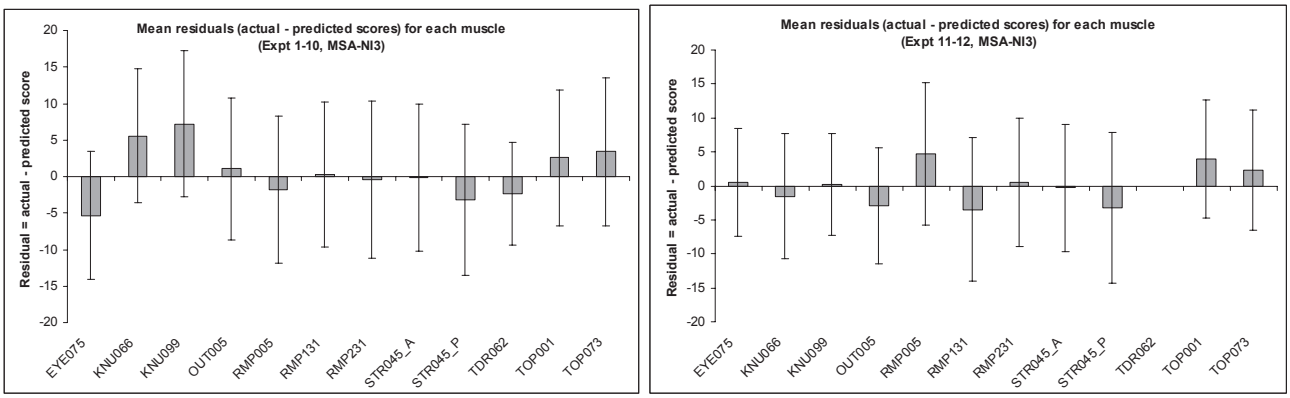
Adaptation of Meat Standards Australia Quality System for Northern Irish Beef

L.J. Farmer[1], D.J. Devlin[1], N.F.S. Gault[1], A.W. Gordon[1], B.W. Moss[1], R.J. Polkinghorne[2], J.M. Thompson[3], E.L.C. Tolland[1], I.J. Tollerton[1], R. Watson[4]
[1]Agri-Food and Biosciences Institute, Belfast, United Kingdom, [2]Marrinya Pty Ltd, Victoria, Australia, [3]University of New England, Armidale, Australia, [4]University of Melbourne, Melbourne, Australia
Email: linda.farmer@afbini.gov.uk

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.



Key to muscles: EYE075 = *semitendinosus*, KNU066 = *rectus femoris*; KNU099 = *vastus lateralis*, OUT005 = *biceps femoris*, RMP 005, 131, 231 = *biceps femoris, gluteus medius, gluteus medius* (eye), STR045A, M, P = *longissimus dorsi*, anterior, middle and posterior, TDR062 = *psoas major*, TOP001, 073 = *adductor femoris, semimembranosus*.

Figure 1 Mean difference (±se) between predicted and actual consumer MQ4 scores from MSA-NI for (a) the calibration data (36000 tastings) and (b) the validation data (10080 tastings). Bars indicate standard deviations.

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

References

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