EVALUATING THE ECOLOGICAL FARMERS ASSOCIATION OF ONTARIO'S FARMER-LED RESEARCH PROGRAM

Summary of 2020-2021
Research Results

Aerial view of Ken Laing's research trial at Orchard Hill Farm, Elgin County, fall 2018
Photo taken with a Mavic Pro drone by Drake Larsen

REPORT PREPARED BY
DR. ERIN NELSON, WITH ASM EASIR ARAFAT, SONYA OGILVIE, PAIGE ALLEN & JENNA LIVINGSTON

RESEARCH FUNDED BY
THE ONTARIO MINISTRY OF AGRICULTURE, FOOD AND RURAL AFFAIRS (OMAFRA), THROUGH THE ONTARIO AGRI-FOOD INNOVATION ALLIANCE

MAY 2022

EFAO
ECOLOGICAL FARMERS

TABLE OF CONTENTS

EXECUTIVE SUMMARY 1

GENERAL FINDINGS....1
FLRP IMPACTS 2
ADDRESSING LIMITATIONS AND CONSTRAINTS 2

INTRODUCTION 3

RESEARCH METHODS 4

RESEARCH RESULTS I: EFAO, FLRP AND BMP ADOPTION 5

SURVEY RESPONDENT PROFILE 5
ENGAGEMENT WITH THE EFAO 5
USE OF BEST MANAGEMENT PRACTICES.... 6
IMPACTS OF EFAO INVOLVEMENT ON FARMERS' RELATIONSHIP TO BMPS.... 6
BARRIERS TO BMP ADOPTION.... 9
IMPACTS OF EFAO INVOLVEMENT ON FARMERS' SOCIAL NETWORKS....11

RESEARCH RESULTS II: OTHER FLRP IMPACTS 13

IMPACT 1: ENHANCING QUALITY AND RELIABILITY OF ON-FARM DATA COLLECTION 14
IMPACT 2: ENABLING EVIDENCE-BASED DECISION-MAKING 16
IMPACT 3: STRENGTHENING NETWORKS AND FOSTERING COMMUNITY....19
IMPACT 4: INSTILLING PRIDE IN FARMER-RESEARCHERS 21
IMPACT 5: FACILITATING EFFECTIVE COMMUNICATION WITH DIVERSE AUDIENCES.....21

RESEARCH RESULTS III: FLRP CONSTRAINTS 23

RESOURCE LIMITATIONS 23
LIMITED GENERALIZABILITY OF RESULTS 24
DESIRE FOR EXPANDED COLLABORATION AND ENGAGEMENT 25

CONCLUSIONS 26

FLR POLICY RECOMMENDATIONS 28

REFERENCES 30

EXECUTIVE SUMMARY

This report presents the results of an evaluation of the Ecological Farmers Association of Ontario's (EFAO) Farmer-Led Research Program (FLRP). The work was funded by the Ontario Agri-food Innovation Alliance's Knowledge Translation and Transfer (KTT) Program. As such, it focused on the ways in which EFAO's FLRP generates and transfers knowledge to support adoption of environmentally sustainable farm management practices. The project employed a participatory approach, with the University of Guelph research team collaborating closely with the EFAO and other stakeholders to design and carry out the study. Data was collected through an online survey, a series of in-depth interviews and a focus group discussion. These built upon a program logic model that was also developed as part of the project.

GENERAL FINDINGS

The online survey was part of a larger research project on the relationship between farmer-to-farmer networks and learning programs and adoption of soil health best management practices (BMPs). **Some general findings were:**

The **most commonly used BMPs** are soil cover over winter, compost application, and cover cropping.

More than three quarters of **respondents felt the EFAO helped** them improve their BMP knowledge as well as increase their adoption of specific BMPs.

Farmer-researchers were far more likely than other respondents to report that **the EFAO had a positive impact** on their relationship with BMPs and on their social networks.

The **main barriers to BMP adoption** are lack of time and labour, high cost, and insufficient knowledge.

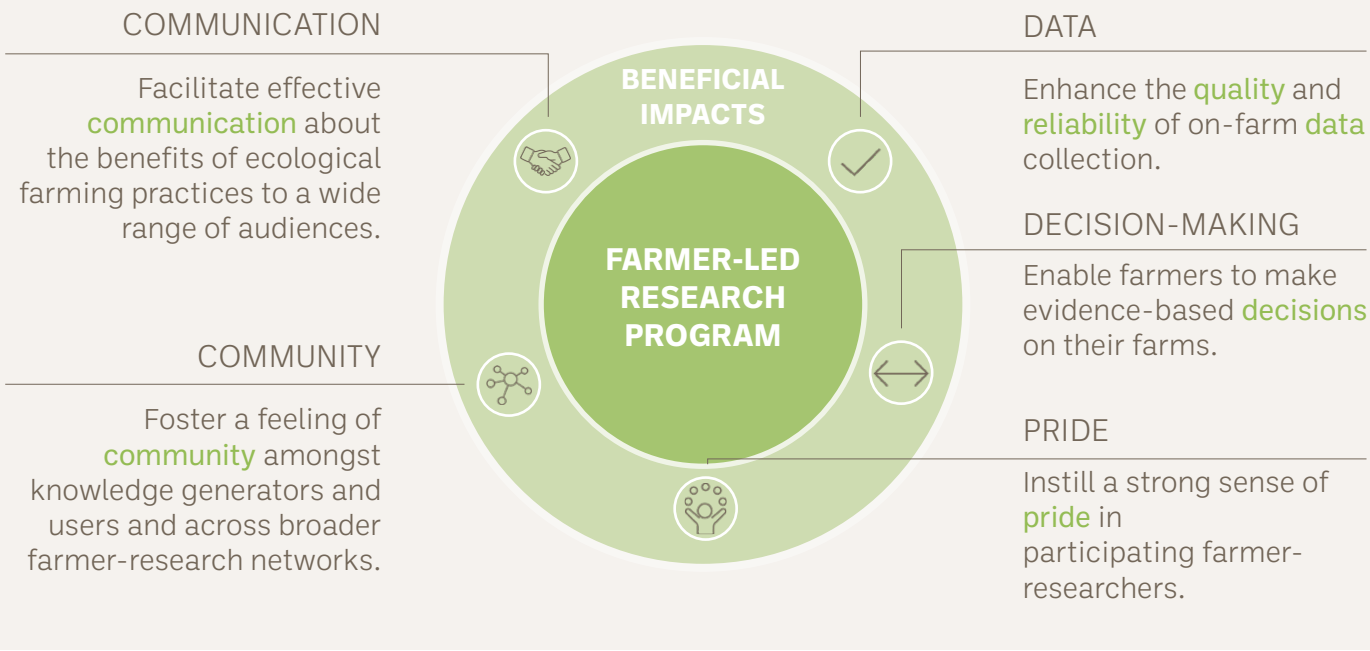
Almost one third of **respondents have plans to initiate** no-till farming in the future.

FLRP IMPACTS

With respect to the FLRP more specifically, research results identified a number of beneficial impacts.

The FLRP was found to:

View of Heather Coffey setting up to seed white clover as green mulch in her garlic crop in 2017



ADDRESSING LIMITATIONS AND CONSTRAINTS

Results also demonstrated that the FLRP is subject to some limitations and constraints. The extent of available funding – and other resources, including land – limits the scale and scope of research projects that can be carried out. In addition, the research process requires significant investments of farmer time, which is a barrier to participation for some. The generalizability of results also presents a challenge given wide variations in climate, soil, and other factors across the province. **Some strategies that could help address these and other issues include:**

Securing sustained investment of **money and resources** in farmer-led research.

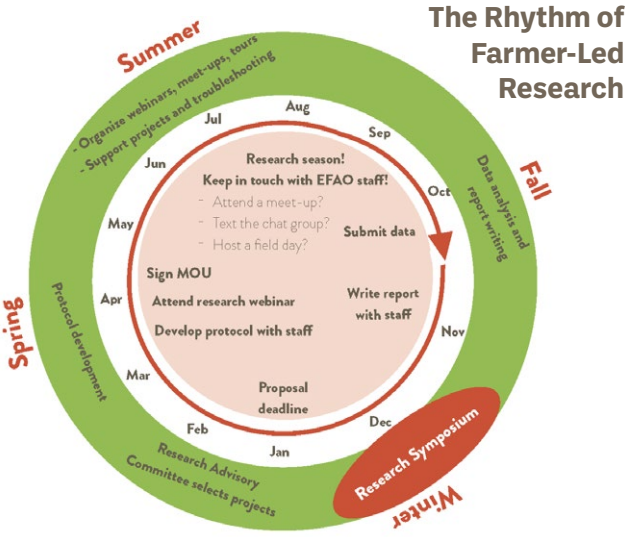
Increasing **collaboration** with other agricultural and research institutions.

