



Ontario Sheep Industry Research Outcomes

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Ontario Sheep Farmers (OSF) Research Outcomes

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Background

On June 14th, 2018 Ontario Sheep Farmers (OSF) together with The Livestock Research Innovation Corporation (LRIC) held a sheep industry research priorities elicitation day.

Participants were invited to discuss what they felt are important issues in the sheep industry that could be addressed through research investment by OSF. Participants were asked to make their research priorities as specific as possible.

Ranking	Research Area
1	<i>Benchmarking/Cost of Production/C3 composite industry data</i>
2	Parasites
3	Lamb mortality
4	<i>Market traits – carcass quality characteristics</i>
5	<i>KTT/communications</i>
6	Environmental impact/sustainability
7	Efficacy trials and diagnostic tests
7	Feed efficiency
7	Grazing – agronomic factors
7	<i>High health status programs</i>
8	AMR/AMU, alternatives, gut health

Ranking 1, 4, 5 and 7 (*italicized and not highlighted*) were considered important but post-meeting discussions revealed there is considerable information already available on these topics which is not currently being used or taken advantage of by producers and/or the topics did not have an applicable novel research question. It is recommended that the industry review the current KTT/extension efforts to identify how they can more effectively meet producer interest in these topics.

The remaining priorities were separated into three overarching areas of interest; Environment, Nutrition and Health. Teleconferences were held with small groups of producers, researchers, Ontario Ministry of Agriculture Food and Rural Affairs (OMAFRA) personnel and members of the sheep industry to further understand and develop research outcomes and directions in each of the areas. The outcomes below combine the information from the meetings and can be used to inform OSF and OMAFRA investment in sheep research.

Research Outcomes

1 - Environment

Outcome:

Ontario sheep production positively impacts the natural environment

Background:

OSF has completed a life cycle analysis of sheep production in Ontario.



The value of wool production research.

Wool contains more than 50% pure atmospheric derived organic carbon. One kilogram of wool can be converted to 1.8kg of CO² (IWTO 2014) making wool a more environmentally sustainable clothing option than synthetics and a method of carbon sequestration directly derived from carbon in pastures, not from fossil fuels.

Concern over microplastics in the environment is increasing due to the negative impact of marine wildlife ingesting them and their persistence and

tendency to aggregate in our environment. One of the largest and most relevant sources of microplastics are synthetic textiles such as nylon, acrylic and polyester which are widely used in clothing. The manufacturing of clothing is becoming a more important concern as clothing made from synthetic textiles is produced using chemicals and synthetic polymers, and the processes involved in its manufacture are not environmentally friendly.

Wool is a natural substitute for synthetics and as it relates to Corporate Social Responsibility a highly palatable regarded alternative.

Value of sheep to the ecosystem

The ecosystem benefits of livestock grazing include maintaining species rich habitats through limiting aggressive species and removing grass and plants gradually and giving more mobile species a chance to spread. The effect of trampling and grazing can also allow for the creation of niche areas in which new species have the chance to compete with the more aggressive ones. Maintaining sustainable grazing with a suitable stocking density is ideal for the maintenance of wildlife habitats.

When sheep ingest plant based carbon and convert it to meat, leather and wool, that carbon particularly in the case of leather and wool is potentially stored for long periods of time. These are all positive research findings.

There is of course, research that contests the assertion that sheep are beneficial for the environment in which they graze.

If we are to grow the Ontario sheep industry, research is needed under typical Ontario conditions to validate that the findings from other studies as per the examples above, can be repeated here in

Ontario. The aim is to demonstrate that the immediate environmental impact of managed grazing of sheep, particularly on marginal land, is insignificant and when the potential to replace synthetic fibres with wool is taken into account, actually leads to positive environmental outcomes.

Potential area(s) for investigation:

- A literature review of existing data to determine its applicability to sheep production, the landscapes and climatic conditions in Ontario
- Identifying methods for improving whole farm water use efficiency
- Determine the cost and environmental benefits of wool as a replacement for synthetic fibers.

