

Dairy Goat Proof-of-Concept Project

FINAL REPORT



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EXECUTIVE SUMMARY

The Sustainable Farm and Food Initiative (SFFI) is a collaborative project that aims to address the need for a whole farm, whole value chain approach to sustainability. The goal of SFFI is to act as an umbrella which hosts general agricultural and commodity specific agri-food standards and requirements that exist throughout the value chain. SFFI will provide a benchmarking function in order to minimize the duplication and overlap of standards and tools. One of the recommendations resulting from an extensive stakeholder engagement process was to develop a proof-of-concept project. With support from the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA), a project was developed in collaboration with Gay Lea to use a sample of the Ontario dairy goat industry as an example.

This project involved collaboration from a multitude of organizations, resulting in the design, development and testing of an SFFI self-assessment sustainability tool specific to the dairy goat sector. The tool consists of an online, easily accessible questionnaire housed within three modules. Overall, this proof-of-concept project confirmed the viability of the SFFI concept. In fact, participants' existing data covered 79% and 83% of the material required by the two international standards incorporated into this project. Participants in this project found the questions to be straightforward and reasonable to answer in a timely manner. Their results showed that their current on-farm practices align well with all 7 standards included in the design of the questions. They suggested the program begin as voluntary, eventually evolving to a mandatory program either as a result of market demand or government regulation. Participants agreed that a 'pull' from the market through the processors and/or retailers would encourage participation. Mariposa Dairy confirmed that a program like SFFI would be beneficial for the industry; farm level data collected in a system like SFFI would allow them to proactively communicate on-farm sustainability practices which could potentially strengthen existing markets and even expand into new markets. Moving forward, SFFI should continue to explore how data can be managed within the tool, in order to most efficiently align existing data with standards. It should also work towards the other action items outlined in this report as well as continue to build off the foundational exploratory work that has been done by the SFFI steering committee and working group.



ACKNOWLEDGEMENTS

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Disclaimer:

The views expressed in the report are the views of the Ontario Federation of Agriculture and do not necessarily reflect those of the governments of Canada and Ontario.

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1.0 INTRODUCTION

The Sustainable Farm and Food Initiative (SFFI) is a collaborative project that aims to address the need for a whole-farm, whole-value-chain approach to sustainability. The goal of SFFI is to act as an umbrella which hosts general agri-food and commodity specific standards and requirements that exist throughout the value chain. It then synthesizes and organizes the data, so producers, processors, distributors and retailers have one streamlined documentation process to complete. By doing this, the burden of documenting on-farm practices is minimized for producers. Furthermore, streamlining standards into a single, easily accessible program allows processors, distributors and retailers to verify on-farm practices, and manage and mitigate risk. Not only will SFFI bring together standards from throughout the Canadian agri-food value chain, but it will also have the capacity to incorporate and benchmark standards from the international context. By doing this, SFFI opens the possibility of entering emerging and new markets, because it provides proof of required on-farm sustainability practices.

In order to demonstrate the viability of SFFI, a proof-of-concept project was proposed. The advisory committee agreed that focusing on a single commodity with a fairly direct supply chain would be the most efficient way to test the SFFI concept. Thus, a sample of the Ontario dairy goat sector was chosen.

This proof-of-concept project involved the development of a prototype SFFI tool which was then field-tested by 10 dairy goat producers within the Gay Lea supply chain.

The dairy goat sector was selected as a relevant case study as goat milk and cheese products are viewed as an emerging commodity with high growth and export potential which could benefit from a proactive approach to documenting and communicating sustainability practices which would align with international standards and expectations. In

Collaborators

- Gay Lea
- Groupe AGÉCO
- AgSights
- Angus GeoSolutions Incorporated (AGSI)
- Ontario Federation of Agriculture (OFA)
- Ontario Soil and Crop Improvement Association
- Provision Coalition
- Ontario Agri-Food Technologies (OAFT)
- Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA)
- Mariposa Dairy

addition, the project knowledge translation and transfer activities, such as farm reports, articles and a short video will support the continued development of sustainability across the dairy goat sector in Ontario.

This project has provided in-depth insight into next steps for further development of the SFFI tool in terms of technical functionality and commodity-specific content. This exercise has also demonstrated that there is a need for a platform such as SFFI and that it is possible to synthesize requirements from throughout the value-chain. This report provides a detailed summary of the proof-of-concept project methodology, results and recommendations for further development of SFFI.

2.0 PROJECT OBJECTIVES

The objectives for the SFFI proof-of-concept project are as follows:

- 1) Develop a sustainability self-assessment tool on an online platform that was specific to the dairy goat sector, in order to track sustainability efforts and on-farm practices
 - i) Combine a minimum of 2-3 sustainability standards by organizing and synthesizing the data
- 2) Engage with the dairy goat value chain (producers, processors and retailers) to pilot and test the online tool
- 3) Use the results and key learnings from this demonstration project in order to inform the further development of the whole farm, whole value chain SFFI sustainability concept.

3.0 METHODOLOGY

The methodology used to complete this proof-of-concept project were as follows:

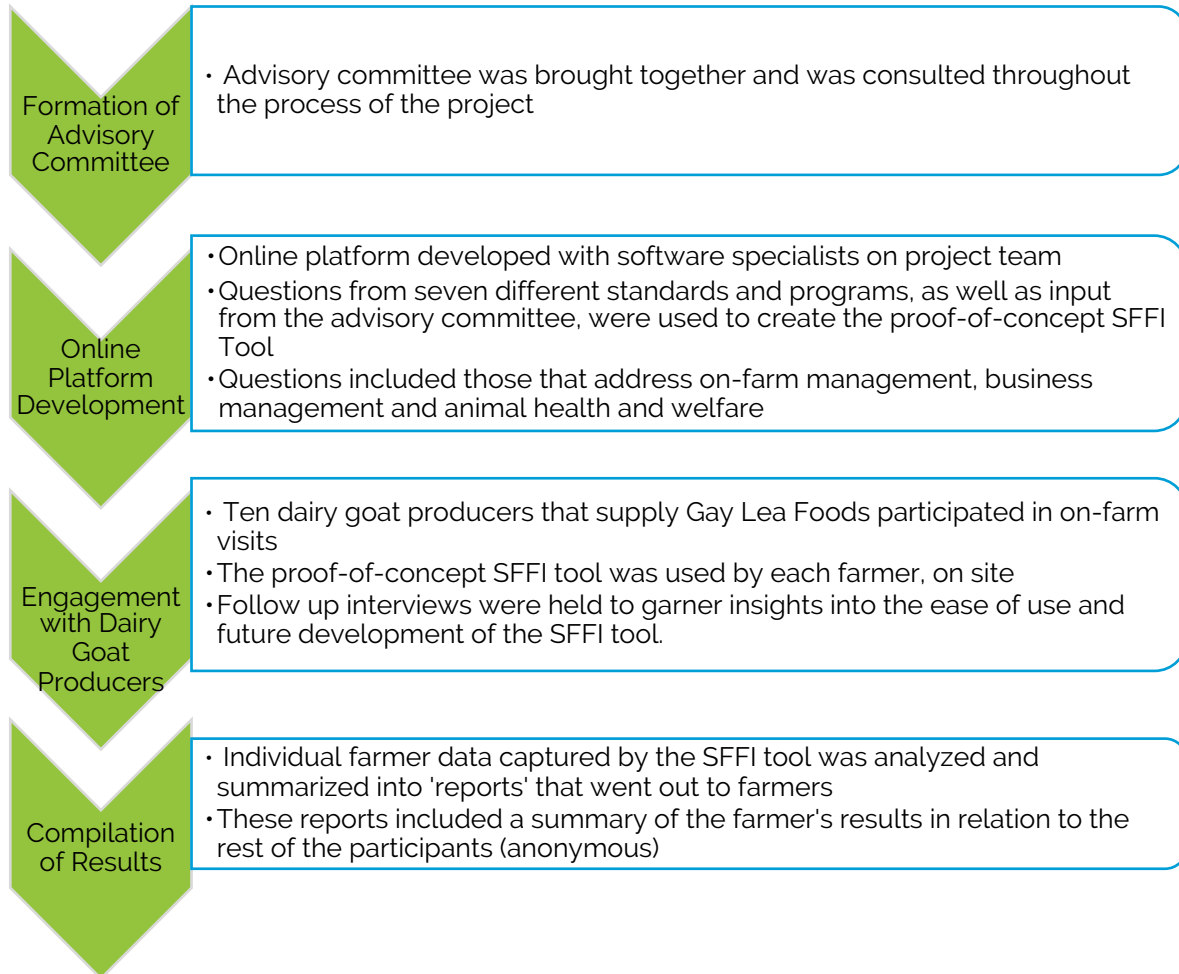


Figure 1. Overview of Project Methodology

4.0 SFFI PROOF-OF-CONCEPT TOOL

4.1 WIDESPREAD VALUE CHAIN BENEFITS

The SFFI tool adds value for different members of the agri-food value chain.

