

SNAPSHOT

AN ON-LINE SYSTEM TO ASSESS BEEF QUALITY CHARACTERISTICS

Project Report Reference: 2017-1070

Date: 5 April 2019

Project Description

The goal of this project was to evaluate the TenderSpec™ beef classification system for tenderness and marbling. The objectives were to evaluate this U.S. system against Australian cattle to identify tender carcasses and evaluate marbling/intramuscular fat within the ribeye. A data set was created to facilitate creation and optimization of algorithms.

Project Content

Images were captured on more than 1,100 ribeyes in a meat packing plant at line speeds. Some carcasses were suspended by the Achilles tendon and others by the hip (Tenderstretch). Proportion of *Bos indicus* and *Bos taurus* breeding was visually assessed and gender was recorded. Images were taken the day after harvest, at the expose surface of the 13th rib. Carcasses were moving when images were made. A MSA grader collected standard MSA data, including loin muscle area, marbling, lean colour, fat colour, and pH. About 400 samples were obtained for laboratory measurements. A 10-cm sample was removed from the loin and aged for 14 d (never frozen) before shear force was measured. A portion of the sample was used for determination of intramuscular fat. Images were subsequently analysed and proprietary algorithms were used to classify carcasses as Tender or Uncertified. Marbling score was also assessed with the instrument. Data were used to characterize the Australian population for tenderness and intramuscular fat.

Project Outcome

In a subset of 255 samples, the TenderSpec™ beef classification system classified 85% as tender. The identified samples met the statistical criterion of 95% accuracy in identifying carcasses that could be certified as tender. That is, when a carcass is certified as tender, the certification was 95% accurate. The project also reinforced some well-known relationships, including that Tenderstretch improves loin muscle tenderness, higher percentages of *Bos*

Disclaimer:

The information contained within this publication has been prepared by a third party commissioned by Australian Meat Processor Corporation Ltd (AMPC). It does not necessarily reflect the opinion or position of AMPC. Care is taken to ensure the accuracy of the information contained in this publication. However, AMPC cannot accept responsibility for the accuracy or completeness of the information or opinions contained in this publication, nor does it endorse or adopt the information contained in this report.

No part of this work may be reproduced, copied, published, communicated or adapted in any form or by any means (electronic or otherwise) without the express written permission of Australian Meat Processor Corporation Ltd. All rights are expressly reserved. Requests for further authorisation should be directed to the Chief Executive Officer, AMPC, Suite 1, Level 5, 110 Walker Street North Sydney NSW.

indicus breeding can be detrimental to tenderness, and that heifers are slightly less tender than steers.

Marbling scores derived from the U.S. algorithm were more highly related to IMF than were MSA marbling scores.

In addition, a database now exists to facilitate development and optimization of algorithms for tenderness, marbling, and other traits collected with the MSA system. It is recommended to fund development of the algorithms straightaway. In the meantime, the system can perform well in the Australian market.

Benefit for Industry

These results indicate that the TenderSpec™ beef classification system is capable of identifying tender beef carcasses. Application of this technology in Australian beef plants has the capacity to benefit producers, the domestic market, and global competitiveness.

USEFUL RESOURCES

Additional information on the TenderSpec™ beef classification system is available from Goldfinch Solutions, LLC and may be requested from GoldfinchCC@gmail.com.