Incentivizing participation from a wider range of farmers.

Exploring opportunities to **share research results** more widely with more audiences.

INTRODUCTION

In Ontario, despite efforts to increase the adoption of environmental best management practices (BMPs), rates of key practices (e.g., cover cropping, reduced tillage, compost application, diverse crop rotations, livestock integration, biodiversity conservation) remain low. A lack of sufficiently widespread adoption of environmental BMPs leaves Ontario's agro-ecosystems vulnerable to continued degradation, threatening the long-term viability of our agricultural communities and our food system.



https://efao.ca/rhythm-of-farmer-led-research/

Evidence demonstrates that farmer-led research (FLR) is a useful methodology for agricultural knowledge generation and transfer and is an effective tool for increasing the adoption of environmentally sustainable farming practices. Unlike most other on-farm research, which is driven by professional researchers, FLR enables farmers to identify research questions and use scientific methods (e.g., randomized control trials) to answer questions they have about their own farming systems.

Ann Slater's farmer-researcher-sign beside her lettuce variety trial in 2020

Ronaldo Eleazar Lec holding Amaranth grown as part of his screening trial in 2020

While the benefits of FLR have been documented in a variety of international contexts, the model remains relatively new in Ontario. As such, data regarding impacts is limited. To address this gap, our research evaluated the Ecological Farmers Association of Ontario's (EFAO) Farmer-Led Research Program (FLRP), which was initiated in 2016 and is the first of its kind in Ontario. Through the FLRP, farmers receive funding, training and ongoing mentorship to design and execute research projects. The program also emphasizes peer-to-peer knowledge mobilization with farmer-researchers sharing results through EFAO-coordinated activities such as field days, workshops and an annual Research Symposium. By 2021, the program had supported more than 80 farmers in conducting more than 125 scientific trials on their farms.

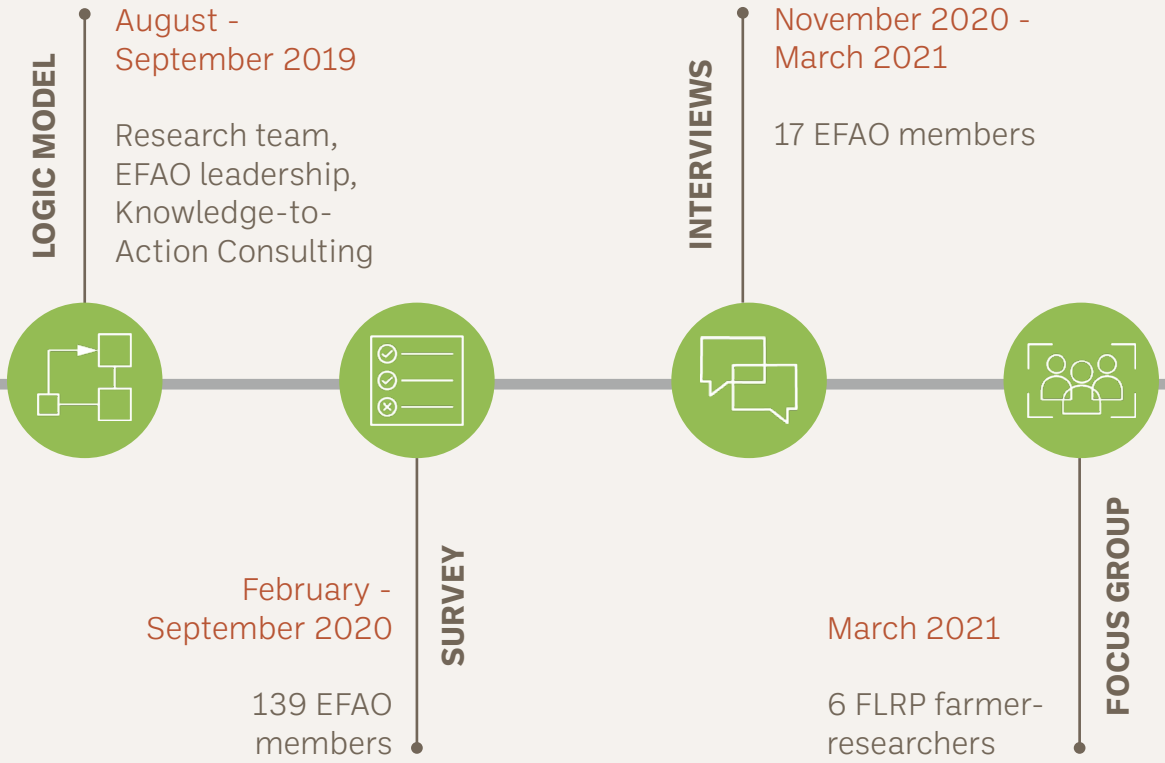
More detail on the EFAO's FLRP can be found at:
https://efao.ca/farmer-led-research/

RESEARCH METHODS

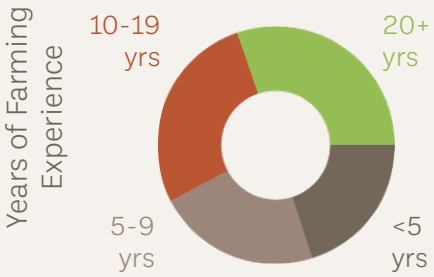
The project took a participatory approach, with the research team collaborating closely with EFAO and other stakeholders during research design and implementation. The first step in the research process was the development of a logic model to clarify program activities, goals and expected short-, medium-, and long-term outcomes. That took place in fall 2019 through a series of workshops with EFAO staff, the research team, and Dr. Anne Bergen of Knowledge-to-Action Consulting.

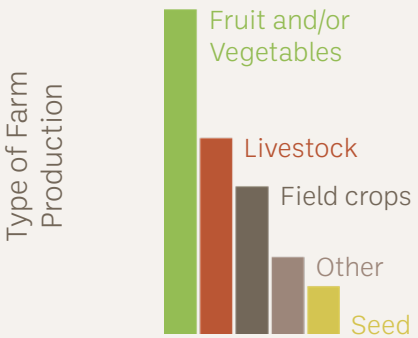
Using the themes that emerged from the logic model, a 34-question online survey was developed which the EFAO distributed to its membership on multiple occasions. Between February and September 2020, a total of 139 EFAO members completed the survey. Respondents were invited to volunteer for a follow-up interview designed to gather more in-depth information about engagement with and opinions regarding the FLRP. The volunteers were randomly selected and a total of 17 were interviewed between November 2020 and March 2021. Survey and interview data was supplemented by an online focus group discussion held with six FLRP participants in March 2021. Focus group participants consisted of people who had expressed interest in an interview but not been selected as well as FLRP leaders identified by the EFAO.

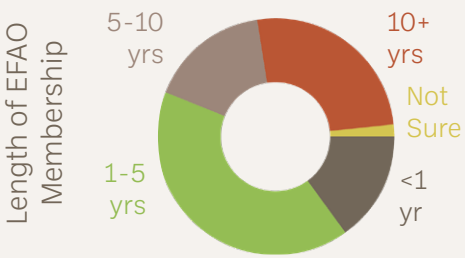
Research Methods Timeline



RESEARCH RESULTS I: EFAO, FLRP AND BMP ADOPTION







This section reports on the findings of the online survey, which assessed participants' perception of EFAO impacts on BMP adoption. This includes, but was not limited to, impacts of the FLRP.

