Live beef cattle assessment

Brett Littler
Livestock Officer (Beef Products), Mudgee

Live cattle assessment is a skill that is developed over time or through training. It can be done on an individual animal or on a mob or segments of a mob.

Being proficient in live cattle assessment helps beef producers to become more profitable by improving the performance of the livestock in their breeding enterprises. It also enables producers to predict best market options and therefore improve compliance rates and the returns per kilogram produced.

In this Primefact, we will briefly look at the different methods of live animal assessment and the usefulness of these methods in improving production and profitability.

Methods of assessment

There are many different methods of assessment. Some assessments can be done subjectively, others objectively, or by a combination of both. Methods of assessment include:

- visual—based on observations of key indicator sites on the live animal
- manual—performed by feeling the live animal at key sites
- objective—performed by measuring the animal at key sites. This is generally performed by ultrasound scanning of the live animal or by measuring such things as hip height for Frame Score.

The main areas and criteria on which cattle are assessed are:

- weight: live or estimated carcase
- age
- fatness or finish (fat score or P8 fat in millimetres)
- sex
- muscling or yield potential (muscle assessment)
- breed
- frame score
- structural soundness
- maturity
- temperament.

Reference points for assessing live cattle

There are a number of reference points or key sites that are used when assessing cattle. These points are the same on all cattle, no matter what breed or sex.

Figure 1 shows the various points that are referred to throughout this Primefact and in other reference or resource documents.

Key indicator sites are used to assess the animal visually. Photo: Brett Littler
Weight assessment

Live weight

Estimating live weight accurately is a difficult skill to master and is made even more difficult when the history of the livestock is unknown.

Some of the factors affecting live weight are the type of feed (grain or grass) and the length of time for which the animal has been off that feed.

The best way to measure an animal’s weight is by using a set of electronic scales. Scales are essential tools in any livestock enterprise, but particularly so in a beef cattle enterprise looking to monitor performance and meet customers’ needs. Most markets, including the feed steer industry, operate over a specific weight range.

Estimating carcase weight and dressing percentage

Producers selling over the hooks get paid on carcase weight.

Carcase weight = Live weight $\times$ Dressing percentage

Dressing percentage = $\frac{(\text{Carcase weight} + \text{live weight})}{100}$

When cattle are off feed and water, live weight will decrease as gut fill lessens. Dressing percentage will increase, as the carcase does not lose weight immediately.

The term ‘yield’ is often used instead of dressing percentage. The true meaning of yield is the amount of red meat that can be cut from the carcase. This is often termed the ‘retail beef yield’.

Dressing percentage is influenced by a number of factors. Some of these factors are type of feed, breed, pregnancy status, level of fatness and muscularity. For more information on dressing percentage and the factors affecting it, see Agfact A3.8.3 Dressing percentages: a guide to carcase weight.

Age/dentition

The ability to age cattle is an important component of most beef enterprises, whether it is to meet the age specifications of specific markets or to sort and cull older cows that are not as productive as they once were. In live animals age can be defined in calendar months or by dentition (teeth). Carcase age is determined by dentition but also through the ossification of the cartilage in the animal’s backbone.

Cattle are aged as milk teeth, two teeth, four teeth or six or eight teeth. Eight teeth is a full mouth. The age in months when these teeth erupt is variable but still reliable enough for markets to include teeth in their specifications. The way the teeth wear varies from beast to beast and with the breed and nutritional and climatic conditions.

For more information on aging of cattle by teeth see Agfact 0.2.2 Cattle must have sound teeth.

Fat assessment

Over the years there have been a number of different terms used to describe both store and
fat cattle. Generally these terms have described appearance. Some of the terms used are:

- **Forward/prime**: Fresh
- **Fresh**
- **Forward store**: Sappy
- **Sappy**
- **Store**: Strong
- **Strong**
- **Backward store**: Poor
- **Poor**

Now a standardised national approach is used to describe the fatness of cattle. This description of fatness is now used by market reports to describe both store and fat stock.

Fat score is now described in millimetres of fat on the P8 site (rump). Table 1 lists cattle fat scores and their measurement in millimetres of fat on the P8 site.
Fat score can be assessed by three methods:

- visual
- manual
- objective.

Visual assessment
For a guide to visual assessment see Figure 3.
As cattle fatten:
- the ribs become less visible
- the tail head softens and rounds of fat increase beside the tail
- the muscle seams of the hindquarters become covered with fat and are less evident when the cattle walk

<table>
<thead>
<tr>
<th>Fat score</th>
<th>P8 fat depth (millimetres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0–2</td>
</tr>
<tr>
<td>2</td>
<td>3–6</td>
</tr>
<tr>
<td>3</td>
<td>7–12</td>
</tr>
<tr>
<td>4</td>
<td>13–22</td>
</tr>
<tr>
<td>5</td>
<td>23–32</td>
</tr>
<tr>
<td>6</td>
<td>Above 32</td>
</tr>
</tbody>
</table>

Manual assessment
To assess manually for fat cover (Figure 4), sites where only fat is laid down should be inspected. The main areas used to manually assess cattle for fat cover are:
- short ribs
- tailhead
- long ribs

Objective assessment
Objective assessment of fat can be done with a real time ultrasound scanner. There are now hand-held digital read-out ultrasound scanners on the market; these can help producers to assess fat depth.

