National integrated genetic services for breeders across multiple species

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Project objectives

◆ Plan for better integration of genetic services for sheep and goats in Canada

◆ Achieve some short term goals during the project

The project partners

- Canadian Goat Society

- Canadian Sheep Breeders Association

- Ontario Sheep Farmers

- Canadian Meat Goat Association

- Centre for Genetic Improvement of Livestock

- Centre D'Expertise En Production Ovine Du Québec

- Canadian Livestock Records Corporation

- AgSights

- Canadian Centre for Swine Improvement

Integration of genetic improvement services

- ◆ For sheep, goats, and potentially other species (ex. swine)

- ◆ For both dairy and meat

- ◆ Goals:
  - Efficient services
  - Cost-effective services
  - On-going services

Short-term goals

◆ Some potential goals for dairy goats:

- Help modernize the animal registration system for sheep and goats

- Increase the quality and amount of information useful to dairy goat breeders

- Prepare for the expanded use of genomics as a selection tool

- Facilitate data exchanges among service organizations and with on-farm software companies

The project

- ◆ Began last July

- ◆ Ends in March 31, 2023 (2.5 years)

- ◆ Funding from:
  - Each project partner
  - Agriculture and Agri-Food Canada (agricultural Strategic Priorities Program)

- ◆ AAFC funding: $495,000

Project budget for short-term tasks ($,000)

Organization	Year 1	Year 2	Year 3	Total
CLRC, CGIL, AgSights	88.2	88.2	88.2	264.6
CCSI (salaries)	21.8	21.8	21.8	65.4

Project budget for short-term tasks

◆ Each task must meet the project objectives (integration)

◆ The project may contract existing or new staff in the 4 service organizations

Main ideas expressed about needs in the longer term

◆ One stop shop for breeders:

- Registration/identification

- Data collection

- Genetic evaluation

- Interface with herd management tools/software

◆ Ability to exchange data seamlessly between databases

◆ Where the data is does not really matter (it could even be a "server farm"); same for where GE are running

◆ More than one individual and/or organization should be involved in each system to reduce risks

◆ Service costs should be reasonable

Advisory Committees

◆ Role of Database Advisory Committee:

- Explore options for databases, software, hardware, etc. for sheep and goats, meat and dairy

- Explore how these can best be integrated in future

- Composed of DB experts from service partners (CCSI, CGIL, CEPOQ, AgSights, CLRC)

◆ Role of GE Advisory Committee

- Share knowledge on existing GE systems (reduced risk for Genovis, dairy sheep, dairy goats GE) since not just one person involved in each system.

- Consider use of specialized GE software

- Plan for potential use of genomic data (ex. one-step GE)

- GE experts ex. Flavio, Laurence, Gordon, Fred

Role of Committees

◆ End User Software Advisory Committee:

- Develop ways to add value to genetic information, and facilitate the development of interfaces with herd/flock management programs

- Success will depend on willingness of project partners to cooperate

Some tasks related to dairy goats identified through consultations

Activity	Number of SC organizations*
1. Move to a more efficient registration system (electronic reg., no duplicate data entry, faster turn-around time)	8
2. Incorporate genomic data into GE systems	3
3. Develop reports and tools to strengthen the interface between genetic improvement and flock/herd management	3
4. Merge CGS and CCSI dairy goats databases	2
5. Expand the CGS database to include additional data (awards, pictures, classification)	1
6. Implement ID light program for goats (electronic capture of parent ID)	1
7. Collect data on fibre, add it to the database, and calculate genetic evaluations for related traits	1

* who listed it as one of their priorities

Short term task: registration system

◆ Goal: more efficient registration system for sheep and goats

- Allow online registration
- Eliminate duplication of data entry
- Facilitate exchanges between registration database and other databases
- Reduce cost per registration/transfer

Short term task: registration system

◆ Possible options, starting with sheep and goats
- Probably not feasible with modification of current CLRC system, based on CLRC input
- Develop a new registration system at CLRC (using RAD or other tools)
- Use a ready-made solution (ex. IRLOnline from ABRI) either at CLRC (starting with sheep and goats) or directly
- Expertise required to make the best decision

Short term task: registration system

◆ Approach:
- Use the proposed DB Committee, composed of DB experts from project partners (CLRC, CCSI, CGIL, AgSights, CEPOQ) to provide the required expertise
- Tasks: review options, their estimated costs and timelines and come up with a list of pros and cons for each option to present to the SC

Short term task: merging of dairy goat databases

◆ Identified as a priority by CGS

◆ More efficient, easier approach than 2 separate databases

◆ Allow for inclusion of new data in the longer term such as pictures, awards, classification

Short-term task: incorporate genomic data into GE systems

◆ Will likely be useful in the longer term

◆ Already some research projects for both sheep and goats

◆ Likely to require international cooperation (ex. SMARTER project in goats)

◆ GE Committee could provide guidance in this area for both sheep and goats

◆ Storing of genomic data might be a first priority

Short-term tasks related to dairy goats approved by the SC so far in 2021-22

Activity	Total
Review of options for the registration system	23
Merging of dairy goat databases (CGS and CCSI)	12
Genetic evaluations that can include genomic data (using meat goats as pilot)	20
Software licence for MixBLUP	7

Thank you!

Questions?