Environment Reference Manual

November 2020

DAIRY FARMERS OF CANADA

CANADIAN AGRICULTURAL PARTNERSHIP

Canada

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An Environment Module for proAction®

There is increasing interest in the environmental sustainability of agricultural systems, from farmers as well as from industry stakeholders and society at large. Farmers are interested in the long-term viability of their farms, where good management involves careful oversight of environmental resources and mitigation of negative impacts, with a recognition that these influence the bottom line over the long term.

The Environment module encourages Canadian dairy farmers to be proactive in supporting environmental health while producing milk profitably and ensuring the sustainability of the natural resources they manage.

The Environment module's five requirements aim to mitigate risks and promote positive action. The requirements consist of:

- an individual Environmental Farm Plan, Agri-environmental Support Plan (Plan d'accompagnement agroenvironnemental) or equivalent, which helps to identify and encourage mitigation of on-farm environmental risks (EN1);
- an Environmental Questionnaire, which assesses use of on-farm practices related to soil health, greenhouse gas emissions, biodiversity, silage seepage, and plastic waste (EN2);
- and three requirements which aim to reduce the risk of contamination of soil, groundwater and surface water from wastewater (EN3) and manure (EN4), and to make the best use of manure and other nutrients on the farm (EN5).

There are many benefits of an Environment module for proAction.

On the farm:

- Identify and mitigate risks
- Enhance soil health and biodiversity
- Make more efficient use of resources
- Preserve quality of land and water for future generations

For the industry:

- Demonstrate the value that the dairy industry places on the health of the natural environment
- Provide assurance to consumers about farm practices as they relate to the environment

In society:

- Reduce carbon and environmental footprint, thus reducing impact on the environment
- Ensure that consumers can confidently enjoy the dairy products they love for generations to come

Workbook Self-Evaluation Questions

Farmer Requirements Reference Manual, Chapter 10		Validation Info	
		Major / minor	Demerits
Environmental Farm Plan (EFP), PAA or Equivalent			
EN1	Do you have a valid provincial (individual) Environmental Farm Plan (EFP), Agri-environmental Support Plan (*Plan d'accompagnement agroenvironnemental*, PAA) or PAA-equivalent to identify and address environmental risks on your farm?	✓	
Environmental Questionnaire – Soil Health, Greenhouse Gases, Biodiversity, Silage Seepage, and Plastic Waste			
EN2	Have you completed the questionnaire on soil health, greenhouse gases, biodiversity, silage seepage, and plastic waste?	✓	
Milking Centre Wastewater			
EN3	Is your milking centre wastewater managed with proper storage or a regulatory approved treatment system?		✓
Manure Storage			
EN4	Is your manure storage adequate to avoid contamination of surface and ground water and to avoid spreading manure on frozen, snow-covered or saturated ground?		✓
Manure Management			
EN5	Do you manage nutrients on your farm to make optimal use of manure and/or fertilizer on land?		✓

Note: The Environment requirements are mandatory as of September 1, 2021.

Introduction

Dairy farmers are committed to providing excellent care of the environment.

Dairy farmers manage a host of environmental practices on their farms daily, including stewardship of soil, water, pastures, wetlands and woodlands. Because the health of their land is essential to the continued success of their farm, careful management provides many benefits. In addition, many farms have been family-owned for long periods of time. There is pride in ownership, as well as care in ensuring that future generations will be able to farm successfully.

Beyond the requirements of the Environment module, it is the farmer's responsibility to meet the applicable provincial regulations. For more information on these, farmers should contact their provincial agriculture or environment department, provincial Environmental Farm Plan (EFP) office, or provincial dairy association.

Environmental Farm Plan (EFP) and Plan d'accompagnement agroenvironnemental (PAA)

An Environmental Farm Plan (EFP) or Agri-environmental Support Plan (*Plan d'accompagnement agro-environnemental*, PAA) is an opportunity to evaluate areas of strength and potential environmental risks associated with an individual farm operation. The EFP and PAA provide a farm with an increased awareness of areas of potential environmental concern and of relevant legislation and regulations, and help outline site-specific, individualized plans to address, monitor or compensate for identified areas of risk.

Note: The Environment requirements are mandatory as of September 1, 2021.

EN1: Do you have a valid provincial (individual) Environmental Farm Plan (EFP), Agri-environmental Support Plan (*Plan d'accompagnement agroenvironnemental*, PAA) or PAA-equivalent to identify and address environmental risks on your farm?

Issue: An EFP, PAA or PAA-equivalent allows a farmer to assess potential environmental risks and plan the appropriate actions to reduce risks.

Explanation: Farmers must complete an EFP, PAA or PAA-equivalent. To be valid, the document must be current according to the expiry or validity period established by the province. If the province does not establish an expiry or validity period, the EFP, PAA or PAA-equivalent must be current within 10 years.

The validity period differs by province and is subject to change by the province. It is the farmer's responsibility to be aware of and meet any change in the validity period.

- British Columbia, Manitoba, New Brunswick, Prince Edward Island, Nova Scotia, Newfoundland and Labrador: the provinces establish 5 years from the date of completion.
- Quebec (PAA and PAA-equivalent): the province establishes 7 years from the date of completion.
- Alberta and Saskatchewan: the provinces establish 10 years from the date of completion.
- Ontario: the province does not establish a validity period, therefore it must be current within 10 years from the date of completion.