SURVEY RESPONDENT PROFILE

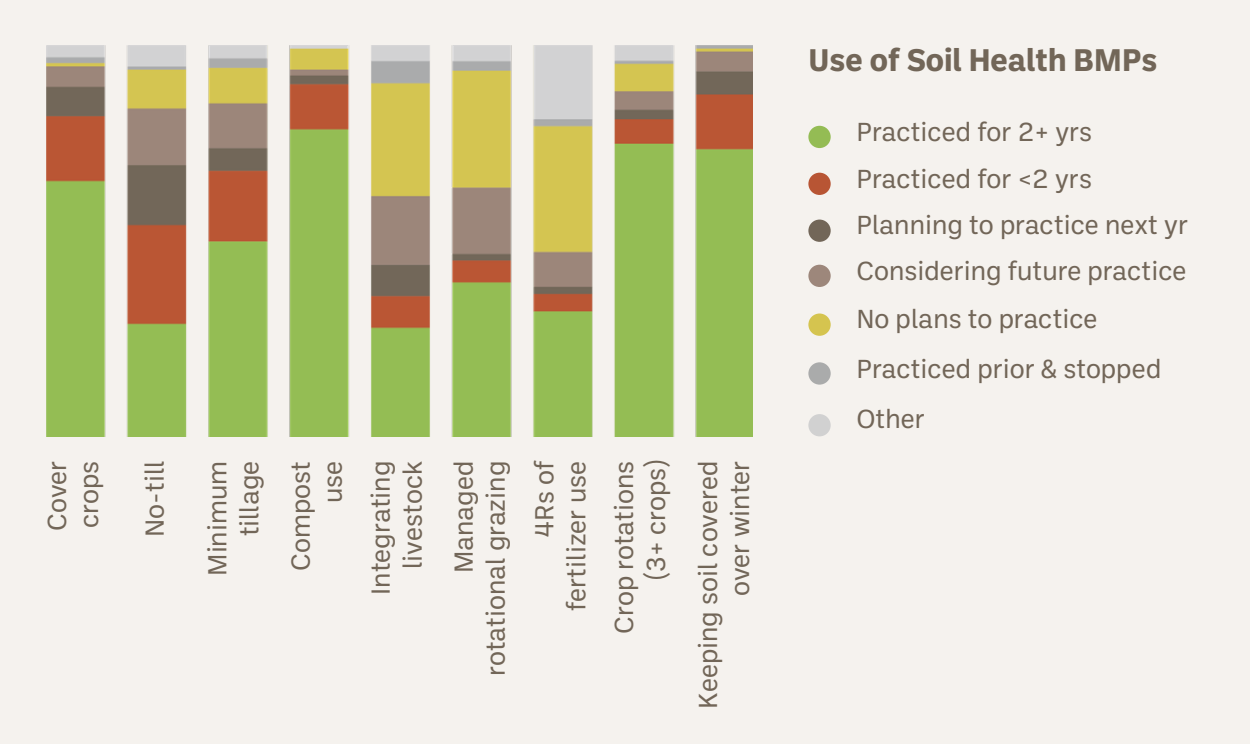
Of the 139 EFAO members who completed the survey, 58% reported having farmed for 10 years or more, while 20% were newer farmers with less than 5 years of experience. Most participants (73%) reported growing fruits and/or vegetables, less than half (44%) raising livestock, and one-third (33%) growing field crops. A small number (11%) produce seeds, while even smaller numbers reported producing eggs, milk, herbs, trees, flowers, oilseed, honey, wheat, maple syrup, and nursery plants. Approximately one quarter of respondents (26%) were long-time EFAO members (10+ years), while 41% had joined in the past 1-5 years.

ENGAGEMENT WITH THE EFAO

Results indicated high levels of member engagement across a range of activities offered by the EFAO. Almost all (92%) respondents reported reading the organization's print newsletter and e-news, and a majority (78%) attend the annual conference and/or Research Symposium. Additionally, 74% of respondents had attended EFAO-organized farm tours and workshops, and 61% indicated that they used resources available on the EFAO website. A smaller number (20%) have used EFAO's advisory services. Other forms of engagement mentioned included hosting workshops and farm tours, participating in the New Farmer Training Program, serving as a farmer advisor or research committee member or on the Board of Directors, and hosting farmer-led meetings. Approximately one fifth of the respondents (21%) identified themselves as farmer-researchers in the FLRP.

USE OF BEST MANAGEMENT PRACTICES

Based upon participant responses, the most widely used BMPs were compost application, soil cover over winter, cover cropping, and diverse crop rotations. A substantial majority of respondents reported covering their soil over winter (86%), applying compost (85%), cover cropping (79%), and rotating 3 or more crops (75%). A majority (60%) also practiced some form of reduced tillage. Although employing no-till was less common (51%), more than a quarter of respondents reported plans to begin no-till in the coming year(s). Similarly, approximately one-quarter of respondents are considering adopting some form of livestock integration in the future. Participants were also asked to report any BMPs that they had used in the past but given up; however, the number of respondents who had ceased practicing specific BMPs was negligible.



IMPACTS OF EFAO INVOLVEMENT ON FARMERS' RELATIONSHIP TO BMPs

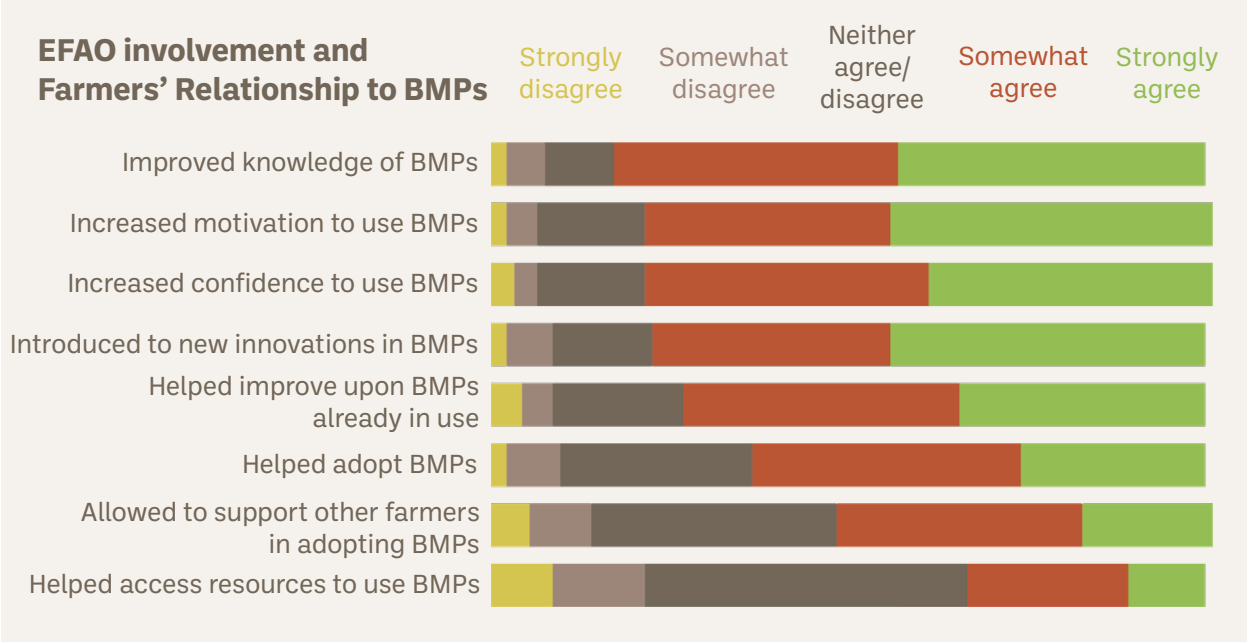
Participation in EFAO activities was found to have a distinct impact on various aspects of farmers' relationship with BMPs. Approximately three quarters of respondents indicated that the EFAO helped them improve their BMP-related knowledge and increased both their motivation and confidence to employ BMPs on their farms. A majority of respondents also reported that the EFAO had introduced them to new BMP innovations (72%) and helped them improve upon BMPs that they were already using (68%).

One respondent helped illustrate this linkage between EFAO membership and improved uptake of soil health BMPs:

> *[The EFAO] made me aware that the things I was doing for years were not doing anything for the soil. Since joining [the EFAO] I have changed how I now farm. And more changes are coming.*

Another explained how the EFAO's advisory service, which connects members with experienced farmers willing to share their knowledge, played a role in supporting BMP adoption:

