MODULE 4 PART B : STUDENT FACTSHET - BEEF MARKETING

INTRODUCTION

Since Britain became a member of the Common Market and then the European Union, the number of cattle slaughtered in the beef industry has decreased steadily (Figure 1). This has happened partly because of the challenge from 'white' meat such as poultry, has caused a shrinkage in the beef market, but also because there has been an increase in animal body size (See Box 1).

Imagine that you need to undertake a beef contract of 120,000 kg and you have a choice of using animals that weigh (i) 300kg or (ii) 400kg.

(i) If an animal weighs 300 kg, you would require 120,000/300 = 400 animals;

(ii) If an animal weighs 400 kg, you would require 120,000/400 = 300 animals;

As an animal's weight increases, the number of animals required to undertake a specific contract decreases.

BOX 1 NUMBER OF ANIMALS REQUIRED

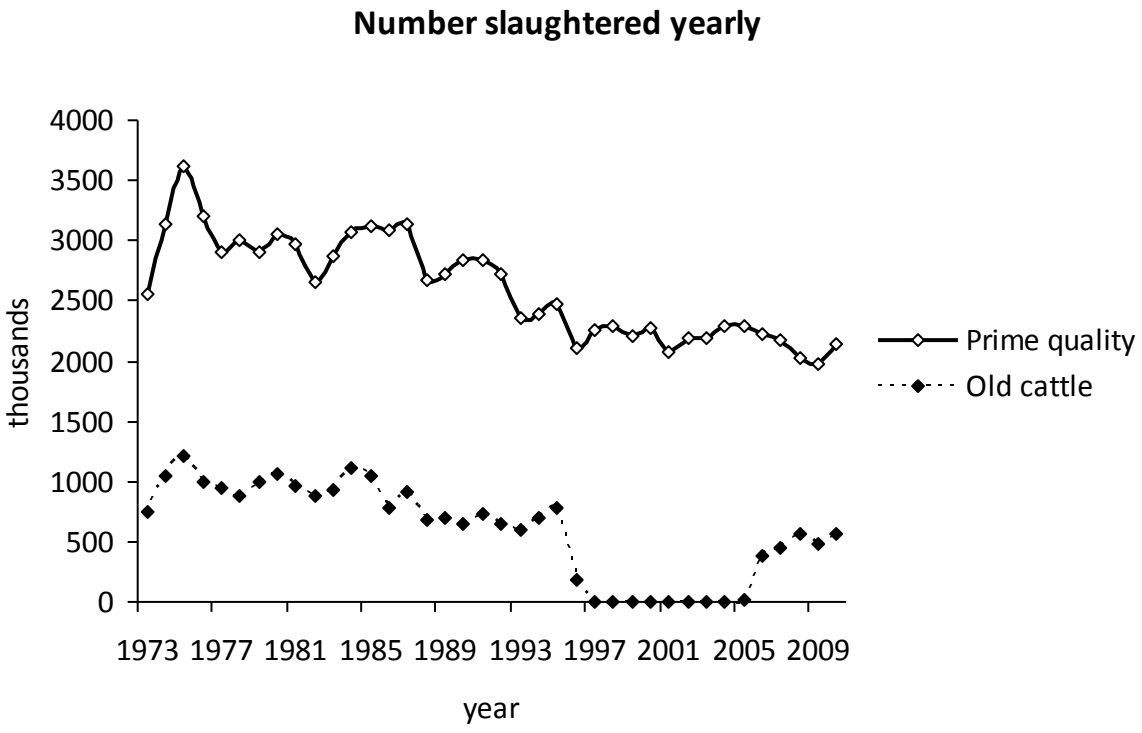


FIGURE 1 NUMBER OF BEEF ANIMALS SLAUGHTERED YEARLY

Source: DEFRA http://www.defra.gov.uk/evidence/statistics/foodfarm/food/slaughter/index.htm

With improved breeding and a wider use of breeds that reach a higher slaughter weight, especially the continental breeds, beef carcase weight has gradually increased over the last 20 years. Young sires are heavier than steers, and steers are heavier than heifers (FigurE 1). Feeding systems that increased the animal's weight were also developed.

