



Forage and Grazing

Research Priorities



October 29, 2019

Forage Strategy Outcomes

This report summarizes the meeting held on October 29th, hosted by Livestock Research Innovation Corporation (LRIC) and The Ontario Forage Council (OFC) to establish forage and grazing research priorities for Ontario. This is the first time such a comprehensive session has been held for the Ontario Forage Council. The meeting was attended by 27 participants from 16 different organizations (See list in Appendix A).

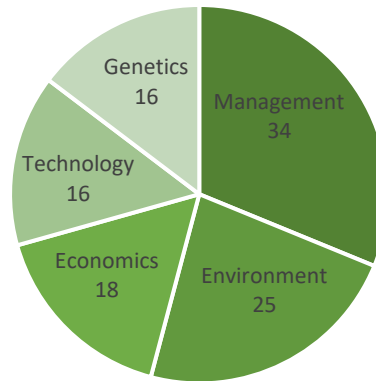
Presentations were made by Dr. Reynold Bergen, Science Director with Beef Cattle Research Council (BCRC), and Christine O'Reilly, OMAFRA Forage and Grazing Specialist with the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA). Both highlighted the loss of research capacity in the field over the last 40 years. There has continued to be national research however the lack of researchers and capacity in Ontario has limited trials that consider our regional conditions, including climate conditions, soil and production practices. The University of Guelph is in final hiring negotiations with a researcher who will have a forage mandate. Current funding opportunities can provide this new hire the opportunity to initiate and collaborate to address areas highlighted by this report. Providing an **industry mentor** to the position was identified as a valuable collaboration to assist the researcher in advancing the research more rapidly.

It was noted that a review of existing relevant research would be valuable, in part to determine which would be applicable to Ontario soils and climatic conditions and how this shapes the gaps in research.

Three important keys to for successful research were identified by the participants:

1. There needs to be a higher level of **collaboration** between and within organizations to maximize results for all stakeholders.
2. **Effective technology transfer** must be a focus of all initiatives.
3. Each project needs to consider the **economic** impacts of the research outcomes relative to on-farm implementation of results, when applicable.

Five overarching priority areas were identified by the participants and ranked during discussion. Further prioritization was done with each participant using 5 stickers to identify their top individual priorities. The stickers within each category were totaled (see Appendix C), and results displayed in the chart below. The ranking of the topic areas matching with the discussion.



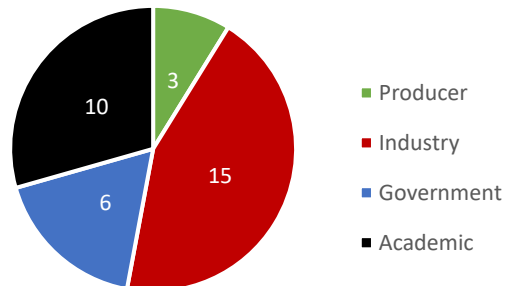
The top ranking priorities across all areas identified by participants are listed below.

1. Technology to measure **on farm yield** such as sensors on hay equipment. A compilation of existing resources would be a benefit prior to any investment in research and development being made in this area.
2. Outcomes that results in **extending the grazing season** for livestock, as long as possible. This could involve but is not limited to: targeting of winter grazing crops such as: corn and turnips, use of stockpiles and/or annual crops.
3. Conduct **fertility** study(s) using biologic and other measures to assess how fertility affects quality. Considerations to include but not limited to phosphorus and potassium rates, nitrogen and assessment of soil organic matter.
4. An economic assessment of the **cost competitiveness of forage in rotation with annual crops in high production land** areas.
5. **Systems assessment** that quantifies agronomic and environmental (including biodiversity/pollinators) impacts of including forages in annual rotations.
6. Develop **options that are comparable to alfalfa**. Considerations can include but are not limited to:
 - that will thrive in northern climates,
 - on untilled, poor nutrient,
 - rocky and/or marginal lands.

Background

Following table and group discussions, the participants using stickers scored individual topics, identifying the top priorities within each area. The priorities listed in each area are compiled. It should be noted that several attendees were identified as industry as they were representing organizations, however they are also producers. The number of sticker votes show within each area of the charts.

