

Classification Systems in the European Community

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The value of a carcass is determined mainly by carcass weight, composition and palatability. Classification and grading systems try to distinguish between carcasses on a quality basis and in their ability for use in further processing. Payment to producers can then be based on the various qualities, providing an incentive for further improvement in animal production.

Standardization of classification systems and clear definitions should be agreed upon to guarantee legitimate comparison of results within and between countries and to obtain confidence of the partners in the market.

Classification Systems

In the European Community (EC), the systems for the various species differ. In cattle, visual scores are still used to officially classify the carcasses, while in pigs, classification is performed by means of instruments, mainly optical probes.

Cattle

Previously existing EAAP (European Association for Animal Production) scales described carcasses in terms of fatness and fleshiness (De Boer et al., 1974) in relation to carcass and skeleton dimensions. Because different systems were already established in the various EC countries, it was difficult to construct a common EC classification system. Nevertheless, a compromise was found in which the EAAP scales had a major contribution (Kempster et al., 1984; Kousgaard, 1984). The EC project started in 1979 and the system was described in EC Regulations (Office for Official Publications of the EC, 1981).

Actually there is a difference in definition between fleshiness and conformation, because the latter also includes the subcutaneous fat. But as outlined by Kempster et al. (1984), countries are concerned with carcasses at low levels of subcutaneous fat and the difference is considered as immaterial.

The EC classification system is a descriptive system of visual assessment of conformation and fatness, supported

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by photographic standards. The system describes five classes for conformation: E, U, R, O and P from excellent to poor respectively, and five classes for fatness: 1, 2, 3, 4 and 5 from low to very high respectively. Further elaborated for both extremes:

- Conformation E is described as: all profiles convex to superconvex; exceptional muscle development; round: very rounded; back: wide and very thick, up to the shoulder; shoulder: very rounded; topside spreads markedly over the symphysis pelvis; rump very rounded.
- Conformation P is described as: all profiles concave to very concave; poor muscle development; round: poorly developed; back: narrow with bones visible; shoulder: flat with bones visible.
- Fatness 1 is described as: none up to low fat cover; no fat within the thoracic cavity.
- Fatness 5 is described as: entire carcass covered with fat; heavy fat deposits in the thoracic cavity; the round is almost completely covered with fat, so that the seams of fat are no longer visible; within the thoracic cavity, the muscle between the ribs is infiltrated with fat.

It is allowed to subdivide each main class for conformation as well as for fatness into three subclasses: -, 0 and +. In fact, a number of countries practice this.

The uniform system allows creation of data (combined for conformation and fatness) for a whole country, as in Table 1. It can also be seen in this table that a difference in sex shows up. This difference is more marked than before because, as a consequence of the milk quota system, part of the cows are used for beef production and are inseminated with semen from pure beef breeds like Piemontese, Blonde d' Aquitaine and Limousin. The classified cows are worse because they are mainly Holstein Frisians. The figures for the young bulls for 1990 have improved.

Up till now, the system has been voluntary. Beginning January 1, 1992, the system will be compulsory in all EC-approved slaughter-houses, except in those where the average number of slaughterings is lower than 75 per week. Furthermore, the classification results will then have to be stamped on the carcass; slaughter-houses may be exempted in cases where all carcasses are boned. Countries may choose labels instead of stamping, but then there are a number of conditions. Also a class S (super) may be added to the EUROP system to meet the quality of extreme and double-muscle animals. The Commission has decided also that classification will be performed by an independent body, which is the case now in only a few countries.

Table 1. Classification in the EC System for Young Bulls and Cows in The Netherlands for 1989 (%).

	Young Bulls (46% of Total Classified)						Cows (52% of Total Classified)					
	1	2	3	4	5	Total	1	2	3	4	5	Total
E	—	1	1	—	—	2	E	—	—	—	—	—
U	1	14	11	—	—	26	U	—	—	1	—	1
R	1	19	36	2	—	58	R	—	1	9	10	22
O	—	4	9	1	—	14	O	1	5	31	29	68
P	—	—	—	—	—	—	P	3	2	3	1	9
Total	2	38	57	3	—		Total	4	8	44	40	4

Source: PVV (Commodity Board for Livestock and Meat).

