

CARCASE APPRAISAL AND MEAT PREPARATION SYMPOSIUM

A symposium on carcass appraisal and meat preparation was held by the Central Coast Section of the Tropical Grassland Society at Thomas Borthwick's Freezing Works, Mackay, on March 19, 1977. The following papers were presented.

HANDLING CATTLE AND AVOIDING BRUISING

M. BINSTEAD

Cattle Fattener, "Glenidol", Rolleston

At "Glenidol" we operate a large fattening enterprise using cattle of every breed, creed, and colour. We buy most of our store cattle from almost anywhere in Queensland, and sell fats at all centres from Rockhampton to Brisbane. One of our major aims at "Glenidol" is to minimize the problem of bruising and we believe we obtain a premium price for our fat cattle because we deliver the goods with an absolute minimum of bruising.

I believe that THE GRAZIER IS RESPONSIBLE for the bulk of the bruising in that he is responsible if his cattle are not worked or transported correctly. The figures available to me demonstrate that the loss to the cattle industry through bruising, alone is in the vicinity of \$17-\$19 million a year. That represents a loss of something like \$5-\$6 a head.

The Weaner

The place to start is with the weaner. This is the most important part of a beast's life, because the attention and handling he receives at this time will reflect in him for the rest of his life.

Most weaning and feeding is done in the yard today, and this is important because it gives the cattle confidence in the handler. But it seems to me that not enough weaners are actually worked through the yards, particularly through the pound. They should be worked quietly and often. After they have been in the yard several days and have settled down they should be taken out, driven around, taught to "block up" and "feed out".

Trucking weaners is one method of educating cattle to transport in later life. Graziers who have the facilities to move weaners in a truck should do so in order to save bruising costs at a later date. Many people do not put this sort of work into weaners because it does not make any money but I believe bruising to be a direct financial loss which the industry cannot afford.

Dehorning

A well-presented line of dehorned cattle will attract a better price from me—as a store buyer—than the same cattle with horns.

The only time that cattle should be dehorned is at branding. Unfortunately, because this is not commonly adopted we are forced to buy horned cattle and tip at 20-24 months. At that age I think that dehorning is far too severe on a beast although I accept that tipping is not as effective in avoiding bruising.

Mustering, Dogs, Whips and Noise

The first time that an animal is mustered after weaning is a critical moment in its life. Mustering should be carried out quietly and slowly. The way cattle are mustered has a great bearing on how they work all day long.

A quiet voice is one of the greatest assets a human being has in communicating with cattle. Humans don't respond to being shouted at and neither do cattle.

I have never used a whip in mustering cattle, I won't allow them on "Glenidol" and I find it hard to see a place for a whip on any property. I also discourage the use of floggers—they make too much noise, and jiggers are completely banned. Jiggers stir cattle too much, and are a direct cause of bruising in loading.

Well controlled dogs can have a place in working younger cattle, but they should never be used with fattening cattle. Unfortunately, one rarely sees a well-controlled dog. Dogs should never be allowed to work in yards, their main ability being to teach cattle to kick.

Yards

If yards are already on the property, there is little that can be done but make do with them short of complete rebuilding. One of the mistakes made by selectors building yards has been to build from patterns from some of the old stations of the past. These yards were an ideal type of complex for handling a large number of cattle, but became very impractical when brought down in scale to suit a small property.

Too many individual yards can create problems. You only want sufficient for the ease of handling in the space you need. Cattle need room to go into a yard and move away. A secret in yarding cattle is to open up every gate possible to allow them as much vision and as much room as you can.

Transport

I want to repeat here what I said at the commencement of this paper—I believe the grazier bears the responsibility for the bulk of bruising in the cattle industry.

The adoption of a pattern when loading onto transports can be very worthwhile. I allow no unauthorised person around the ramp. All trucks (sometimes up to 20) wait outside where they cannot be seen by the cattle. As one pulls in to load we do not attempt to move the cattle until he has stopped. We then bring them into the pound when everyone is out of the way. No more than three men are allowed in the yard during loading. We endeavour to get the cattle to go up themselves, and if everything is quiet, they will. We have found that it is not wise to have a stranger in the yard because they will know immediately and will not work easily.

Trucking onto Rail

Most graziers fall down badly when trucking onto rail. They work the cattle from weaning and get to know how to handle them. Yet when it comes to putting them onto the train they often leave it to someone else.

Possibly the cattle will never have seen that person before, and it is in this situation that a great deal of bruising can occur. If you have gone to the trouble to bring your cattle to saleable condition ready for the meatworks, it is in your own interests to go and put them on the train as quietly as possible.

