



LIVING LABORATORIES INITIATIVE

Socio-Economic Factors Affecting the Adoption of Agri-Environmental Beneficial Management Practices in Manitoba: Evidence from Living Lab - Eastern Prairies

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Living Lab - Eastern Prairies

Beneficial management practices (BMPs) are a growing suite of farm practices designed to mitigate the environmental impacts of agricultural operations. Agriculture and Agri-Food Canada's (AAFC) Living Lab - Eastern Prairies is exploring how to best target and increase BMP uptake on agricultural lands in an economically feasible fashion through a partnership between farmers, scientists, and other collaborators. The team is working directly with farmers in four geographically diverse watersheds in Manitoba (Figure 1) to co-develop, test, and monitor BMPs, as well as understand barriers and incentives for BMP implementation in a real-life context. The team is also exploring how Living Lab participation contributes to farmers' perceptions around BMPs and their relationships with agencies and producers.

Survey to Understand Barriers and Incentives for BMP Adoption

A key element in promoting BMP adoption is understanding the socio-economic factors that drive BMP uptake. A better understanding of farmers' preferences, as well as their barriers and motivations, can inform agri-environmental policies and programs for improving BMP uptake. To understand these factors, AAFC has partnered with the International Institute for Sustainable Development (IISD), the Manitoba Association of Watersheds (MAW), Keystone

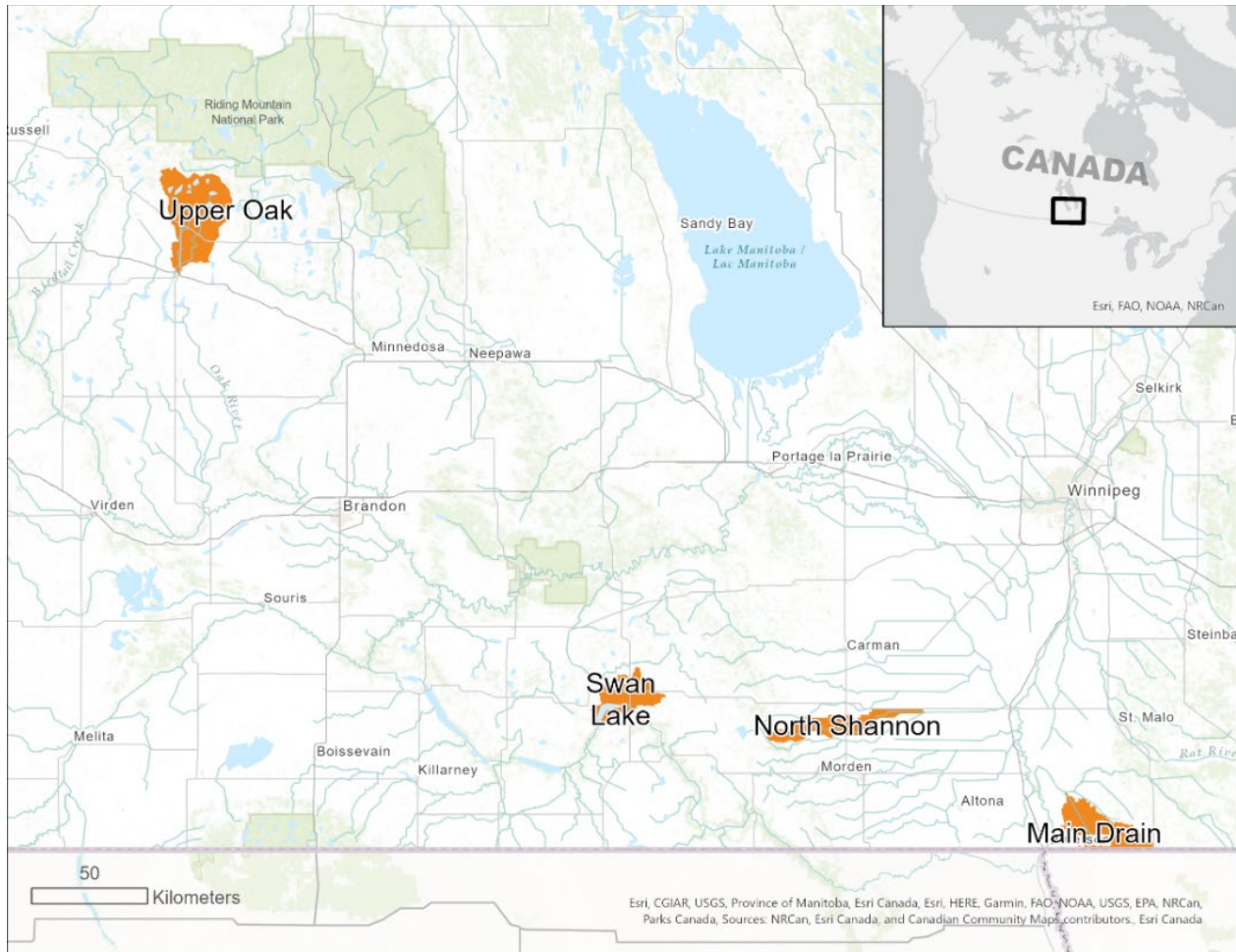
¹ International Institute for Sustainable Development (IISD).