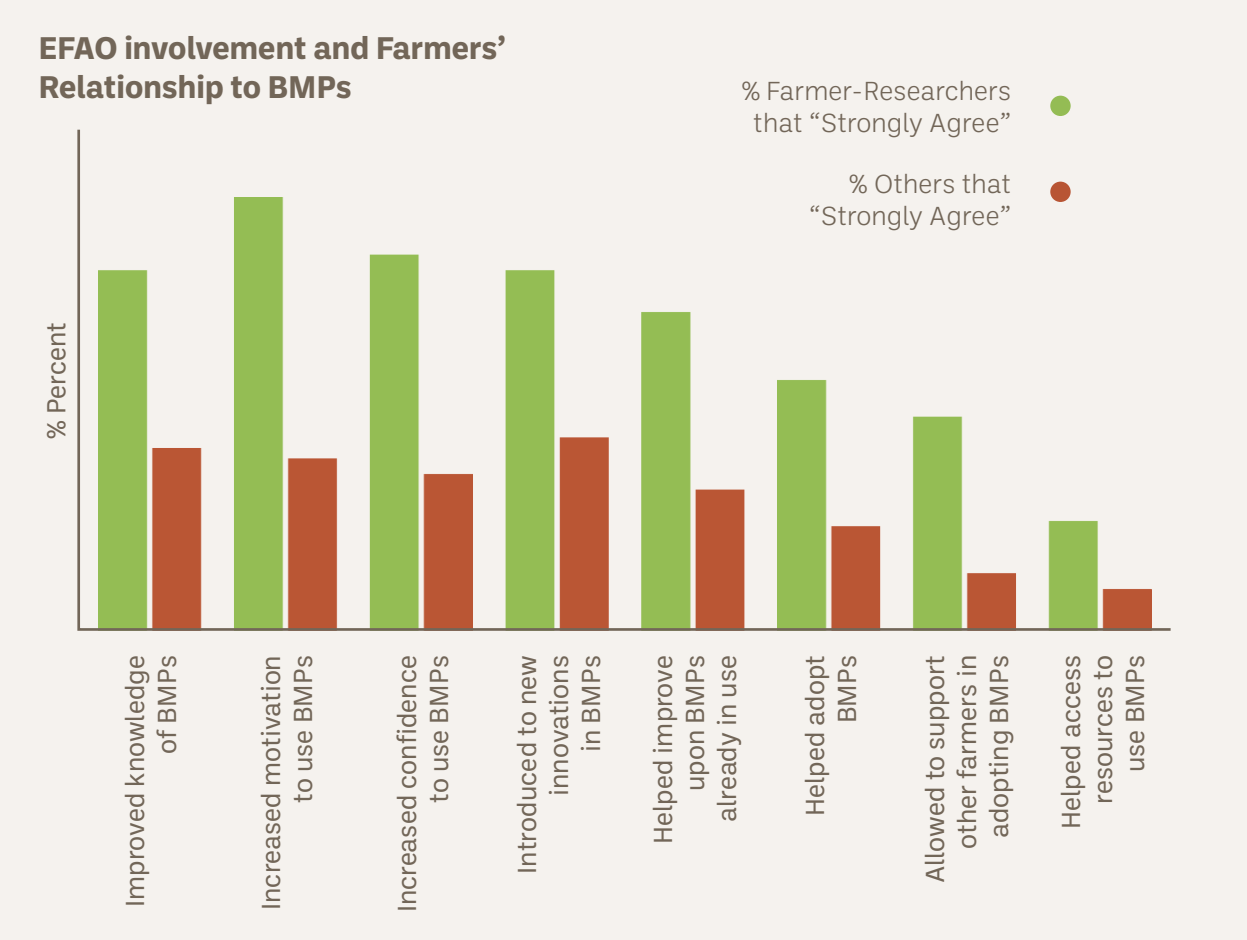
> *The Advisory Service was particularly helpful in providing feedback about my recent soil test. The recommendations for amendments were especially helpful, as this new plot was much more depleted than one I had worked on before. My previous knowledge of how to apply and where to source amendments was minimal. I wouldn't have had the confidence or knowledge to address this issue without the Advisory Service.*



Importantly, one-third of survey respondents stated that engagement with the EFAO had helped them access resources to support their use of BMPs. Although resources are often assumed to be material, one respondent clarified that, in their case, the most crucial resource for adopting or improving BMPs was knowledge:

> *In terms of "access to resources" to use soil health BMPs, the most important resource is knowledge and that was accessed through the annual conference.*

While EFAO involvement clearly impacted farmers' relationship to BMPs in many ways, survey respondents who identified themselves as FLRP farmer-researchers were far more likely to "strongly agree" with statements about impact than those who engaged with the organization in other ways. This difference was seen across all impact categories but was especially notable when it came to increasing motivation and confidence to use BMPs, improving upon and adopting BMPs, and supporting others to adopt BMPs. For example, almost half of the farmer-researcher participants strongly agreed the EFAO had helped them adopt BMPs, compared to one fifth of other respondents, and a striking 83% of farmer-researcher participants strongly agreed the EFAO had increased their motivation to use BMPs, compared to 35% of other participants.



Finally, in response to an open-ended question about how, specifically, the EFAO had impacted farmers' relationship to BMPs, the most commonly cited influences were the annual conference and/or Research Symposium and the FLRP. Of the 66 respondents who answered the question, 26 cited the conference/Symposium, 21 cited the FLRP, 17 cited farmer-led workshops, 11 cited the Advisory Service, 11 cited informal conversations with peers, and 7 cited farm tours or visits. Other less commonly reported influences included the newsletter and online material.

BARRIERS TO BMP ADOPTION

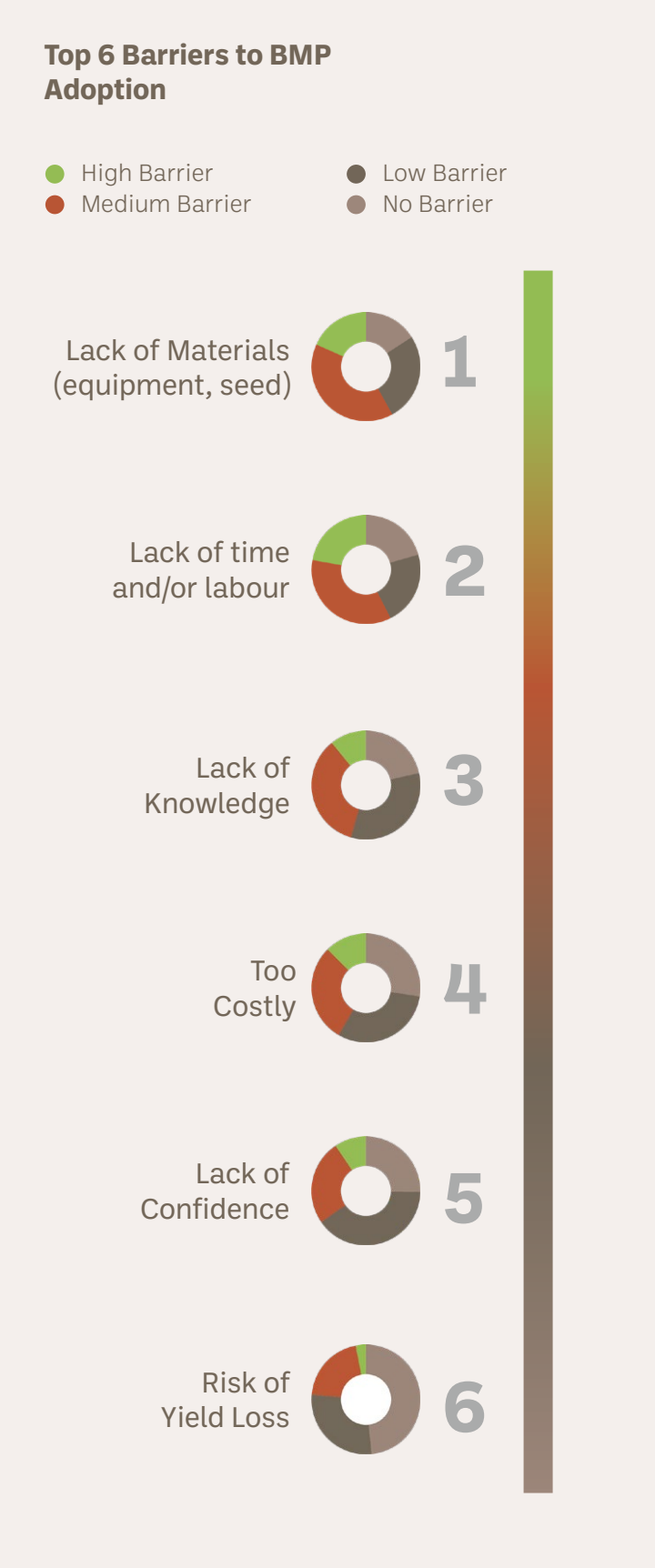
The primary barriers constraining adoption of soil health BMPs reported by survey respondents were a lack of time and/or labour, lack of knowledge, lack of materials (e.g., equipment, seeds), and the cost involved. More than half of the respondents considered those four issues to be either a medium or high barrier to BMP adoption. In response to an open-ended question, respondents identified a number of **additional constraints, including:**

- Lack of **personal motivation and willingness** to change existing practices
- Difficulty **breaking habits** and/or shifting paradigms
- **Fear** of the unknown
- A lack of available **evidence** and/or conflicting evidence
- **Weather**
- **Weed management** difficulties
- Lack of **funding and government support**
- Lack of **structural support**
- The required **learning curve** to adopt and perfect a new practice

One respondent highlighted the challenges of adopting BMPs while participating in a multi-generational farming system:

> *The management generation is not the ownership generation. Most farmers... most of us are managing land that's at least partially owned by our parents. And our parents have their way of doing things... If you're the next generation, but you don't fully own land, you don't have full say over how to manage it, so you're still operating [within a] multi-generational management system. And without a proper succession plan, you can't make drastic changes, like you can't make big changes.*

Cover crop of peas and oats growing as part of Ryan Spence and Isabelle Spence-Legault's no-till broccoli trial in northern Ontario in 2020



In response to an open-ended question, many respondents also expressed frustration with how systemic political-economic issues constrain BMP adoption. Specifically, they noted a contradiction between soil health as a common good, particularly in the context of a changing climate, and the expectation that individual farmers should bear the cost and responsibility of protecting that good. Many of these respondents indicated a strong desire for increased government support to encourage – and fund – BMP adoption. Some also referenced a need to increase broader public understanding regarding the importance of soil health as a foundation for human food security and long-term ecosystem health. One respondent summarized some of these connections:

So, I think the biggest challenge is convincing governments and politicians that farming is not just another business. Our food security is reliant on the top 6 inches of the earth's surface. And we all need to look at farmers as being custodians of the soil.