A trick I have used for many years when loading cattle onto a train is never bring them into the forcing pen until ready to load, and the race is open. If they are in the forcing yard and the train moves, the K wagon gate crashes down and the cattle all huddle into the back of the forcing yard. They then have to be straightened out before moving up the crush. It is much easier not to bring them into the yard until they can move straight onto the wagon.

Unloading

The last point at which the grazier has control over his cattle is during unloading.

The main bruising in transport occurs when cattle are coming off the truck, and when they all try to get off at once. If they are allowed to come off by themselves without being rushed, the bruising problem would be minimized.

Most transport operators today are owner-drivers and it is very easy to keep a check on them. If there is any suspicion about a driver that truck can be side tracked and the kill put through separately to assess the degree of bruising. If the owner-driver has his pocket hurt, he will quickly do something about it.

Brahman X Cattle

Anyone who has studied sale prices in Central Queensland this year will have noticed that good quiet cattle OF ANY BREED have commanded \$15-\$20 a head more than temperamental types. I believe that breeders of store cattle must study the selection of a quieter less temperamental beast even at the expense of growth rates. Hybrid vigour has been a wonderful thing for the industry but must be combined with the selection of good temperament. The quiet beast grows better for us in the paddock, travels better and kills better and no beast achieves that result as well as a well-bred quiet crossbred.

The basic principles of handling cattle that I have discussed are even more applicable to crossbreds. In my opinion, the Brahman is more intelligent and certainly more active than British bred cattle. To begin with, they require a different system of mustering. By keeping a man in front of the mob—working off the head—crossbreds can be walked quietly to the yards. There is a great art in riding in the head of cattle and in judging the speed of a mob. Crossbreds will follow you anywhere if you go about the right way of leading.

We always muster crossbreds towards watering points or other spots which normally interest them. We usually take an extra man with a crossbred mob and once a pattern has been evolved—we stick to it. Brahman cattle respond well to a regular pattern or routine. In the yards the nervousness of Brahman X cattle means that noise is absolutely out of the question. Some crossbreds are more intelligent than humans—they can out-think us. A broken rail or a bad fence is only bad management and a crossbred is intelligent enough to take advantage of this.

I have tried to talk about a subject that is a bit of a crossbred itself—a mixture of experience, instinct and knowledge. A good cattleman works cattle with his head, thinking like a beast and above all, showing a genuine love for his cattle.

BRUISING IN CATTLE

W. R. RAMSAY

Senior Meat Quality Officer, Queensland Department of Primary Industries

INTRODUCTION

Over the years since the 1930's, several surveys of the problem of bruising in cattle were made. These made clear the seriousness of the problem but the possible uses of these studies are limited. For example, comparisons cannot be made between surveys as there was no common way of describing bruises. No attempts were made to quantify the causes of bruising. All surveys agreed that bruising was a serious problem.

In reporting to you as cattle producers on the bruising research carried out with your money collected through levies it is important to mention the following:

1. The research has been carried out economically by three organisations in collaboration:

Australian Meat Board
CSIRO Meat Research Laboratory
Queensland Department of Primary Industries
The former has had a co-ordinating role.

2. Bruising has been quantified to allow comparison between studies over time. This has been done in two ways:

- (a) Using weight of tissue trimmed from carcasses as a measure. This needs constant careful organising and a large team of men.
- (b) By developing the Australian Beef Carcase Bruise Scoring system, bruises are drawn on small charts of carcasses in a way which records both location and

size. This system allows one man to do the work of several and gives results which correlate well with bruise trim weight.

Findings of the research group may be summarised as follows:

HORNS EFFECT

Initially 3 trials were done from the same property utilising cattle of mixed breeding and run separately in treatment groups (55 in each) for 6, 10 and 27 weeks before slaughter. The mean weight of bruise trim (kg) for three horn treatments was:

Horned	Hornless	Mixed Horned and Hornless
1.6	0.8	1.3 (kg bruise trim)

Five further trials involving 436 steers were done in various places. Cattle were generally Herefords or Shorthorns although in one trial the hornless group were Angus. Cattle in various trials were transported by road, rail or by road plus rail. Treatment groups in this series were obtained by drafting trial groups off in yards. The mean weight of bruise trim (kg) for the three horn treatments was:

