Understanding cattle and carcases for better returns

Funded by your levy

AHDB
ahdb.org.uk

Contents

Introduction

TIn order to maximise their financial returns, beef producers need to produce and sell the type of finished cattle markets really want and are willing to pay the most money for.

Identifying a target market is the key to successful cattle finishing, as is building relationships with customers. Then the task is to produce cattle to meet their specific needs as cost-effectively as possible.

There are many other elements to get right too, such as:

- Avoiding price penalties due to poor handling or health
- Presenting clean animals
- Hitting the right specification for conformation, fat class and weight

Sending overfat cattle to slaughter erodes producer margins and must be avoided. Processors, retailers and consumers do not want excess fat. It is estimated that it takes four times the amount of feed energy for an animal to put on a kilogram of fat compared to a kilogram of muscle. Producing ‘fat’ cattle costs farmers far more in feeding than any gain from sending heavier animals.

Handling the loin

Always handle the loin on the beast's left side to give a true reflection of loin depth. This is the 'loose side'.

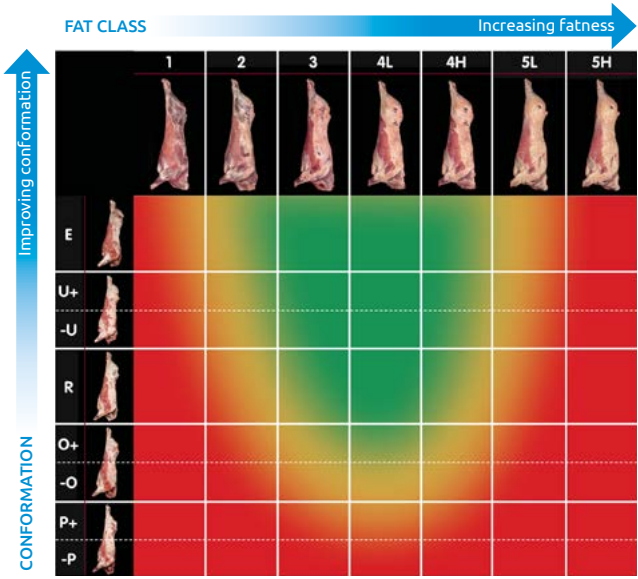
Loose side because the kidney knob hangs free, away from the underside of the loin.

On the beast's right side, the kidney knob is attached to the underside of the loin.

Carcase classification

Carcases are classified by assessment of conformation (five classes: E, U, R, O and P) and fat cover (five classes: 1, 2, 3, 4 and 5).

To be awarded an E classification, the carcase must have excellent conformation. P is the poorest conformation class. For fat cover, 1 is the leanest and 5 is the fattest.



Market signals

Little or no demand	Medium demand	High demand
Discount prices	Average prices	Premium prices
Poorest returns	Moderate returns	Best returns

The 15-point grid

Some abattoirs use the 15-point grid. It divides each conformation and fat class into three, e.g. +, =, - .

This grid gives a total of 225 potential classifications compared with 56 under the traditional grid. This can be useful in recognising the types of carcases available for the supply chain, which could have potential financial benefits.

Carcases classified by Video Image Analysis (VIA) technology will be assessed against the 15-point grid. There are also a small number of abattoirs where the 15-point grid is used, and VIA is not in operation.

VIA is an automated method of classifying a carcase. Machines are integrated into the slaughter line, usually near the scale point. One side of each suspended carcase is illuminated, and digital images are captured and processed using specialised software to extract data that relates to conformation and fat cover, such as length, width, angles, areas, volume and colour. The machine can interpret both the 2D and the 3D records.

Yield data

Yield is the total percentage of saleable meat from a carcase and should not be confused with killing-out percentage, which is carcase weight as a percentage of the liveweight.

Fat has the greatest influence on total meat yield from a carcase. Better conformed carcases will yield a greater proportion (percentage) of higher value (or premium) cuts (see table below).

