

**THE CASE AGAINST QUALITY GRADING FOR BEEF
(BUT FOR PRODUCT DESCRIPTION)**

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INTRODUCTION

Despite the fact that the debate over the grading of beef has been raging for 30 years or more, the topic is as critical and no less relevant today as it was three decades ago. While the principles of grading beef have not changed during this time, our understanding of the vital characteristics of beef eating quality and the technology to monitor, manage and manipulate the product has changed dramatically.

At the outset we need to clarify the terminology the industry is currently using relating to meat quality description. Widespread confusion over the important differences between grading and product description has, I believe, largely converted simple concepts into a complex controversial and divisive debate.

USA GRADING SYSTEM

Grading USDA style refers to the subjective and arbitrary segregation of carcasses by a trained grader into rankings of preference based on a set of criteria which is thought to reflect eating quality. Despite the fact that beauty lies only in the eye of the beholder, grading systems in principle aim to advise consumers what they should regard as really beautiful as opposed to less beautiful as the case may be, for example, Prime, Choice, Select, Standard, Commercial, Utility, Cutter, Canner etc. To determine whether grading achieves its objectives we must first define what we mean by eating quality and then decide if it is possible for a grader to accurately identify these vital characteristics applying the given parameters of a grading system so remotely located from the consumer's plate. Further, we must also consider the reaction of a consumer who has been sold an expensive high-grade product on the absolute assurance of being first quality only to find on consumption that it is in fact third grade or worse. With beef accurate description is vital as consumers find it impossible to visually assess quality themselves at the retail meat counter. Importantly, regardless of the product in question, at the end of the day, consumer satisfaction is entirely dependent on that product measuring up to its actual description at the point of retail when purchased. And that is where our beef industry problems begin.

FACTORS INFLUENCING CONSUMER ACCEPTABILITY

It can be claimed with absolute confidence that consumers worldwide would define reliable beef quality as comprising these simple, but vital, characteristics being continuously and reliably available in the following order of priority:

- The overriding factor is an acceptable degree of tenderness.

Followed well behind by:

- Desirable taste, flavour and smell.
- Adequately moist or juicy.
- Visibly attractive lean to fat ratios with acceptable meat and fat colour.

While price in itself is not a quality parameter, it is the most influential of all factors influencing consumption levels. Beef is extremely price sensitive for as price rises consumption falls in direct relation and vice versa. I believe this is largely due to lack of confidence through the notoriously unreliable product quality which is mostly determined by tenderness or lack thereof. I am equally confident that when we can deliver quality/tenderness reliably and consistently, then price will have a far lesser influence on consumption levels.

If the above definition of quality be true, then obviously what has to be done is to identify, measure, record, monitor and communicate data relating these traits to the consumer. In addition, and of absolute importance, the whole industry marketing infrastructure from the breeding paddock to the boning room (or butcher shop) requires a total restructure so that every link in the production chain is given the incentive to enhance the product while in their control and is properly rewarded for so doing. Live animal slaughter sales based on Estimated Saleable Meat Yields (ESMY) or preferably on actual Saleable Meat Yields (SMY) would go a long way to addressing this problem as opposed to dollars per head or cents per kilo live or dead weight methods of today.

SUITABILITY OF USA GRADING SYSTEM FOR AUSTRALIA

The USDA grading system has been around for many years and has been considered for introduction into the Australian industry. It is therefore a relatively easy task to assess the system's ability to measure and record the agreed attributes for meat quality and consumer benefit. USDA grades currently do NOT record tenderness or juiciness or taste, flavour or smell. In fact, of the above traits, all it does record of consumer interest really is the lowly rated fourth category of meat and fat ratios which characteristics are categorised into basic groups then tagged with emotively descriptive labels connotating quality gradings. These labels lead to high levels of consumer expectation as to quality which often are not met and as a consequence create poor confidence in the product. In America, where despite all steaks consumed being grain fed and graded, 25% continuously fails to reach the desired degree of tenderness, thus one meal in four creates opportunities for competing products, particularly chicken which is always tender.

Traditionally, marbling has been thought to be associated with palatability characteristics of meat. Consequently the degree of marbling in the twelfth-rib cross section is the primary determinant of USDA quality grades among carcasses of cattle of similar age.