² Agriculture and Agri-Food Canada (AAFC).



Agricultural Producers (KAP), and the Manitoba Forage and Grasslands Association (MFGA) to collect producers' responses in a survey administered in 2020. The team developed a questionnaire collecting details on BMP adoption, farmer demographics, and farm operation characteristics. As part of the questionnaire development, it was also tested by KAP and MFGA in Manitoba and producers in Prince Edward Island during the winter/spring of 2020.

Figure 1. Map of the Living Lab-Eastern Prairies watersheds



AAFC partnered with MAW to collect data from producers in the four Living Lab - Eastern Prairies watersheds. IISD conducted an online survey for producers in other watersheds using e-newsletters and the social media channels of KAP and MFGA. In total, 70 producers responded to the survey: 18 producers from the Living Lab - Eastern Prairies watersheds and 52 producers from other watersheds in Manitoba.



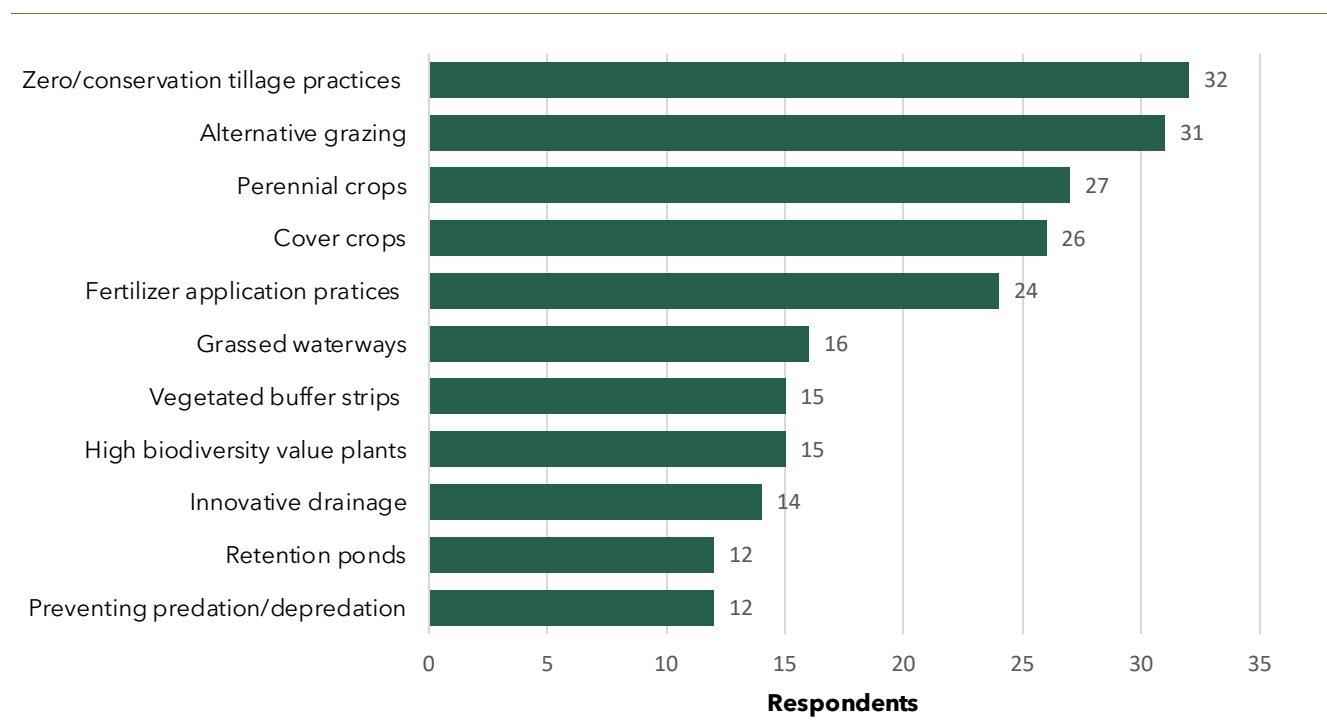
Socio-Demographic Characteristics of the Respondents

Our sample was, for the most part, reasonably representative of most watershed districts and the predominant farm types in Manitoba. Certain socio-demographic characteristics of our sample, however, differed from the general population. Namely, we saw a greater representation of younger producers, producers with higher levels of education, and producers operating larger farms.

