4
- 7) Input of veterinary remarks at terminal 2
- 8) Recording of slaughtered weight
- 9) Transfer of the complete data record to the evaluation and control terminal IR 10



All weight and measuring results are taken down:

* R K G Objektive Schlachtkörper Klassifizierung - Rinder R K G *

K l a s s i f i z i e r u n g s p r o t o k o l l

Schlachthof: Augsburg Seite: 8

Klassifizierer: 0225 Datum: 07-06-88

Lfd.Nr	Ag	Ohrm.	Kategorie	Lebendgewicht	V-Fuß-Gew.	Fleischigkeit	Korrektur	wertv.Teile
	Kom	Rasse	EUROP	Warm Gewicht	N-Fett-Gew.	absolut	Gewicht	
			Fettklasse	Ausbeute		Gesamt	Fett	Gesamt
00103	01	00000	JB	629,4 kg	7,0 kg			
	073	Flv	R	366,7 kg	9,2 kg	75,2 %	0	
			3	58,3 %		99,0 %	0	99,0 %
00104	01	00000	JB	614,0 kg	6,8 kg			
	073	Flv	R	352,2 kg	10,2 kg	74,8 %	0	
			4	57,4 %		99,5 %	1	99,4 %
00105	01	54035	K	603,6 kg	6,4 kg			
	046	Flv	R	310,2 kg	9,4 kg	74,3 %	1	
			4	51,4 %		99,7 %	1	99,6 %
00106	01	00000	K	545,8 kg	5,6 kg			
	046	Sbt	O	268,8 kg	6,6 kg	74,5 %	0	
			3	49,2 %		98,0 %	0	97,9 %
00107	01	00000	K	523,4 kg	5,2 kg			
	046	Sbt	O	245,8 kg	5,4 kg	74,5 %	0	
			3	47,0 %		98,0 %	0	97,8 %

The additional computer IR10 calculates the classification results which are then printed:

* R K G Objektive Schlachtkörper Klassifizierung - Rinder R K G *

W i e g e p r o t o k o l l

Schlachthof: Augsburg Seite: 8

Klassifizierer: 0225 Datum: 07-06-88

Lfd.Nr	Ag	Ohrm.	Kategorie	Lebendgewicht	V-Fuß	Gewicht	M-Fett	Gew.	Warm Gewicht	Schl-Max	Schl-Min	Winkel	Abst.1	Umfang 1	Fläche 1
	Kom	Rasse								Schu-Max	Schu-Min	S-Länge	Abst.2	Umfang 2	Fläche 2
00305	10	23411	JB												
	100	Flv		W4<700,5kg>B	W1<005,6kg>B	W2<012,5kg>B	W3<398,2kg>B								
							W3 394,2kg N								
00306	10	03412	JB												
	100	Flv		W4<620,3kg>B	W1<005,5kg>B	W2<008,7kg>B	W3<370,3kg>B								
							W3 366,3kg N								
00307	10	67891	JB												
	100	Flv		W4<645,9kg>B	W1<005,4kg>B	W2<010,6kg>B	W3<375,7kg>B								
							W3 371,7kg N								
00308	10	93176	JB												
	100	Flv		W4<611,7kg>B	W1<005,0kg>B	W2<011,2kg>B	W3<354,7kg>B								
							W3 350,7kg N								