Some Nebraska's Clay Center studies have shown a low relationship between marbling and palatability characteristics including tenderness. However, other Clay Center studies, and indeed studies elsewhere, including Australia, have shown no correlation at all. Of concern, however, what has been shown is an antagonistic relationship or a strong correlation between marbling and poor boning room yield efficiencies. Additionally, joint research by Texas A&M, Iowa State, Clay Center, USDA Meat Quality Division, Beltsville Meat Research Laboratory and others has found and agreed that, and I quote, "within the age and maturity range of carcasses eligible to qualify for Prime, Choice, Good and Standard grades, then grades could only predict tenderness, flavour and overall palatability of loin steaks with 30 to 38% accuracy (a pretty poor result!). Worse still the same grades could not explain more than 8% of the same characteristics including shear force value differences of broiled top round, bottom round or eye of round

steaks". In other words, USDA grades do not necessarily reflect essential quality attributes as defined by the consumer.

Much support in Australia for grading has been generated on the grounds that it is considered by some to serve the American industry well, which belief, on analysis, is found to be far from correct. Grading was originally introduced nationally by the USA Government, not as a quality control measure, but as a war-time mechanism to support price control. However, it is now so deeply entrenched and favoured as a promotional tool by the politically powerful supermarket chain-stores that it is impossible to remove and almost impossible to amend despite constant criticism from the industry, particularly the producing sector. The strongest industry supporter of grading is understandably the feedlot sector. Feedlot operators recognize that grass-fed cattle seldom grade therefore the grading system delivers them a captive clientele. As most cattle are custom fed by individual owners, then obviously the lotfeeder has no exposure to either the cost or the risk of grading, but simply benefits from continuous patronage of the owners of the cattle. Should a breeder be able to negotiate an over the hooks sale, then the grading system allows the purchaser to apply discount prices below market level for the lesser grades, rather than premiums for the high grades.

COSTS AND BENEFITS OF GRADING

Why you might ask do not American livestock producers like their grading system and the answer is simply it costs them money. First and foremost the system, because of its high scoring of over-fat carcasses combined with inherent inflexibility, could not recognize and respond to the sudden and world-wide consumer aversion to dietary consumption of animal fats. This resulted in huge quantities of expensive surplus fat being fed onto the animal to enable them to achieve high grades, then trimmed off the carcass and disposed of at enormous cost in the boning room to make the product attractive enough to entice the buying support of consumers. More than anything, this grading-based problem caused the significant downturn in beef's market share and to subsequent replacement with chicken. Did this matter to the retail chains?—not at all, for they simply sold more chicken, but the effect on the cattle industry was catastrophic. As a consequence, American producers and processors then turned their attention towards foreign consumers and higher prices on export markets initially developed by Australia. To add insult to injury, some of those export markets are now pressuring Australia to adopt USDA grading in the belief that it would cure the variability problem of our product which, of course, is totally fallacious.

Frustratingly no matter how assiduously or how successfully livestock producers worked to upgrade and improve their cattle, they invariably never received or benefited from those premiums available only to the higher grading carcasses. This disincentive to improvement is because the breeders of the cattle have long since lost ownership in their animals prior to the grading process. They have been purchased by feeders who, in turn, mostly on-sell to processors who, as the owners of the carcasses at the actual time of grading, pocket the higher grade premiums if indeed any came their way. Meanwhile, all animals are purchased by processors at an average price based on the assumption they may not grade at all. **In other words, under the American industry structure which has developed around its grading system, there is little opportunity or incentive for cattle breeders to improve the quality of their product, as measured by the consumer, and equally little reward if they manage to do so.**

Unfortunately, we in Australia tend to think that if it is good for America, then it must also be good for us. This is a fallacious argument as many American products and practices are often not what they seem to be when exported away from the hype of their home environment. We are also told that the Japanese consumers strongly favour USDA graded beef. I would suggest this preference stems not from the fact that the beef is graded per se, but that being all grain fed it is far more consistent than the Australian product

which, being both grass and grain fed to varying degrees, is by comparison, and to our detriment, highly inconsistent.

