

Ontario Goat Research Strategy 2014 to 2019

The Ontario Goat Sector in 2019

In 2019 there will be a single organization representing the goat meat, milk and fibre producers with a sustainable goat research funding program in place. Research and extension-type programs will have improved the health status of herds with 30 per cent of herds in the process of becoming caprine arthritis encephalitis virus (CAEV) negative. Production will continue to increase both in litres per doe and litres per farm. There will be better utilization of on-farm data collected and recorded milk weights either through on-farm parlour systems, Dairy Herd Improvement services or weigh scales, and improved identification of individual animals. There will be systems in place that allow for additional testing of milk samples for disease, improving udder health and milk quality. There will be standardized and validated criteria to allow herds to be classified based on their health status, and to use genetic indicators for disease resistance. Collaboration and communication will be improved between producers, industry and the research community.

With the continued rise of ethnic populations in Ontario, the market for goat meat, milk and fibre will continue to grow. Ontario goat products will be promoted as delicious, locally grown, high quality, nutritious foods, etc. There will be improved carcass information flow.

In 2019 there will be more animal health products approved for use in goats. The industry will have standard production protocols in place. Ontario goats will be stronger genetic animals with disease resistant genotypes. Disease control programs will be in place for Johne's disease, infectious abortions, CAEV and caseous lymphadenitis (CLA). The industry will be benefiting from benchmarks established for growth curves, lactation curves and disease status.

Theme 1. Nutrition

Nutrition planning and management is of paramount importance in all livestock systems. The goat industry is no exception; however, unlike most other commercial livestock in Ontario, goats are efficient browsers and able to effectively digest a large variety of fibre and roughage. High performing goats and fast growing kids require supplemental feeding during growth, lactation and pregnancy. To avoid metabolic disorders such as pregnancy toxemia (ketosis) it is important that current information on the best feeding and nutritional management practices during these important periods is available for producers. Most regions in Ontario are deficient in selenium and research is required to understand how this deficiency can be addressed cost effectively and practically by farmers.

Theme outcome(s)

Optimal nutritional planes at important periods in the lifecycle of goats are understood and accurately described in a way that allows service providers and farmers to apply that knowledge.

Research objectives

The performance of the Ontario goat sector is not restricted by an inadequate knowledge of the best nutritional regimes for all goats at all stages of life.

Potential areas of research:

- Investigate and develop goat-specific physiological lactation data for goats producing milk under typical Ontario conditions.
- Investigate transition doe feeding regimes currently being utilized by the Ontario industry and develop recommendations (there are no standards – dependent upon feed used). Does and doelings need to be investigated.
- Verify and validate existing information on the changing nutritional requirements of developing kids and investigate the most efficient and practical ways of getting this information utilized on farm.
- Investigate the cause and develop more accurate control systems for identifying and managing vitamin E/Selenium deficiency in kids.
- Develop goat-specific National Research Council (NRC) nutritional requirements.

Theme 2. Animal health

Goats are raised in a variety of production systems in Ontario where the physical conditions at the farm and in transport expose goats (individual and herd) to a plethora of disease challenges. Examples include various climates, exposure to wild animals carrying disease, chronic parasite issues, different viral and bacterial exposure, etc. Management, continuing education and research are important requirements for an improved health profile for Ontario goats.

Theme outcome(s)

In 2019 the Ontario goat herd is demonstrably healthier than in 2013. Improvements will be gained through a reduction in premature mortality and rates of morbidity for the most commonly occurring production-limiting diseases for both young stock and the adult herd.

Research objectives

Farmers, in conjunction with their herd veterinarians, are confidently implementing a suite of management practices and pharmaceutical options to better manage herd health; and as a result, are recording improved health outcomes on their farms.

Potential areas of research:

- Validate current management protocols and develop prevention control programs and early diagnostic techniques for the following diseases: Johne's disease, CAEV, infectious abortions and CLA.
- Standardize the assessment of and accurately assess kid mortality in Ontario and compare with other similar jurisdictions.
- Across Ontario and in other similar jurisdictions (Canada and United States) compare production systems that are consistently recording lower average kid and doe mortalities than others.
 - Using this information develop benchmarks and animal health protocols as a basis for best management practices (BMPs) with the following 2019 targets:
 - Ontario kid mortality is less than 10 per cent.
 - Ontario is recorded as one of the lowest three regions in North America for early goat mortality.
- Investigate the best knowledge translation and transfer (KTT) and extension mechanisms that will ensure that by 2019 all goat producers in Ontario are moving towards implementing Canadian Food Inspection Agency (CFIA) recommended biosecurity protocols.
- Investigate what (if any) vaccines and animal health products with goat specific label claims, doses and withdrawals for both meat and milk are available in other jurisdictions and work to develop a case to have these licensed in Canada or work with other jurisdictions to develop a label claim.

Theme 3. Economics

Goats are raised for the milk, meat or fibre market. Within these three production systems there are differences in: genetics, management systems and geographic and climatic conditions. The economics of the goat industry in Ontario is influenced by these various production systems and conditions. If the industry is to grow, it needs to understand what the most profitable production systems are in Ontario and how to most profitably increase its share of the meat, milk and fibre market.