Increasing fatness

Improving conformation

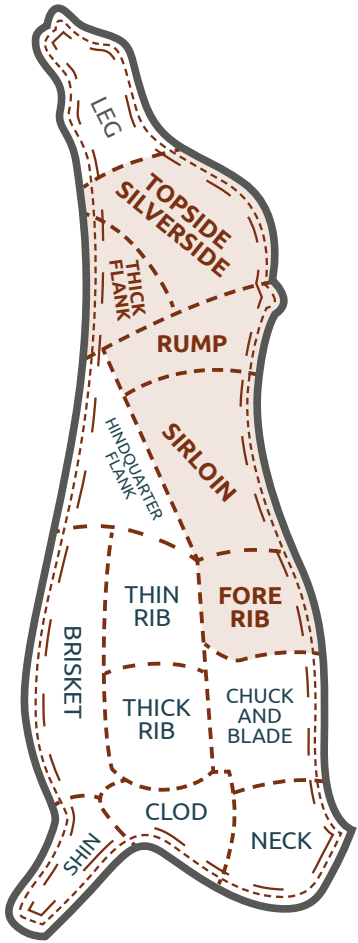
	2	3	4L	4H
-U	76.5	73.8	71.7	70.4
R	74.8	72.1	70.0	68.7
O+	73.1	70.4	68.3	67.0
-O	71.7	69.0	66.9	65.6
P	70.8	68.1	66.1	64.7
Overall	74.10	71.04	69.4	68.0

Conformation differences

Poor carcase

Very good carcase

Premium cuts



Eye muscles and fat levels

Too lean: 2

Ideal: 4L

Too fat: 5H

Dark cutting meat

Dark cutting beef is often caused by stress. The lean meat in the most expensive cuts is dark and unattractive, shelf life is reduced and the carcase is devalued.

To avoid stress:

- Always handle cattle quietly and safely with good handling systems
- Avoid mixing cattle from different groups
- Take special care with bulls, as they are more susceptible to stress
- Provide clean, dry bedding and plenty of drinking water in the lairage

Bruising and gristle

Bruising

A bruised carcase may need further trimming and may result in darker meat. Bruising and abscesses lead to wasteful trimming, or even partial condemnation of carcases.

Bruising is best avoided, by:

- Handling cattle in layouts with smooth walls, no sharp corners and non-slip floors
- Avoiding use of sticks and goads
- Using vehicles that avoid overcrowding, with internal partitions to restrict movement
- Using clean injection needles to avoid infection

Gristle

Gristle can become an increasing problem with age.

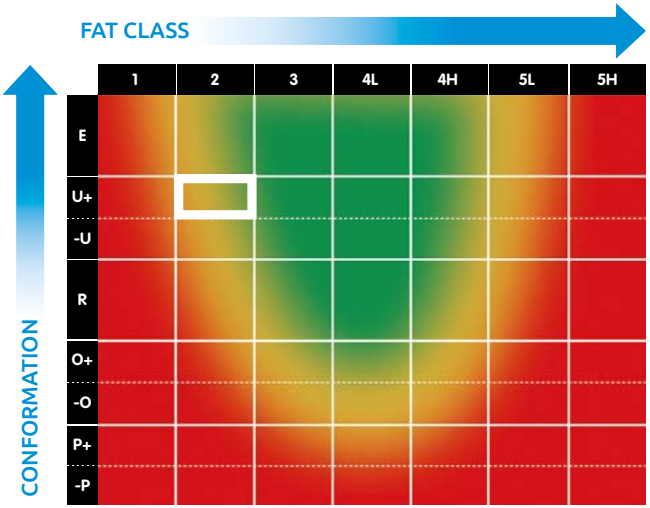
U+2 classification example

Conformation

Wide and thick back from a rounded shoulder to round hindquarter.

Fat

Skin is tight on the tail head, and the area around the root of the tail and over the pin bones is fairly firm. The ends of the transverse processes are prominent, and individual bones are felt as deep corrugations. The ribs are prominent, visible, and also felt as deep corrugations.



Very good muscle development, with all profiles being convex.

The round, shoulder and rump are rounded, along with the back being wide and thick.