Being able to accurately assess fat score is critical, not only in correctly meeting market specifications, but also particularly in breeding herds, where fat score can have a huge influence on reproductive performance (see Primefact 626 Selecting and managing beef heifers.)

More information on assessing cattle fat scores can be obtained by attending a PROfarm StockAssess™ course (see http://www.dpi.nsw.

Figure 3. Key areas for visually assessing fat on the live animal
Sex
Some markets will specify the sex of the animal they want.

Muscle and yield potential
Muscle on both the live animal and the carcase is measured by ‘muscle score’. Muscle score describes the shape of the animal, independently of fatness, and is a subjective skill that can be developed through training. It predicts the amount of muscle or red meat—the most valuable part of the carcase.

Muscle scoring can be assessed in the live animal or in the carcase. Heavily muscled cattle produce higher-yielding carcases than lightly muscled cattle. There are a number of key indicator sites for muscle assessment on the live animal (Figure 5).

The degree of muscling in the live animal will affect dressing percentage and meat yield.

Heavily muscled cattle have a:
- higher saleable yield
- higher dressing percentage.

Live animal assessment of muscling uses a system of scoring from A (very heavy) to E (very light).

The best method to assess muscle is to view the animal from behind and from the side. From behind, the thickness through the lower hindquarter (stifle area) can be assessed: heavily muscled cattle are thickest through the stifle. From the side, the convex shape of the hindquarter will indicate muscle. The stance of the animal also gives an indication of muscling, as well muscled cattle have a wide stance. Lightly muscled cattle will have a narrow stance and the gut will be visible from the rear. Muscle will bulge and ripple as an animal walks, whereas fat will wobble and give the animal a smooth appearance. The thickness through the backline and shoulder should also be viewed when assessing muscle.

Breed
There are more than 75 beef breeds in Australia, with new breeds being imported and some developed locally as composites. It is important
to be able to distinguish between breeds and, if possible, between the breeds used in crossbred cattle. Some markets exclude some breeds and their crosses.

**Maturity type/frame score**

Maturity of cattle is often a difficult trait to assess. Maturity is the age and weight at which an animal fattens. Some markets buy heavy grain-fed cattle and want a high carcase weight but not too much fat. Table 2 indicates how maturity is related to frame size.

Early-maturing cattle that fatten at low weights are typically small framed and light muscled. They are more often targeted to the lightweight domestic trade markets. Late-maturing cattle, on the other hand, are often large framed and heavy muscled and are used to supply our heavy export markets.

**Early maturing cattle:**
- fatten at a young age
- fatten at low weights
- are smaller framed

**Late maturing cattle:**
- grow slower
- easier to finish on grass or grain
- are often straight British small-framed breeds.

Late-maturing cattle:
- fatten at a later age
- fatten at heavier weights
- are larger framed
- grow faster
- are more difficult to finish on grass
- are often large European breeds or their crosses.

For more information on maturity type and frame score, see Primefact 340 *Dressing percentages for cattle.*

**Structural soundness**

Structural soundness has an important effect on the longevity of breeding stock. It is a heritable trait that is passed on to their progeny.

Structural soundness is less important for young stock going to slaughter, as animals need only be structurally correct enough to be loaded onto a truck, travel to the abattoir and be slaughtered.

For feeder cattle, structure becomes an issue only when steers or heifers are fed for more than 100 days to achieve live weights of over 500 kg. Research has indicated that animals in feedlots break down mostly in the feet and legs.

**Temperament**

Poor temperament in cattle should not be tolerated. These animals pose a risk to the handler and can upset other cattle. Extra costs come from increased handling times, repair and maintenance.
to facilities, poorer performance when on feed, and an increased risk of dark-cutting of all animals in the mob.

Temperament can be assessed in a number of ways. It can be assessed by using a subjective crush or yard score, or objectively by flight time. Flight time tests the time it takes for an animal to travel a set distance when exiting the cattle crush. The Beef Cooperative Research Centre has found significant genetic relationships between temperament (flight time) and beef tenderness, growth rates and feed conversion in tropically adapted cattle breeds.

Most reports indicate that even the subjective, restrained scores of temperament are moderately heritable. Cattle of poor or excitable temperament will pass on this trait to their progeny. They should be culled as soon as possible.

Conclusion
Assessing cattle will make it easier to meet market requirements and can also help in herd management. Markets pay premiums for cattle that meet their customers’ requirements and often discount heavily for those that don’t. The skills needed to assess cattle can be learned and with enough practice can be confidently developed.

Further reading
Primefact 249 Checking your bull is ready for joining
Primefact 620 Developing an effective breeding plan for your beef business
Primefact 621 Market specifications for beef cattle
Primefact 623 Cattle breed types
Primefact 624 Beef cattle breeding systems
Primefact 625 Using EBVs and $ Index Values in beef breeding
Primefact 626 Selecting and managing beef heifers
Primefact 627 Economic advantages of better management of your beef breeding herd

Further information
For further information contact your local NSW Department of Primary Industries Livestock Officer (Beef Products).