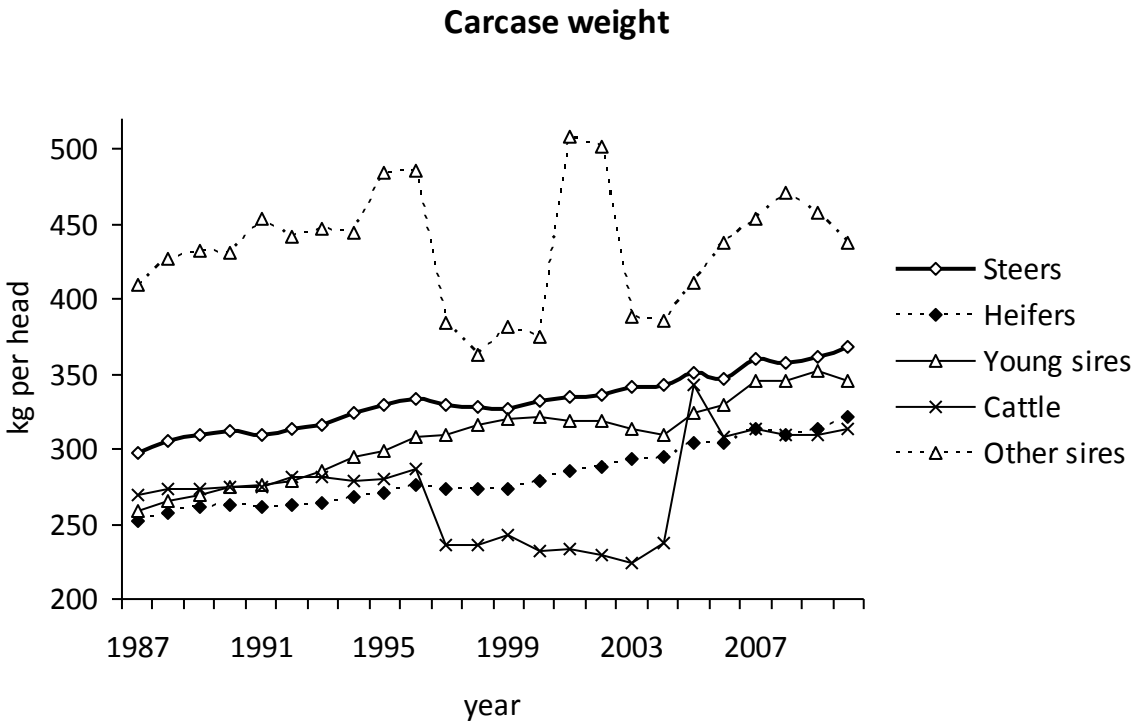


FIGURE 1 CARCASE WEIGHT CHANGES

Source: DEFRA http://www.defra.gov.uk/evidence/statistics/foodfarm/food/slaughter/index.htm

The carcase weight in slaughter-houses can also vary during the year (Figure 3). The animals slaughtered in spring are heavier than the ones slaughtered in autumn. The spring animals would have grown and received intensive feed over an extended period, and since the prices are higher in spring, the extra feed is worthwhile. In the autumn farmers are willing to slaughter the animals at a lower weight so as to decrease the number maintained over winter, especially when feed is limited or when concentrates are expensive.

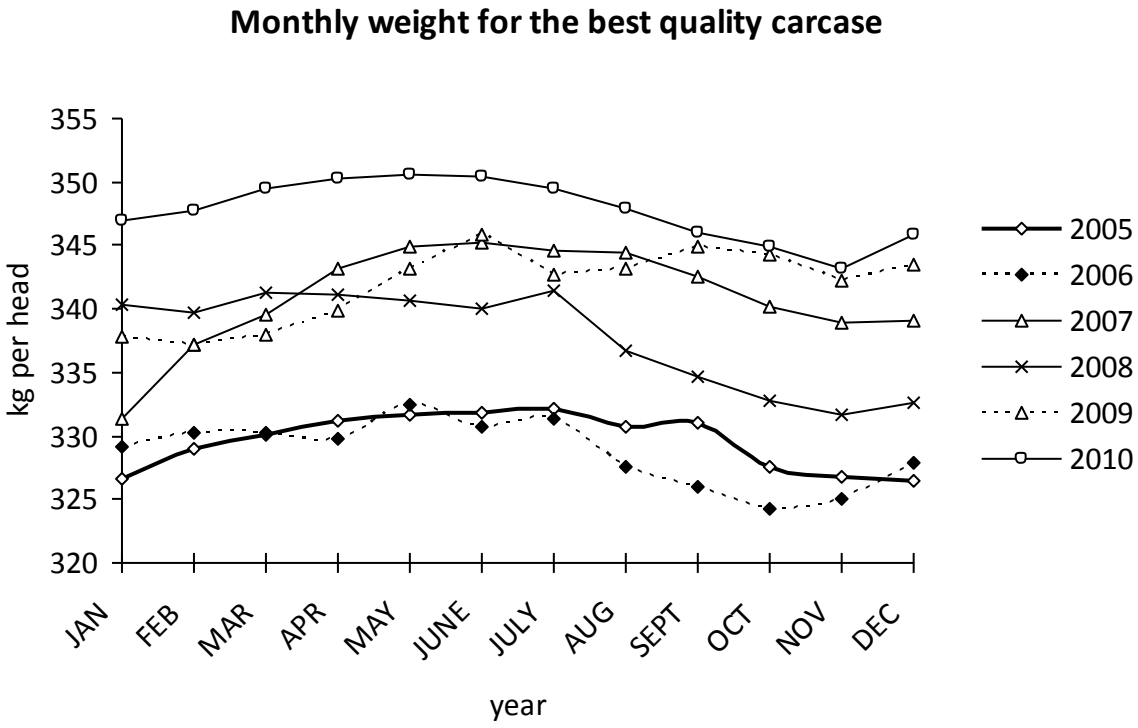


FIGURE 2 MONTHLY WEIGHT OF BEEF CARCASE

Source: DEFRA http://www.defra.gov.uk/evidence/statistics/foodfarm/food/slaughter/index.htm

EUROP GRID

The EUROP Grid is the recognized system for measuring beef carcase quality. Fat is measured on a scale 1, 2, 3, 4L, 4H, 5L, 5H. 1 represents the least fat and 5H the most fat. The animal's shape or conformation is measured on a scale E, U+, -U, R, O+, -O, P+, -P. E represents the best shape and the heaviest meat yield and -P represents the most angular shape and lightest meat yield. The most common category is cattle with R4L quality. Usually, the beef breeds are at the upper end of the conformation scale, and the dairy breeds towards the bottom of the scale

		Fat						
Conformation		**1**	**2**	**3**	**4L**	**4H**	**5L**	**5H**
	E							
	U+							
	-U							
	R							
	O+							
	-O							
	P+							
	-P							

The grid is used by the slaughterhouses to determine the stratified price, the best quality animals achieving the highest price (see below). The main reason for this is that the % of saleable meat in the carcase is higher for animals with the best conformation and least fat (Figure 4). Saleable meat is the high quality meat that remains after the unwanted fat has

been cut off. Usually, 65-75% of the carcase is saleable meat. Fat has the greatest influence on the % of saleable meat, as the butcher always discards the fat that the consumer does not require.