ANOMALIES IN US GRADING SYSTEM

The USDA grading system is largely subjective and totally arbitrary. It is common practice for carcasses which fail to achieve the desired grade (and therefore value) one day, to be stood aside to face the scrutiny another grader the next day, who with a different perspective will often pass them. On this lottery rests countless millions of dollars by way of increased costs and premium payments, not to mention confused market signals with absolutely no guarantee of consumer satisfaction, particularly as to tenderness. Because of the problems inherent in grading, some minority retail stores successfully specialize in ungraded or "no roll" beef which is mostly very youthful, but heavy and relatively lean carcasses with no marbling and, as such, would not grade even if eligible to do so. This is all grain fed, mostly British x European breed, beef from Canada or else locally produced, but escapes the USDA Federal grading system which dictates that no domestically produced beef can cross a State boundary unless it has been graded. This product is very similar to that most preferred on our own domestic market.

Were we to adopt the USDA grading system in Australia, be assured that only a very small percentage, if any, of our grass-fed cattle would achieve the top grades and not too many more when grain fed. Under this scenario, only those few in the top grade would achieve and set market value with all lesser grades (that is, the bulk of our production) being price discounted below market level. As a result, the average producer selling over the hooks would receive a lower average price and the consumer would be no better served in terms of quality assurance. Unlike the USA which consumes 95% of its product internally, more than half of our production goes to many and diverse export outlets, all of whom have widely differing quality requirements which could not possibly be catered for under a single standard quality grading system.

Additionally, we would have imposed on our industry yet another substantial and fixed overhead cost between the farm gate and point of consumption, that segment of our industry already overloaded with unnecessary and debilitating costs. There are no prizes for guessing on whose shoulders this burden would fall.

BEEF MARKET SHARE

The greatest indictment of all is, that during the last 30 or so years of USDA grading, beef has lost its pride of place, once promoted as the "King of Foods", enjoying amongst the world's highest consumption per capita to where, today, beef has substantially lost market share and is struggling unsuccessfully to contain inroads made by the poultry industry. One must question then just what is so magical about the USDA grading system which actually pre-empt's consumer choice, but as the evidence shows does not ensure consumer satisfaction, particularly as it relates to tenderness. Objectively viewed and as many American industry participants acknowledge, there is little to commend USDA grading when separated from the hype of its influential protagonists, most of whom have interests diametrically opposed, particularly as related to price, to those of the producer of the raw material, that is, breeders of cattle.

OPTIONS FOR AUSTRALIA IN PRODUCT DESCRIPTION

Doing nothing at all about the poor image of our product in the eyes of consumers would be as big a crime as adopting grading in my view. Therefore what should be done to ensure consumer confidence in and loyalty to our product? Like very other product which comes in differing sizes, shapes, attributes and prices, beef must be accurately described and importantly must perform up to its description. Until such time as we have a reliable, effective and low-cost mechanism to measure tenderness in the carcase and convey this information to consumers, then we will continue to lose market share no matter how sophisticated our product description. Hopefully, this technology is imminent and must go hand in hand with a review of appropriate genetic selection, management procedures, nutritional regimes, slaughter practices, as well as the complete spectrum of all factors affecting tenderness right through to the cooking process.

Apart from all important tenderness, what other information is relevant to consumers? This I believe can be limited to age, fat content, some measure of the nutritional plane prior to slaughter (reflected perhaps by an age:weight ratio), statement as to grain or grass finished, date when vacuum packed for ageing purposes and assurances on health and medication. For the domestic market any further data is superfluous to requirement, while for export markets any other information relevant to that particular market, such as marbling scores, should be included.

I suggest we should introduce our own brand of voluntary, but objective, Product Description using the criteria described above. This criteria should be universally and nationally supported by the imprimatur of an Australian Meat and Live-stock Corporation logo to ensure security and credibility to the systems. Its users should be approved, licensed and monitored on a user-pays basis so the benefit (and the cost) can be tied into the respective producer's or the processor's or the retailer's brand name. Unlike grading which ranks in order of supposed or notional quality, Product Description categorizes into groups those carcasses of identical or similar objectively measured historical and physical characteristics without any attempt to indicate quality. Relying on that information the consumer can then exercise their own prerogative, as indeed they should, to determine their own quality and price rankings according to their individual palate and pocket dictates.