IMPACTS OF EFAO INVOLVEMENT ON FARMERS' SOCIAL NETWORKS

Although not directly related to BMP adoption, the survey also examined how EFAO involvement impacted farmers' social networks, as engagement with these networks has been found to have a positive association with BMP adoption. Results demonstrated that the EFAO helped farmers develop their agriculture-related social networks in a variety of ways. While involvement with the EFAO clearly enhanced farmers' connectivity with other farmers and the farming sector, respondents did not report any substantial impact on their relationships with clients or consumers.

Heather Coffey seeding white clover as green mulch in her garlic crop in 2017

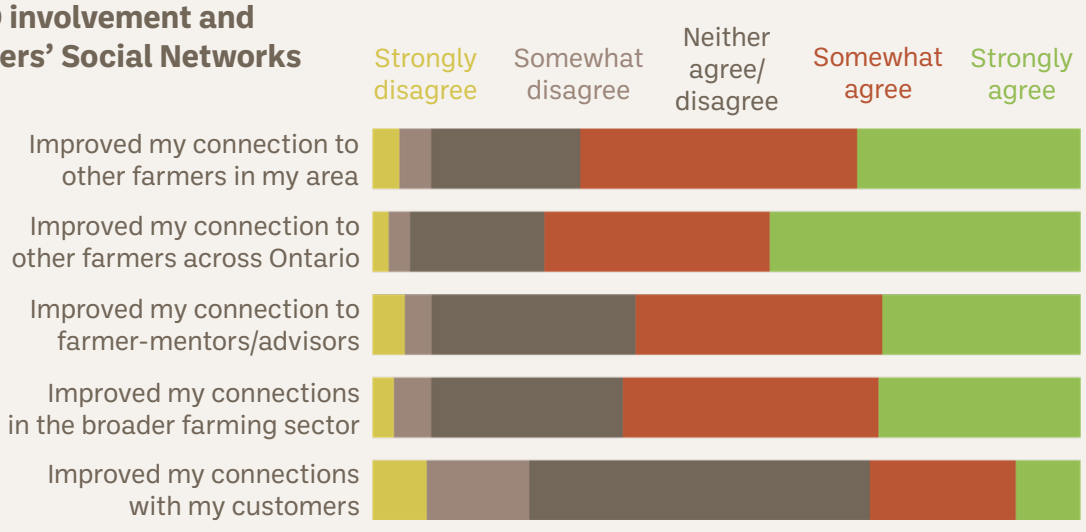
71% reported improved connectivity with other producers across Ontario

67% reported improved connectivity with other local farmers

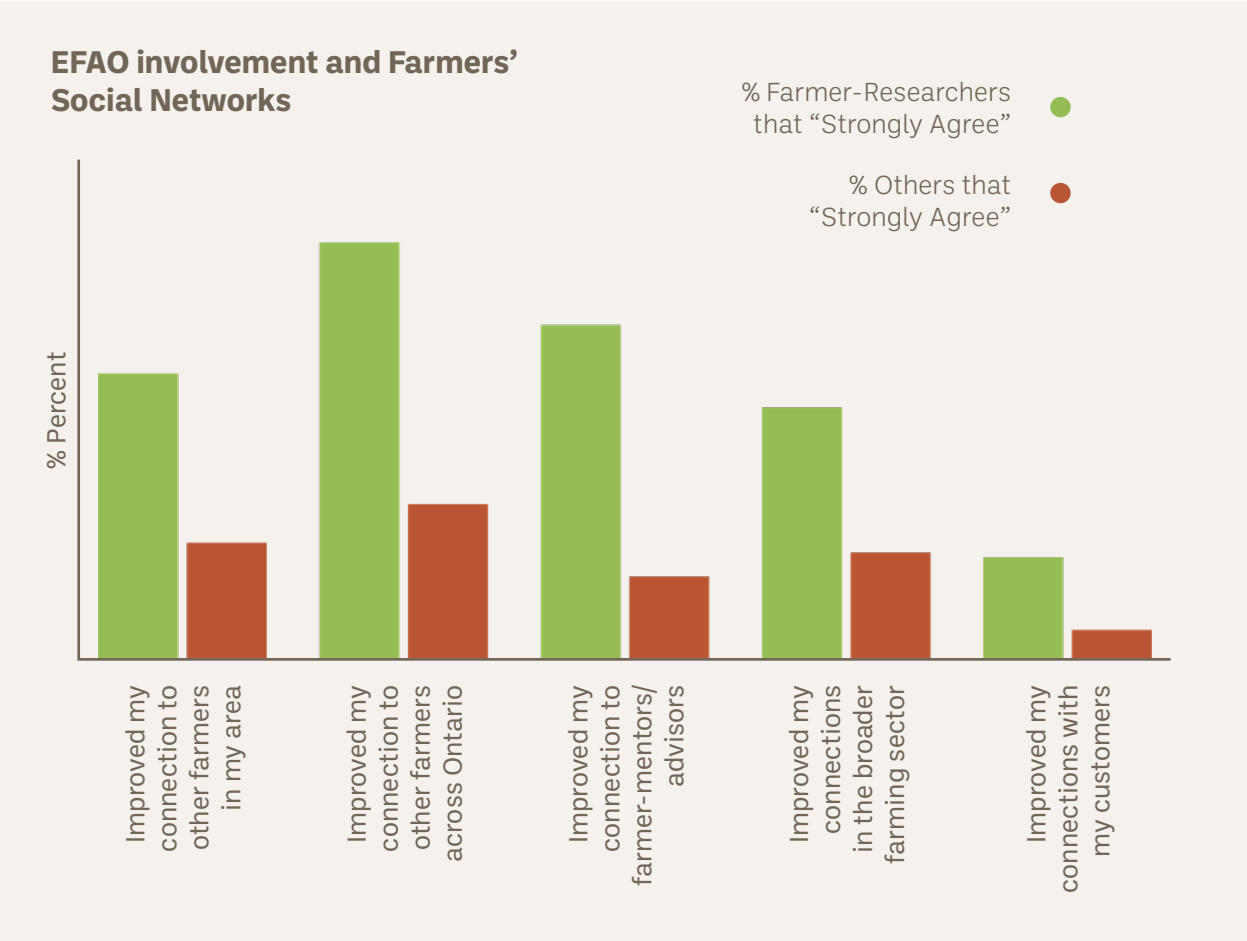
61% saw improved connections with the broader agricultural sector

59% noted an improvement in their connections to mentors and advisors

EFAO involvement and Farmers' Social Networks



As was the case with BMPs, farmer-researchers were distinctly more likely to "strongly agree" that involvement with the EFAO impacted their various social networks. Even in the least impactful category of connectivity with customers, more than one fifth of the farmer-researcher participants strongly agreed the EFAO helped them increase connectivity. A substantial majority of farmer-researchers also strongly agreed that the EFAO helped improve their connectivity with farmers across Ontario (86%), while just under one third of other respondents felt the same. Similarly, 69% of farmer-researchers reported strong agreement that the EFAO helped them increase connections with farmer mentors/advisors, compared to just 17% of other respondents.



RESEARCH RESULTS II: OTHER FLRP IMPACTS

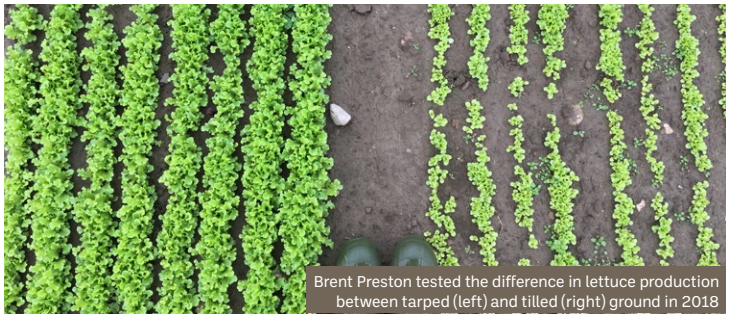
5 Main Research Program Impacts

- data
- decision-making
- community
- pride
- communication

As the survey results demonstrated, participants who were closely involved in the FLRP were more likely than others to feel strongly that the EFAO had positive impacts on their relationship with BMPs and their agriculture-related social networks.

The FLRP and events where FLRP project results are shared were also widely referenced as being especially influential activities.

It is clear then that there is a connection between the FLRP, BMP adoption and improved farmer connectivity.