Veal Calves

There is no official EC system for classification of veal; only national systems are operating on a voluntary basis. Like in France and The Netherlands, they are derived from the EUROP system for cattle. In the latter country, a 5-point scale color standard was officially introduced and added to the scoring for conformation and fatness by January 1, 1990.

Sheep

There is no official EC system for classification of lamb either. Discussions are going on to introduce a EUROP system as well, but agreement is more difficult than with cattle. The northern countries deliver heavier carcasses with more variation than the southern ones, where very light carcasses are on the market. They would probably all classify as P, with no variation. The trade is applying other values to these carcasses, such as the weight desired and other characteristics.

Pigs

Classification of pigs in the EC is, in contrast to cattle, performed by means of instruments, mainly by the so-called second generation of automated grading probes. The probes operate by measuring backfat and muscle depth at one or more sites 6, 7 or 8 cm off the midline of the split carcasses. They estimate the lean meat percentage by 1% to 1.5% higher in accuracy (expressed as RSD) than a combination of visual assessment of median backfat class and conformation class (De Boer et al., 1979; Scheper et al., 1983), as was performed before.

Complaints about different interpretations of the descriptive standards for visual assessment in various countries was one of the reasons for the classification by instruments. An example of this is given in Table 2. It can be seen that the scores differ considerably when parallel classifications on the same animals were carried out by classifying staff from different countries. The carcasses may have been overestimated in The Netherlands or underestimated in Germany and France.

EC Regulations No. 3220/84 and No. 2967/85 require that classification of pigs has to be based on objective measurements that enable estimation of the lean meat percentage. This is calculated after dissections of the left carcass sides according to the EC reference method, which means com-

plete separation of the muscles, including those of the head, as far as possible by knife. The estimate has to be based on dissection of at least 120 carcasses (with definition of a carcass) that should be a representative sample of the pig population for a given country or region of a country.

Grading probes have to be approved by the EC Commission. Certain conditions have to be fulfilled: the residual standard deviation (RSD) and the coefficient of determination (R^2) for the estimate should be lower than 2.50% and be higher than 0.64 respectively.

The classification scheme is as follows:

Lean meat %	Class
≥55	E
50-54	U
45-49	R
40-44	O
<40	P

If required by a country, class S (≥60%) may be used as well. The system was compulsory from January 1, 1989.

In The Netherlands, the slaughter-houses wanted carcasses to be scored for conformation additionally, but because of the EC Regulations it may not be incorporated in the probe estimation formula. Four conformation scores (types) are used: AA, A, B and C going from very good to poor. The use of type scores is also the reason that only a single site probing is performed in The Netherlands, because the same classifier has to probe and to score.

The use of probes in various European countries was described by Walstra (1988). In the meantime, probes have been approved, except for Portugal, in all EC countries. Some EC countries asked for and obtained approval for only

Table 2. Different Judgements for Visual Scores in the Former EC Pig Classification Scheme (%). (Huiskes et al., 1983).

Class	NL	D	NL	F
	n = 651		n = 176	
EAA	3.8	0.5	8.0	3.4
1A	57.5	30.6	64.8	36.4
1B	18.0	53.6	22.7	43.2
2A	8.1	6.8	0.6	3.4
2B	7.5	6.8	2.8	11.4

one probe; however, most of them have approval for more than one probe (2 to 5 probes).

Research is now being carried out in all EC countries concerning further harmonization of methods for the grading of pigs. The main objectives are:

- Try to find a more simplified reference method for dissection (because the present one takes 9 man-hours).
- Try to find a quick monitoring method for dissection.
- A possible lining up of equations in case biases in lean meat estimations between member states would be found.
- Harmonization as far as possible of measuring points for backfat and muscle depth.

At least 120 carcasses are dissected in every member state, representing 40% of the fattest, 40% of the leanest and 20% of the average lean content of the pig population in a given country. In any case, backfat and muscle depths must be measured at the head of the last rib and at 3rd/4th from last rib position.