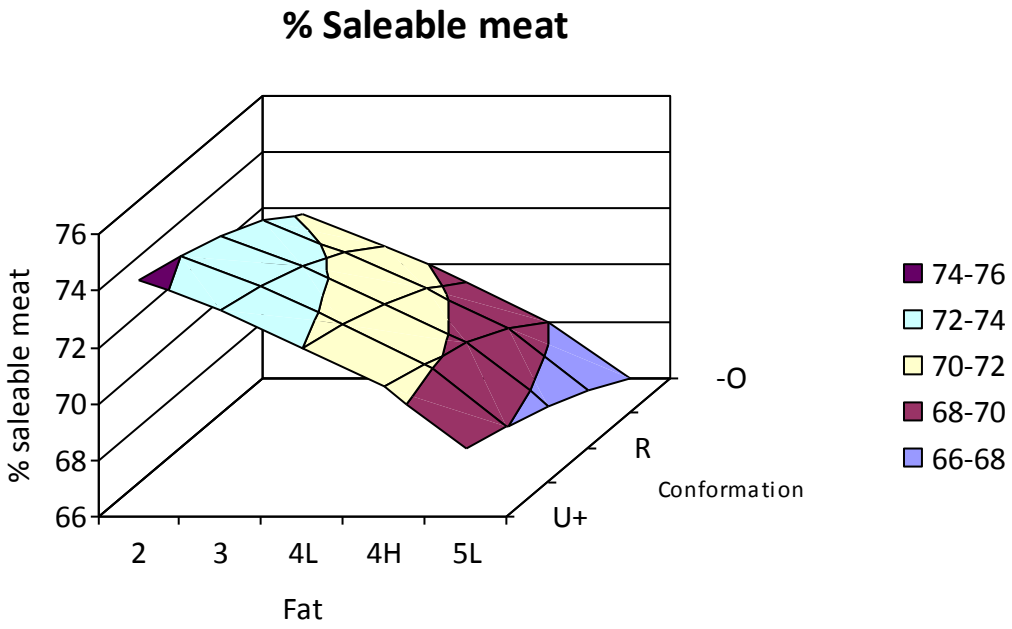


FIGURE 3% SALEABLE MEAT

Source: EBLEX Understanding Cattle and Carcases For Better Returns 2008

THE MARKET NEEDS

The three yardsticks used to assess the market needs are:-

- Weight
- Fat, and
- Conformation

Often, the animal's breed has a great influence on weight, fat and conformation and marketing timing has a strong influence on fatness. A farmer can make a mistake and send the animal to market when it is too fat, thus losing on value, or too lean and yet again losing on value. In order to target the market and get the best possible price, it is important to understand what the requirements of different businesses are:-

Supermarkets

		Fat						
		1	2	3	4L	4H	5L	5H
Conformation	E			■	■			
	U+			■	■			
	-U			■	■			
	R			■	■			
	O+							
	-O							
	P+							
	-P							

The supermarkets have the strictest requirements for animals – in the fat categories 3 and 4L, and in the conformation class E, U+, -U or R. That means 8 possible categories. A very specific description is required to satisfy the industry's packaging needs. That means that only a certain sized steak can fit into a package of a specific size.

Butchers

		Fat						
		1	2	3	4L	4H	5L	5H
Conformation	E				■	■		
	U+				■	■		
	-U				■	■		
	R				■	■		
	O+				■	■		
	-O							
	P+							
	-P							

Butchers have a much greater flexibility to dress and process meat, so their needs are more extensive than the supermarkets. Usually, butchers require animals in the 4L or 4H fat

category, and E, U+, -U, R, O+ or -O conformation category in order to meet the extensive needs of customers in shops. They buy from 12 possible categories.

Catering

		Fat						
		1	2	3	4L	4H	5L	5H
Conformation	E							
	U+							
	-U							
	R							
	O+							
	-O							
	P+							
	-P							

The weight is more important than quality in the catering industry. They buy in the 3, 4L or 4H fat category and E, U+, -U, R, O+ or -O conformation category, that is, 18 possible categories

THE MARKET

Usually, the farmers will send their animals either to a live market (Figure 5 and Figure 6) or direct to the slaughterhouse. The two have advantages and disadvantages (Table 1). Occasionally, farmers will sell animals privately.

	Advantages	Disadvantages
Live markets	• If the price is not acceptable, the animal can return home • The price reacts to market needs sooner and can increase suddenly when there is a shortage animals • Payment on basis per head whatever the standard	• Strict rules for animal movements • The price reacts to market needs sooner and can decrease suddenly when there are too many animals on sale • Quality is estimated and depends on the buyer's experience • Lose weight in transport and waiting in the live market
Slaughterhouse	• The price is known before selling • Payment according to quality of carcase, using the stratified system • Strict hygiene rules • Price reacts more slowly to market when the price decreases • The animal's slaughter weight is nearer its weight on leaving the farm • Feed-back to assess the animal's quality	• Final. Must accept the price after the animal is slaughtered • Substantial effort to prepare the animals regards health and hygiene • Price reacts more slowly to market when the price increases

TABLE 1 SELLING ADVANTAGES AND DISADVANTAGES

FIGURE 5 LIVE MARKET

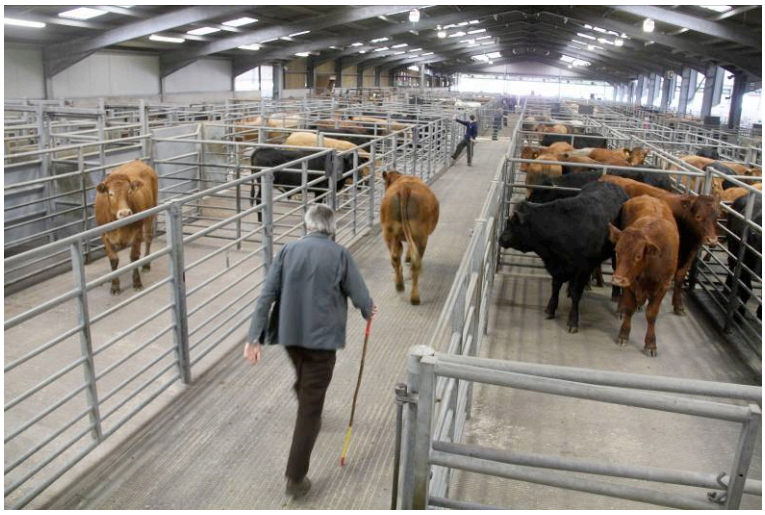


FIGURE 6 PENS AND MOVING ANIMALS IN A LIVE MARKET

TIME TO SLAUGHTER

By combining the knowledge of breed, gender, production system and other numerous bodily features, the farmer can estimate at what weight, age and time the animal will be ready for market. Nevertheless, a detailed assessment will be required at that time to estimate the exact time to slaughter the animal.