2 - Nutrition

Outcome:

The economics of various feeding strategies for sheep and lambs in Ontario are available to and useful for producers

Background:

In Ontario, a wide variety of feeding methods are employed when raising sheep. These vary from seasonal rotational grazing to complete TMR systems. Research is required to give producers the tools/knowledge to improve their cost efficiency, through understanding the advantages and drawbacks of non-traditional feed sources used within a grazing rotation and/or a TMR regime. Considerations should include the identification and availability of alternative feed sources, feeding methods and options which could include the length of grazing period. All research should also determine the economics and cost efficiency of the systems.



Potential area(s) for investigation:

- Could winter wheat or rye be grazed with a minimal impact and/or improvement to the crop yield?
- The impact of dietary ingredients on meat quality
- Options and methods for forage and grass grazing during drought conditions
- Assessment of feed sources and their impact on the gut microbiome

3 - Nutrition & Health

Outcome:

A measurable decline in on-farm lamb mortality and morbidity compared with that which was reported in the OMAFRA report of 2010.

Pre-weaning Mortality

	%
Average mortality per flock	15.8
Median mortality per flock	14.5
Minimum mortality per flock	6.8
Maximum mortality per flock	31.7
Percent mortality 0 – 2 days	9.6
Percent mortality 0 – 10 days	11.8
Percent total mortality pre weaning	15.4

Background:

The determinants of maternal and lamb immunity are multi-factorial with many inter-related components and factors that impact offspring mortality and morbidity.

Potential area(s) for investigation:

- Maternal Nutrition: Identify nutritional strategies that will reduce variations and optimize ewe body condition score in accelerated rearing systems
- Vaccinating ewes to reduce mortality and morbidity of lambs
- Assessment of passive immunity and the factors that determine its efficacy
- The development of water-based delivery options for nutraceuticals and alternatives to antimicrobials within the various production systems (This work could be linked to identifying methods for improving whole farm water use efficiency)
- Nutritional/gut health management to help guide antimicrobial use (AMU) decisions
- Efficacy of immunobiotics including immune stimulants and/or probiotics
- The relationship between genetics and lamb mortality and morbidity



4 - Health Management

Outcome:

Producers have access to the information they need to make appropriate management decisions that will positively impact flock health within their individual farm system context.

Background:

With the huge diversity in Ontario production systems, an understanding of the various methods, impacts and costs, will provide information to determine the management systems most appropriate for the conditions and context in which sheep are being produced.

The implementation of contextualized management systems will result in an overall improvement in animal health and welfare.

Potential area(s) for investigation:

- Cost effective tests for identification of parasite loads
- Methods including grazing systems to improve control of parasites
- Management and nutritional methods to manage gastrointestinal parasitism
- Selecting sheep that are better able to manage parasite infections
- Investigate ability to have the CARLA saliva test administered in Ontario without needing to ship samples to New Zealand
- Housing system design to help control of bacterial infections
- Air quality/ventilation systems for improved manure management in housed flocks



Secondary issues for the industry to consider

Non-Research:

- OMAFRA should support an Ontario wide survey to record the different pasture management systems and other feeding options being practiced for sheep production in the Province. Industry and researchers need to be included in the survey design to optimize the questions in order to obtain relevant, useful data.
- All groups identified management as the critical component of rearing sheep and that the need for education and teaching is critical. It was noted that research into the best way to accelerate behavioural change would be beneficial.

Research:



- GenOvis incorporates phenotype data but needs to go further. Research (not just in Ontario) is needed to validate phenotype and genotype data relationships for incorporation into the GenOvis database.
- There is a lack of registered pharma products that are available to sheep farmers. Rated highly, is the need for continuing access to research resources to prescribe off-label products for sheep and to be able to determine withdrawal times. CgFARAD research was considered to be of vital importance to the industry.