Adaptation of Meat Standards Australia Quality System for Northern Irish Beef
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Introduction. The “Meat Standards Australia” (MSA) quality assurance system for beef eating quality is based on
consumer data and predicts the final eating quality for a particular muscle and cooking method from information recorded
for each animal/carcase (Thompson, 2002, Polkinghorne et al., 2008). Prediction traits included muscle, position within
muscle, hanging method, % Bos indicus breed, use of hormonal growth promoters, marbling, maturity (by ossification
score), carcase weight, rib fat depth, meat colour, ultimate pH, ageing time and cooking method (Thompson, 2002). In
addition, participating meat plants minimize handling stress and ensure that the electrical stimulation/chilling regime allows
an appropriate rate of pH decline against temperature. Some factors, especially % Bos indicus breed and use of growth
promoters, do not apply in the EU, while the impact of maturity will be less due to different production practices. Likewise,
the MSA system did not include bulls, beef of dairy origin or beef cooked “well-done” in its prediction model. This paper
summarises the outcomes of a project to evaluate the performance of MSA, adapt it to NI beef and consumers and to test
the validity of the adapted model.

Materials and methods. Experiments were conducted to evaluate the role of pre-and post-slaughter factors, such as
gender, breed, hanging method, ageing, electrical stimulation/chilling, muscle and position within muscle on eating quality.
Carcass information, namely breed, sex, hot standard carcase weight and EUROP grade were recorded as were MSA
grading measurements (Thompson, 2002). A total of 192 animals and 36000 consumer tastings (6000 consumers) were
used to develop a version of the model for NI. A further 10080 consumer tastings on beef from 48 animals were used to
validate the adapted model (MSA-NI). Consumers scored portions for tenderness (TE), juiciness (JU), flavour liking (FL)
and overall liking (OL) using a 100 mm line scale (Farmer et al., 2009). A combined meat quality score (MQ4) was
obtained using the equation, MQ4 = 0.4*TE + 0.1*JU + 0.2*FL + 0.3*OL.

Results and Discussion. The standard MSA system accurately predicted the eating quality of beef for consumers from
Northern Ireland. Nevertheless, some differences were found: NI consumers responded slightly differently to Australian
consumers and some muscles and groups of animals were less accurately predicted. The adapted MSA model included
adjustments to the boundaries between grades, adjustments to the predicted scores for certain muscles, removal of factors
relating to Bos indicus and growth promoters and an adjustment for bulls. Figures 1 shows the ability of the adapted model
(MSA-NI) to predict the eating quality of (a) beef used to develop the model and (b) that used for validation.

Conclusions. An adapted MSA-NI grading model predicted the eating quality of the NI beef with good accuracy and
precision.

References