The topside spreads over the pelvis.

Slight fat cover, with flesh visible throughout. Within the thoracic cavity the muscle is clearly visible between the ribs.

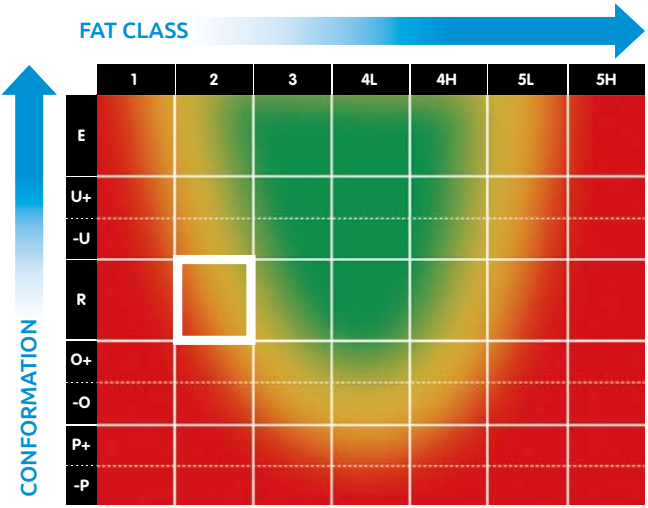
R2 classification example

Conformation

Well-developed round and shoulder with thick back.

Fat

Skin is tight on the tail head, and the area around the root of the tail and over the pin bones is fairly firm. The ends of the transverse processes are prominent, and individual bones are felt as deep corrugations. The ribs are prominent, visible, and also felt as deep corrugations.



Profiles mainly straight, on the whole, with good muscle development throughout the carcase.

Well-developed round.

Thick back, less wide at the shoulder, but still neat and fairly well developed.

Topside and rump are slightly rounded.

Slight fat cover, with flesh visible throughout. Within the thoracic cavity, the muscle is clearly visible between the ribs.

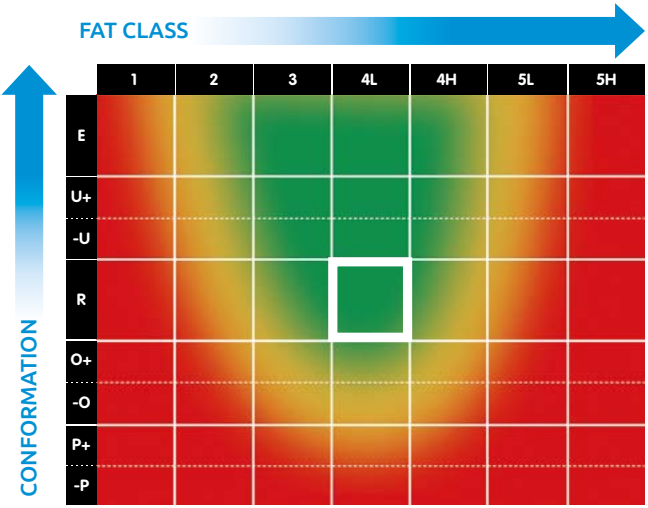
R4L classification example

Conformation

Well-developed round and shoulder with thick back.

Fat

Thin layer of fat felt when skin on either side of tail head is pinched between fingers. Ends of transverse processes slightly rounded by fat. Thin layer of fat is felt over ribs with light pressure.



Profiles mainly straight, on the whole, with good muscle development throughout the carcase.

Well-developed round.

Thick back, less wide at the shoulder, but still neat and fairly well developed.

Topside and rump are slightly rounded.

Most areas of flesh covered with fat, but with muscle still visible across the round and shoulder. Some distinctive fat deposits within the thoracic cavity. Seam of fat on the round becoming distinctive. Muscle between the ribs becoming infiltrated with some fat.