SELECTING ANIMALS TO BE SLAUGHTERED

In its Beef Producers' Handbook – "From Gate to Plate" (2010), Meat Promotion Wales explains how to select animals for slaughter. The first step is to weigh the animal, and then make a visual appraisal in order to have a general idea of the fatness of the animal

- muscles will be more visible in lean animals and less visible in fat animals
- wide and deep brisket is a sign of fatness.

In order to assess the fatness in more detail, Meat Promotion Wales (MPW) (2010) draws attention to three points on the animal's body

A. Over the pin bones and on either side of the tail head

B. The transverse processes of the loin

C. Over the last three ribs.

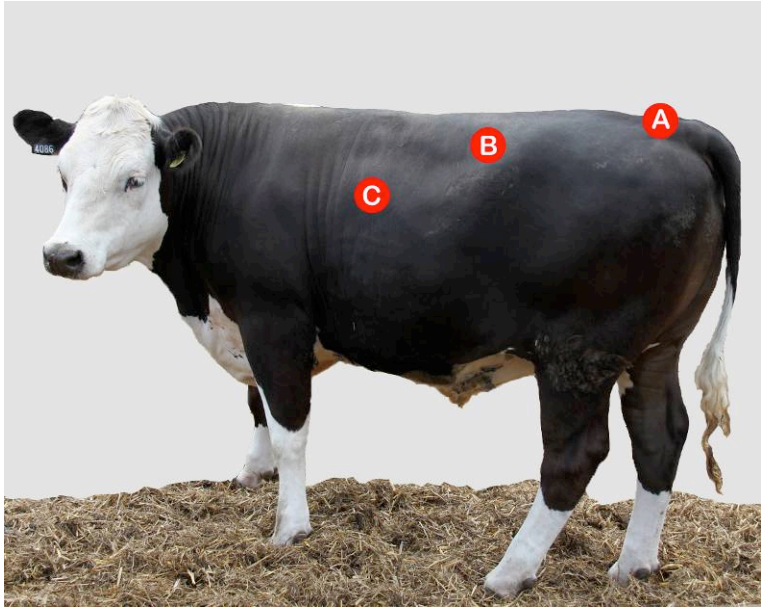


FIGURE 4 KEY HANDLING POINTS TO ASSESS FAT ON CATTLE (ADAPTATION FROM HCC 2010)

FAT ASSESSMENT

Fat assessment in cattle should always be assessed by handling the left side rather than the right hand side as it gives a better estimate of the animal's fat distribution. The left kidney's overlaying fat hangs from the internal wall, whilst the right kidney overlaying fat is attached to the internal wall, thus making the animal appear fatter.

With all three handling points, tips of the fingers should be used to feel the fat depth over the underlying muscle and bone. As the animals get fatter, it will be much more difficult to feel the bone and muscle. Above the ribs, it is much more difficult to feel the bone as the fat depth increases (Figure 8). By using MPW's descriptions (Table 2), regular practice and experience, it will be possible to combine a body assessment with a specific fat class.

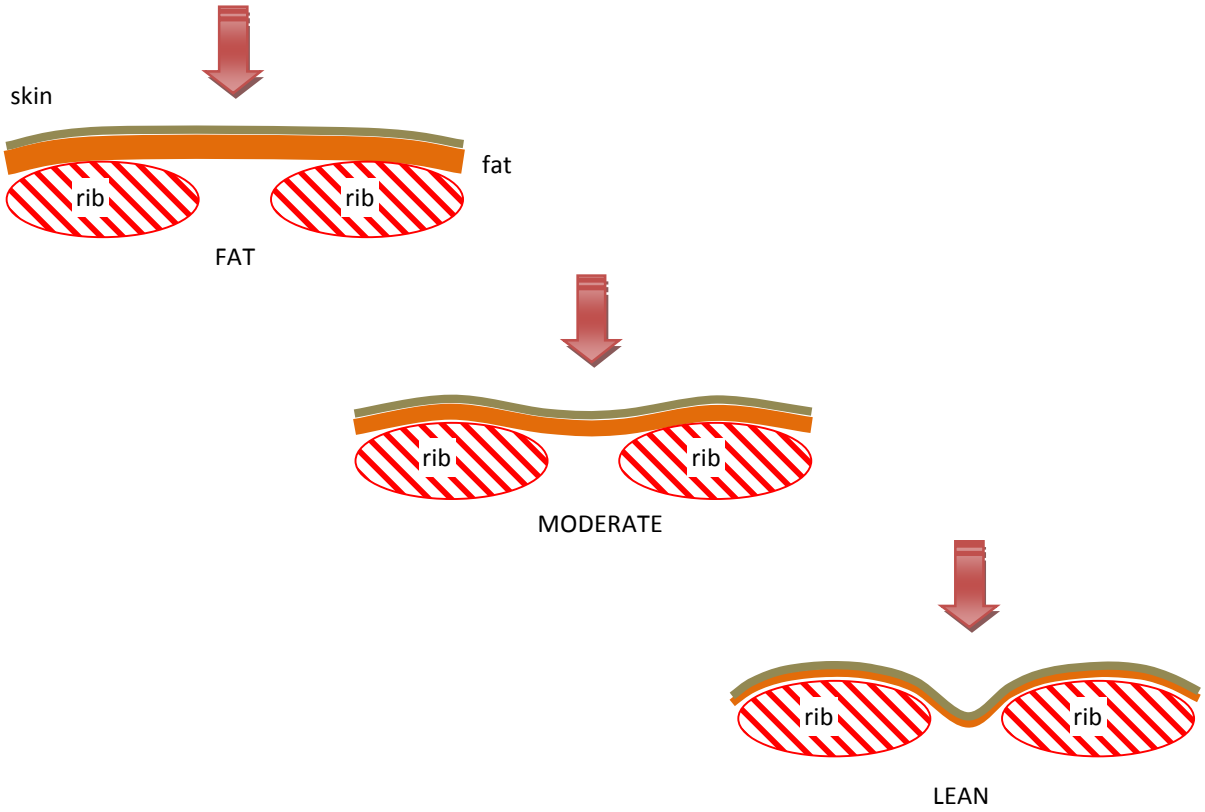
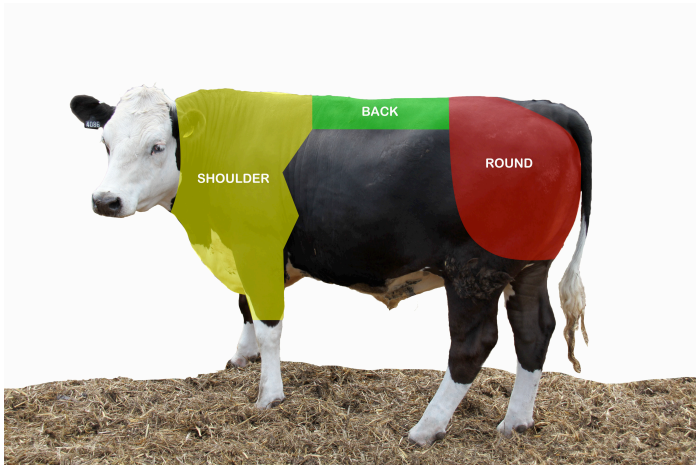