Acknowledging and being mindful of these differences will be important in how SFFI continues to develop. The SFFI tool will benefit different members of the value chain in the following ways:

Producers

- Avoid duplication of paperwork and associated costs
- Easy, time-saving data collection
- Data allows for market retention, market expansion, and/or attracting a premium
- Educational tool
- Identifies areas needing more resources and support from industry and government
- Easily ties into a whole-farm information management system

Processors

- Potential for one system across multiple commodities in a consistent format
- With third-party verification SFFI provides proof that their product is produced in a sustainable manner
- SFFI can be used as a tool to leverage business with distributors and retailers
- Data allows for market retention, market expansion, and/or attracting a premium

Retailers

- Potential for one system across multiple commodities in a consistent format
- Verified sustainably produced products allow retailers to comply with their own sustainability efforts and mandates
- If retailers are established internationally, it allows them to adhere to all international standards at once (provided verification is implemented)

Consumers

- Consumer can purchase product with a level of assurance that it was sustainably produced
- This could include an agri-education component, through development of an interactive website (proposed), consumers could be able to easily understand the kinds of standards and requirements producers follow.

Government

- Government would be investing in a system that provides value along the supply chain



- Helps to mitigate risks
- Adds definition and strength to "Brand Canada"
- SFFI would also allow governments to approach negotiations from a place of strength because they would be able to demonstrate what Canadian producers and processors are already doing

4.2 ONLINE PLATFORM DEVELOPMENT

An SFFI tool specific to the dairy sector was developed in order to test if the SFFI concept of bringing together standards and requirements for various commodities, across the agri-food value-chain could work. A technological platform was required in order to simplify the collection of on-farm data in a manner that could be shared within the value chain. For this project, the SFFI Tool was input into AGSI's Go360™ Audit & Compliance system¹.

Functionality features of the platform:

- Homepage with three modules in a tabular form and option to add aerial farm photo
- Each module contains tabs representing each of the topics (see [Appendix A](#))
- Questions are simply answered yes, no, or not applicable
- When users answer questions, the check marks and X's turn red or green, respectively. Indicating positive and negative scores, respectively.
- Tabs turn green when all questions are answered, making progress visible and ensuring proper completion
- Some questions have a camera function for uploading supporting information or documents
- Ability to enable GPS tracker, indicating the location of tool completion, ensuring accountability.

Once the module is fully complete, a farmer's data is then converted into a report that shows the questions in the module and their corresponding answers. At the top of the report, users can click "Action List", and a filter is applied to the report, showing them questions they answered no to, indicating areas for improvement within their operation.

¹ This system, run by AgSights will soon be a part of the multi-species, whole-farm information management system called Go360 bioTrack.

4.3 QUESTION DEVELOPMENT

The set of questions for the SFFI tool were developed through an iterative process, which included the incorporation of local and international standards and programs. This iterative process was a matter of bringing together work already done by Groupe AGÉCO and AgSights and including a couple of new standards specific to the dairy goat industry. Questions were reviewed and approved by the project advisory committee.

The requirements from the FSA, ULSAC and Ontario EFP programs were used to develop the questions related to the social, economic and environmental pillars of sustainability. Since these programs are not specific to livestock production, the Code of Practice, Canadian Verified Sheep and Verified Beef Production Plus programs were included to cover animal health and welfare of dairy goats. *Appendix B* highlights the focus and some of the functionalities of each of these standards.

The SFFI questionnaire brings together common requirements between standards and creates specific modules for commodity specific content. The questionnaire is not meant to replace any existing programs or standards. Ultimately, the role of the SFFI tool is to make completion of a high percentage of programs fast and simple for farmers.

The SFFI proof-of concept platform has a user-friendly, self-assessment questionnaire to support dairy goat farmers in their preparedness to meet the requirements of various sustainability programs and standards. The most essential and significant requirements were included.

The requirements from these programs and standards were listed and sorted into a framework comprised of 3 categories, 27 topics and 111 indicators (Appendix C). To enable

Standards and programs used:

- Sustainable Agriculture Initiative (SAI) Platform – Farmer Self-Assessment¹ (FSA) version 2.0
- Unilever's Sustainable Agriculture Code (ULSAC) – 2017 Version
- Canada-Ontario Environmental Farm Plan (EFP) – Fourth Edition Workbook, 2013
- Gay Lea Foods- The Code of Practice for the Care and Handling of Dairy Goats
- Gay Lea Foods- The Code of Practice for the Care and Handling of Dairy Cattle
- Canadian Verified Sheep program, and,
- Verified Beef Production Plus.

farmers to assess their performance against this framework, each indicator was translated into a practice-based question using layman terms.

5.0 ENGAGEMENT WITH DAIRY GOAT PRODUCERS

5.1 TESTING THE ONLINE PLATFORM: FARMER PROFILES

Ten dairy goat producers who sell 100% of their milk to GayLea, had the opportunity to test out the tool. Participants were spread across southwestern Ontario (Appendix D). Of the total liters that GayLea processes in a year, these 10 producers represent almost 20% (18.6%) of their supply, and so their answers to the questionnaires carry a considerable weight.

Although the participants were self-selected, they represented the diversity in the GayLea portion of the dairy goat industry, as seen in the variation of size of operation and management. Operations ranged in size from 520 to 1800 goats in total (See Appendix E).

Participants had been farming anywhere from 8-58 years, some always having been in the dairy goat industry and other joining it more recently. Some did not express an interest in expanding their operation, while others wanted to expand at various rates. One participant in particular has a goal to add 3000 dairy goats in the next 3-5 years, if the processing facility in Kingston comes online. In his words, "If the demand is there, I want to fill it".

5.2 FARMER EXPERIENCES AND REVIEWS

On average, it took participants 60-75 minutes in total to complete the SFFI questionnaire. Nine out of ten participants felt that the questionnaire was a reasonable length and took a reasonable amount of time.

"If an old guy like me can do this, anyone can" It's straightforward. It goes pretty smooth!"

Appendix A outlines specific feedback that participants had on the SFFI tool, the content of the questionnaire, and the concept of SFFI. Overall, the tool was well received. Participants found it, "straightforward", "easy to use", and "intuitive". On a scale of 1-5, 1 being difficult and confusing and 5 being easy and intuitive, 100% of participants scored the tool as either 4 or 5. No suggestions were given on how to improve the tool itself.

With regards to the content in the questionnaire, participants found it to be “straightforward” and “basic”. One participant said “As a farmer, this is all common sense. Nothing in here is a surprise. It’s what we should be doing, and unlike what people think, [what] we are doing”. Although well-received, participants felt some of the questions were not applicable to them. For example, questions from international standards that were incorporated that were meant to address the topic of bonded labour. Although this could be an issue in the Canadian context, participants felt the questions were out of place. Overall, suggestions regarding the content of the questions were related to ensuring the tool was asking the right questions. Moving forward, as more standards and commodities are added to the tool, the use of filters and data management in the background of the tool, will be essential.

“Sometimes you don't know information, so this can inform you as you complete it.”

Finally, with regard to the SFFI concept, participants were interested, although to varying degrees. Some were keen to use a tool like the SFFI platform immediately, whereas others felt it would take motivation from processors to encourage farmers to participate in a program like SFFI; if this push from processors existed, producers would be happy to use a tool like SFFI, especially considering its ability to reduce paperwork. This degree of interest reflects the complexities of the dairy goat industry and the agri-food industry as a whole. 90% of participants thought a tool like the SFFI tool would be useful for the industry because it:

- Assists the dairy goat industry in establishing some standardization, which it currently doesn't have. As a smaller commodity in Canada, this opportunity is important.
- Makes participants actively think about their accountability, which in turn has an effect on risk management for the entire sector
- Acts as an educational tool, providing insight into different management practices
- Provides a way of measuring what participants are already doing, and capturing these efforts
- Streamlines and combines the paperwork participants have to do for all their commodities into one tool, so farmers can spend more time farming, and not doing paperwork

One participant didn't feel a tool like SFFI would be useful for the industry because "there's always more paperwork coming down the line". This opinion accurately represents the current

"It combines my animals in the barn, my fields and crops and joins them all into one system."

landscape of paperwork in agri-food, and in fact is the argument for SFFI as the intention is to simplify that paperwork load for farmers. There are many comprehensive standards and programs and that producers are either required to complete or can participate in, and this can result in redundancy and duplication. While they all serve important purposes, often information between them overlaps. SFFI aims to simplify this paperwork cycle, by identifying commonalities, and differences, so farmers do not have to take time repeating work.

