

Exploratory Ontario Lamb Grading Study

October 31, 2017

This project was funded in part through *Growing Forward 2 (GF2)*, a federal-provincial-territorial initiative. The Agricultural Adaptation Council assists in the delivery of *GF2* in Ontario.

Executive Summary

A sheep industry's competitiveness rests on the consistency and predictability of the lamb it produces, the suitability of the lamb produced to meet market demands, and the efficiency with which lamb can be produced, processed and distributed to consumers. Fat lambs are more expensive to produce and process than lean lambs, and production costs are directly impacted by feeding programs, production systems, weight and genetics. In light of this, multiple nations' sheep industries (including the US, UK, New Zealand and Australia) are each seeking to improve their economic viability by utilizing grading systems to retain current markets and secure new market opportunities.

The grading of lamb is not complex and, for reasons described, the benefits of grading far outweigh the costs. The value of grading systems also stems from their ability to create a common language that extends along the value chain, resulting in the creation of a common language and vision. This provides farmers, processors and overall industry with greater ability to continually improve their performance in line with market demands. The degree to which practices used to evaluate carcass value, and the utilization of resulting information to improve on-farm and downstream operational performance, remains in comparative infancy in Ontario's sheep industry compared to its major competitors.

The purpose of this project is to examine opportunities to increase the value and consistency of Ontario lamb by establishing a means for objectively measuring lamb carcass performance from retail grade and meat yield perspectives, then communicate the results to industry. The project's objectives included creating an objective lamb conformation benchmark in the form of a baseline 100 index, and producing an indicative retail grading grid and pricing formula that processors can modify to suit specific target markets. The project comprised four distinct phases: 1) research design, including processor engagement; 2) data capture; 3) data analysis; and 4) reporting.

The research design was based on insights produced by a short literature review of grading practices and a survey into how Ontario lamb processors determined carcass value. Evidence of the success and promotion of market-oriented pricing systems that rely on the grading of carcasses to determine market value has been documented in multiple jurisdictions and species. Grading enables New Zealand and Australia, along with the UK, to successfully capture international markets, by having created the ability to perform and produce a consistent supply of verifiable quality lamb. The same jurisdictions' sheep industries also promote the formation of collaborative value chains to further increase efficiencies and margins along the chain. The literature review includes examples of why grading is a valuable tool that can provide enormous benefit to the entire chain if it is implemented with transparency and rigour. The review also details why the effectiveness of grading and pricing systems rely on providing appropriate information and incentives for producers to produce in line with market demands.

Two Ontario processors provided written records on the individual dressing percentages of over two thousand lambs slaughtered in Ontario during 2016 and 2017. The same processors also measured the warm carcass weight and fat depth of over 2,426 lamb carcasses during September and October 2017. The processors also provided data on individuals' lambs' source (e.g. ON QC, etc.). Carcass fat depth was measured using Grade Rules (GR knives) sourced from Australia. The processors followed the process developed by AUS-Meat and Lacombe Research and Development Centre for measuring fat to estimate lean meat yield. External fat is measured on the 12th rib at what is termed the "GR site." The GR site is 110 millimetres from the midpoint of the carcass.

The amount of meat that can be derived from a carcass determines its value. A formula developed by Lacombe Research and Development Centre, Alberta, was used to calculate lean meat yield percentages on each individual carcass. The average weight of all carcasses measured during trial was 49.2lb (22.3kg), the median – or midpoint in the data – was 51.6lb (23.4 kg). Variations in carcass weight and fat depth resulted in the estimated lean meat yield (LMY) percentage ranging from 55.1 to 63.1. This variable of 55.1/63.1 represents 12.6 percent difference in the amount of meat that could be derived from a carcass – regardless of its weight. Of the lambs slaughtered during the pilot, 978 (~40%) were within the weight range typically desired by processors: 45lb to 55lb. Similar differences in fat depth and LMY exist across the overall and narrower population of lamb slaughtered.

The point at which the average weight and fat depth of 45-55lb carcasses coincided, along with the impact of fat measurements on LMY percentages, was analyzed to produce the base index on top of which values were later assigned. The producer value used in the pricing grid’s development was \$5.00/lb WCW. This was based on \$2.50/lb live weight and 50 percent dressing percentage. The processor value used in the grid’s development was the three-month average of the Montreal wholesale price adjusted to estimate the value of lean meat only: \$20.41/kg. A 100 index “breakeven point” was established. This is where the price paid for lamb’s whose carcasses weighed 51.3lbs with 11.5mm of fat would be the same – regardless of whether the lamb was purchased live (based on weight) or as a carcass (based on meat yield).

In the pricing grid developed during the research, the value of the 45lb carcass ranges from \$235 (28lbs of meat @ 6mm fat) to \$212 (25lbs of meat @ 20mm fat). This is a 9.6 percent variation in price. The larger the carcass, the wider the weight range – and therefore carcass value. For the same difference in external fat on 55lb carcass, the prices paid for 6mm versus 20mm fat is \$286 and \$257, respectively. This equates to a 10.2 percent variation in price. An example was than described of how processors could modify the representative grid to incentivize farmers to produce lambs suited to a specific market. The analysis concludes by presenting a comparative assessment of overall lamb value by source. Using data collected during the pilot, the overall value of Quebec lamb was identified as being over 11 percent greater than the overall value of “Local Ontario” lamb. While reflecting a snapshot in time, this suggests that Quebec’s focus on identifying breeds and production systems suited to producing higher value lamb with predictable consistency is producing results.

In achieving the outcomes described, the project demonstrated that a GR knife can be used accurately and quickly by Ontario lamb processors at current line speeds. The project also established a base 100 index for lamb based on estimated lean meat yield, and a method by which lamb can be valued based on its individual lean meat yield estimate. In doing so, the project provided a template payment system that the Ontario lamb industry can adopt to ensure that producers receive payments that directly reflect the value of their lamb. The project also demonstrated the flexibility with which lean meat yield index values can be used within defined weight ranges, thereby enabling producers and processors to benefit from producing lamb targeted at specific markets.

Table of Contents

1	Introduction	4
---	--------------------	---