

AN OVERVIEW OF BEEF MARKETING AND CLASSIFICATION STANDARDS AMONG THE INDUSTRIES OF THE UNITED STATES, CANADA, URUGUAY, AND AUSTRALIA

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Abstract – Most of the world’s leading beef producing countries have established grading systems to classify beef products in order to differentiate the value of beef. Limited information was known about the beef industry structure and export process for marketing beef. The purpose of this research was to identify similarities and differences among four countries competing in beef export markets. Differences and similarities in grading standards existed between the United States, Canada, Uruguay, and Australia.

I. INTRODUCTION

Little information is known about the similarities and differences among the beef industry export and domestic beef marketing infrastructure and beef grading standards applied in the United States, Canada, Uruguay, and Australia. Beef grades can be used to differentiate beef products both domestically and internationally. A better understanding of the government and/or privatized grading authorities which provide country specific yield and/or quality grades will allow researchers to better understand marketing technique and specific industry structure.

II. MATERIALS AND METHODS

Researchers conducted multiple interviews with government agencies, private industry groups, finishing operations, and beef packing plants in the United States, Canada, Uruguay, and Australia. A uniform survey was developed and used for in-person interviews. Interviews in the United States were conducted with one finishing operation, one beef packing plant, The United States Meat Export Federation (USMEF), and Where Food Comes From, Inc. (a private, third-party process verification company). Interviews in Canada were conducted with four finishing operations, two beef packing plants, the Canadian Meat Council (CMC), the Canadian

Beef Grading Agency (CBGA), the Canadian Food Inspection Agency (CFIA), and the Canadian Cattlemen’s Association (CCA). Interviews in Uruguay were conducted with four finishing operations, three beef packing plants, The Ministry of Livestock, Agriculture and Fisheries (MGAP), the National Meat Institute (INAC), and the Hereford Breeders Society. Interviews in Australia were conducted with four finishing operations, three beef packing plants, The Department of Agriculture, Fisheries and Forest (DAFF), Australian Agricultural Company (AAco), Authority for Uniform Specifications (AUS-MEAT), and Meat and Livestock Australia–Meat Standards Australia (MLA-MSA).

III. RESULTS AND DISCUSSION

In the United States, two government agencies oversee the safety, export, and grading of beef. The United States Department of Agriculture (USDA) – Food Safety Inspection Service (FSIS) is responsible for food safety oversight, product labeling, and issuing export certificates. USDA - Agricultural Marketing Service (AMS) offers a voluntary grading service to beef processing establishments. Both USDA-FSIS and USDA-AMS work harmoniously to ensure that quality and safety export criteria are conformed to, prior to issuing export certificates. Government approved and audited private, third-party process verification companies may be employed to certify and/or verify marketing and/or production claims as well as source and age verification for domestic and export markets. USDA-AMS officials are commonly contracted to assign grades to beef carcass to differentiate the value of beef products entering domestic and export markets. The United States has a two part beef grading system 1) USDA Quality Grade which serves as an indication of the eating characteristics; 2) USDA Yield Grade which

serves as an indication of carcass composition related to the percentage of boneless, closely trimmed, retail cuts (BCTRC) from the round, loin, rib, and chuck. Even though the decision to grade beef carcasses is voluntary, USDA-AMS, a government agency, regulates and maintains the grade standards and oversees the application of grades. USDA Quality Grade is determined based on the following criteria: carcass maturity (indications of physiological maturity determined by skeletal and lean characteristics), degree or amount of intramuscular fat or marbling, and sex classification. Youthful steer and heifer carcasses are eligible for quality grade designations of USDA Prime, Choice, Select, and Standard, while carcasses indicating advanced levels or age/maturity only qualify for USDA grade designations of Commercial, Utility, Cutter, and Canner. Except for Prime, the same designations apply to cow carcasses. The quality grade designations for bullock carcasses are Prime, Choice, Select, Standard, and Utility. There are five yield grades applicable to all classes of beef, denoted by numbers 1 through 5, with Yield Grade 1 representing the highest degree of BCTRC (52.3% yield or greater) and Yield Grade 5 representing the lowest degree of BCTRC (45.4% or less). Beef yield grade is determined by considering four characteristics: 1) the amount of external fat over the ribeye, 2) the percent of kidney, pelvic, and heart fat, 3) the area of the ribeye muscle at the 12th/13th rib interface, and 4) the hot carcass weight (HCW; USDA-AMS, 1997). In most all cases in which carcasses are being graded, a combination of Quality Grade and Yield Grade are assigned to each carcass. Quality Grade designations are commonly utilized to differential the value of products in both domestic and international markets. A combination of carcass characteristics and live animal characteristics (e.g., marbling, HCW, maturity, phenotype, breed type, etc.) may be utilized to further differentiate beef products in certified and/or branded beef programs by USDA-AMS officials.