Similarly, although 90% of participants would recommend a tool like SFFI to other farmers, one participant said they would not, because "...at the end of the day, this doesn't change my day-to-day operation, and it's not mandatory. Why would I do it if no one is asking for it"? This is an important point and leads into participants' views of whether a tool like SFFI should be mandatory or voluntary. 75% of participants thought it should be voluntary, while 25% felt it should be mandatory. In further discussion, 100% of participants revealed that they believed that any program like SFFI should start out as a voluntary program which is consistent with the position of the SFFI steering committee.

The topic of who would pay for the system, generated substantial discussion. Half of participants said they would be willing to pay for it, depending on what the return was on their business and how much it cost, whereas the other half were adamant that they would not pay. This is valuable and important information for developing SFFI going forward and highlights the nuances of the kinds of decisions those involved in the governance of SFFI will have to make. It will be important that stakeholders along the supply chain see value in SFFI and be willing to co-fund the implementation of SFFI, so it may be in itself, sustainable.

6.0 TESTING THE ONLINE PLATFORM: FINDINGS

6.1 FROM CONCEPT TO REALITY

Through the process of designing and creating the SFFI tool, this project was able to accomplish the following:

Accomplishment:	Proves:
Similarities and gaps between existing standards from the provincial, national and international levels, and from different commodity groups were identified and then standards were combined to create one synthesized set of questions. Refer to Appendix B to see a template scorecard.	It is possible to benchmark standards within the agri-food sector and have them 'communicate' with one another.
After answering the questions, we were able to analyze how participants' answers fulfilled the various standards included in the questions.	It is possible to create a 'standards map' that allows participants in the agri-food sector to see how current production practices align with standards that are applicable to them.
Participant identifies areas where they would like more information and resources and showed interest in having a place where resources applicable to them could be found.	SFFI has the potential to act as an educational tool and resource for participants.
Brought members from throughout the agri-food and dairy goat value chain together to communicate and work together towards a common goal of simplifying documentation and creating streamlined proof of producers' practices.	The entire value chain has a potential stake in a tool like SFFI and can benefit in some way from it.
The SFFI tool was able to document producers' practices that directly countered consumer misconceptions. For example, all of the project participants practice appropriate and approved health management and animal handling and have appropriate housing and living conditions for their dairy goats.	Information on what producers are practicing can be used to counter consumer misconceptions.

6.2 INTERNATIONAL ALIGNMENT

In order to test the overall concept of SFFI, it was necessary for this project to incorporate existing standards from the Ontario, Canadian, and international contexts. Including the international context was critical in ensuring the relevance of the SFFI concept, considering the impact of international trade on the Canadian agriculture and agri-food system. In 2014, the Canadian agriculture and agri-food system generated \$108.1 billion, accounting for nearly 7% of Canada's gross domestic product (GDP)². In addition to this, Canada is the fifth-largest exporter of agriculture and agri-food products globally, with 51.4% of exports (\$26.5 billion) going to the United States, over 9% going to China, and 17% going to Japan, the European Union and Mexico collectively³. By aligning international standards with national and regional ones, it helps to ensure that the standards and requirements that producers are following will allow them to remain in existing markets and potentially enter into new and emerging ones.

The SFFI tool was able to incorporate two international standards into the SFFI questionnaire; the Farm Sustainability Assessment 2.0 (from the Sustainable Agriculture Initiative Platform), and Unilever's Sustainable Agriculture Code (from Unilever). Producers participating in the SFFI proof-of-concept project covered 83% of the material required by the FSA 2.0 standard, and 79% of the ULSAC standards. These percentages reflect how many metrics from the respective international standards were addressed based on the users score. These degrees of alignment are a good demonstration of how SFFI can bring together standards, but at the moment do not accurately reflect the true alignment between the SFFI questionnaire and the standards because a further degree of analysis is needed (in particular for FSA 2.0).

The FSA divides requirements into categories of importance: essential; basic; and advanced. Based on the number of requirements met in each of these categories, users are assigned an overall performance level of bronze, silver or gold. In order to better understand what performance level SFFI users can achieve in FSA, based on the data they are collecting, an

² <http://www.agr.gc.ca/eng/about-us/publications/economic-publications/an-overview-of-the-canadian-agriculture-and-agri-food-system-2016/?id=1462288050282>

³ <http://www.agr.gc.ca/eng/about-us/publications/economic-publications/an-overview-of-the-canadian-agriculture-and-agri-food-system-2016/?id=1462288050282>

analysis would need to be done examining the degree of importance (essential, basic and advanced) of each of the SFFI requirements (based on the degree of importance of the aligning FSA requirement). While this further analysis could be done now, it would not reflect SFFI's true potential to align with the international standards, nor would it reflect the highest possible performance level achievable from the international standards.

Both the FSA and ULSAC standards are designed to cover sustainability in a holistic manner, addressing all three pillars of sustainability. Although the SFFI questionnaire incorporated standards that examine all three pillars of sustainability, no standard specific to economic sustainability was incorporated. This means that as the SFFI questionnaire currently stands,

90% Of participants agreed that SFFI could help build agri-food consumer trust.

it likely would not receive a bronze level from FSA. However, the vision for SFFI is to incorporate as many or as few standards as producers would like, meaning that if standards included target the three pillars of sustainability, then achieving a silver or gold performance on FSA is highly

possible. It is highly recommended that SFFI continue to explore how data can be managed through the tool, in order to efficiently see what performance levels existing data can achieve.

6.3 VALUE CHAIN RESPONSE TO THE SFFI TOOL

As part of this project, we reached out to GayLea Foods, Mariposa Dairy and Longo's, in an effort to explore how the SFFI tool could be of value, and potentially impact the portion of the Ontario dairy goat sector that participated in this

90% Of participants were willing to share aggregated data with their value chain

project. It is important to first note, that of the 10 participants in this project, the majority were willing to share aggregated data with members further on in the value chain. This willingness to share data is key to the success of SFFI. Furthermore, participants felt that a program like SFFI could help to build consumer trust in the agri-food sector. This point speaks to the ability of accurate data to move throughout the value chain, so that consumers can make decisions about food based on evidence-based information.

In order for this data to reach consumers, however, it requires active participation from processors and retailers in the process. Participants were very open about the consumer



misconceptions that they face, and how if consumers knew what was happening on farm, there would be the opportunity for better agri-food relationships. Again, this level of communication will be more effective if processors and retailers in the middle of the value chain are active in the process.