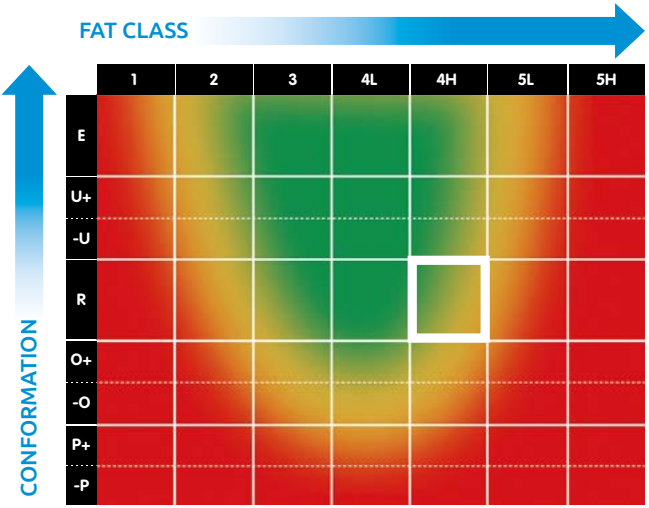
R4H classification example

Conformation

Well-developed round and shoulder with thick back.

Fat

Tail head looks slightly puffy and a soft layer of fat is felt, using light pressure. Surface area around the pin bones is soft and the fat tends to spread back towards the tail head. The ends of the transverse processes are slightly rounded by fat, which is felt with light pressure. Across the ribs, a distinct layer of soft fat is felt over the bones. Individual ribs are felt only with moderate pressure.



Profiles mainly straight, on the whole, with good muscle development throughout the carcase.

Well-developed round.

Thick back, less wide at the shoulder, but still neat and fairly well developed.

Topside and rump are slightly rounded.

Most areas of flesh covered with a thickening layer of fat, muscle only partially visible across the round and shoulder. Prominent seams of fat on the round. Some distinctive fat deposits in the thoracic cavity, with the muscle between the ribs infiltrated with fat.

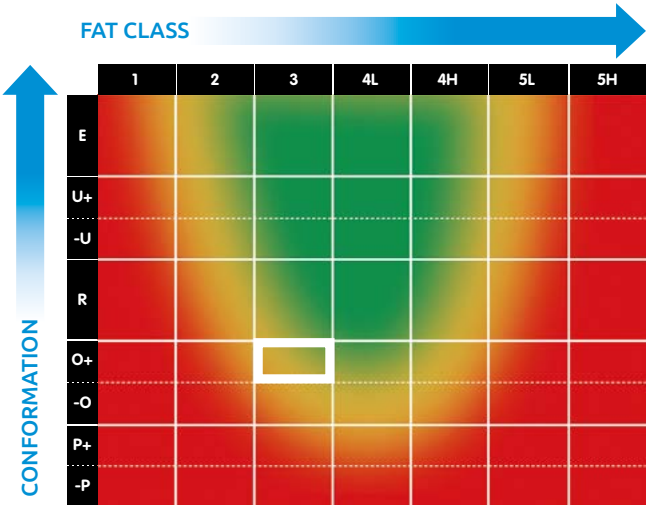
O+3 classification example

Conformation

Average round. Slightly lacking thickness on a marginally flat back.

Fat

An indication of very thin fat cover over the tail head, which yields slightly to moderate pressure. Ends of the transverse process are prominent, with individual bones felt as deep corrugations. Individual ribs are easily felt as corrugations, with some fat cover detectable.



Profiles straight to concave, with overall average muscle development.

Average to lacking development over the round.

Average to lacking thickness on the back.

Shoulder flat, with a straight profile over the rump.

Average fat covering, with the exception of the round and shoulder, covered with a layer of fat throughout. Slight deposits of fat in the thoracic cavity, but with the muscle still visible between the ribs.