FIGURE 5 RIBS LESS PROMINENT IN HANDLING FAT CATTLE

	Fat Category					
	1&2	3	4L	4H	5L	5H
TAIL HEAD HANDLING POINT A	The skin is tight. The area of the body around the root of tail and over the pin bones is firm and unyielding.	Indicated by a very thin fat cover which yields slightly to moderate pressure.	Thin layer of fat felt when skin on either side of tail head is pinched between fingers and thumb. Thin soft layer is felt over the pin bones.	Looks slightly puffy; soft layer of fat felt using light pressure. Surface area around pin bones is soft and the fat tends to spread back towards the tail head	Looks puffy and feels spongy. Moderate fat cover over pin bones is felt as distinct soft layer	Looks very puffy and feels very spongy. Thick and sometimes patchy layer of soft fat over the bone
LOIN HANDLING POINT B	Ends of transverse processes of vertebrae very prominent; individual bones felt as deep corrugations	Ends of transverse processes prominent. Individual bones are felt as corrugations.	Ends of transverse processes slightly rounded by fat, felt with light pressure.	Ends of individual transverse processes are felt only with moderate pressure	Transverse processes are felt only with firm pressure.	Individual transverse processes cannot be felt.
RIBS HANDLING POINT C	Ribs are prominent, clearly visible and are felt as deep corrugations.	Some fat cover is detectable over the bones but individual ribs are felt easily as corrugations.	Thin layer of fat is felt over the bones. Individual ribs felt with light pressure.	Distinct layer of soft fat is felt over the bones. Individual ribs are felt only with moderate pressure.	Thick soft fat covers ribs. Individual ribs are felt only with firm pressure	Rib cage is smooth to the touch with a tendency to patchiness. Individual ribs cannot be felt.

TABLE 2 FATNESS ASSESSMENT BY HANDLING THE ANIMAL (MPW 2010)

CONFORMATION ASSESSMENT



The three parts of the body that are important when assessing conformation are:

- Shoulder
- Back and
- Round (Rump)

FIGURE 6 ASSESSING CONFORMATION (ADAPTED FROM HCC 2010)

Shoulder

FIGURE 10 SHOULDER CONFORMATION

Cattle with a good conformation have a round outline across the shoulder compared to cattle with poor conformation that have a more angular shape. Angular shape is common amongst the dairy breeds.

