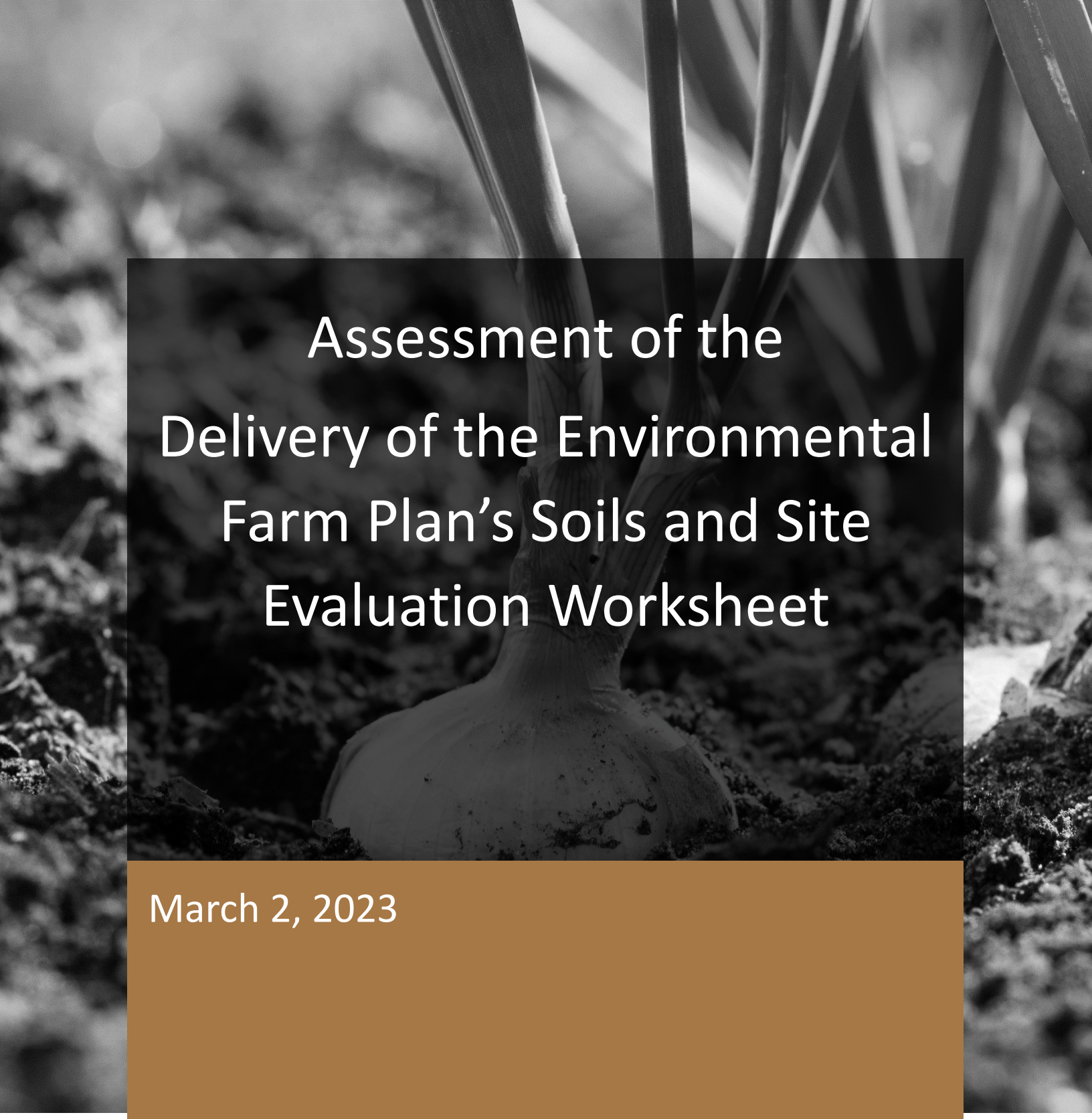

Assessment of the Delivery of the Environmental Farm Plan's Soils and Site Evaluation Worksheet

March 2, 2023

WILTON
CONSULTING GROUP

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Executive Summary

The Environmental Farm Plan (EFP) program in Ontario has been delivered since the mid-1990s as a self assessment for farmers to identify opportunities to reduce environmental risk on the farm. Now, in 2023, an opportunity to better understand ways to improve the content and delivery of the fourth edition EFP to best serve Ontario farmers.

This report summarizes research and engagement findings to improve the delivery of the EFP Soils and Site Evaluation worksheet, as well as the Farmland Health Check-Up (FHCU) Soil and Slope Information sections.

Table 1. Description of Research Activities

Research Activity	Description
Jurisdictional Scan	Review of other provincial EFP programs' approaches to collecting and assessing soil data to identify potential opportunities for Ontario.
FHCU Survey	A survey of Certified Crop Advisors and Professional Agrologists who deliver the FHCU program to identify opportunities for improvement in the delivery of the soil and slope content.
Focus Groups	Focus groups with Ontario Soil and Crop Improvement Association staff and other EFP program stakeholders to assess opportunities for improvement to workshop delivery and the associated soils tools, and recommendations moving forward.

Key Takeaways

- The Ontario Soils Calculator (under development) can improve the delivery of the EFP and FHCU by reducing the amount of time spent on information-gathering and refocusing valuable time on education about environmental risks and agricultural management practices
- Opportunities exist to:
    - Strengthen and streamline some of the existing soil resources for Ontario agriculture
    - Better support EFP Workshop Leaders, which will further strengthen the workshop experience for producers
    - Foster a deeper understanding of site-specific soil quality, soil health, and agri-environmental risk factors

Recommendations

OSCIA and other EFP stakeholders can consider the following recommendations to improve delivery of the EFP Soils and Site Evaluation worksheet, as well as the Farmland Health Check-Up Soil and Slope Information sections.

EFP Soil and Site Evaluation Worksheet Delivery

1. Collaborate with EFP Workshop Leaders to develop standardized materials (e.g., written instructions for workshop participants and facilitation plans) for the one-day renewal workshops and two-day workshops.

2. Develop and implement educational opportunities for EFP Workshop Leaders, including:
    - A formal onboarding process
    - Basic technical training sessions
    - Regular time on the agenda in OSCIA Field Staff meetings to discuss what is working well and brainstorm opportunities for improvement

EFP Soil and Site Evaluation Worksheet Content

3. Expand the content covered in the Field Management Groups table and the Farm Sketches to foster a deeper understanding of site-specific soil quality, soil health and agri-environmental risk factors.

4. Add a soil symbol throughout the EFP to highlight the interrelationship between soil health and various management practices.

Soil Resources

5. Incorporate small updates to the eEFP and Ontario Soils Calculator to improve the user experience.

6. Streamline the user experience across digital tools, such as the eEFP, FHCU, AgMaps, and Ontario Soils Calculator.

7. Leverage the expertise of OMAFRA's specialists to strengthen and streamline the existing soil resources, as well as address gaps in available resources.