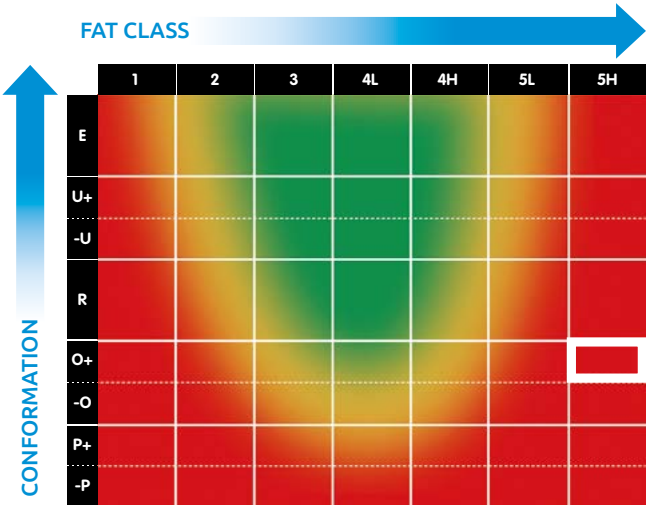
O+5H classification example

Conformation

Average round. Slightly lacking thickness on a marginally flat back.

Fat

The tail head looks puffy and feels spongy. A thick, and sometimes, patchy layer of fat can be felt over the bones. Heavy in the brisket. The individual transverse processes cannot be felt. The rib cage is smooth to the touch, with a tendency to patchiness, and individual ribs cannot be felt.



Profiles straight to concave, with overall average muscle development.

Average to lacking development over the round.

Average to lacking thickness on the back.

Shoulder flat, with a straight profile over the rump.

All areas of flesh covered with a thick layer of fat. Heavy deposits in the thoracic cavity, with muscle between the ribs infiltrated with fat. The round is almost completely covered with fat, so the seams are no longer clearly visible.

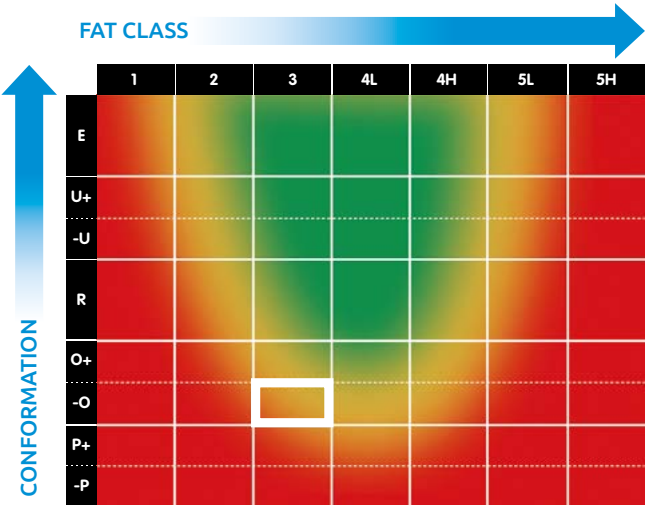
-O3 classification example

Conformation

Average round, lacking development. Lacking thickness on a fairly flat back.

Fat

An indication of very thin fat cover over the tail head, which yields slightly to moderate pressure. Ends of the transverse process are prominent, with individual bones felt as deep corrugations. Individual ribs are easily felt as corrugations, with some fat cover detectable.



The odd straight profile, but mainly concave.

Lacking development over the round.

Lacking thickness on the back.

Shoulder angular, with a straight profile over the rump.

Average fat covering, with the exception of the round and shoulder, covered with a layer of fat throughout. Slight deposits of fat in the thoracic cavity, but with the muscle still visible between the ribs.

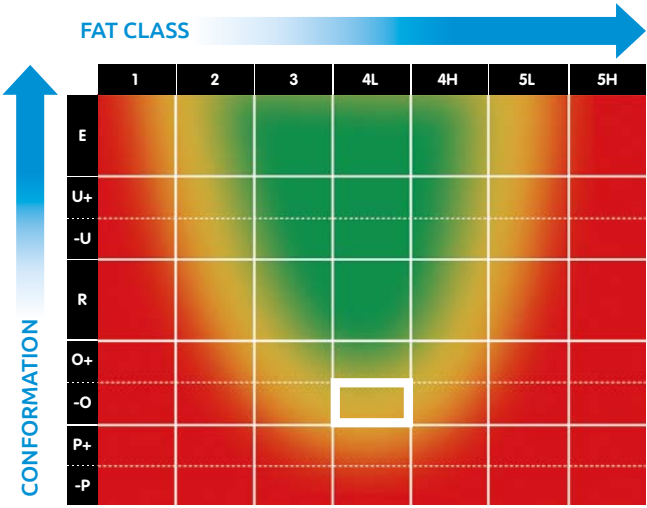
-O4L classification example

Conformation

Average round, lacking development. Lacking thickness on a fairly flat back.