FIGURE 7 SHAPE ACROSS THE SHOULDER

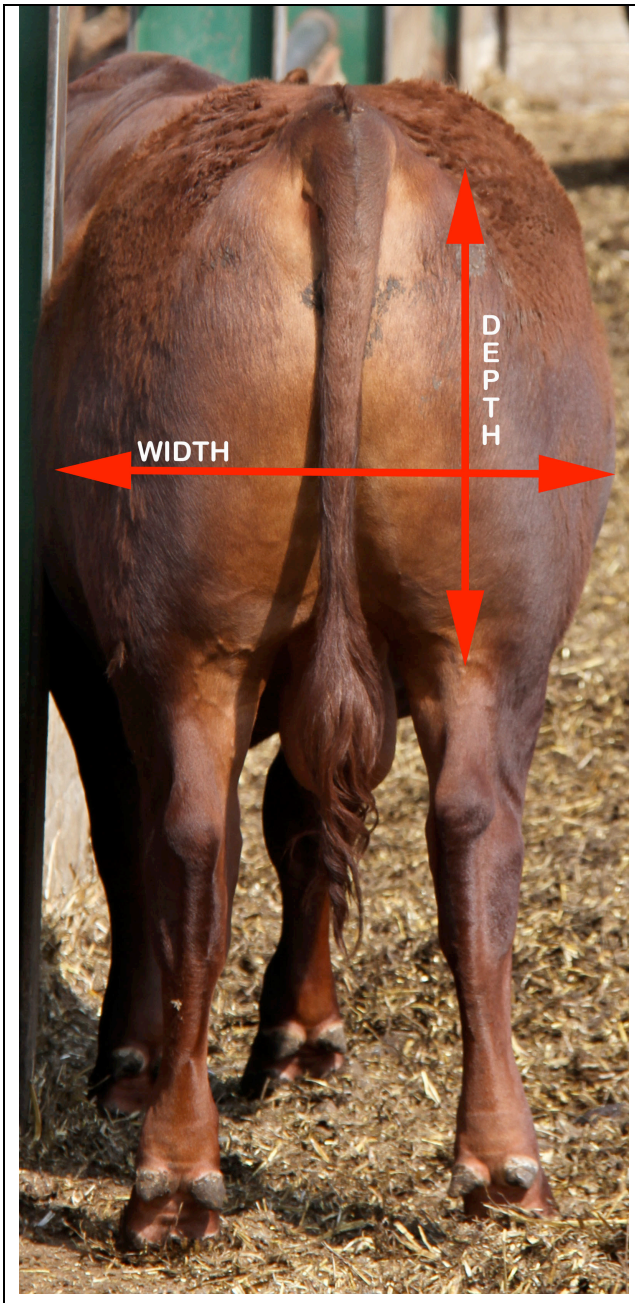
BACK

FIGURE 12 BACK CONFORMATION

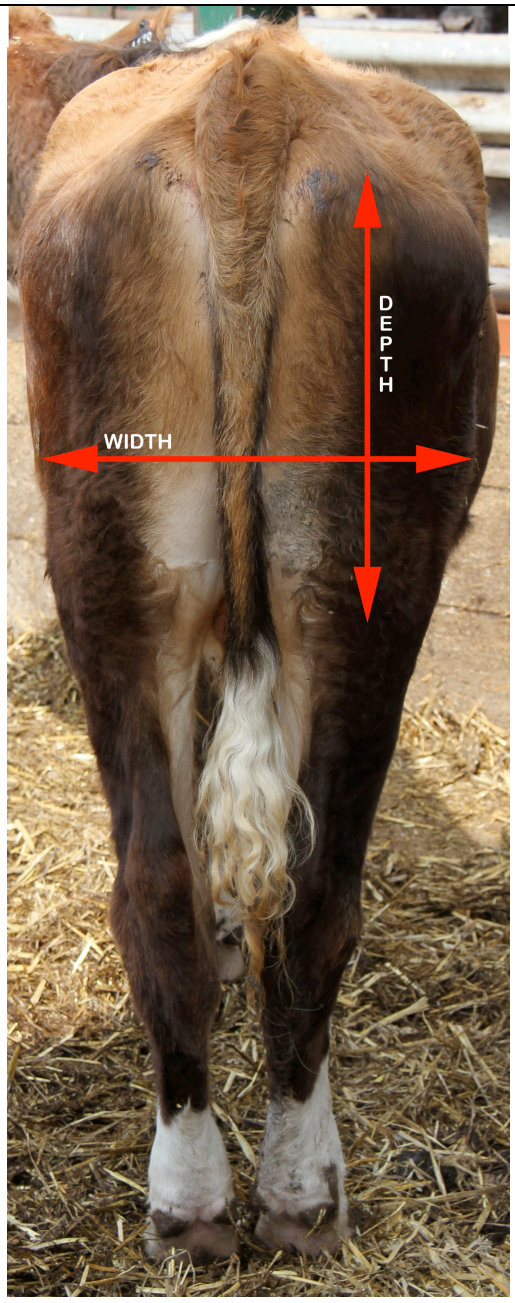
Many of the best beef cuts are located near the loin, and fullness (wide and round) is important to take advantage of the higher premium price.

Rump

A round, wide rump full of depth is expected to ensure a higher quality meat product. In Figure 13, the animal with a good conformation has a far more rounded shape than the animal with a poor conformation. Genes contribute greatly to the animal's shape, but a farmer through extensive feeding can produce an animal that looks more round. Frequently however it is unwanted fat that creates this shape.



Good conformation



Poor conformation

FIGURE 8 RUMP CONFORMATION

In its Beef Producers' Handbook –"From Gate to Plate" (2010), Meat Promotion Wales defines the shape required for the shoulder, back and rump in every conformation class (Table 3). It is only through training, practice and experience that one can align the correct descriptions with a specific animal.

	SHOULDER	BACK	ROUND (RUMP)
E	Wide and very thick up to the shoulder	Very rounded	Very rounded
U	Wide and thick up to the shoulder	Rounded	Rounded
R	Still thick but less width at the shoulder	Well developed	Well developed
O	Average to lacking development	Average development to almost flat	Average to lacking development
P	Narrow with bones visible	Flat with bones visible	Poor development

TABLE 3 CONFORMATION ASSESSMENT (MPW 2010)

CARCASES CLASSIFICATION

Classifying carcases will be different, within, and between every system, as the environment and the animal's genetic background are influential. However there are some common features:-

- The animal's conformation improves as it fattens
- Older cattle have a poor conformation
- Heifer and steer carcases have a higher proportion of fat than a bull beef carcase
- Bull beef has a better conformation than a steer, which in turn is better than a heifer.