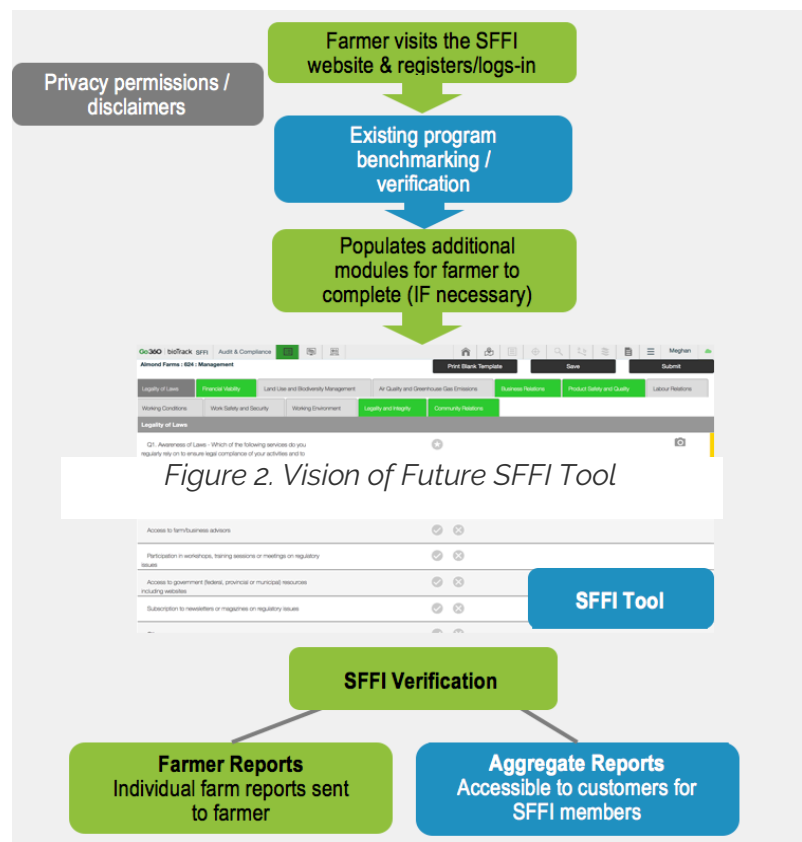
6.3.1 Mariposa Dairy

Mariposa Dairy receives approximately 100,000 liters of goat milk per day from Gay Lea. As a processor, Mariposa Dairy finds itself in the middle of retailers demanding evidence of on-farm practices and Gay Lea Foods Co-operative who supplies the majority of their milk. Currently, retailers conduct audits of Mariposa Dairy's facility, as well as random audits of dairy goat farms that sell to Gay Lea, who in turn sells to Mariposa Dairy. SFFI has the ability to provide an indication of sustainability to processors such as Mariposa Dairy, that the dairy goat milk being used to produce their products was produced sustainably, with regards to the environment, finances, and people. The fact that SFFI holistically covers sustainability is beneficial, as some retailers examine how employees and labourers are treated as part of their audit and purchasing decision. This can result in an increased level of trust and potentially a competitive advantage for Canadian commodities.

7.0 FUTURE TOOL DEVELOPMENT

As the SFFI tool was being developed, those involved were mindful of how this tool could accommodate other commodities and standards. It was discussed that in future versions of SFFI there could be the possibility of having a user log into their account, and then begin by selecting the province they reside in. This would allow the SFFI tool to filter through legislation applicable to their province, and benchmark applicable legislation against the various standards that would apply to them. Users would then select the commodities they produce on their operation, and the SFFI tool would filter through which standards would be applicable to the producer.

Another possible way to reduce the amount of work required of producers would be to link existing data systems to the SFFI tool. For example, if a user had completed the Ontario environmental farm plan they could provide their number, and with permission the SFFI tool would auto populate the producer's information into the SFFI tool. This kind of data linkage could be done for a variety of programs and requirements.



8.0 NEXT STEPS

This proof-of-concept project proved that it is in fact possible to create a tool like SFFI. Moving forward, it is important to note the following potential challenges that SFFI will face, and work through the associated action items related to each challenge.

Challenge	Action Item
The SFFI tool is voluntary. What will drive participation across the value chain?	<ol style="list-style-type: none"> 1) Be clear in messaging that for anyone who is a multi-commodity producer, the SFFI tool provides one place where data can be input, thereby saving time 2) Clearly define and communicate the benefits to stakeholders across the sector
What is the financial sustainability of SFFI? Who pays?	<ol style="list-style-type: none"> 3) Explore potential business structures that SFFI could use to pay for itself. For example, a membership model could be created that would see an equitable distribution of the costs across the value chain
SFFI may be seen as a competitor to existing standards and commodity specific initiatives.	<ol style="list-style-type: none"> 4) Create clear messaging that positions the SFFI tool as a way to bring together data already being collected, for the larger purpose of the agri-food sector, rather than competing with any existing initiatives being done.
Management and flow of data	<ol style="list-style-type: none"> 5) Work with experts in data sharing systems in order to develop recommendations for SFFI. 6) Explore all the options of data management and more importantly data sharing. For the SFFI concept to be successful in its objective to streamline multiple programs and standards, the ability to share data in a secure and trusted system will be of critical importance

9.0 CONCLUSION

The SFFI proof-of-concept project aimed to bring together various stakeholders from throughout the agri-food sector, analyze and benchmark existing standards against one another and identify commonalities and gaps between standards so a single set of questions could be designed that fulfilled numerous standard's requirements. This project succeeded in doing this by bringing together an array of organizations and creating a single set of questions based on the content in 7 existing standards. It is important to note that although this project focused on a portion of the Ontario dairy goat industry, standards were included from the beef and dairy cattle sectors, from international standards and from a standard developed for the province of Alberta. Participants in this project thought the questions were straightforward and took a reasonable amount of time to answer. Their results showed that their current on-farm practices align well with all the standards included in the design of the questions. Participants thought a program like SFFI could benefit the dairy goat industry and could be used as an educational tool. They suggested the program be voluntary, and that a pull from the market and processors would encourage participation. Mariposa Dairy confirmed that indeed a program like SFFI would be beneficial for the industry, but for market reasons; proof of practices would allow them to hold onto existing and potentially expand into new markets. Moving forward, SFFI should work towards the action items mentioned previously in the report, continue to explore how data can move within the SFFI tool, and work to build off the foundational exploratory work that has been done by the SFFI steering committee and working group.