In Canada, the beef export process requires approval and documentation from government entities prior to export. The Canadian Cattle Identification Agency (CCIA), a private industry agency, assists with animal traceability, and the CFIA, a governmental agency, audits live cow-calf and finishing operations for animal records, export

documentation, and health certification. The Canadian Minister of Agriculture and Agri-Food oversees the CFIA President, Vice-President, Chief of Livestock Grading Programs, and the Food Safety Officer and Chief. The district veterinarian sends all animal health documentation to the Chief Food Safety Officer and Chief.

Similar to the United States, the beef grading system is voluntary. The grading authority, CBGA, is permitted by the CFIA Chief of Livestock Grading Programs to contract graders or special service third-party entities to conduct grading. The CBGA, a private, non-profit organization, ensures uniformity in the application of grade standards while remaining open to alternative delivery systems. Canada has a two-part grading system to: 1) assess predicted carcass quality and palatability and 2) assess carcass cutability or yield. Canadian beef quality grades evaluate carcass maturity, meat color, fat color, carcass muscling, fat coverage, meat texture, and marbling level. Carcasses are evaluated as either "youthful" or "mature" according to the degree of bone ossification. Carcasses showing more advanced ossification are considered to be mature and must be graded as Canada D or as Canada E (Canada Beef, 2012). The Canadian beef quality grades, Canada A, Canada AA, Canada AAA, and Canada Prime are harmonized with the USDA quality grades (USDA-AMS, 2014). In 1996, Canada adopted a beef grading system that mirrored USDA's quality standards (USDA-AMS, 2014). The yield grade criteria in Canada measures the amount of lean yield in the carcass by using ribeye length, width, and fat depth over the ribeye. The three possible yield classifications include Canada 1, 2, or 3. Carcasses with Canada 1 designation are estimated to contain 59% or more lean meat; carcasses exhibiting characteristics indicating an estimated lean content of 54% to 58% lean meat are designated as Canada 2, and carcasses exhibiting characteristics indicating an estimated lean content of 53% or less are designated as Canada 3 (Canada Beef, 2012). Canada yield grades are not designated for any carcass graded in the B, D, or E quality grades.

In Uruguay, the beef export process requires approval and documentation from government

entities prior to export. The government oversight includes: Uruguayan Minister of Agriculture, Director of Ministry of Agriculture, Livestock and Fisheries (MGAP), and the General Direction of Livestock Services. The General Direction of Livestock Services oversees MGAP auditors, veterinarians, Sub Director Division of International Relationship, Animal Identification and Registration System (SIRA), official Ministry beef grades (MGAP) for the export market and the Animal Industry Division. The Animal Industry Division consists of INAC Board of Directors (4 producers and 4 beef packers). The Uruguayan cow-calf operations, finishing operations, beef packing plants, domestic and export markets are overseen and approved by the Uruguayan Ministry of Livestock, Agriculture and Fisheries. Cow-calf operations must be inspected by MGAP veterinarians and have a National Livestock Information Systems (SNIG) and SIRA to be monitored by the animal DISCOSE or traceability software system. The Minister of Livestock, Agriculture and Fisheries, Sub-Secretary, and Director of General Livestock Services oversee MGAP auditors at finishing operations, and issue MGAP export permits at the beef packing plants prior to export for markets requiring specific quality attributes and production standards. The Uruguayan beef grading system is both a private (INAC) and a government (MGAP) grading system. Uruguay also has a two part grading system 1) INAC to evaluate yield or cutability standards and 2) MGAP to evaluate quality attributes to predict palatability for the export market. INAC grading standards evaluate age (must be < 27 months), (muscle to bone ratio) carcass conformation, and sex. INAC receives funding from beef packing plants based upon carcass destination (domestic vs. export). INAC trains and approves graders to apply classification and tipificacion to carcasses designated for the domestic market. Tipificacion is the animal conformation or lean to bone ratio. Classification and tipificacion is recorded and INACUR specifications are used to determine carcass grade or terminacion (0-4). However, beef intended for the export market may require quality specifications. The MGAP grading system, a public government entity, assesses marbling, color, texture, and ossification to assign quality designations. The ministry (MGAP) provides training and accreditation for graders to assess quality attributes for the export market.