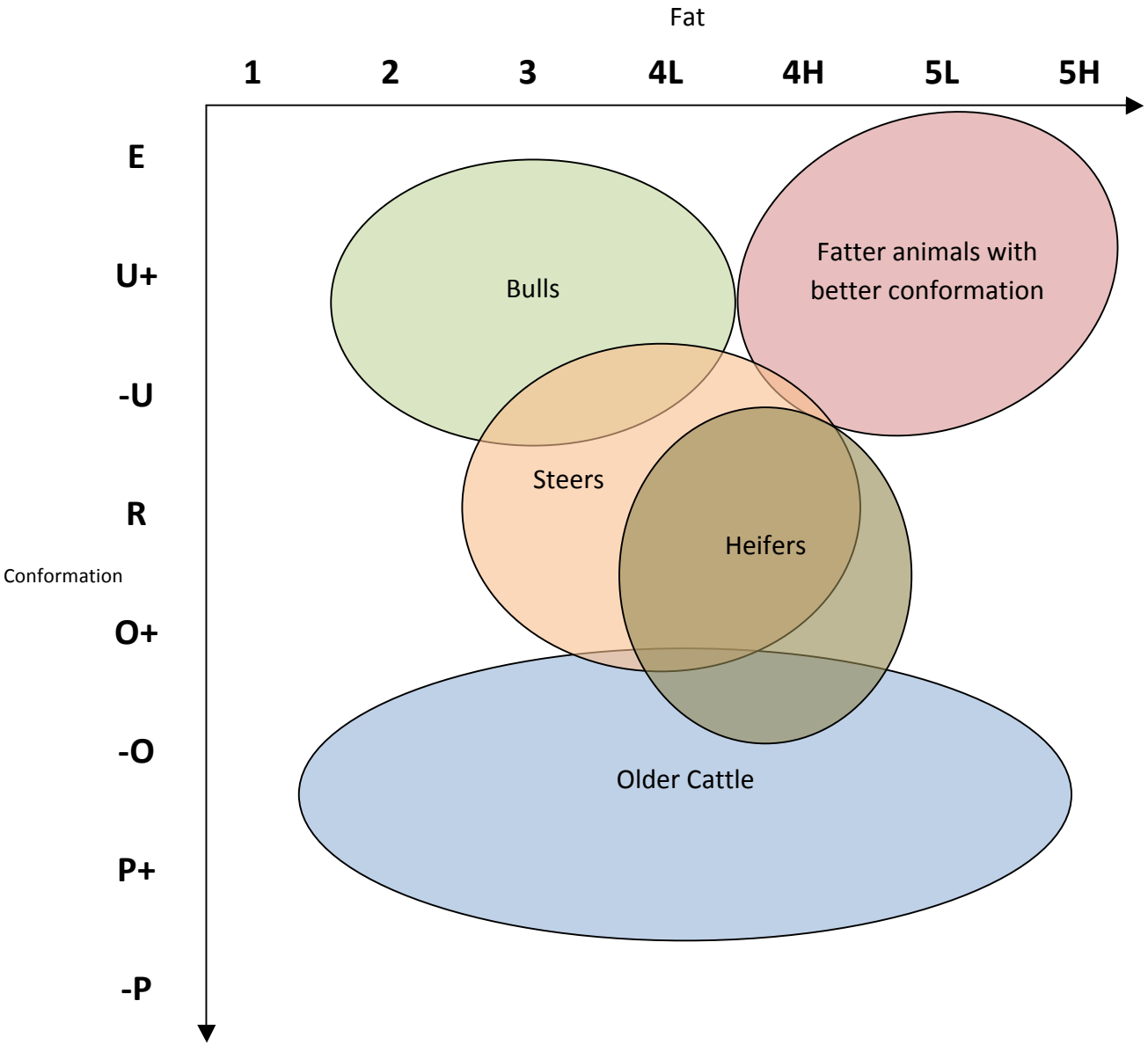


FIGURE 9 CARCASES' GENERAL CLASSIFICATION

EBLEX analyses carcases' performance data every year, and in 2010, 49% of the carcases were acceptable for the market as the conformation classification was E - R and 1 - 4L fat. 37% of the carcases were in the correct acceptable fat category (1 - 4L), but as the dairy industry was supplying so many cattle to the beef industry, the conformation was not acceptable, thus falling to lower unacceptable (O+ - -P) conformation category. Only 8% had an acceptable conformation category (E - R) and an unacceptable fat category (4H - 5H). This could be decreased by sending animals to slaughter sooner, before becoming too fat. A minority of 6% were unacceptable due to conformation and fat, and the farmer would receive a low income for these animals.