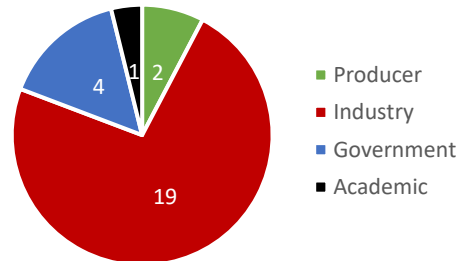
Management



1. Extended grazing to have as long a grazing season as possible.
 - Stockpiles
 - Annual crops
 - Targeted winter grazing crops like corn and turnips
2. Fertility study
 - P & K rates, N OM?
 - How does fertility affect quality?
 - Biologic measures
3. Management strategies and Agronomics for best practices for Forage and Grazing
Considerations identified:
 - Species and Cultivars
 - Quality
 - Duration of grazing period
 - Marginal Pastures
 - Utilizing Native and Tame Production Systems
 - Bird and pollinator species habitats
 - Fertilization of pasture
4. Selecting the livestock genetics to match the grazing strategies
 - breed traits best for pasture utilization
 - breeds best for certain pasture/grazing densities

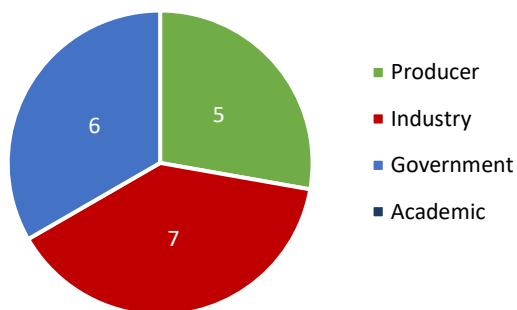
5. Impact/evaluation of increased management intensity in the interface between forestry and grazing croplands (Silvaculture) to enhance both forage and tree productivity and animal welfare (shade for cattle in annual pastures)

Environment



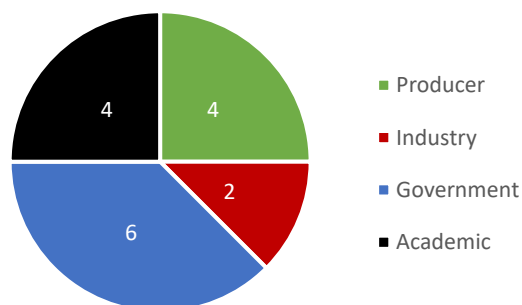
1. Systems-based research that quantifies agronomic and environmental impacts of including forages in annual rotations.
 - including soil health
2. Pollinator health #'s
 - On pastures and hayfields
 - Also overall biodiversity on pastures and hayfields
3. Data/quantification of soil health of grasses and forages compared to other (ag and non-ag) land uses – e.g.city parks
 - Identify the measurement/claim of soil health in easy to understand and simple way
4. Carbon storage and sequestration
 - Need Ontario info on carbon dynamics on our grasslands with our soils, climate, practices, etc.
 - Compare with other land uses

Economics



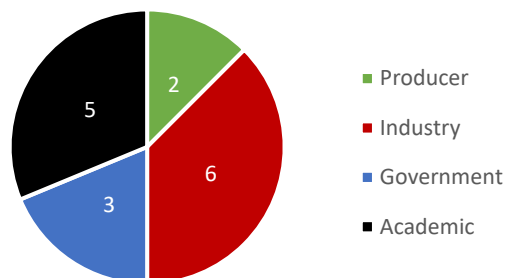
1. Cost competitiveness of forage in rotation with annual crops in high production land areas
 - Economic analysis of forages vs other crops and as cover crops
2. Integrate Economics, Environmental Goods and Services contribution acres to prime production acres

Technology



1. Methods to measure on farm yield
 - Sensors on hay equipment
 - Plate meters etc. for pastures
2. Within Intensive grazing systems increase plants per acre
Examples could be:
 - Fencing Technology
 - Crop resilience
 - Labour saving devices
3. Different Methods for Making and Storing Forages
 - Wrap, bunker silos, hay shed
 - Recycling sileage wrap, edible or biodegradable wrap

Genetics



1. Develop options that are comparable to alfalfa. Considerations can include but are not limited to:
 - hardiness in northern climates,
 - on untilled, poor nutrient land,
 - rocky and/or marginal lands.
2. Adapt and Identify Forage/Pastures for
 - Conditions of weather variability and Climate Change
 - Reduction of winter kill in alfalfa
 - Palatability of species
 - Cultivars able to extend grazing and meet nutritional requirements
 - Improved digestibility e.g. tannins in trefoil
3. Programs (breeding or other) that will:
 - Increase yields on less acres
 - Varieties with greater genetic potential
 - Disease resistance

Getting research and knowledge adopted also received discussion and needs to be considered in all research. Impacting the mindset of the primary producer on technology and agronomy adoption was identified with the need to use the non-profit sector to deliver applied extension projects. Involving seed companies with industry-led forage research was also noted as an important collaboration.

Conclusion

There are now several clear priorities for forage research in Ontario. The overriding priorities of collaboration, effective technology transfer and analysis of economic impact are central to all research initiatives. There is currently a window of opportunity to source funding through OMAFRA, led by researchers at the University of Guelph, as well as through Beef Farmers of Ontario. Further opportunities through BCRC and collaborations in Northern Ontario also exist.

Appendix A

Name	Email	Organization
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