BMPs Adopted by the Survey Respondents

The survey examined the adoption of 11 BMPs with a focus on soil health, effective on-farm water management, and biodiversity (Figure 2).

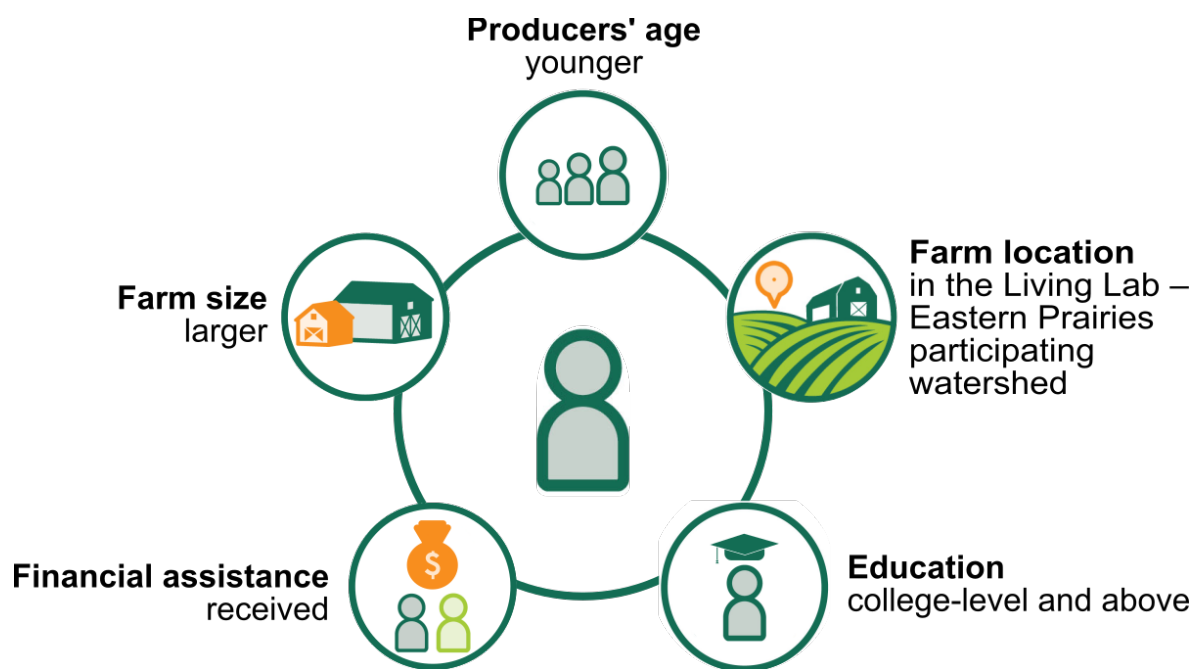
Figure 2. Number of respondents adopting BMPs by BMP type



Socio-Economic Factors Affecting BMP Adoption

Producers' decisions around BMP adoption are influenced by a range of factors and considerations, such as producer demographics and farm characteristics, local policies, and relationships with extension specialists. All these factors shape the situation of individual farmers and individual farms, impacting BMP adoption behaviour. Our survey data revealed some patterns and correlations of various observed socio-demographic factors with BMP adoption. Based on our analysis results, the following factors are associated with the higher likelihood of BMP adoption: *producer age less than 55 years old, post-secondary education, larger farm (farm size above 1,200 acres), financial assistance received for BMP adoption, and farm location in the Living Lab - Eastern Prairies watershed* (Figure 3).

Figure 3. Socio-economic factors affecting BMP adoption



Producers are more likely to be early BMP adopters³ if they hold memberships in agricultural associations and receive financial assistance for BMP adoption.

Barriers and Incentives for BMP Adoption

Barriers

An important goal of our survey was to identify barriers to BMP adoption. The barriers that were identified as being the most important across the survey focused on farm economic issues such as high upfront costs, lack of financial assistance, high maintenance costs, lack of time, and uncertainty about economic benefits.⁴ We also examined differences in barriers by producer types, specifically large versus small operations and early versus late BMP adopters.

Barriers by farm size: Larger farms were more likely to be concerned with high ongoing/maintenance costs, uncertainty about economic benefits, and lack of time than smaller farms.

Barriers by the timing of BMP adoption: Early BMP adopters were more likely to find the lack of financial assistance and uncertainty about economic benefits or environmental benefits as important barriers to BMP adoption than late BMP adopters. However, late BMP adopters

³ An early adopter is a producer who is ready to try BMPs even if they are not well tested.