Horned	Hornless	Mixed Horned and Hornless
1.86	1.12	1.75

By analysis of the results of the above eight trials it was possible to determine the effect of horn status on animals in the mixed horned and hornless groups. Horned animals in mixed groups showed a similar level of bruising as that occurring in horned cattle in groups in which all the animals were horned. Hornless cattle in mixed groups showed significantly more bruising than those in groups in which all the cattle were hornless, the kg of bruise trim being:

Horned in Mixed groups	Horned in all Horned groups	Hornless in all Hornless groups	Hornless in Mixed groups
1.88	1.82	1.04	1.48

EFFECT OF TIPPING

A trial was carried out using Brahman cross Shorthorn steers from Swan's Lagoon Cattle Field Research Station to compare the effects of tipping and dehorning with horned bullocks. Animals were tipped and dehorned about 5.5 months prior to slaughter. Records were kept of subsequent live weight gain. Cattle travelled by road 170 km to slaughter. Results were as follows:

Horn Status	Live Wt. loss relative to horned bullocks (kg)	Bruise trim (kg)
Horned	—	1.1
Tipped	8.6	1.3
Dehorned	10.2	0.7

KNOCKING BOX EFFECT

The possibility of cattle being bruised as they fall out of the knocking box exists. Evidence shows that it has occurred in some works. The incidence of knocking box bruising is now known with certainty. Simple ways of preventing it are known.

ASPECTS OF TRANSPORT

Effects of Stopping Trucks

In one trial, 170 km in a single deck semi-trailer, it was possible to investigate the effects of extra stops by trucks on bruise trim weight. Bruising was significantly heavier when the trucks stopped on 10 occasions rather than 4 times. Bruising did not

vary significantly with number of stops for dehorned and tipped steers, only for horned steers. The kg of bruise trim was as follows:

	Horned	Dehorned	Tipped	All Groups
10 stop	1.5	0.8	1.3	1.2
4 stop	0.7	0.6	1.35	0.9

Distance Travelled

Although exceptions occurred, in general, in these trials, bruising appeared to increase with distance travelled.

Type of Trucks

In the first three trials over a distance of 42 km, greater bruising appeared to be associated with a table top truck compared with a semi-trailer.

Fasting

To determine the effect of pre-transport fasting, three trials were undertaken using horned bullocks of Hereford, Shorthorn and some Brahman cross breeds. They were travelled 245 km by rail only. Three treatment groups were used (no fasting, 24 hours fast, 48 hours fast). A total of 262 head were involved.

Analysis of results showed that length of fast was not significant, but that non fasted cattle had significantly less bruising:

Fast	Number of Cattle	Bruise Trim (kg)
0 hours	94	0.5
24 hours	84	1.1
48 hours	84	1.0

Top vs. Bottom Deck

By law, double deckers should not exceed 14.5 ft in height. Consequently the height of the top deck is reduced relative to the bottom deck, creating back bruising problems if tall cattle are loaded on the top deck. It was felt that better loading management should solve this. There are also problems in loading top decks, depending on whether cattle load from the side, back or by a ramp through the floor.

Modified Crate

Despite favourable reports from a transport-meatworks group on the Downs and a grazier-meatworks group at Rockhampton, two controlled trials showed no reduction in bruising in a marine ply lined crate compared with conventional crates. Admittedly distances involved were small.

Time of mixing of groups before transport

In an attempt to qualify any effect of social interaction, groups of cattle, strange to each other, were mixed at various times before transport to slaughter. Results were negative.

Bruising in females compared with castrated males

What literature is available generally supports the view that females bruise relatively easily. There is some evidence from U.S.A. however to support the opposite. It has been postulated that this might be due to oestrogen use in steers in U.S.A. To clarify and to test the effect of mixing the sexes, six trials have been undertaken. Their format was similar to the horns trials (i.e. cows only, steers only, cows and steers mixed). Pooled results from these latter as kg of bruise trim are:

Bullocks	Mixed	Cows
1.66	2.46	3.57

There was no difference between cows or bullocks in the mixed group compared with the animals of the same sex in the one sex groups. This result surprised the investigators since it was considered that social factors would be likely to result in greater bruising.

It should be noted that in each trial cattle originated from the one property and that cows and steers were mixed immediately prior to loading.

With the exception of one trial, pregnancy appeared to be without effect on bruising.

All these trials dealt with females in strong condition. It has been hypothesized that weak females could show greater bruising and an effect in the mixed group.

Two deaths (of unknown cause) in cows, occurred in transport in these trials—one in an all cow group and one in a mixed group.