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1. Introduction

The Environmental Farm Plan (EFP) is a voluntary self-assessment for Ontario farmers to learn about on-farm environmental risk. The Ontario Soil and Crop Improvement Association (OSCIA) delivers the program through funding provided by the *Canadian Agricultural Partnership*. The fourth edition EFP was released in 2013. Now, in 2023, an opportunity exists to improve delivery. One such area for improvement lies within the (print and electronic) Soils and Site Evaluation worksheet. An assessment of worksheet content and delivery was conducted between September 2022 and February 2023. The goal of the assessment was three-fold:

1) To identify areas for improved delivery of the Environmental Farm Plan's (print and electronic) Soil and Site Evaluation Worksheet, as well as the Soil and Slope Information sections of the Farmland Health Check-Up (FHCU).
2) To gather feedback on areas for improvement on the beta version of the Ontario Soils Calculator.
3) To identify recommendations to best advance EFP and FHCU products to address soil health concerns.

The focus of this project is to provide recommendations to align the EFP with current learning objectives and identify opportunities to streamline the background soils work to increase the educational focus of the EFP workshops. Ultimately, this report will inform next steps in updating the delivery of the EFP program.

Source: On-Farm Applied Research and Monitoring photo

2. Context

2.1. About the EFP

Farmers can voluntarily complete an EFP to increase their environmental awareness specific to their operations, identifying both their strengths and areas of risk. In the process, farmers also learn about beneficial management practices (BMPs). Farmers then create action plans to manage and mitigate these risks. In Ontario, the OSCIA delivers the EFP. Both the Ontario Ministry of Agriculture, Food, and Rural Affairs (OMAFRA) and Agriculture and Agri-Food Canada (AAFC) support the EFP. As of 2017, 46% of farms in Ontario had an EFP, and 27% of farms had developed their EFPs within the last two years (of 2017).[1]

Depending on their previous experience with the EFP program, producers have three options for completing their EFPs (Table 2).

Table 2: Process for completing an EFP

	2 day in-person workshop	1 day renewal workshop	eEFP
Eligibility	• Farmers who are completing their first EFP • Farmers who have not completed an EFP in a long time	• Farmers who completed a 3rd or 4th edition EFP and wish to update it	• Farmers who completed a 3rd or 4th edition EFP and wish to update it • Note: farmers participating in a workshop may opt to complete their eEFP during the sessions, in lieu of using the hard-copy workbook
Benefits	• OSCIA Workshop Leaders guide participants through the process of completing the EFP • Learn about cost-sharing opportunities • Peer networking	• Learn about cost-share funding opportunities • Peer networking	• Available at www.electronicefp.com

[1] Statistics Canada. (April 2019). The Daily: Table 5. Farms with a formal Environmental Farm Plan (EFP) Canada and Provinces. Retrieved from: https://www150.statcan.gc.ca/n1/daily-quotidien/190426/t005b-eng.htm.

2.2. Overview of the Soils & Site Worksheet

The first worksheet in the Ontario EFP is the Soil and Site Evaluation Worksheet. Through this worksheet, farmers must identify, describe, and classify:

- Their farmstead sites, which are associated with well water sites
- Their field management groups, which are groups of fields with "similar soil type, slope, field management, and cropping practices"[2]
- Their potential for water contamination, erosion, and soil compaction

Information collected in Worksheet 1

- Farm and farmstead site sketches
- Soil type
- Slope class
- Hydrologic soil group
- Erosion factor
- Potential for water contamination (surface and ground)
- Potential for erosion (wind and water) and compaction

Workshop leaders guide producers through the process of completing this worksheet (Table 3). Typically, it can take up to 45 minutes to complete it. Farmers use the information gathered in this worksheet in subsequent sections of the workbook, as these soil and site factors influence many other environmental considerations.

Table 3. Process for completing the Soil and Site Evaluation Worksheet of the Ontario EFP

Pre-Workshop

- Producers asked to:
  - Find their predominant soil type(s) and slope class using County/District Soil Maps or AgMaps
  - Refer to Soil Summary Sheets to identify their hydrologic group, erosion factor, and potential for wind erosion and soil compaction

Workshop 1

- Workshop Leaders:
  - Help producers troubleshoot pre-workshop activities
  - Walk producers through the process for completing Tables 6-8 of the Soil and Site Evaluation Worksheet, which identify the potential for surface water contamination, ground water contamination, and water erosion
  - Explain requirements for farm and farmstead site sketches
  - Teach producers about the risks associated with their soils

Post-Workshop 1

- Producers prepare their site sketches

Farmers completing their eEFP can access written instructions to similarly guide them through this process. Glossary hyperlinks are included to provide producers with additional information. Users can also access videos and examples to help guide them through the process. For example, a YouTube video demonstrates how to create a site sketch using AgMaps, and producers can see an example farm sketch.

[2] Ontario Environmental Farm Plan Workbook, p. 11.

2.3. Overview of the Farmland Health Check-Up's Soil & Slope Sections

The Farmland Health Check-up (FHCU) is a voluntary program for farmers in the Lake Erie and Lake St. Clair watersheds to assess soil health and water quality risks and identify BMPs. Participating farmers must work with a Certified Crop Advisor (CCA) or Professional Agrologist (P.Ag.) to complete this program.

To complete the FHCU, farmers select three fields that represent their least challenging, challenging, and most challenging fields. They work with their CCAs or P.Ags to compile relevant information. The Soil Information and Slope Information sections (2.2 and 2.3) gather similar information as in the EFP Soil and Site Evaluation Worksheet.

Soil and slope information collected in the FHCU

- Soil type
- Surface texture
- Hydrologic soil group
- Natural drainage class
- Erosion factor
- Soil compaction potential
- Tile drainage
- Slope class
- Length of slope
- Slope complexity

When working through the FHCU Soil and Slope sections, typically, CCAs and P.Ags either collaborate with producers to find the necessary information (40% of survey respondents) or find the information themselves in advance of their meetings with producers (32%). Rarely do producers provide the necessary information from their EFPs.[3]

Source: On-Farm Applied Research and Monitoring photo

Survey of CCAs and P.Ags who deliver the FHCU:

- 25 respondents provided their feedback through the survey
- Most respondents were moderately familiar or extremely familiar with both the EFP (56% of respondents) and the FHCU (92%)

The length of time it takes to complete these sections of the workbook can vary; 40% of survey respondents said this work takes 20 to 29 minutes, while another 28% said they can complete the work in 10 to 19 minutes. The amount of time it takes to complete this section could be related to the associated conversations with the participating producers. One respondent, for example, said that "farmers don't agree with the information online" and a "site visit, or talking to the producer, is required to confirm slope details."

[3] In total, 12% of survey respondents said producers provide the necessary information.