Brent Preston tested the difference in lettuce production between tarped (left) and tilled (right) ground in 2018

This section explores those linkages and draws on interview and focus group data to identify five other categories of FLRP impacts:

1) enhancing **quality and reliability** of on-farm **data** collection;

2) enabling evidence-based **decision-making**;

3) strengthening networks and fostering **community**;

4) instilling **pride** in farmer-researchers; and

5) facilitating **communication** about the benefits of ecological farm practices.

Collectively, these impacts contribute to increases in and improvements to ecological farm practice, including but not limited to soil health BMPs.

IMPACT 1: ENHANCING QUALITY AND RELIABILITY OF ON-FARM DATA COLLECTION

data

One of the most notable findings of the qualitative component of the research was that the FLRP enhances the quality and reliability of on-farm data collection. Participants were aware that many farmers conduct informal trials and experiments on their farms; however, they made a strong distinction between such informal efforts and the research projects conducted through the FLRP. While the former have long been part of farming culture and were certainly perceived as valuable, the latter were characterized by higher levels of rigour with respect to research design and execution. As a result, results were perceived as being much more reliable. One farmer clarified this distinction:

Romina Bortoluzzi observing her lettuce variety trial in 2021

[The FLRP] was really important for us because I think we're experimenting all the time on the farm, but we're often not very rigorous…I think sometimes you don't really go through meticulously to ensure that the results you're getting are significant and good enough that you want to actually change your practice.

Another described the quality of their own on-farm research prior to engaging with the FLRP:

I had played with different varieties of tomatoes and how they yield on my own, and kept lousy quality, un-replicated data for a few years; you know, the sort of data where you collect data from your plots until you forget to do it for a month or so…

In part, the increased rigour and reliability associated with data gleaned from the FLRP was attributed to the program's focus on training participating farmers in scientific research methods (e.g., randomized control trials) and providing ongoing mentorship and support as projects are executed. As one participant explained:

> *I think [the EFAO is] doing a good job of making research accessible to farmers who want to participate and try out how to do research. And I think they do a really good job of supporting those farmers in conducting the research and assembling the data.*

Other farmers described how participating in the FLRP held them accountable to the data collection and recording process, ensuring they maintained consistency even as other on-farm priorities competed for their time, resources, and attention:

> *It was just having that forced discipline to do all those [data collection and record-keeping] steps. Whereas when it gets really busy on the farm it's easy to cut corners and let things like that slide, because we had [the FLRP Director] sending us emails saying "I need your data, I need your data", you stay on top of it.*

> *Part of [what makes the FLRP successful] is just the discipline of, well we said we were going to do this, we have funding for doing this, and now we actually gotta collect the data every week…It's just that, consistently keeping that amount of data, it takes a chunk out of your week…[and] actually follow[ing] through for the entire season…I know that it's good to keep that sort of data for myself, but…whether I actually would do it [without the FLRP]…the answer is usually no.*

One final note regarding how the FLRP contributes to the quality of on-farm data collection is that, by supporting multi-farm trials and facilitating exchange of results across a wide network of farmers, the program helps ensure results are replicable and knowledge can be built upon in a timely manner. One research participant explained how, in the absence of a program like the FLRP:

> *We all sit at home and do our own thing…we end up replicating a lot of stuff [and] we don't get the value of that replication, we just all do the work.*

Others emphasized how the FLRP can accelerate knowledge generation and transfer, enabling faster development and sharing of sustainable on-farm innovations:

Because you can only try things on a farm once a year, it really speeds up the process when we're leap-frogging on what other people are doing when we're developing new methods for doing things more ecologically.

Through their [farmer-researcher] trial and error, I get to skip a few mistakes.

IMPACT 2: ENABLING EVIDENCE-BASED DECISION-MAKING

Many research participants drew a direct connection between the high-quality research results achieved through the FLRP and their ability to feel confident making evidence-based decisions on their farms. This was particularly true with respect to making changes or adjustments to existing practices or adopting new ones. For example, discussing a research project that assessed yields for different varieties of tomatoes, including grafted plants with different root and top stocks, a farmer-research explained:

Spending a couple of years of collecting solid data... it's taken a lot of guessing out of stuff.

Similarly, another farmer shared how involvement in the FLRP enabled them to confidently invest the required resources to shift to a no-till operation:

We had read a lot and talked to other farmers about using tarps to kill weeds and stubble and to replace tillage, and in order to convert our whole farm to no-till we're talking about probably a $20,000 investment in material. And we needed a process to figure out what was the best material to use, how we're going to do it...before we made that investment. So, the farmer-led research project helped us get the rigour to actually see... to go through the process for two complete seasons to figure out exactly what worked best for our operation and then, when we made that investment, we were totally confident that we had exactly the right stuff.

As that example demonstrates, farmers must always weigh the potential benefits of a new or adapted practice against the resources (including time, capital and/or materials) that would need to be invested and the potential risks (including yield losses) involved in adoption. One research participant highlighted how the FLRP can help farmers better make those calculations, thereby mitigating some of the risk that can be a barrier against adoption of BMPs or other innovations:

> *I would say [the FLRP] has made me feel less worried [about the potential risks of changing practices] in the sense that when you see people doing it and you see the result…. most of the risk in wanting to switch to a different BMP or a BMP that you're not currently using, usually it's financial, you don't want your yields to plummet, you want your farm to succeed and continue to thrive… I would say that [seeing FLRP results] has given me confidence that as we [adopt a new BMP] we can transition, and things will be just fine coming out the other side.*

The kind of evidence provided by FLRP projects is especially important because much of the widely available data designed to help farmers make management decisions is not geared towards ecological operations. Many participants discussed the difficulties they had finding data that was relevant to, for example, the varieties or breeds they had on their farms, the inputs they wanted to use, or the overall approach they wanted to take with their farming. One farmer described this challenge:

> *You can talk to a hundred experts, and nobody has a darn clue what you're talking about because nobody's actually done this research… If I want to know in conventional production how much it costs to raise a kilo of chicken, there's so much benchmarking information out there. But for ecological, pasture-raised chicken, nobody knows…We all have a general sense of what it might cost on our farms but, even there, the effort that I've put into writing my own spreadsheet versus the effort I think it deserves and would get if I had to do it, and had that sort of organizational support behind me, would be just two entirely different things.*

Red pepper selection as part of the Southern Ontario Pepper Breeding Project in 2018. The project ran from 2016 - 2020, and completed with the release of Renegade Red sweet bell red pepper

In addition to an appreciation for the ecological focus of the FLRP projects, many participants also noted that the farmer-led and location-specific nature of the work made results feel especially trustworthy and relevant to them. Comparing their willingness to use FLRP results to inform decisions, as opposed to evidence from other sources, one participant explained:

> *[Other sources are] very formal, very top-down, no nuance necessarily. I find that much harder to interact with, where someone doesn't actually know my farm, doesn't know the intricacies of what I do, it's just a blanket approach... I find that I don't connect to that style of information as much.*

Another participant stressed the importance of a research agenda led by farmers, with no interests beyond improving farm practice, again comparing that to the bulk of available farming research:

> *One of the successes of [the FLRP] is that it works with the interests of the farmers. It's not something [the researchers] are trying to sell to the farmers or promoting to the farmers; this is a program that comes from farmers' interests.*

The trustworthiness of, not just the research data itself but also the method by which it is communicated and shared, was highlighted by another participant:

> *Having your friend tell you 'this is what we did and this is the origin and this didn't work...' This is the best way to learn. The important thing about that, I think it's trust.*

Jason Hayes seeding carrots in 2020 for his trial looking at direct seeding into compost mulch

IMPACT 3: STRENGTHENING NETWORKS AND FOSTERING COMMUNITY


community

In addition to lending credibility to research results in the eyes of farmers, the related concepts of trust, relationships, and community were frequently raised by research participants as important components of the FLRP more generally. One participant described how that focus made communication between farmer-researchers and people interested in using results feel more accessible:

> *There's a database that people can look towards that doesn't feel too institutional. Like you can probably reach out with an email to the person that did that research...*

In addition to such informal opportunities to talk about research results and their application, the annual Research Symposium was also widely viewed as important, both as an avenue for sharing research results and for strengthening a sense of community. Discussing their attendance at the event, one participant noted:

> *The culture of coming together, sharing, exchanging, building this face-to-face interaction, it builds a really strong level of trust and cohesion.*

Another participant contrasted that approach with more traditional agricultural advisory or extension efforts:

> *[It's farmers] learning from each other. Not just some expert at the front of the room or leading the parade with a microphone through the fields... People are sharing from their own experience, which is useful for the person who it's being shared with and also validating for the person sharing it... It encourages people to be open to trying out new things. And it also, I think, creates a situation where [people] see themselves as being part of something.*

By fostering this sense of community, the FLRP helps motivate and inspire people to continually strive to improve their operations. In the words of one farmer-researcher:

That network with other farmers is very important, so we can support each other.

