final report

Project Code: P.PSH.0637

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Date published: January 2013

PUBLISHED BY
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Development of pathways for the eligibility for MSA Grading for Royal Queensland Show Led Steer Competition

Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government to support the research and development detailed in this publication.

RECOMMENDATION

The following recommendation has been made by the MSA Pathways Committee out of session and agreed by the MSA grading office for the 2013 exhibition. Longer term arrangements will be discussed at the next Pathways Committee meeting where the RNA and Sydney RAS results together with ongoing long distance transport research will be evaluated.

1. That the 2013 Brisbane Exhibition (EKKA) Show carcasses be eligible for MSA grading subject to the following:
   - Meeting standard MSA screening criteria for pHU, meat colour and minimum rib fat.
   - Slaughter within 24 hours of despatch from the Showgrounds.
   - Cattle being on full feed and water prior to despatch from the Showgrounds.
   - Cattle having unrestricted access to water in abattoir lairage and being slaughtered within 24 hours of arrival.
   - Standard MSA requirements relating to cattle mixing be replaced by a 5 MQ4 point reduction on all cut by cook scores. (Equivalent to the MSA Saleyard penalty)

2. The requirements for subsequent years to be reviewed by the MSA Pathways Committee at their next meeting.

BACKGROUND

Carcass competitions are an important and popular means to encourage production and discussion of higher quality beef. As such it is highly desirable that Meat Standards Australia (MSA) be actively involved with such competitions, particularly where they are of state and national importance with significant producer and consumer impact. This also relates to major sponsors who support and seek association with the competitions as part of their brand promotion activities. Where their brands are visibly supported by MSA grade endorsement it is also important that this linkage be evident where they are purchasers of show carcasses.

MSA impose a number of pre-conditions for grading eligibility that seek to manage eating quality risk. Current regulations preclude cattle from grading that have been mixed within 30 days of slaughter on farm and require slaughter by the day after despatch from the farm. These conditions are imposed to counter potential stress associated with handling but not able to be directly observed during the grading process. To date MSA grading of show cattle has been precluded as they cannot meet these conditions.

It has been thought that show cattle may in fact be less affected by transport and mixing stress due to a history of regular handling, often including transport and showing at other venues prior to a national competition. In addition they are fed to a high standard while at the showgrounds which is likely to provide a high level of blood glycogen. The MSA saleyard pathway provides a possible precedent in that it allows grading of cattle that have an extended period from farm to slaughter due to saleyard selling in exchange for an imposed 5 MQ4 point penalty on all carcass cuts.

It was agreed that a sub group of 2012 EKKA show steers be followed through slaughter by MSA graders and that striploin samples be collected for consumer evaluation. It was further agreed that

the consumer results in relation to predicted outcomes from the MSA model be used to evaluate the added eating quality risk, if any, to equivalent cattle moving to slaughter within the standard conditions.

TRIAL METHODOLOGY

The available 2012 RNA carcass competition cattle were mixed at the conclusion of the live display in Brisbane and trucked to a Queensland abattoir located some 2 hours from Brisbane. Each animal was identified by an eartag that related to the exhibitor and competition class. The morning after arrival the cattle were drafted quietly into their class groups for subsequent slaughter on a group basis.

While all 341 carcasses could have full MSA grade data collected only a lesser number could have detailed pH and temperature decline measurements taken due to the labour intensity of this work. It was elected to select the 36 carcasses for consumer testing from within these cattle to provide more detailed data and the examination of potential stress mediated linkage to pH decline rates and eating quality. To ensure a random spread of carcasses across multiple competition categories and exhibitors blocks of cattle were identified for pH and temperature decline measurement with later selection of consumer test samples from within these groups. The selection protocol sought to provide a mix in approximate relation to the total number within each class.

Groups selected were all drawn from the steer category which represented the greatest proportion of cattle with the heifer and Junior led steer classes excluded. Table 1 presents the number of carcasses available, measured for declines and collected for consumer testing by class.

Table 1: Cattle slaughtered, carcasses measured for pH decline and selected for consumer test by competition class.