2.4. Overview of the Ontario Soils Calculator

The Ontario Soils Calculator is in beta form. It is designed to help streamline the gathering of information required for Soil and Site Evaluation Worksheet of the EFP, which will allow for more educational time during the workshop. The Calculator will also be useful for the Soil Information and Slope Information sections of the FHCU.

Producers enter the following information into the Calculator:

- ✓ The region their farm is in
- ✓ Their predominant soil type(s), identified using County/District Soil Maps or AgMaps

Once the relevant information is entered, the Calculator auto populates the topography/slope class as well as the depth to water table. The user can review the auto populated information and adjust as necessary. Then, the Calculator provides the key outputs, including:

- Drainage
- Hydrologic soil group
- Erosion factor
- Site's potential for:
  - Surface water contamination
  - Ground water contamination
  - Wind erosion
  - Soil compaction
  - Water erosion

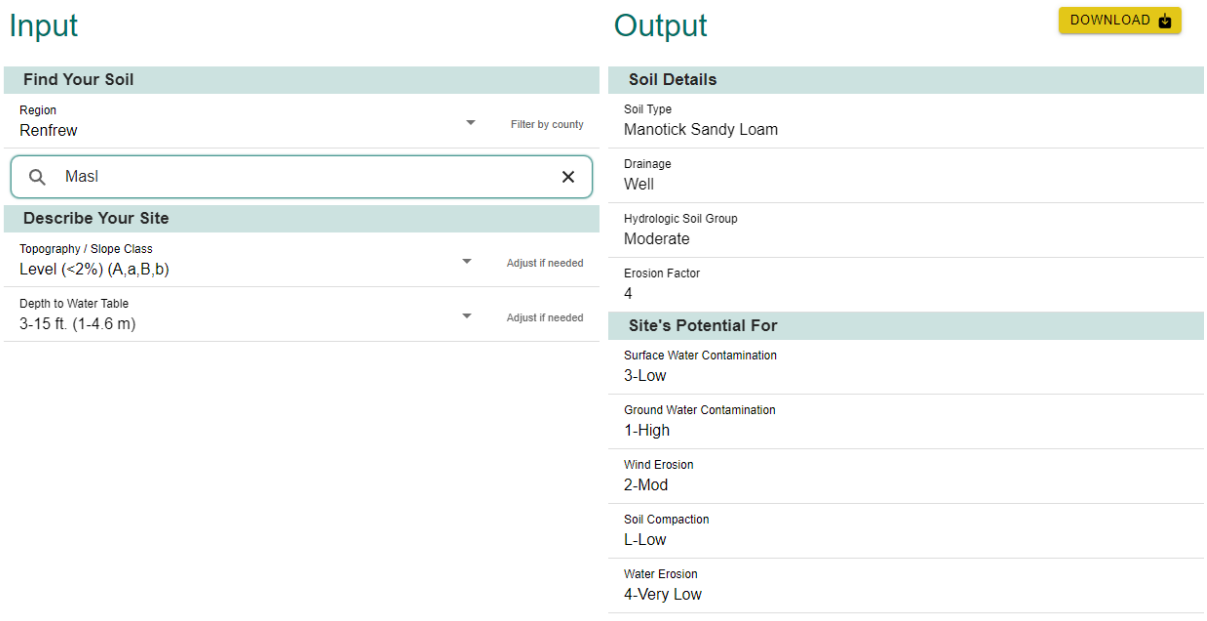

Figure 1. Sample output from the Ontario Soils Calculator

3. Methods

This project used a mixed methods approach, including both a jurisdictional scan and stakeholder engagement. Key findings from this research are presented in Section 4 of the report.

A. Jurisdictional Scan of Other EFPs' Soils-Related Sections

- Scanned soils-related sections of the EFPs from Alberta, British Columbia, New Brunswick, Prince Edward Island, and Saskatchewan
- Identified opportunities for Ontario's EFP Soil and Site Evaluation Worksheet, as well as the associated workshop delivery

B. Survey of CCAs and P.Ags who Deliver the FHCU

- Surveyed 25 CCAs and P.Ags who deliver the FHCU
- Gathered insights on how they compile the soil and slope information for the FHCU and the useability of current sources to acquire the necessary information
- Identified the challenges associated with these resources and opportunities for improvement

C. Engagement with EFP Workshop Leaders on Current Approaches to the Soil and Site Evaluation Worksheet and Future Opportunities

- Facilitated a focus group with seven OSCIA staff, including workshop leaders and the program coordinator
- Conducted interviews with two additional EFP workshop leaders, and gathered feedback from another individual through email correspondence
- Identified the strengths of the Soil and Site Evaluation Worksheet, and the resources Workshop Leaders encourage producers to use to complete this worksheet
- Identified the challenges producers face when completing the worksheet, and the resources and supports that could be created or leveraged to overcome these challenges
- Gathered feedback on opportunities identified through the jurisdictional scan

D. Beta Ontario Soils Calculator Development

- The beta version of the Ontario Soils Calculator was developed by a 3rd-party technology services provider in collaboration with OSCIA

E. Focus Group with EFP Stakeholders to Gather Feedback on the Beta Ontario Soils Calculator and Identify Future Educational Opportunities

- Facilitated a focus group with 10 EFP stakeholders, including OSCIA staff, CCAs, OMAFRA staff, and others with a strong working knowledge of the EFP
- Discussed the strengths of the beta Ontario Soils Calculator and identified opportunities for improvement
- Explored a potential, refined approach to the delivery of the Soil and Site Evaluation Worksheet
- Brainstormed additional educational opportunities related to soils to incorporate into the EFP workshop

4. Findings

4.1. EFP's Worksheet 1: Soil and Site Evaluation

4.1.1. Strengths & Challenges of the Current Worksheet and Delivery Methods

During the focus groups and interviews, EFP Workshop leaders highlighted the strengths and challenges associated with the Soil and Site Evaluation worksheet and the delivery of the associated content (Table 4).

Table 4. Strengths & Challenges Associated with the Current Soil and Site Evaluation Worksheet

Strengths	Challenges
• Helps to broaden workshop participants' focus to a whole-farm approach, rather than focusing on individual farmsteads • Helps producers recognize that different soil types have different levels of risk for water contamination, soil erosion, soil compaction, etc. • Teaches workshop participants how to read soil maps • Workshop materials (e.g., videos and photos) enable producers to visualize risks • Helps justify the value of the in-person EFP workshops, as Workshop Leaders guide participants through the process for completing the worksheet • Provides an opportunity for peer-to-peer learning	• In cases where farms have multiple soil types, it can be challenging to know how to best combine the range of information to avoid overwhelming the producer as they complete the subsequent worksheets • Pre-workshop homework is required which requires computer access and computer literacy • Producers completing the eEFP (without attending a workshop) might incorrectly identify their soil types • The use of soil symbols in the eEFP can lead to mistakes (e.g., a producer might select Gsl for Granby sandy loam instead of Grl for Grenville loam), which can necessitate revisions after submission • Table 2a (Descriptor of Storages Shown on Farmstead Sketch) and Table 3 (Inventory of Field Management Groupings) are unclear as currently presented; workshop participants have expressed difficulty knowing which storages to include and how to identify field management groups

4.1.2. Opportunities to Improve Content and Delivery

During the focus groups and interviews, EFP Workshop Leaders identified opportunities to improve the content and delivery of the Soil and Site Evaluation Worksheet.