CONCLUSIONS

Horns are bad; tipping is very suspect; cows bruise easily. Don't mix horned and hornless, but you can mix cows and steers. Don't empty out, be careful loading and don't stop trucks unnecessarily.

More research is needed, and we need co-operators to continue investigations as to how bruising is a result of loading density, handling, tipping, different emptying out conditions, and transport.

CARCASE EVALUATION

W. R. RAMSAY

Senior Meat Quality Officer, Queensland Department of Primary Industries

INTRODUCTION

Eyeballing (visual appraisal) leads to inconsistencies when used on any more than a very small number. These inconsistencies occur within the one operator when compared over time, and between operators. Certainly experience improves the ability to judge and if one party in a transaction is less experienced he is likely to lose out. In addition, it is impossible to document or transmit eyeball findings to another person. These things must support the argument in favour of objectivity in classification.

FACTORS CONSIDERED IN EVALUATION

Weight. Weight is often confounded with age, both weight and age must be considered.

Fat cover. Classification measurement relates well to total fat and total muscle and in conjunction with evenness of fat indicates waste to butchers, though the optimum fat level is related to the market being supplied. It is logical that internal fats should be taken out on the slaughter floor.

Shape of Muscle. The convexity-concavity of the butt, rump, eye muscle and shoulder is often quoted by the trade and judges of carcass competitions as indicators of the amount of muscle below. From Butterfield's findings we know for sure that this can only be a general indicator—in other words it is impossible to have a carcass with big muscles in one cut without big muscles overall. Fat confounds the picture when lines being considered are straight to convex. At best this is a rough guide and suffers from the deficiencies in eyeballing already discussed.

Eye Muscle Area. Eye muscle area in quarter beef is commonly used by butchers in appraisal, but considered alone it is a poor predictor of total muscle. Butchers commonly feel or plunge the finger in to estimate tenderness. Not only does this con-

taminate the meat but scientists believe that there is no way of estimating how tender the cooked meat will be from any measurement taken on the raw product.

Rib cover. In quarter beef this is sometimes used in evaluation by looking at the relative amounts of muscle and fat exposed. This is largely influenced by the position of the knife making the cut.

Fat colour. Very yellow fat is not liked (even though good for you). Except in the Japanese market I doubt if any premium has been demonstrated for white fat over creamy coloured.

Muscle colour. Dark cutters are hard to sell if muscle is seen by purchaser. The brighter the red in muscle the better from this point of view.

Sex. This is a necessary and integral item in classification. In evaluation, however, I know of no effect of femaleness, pregnancy or lactation on meat quality.

Breed. Published literature supports the contention that *Bos indicus* are slightly but demonstrably tougher than *Bos taurus*, but this effect is slight when compared with the large effect of what happens after death (e.g., Tenderstretch, see other paper on Meat Quality).

CARCASE CLASSIFICATION

L. E. BROWNLIE

Director of Technical Services, Australian Meat Board

CLASSIFICATION

Classification aims to develop a uniform descriptive language to describe carcasses. All carcasses regardless of where produced in Australia, would be described using a uniform system of measurements and description. The characteristics of the carcass which are observed and measured are those which are commercially important in the trading of carcasses (or the meat derived from the carcass) both in quality and quantity.

The factors to be utilized for beef carcass classification are:

Sex

Observed visually. Steer, Heifer, Cow, Bull.

Dentition

A measure of physiological age rather than chronological age and is based on the eruption of teeth:

Teeth Eruption	Category	Age (months)
Milk teeth	0	0-18
Molar eruption 5th molar	1	12-18 (15)
1st permanent incisor	2	18-24 (21)
2nd permanent incisor	4	24-30 (27)
3rd permanent incisor	6	36 (36)
4th permanent incisor	8	42-48 (45)

Weight

Measured hot weight of a defined standard carcass (KKCFO, tails off, thick and thin skirts out, cod and udder fats off). No shrinkage factors to be applied. Provision will be made for non-standard carcasses if the local trade requires them with "fats-in".

Fat cover

Measured with an electrical conductivity probe at a specific position on the hot carcass. The point of measurement is 3/4 the distance from the spinal column to the edge of the eye muscle at the 12-13 rib position.

Carcase shape

A measure of the total carcase length is taken to obtain a measure of the skeletal size. Carcase length is then related to carcase weight (fat adjusted) to obtain a measure of carcase shape.