APPENDICES

APPENDIX A: SFFI PROOF-OF-CONCEPT TOOL

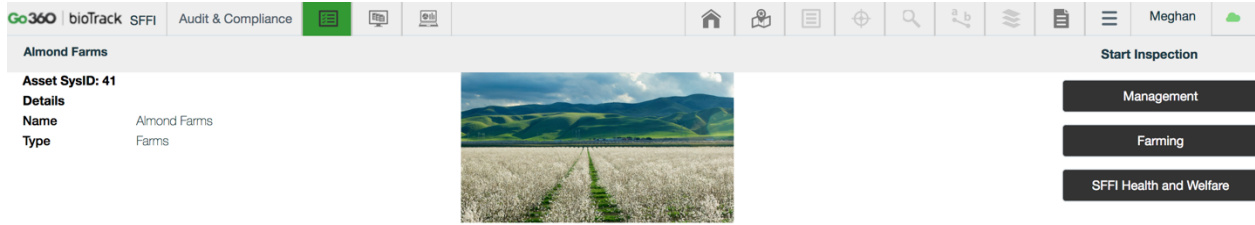


Figure 3. SFFI Tool Homepage

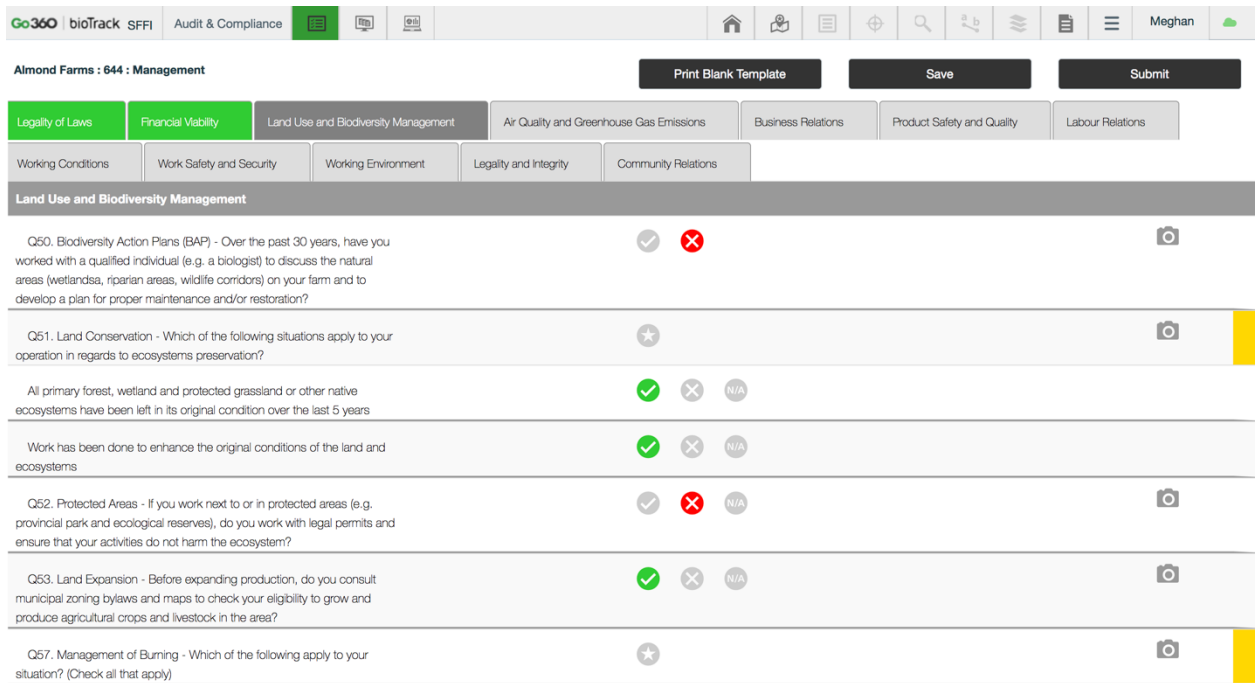


Figure 4. SFFI Management Module and Progress of Completion

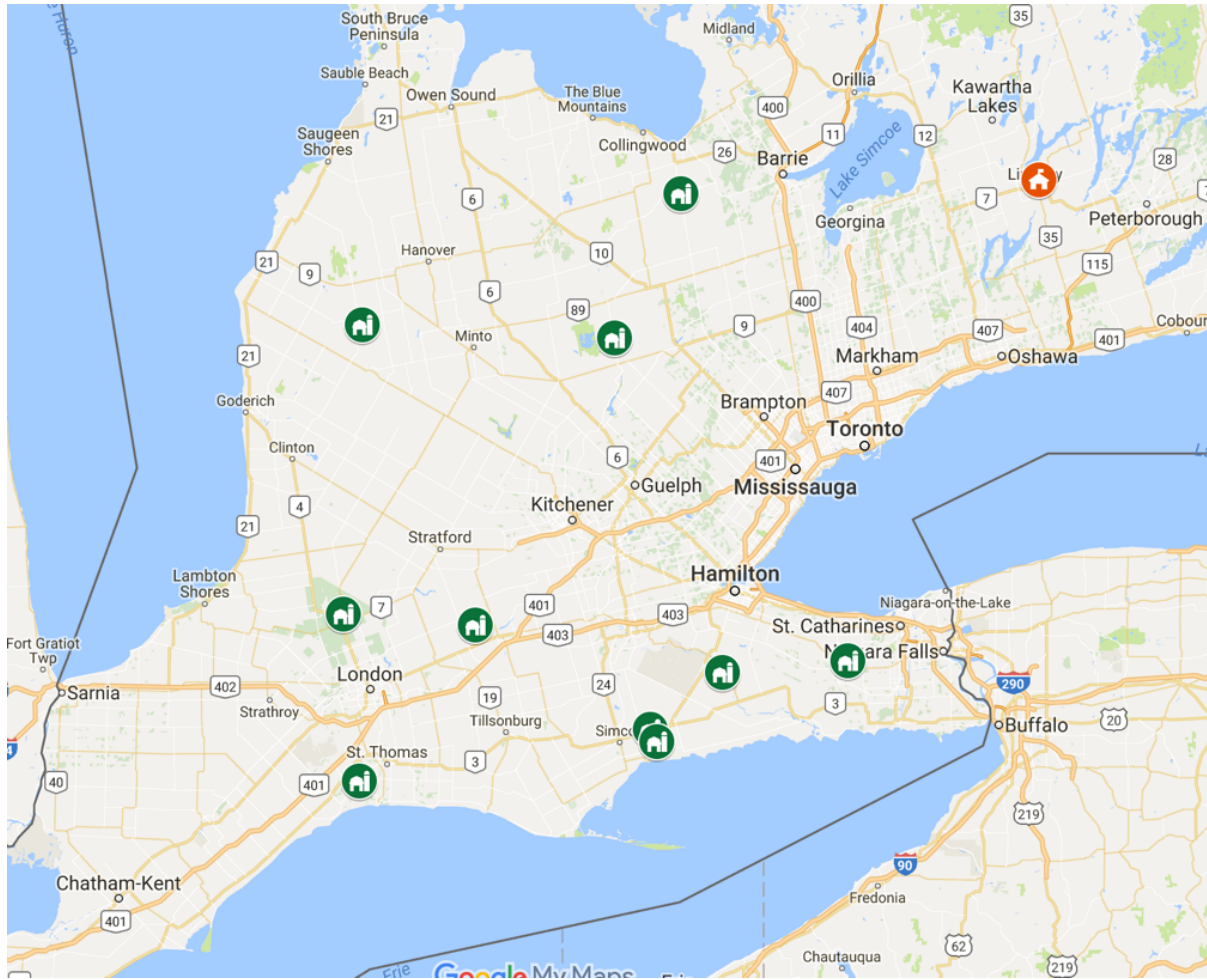
**APPENDIX B: STANDARD DESCRIPTIONS OF STANDARDS CONSULTED AND INCLUDED
IN SFFI QUESTIONNAIRE**

Standard	Pillar(s) of Sustainability Substantially Covered	Pillar(s) of Sustainability Partially Covered	Focus	Owner of Standard	Verified/ Audited	Jurisdiction
Farm Sustainability Assessment 2.0	Planet People Profit	----	-General agri-food sustainability	Sustainable Agriculture Initiative	Yes	International
Unilever's Sustainable Agriculture Code	Planet People Profit	----	-General agri-food sustainability	Unilever	Yes	International
Ontario Environmental Farm Plan	Planet	People		Ontario Soil and Crop Improvement Association	No	Provincial (Ontario)
The Code of Practice for the Care and Handling of Goats	Planet (Animal Welfare)	----	-Animal Welfare	Gay Lea Food Co-Operative	No	National (Canada)
The Code of Practice for the Care and Handling of Dairy Cattle	Planet (Animal Welfare)	----	-Animal Welfare	Gay Lea Food Co-Operative	No	National (Canada)
Canadian Verified Sheep Program	Planet (Animal Welfare)	Profit People	-Animal Welfare - Environment	The Canadian Sheep Federation	Yes	National (Canada)
Verified Beef Production Plus	Planet (Animal Welfare and Environment)	People Profit	-Animal Welfare - Environment	The Beef Cattle Research Council	Yes	National (Canada)

APPENDIX C: DESCRIPTION OF TOOL REQUIREMENTS

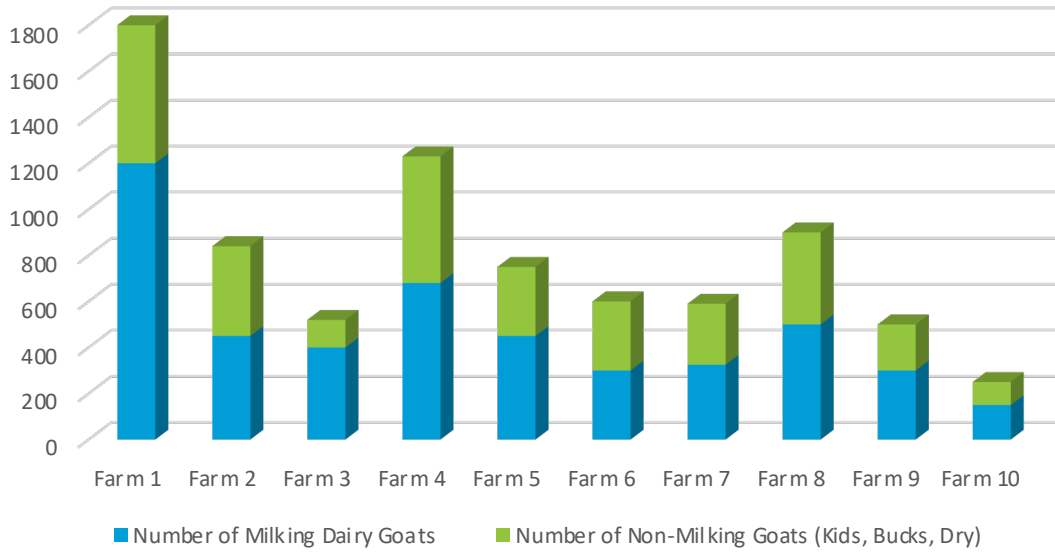
Category	Topics Covered	Example of Indicator Question	Standards Covered by Indicator
Management	<ol style="list-style-type: none"> 1) Legality of Laws 2) Financial Viability 3) Land Use and Biodiversity Management 4) Air Quality and Greenhouse Gas Emissions 5) Business Relations 6) Product Safety and Quality 7) Labour Relations 8) Working Conditions 9) Work Safety and Security 10) Working Environment 11) Legality and Integrity Community Relations 	<p><i>Before expanding production, do you consult municipal zoning bylaws and maps to check your eligibility to grow and produce agricultural crops and livestock in the area?</i></p>	<ul style="list-style-type: none"> - Ontario Environmental Farm Plan - FSA - ULSAC
Farming	<ol style="list-style-type: none"> 12) Operations 13) Planting Material Management 14) Soil Quality and Productivity 15) Nutrient Management 16) Crop Protection Product Management 17) Waste and Pollution Water Quality and Quantity 	<p><i>Over a 5-year period, do you carry out a soil analysis on every annual crop field?</i></p>	<ul style="list-style-type: none"> - Ontario Environmental Farm Plan - FSA - ULSAC
Health and Welfare	<ol style="list-style-type: none"> 18) Food Safety and Biosecurity 19) Traceability 20) Welfare 21) Transportation 22) Housing 23) Feed 24) Health Milk Quality 	<p><i>Do you regularly inspect living spaces to ensure safety and appropriate living conditions (e.g. clean and dry bedding, secure footing etc)?</i></p>	<ul style="list-style-type: none"> - Gay Lea Foods- The Code of Practice for the Care and Handling of Dairy Goats - Gay Lea Foods- The Code of Practice for the Care of Handling Dairy Cattle - Canadian Verified Sheep program - Verified Beef Production Plus