Supports for Workshop Leaders

The creation of standardized written instructions for workshop participants would be helpful. For example, OSCIA could prepare instructions on how to create a farmstead site sketch using Google Earth. These instructions should clearly present what farmers must complete before they return for the second day of the two-day workshop. These written instructions could also encourage workshop participants to leverage local supports to assist with completing the worksheet. For example, high-speed internet is

often available at local libraries, and librarians may be willing to assist producers in accessing a Google Earth image of their farms.

Similarly, OSCIA could create standard facilitation plans for one-day renewal workshops and two-day workshops. These plans would be beneficial for Workshop Leaders and help to ensure consistency in participant experience across the province.

OSCIA could also create a list of additional resources and contacts for Workshop Leaders to share with producers who want to learn more about their soils. Workshop Leaders need to know the basics about soils for workshop delivery; they can direct participants to other sources, such as the FHCU, OMAFRA specialists, and CCAs for more in-depth learning.

Workshop Leaders could fine-tune the written materials, facilitation plans, and list of resources to align with their facilitation styles and local needs.

OSCIA could develop and institute a formal onboarding process to support the training of new Workshop Leaders. To support all Workshop Leaders in developing their skills and confidence in the educational materials they deliver to producers, OSCIA could initiate training sessions for Workshop Leaders.

In addition to these more formal learning opportunities, OSCIA could build time for conversations about workshop delivery into regular meetings of OSCIA field staff. During these sessions, staff can discuss what is working well and what is not working well. They can also brainstorm how to best resolve these challenges.

An EFP workshop facilitation plan could include:

- A timeline to help pace the sessions
- Key context about and importance of the topics covered in the worksheet to ensure participant "buy in"
- Clear directions of the types of storages that must be identified in Table 2a (Descriptor of Storages Shown on Farmstead Sketch), and why these storages should be identified
- An explanation of what field management groups are and best practices for selecting these groups
- An overview of a "buddy system," whereby producers who have completed an EFP before and/or are familiar with soil maps can volunteer to assist others in finding the necessary information for their farms.

Potential Workshop Leader training topics:

- Cartography skills
- The content covered in the *Field Manual for Describing Soils in Ontario*
- Soil classes and types
- The significance and implications of the risk ratings (e.g., water contamination, erosion, soil compaction, etc.)

Small Updates to the Format of the eEFP

To help decrease the chance of transcription error when producers select their soil type in the eEFP, Workshop Leaders suggested the opportunity to incorporate some updates. In the short term, for example, perhaps the font could be made larger for soil codes, or key letters could be underlined. Pop-ups or "help" buttons could provide users with more information. Perhaps, in the longer term, the code could be replaced with the full name.

4.1.3. Insights from Other Province's EFP Soil Worksheets

All EFP programs across Canada include soil health topics as a key component of the program. As such, EFPs from five other provinces were reviewed (Table 5). The review focused on:

- ✓ The approach taken with regard to soils content
- ✓ Identification of opportunities for Ontario's Soil and Site Evaluation Worksheet.

Table 5. Other Provinces' Approaches to Soils Content in their EFPs

Province	Approach to soils content	Opportunities for Ontario to explore
Alberta	• Producers identify their soil group and associated characteristics using the Alberta Soil Group Map • If producers complete their EFP online, they are linked to the interactive Alberta Soil Information viewer • The workbook contains tables with guidelines for identifying the potential for soil erosion and ground water contamination • When identifying their field groups, farmers are also encouraged to identify any eroded knolls, wetlands, or water bodies • Producers are encouraged to take photos of key features of their farms to compare change over time	• Could directly link the Ontario Soils Calculator with the eEFP and auto populate the content from the Calculator into the eEFP • Could link AgMaps to the Ontario Soils Calculator (i.e., to streamline the gathering of relevant soils information) • Could add a comments section in the Inventory of Field Management Groupings table to allow producers to note additional, relevant information related to their field management groups (e.g., eroded knolls or low, wetter areas) • Could encourage producers to take photos of key areas of concern or priority, such as eroded or compacted areas, so they can track change over time when they update their EFPs
British Columbia	• Producers identify their soil type(s) and depth to high water table in the Farm Identification Worksheet • Producers identify slopes of fields directly on the farmstead and field location sketches • Producers conduct risk assessments related to soils throughout the workbook, rather than focusing on this topic early in the workbook	• Could encourage producers to identify slopes of fields on the farm sketches, as this addition could assist with visualizing risks (e.g., for erosion and water contamination)

New Brunswick	• Participants identify their soil types prior to starting the EFP • The Introduction provides an overview of how to read a soils map, as well as includes the soil summary sheets • A soil health symbol appears throughout the EFP for any management decision that could impact soil health	• A soil symbol throughout the EFP could highlight the importance of the relationship between soil health and various management practices
Prince Edward Island	• The EFP coordinator works with the farmer to gather relevant Property Identification Numbers (PIDs) and uses PEI Land Online to measure slope lengths and grades • CanSIS data is used to identify soil types based on PIDs for the farm • The information is shared with a third-party company that uses GIS software to map the farm operation and provide risk ratings for various EFP criteria based on the slope and soil data for all farmsteads	• Existing mapping/soils data can be more seamlessly integrated into EFP delivery (e.g., no pre-workshop homework for farmers)
Saskatchewan	• Farmers use the soil texture, organic matter, and slope class maps to help complete the farmstead inventory • Farmers can find their farms in the Saskatchewan Soil Information system to fill in specific information about their farmstead and fields • In addition to identifying their soil zones, producers identify their surface soil textures and dominant soil textures (to 1 metre)	• Could include surface texture and subsurface texture of soils in the field management groups table, as these qualities also influence agri-environmental risks

4.2. Existing Resources to Support the Completion of the EFP & FHCU Soils Content

4.2.1. Overview of Existing Resources

Generally, industry stakeholders use a combination of three main sources of information to complete the soils sections of both the EFP and FHCU:

- AgMaps, which is an online digital mapping tool provided by OMAFRA
- County or District Soil Maps, which are available online through Agriculture and Agri-Food Canada or in hard copy at EFP workshops
- Soil Summary Sheets, which are available in hard copy at EFP workshops or online through the FHCU resources and eEFP resources

Stakeholder use of AgMaps or the County/District Soil Maps seems to vary by the specific program and personal preference. Through the FHCU survey, for example, 79% of respondents said they use AgMaps, while 58% of respondents said they use the resources on the FHCU website, including the County or District Soil Maps and the Soil Summary Sheets.[4] Based on the conversations in the focus group and interviews, workshop leaders often promote both AgMaps and the County/District Soil Maps but lean to the use of the hard-copy County/District Soil Maps in the EFP workshops.