Payment Systems

The classification systems for cattle and pigs are very uniform in the EC countries. In contrast, the payment systems are very different. They not only differ between countries, but also within countries. The larger slaughter-houses within countries may use different systems.

Cattle

Payment systems may be very detailed. As an example, price differences for young bulls are shown in Table 3, without going into the subclasses. These prices were calculated by PVV (Commodity Board for Livestock and Meat) as an average from various participating slaughter-houses and refer to the classification results from Table 1. These price differences need not be stable; they may change according to market conditions. From Table 3, it can also be seen that a certain degree of fatness is preferred to a too-lean carcass. For cows, the base price is at the class O3.

For a given slaughter-house in the UK, the base was at R3+U⁻4⁻ (Cook, pers. comm.) Other slaughter-houses include in the base price also E, U⁺ and U⁻ but then all for fatness 4⁺. Besides that, base prices may differ according to sex and weight classes.

In Denmark (Pedersen, pers. comm.) they do not have subtractions, but there the producers get only premiums and thus the lowest price is for the worst classification in a given

Table 3. Example of a Payment System from The Netherlands for Young Bulls; Differences in Cents/kg Cold Carcass Weight.

	1	2	3	4	5
E	—	+85	+100	—	—
U	+25	+45	+40	—	—
R	-40	+5	base	-35	—
O	—	-60	-55	-80	—
P	—	—	—	—	—

Source: PVV.

category (young bulls older and less than 2 years, steers, cows, heifers).

In any case, countries have to send the price quotations for the most important classes and categories to the EC.

Pigs

Producers may be paid according to the lean meat percentage in pigs. In The Netherlands, all slaughter-houses use the same payment system, with a base price set at 52% lean meat. The base price may differ between slaughter-houses. The system is that for every 1% increase in lean meat, a premium of 4 cents (Dfl.)/kg up to 57% and of 3 cents from 58% to 65% is paid (no more premium above 65%); for every 1% less than 52%, there is a subtraction of 5 cents down to 47% and below that a subtraction of 4 cents unto 40% lean meat (below the latter, no subtraction is made). Besides that, producers are paid according to type; they get 10 cents more for an AA and 5 cents less for type B or C. Because more than 70% of the carcasses are in class A, the major payment is based on the lean meat percentage. Furthermore, pigs should be in a desired weight range: 73 to 93 kg carcass weight. Below and above these weights, there is a gradual increasing subtraction.

In the UK (Cook, pers. comm.), the price system is simpler with four grades based on the P2-backfat thickness, which is 6 cm off the midline at the last rib. The base is the average price; for grade 1, there is a premium of 4p and there are subtractions for grade 2, 3 and 4 of 2p, 9p and 20p, respectively. For bacon pigs, the desired weight is between 54.7 kg and 76.7 kg carcass weight. Pigs falling outside this range are graded down.

Within Germany (Sack, pers. comm.), the payment system is more or less like that in The Netherlands, but it is not uniform: the base price differs between regions and the premiums and subtractions differ between regions. This also applies for subtractions when the pigs are outside the desired carcass weight.

In Denmark (Pedersen, pers. comm.), the system is more like that in The Netherlands. It also has a basic price at a given lean meat percentage, i.e. 56%, and has a premium for every 1% increase in lean and a subtraction for every 1% decrease in lean, while also the premium is less than the subtraction. There is an increasing subtraction for 3 weight classes higher than the desired weight class of 60 kg to 75.9 kg.

Control System

Especially in cases of visual systems, a control system has to be set up to follow the descriptive standards as closely as possible. An independent body, as in The Netherlands and the UK, should perform the classification. In the former country, a special team of experts is formed to execute the controls by parallel judgments of the classifying staff. If the results are not good enough, it can be decided that a given person has to be re-educated or even loses the certificate to classify.

In the new EC regulations for the classification of cattle, the procedures for an independent body will be met and will be compulsory for all member countries.

However, not only the visual classification has to be controlled. Also the probing in pigs can lead to large devi-

ations with improper use (Mateman and Walstra, 1990), i.e. probing at a wrong site or probing obliquely. Execution of

classification in pigs by probes therefore should be included in a control system, as is done already in a few countries.

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