

GLOBAL BEEF EATING QUALITY COLLABORATIVE PLATFORM AS AN INNOVATION FOR THE MEAT INDUSTRY

Rod Polkinghorne^{1*}, Holly Cuthbertson¹, Alix Neveu², Ray Watson³ and Jerzy Wierzbicki⁴

¹Birkenwood Pty Ltd, Blandford, Australia

² SARL Birkenwood Europe, Saint-Sornin, France

³ Department of Mathematics and Statistics, University of Melbourne, Vic. 3010, Australia,

⁴IMR3G Foundation, Warsaw, Poland

*Corresponding author email: rod.polkinghorne@gmail.com

I. INTRODUCTION

The beef industry is impacted by many challenges with consistent, predictable eating quality of critical importance being directly related to consumer satisfaction and value. Description of beef eating quality was defined by UNECE standards and its variability through the supply chain is notable [1,2,3,4,5]. Consumer prediction models can identify the beef eating quality variability, however, extensive high-quality research data is required to develop models. The International Meat Research 3G Foundation (IMR3GF) has developed a collaborative software system, named DATAbank, to facilitate integrated project design and delivery across multiple international partners who maintain ownership of their individual data with underlying protocols to ensure data compatibility.

II. MATERIALS AND METHODS

Since 2017, the IMR3GF has established a global database of consumer sensory response related to major muscles from many cattle production systems evaluated in accordance with UNECE Bovine Language Standards. The DATAbank contains data from live animal to consumer response for beef collected via international projects over the last 20 years in 11 countries (Australia, Northern Ireland, South Africa, USA, Poland, France, Japan, South Korea, New Zealand, UK, Ireland). The DATAbank software also supports experimental design through sequential processes that assist statistical balance and consistent application.

III. RESULTS AND DISCUSSION

The assembled global data of carcass traits and consumer response has been collected in accordance with UNECE protocols (Table 1). Extensions have been made to the existing UNECE Bovine language to extend description from cut codes to muscles, muscle positions, ageing time and conditions and multiple cooking methods. To facilitate high quality project design and uniform description the DATAbank Experimental Design software provides a progressive design sequence to firstly specify the livestock required and assignment to control and treatment groups with balanced allocation guidance for comparisons within animal, including side allocations, and for treatments between animal groups. Following side allocations routines include selection of cuts, defined by UNECE codes, to be collected after boning, and then extraction of muscles and muscle positions to determine the number of ultimate consumer samples. Further treatments that define cooking and ageing across and within each muscle can be expanded to include allocation of treatments such as mechanical or chemical processes and allocation to multiple destinations. These routines deliver a parsimonious allocation to ensure balanced replication across the minimum number of animals per rotation. Practical application is assisted by allocation of unique identification and progressive work files and labelling from carcass sides to consumer plates and questionnaires and the accumulation of animal, carcass and consumer data.

Table 1 Current beef data stored in DATAbank

Countries	Cooking methods (n)	Consumers (n)	Samples (n)
Australia	13	132,400	926,800
England	1	300	2,100
France	1	2,340	16,380
Ireland	2	3,000	21,000
Japan	3	2,460	17,220
South Korea	2	720	5,040
New Zealand	4	3,960	27,720
Northern Ireland	2	9,000	63,000
Poland	4	9,780	68,460
South Africa	2	840	5,880
UAE	1	420	2,940
USA	5	21,660	151,620
Wales	2	1,320	9,240
Total		188,200	1,317,400

IV. CONCLUSION

This is intended that the software be made widely available at minimal cost and hoped that it will prove valuable in facilitating highly compatible data across research projects thereby increasing the value of data through extensive linkage. As all industry revenue directly comes from the consumers judgement of value, with the most critical component meal satisfaction, industry profitability can be enhanced by delivering consistent eating quality through strong commercial brands built on a solid scientific foundation.

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