4.2.2. Strengths & Weaknesses of Existing Resources

EFP workshop leaders, as well as CCAs and P.Ags who deliver the FHCU, provided feedback on the strengths and weaknesses of AgMaps and the Soil Maps (Table 6).

Table 6. Strengths and Weaknesses of AgMaps and County/District Soil Maps

AgMaps	
Strengths	**Weaknesses**
• Information is more current than the County/District Soil Maps; AgMaps was updated in March 2022 • Offers many layers of information, including well locations, soil names, soil symbols, hydrologic soil groups, watersheds, source water protection data, etc.	• Bandwidth heavy; can be difficult for some users to access because of rural Internet limitations • Not easily accessible in the workshop setting as participants need a laptop and access to Wi-Fi • Can be difficult and time-consuming for users to navigate, as many layers can be added and these layers are not intuitive • Slope and topography information is not always accurate

[4] Survey respondents could select all the resources that applied.

County or District Soil Maps	
Strengths	**Weaknesses**
• Hard copies can be used in EFP workshops, which makes it easier for Leaders and other workshop participants to help individuals needing assistance • As fewer layers of information are presented, it can be easier to find the relevant information using the soil maps than AgMaps	• Many of the maps are dated (e.g., the maps for Prince Edward, Essex, and Grenville Counties are from the 1940s), which can make it difficult for users to navigate • Lack of consistency on how topography is presented across different maps; some maps include descriptions (e.g., slightly undulating) while others use percentages (e.g., 2%)

Through the focus group, Workshop Leaders also identified gaps in available soils information, including:

- A lack of soil maps for some parts of the province, including parts of Northern Ontario
- A lack of data for producers who farming alluvial soils, as well as producers whose operations are located on bedrock

4.2.3. Opportunities to Improve and Streamline the Use of Existing Resources

EFP Workshop Leaders, CCAs, P.Ags, and other EFP stakeholders shared suggestions of how to improve the existing resources.

Logistical Considerations

OSCIA could support Workshop Leaders by providing laminated copies of the County/District Soil Maps. These maps are crucial educational resources, and they can get tattered with repeated use, Workshop Leaders said. When the maps are laminated, Workshop Leaders can also clean them as necessary.

Technical Reviews and Updates

OSCIA could collaborate with OMAFRA specialists on several initiatives to review, update, and streamline existing resources.

EFP stakeholders shared it can be difficult to find the latest version of all County/District Soil Maps. OSCIA could expand upon the list of Soil Maps on the FHCU resources page to create a listing for the entire province. This page could be housed on OSCIA's Soil Health Resources page. It would also be helpful to have a listing of common soil symbols and acronyms used on Ontario soil maps. In the process of creating these resources, technical experts could also compare the County/District Soil Maps and AgMaps to identify any discrepancies in information. For example, CanSIS website lists a 1930 soil survey of Kent County. However, discrepancies exist between this map and the data retrieved using AgMaps, suggesting the latter resource uses more recent soil surveys. Ideally, EFP and FHCU stakeholders should be able to access static soil maps that align with AgMaps. If this is not possible, the listing of soil maps should identify counties or districts where more accurate information is available through AgMaps.

Technical experts could revisit the soil summary sheets to ensure all data is accurate and up to date. Then, OSCIA and OMAFRA could collaborate to consolidate the existing county- or district-level soil summary sheets into one "master" reference sheet. A more streamlined resource would be helpful for all users.

OSCIA workshop leaders could meet with OMAFRA to share their specific insights on gaps in available information, so that OMAFRA specialists could develop resources to support with filling these gaps. For example, EFP stakeholders could identify areas lacking soil maps and collaborate with OMAFRA specialists to find the necessary information. OMAFRA specialists could also develop more formal guidance on how to best handle farms located on bedrock, alluvial soils, etc. within the context of the EFP and FHCU.

4.3. Beta Ontario Soils Calculator

4.3.1. Strengths of the Beta Ontario Soils Calculator

After seeing a demonstration of the beta Calculator and testing it themselves, industry stakeholders with a strong working knowledge of the EFP identified the strengths of the tool (Table 7).

Table 7. Strengths of the Beta Ontario Soils Calculator

Strengths
✓ Easy to use
✓ Easy to reference during the workshop; producers can print it out or take a screenshot for reference
✓ Frees up some time that can be repurposed for other educational opportunities
✓ Does not require a lot of Internet bandwidth; a cached version of the Calculator can be used once it is loaded on a device with Internet access
✓ Reduces the potential for errors when transcribing information from the Soil Summary Sheets
✓ Does not save producers' data; alleviates concerns about privacy

While industry stakeholders recognized the value of the beta Ontario Soils Calculator, they also underscored the importance of the existing education surrounding the completion of the Soil and Site Evaluation Worksheet. For example, industry stakeholders underlined the importance of helping producers to learn how to read a soil map.

4.3.2. Opportunities to Improve the Beta Ontario Soils Calculator

Strengthen Associated Communication Materials

OSCIA could add a short section in the About section of the Calculator to provide context on how users find their soil types. For example, the section could include a link to the instructions available through the eEFP and FHCU, as well as a link to AgMaps.

As the Calculator does not actually collect any information, OSCIA could also add a note on the website to tell users. Data privacy is a key concern for many Ontario farmers, so providing the reassurance of the protection of their privacy is important.

Logistical Considerations

As with the eEFP, a risk exists that users might accidentally select the wrong soil symbol in the Calculator. To help alleviate this risk, OSCIA could consider:

- Increasing the size of the font
- Underlining key letters (e.g., Gsl and Grl)
- Adding the full name of the soil type

Updates to Outputs

The Ontario Soils Calculator Outputs currently include a description, as well as a risk rating, for the site's potential for water contamination, soil compaction, etc. OSCIA should also add a description for the erosion factor, EFP stakeholders suggested. The addition of information on natural drainage, drainage class, surface texture, and subsurface texture to the Outputs of the Calculator could also be beneficial.