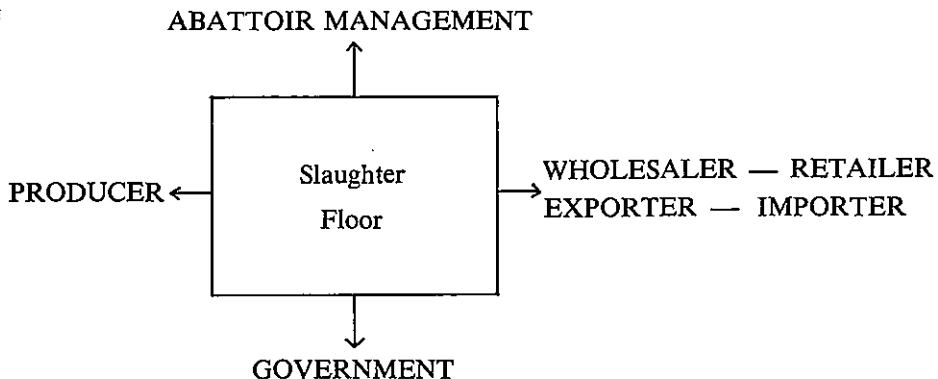
Classification Procedure

The factors proposed are all either measured or observed and as such classification is totally objective. These require the use of one person at the scales and the part-time assistance of a person on the heads. Equipment has been obtained and designed to facilitate the collection of this data on the slaughter floor and make it available for distribution as indicated later.

It is possible to give an estimate of the yield of saleable meat from a carcase using an equation which uses only the hot carcase weight and the fat cover. The relationship between estimated yield and actual yield is very good ($R = .974$).

Flow of Classification Information

It is suggested that the data obtained on classification of carcasses could flow in four directions—



Producer

In the case of cattle, to enable this data flow back to the producer, it is necessary to report the tail-tag number—this gives the owner and location of the property of origin of the cattle regardless of the method of purchase (paddock sales, auction, live-weight or weight and grade). It should prove possible to simultaneously collect data on animal health (disease) status on those conditions of economic importance at post-mortem inspection. Details can then be fed back to the producer on both classification of the carcase derived from the cattle and the post-mortem details.

Abattoir management

The proposed system should give details of both classification and disease status in a form which facilitates management's access to information.

Government

Details in summary form the sex, age, types, etc., being slaughtered would enable better projections of short, medium and long term trends in the livestock population and potential availability of both livestock and meat.

Distribution chain

Carcasses can be ticketed forwards with relevant classification details to facilitate sorting and marketing domestically and for export orders.

Implementation

A proposed plan of implementation for carcass classification for cattle and sheep was prepared by the Australian Meat Board and forwarded to Standing Committee on Agriculture and Agricultural Council in late August 1976. It has been agreed that finance will be provided for commercial testing of carcass classification. Instrumentation of selected slaughter chains will occur by the end of June 1977 and commercial testing will continue for approximately six months.

Conclusions

Classification offers the industry a slightly different and formalized approach to description of its product. It is no more than a language of description developed to facilitate the flow of information primarily backwards to the producer. It is potentially a useful tool in marketing carcasses both domestically and on export markets, and in providing the basis for improved market report and specification.

WHAT'S HAPPENING ABOUT CLASSIFICATION

W. R. RAMSAY

Senior Meat Quality Officer, Queensland Department of Primary Industries

Industrial trials on beef carcass classification are due to be set up at the M.P.A.B.'s new works at Cannon Hill, Brisbane. The Australian Meat Board is organizing the computer and instruments and the Department of Primary Industries is to provide staff to run it. Studies are to be made into how much it costs and what benefits come out of it—a most important aspect.

The System

Australian Meat Board have developed this system which is unique—it uses only things that can be measured to set up the classes, i.e. it is objective. Grading systems usually depend on things on which only an opinion can be given, i.e. subjective. Opinions can be disputed and lead to inconsistencies. This is one way that beef grading systems which depend on opinions are being criticised all over the world. Using only objective measurements the Australian Meat Board system will be free of criticism of this sort.

To keep up with the speed of abattoir chains some of the measurements will be taken automatically by electronic equipment. This will eliminate some human error. Weight will be recorded in this way. Some information will be punched into electronic keyboards and fat over the rib eye will be measured electronically. All this information will be collected and stored in a small computer. A ticket will be printed out automatically for each carcass.

The equipment to do all this costs about \$30,000 per chain.