Theme outcome(s)

The Ontario goat industry is increasing its productivity and maintaining or improving profitability year-over-year.

Research objectives

Industry has an accurate cost-of-production model for the various goat production systems that exist in Ontario and producers are actively benchmarking their performance against one another and working collaboratively to improve productivity.

Potential areas of research:

- Determine accurate cost-of-production data for meat goat production that will allow benchmarking and which can then be used to update BMPs.
- Re-confirm the cost of production data for dairy.
- Identify production sensitivities; which factors most significantly improve efficiency and/or have the biggest impact on the bottom line:
 - Establish benchmarks for the (major) economic factors impacting productivity and profitability.
 - Establish management clubs and analyze return-on-investment.
- Within different production systems work to estimate the economic impact of the top three production-limiting diseases on productivity and bottom line.

Theme 4. Reproduction

Goats reproduce seasonally causing a lack of milk supply each fall. The entire goat supply chain would benefit dramatically with year-round reproduction.

Theme outcome(s)

In 2019 milk and meat production is year-round and 30 per cent of farmers have adopted the necessary protocols for year-round reproduction. Veterinarians are noting fewer abortions through the Ontario Animal Health Network. The use of genetic improvement programs and reproductive management techniques such as hormone protocols, lighting programs, artificial insemination and embryo-transfer is more widely adopted.

Research objectives

Researchers have solved the issue of seasonal reproduction and established protocols that producers are implementing. There are fewer abortions due to improved management of the elimination of the abortion organisms. Artificial insemination and embryo-transfer is more successful and available.

Potential areas of research:

- Investigate the most cost-effective mechanisms to manage or eliminate the impact of the abortion organisms (i.e. cluster of four: toxoplasmosis, chlamydia, Q fever, campylobacter).
- Investigate management techniques to improve the success rates of out-of-season breeding protocols and develop cost-effective techniques and tools to overcome the problem including research into lighting programs and hormone manipulation.
- Investigate the potential cost / benefit of improving reproduction protocols and tools for:
 - Artificial insemination and embryo transfer leading to improved availability and documented hormone protocols for producers to follow.
 - Research that supports a strong case for the use of PMSG hormone for out-of-season breeding.

- Licensing controlled internal drug release products (CIDR) for use in dairy and meat goats.

Theme 5. Genetics

The potential to maximize production using genetic selection is yet to be fully realized by the goat sector in Ontario. Selection for animals that are more robust and productive and produce a consistent quality product for the market is paramount if the industry is to reduce cost-of-production and successfully grow its market share.

Theme outcome(s)

Ontario goat producers have the genetic tools to develop robust animals that produce high quality product that profitably meets market requirements.

Research objectives

Genetic selection as a production tool is becoming more common with Ontario producers. Producers are aware of the tools available to them and those engaged in improving their genetics can use the tools confidently.

Potential areas of research:

- Identify those traits that will provide more robust animals with a focus on markers for disease resistance and high immune response.
- Continue to elucidate Canadian genomic information and provide the results in a format that producers can use to improve productivity.
- Established benchmarks to measure the success of on-farm breeding programs.

Theme 6. Product development

The Ontario goat industry has significant opportunity to produce a very wide variety of new and improved products to compliment the existing selection.

Theme outcome(s)

Three cost effective new products are being added each year to the market offering.

Research objectives

Producers have more choices available to them to market their product and have the knowledge and ability to be able to take advantage of these opportunities.

Potential areas of research:

- Investigate goat products that have proven market penetration in other jurisdictions and assess their applicability for the Ontario goat industry.
- Understand the opportunities provided by the new population demographics in Ontario to increase market share for meat and milk and assess the feasibility of cost effectively supplying their needs (e.g. investigating different cuts, utilizing the whole carcass and milk products).
- Investigate the economic feasibility of developing goat whey as a source of protein for the health and fitness sector.

- Investigate the economic feasibility of developing goat whey as a source of protein for milk replacer for kids.
- Investigate the cost / benefit to all elements of the supply chain in having more processors or better vertical integration.

Theme 7. Milk quality

Implementing milk quality standards for all goat milk produced in the province will assure customers of a consistently high grade, safe product.

Theme outcome(s)

In 2019 milk quality is improved due to the establishment of milk quality benchmarks.

Research objectives

In 2019 Ontario has established minimum standards for goat milk quality and 100 per cent of all milk produced is meeting those standards.

Potential areas of research:

- Identify the major contributors to contaminated milk and milk losses and provide cost effective management solutions to reduce and eventually eliminate contamination including research into:
 - Determining how best to use somatic cell count as a benchmark for udder health and milk quality.
 - Study the most common mastitis-causing organisms on farm and develop protocols for prevention (contagious versus environmental).
 - Investigate the impact of milking technique on udder health and milk quality.
- Identify the optimum fat-to-protein ratio for processing. Work with the feed industry to adjust rations.