4.3.3. Additional Learning Opportunities

The Calculator should help to streamline the process for collecting the necessary information for the completion of the Soil and Site Evaluation Worksheet, which should allow for additional educational opportunities. EFP stakeholders shared the following topics for inclusion:

- Soil surface texture, subsurface texture, and how these textures influence risk ratings
- More coverage of soil health
- Increased discussions about wells
- Site-specific risk factors for soil degradation and associated BMPs to reduce these risks

EFP stakeholders also shared suggestions on mediums for communication:

- Tactile learning opportunities, with items that can be passed around the room
- Three- to five-minute explainer videos
- Pictures showing soil degradation
- A list of additional resources, such as info sheets and factsheets (e.g., Best Management Practices: Soil Health in Ontario, and the Best Management Practices website)

Source: On-Farm Applied Research and Monitoring photo

4.4. Potential, Refined Approach to the Delivery of the Soil and Site Evaluation Worksheet

Based on the feedback provided by EFP stakeholders, a proposed, slightly refined approach to the delivery of the Soil and Site Evaluation Worksheet is outlined below (Table 8). Given the EFP Workshop

Leaders' emphasis on the value of learning how to read a soil map, it is suggested this work is reincorporated into the EFP workshop.[5]

Table 8. Potential Refined Approach to the Delivery of the Soil and Site Evaluation Worksheet

Pre-Workshop
• If possible, the morning of the first workshop, producers are asked to load the Ontario Soils Calculator on the smartphone or tablet they will bring to the workshop
Workshop 1

• Workshop Leaders:
  ○ Introduce the subject matter of the Soil and Site Evaluation Worksheet
  ○ Guide producers through finding their soil types, using the Ontario Soils Calculator, and interpreting the results
  ○ Facilitate additional, related learning opportunities
  ○ Explain the requirements for the farm and farmstead site sketches

Post-Workshop 1
• Producers prepare their site sketches

To streamline the process, Workshop Leaders could encourage participants to bring smartphones, tablets, and/or laptops to the workshop. That way, more devices would be available for using the Ontario Soils Calculator. Depending on the availability of high-speed Wi-Fi, Workshop Leaders could also leverage AgMaps if desired to supplement the hard-copy County/District Soil maps. As producers have different levels of computer literacy, Workshop Leaders could leverage the "buddy system" to enable producers to help one another with gathering the necessary soils information.

Source: On-Farm Applied Research and Monitoring photo

[5] The pre-workshop homework was assigned to help ensure alignment with the public health guidelines for physical distancing during the COVID-19 pandemic. Now that guidelines have relaxed, workshop participants could again collaborate in person to identify their soil types.

5. Recommendations

Through the stakeholder engagement activities and jurisdictional scan, a series of recommendations were developed. These recommendations focus on the delivery and content of the Soil and Site Evaluation Worksheet, as well as the soils resources. The recommendations are classified into short- (1), medium- (2) and long-term (3) objectives.

EFP Soil and Site Evaluation Worksheet Delivery		
#	**Recommendation**	**Timeline**
1.0	**Collaborate with EFP Workshop Leaders to develop standardized materials (e.g., written instructions for workshop participants and facilitation plans) for the one-day renewal workshops and two-day workshops.**	**1**
1.1	Leverage the existing resources and expertise of the Workshop Leaders to prepare these materials.	1
1.2	Laminate Workshop Leader's County/District Soil Maps.	2
1.3	Collaborate with Workshop Leaders to finalize the refined delivery approach for the Soil and Site Evaluation Worksheet.	1
2.0	**Develop and implement educational opportunities for EFP Workshop Leaders, including:** • **A formal onboarding process** • **Basic technical training sessions** • **Regular time on the agenda in OSCIA Field Staff meetings to discuss what is working well and brainstorm opportunities for improvement**	**1**

EFP Soil and Site Evaluation Worksheet Content		
#	**Recommendation**	**Timeline**
3.0	**Expand the content covered in the Field Management Groups table and the Farm Sketches to foster a deeper understanding of site-specific soil quality, soil health and agri-environmental risk factors.**	**3**
3.1	Identify surface texture and subsurface texture of soils, as these factors influence risks for erosion and water contamination.	3
3.2	Ask producers to include photos of key areas of concern or priority in their fields, such as eroded or compacted areas, so they can track change over time as they update their EFPs.	3

3.3	Stipulate that farm sketches should also include an identification of field slopes to help visualize risks.	3
3.4	Add a section for producers to note additional, relevant information related to their field management groups (e.g., eroded knolls or low, wetter areas).	3
4.0	**Add a soil symbol throughout the EFP to highlight the interrelationship between soil health and various management practices.**	**3**

Soil Resources		
#	**Recommendation**	**Timeline**
5.0	**Incorporate small updates to the eEFP and Ontario Soils Calculator to improve the user experience.**	**1**
5.1	Use larger font in soil codes and/or underline key letters in soil codes (e.g., Gsl and Grl) in both the eEFP and Calculator.	1
5.2	Add the description to the erosion factor output in the Calculator to accompany the risk rating.	1
5.3	Add information on natural drainage, drainage class, surface texture, and subsurface texture in the Calculator.	3
6.0	**Streamline the user experience across digital tools, such as the eEFP, FHCU, AgMaps, and Ontario Soils Calculator.**	**1**
6.1	Include links to instructions and resources for identifying soil type on the Calculator.	1
6.2	Explore opportunities to auto populate results from the Calculator into the eEFP and FHCU.	3
7.0	**Leverage the expertise of OMAFRA's specialists to strengthen and streamline the existing soil resources, as well as address gaps in available resources.**	**2**
7.1	Develop a basic landing webpage, housed on OSCIA's Soil Health Resources webpage, with links to the latest versions of all the County/District Soil Maps and a legend for the soil symbols and acronyms.	2
7.2	Prepare a "master" Soil Summary Sheet that covers all soil types.	2
7.3	Develop guidance on how best to handle farms located on bedrock, alluvial soils, etc. within the context of the EFP and FHCU.	2
7.4	Create a list of additional resources (e.g., FHCU) and contacts (e.g., OMAFRA specialists and CCAs) to assist producers with gaining more in-depth knowledge about their soils.	2

6. Appendix: Summary of Results for Consultation on the Soils & Slope Information in the Farmland Health Check-up Survey

Question 1: Please rate your level of familiarity with the following programs: EFP and FHCU.

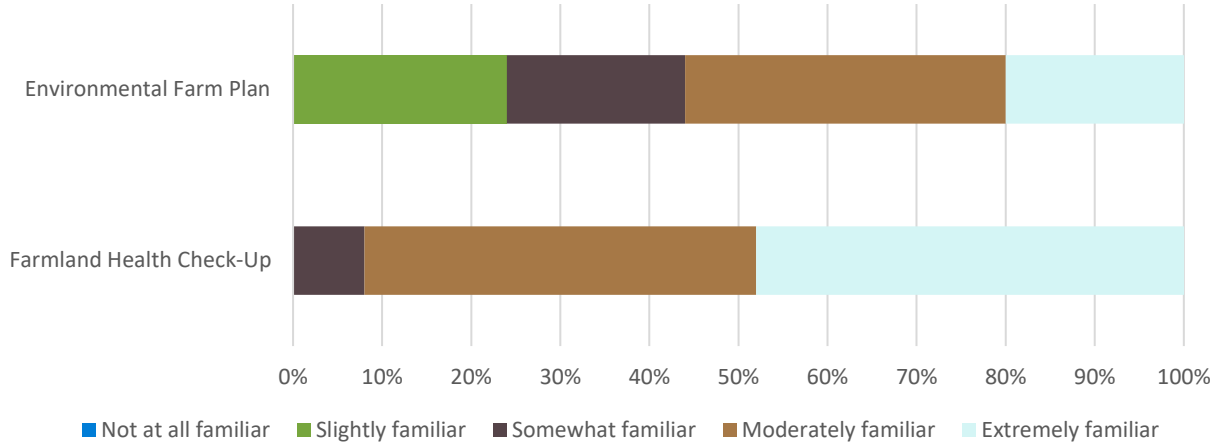

Figure 2. Survey responses for level of familiarity with the EFP and FHCU (n=25)

Question 2: Please indicate how you typically gather the necessary information to complete the soil and slope sections of the FHCU workbook.