QUALITY ASSURANCE BEGINS AT THE SALEYARDS

Currently information vital to quality assurance such as age, genetics, medication and prior nutritional environment is simply not available as it is lost either at every change of ownership prior to slaughter or during the slaughter process itself. Saleyard auctions, as currently constituted, are probably the greatest single perpetrator of this disastrous vacuum in essential animal background data. Livestock saleyards must be forced to conform to the industry's needs of today or else risk becoming redundant. Livestock producers must be made to declare the vitally relevant information by Statutory Declaration, if necessary, and to stand behind that information as a warranty of their product and as a standard quality assurance program. Producers in return for the live animal information would be entitled and should expect to receive accurate and timely feed conversion together with carcase and meat quality data feedback.

EFFECTIVENESS OF USDA QUALITY GRADES, MARBLING AND MATURITY IN PREDICTING MEAT QUALITY

An assessment of the plethora of US research commissioned over many years to evaluate the accuracy and effectiveness of the USDA quality grades to predict palatability, unequivocally confirms that the quality grades are almost totally flawed in achieving its current-day objective. Regrettably, the attempt to make the facts match up with the theory has failed.

The following summarizes many of the findings of the research conducted in the USA.

Relationship of USDA quality grade to beef flavour - 1983

Smith et al. (1983) reviewed 25 research reports relating USDA quality grade, USDA marbling score, and intramuscular fat content (determined chemically) to flavour of beef and concluded that 7 to 11% of the observed variability in sensory panel ratings for flavour were associated with differences in quality grade and subjective (marbling score) or objective (chemical fat content) measures of intramuscular fatness.

In 35 other research reports, USDA quality grade, USDA marbling score and intramuscular fat content had low to moderate relationships to sensory panel ratings for flavour. In 13 of the 35 studies, relationships of grade, marbling and intramuscular fat content to flavour were very low to low suggesting that there is a tenuous association of quality grade and/or fatness to flavour desirability of cooked beef.

Relationship of USDA marbling groups to palatability of cooked beef - 1984

The review of Smith et al. (1984) concluded that marbling explained about 5% of the variability in tenderness and about 16% of the variation in juiciness and that marbling, at best, has only a low correlation with beef palatability. Smith et al. (1984) found that marbling score had a low correlation with palatability of cooked beef. In loin steaks in the A maturity group, marbling explained 24 to 34% of the variation in flavour, tenderness and overall palatability. As the maturity groups were expanded from A to E the ability of marbling score to account for observed differences in flavour, juiciness and overall palatability of loin and top round steaks was essentially halved.

Relationship of USDA quality grades to palatability of cooked beef - 1987

Again, Smith et al. (1987) reported that, within the carcass maturity range encompassing those carcasses youthful enough to qualify for the prime, choice, good and standard grades, grade predicted flavour, tenderness and overall palatability of loin steaks with 30 to 38% accuracy, but could not explain more than 8% of the flavour, tenderness, overall palatability and/or shear force value differences between broiled top round, bottom round, or eye of round steaks. Forequarter cuts were not referred to in the scientific paper, however, the author of this paper assumes there is likely to be little or no correlation between quality grades and palatability of forequarter cuts.

CONCLUSION

The bad news is that beef's quality image around the world, particularly in Australia, leaves much to be desired. The good news is that there is plenty that can be done to remedy the poor image in real terms providing there is a will and a concerted effort to do so.

The CRC for the Cattle and Beef Industry is well positioned to become the catalyst to lead the industry towards the many attainable objectives essential for future growth and improved levels of consumer satisfaction.

On the other hand, a quality-based grading system can deliver none of this available upside potential. On the contrary, quality grading is more than likely to be an impediment constraining improvement in real beef quality, particularly as current and important research programmes deliver the technology necessary to drive the change.

Finally, much more must be learnt about all the processes between the paddock and the plate mitigating against product quality, especially tenderness, bearing in mind that 50% of all factors influencing tenderness occur post-slaughter between the knocking box and the plate. These influences should be inventoried, then systematically addressed even down to educating the consumer what to look for in the descriptive language of the day relative to the price tag, as well as how to best select, store, prepare, cook and present the world's premier protein product—enjoyable, nutritious and healthy Australian beef!

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