APPENDIX D: MAP OF PARTICIPATING DAIRY GOAT FARMS



APPENDIX E: NUMBER OF DAIRY GOATS BY FARM

Number of Dairy Goats by Farm



APPENDIX F: PARTICIPANT OBSERVATIONS AND SUGGESTIONS

Observation	Suggested Action
<p>Questions refer to specific best practices, codes and manuals that participants aren't familiar with. For example, the definition of category 1 antimicrobials, or the Goat On-Farm Food Safety program through the Canadian National Goat Federation.</p>	<p>Provide links, pop-up windows, podcasts, videos, and/ or documents with questions that reference specific codes/ standards/ best practices. Through this, SFFI becomes a knowledge transfer and educational tool for those participating.</p>
<p>What does a protocol/ procedure consist of? Does it have to be written down? Can it be verbal?</p>	<p>Provide clarity on the definition of a protocol/ procedure based on what other standards are requiring for a protocol/ procedure.</p>
<p>What is considered training? Can it be verbal? Does it have to be a course? Or from a professional?</p>	<p>Provide clarity on the definition of training and include all possible forms of training when and if possible.</p>
<p>Not applicable should be added to the topics of genetically modified organisms, irrigation, riparian buffers, grain quality, liquid fertilizer.</p>	<p>Farmers situations vary. NA should be added as an option to more questions to accommodate this diversity. NA could also come with specifications about when it can be used as an answer. Also, by adding in more filters, and asking farmers what commodities they produce at the start of the process, questions and required data can be filter more appropriately.</p>
<p>All participants brought in a third-party operator to apply their crop protection products. They all assumed the company they hired followed best management practices but had no way to confirm it.</p>	<p>This is where SFFI can connect data systems, thereby proving the efforts of the value chain.</p>
<p>Participants do not have access to a certified waste disposal company who accepts plastic like bale wrap or twine.</p>	<p>The SFFI tool, can help to identify areas within agri-food that need more support, research, innovation or services. Once gaps are identified, SFFI can strike up technical committees to explore and work on implementing solutions.</p>
<p>There is no "overtime" for agricultural workers in Ontario, as they are exempt from labour legislation.</p>	<p>This identified a legislative gap. This information is useful for government as they also work towards sustainability, and work to best serve the citizens of the province and nation.</p>
<p>No injury has occurred on the farm, so many of the questions about worker compensation, WSIB etc. no longer apply.</p>	<p>Questions that have a precondition should be set up by first asking whether or not the precondition applies. For example, have you ever had an injury on your farm? If the answer is yes, the participant then moves onto a set of related questions. If the answer is now, then</p>

	the associated questions are filtered out and the participant moves onto the next topic.
"None of the above" should be used as a filter, rather than an option.	This relates to how the questions are structured in the tool. Questions that provide options for answers should not be in yes/no format. They should be in a "select all that apply" format. This avoids having the option of "none of the above" appear to be a double negative.
Green is good and red is bad. But sometimes it's a matter of opinion.	Consideration should be taken into the colour choices of the tool. At times, answers were neither good, nor bad, but the associated colours made participants feel less confident and secure in their choices. SFFI does not want to judge how a producer operates their business, but rather provide an assessment of their practices and identify potential areas for improvement, should they choose to do so.

APPENDIX G: SAMPLE SFFI PARTICIPANT SCORECARD ILLUSTRATING THE COMBINATION OF STANDARDS

Dairy Goat Proof-of-Concept Project

SUSTAINABLE FARM & FOOD

Individual report for: **Example**

FARMING

Overall score
71%

Completed

Not completed

Not applicable

Crop protection product management*	86%	Nutrient management	38%	Water quality and quantity	75%
Your farm: 86%	<div style="width: 86%; height: 10px; background: linear-gradient(to right, #0072bc, #99cc99);"></div>	Your farm: 38%	<div style="width: 38%; height: 10px; background: linear-gradient(to right, #0072bc, #99cc99);"></div>	Your farm: 75%	<div style="width: 75%; height: 10px; background: linear-gradient(to right, #0072bc, #99cc99);"></div>
Your sector: 94%	<div style="width: 94%; height: 10px; background: linear-gradient(to right, #0072bc, #99cc99);"></div>	Your sector: 79%	<div style="width: 79%; height: 10px; background: linear-gradient(to right, #0072bc, #99cc99);"></div>	Your sector: 97%	<div style="width: 97%; height: 10px; background: linear-gradient(to right, #0072bc, #99cc99);"></div>
Application of crop protection products ^{EFP}	<input checked="" type="checkbox"/>	Fertilizer storage ^{EFP}	<input type="checkbox"/>	Buffer strips ^{EFP}	<input type="checkbox"/>
Cleaning and disposal of agrochemicals and containers ^{EFP}	<input checked="" type="checkbox"/>	Nutrient application	<input checked="" type="checkbox"/>	Irrigation records ^{EFP}	<input checked="" type="checkbox"/>
Crop protection products records ^{EFP}	<input checked="" type="checkbox"/>	Nutrient management plan ^{EFP}	<input checked="" type="checkbox"/>	Irrigation systems ^{EFP}	<input checked="" type="checkbox"/>
Crop protection products storage ^{EFP}	<input checked="" type="checkbox"/>	Nutrient management records ^{EFP}	<input checked="" type="checkbox"/>	Water contamination ^{EFP}	<input checked="" type="checkbox"/>
Integrated pest management system ^{EFP}	<input type="checkbox"/>	Nutrient selection ^{EFP}	<input type="checkbox"/>	Water infrastructure and equipment	<input checked="" type="checkbox"/>
Label requirements ^{EFP}	<input checked="" type="checkbox"/>	Period of application	<input type="checkbox"/>	Water quality ^{EFP}	<input checked="" type="checkbox"/>
Operators	<input checked="" type="checkbox"/>	Training	<input checked="" type="checkbox"/>	Water quality and quantity ^{EFP}	<input checked="" type="checkbox"/>
Personal protection equipment ^{EFP}	<input checked="" type="checkbox"/>			Water withdrawal ^{EFP}	<input checked="" type="checkbox"/>
Pest and disease resistance ^{EFP}	<input checked="" type="checkbox"/>				
Selection of crop protection products	<input checked="" type="checkbox"/>				
Training ^{EFP}	<input checked="" type="checkbox"/>				