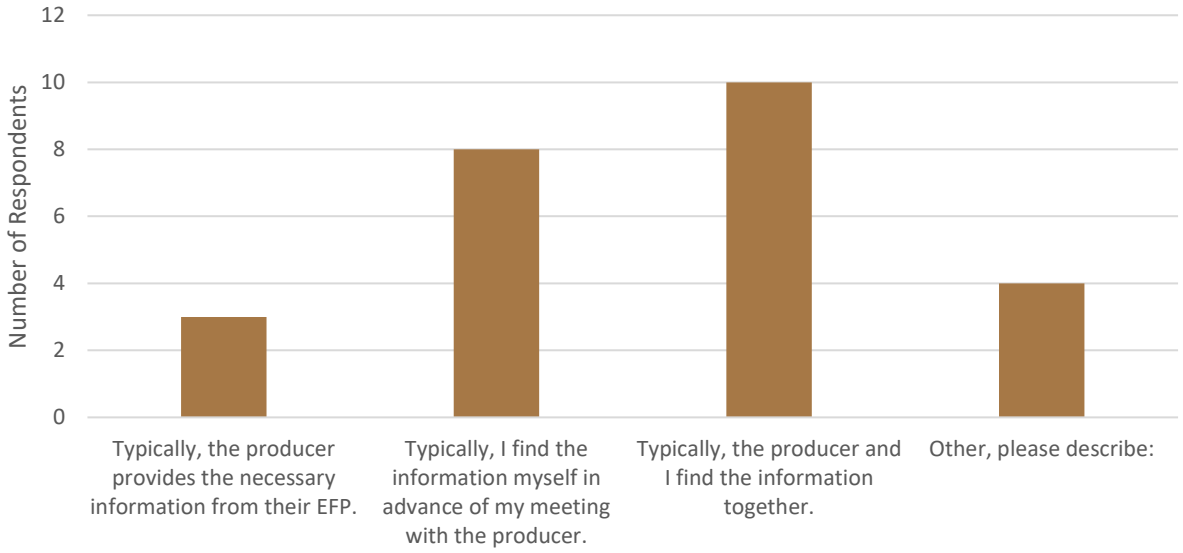

Figure 3. How survey respondents typically gather the necessary information to complete the soil and slope section of the FHCU workbook (n=25)

One respondent shared they compare the information in AgMaps to the physical field site, as they find AgMaps does not always provide accurate slope information. Another respondent shared they find much of the necessary information themselves after they meet with the producer.

Question 3: On average, how many minutes does it take you to complete the soil and slope sections of the FHCU?

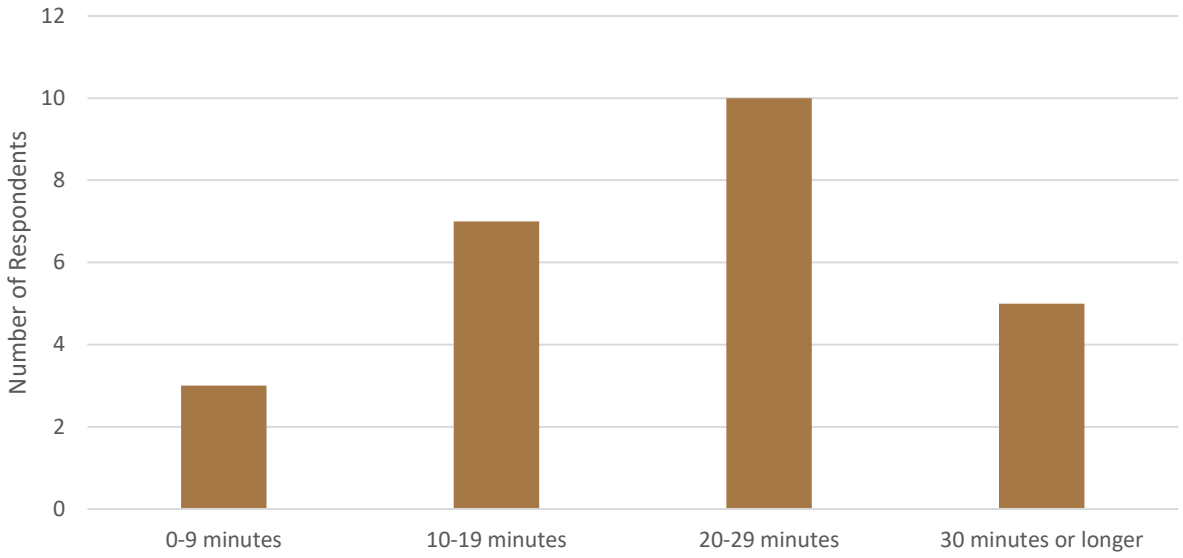

Figure 4. The average amount of minutes it takes for survey respondents to complete the soil and slope sections of the FHCU (n=25)

Question 4: Which resource do you usually use to find soil types for the FHCU? (Please select all that apply.)

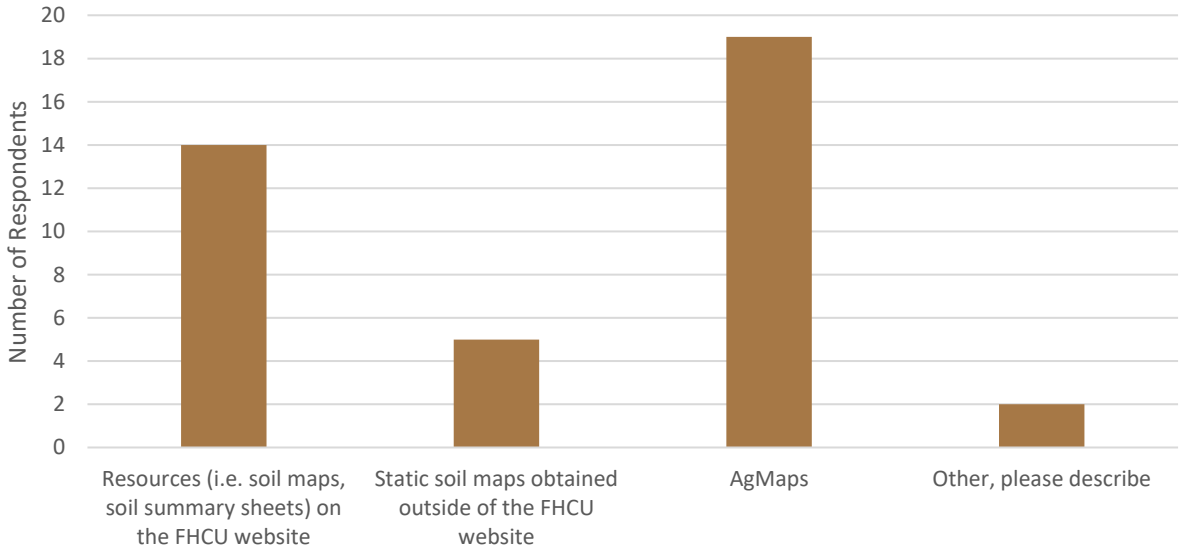

Figure 5. Resources survey respondents typically use to help find soil types for the FHCU (n=24)