That feeling of mutual support and community was perceived as deeply meaningful both for farmer-researchers and for members of the research audience:

Ryan Spence and Becky Porlier weeding Ryan's no-till broccoli plots in 2020

[I]t gives us…a dab of validation; like our questions are not stupid questions; there's other people that would love to hear the answers. So that kind of bolsters us up a little bit, makes us say "let's try to make our answers as useful to others as we can".

[I]t was…really important to have this connection to the community through these citizen scientists …and to find out what they're doing. It is incredibly powerful and inspiring to see and hear their stories.

The sense of community and inspiration generated by the FLRP extends beyond Ontario, as a number of participants discussed feeling connected to a worldwide network of farmers interested in supporting adoption and improvement of ecological methods. One participant offered a specific illustration of the importance of belonging to such an expansive network:

We've started using deep wood chip mulch on a few different things and I wouldn't have had the nerve to do that if I hadn't have read somebody's research project out of California where they were tilling large quantities of wood chips into their soil and still finding that they could get good yields. So, I like to think that whatever I do might have that sort of impact for somebody else, whether it's in Ontario or far beyond; it's the collective sharing of knowledge that's important.

IMPACT 4: INSTILLING PRIDE IN FARMER-RESEARCHERS

pride

Another important FLRP impact that was noted by participants who identified as farmer-researchers was the strong sense of pride instilled by engagement with the program. During the focus group discussion, one participant shared that the "Farmer-Researcher" sign was the first – and only – roadside sign they had hung at their farm. A number of participants echoed this sense of enthusiasm about the farmer-researcher aspect of their identity. For example, one explained:

I feel very proud being a research farmer and having that kind of mind-frame of doing research, not just growing... it just kind of reaffirmed certain things that farmers know already but that a lot of times are not considered in the commercial part of production.

Pat Kozowyk in front of her Saskatoon berry patch in 2017, the site of her trial looking at the effect of comfrey

IMPACT 5: FACILITATING EFFECTIVE COMMUNICATION WITH DIVERSE AUDIENCES

communication

One of the reasons the farmer-researcher sign was talked about with such enthusiasm by multiple participants was that it was perceived as being a good conversation-starter with a wide variety of people. According to one participant:

I'm just really happy to talk to anybody, whatever kind of farmer or person they are, about [the FLRP]... It's a fun conversation and I think it is a less fraught and more constructive conversation to get into with a conventional operator than [some other topics].

A number of other participants similarly felt that the FLRP offered a useful way to bridge divides between self-identified ecological farmers and their conventional farming neighbours and peers. As one interview participant put it:

> *I think there seems to be some success in bringing together farmers with different viewpoints, which is good.*

Beyond facilitating general conversations, the FLRP was viewed as creating a solid platform for communicating clearly and convincingly about the benefits of ecological farming methods with a variety of audiences, including conventional farmers, consumers, and the broader public. One participant discussed how they use the FLRP to start conversations:

> *It's a more constructive conversation, instead of just going directly into ecological agriculture, you talk about the role of the farmer as a researcher and start from there. Being the farmer is the key element in this, more than the ecological part of it, so it's a great tool.*

Another participant explained how the high quality data produced by FLRP projects contributed to those productive bridge-building conversations:

> *[The FLRP] allows you to cross boundaries, because once you know the numbers behind your soil organic matter and things like that you can start having conversations... It [gives] you a good grounding to have conversations that aren't divisive, because we may be the ecological farmers, but the environment is a big and growing concern for everybody in agriculture even if they're following a conventional method. So, with that grounding behind you, you can have those conversations that just don't have the same division.*

Heather Newman tested grower rations with different protein contents on her Chantecler chickens in 2019/2020

RESEARCH RESULTS III: FLRP CONSTRAINTS

Sweet potatoes grown as part of Kate Garvey's trial to select for short season northern sweet potatoes (2019)

RESOURCE LIMITATIONS

When discussing constraints to FLRP success, many research participants pointed to the limited resources available for the work. One of the most important resourced mentioned was the time required to design and conduct on-farm research. While that time investment was perceived as contributing to the high quality of the data generated through the program, it also limited people's ability to participate. One research participant explained how a lack of time combined with a lack of confidence in their research capacity limited their desire to be more actively engage in the FLRP:

> *I think the degree of scientific application and research and the methodologies and following through and keeping data and all that organizational stuff, I find intimidating...[It] is not my strength...so I'm just a little bit intimidated by taking something like that [on and] not being able to follow through...with all the data collection. I have a hard enough time with that on my farm. Many farmers are just finding [themselves] so strapped for time and resources to do other things other than their own business.*

Other participants discussed a desire to expand the scope of existing research projects, for example by increasing the number of sites involved in multi-farm trials or conducting experiments on larger plots of land. However, they noted that such expansion was challenging because of the resources that would be required, including time, labour, materials and land. Drawing on their own experience as a farmer-researcher, one participant observed how resource limitations constrained the ability to achieve a desired scale for some research projects:

> *I know that our study needs to be redone on a larger scale, but I have to justify the time, which really is money, and I don't want to say that we need to be paid to do [the research] because I think that it's worthwhile in many ways beyond that, but…that limits people in what they can take on if they have to allocate workforce toward something.*

Building upon this concern about how to scale research projects up and out with limited available resources, many participants argued that the FLRP could be improved through greater and more stable funding. Some suggested additional funding would enable adequate compensation for farmer-researcher labour. According to one participant: *Even if it's not a huge amount it feels respectful; your time matters.* Another explained more broadly how increased funding could be used to expand program capacity and impact:

> *[I]t's inadequately funded and supported… you've got a limited number of staff who are able to help farmers do this. They have to select what they think they can accept…[A]nother potential limit is the number of farmers willing to take the time…the farmers are not being paid enough for the time that it takes to really do the on-farm research to make it cost-neutral to them. They're having to say… I'm going to donate time and effort to this project and that's okay. But if you really would want to see [the FLRP] expand, then it would need to be better resourced for both the technical side of the staffing, but also on the support to the farmers…*

LIMITED GENERALIZABILITY OF RESULTS

In part, interest in expanding the scale and scope of the FLRP was motivated by a desire to produce results that would be relevant to a more diverse population of farmers across Ontario. Indeed, the wide variation in soil type, climate, topography, as well as scale and type of farm operations across the province means that FLRP project results are not always relevant or applicable to everyone. One participant explained:

> *The information that people have that are used to working on heavy clay doesn't pertain to what I'm doing on sandy soils.*

Another participant elaborated:

My farm is not representative…every farm is different. What works here may not work on other farms.

Just as the time invested in doing rigorous research was perceived as both a strength and limitation of the FLRP, the site-specificity of results was both deeply appreciated and viewed as something that constrained program impact.

DESIRE FOR EXPANDED COLLABORATION AND ENGAGEMENT

Finally, a number of research participants felt that one way to improve upon the existing strengths of the FLRP would be to expand the extent of collaboration and engagement with new partners and audiences. Partnering with other research organizations (e.g., universities) and farm organizations (e.g., the Ontario Fruit and Vegetable Growers Association) was identified as a possible strategy to help expand the scale and scope of research that could be undertaken. For example, a number of participants expressed an interest in conducting comparative research with conventional farming counterparts, and others suggested that access to resources such as land and methodological expertise could be enhanced through increased connectivity with universities or other institutions. As one participant put it:

The more partnerships that are able to be forged, then the more of a future there is for the questions that are generated by our research.

Beyond the potential to increase the scale and scope of research projects, expanding collaboration was also perceived as a way to increase the audience for research results and thus the potential for their application. Farmer-researchers were especially keen to communicate their findings to wider audiences with the idea that they might be used by more people. One explained their desire to see results shared beyond the existing avenues:

I would also like to be able to share what we do on that kind of broader scale…whether it's farmers markets or whatever platform that I get to see other growers face to face…We love doing this and so we love talking about it, the same as researchers in other fields…As soon as we learn something the next thing we want to do is tell someone…OMAFRA could maybe provide us with more opportunity to see what we have done filtered down into a fact sheet that's sitting on a rack somewhere…That would be kind of cool.

CONCLUSIONS

Michelle Dang taking crop observations on the effects of biochar at rooftop gardens of TMU Urban Farm in 2021

This report presented results of quantitative and qualitative research with EFAO members regarding how engagement with the organization – in particular its Farmer-Led Research Program – impacts their networks, their use of soil health BMPs, and their farm practices more generally. Findings clearly demonstrated that engagement with the EFAO positively impacts farmer knowledge about and use of soil health BMPs as well as other innovative sustainable farm practices.

EFAO membership was also associated with strong feelings of belonging and community, and that translated into confidence, motivation and inspiration to continuously work towards on-farm improvements, including adopting new BMPs and improving upon those already in use. Such feelings were especially notable amongst those actively engaged in the organization's Farmer-Led Research Program.