Class	Weight Range	Head	No of Declines	Consumer Tested
1	325 - 350	3	2	1
2	351 - 375	18	8	3
3	376 - 400	33	18	6
4	401 - 430	41	12	2
5	431 - 460	29	20	6
6	461 - 490	35	20	6
7	491 - 540	40	10	6
8	541 - 591	33	10	6
9	591 - 650	13	-	-

All carcasses were MSA graded in the early morning following slaughter and the 36 sides (the right side from 36 carcasses) selected for consumer evaluation sorted off and boned as a separate run. The striploin was collected from each with an MSA primal identification tag inserted in the vacuum bag to retain linkage to carcass and eartag identification. The striploins were then trucked to Coffs Harbour and fabricated into consumer samples in accordance with MSA protocols and frozen at 7 days from slaughter.

The standard protocol results in 5 individual steaks being prepared from each sample. Each is halved after cooking and served to two consumers with each steak served in a different presentational

order. This results in 10 consumer results per sample. All consumers are served 7 steaks with the first a presumed mid quality starter and the following 6 representing 6 products. The products are selected to provide a wide quality range resulting in all consumers evaluating a range from unsatisfactory to premium quality. To achieve this the RNA samples were arranged as a product and benchmarked by tenderloins, outside flats and striploin samples from other MSA projects. The presentational order is assigned in accordance with a 6 x 6 latin square ensuring that each product is served an equal number of times before and after each other product and equally in second to seventh serving order. This process assists in balancing out possible bias due to preceding samples or order of serving.

All consumers recorded their judgement by marking 100 mm line scales for tenderness (t), juiciness (j), flavour (f) and overall satisfaction (o) in addition to selecting one of four categories – unsatisfactory, good every day, better than every day or premium quality – for each sample. The line scales were measured to provide a score between 0 and 100 for each trait and entered into a data file. Means for the 10 consumers were calculated and clipped means calculated by averaging the 6 values remaining after discarding the highest and lowest 2. An MQ4 (Meat Quality, 4 Variable) result was created by multiplying and cumulating (t *0.3 + f*0.3 + o*0.3 + j*0.1) to provide a combined consumer score between 0 and 100 for all samples. A score below 46.5 is an MSA ungrade, between 47 and 63 an MSA 3*, 64 to 76 an MSA 4* and any above 76 are graded MSA 5*.

RESULTS

Key carcass parameters for the 341 head that were graded and for the 36 selected for consumer testing are presented in Table 2. All cattle were tenderstretched after slaughter and had no HGP implant, both positive influences in regard to eating quality. The cattle were young and relatively heavy for their maturity (defined by ossification – Uoss) with a range of marbling. As might be expected for a prestigious competition they reflect an overall high quality.

Of the 341 head graded 20 failed to meet MSA specification with 15 rejected on account of ultimate pH exceeding 5.7 and 5 due to ribfat being under 3mm. At 5.9% of the total this is not considered excessive.

The 36 selected for consumer testing were a good reflection of the larger group having very similar mean values and range for the majority of attributes although the mean marbling values were slightly higher. No ungraded carcasses were tested as these would be automatically excluded in commercial grading. This is reflected in the slightly lower pHu and meat colour values for the test group.

The consumer test results are shown in Table 3. These reflect the generally high carcass quality and best practice processing with tenderstretch carcass hanging. Consumers have rated the average product at 68 MQ4, comfortably into the MSA 4* grade which starts at 64 MQ4 points.

	MSA GRADED			CONSUMER TESTED		
	No. Of Head - 341			No. Of Head - 36		
	Av	Min	Max	Av	Min	Max
HSCW *				273	179	352

P8 Fat						
RibFat *				7	3	14
Hump *				68	50	110
EMA				88	61	117
Uoss *				109	100	140
Umb *				386	220	590
AMB						
AMC						
AFC						
pHu *				5.48	5.35	5.67
Loin Temp				4.0	1.4	8.1
%BI (hump calc)				4	0	38