Other resources respondents use to help find soil types for the FHCU include:

- Information from the local watershed groups and conservation authorities
- Write-ups in the soil map books by county.

Question 5: Think about your experience completing the soil and slope sections of the FHCU. Please rate your level of agreement with the following statements:

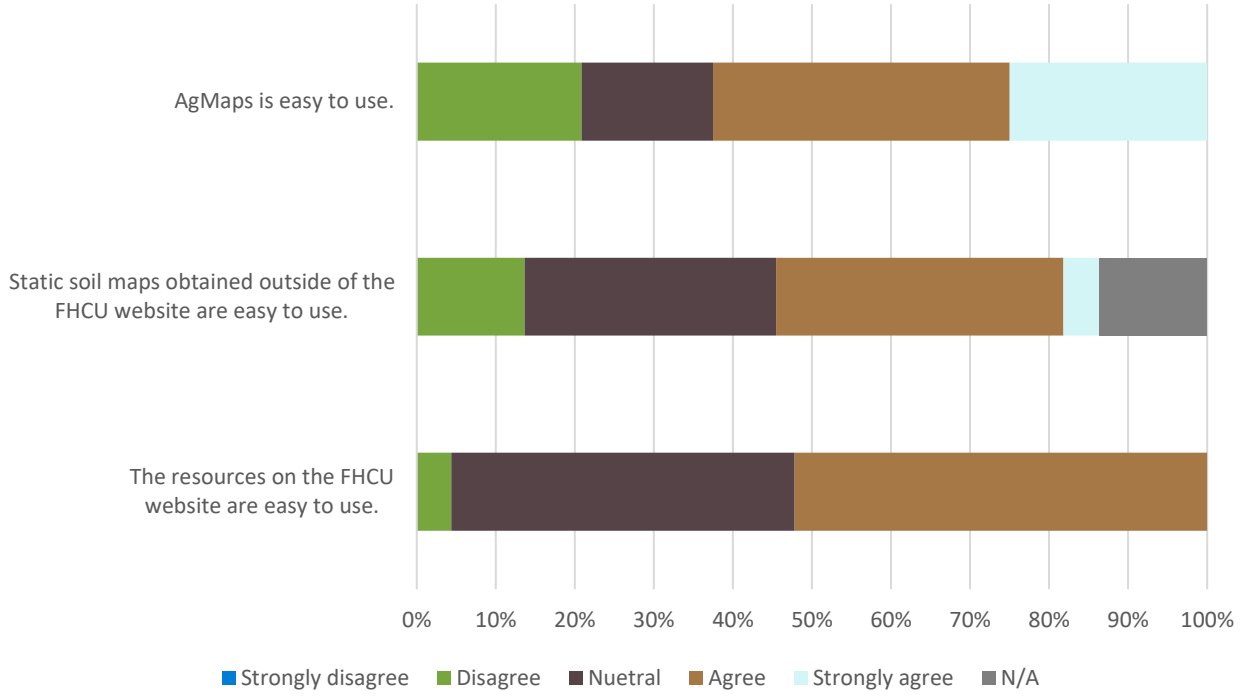

Figure 6. Survey respondents' level of agreement in relation to statements about their experience completing the soil and slope section of the FHCU (n=24)

Some respondents provided feedback specifically on AgMaps. This feedback included:

- AgMaps will crash at times. If you're not looking the information up ahead of time, having a "paper" copy is good.
- AgMaps is the easiest way to locate a specific field and illustrate the required layers. Soil name labels are most often accurate. Topography is approximately 50% accurate.
- Unless you use AgMaps often, it takes time to find what you are looking for. Plus, you need to be able to save fields in AgMaps. I only use AgMaps for government programs. I use three or four other map programs for day-to-day business/client management.

Question 6: Please identify any specific challenges you have faced when completing the soil and slope sections of the workbook. (n=13)

- Getting to the right section for the information.
- Maps are generalizations of the landscape. In-field measurements are best although time consuming.
- Fairly easy to navigate, however, time consuming.
- It is pretty well known that the soil polygons on AgMaps and other sources are not as detailed as they could be. They are being updated but, to be truly effective, a FHCU should recognize that

there are several soil types in a field and understanding which has the most limitations or issues is what should be managed, not which soil polygon is the biggest (which again is outdated).

- I also find the topography lines not overly useful. A DEM would be best.
- Sometimes hard to find information.
- Farmers don't agree with the information online.
- Usually, for the grower, it's more a conversation of the soil type and structure not so much about the exact soil class and name.
- Determining representative slope and slope length.
- Not always accurate with what grower sees in field.
- Legend not matching label on the map and having to consult multiple resources to find out what map label means.
- Site visit or talking to the producer is required to confirm slope details.
- Need the workbook to include all counties and soil types so we can use it for non-LEADS (Lake Erie Agriculture Demonstrating Sustainability) areas.

Question 7: Please share 1-2 suggestions of how to simplify the process for completing the soil and slope sections of the workbook. (n=9)

- Its a big program. Maybe a quick "lookup help section" to guide you to the actual site you need.
- I don't think it should be simplified. It should be expanded! More details and more focus on the soil which is the primary resource that is intended to be managed by this program, isn't it?
- Links where to find the info most accurately.
- For the grower, it doesn't need to be the class and name. It's more about this is a clay loam versus a sandy loam and how to manage the clay versus the sand.
- Slope section should just feed off soil type.
- Better legends in AgMaps would simplify the process because AgMaps allows for quick identification of the field location. Having wording of resources match the wording in the Farmland Health Check-Up/Environmental Farm Plan. (For example, in some cases, the layer you need in AgMaps to find the information isn't named the same as the heading of what you are looking for from the document.)
- Updating mapping layers would be useful.
- Not sure why this is a concern. The soil type formation is at the core of the checkup. People preparing checkups should have good familiarity of these resources. If this is a weak area, provide extra training or step-by-step instructions to access this information.
- Pretty straightforward.