Theme 8. Marketing

Changing consumer demographics in Canada combined with changing consumer preferences based on real and perceived health attributes of products, provides potential opportunities for innovation in both the meat and milk categories and gives the Ontario goat industry a significant potential market advantage.

Theme outcome(s)

In 2019 Ontario goat products are achieving sustainable market growth increments at twice the 2013 levels.

Research objectives

Producers have the necessary information coming back from the market and the tools at the farm level to be able to make informed choices about what products and which markets to target.

Potential areas of research:

- Investigate consumer trends in all categories and develop benchmarks for each against which market penetration can be quantified.

- Review successfully differentiated goat products in other similar jurisdictions and new products being developed from meat and milk in Canada. Analyze and report on the cost of developing similar and/or new differentiated products from goat meat, milk and fibre.
- Quantify the health benefits of goat products and use this information to market and promote goat product consumption.
- Investigate consumer attitudes on goat welfare and on-farm food safety as a marketing tool and identify where there may be some points of alignment between animal, producers and consumers.
- Investigate the international situation in relation to the availability of semen and embryos and provide solutions as to how Ontario producers can use the information to their advantage in terms of buying and selling.

Theme 9. Animal welfare

Goat production is undertaken in a variety of different systems. There are many factors contributing to animal welfare, therefore a multi-disciplinary approach to the exploration and understanding of the welfare needs of goats is required.

Theme outcome(s)

The goat industry in Ontario is recognized as a leader in small ruminant welfare.

Research objectives

Herdspersons and managers are able to recognize early signs of compromised welfare and have the tools to alleviate the conditions that are causing the problem. Injuries are reduced in the goat population due to a better understanding of normal goat behavior and goat needs.

Potential areas of research:

- Investigate and develop the most efficient and effective manner with which to euthanize goats of all ages. Develop protocols (in a simple to follow format) and disseminate to all goat producers and their employees.
- Benchmark adherence to transportation guidelines (including compromised animals) and seek to understand the barriers to goat producers not adhering to transportation guidelines. Find solutions that will remove those barriers.
- Create education programs for producers to be able to understand and practice proper hoof care and trimming.
- Determine the optimum stocking density for meat does and kids.
- Investigate goat behavior in various handling systems (including the parlour) to improve housing, equipment design and handling procedures.
- Investigate normal behavioral indicators for goats.

Theme 10. Food safety

There has never been a time when consumers and the marketplace have been more focused on food safety.

Theme outcome(s)

In a 2019 survey, consumers state that they are 100 per cent confident of the safety of Ontario goat products.

Research objectives

Ontario goat products have an unblemished food safety record.

Potential areas of research:

- Investigate and advise producers on the rationale behind withdrawal times for all drug treatments.
- Investigate the incidence of foodborne pathogen contamination in raw milk cheeses and develop food-handling protocols for their elimination.
- Research the producer benefits to encourage adoption of the full traceability system being implemented through the National Goat Identification Program.
- Investigate the efficacy and cost / benefit of the Canadian goat on-farm food safety program versus developing an Ontario-specific program. Consider additional modules to the program (e.g. environment, biosecurity, welfare).

Theme 11. Environment

Goat production enjoys a reasonable reputation as an environmentally-friendly type of farming. Managing the environment to ensure that this belief is not erroneous and co-existing with other species that share the environment, requires the application of knowledge of farming systems.

Theme outcome(s)

Goat production increases and the environment in which it is practiced improves over time.

Research objectives

The Ontario goat industry can objectively demonstrate its environmental management credentials.

Potential areas of research:

- Develop mechanisms to improve management of whey waste diversion (e.g. human protein supplements or milk replacer).
- Monitor the impact of grazing goats in close proximity to water courses and develop BMPs for alleviating any environmental impact.
- Assess ventilation and water quality in housing and develop BMPs for different production systems and stage of growth for goats kept in such housing. Use results to update the Code of Practice.

Theme 12. Meat quality

Meat quality cannot stand in isolation of an understanding of market needs. The definition of quality is 'fitness for use'. Quality is a subjective measure of value and will be judged by the standard the consumer of the product attributes to what he/she has consumed and this will differ with individual consumer preference. Meat quality research and education must

therefore aim to consistently produce a product that meets expectation defined by industry but firmly based on consumer needs.

Theme outcome(s)

Consumers of Ontario goat meat are satisfied that the product they purchase provides them with value.

Research objectives

The Ontario goat industry has an accepted set of meat quality standards which random audit demonstrates producers are following.

Potential areas of research:

- Develop and publish national meat quality standards for all cuts of goat meat based on consumer research.
- Review automated grading systems operating in Ontario and other jurisdictions and consider how they might be applied in processing Ontario goats.
- Investigate mechanisms to develop grading reports received by producers for 100 per cent of animals slaughtered.
- Review current training for CFIA inspectors and identify areas for developing education and training programs specific to goat processing.
- Develop and implement standards for cull goats. Educate producers on the market standards allowing them to identify whether a goat should be shipped or euthanized.