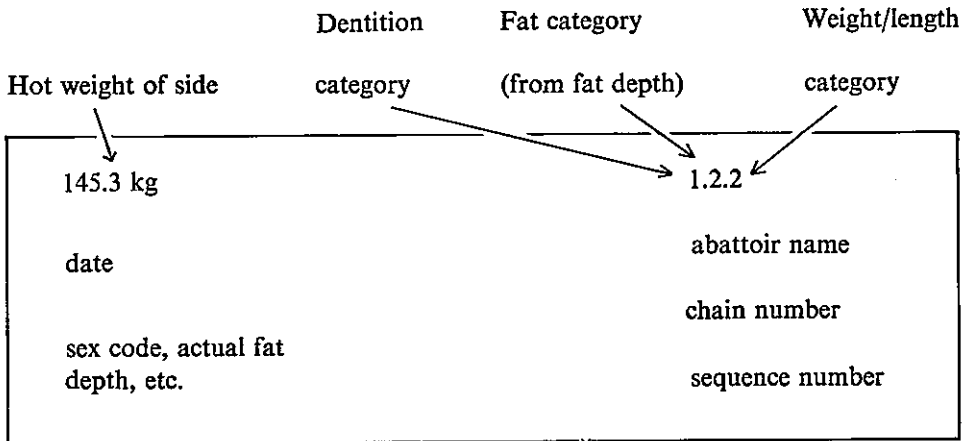
The Ticket

The carcass ticket will look some thing like this.

The information on the ticket

The hot weight printed will be the actual weight—no allowance is planned for shrink. For consistency in classification the carcass produced must be a standard one. The A.M.B. has published a proposal for a definition of a standard carcass.

Carcasses are classed on age by using the teeth (dentition category). The actual depth of fat over the eye muscle is recorded on the ticket. This is used to classify carcasses into fat categories. The computer calculates the weight/length ratio and places carcasses into classes based on this.



What good is it?

It is argued that classification provides a clear, precise common language for all in the industry. Such is lacking to date. Using it should promote savings and efficiency.

The classification equipment would allow for other uses at little extra cost. Carcase information could be fed back to producers. Market reports could be more accurate and clear. Marketing decisions could become simpler. The computer could help wholesale butchers and abattoirs with their record keeping and accounting. Industry statistics not available now could be collected cheaply.

It has been said that these points in favour of classification would allow price justice to be seen to be done. It seems that some cattle industry leaders think that price averaging takes place at present no matter how cattle are sold. They say cattlemen don't want this. They want to be paid for what they actually produce, not an average price covering a range of carcase types. This doesn't necessarily mean any change in ways of selling. It does mean that "weight and classification" selling is clearer and more consistent than "weight and grade" selling.

Arguments against

In broad terms graziers and scientists come down in favour of classification. The meat side of the industry generally is against it. They say their existing grading systems are good enough. Some argue that costs will outweigh any benefits.

Costs

Hard data on costs and benefits do not exist; but costs will be incurred—labour costs, maintenance costs and costs of instruments. Governments need to know details of both costs and benefits to decide what to do about classification.

Studies of both costs and benefits will be done over the long term large scale Cannon Hill trials as well as a number of other abattoirs in the south. They are planned to be concluded in mid 1978. Given the results of these studies, Governments will be in a position to decide what further to do about classification.

PRODUCERS' POINT OF VIEW ON CLASSIFICATION

B. E. MCCAMLEY

Grazier, "Tartus", Marlborough

It never ceases to amaze me why there is so much controversy over classification, whether it should be introduced, and the suggestion of a cost benefit study before introduction is superfluous.

Almost every country of the world that produces beef classifies their meat. All that is required is to put "like with like", grouping carcasses of similar characteristics, and then give them a simple description so that a purchaser knows what to order or ask for, and more importantly, knows that any particular classification will be of constant quality.

The advantages of classification to producers are:

1. To enable him to identify the type of animals required and in demand.
2. For introduction of a scheduled minimum price for all types of meat produced.
3. To help police quality control on export markets and to ensure importing nations receive what they ordered.
4. To protect consumers in Australia with a view to raising domestic usage of beef in Australia.
5. It will hasten the introduction of statutory electronic weighing.
6. More reliable market reporting.

The only disadvantage is that it will identify inferior types of cattle and inferior herds and people with these cattle will receive less, but in the long term, the whole industry will benefit. I don't believe that it would disadvantage any cattle travelling long distances to market.

Classification will necessitate the introduction of electronic recording equipment, which will include electronic weighing. This equipment will enable abattoirs to identify individual consignments of badly bruised animals from saleyards and the particular owner will pay for his bruising, instead of this cost being averaged among all sellers.