Soil quality and productivity	100%	Planting material management	50%	Waste and pollution	80%
Your farm: 100%	<div style="width: 100%; height: 10px; background: linear-gradient(to right, #0072bc, #99cc99);"></div>	Your farm: 50%	<div style="width: 50%; height: 10px; background: linear-gradient(to right, #0072bc, #99cc99);"></div>	Your farm: 80%	<div style="width: 80%; height: 10px; background: linear-gradient(to right, #0072bc, #99cc99);"></div>
Your sector: 91%	<div style="width: 91%; height: 10px; background: linear-gradient(to right, #0072bc, #99cc99);"></div>	Your sector: 81%	<div style="width: 81%; height: 10px; background: linear-gradient(to right, #0072bc, #99cc99);"></div>	Your sector: 70%	<div style="width: 70%; height: 10px; background: linear-gradient(to right, #0072bc, #99cc99);"></div>
Crop rotation ^{EFP}	<input checked="" type="checkbox"/>	Cropping plan ^{EFP}	<input checked="" type="checkbox"/>	Identification of discharge	<input checked="" type="checkbox"/>
Soil compaction ^{EFP}	<input checked="" type="checkbox"/>	Genetically modified organisms (GMO)	<input checked="" type="checkbox"/>	Pollution and spill prevention ^{EFP}	<input checked="" type="checkbox"/>
Soil erosion ^{EFP}	<input checked="" type="checkbox"/>	Management of crop disease ^{EFP}	<input type="checkbox"/>	Reduction and recycling ^{EFP}	<input checked="" type="checkbox"/>
Soil quality ^{EFP}	<input checked="" type="checkbox"/>	Management of invasive species ^{EFP}	<input checked="" type="checkbox"/>	Waste disposal ^{EFP}	<input type="checkbox"/>
Soil sampling and analysis ^{EFP}	<input checked="" type="checkbox"/>	Soil management plan	<input type="checkbox"/>	Waste storage ^{EFP}	<input checked="" type="checkbox"/>

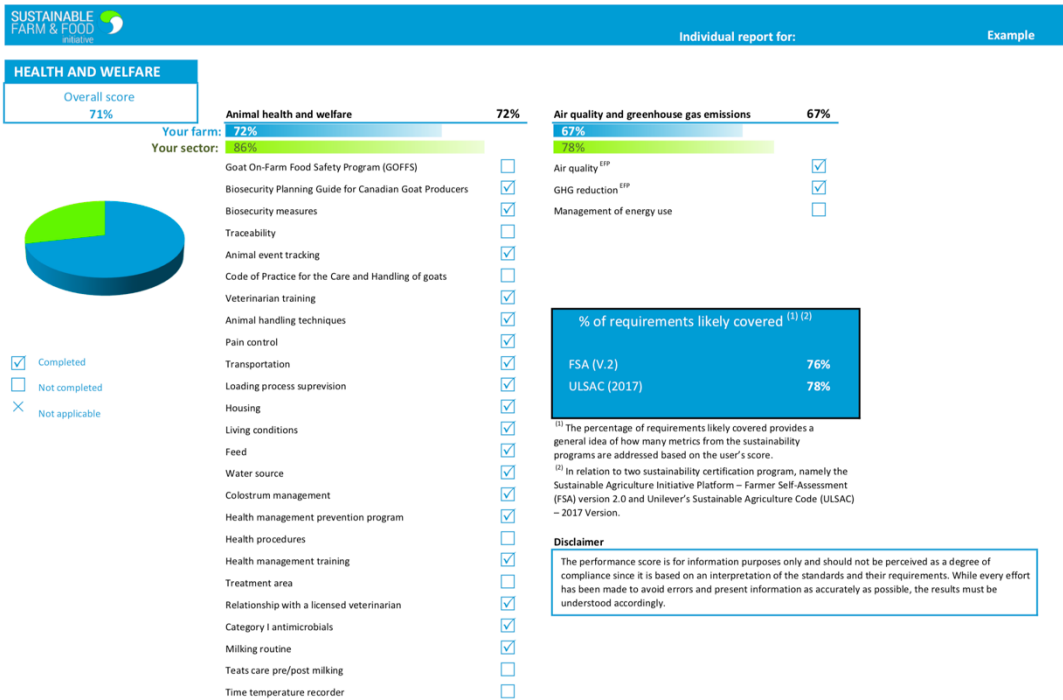
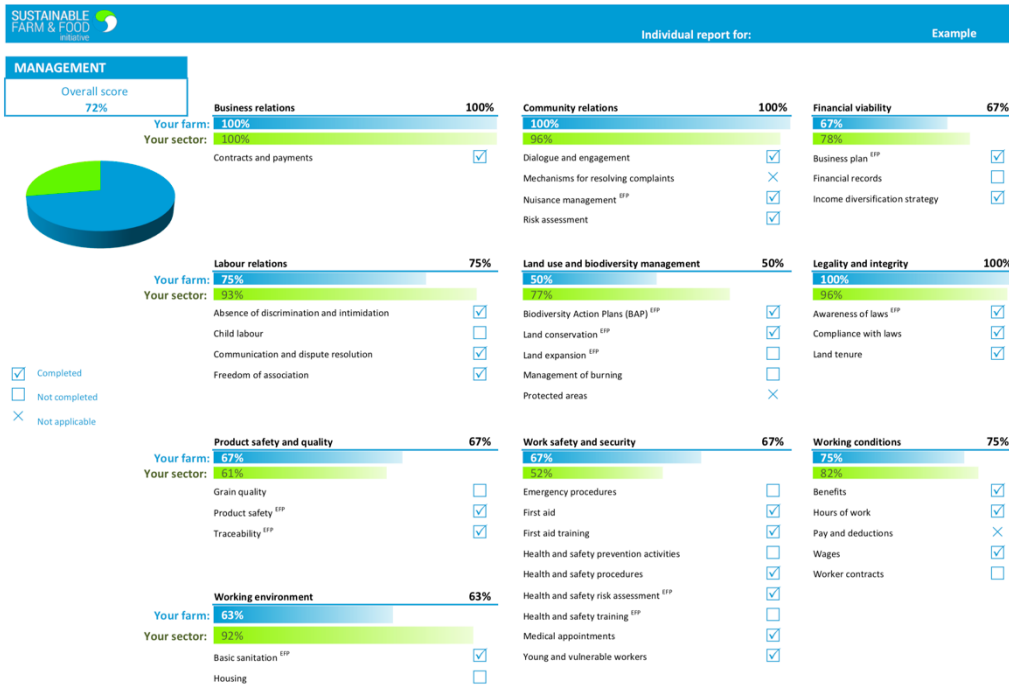
Operations	33%
Your farm: 33%	<div style="width: 33%; height: 10px; background: linear-gradient(to right, #0072bc, #99cc99);"></div>
Your sector: 78%	<div style="width: 78%; height: 10px; background: linear-gradient(to right, #0072bc, #99cc99);"></div>
Equipment and machinery maintenance ^{EFP}	<input checked="" type="checkbox"/>
Equipment calibration ^{EFP}	<input type="checkbox"/>
Training ^{EFP}	<input type="checkbox"/>

Methodology

The scorecard provides a summary of your performance.

- The overall performance is your overall score based on the answers from the questionnaire. The performance is not related to the requirements of the sustainability programs but only to SFFI's scoring system.
- The indicators are based on internationally recognized sustainability certification programs (Sustainable Agriculture Initiative Platform – Farmer Self-Assessment (FSA) version 2.0; Unilever's Sustainable Agriculture Code (ULSAC) – 2017 Version) as well as on national and provincial production standards (e.g. Ontario EFP)
- * 'Completed' indicator are those addressed based on the information provided in the questionnaire. Indicators that do not apply to your situation are not taken into account in your final score.





APPENDIX H: PARTICIPANT RESULTS

The following tables summarize the results for all 111 indicators, grouped within the 19 topics. Note that for some questions farmers had the opportunity to check 'non-applicable'.

MANAGEMENT	Yes	No	NA
Legality and integrity			
Awareness of laws	10		
Compliance with laws	10		
Financial viability			
Business plan	6	4	
Income diversification strategy	10		
Financial records	8	2	
Land use and biodiversity management			
Biodiversity Action Plans (BAP)	6	4	
Land conservation	9		1
Protected areas	1	1	8
Land expansion	7		3
Management of burning	7	3	
Air quality and greenhouse gas emissions			
Air quality	10		
Management of energy use	6	4	
GHG reduction	7	3	
Business relations			
Contracts and payments	10		
Product safety and quality			
Grain quality	4	3	3
Product safety	7	3	
Traceability	5	5	
Labour relations			
Child labour	6	1	3

Absence of discrimination and intimidation	5	1	4
Communication and dispute resolution	5	1	4
Freedom of association	6		4
Working conditions			
Worker contracts	5	1	4
Hours of work		4	6
Benefits	6		4
Wages	6		4
Pay and deductions		2	8
Work safety and security			
Young and vulnerable workers	7		3
Health and safety risk assessment	5	5	
Health and safety procedures	10		
Health and safety training	3	7	
First aid	7	3	
Emergency procedures	1	9	
First aid training	2	8	
Medical appointments	10		
Health and safety prevention activities	3	7	
Working environment			
Basic sanitation	7		3
Housing	5	1	4
Legality and integrity			
Land tenure	9	1	
Community relations			
Dialogue and engagement	10		
Nuisance management	9	1	
Mechanisms for resolving complaints	1		9
Risk assessment	10		