In Australia, the beef export process requires approval and documentation from government and private entities prior to export. The four main entities that provide oversight include: the Ministry for Agriculture, Fisheries and Forestry (DAFF), Australian Meat Processors Council, Meat and Livestock Australia (MLA) and the Australian Meat Processors Corporation (AMPC). Accreditation for veterinarians, Chief Veterinarians, and food export standards is conducted by DAFF, Parliamentary Secretary for DAFF and the First Assistant Secretary Export. AUS-Meat and AUS-Qual are overseen by AMPC, which also oversee the First Assistant Secretary Export branch for food export standards. AMPC is comprised of AUS-Meat, AUS-Qual, Australian Meat Industry Language and Standards Committee, Chief Executive, Certification Manager, and Manager Certification Services who train AUS-Meat Auditors on behalf of AUS-Qual. Training Managers oversee AUS-Meat chiller assessors who are plant employed for grading beef for both domestic and export markets. MLA, a private industry entity, oversees the National Livestock Identification System (NLIS). MLA reports traceability records to AUS-Qual for use during carcass assessment. MLA also sends the NLIS records to MSA for the MSA field and beef packing plant grade assessment. MSA graded beef is marketed heavily domestically and used for the export markets requiring quality specifications. Australian Livestock Exporter's Council (ALEC) develops industry policy and LiveCorp (not-for-profit) collects levies from the government to assist with the livestock export industry including live animal export. The collected levies are monitored by AMPC who permit levies to be used for MLA research and the NLIS. The beef industry at the cow-calf, finishing operation, beef packing plant and export market sector require oversight. Cow-calf operations require DAFF accredited and Chief Veterinarian Officer animal health inspection and a National Vendor Declaration (NVD). MLA assigns cattle operations a PIC number for the NLIS to ensure RFID traceability. At finishing operations NVDs must be maintained and verified by Livestock Producers Assurance (LPA) and AUS-Qual auditing service. The LPA program is a quality assurance program that can be used for feedlot accreditation for animal welfare (NFAS). Live animal AUS-Qual audits are conducted for Exporter Supply Chain

Assurance (ESCAS). At the plant, the truck driver delivers the NVD and LPA certifications for cattle acceptance at the packing plant delivery office. AUS-Qual allows AUS-Meat to accredit beef based upon different marketing claims including but not limited to: electronic export certificated, HACCP, Good Manufacturing Practices (GMP), and AUS-Meat accreditation. Beef intended for the export market requires an export certificated that has been approved by DAFF export standards branch for specific import countries standards (MIC). Australia's beef grading system is accredited by two different privatized entities. AUS-MEAT is the standard for grading beef carcasses to assess yield. AUS-MEAT evaluates dentition, (rump fat) P8 fat, and carcass weight. AUS-MEAT may evaluate, marbling, eye muscle area, and meat color at the 10th, 11th, 12th or 13th rib. AUS-MEAT classifies beef carcasses into boning groups (1-18). Most carcasses are recorded as either boning group five, six or seven. After AUS-MEAT grading is assessed Meat Standards Australia (MSA) is an optional grading system that can also be conducted to predict beef quality and palatability. The MSA grading system evaluates meat color, fat color, ossification, AUS-MEAT marbling, *bos indicus* content, hormone growth promotants, rib fat, MSA marbling (5th to the 13th rib), hang method, overall fat diet, hump height, and pH of the lean at the 10th rib. The MSA grades include: MSA three, four, or five star assigned to beef primals.

IV. CONCLUSION

Differences and similarities were found between government and/or privatized grading systems among countries. The criteria for determining beef quality grade and yield grade were also different between countries. Both Canada and the United States do not have mandatory quality or yield grade requirements and are most similar in quality grade and yield grade designations among all other countries. The Canadian beef quality grades, Canada A, Canada AA, Canada AAA, and Canada Prime are harmonized with the USDA quality grades (USDA-AMS, 2014). Uruguay has a mandatory yield grading system overseen by a private, industry entity (INAC) for all domestic products. MGAP quality grades may also be applied (voluntary), which are primarily used for export purposes. Australia does have a mandatory yield grading system that is privatized by AUS-MEAT and accredited by

AUS-QUAL. AUS-MEAT is predominately used for marketing of domestic product. Australia does have a privatized quality grading system (MSA) that evaluates quality attributes to determine MSA three, four, and five star primals. This allows Australia to use MSA grades to target both higher premiums in the domestic and export markets.

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