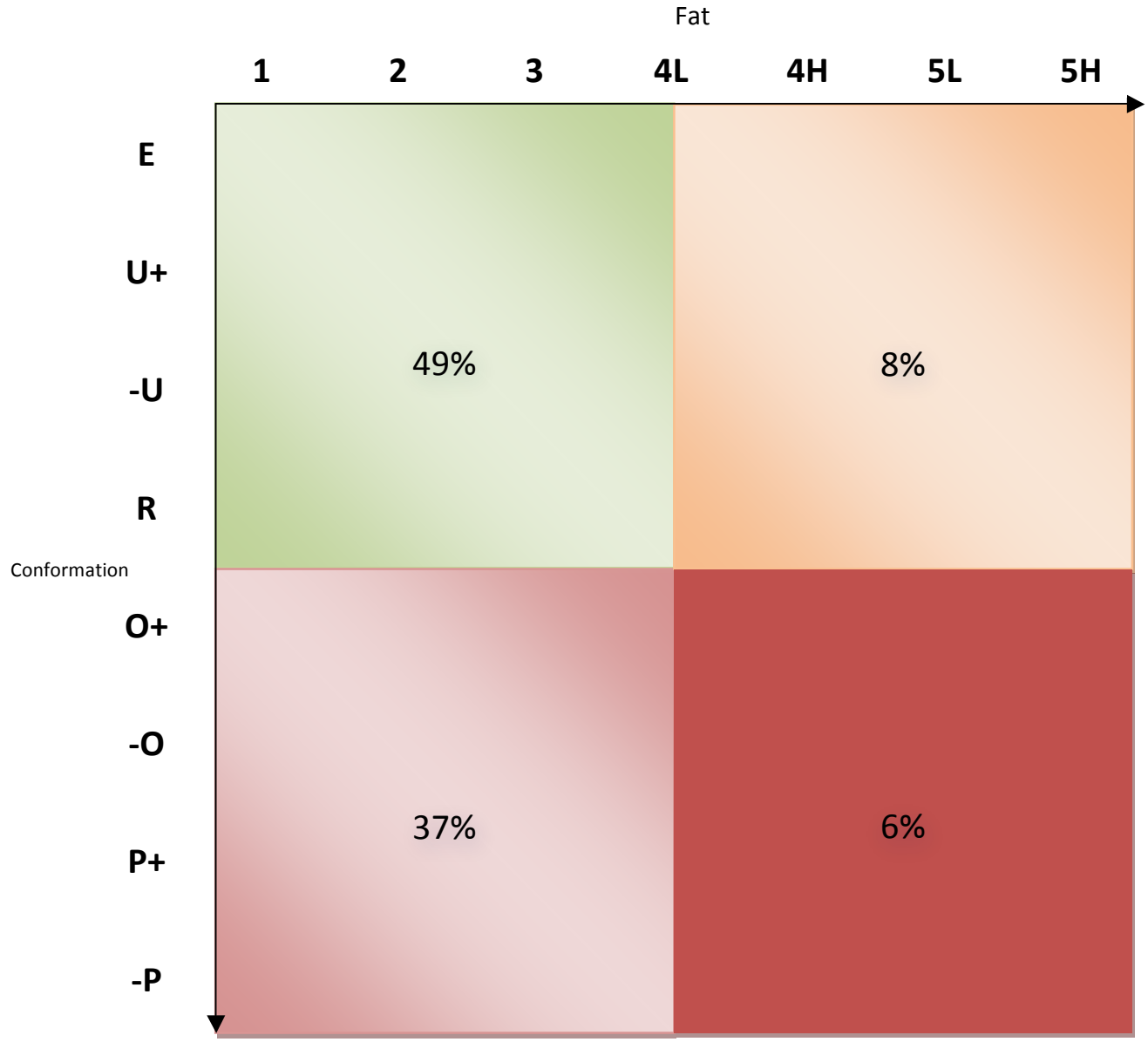


FIGURE 10 CARCASES' CLASSIFICATION IN ENGLAND 2010 (EBLEX DATA)

Source :
http://www.eblex.org.uk/documents/content/publications/p_bb_carcase_quality130511.pdf

PROTECTED GEOGRAPHICAL INDICATION (PGI)

In November 2002, Welsh Beef received status by the European Union. The aim of PGI is to recognize the authenticity and food sources from particular regions and provides legal protection on the food so that it is not emulated in other areas. Only beef that has been produced in Wales can be classified as 'Welsh Beef' or 'Cig Eidion Cymru'. This gives a marketing advantage to the product. Meat Promotion Wales is responsible for defending the status of 'Welsh Beef'. 'Welsh Lamb' or '*Cig Oen Cymru'* received the status in July 2003.

Further details about the scheme can be obtained from the following web sites:-

- European Union http://ec.europa.eu/agriculture/quality/schemes/index_en.htm
- DEFRA http://www.defra.gov.uk/food-farm/food/protected-names/
- Meat Promotion Wales http://www.hccmpw.org.uk/Index.aspx

PRICING

Cattle are sold by using one of the three pricing systems:-

- Price per Head
- Uniform Price
- Stratified Price

Price per head

This is the system that is used in a live market and it depends on the experience of the auctioneer and buyer to estimate the quality and value of the animal. The markets will weigh the animal before it enters the ring.

Uniform Price

The slaughter-house with an uniform pricing system sets one price across all quality classes. In such slaughter-houses, animal of low quality are processed.

Stratified Price

		Fat						
		1	**2**	**3**	**4L**	**4H**	**5L**	**5H**
Conformation	**E**	+6	+12	+12	+6	-12	-48	-48
	U+	S	+8	+8	S	-12	-48	-48
	-U	S	+6	+6	S	-12	-48	-48
	R	-4	S	S	S	-12	-48	-48
	O+	-14	-6	-6	-6	-28	-64	-64
	-O	-24	-16	-18	-18	-28	-72	-72
	P+	-16	-18	-18	-28	-32	-84	-84
	-P	-16	-18	-18	-28	-32	-84	-84

TABLE 4 STRATIFIED PRICING GRID

Usually it is the slaughter-houses that use the stratified pricing system where the price per kg depends on the quality of the carcase.

If the Base Price (S) is 160 pence per kg, then the price for a R4L animal will be 160 p per kg. If the quality is –O4H, then the price will be (160-28), that is 132 p per kg. If the quality is E2, then the price will be (160+12), that is 172 p per kg. Usually, the reductions (-) are much greater than the additions (+).

Aiming for a Higher Quality

A farmer can produce the perfect animal, but then see its value decrease before reaching the slaughter-house. Careful handling is required

- Before the animal leaves the farm
- During transportation to the slaughter-house
- In the slaughter-house.

On the Farm

After selecting the animal, the animal must be handled to ensure that it will be accepted in the slaughter-house. For reasons pertaining to food hygiene, especially E. Coli O157, the Food Standards Agency (www.food.gov.uk) does not accept dirty animals to be slaughtered. They categorize every animal on a scale 1-5, and only accept animals in Category 1 (clean and dry) and Category 2 (slightly dirty but dry/slightly damp) to be slaughtered. The farmer needs to clean and/or clip animals according to requirements in order to satisfy these standards. More information can be obtained from the web site

http://www.food.gov.uk/foodindustry/farmingfood/cleancattleandmeatsafety/

On every occasion, the animal must be handled quietly to avoid bruising the carcase. Striking the animal with a stick causes haemorrhage and bruising, and this has to be removed from the carcase before it is sold.

Handling and transporting and in the slaughter-house

Transportation always puts the animal under stress, and it can affect the quality of the meat. Stress burns muscle energy, and after slaughtering an animal under stress, the meat can appear dark, less attractive and allow bacteria to grow – this reduces shelf life. Animals that have not been properly fed prior to transportation also suffer from dark meat.

To prevent stress, MPW (2010) has set the following guidelines

- Cattle should always be handled quietly
- Keep animals of the same group together to avoid fighting
- Provide clean, dry bedding and plenty of drinking water
- Take special care with bulls, as they are more susceptible to stress.

SOURCES

MLC Classification www.mlcclassification.org.uk

Beef Producers' Handbook - "From Gate to Plate" (2010)

http://www.hccmpw.org.uk/publications/farming_and_industry_development/beef_management/

Food Standards Agengy ' Clean Livestock'
http://www.food.gov.uk/foodindustry/farmingfood/cleancattleandmeatsafety/