With an objective classification system, which is actually measuring fat cover in several areas, the yield factor calculated from these measurements would be very reliable and of tremendous importance to the producers, because yields of saleable meat can vary by up to 10% in animals of similar weight. This is of great importance to the cattle producer because he will be able to identify the individuals in his herd which are not yielding and be able to breed the particular type of carcass required. This fact has been overlooked for far too long.

So far, my comments have been confined to an objective classification system and naturally, this is the ultimate in classification. The Australian Meat Boards' technical officers are to be complimented on the wisdom of introducing such a system cautiously. However, the time taken to finalise these objectives would appear to be excessive.

While awaiting the introduction of this excellent system of classification, the beef producers of this country should introduce a simple subjective classification, similar to the one used in New Zealand, which groups carcasses according to weight, age and sex, and visual assessment of fat cover. This could be coupled with a live animal classification which would group our live animals to coincide with the trade descriptions actually being traded, both on the export and domestic market.

Below is an example of how animals could be described for uniform market reporting and for the introduction of a minimum price for live cattle. Steers would be classified into four groups according to age and weight to coincide with present trade requirements.

1. Ox over 270 kg
2. Ox under 270 kg
3. The prime local trade steer under 227 kg
4. Boner Ox
 1. Cows and others could be classified as follows:
 1. Cows over 227 kg
 2. Cows under 227 kg
 3. Prime local trade speyed heifers.
160 kg to 227 kg
 4. Boner cows and/or heifers.
Bulls over 270 kg

Bulls under 270 kg
 Yearlings prime local trade
 Yearlings unfinished
 Vealers
 Bobby Calves

If necessary, age could be included and probably all that would be necessary would be to have two extra classifications, one for ox over 5 years and one for cows over 5 years.

If a live animal classification system was introduced, it would not jeopardize the introduction of the Australian Meat Board carcass system when it was ready. However, a subjective carcass classification system, in the interim period, could be made use of to stall the A.M.B. scheme for some time and this would be to the detriment of the industry, for I feel that a system which can measure hot fat in several positions and includes a reliable yield factor, is of the utmost importance.

The extra cost of installation of electronic recording equipment should not be attributed to classification. The only relationship between classification and this cost is that objective classification as envisaged will compel processors to install modern weighing and recording equipment, which is long overdue.

This will replace the archaic system and equipment now being used in 90% of meat works in Australia.

SLAUGHTERING REGULATIONS

J. M. HAMMOND

Meat Inspector, Queensland Dept. Primary Industries

A question I am quite often asked is, "Can I kill stock for my own use?" Before answering this question I feel that some background information would be of value.

In Queensland, the Slaughtering and Meat Inspection Branch of the Department of Primary Industries is the supervisory body for the slaughtering of stock for the local trade. Some parts of Queensland have been declared 'Abattoir Areas' or 'Regional Areas'. Mackay District Abattoir Area is one of these areas.

Within these areas all stock for human consumption must be slaughtered at an approved abattoir within that area. Any meat brought into one of these areas from outside, must be from an approved abattoir. A main requisite of an approved abattoir is that it must have a full time meat inspection service.

Now returning to the question, about killing stock for one's own use, the answer is "No" if you are within an abattoir area. "Yes" if you are not in an area, but within certain restrictions which are tabled below.

Section 101 of the Meat Industry Act: *Illegal slaughtering of Stock and Dressing of carcasses.*

- (1) A person shall not except with the consent of and in compliance in every respect with conditions imposed by the Authority slaughter stock or dress a carcass of stock for human consumption at any place other than an abattoir or slaughter-house.
- (2) Subsection (1) does not apply with respect to stock—
 - (a) that is slaughtered by a person at a place of which he is the owner or occupier for consumption solely by him, members of his family residing with and dependent upon him or persons employed by him in or on that place;
 - (b) that is slaughtered by a drover at any time and place while he is engaged in driving animals, for consumption (in the course of the driving of those animals) solely by that drover, members of his family accompanying him and persons employed by him on that drive.

No part of a carcass of stock slaughtered pursuant to subsection (2), save the hide thereof, shall be sold.

Regulation 279 of the Meat Industry Regulations: *Slaughtering, etc., on Properties*. Where stock has been slaughtered and dressed pursuant to the provisions of paragraph (a) of subsection (2) of section 101 of this Act, a person shall not—

- (a) remove or permit to be removed the carcass thereof from the place on which such stock was slaughtered and dressed for breaking up, processing or otherwise handling; or
- (b) break up, process or otherwise handle the carcass of such stock other than at the place at which it was slaughtered and dressed.