Fat

Thin layer of fat felt when skin on either side of tail head is pinched between fingers. Ends of transverse processes slightly rounded by fat. Thin layer of fat is felt over ribs with light pressure.



The odd straight profile but mainly concave.

Lacking development over the round.

Lacking thickness on the back.

Shoulder angular, with a straight profile over the rump.

Most areas of flesh covered with fat, but with muscle still visible across the round and shoulder. Some distinctive fat deposits within the thoracic cavity. Seam of fat on the round becoming distinctive. Muscle between the ribs becoming infiltrated with some fat.

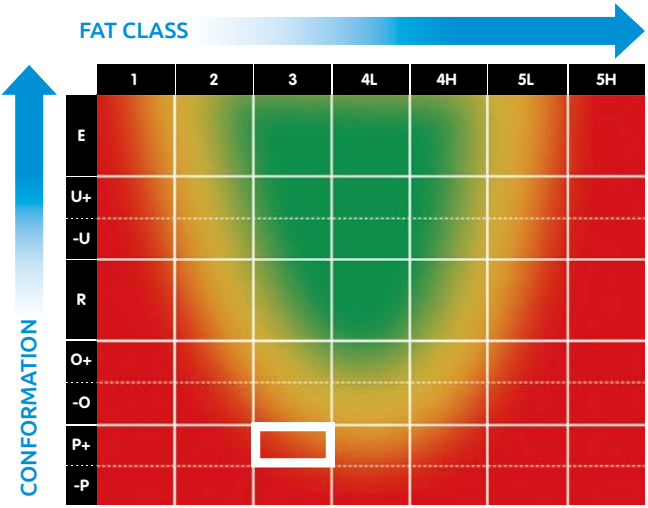
P+3 classification example

Conformation

Poorly developed on the round. Narrow, with bones visible across the back. Shoulders flat with bones visible.

Fat

An indication of very thin fat cover over the tail head, which yields slightly to moderate pressure. Ends of the transverse process are prominent, with individual bones felt as deep corrugations. Individual ribs are easily felt as corrugations, with some fat cover detectable.



All profiles concave to very concave, with poor muscle development.

Poorly developed over the round; narrow back with bones visible.

Shoulder is flat, also with bones visible.

Average fat covering, with the exception of the round and shoulder, covered with a layer of fat throughout. Slight deposits of fat in the thoracic cavity, but with the muscle still visible between the ribs.

Further information

Other publications from AHDB

- Marketing prime beef cattle
- AHDB Beef & Lamb Virtual Selection Tool

Visit ahdb.org.uk to:

- Find resources on our **knowledge library**
- Listen to our **podcasts**
- Visit **farm events and agricultural shows**
- Contact your **local knowledge exchange manager**

Produced for you by:

AHDB Beef & Lamb
Middlemarch Business Park
Siskin Parkway East
Coventry
CV3 4PE

T 024 7647 8834
E comms@ahdb.org.uk
W ahdb.org.uk

If you no longer wish to receive this information, please email us on **comms@ahdb.org.uk**

Scan the QR code to sign up to receive the latest information from AHDB, update your preferences and receive important updates or visit **preferencecentre.ahdb.org.uk**

Established in 2008, AHDB is the independent, impartial public body that unlocks success in British agriculture. Funded by a levy from British farmers, growers and processors, we're behind the invaluable research and reports, domestic marketing campaigns and global export opportunities that help British farming thrive. Together, we deliver the insights, the influence and the impact that farmers need.

60064 1227