⁴ These are the top five barriers identified by producers in our sample arranged in the order of importance, with the highest-ranking barrier being high upfront costs.

were more likely to be concerned with the lack of evidence regarding the economic benefits of BMPs than early BMP adopters.

Incentives

Along with the barriers, we also investigated the incentives for BMP adoption. The most important incentives for farmers were improving soil health, increasing farm profitability, being responsible environmental stewards for personal reasons, improving downstream water quality, and improving on-farm water-use efficiency.⁵ Survey results indicated that the incentives varied among different producer groups.

Incentives by farm size: Larger farms were more likely to be motivated by increasing profits than smaller farms.

Incentives by the timing of BMP adoption: Early BMP adopters were more likely to view the improvement of soil quality as an important incentive to BMP adoption. Late BMP adopters were more likely to identify increasing profits as an important incentive to BMP adoption.

The Role of Information Sources About BMPs

Exposure to information is vitally important for encouraging BMP adoption. Identifying the right agency or person to disseminate information is also important for increasing awareness. To provide insights on how to best disseminate information about BMPs, our questionnaire collected information about farmers' trusted networks and preferred ways to learn about farming practices.⁶

Groups consulted to implement BMPs: 43% of the respondents indicated that they have consulted with other producers to implement BMPs, 41% have consulted with watershed district managers or environmental non-governmental organizations, 27% have consulted with industry (input supplier, processors, etc.), and 24% have consulted with a government agency.

Trusted sources of information about farming practices: Most respondents considered other producers and producer associations as the most trusted sources of information about farming practices. Government was also one of the important information sources for some farmers. The survey data also showed that those respondents who waited until at least a few others adopted the BMP relied more on other producers as a trusted source of information about BMPs. This demonstrates the importance of network building between producers in efforts to increase BMP adoption.

⁵ These are the top five incentives identified by producers in our sample arranged in the order of importance, with the highest-ranking incentive being improving soil health.

⁶ Farmers were presented with multiple-choice questions where they could select more than one answer matching their situation.



Preferred format to receive information about farming practices: Tours and field trips were the preferred formats for receiving information about BMPs for the producers in our survey, followed by group discussions (through producer groups, clubs) and print publications. Younger respondents (under 55 years old) prefer group discussions, print publications, and online courses over older respondents. The respondents with a college degree and above have a stronger preference for e-newsletters and online courses compared to respondents with lower levels of education. In comparison, the respondents with less than a college degree have a stronger preference for face-to-face engagement with peers and professionals through tours and field trips, group discussions, and on-farm demonstrations.

The Impact of Living Lab Participation

Given the Living Laboratories Initiative's innovative approach to communicating with farmers and sharing best practices around BMPs, we wanted to understand how this collaborative approach could affect farmers' perceptions of BMPs and their relationships with agencies and producers. Based on the survey data, half of the respondents who are Living Lab participants indicated that participation in the Living Lab led to positive impacts on their relationships with non-farmers in their community. More than half indicated that Living Lab participation positively impacted their relationships with other producers. And almost all respondents indicated that Living Lab participation led to positive impacts on relationships with representatives from AAFC or other government agencies. Most of the respondents who have participated in the Living Lab also indicated that their participation in the program increased the likelihood of adopting other BMPs in the future.

Conclusions

This exploratory survey of producers in Manitoba revealed patterns about BMP adoption that could be considered by policy-makers and watershed district managers in BMP targeting programs and agricultural extension. Age, education, farm size, and financial assistance have significant impacts on farmers' BMP adoption. It is also important to consider a combination of socio-economic factors and further explore the diversity of farmers in Manitoba in the context of BMP adoption decisions.

The insights on barriers and incentives, together with farmers' socio-economic characteristics and information-seeking preferences, can further inform strategies to increase BMP uptake. The most important barriers for respondents related to economic aspects such as high upfront costs and lack of financial assistance to implement BMPs. In contrast, the motivators related to improving the efficiency of farm operations and environmental outcomes. Our results also showed that the barriers and incentives varied among producer groups. Policy-makers and agricultural extension specialists can use these insights to further explore barriers and incentives by producer groups to better understand their varying needs and to tailor messages accordingly.



Identifying the right group to deliver messages about BMPs and the appropriate format for learning is also key and can vary among producers based on the socio-demographic characteristics. Most producers value other producers as information sources on BMPs, so enabling peer-to-peer communication is crucial. Providing on-farm tours to interested farmers where the early adopters can share their experiences appears to be a good strategy to increase awareness about BMPs. At the same time, a variety of other information channels and messengers could be considered, depending on the producer type.

For more information, please visit the Living Laboratories Initiative website:
agriculture.canada.ca/living-lab



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