This briefly means that, outside an abattoir area, you may slaughter stock on your property for use by yourself, family or servants (employees) on your property and no part, except the hide, can be removed, sold or given away for use off your property.

Finally, my advice is, for best handling and results, that where possible, make use of the facilities at an abattoirs, slaughter house and butchershop.

IMPROVING BEEF QUALITY

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Quality

Beauty is in the eye of the beholder. Similarly what quality is depends on one's point of view, the retail butcher for example may be more concerned with the appearance of uncooked cuts on display than the consumer, who is more concerned with tenderness and price.

Tenderness

All the available scientific evidence points to the dominant position of this in consumer satisfaction.

It is only in the last five years that the vital role of the phenomenon of *shortening* has been understood by scientists. Shortening means that as muscle goes into *rigor mortis* after death it tends to shorten if it can. In broad terms the shorter it becomes the tougher it is to eat. The degree of shortening depends on the temperature of the muscle while *rigor mortis* is taking place, approximately 18 hours. At very cold chiller temperatures shortening is *maximal*. In a narrow temperature zone around 15°C shortening is *minimal*. Above 15°C some shortening occurs but not as much as with cold temperatures.

The importance of shortening in relation to tenderness is so great that it far outweighs any other factor. This means that what happens to beef in the few hours after death is far more important in relation to tenderness than anything which happens during the life of the beast. It is this understanding of shortening which has opened the way for the very significant advances in the field of beef tenderness that have come up in the last three to five years.

Tenderstretch

Tenderstretch is a new method of hanging carcasses during chilling and setting. Beef sides are supported by hanging from the aitch bone. Carcasses of mutton, lamb, pigs and calves can be supported by hanging from the pelvis; if split into sides they also can be hung from the aitch bone. Tenderstretch improves tenderness in cuts representing about 35% of the value of a beef carcass.

Conditioning

This involves holding carcasses at about 15°C for the period that it takes for rigor to develop. Unfortunately this temperature favours the growth of bacteria. To control this a very dry atmosphere is needed which means a high degree of shrink is inevitable. Nevertheless the process is in use in New Zealand.

Vacuum packaging

Cuts are vacuum sealed in special plastic bags and held for "ageing" to allow tenderness to develop. The speed of this development depends on the temperature the meat is held at in the bag. The bag allows the build up of carbon dioxide within itself which vastly reduces bacterial growth with a consequent vast increase in shelf life.

Usually two to three weeks ageing are regarded as necessary. This plus the expense of the process adds to costs. High pH beef is unsuitable for bagging and beef which has been severely shortened will not improve in the bag.

- Problems which I personally feel are occurring in the trade in "bagged" beef are:
1. No consumer education (in the bag muscle looks black, fat greyish and the normal bloody liquid is off putting).
 2. Little butcher education. Whilst processors are aware of the needs of this process retail butchers generally are not. I have observed this situation: beef bagged today, delivered to butcher shop tomorrow and sold the next day. Bags have been seen in butcher shop windows with price tickets piercing the bag, yet once the seal is broken shelf life is very short.

Electrical stimulation

This involves the passage of a current through the body within an hour of death. The result is the acceleration of the rigor process to completion in about two hours. Shortening is thus reduced because of the temperature effect.

Whilst this is still experimental Meat Research personnel in C.S.I.R.O. believe it is very close to being practical. A problem still to be solved is modifying slaughter chains to allow it to be done. Even if adopted there will still be a place for tender-stretch.

Most importantly electrical stimulation raises the very real possibility of hot boning without substantial loss in tenderness, drip, etc. This has the potential of substantial savings in chiller cost in processing.

FIELD MEETING IN THE BOONAH DISTRICT, MAY 13, 1977 LOW COST PASTURE ESTABLISHMENT ON STEEP ROCKY HILLSIDES

Many properties have at least some country which is steep, difficult of access and often unproductive. This land is often too steep to go over by tractor and is frequently left undeveloped. However because of its elevation it may not be frosted and so is well suited to tropical legumes.

Two pastures of this type were inspected in the Boonah district, the first pasture had only been sown eighteen months previously while the second pasture was sown seven years ago. The field day was organized in conjunction with the Boonah Dairy Development Committee.

AN INTRODUCTION TO THE BOONAH AND FASSIFERN DISTRICT

K. F. LOWE*

The Boonah Shire, of which the Fassifern Valley is a part, has an area of 148,000 ha. In fact the use of the term Fassifern Valley for the general Boonah area is a misnomer as it really is the area of the Parish of Fassifern which surrounds Kalbar.

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