The research found that the FLRP was producing a range of meaningful impacts for the farmer-researchers involved as well as farmers who learned about project results. Both farmer-researchers and others found the data generated through the program was high quality. It also filled a gap, as much of the widely available agricultural data is a product of research on conventional farms and/or farming methods and therefore less relevant in the context of ecological farming systems. Research participants found they could rely on FLRP project results to help inform their on-farm decision-making and this increased their confidence and mitigated some of the risk associated with adopting new practices. Importantly, engaging with the FLRP also fostered a strong sense of community for both knowledge generators and users, helped them feel connected to broader farmer-research networks, and enabled them to feel part of a larger movement towards sustainable food and farming systems. For the farmer-researchers in particular, involvement with the program was viewed as a source of pride and an important element of their identities. Finally, the FLRP served as a meaningful platform for communication about the benefits of ecological farming practices across a range of groups, including conventional farmers and the public.

Becky Porlier seeding sunflowers as part of her no-till sunflower trial in 2020

The FLRP is also characterized by a number of constraints. The most prominent of those are insufficient availability of resources (particularly time, labour, land and funding), challenges associated with generalizing results across diverse farm locations and types, and limited engagement with potential partners beyond self-identified ecological farmers and related groups. Notably, each of these challenges also represents an opportunity. For example, the time-intense nature of the farmer-led research projects contributes to the high quality of the data produced, the specificity of the work makes generalizing results difficult but also means results are more highly relevant to some audiences, and the idea of expanding partnerships and collaboration was viewed as an important future opportunity to pursue.

Setting aside program constraints, a focus group participant provided a good summary of the importance of farmer-led research, pointing out how it can contribute to the development of food and farming systems equipped to handle the challenges of the present and future – from climate change to pandemics to supply chain problems – by supporting more widespread adoption of sustainable farming methods:

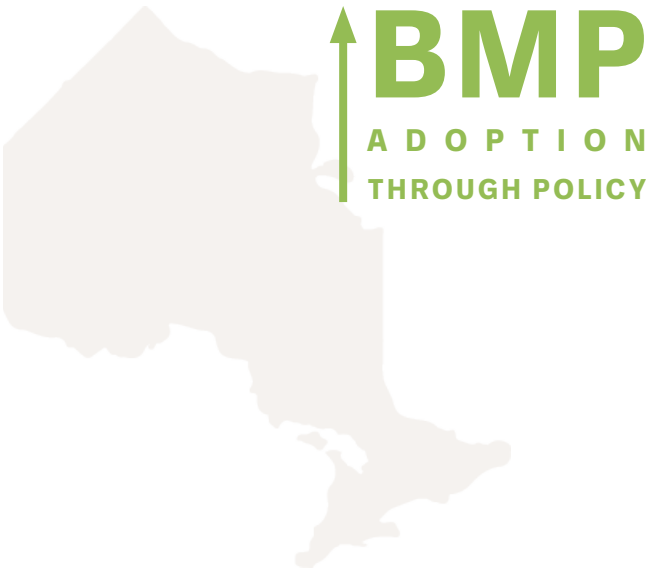
> *[FLRP] research is representing a sector of the food economy that is not represented by research done in other places…I think it becomes even more important that this [ecological farming] sector becomes represented when we're talking about what could [our future] food system look like, because if more local food or smaller farms or more ecological farms need to be part of that future picture, then we have to know what that looks like, how we get there, and we have to have the numbers to back that up as to why it's beneficial. So, we potentially have a major role to play going forward.*

FLR POLICY RECOMMENDATIONS

From this report, it is clear that farmer-led research is an efficient and effective mechanism to drive adoption of BMPs. Farmers who have participated in EFAO's Farmer-Led Research Program were far more likely than other farmers to report a positive impact on their relationship with BMPs and on their agricultural social networks. This finding is supported by research on other farmer-led research networks (Ashby et al., 2000; Braun et al., 2000; Classen et al., 2008; Humphries et al., 2015; Waters-Bayer et al., 2015; Wettasinha et al. 2014).

Drawing on these conclusions, we have developed a set of policy proposals for the Ontario context. The proposals listed below are not an exhaustive list of everything that is needed to increase BMP adoption in Ontario. They are, however, recommendations grounded directly in our findings that highlight the impact of farmer-led research on increasing BMP adoption.

These recommendations are practical, implementable, and affordable for farmers, the government, and other funders, and they have the potential to jump-start transition to a resilient and sustainable future in Ontario agriculture.



1 Invest in multi-year funding for EFAO's Farmer-Led Research Program

Since its inception in 2016, funding for this program has been piecemeal, coming largely from the Ontario Trillium Foundation and private donors.

Action: Dedicate government funding to support EFAO's Farmer-Led Research Program. Multi-year funding is critical to enable investment and capacity building in the program, and also to allow for multi-year trials, which increase the rigour and relevance of research data.

2 Invest in flexible funding that works for the farmer-innovator timeline

Farmer-led research questions often evolve from the farmers' experiences and observations in the previous season such that research topics are generally identified by farmers 3-6 months before the growing season.

Action: Make funding flexible in terms of research topics and deliverables, and available in alignment with the timelines of farmer-led innovation and decision-making cycles.

3 Continue to invest in farmer-to-farmer knowledge sharing and mentorship

Farmers learn best from other farmers. At the heart of increasing BMP adoption is the process of farmers sharing their knowledge and experiences with other farmers (Baumgart-Getz et al. 2012; Liu and Brouwer 2022).

Action: Continue to support farmer-to-farmer knowledge sharing and mentorship by funding organizations like EFAO that host field days, workshops, webinars, etc. These organizations have earned the trust of farmers and have developed the networks that are necessary for farmer-researchers to share their knowledge and to support other farmers in trying new practices within a supportive community of peers.

4 Expand farmer-led research across Ontario (A network of networks)

Expanding the approach to different farm audiences and organizations would be the most effective way to increase impact and adoption of BMPs through farmer-led research. EFAO's Farmer-Led Research Program has garnered the interest and attention of many farm organizations and academic partners across the country. While there has been strong interest in the approach and its results, no other organizations in Canada have had the capacity or expertise to replicate or emulate the program for their own community of farmers.

Action: Build on EFAO's experience facilitating farmer-led research, and openness to share this knowledge, to pilot farmer-led research programs within other farm organizations across the province. EFAO could provide training and mentorship to increase staff capacity within other organizations to support farmer-led research.

REFERENCES

Ashby, Jacqueline A., Anne R. Braun, Teresa Gracia, Maria del Pilar Guerrero, Luis Aflredo Hernández, Carlos Arturo Quirós and José Ignacio Roa. 2000. Investing in Farmers as Researchers. Cali: CIAT.

Baumgart-Getz, A, L Stalker Prokopy, K Floress. 2012. Why farmers adopt best management practice in the United States: A meta-analysis of the adoption literature. Journal of Environmental Management, 96.

Braun, Ann R., Graham Thiele and María Fernández. 2000. Farmer Field Schools and Local Agricultural Research Committees: Complementary Platforms and Integrated Decision-making in Sustainable Agriculture. AgREN Network Paper No. 105. London: ODI.

Classen, Lauren, Sally Humphries, John Fitzsimons and Susan Kaaria. 2008. Opening Participatory Spaces for the Most Marginal. World Development, 36(11):2402-2420.

Humphries, Sally, Juan Carlos Rosas, Marvin Gómez, José Jiménez, Fredy Sierra, Omar Gallardo, Carlos Avila and Mérida Barahona. 2015. Synergies at the interface of farmer-scientist partnerships: agricultural innovation through participatory research and plant breeding in Honduras. Agriculture and Food Society, 4(27):1-17.

Liu, H and R Brouwer. 2022. Incentivizing the future adoption of best management practices on agricultural land to protect water resources: The role of past participation and experiences. Ecological Economics, 196.

Waters-Bayer, A., Kristjanson, P., Wettasinha, C., van Veldhuizen, L., Quiroga, G., Swaans, K., & Douthwaite, B. 2015. Exploring the Impact of Farmer- led Research Supported by Civil Society Organisations. Agriculture & Food Security, 4(1):4.

Wettasinha, C., Waters-Bayer, A., van Veldhuizen, L., Quiroga, G and Swaans, K. 2014. Study on impacts of farmer-led research supported by civil society organizations. Penang, Malaysia: CGIAR Research Program on Aquatic Agricultural Systems. Working Paper: AAS- 2014-40.

EFAO
ECOLOGICAL FARMERS ASSOCIATION OF ONTARIO

UNIVERSITY of GUELPH

EVALUATING THE ECOLOGICAL FARMERS ASSOCIATION OF ONTARIO'S FARMER-LED RESEARCH PROGRAM

SUMMARY OF
2020-2021 RESEARCH RESULTS