FARMING	Yes	No	NA
Operations			
Training	10		
Equipment and machinery maintenance	9	1	
Equipment calibration	4	6	
Planting material management			
Cropping plan	10		
Management of invasive species	7	3	
Management of crop disease	10		
Genetically modified organisms (GMO)	2	3	5
Soil management plan	6	4	
Soil quality and productivity			
Soil quality	10		
Crop rotation	8	2	
Soil sampling and analysis	8	2	
Soil erosion	9	1	
Soil compaction	10		
Nutrient management			
Nutrient application	2	3	5
Period of application	8	2	
Training	7		3
Nutrient management plan	8	2	
Nutrient selection	8	1	1
Nutrient management records	7	3	
Fertilizer storage	9		1
Crop protection product management			
Training	9		1
Operators	10		
Integrated pest management system	7	3	

Selection of crop protection products	10		
Label requirements	10		
Pest and disease resistance	10		
Application of crop protection products	10		
Crop protection products records	6	1	3
Crop protection products storage	4	1	5
Cleaning and disposal of agrochemicals and containers	5		5
Personal protection equipment	6		4
Waste and pollution			
Waste storage	7	3	
Waste disposal	7	2	1
Pollution and spill prevention	7	3	
Identification of discharge	5	5	
Reduction and recycling	10		
Water quality and quantity			
Water quality	9	1	
Water contamination	10		
Buffer strips	7	1	2
Water infrastructure and equipment	10		
Water quality and quantity			10
Water withdrawal			10
Irrigation systems			10
Irrigation records			10

HEALTH AND WELFARE	Yes	No	NA
Animal health and welfare			
Goat On-Farm Food Safety Program (GOFFS)	3	7	
Biosecurity Planning Guide for Canadian Goat Producers	6	4	
Biosecurity measures	10		
Traceability	9	1	
Animal event tracking	10		
Code of Practice for the Care and Handling of goats	8	2	
Veterinarian training	10		
Animal handling techniques	10		
Pain control	7	3	
Transportation	9	1	
Loading process supervision	9	1	
Housing	10		
Living conditions	10		
Feed	10		
Water source	10		
Colostrum management	10		
Health management prevention program	10		
Health procedures	8	2	
Health management training	10		
Treatment area	8	2	
Relationship with a licensed veterinarian	10		
Category I antimicrobials	10		
Milking routine	10		
Teats care pre/post milking	6	4	
Time temperature recorder	3	7	

APPENDIX I: IN-DEPTH RESULTS ANALYSIS

Participant Results

Numerous findings can be extrapolated from the results of the questionnaires that participants completed⁴. Detailed results can be found later in this appendix.

Management

The first module completed by participants was the management one. Results reveal that of the three questionnaires (representing three categories—management, farming, and health and welfare), the management category had the greatest amount of variation in answers. Several indicators deserve particular attention, many of which relate to the topic of occupational health and safety (OHS):

- **Health and safety risk assessment:** over the last 3 years, only 50% of producers have carried out an assessment of the workplace to determine the risks that they or their workers may be exposed to. This includes assessing potential biological, chemicals or physical hazardous agents.
- **Health and safety training:** only 30% of farmers organize regular health and safety training for all permanent and temporary workers.
- **Emergency procedures:** only one respondent has a well-defined protocol known by everyone (employees and farm owners) in case of an incident, submits the employer report detailing injuries to the Workers' Compensation Board (WCB) within 72 hours after becoming aware of an injury or illness, and investigates and implements corrective action if necessary, when an accident occurs.
- **First aid training:** 20% of participating producers said they have at least one farm worker (including owners and their family) who participated in a first aid training program over the last 3 years.
- **Health and safety prevention activities:** 30% of respondents declared they participated in health and safety prevention activities, information sessions or training.
- **Business plan:** 40% do not have a documented business plan that includes their short, medium and long-term objectives and goals, and identifies the future challenges for their farm.

These points highlight areas in which producers will need future support and resources, in order to align with a variety of sustainability standards. The FSA asks specifically about these indicators, and considers them essential, meaning that they are not in 100% compliance with them, not even the lowest level of FSA Bronze can be achieved.

⁴It is important to mention that the results generated from this project are based on self-declaration made by farmers themselves. Answers were not verified, and some questions may have been interpreted differently by some participants.

Farming

Results show that participants are doing well with regards to the indicators covered under the Farming category. In fact, results align well with the requirements of the FSA and ULSAC international standards. Some indicators that deserve attention, however, in order to improve alignment with standards include:

- **Equipment calibration:** 40% of producers regularly calibrate their seeding and fertilizer application equipment. 100% of participants bring in a third party for agrochemical application. While no participant could confirm that the third party they hire calibrates their agrochemical equipment, 40% felt confident enough to say they would trust that they did.
- **Personal protection equipment:** 60% of farmers said that everyone working on the farm have access to protective equipment and clothing when carrying out hazardous operations, such as pesticide handling and mechanized or manual application.
- **Identification of discharge:** 50% of producers have identified all discharges to drains, sewers, land or groundwater, made sure they are located at a safe distance from living areas and/or waterways and have shut off valves at point of discharge.

Again, these areas are asked in the FSA and ULSAC standards, so in order to achieve international alignment they will need to be addressed.

Health and Welfare

The final questionnaire answered by participants was mostly developed based on the 2003 version of the Code of Practice for Goat Production from the National Farm Animal Care Council, and Gay Lea Foods Co-operative's dairy goat and dairy cattle codes for best practices.

This category has the highest overall score from participating farmers. The fact that the practices documented are more directly related to dairy goat production may explain these results, in part. That being said, as in the previous two categories, some indicators deserve attention:

- **Goat On-Farm Food Safety Program (GOFFS):** 30% of respondents have implemented the Goat On-Farm Food Safety (GOFFS) Program developed by the Canadian National Goat Federation (CNGF).
- **Biosecurity Planning Guide for Canadian Goat Producers:** 60% of producers said that they or one of their employee read / reviewed the Biosecurity Planning Guide for Canadian Goat Producers over the last 3 years.
- **Teats care pre/post milking:** 60% of farmers clean and/or dip the teats pre- and post-milking.
- **Time temperature recorder:** only 30% have a time temperature recorder.

On-Farm Practices and Alignment with an Array of Standards

One of the goals of SFFI is to provide a single space where data can be organized so that standards and programs can be benchmarked, and data being collected for one standard can be translated over to other standards, so participants don't have to do additional work if they need to meet multiple standards. From a processing and retail perspective, where multiple standards and programs may be involved in the production of a product, how all of



the standards involved in each ingredient of a product align with international standards is important information for business.

Of the 111 questions, 48 are partly or fully addressed by the Ontario EFP. The percentages below, indicate the number of requirements that are likely covered based on participant answers. Note that questions referring to the FSA and ULSAC programs can be related to more than one requirement. Also, the degree to which the question matches the related requirements varies in each case. For that reason, this score only gives a general idea of how many metrics from the sustainability programs are addressed based on the user's score.

Participant	% of requirements likely covered (1), (2)	
	FSA (2.0)	ULSAC (2017)
Participant 1	76%	65%
Participant 2	81%	77%
Participant 3	96%	91%
Participant 4	72%	66%
Participant 5	90%	95%
Participant 6	85%	82%
Participant 7	85%	87%
Participant 8	88%	81%
Participant 9	78%	74%
Participant 10	76%	72%
AVERAGE	83%	79%

Notes:

- (1) The percentage of requirements likely met provides a general idea of how many metrics from the sustainability programs are addressed based on the user's score.
- (2) In relation to two sustainability certification programs, namely the Sustainable Agriculture Initiative Platform- Farmer Self-Assessment (FSA) Version 2.0 and Unilever's Sustainable Agriculture Code (ULSAC) – 2017 Version.

Moving forward, it will be important to be able to break down these general overall percentages into the international standards formats. For example, the questions in the FSA are divided into categories of essential, basic and advanced. In order to achieve one of the three FSA standards of bronze, silver or gold, participants have to achieve a certain percentage in each category. So, SFFI participant scores will need to be broken down into percentage achieved on essential, basic and advanced requirements.



APPENDIX J: SFFI QUESTIONNAIRE