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An EFP or PAA is different from Group Farm Plans that have existed in some provinces, such as the Agri-Environmental Group Plan in Saskatchewan or Environmental Farm Plan Group Planning in British Columbia. The EFP or PAA must be completed for the individual farm in question.

Environmental Farm Plan (EFP) (all provinces except Quebec)

EFP delivery differs by province. The EFP is designed either as a farm self-assessment that can be delivered through workshops or online, or an independent assessment conducted with an EFP advisor or other independent party. In the course of completing an EFP, farmers or their advisors develop an action plan that lists all identified risks, along with a timeline and options to address them.

An EFP is only considered complete when it includes a completed action plan. In most provinces, the completed action plan will be accompanied by a certificate or statement of completion.

(Note: In British Columbia, there are two levels of EFP: completed and implemented. At a minimum, dairy farmers are expected to reach the "completed" level, from which they should receive a statement of completion. A certificate is only provided in British Columbia where the EFP is "implemented"; this is not a proAction requirement, but would show that the proAction requirement for the completed level has been met. In Nova Scotia, a farmer receives the EFP report from their third-party reviewer as verification of completion of an EFP. There is no certificate or separate statement of completion provided for farmers in Nova Scotia.)

Topics covered within an EFP may include, but are not limited to:

- Water Sources
- Pesticide Handling and Storage
- Fertilizer Handling and Storage
- Storage of Petroleum Products
- Manure Storage
- Milking Centre Wash Water
- Water Use Efficiency
- Energy Efficiency
- Soil Management
- Nutrient Management
- Pest Management
- Stream, Ditch and Floodplain Management
- Wetlands
- Woodlands and Wildlife
- Pasture Management
- Irrigation
- Climate Change
- Species at Risk

Agri-environmental Support Plan (*Plan d'accompagnement agro-environnemental*, PAA) or equivalent (Quebec only)

The PAA is offered in the province of Quebec and is the approximate equivalent of the EFP in other provinces. The program is delivered on a one-on-one basis with an agronomist, generally through agri-environmental clubs. The PAA program takes individual farmers through a range of environmental risk areas that could be relevant for their farms, and draws attention to applicable environmental regulations and localized risk factors (e.g. presence of water, slope and soil type, etc.) that increase awareness of potential concerns and of recommended practices to address or monitor them. In the course of completing a PAA, agronomists will develop an action plan that lists identified risks, along with a timeline and options to address them.

A completed PAA will have an agronomist's signature, with the date of completion.

Topics covered within a PAA include:

- Adaptation to climate change and reduction of greenhouse gas emissions
- Management of fertilizers and residual materials on the farm
- Soil health and conservation
- Management and use of water in agriculture
- Integrated pest management
- Biodiversity in agriculture

PAA-Equivalent

The PAA-equivalent is only available to farmers in Quebec. Due to the format, cost and stringent nature of programming and regulations within the province, farmers in Quebec have the option to complete this program instead of completing a full PAA. This option constitutes a self-assessment of risks, to be completed online, designed with the PAA and EFP programs in mind. It also requires the farm to prepare an action plan to address identified concerns on the farm.

A completed PAA-equivalent will have a confirmation of completion, with the date of completion or of latest update.

The PAA-equivalent covers the same topics as the PAA.

Environmental Questionnaire

Both farmers and the public want a healthy ecosystem and increased emphasis has been placed on beneficial practices. The purpose of this requirement is to understand the level of action taken towards environmental stewardship, and allow flexibility in finding solutions that are of benefit to the farm and the environment. The focus of the questionnaire is awareness and self-evaluation. The questionnaire is to be completed online by each farm, or with the assistance of a Provincial Coordinator. The questions included in the questionnaire have been listed in Appendix I for reference.

Note: The Environment requirements are mandatory as of September 1, 2021.

EN2: Have you completed the questionnaire on soil health, greenhouse gases, biodiversity, silage seepage and plastic waste?

Issue: The questionnaire will provide an overview of performance on soil health, greenhouse gases, biodiversity, silage seepage, and plastic waste.

Explanation: The questionnaire lists voluntary actions that may or may not be undertaken, and is intended to help farms identify where they are at currently, or where potential adjustment could be made. Aggregated information will help the industry describe practices undertaken to advance environmental stewardship.

Farmers must complete the questionnaire every 2 years and have the confirmation of completion available.

The questionnaire covers the following topics:

- **Soil health:** Managing soil health is important to the success of farms and its ecosystems. Healthy soil is able to support plant growth without becoming degraded or otherwise harming the environment. Many at-risk soils can be improved through practices that improve soil health.
- **Greenhouse gases:** Methane, nitrous oxide, and carbon dioxide are emitted during livestock management and crop production. Working with a ruminant nutritionist, storing and using manure effectively, and reducing energy use can all contribute to greenhouse gas mitigation and improved nutrient management.

- **Biodiversity:** Lands managed with biodiversity in mind not only provide diverse habitats, but also reduce off-site environmental risks especially in areas where lands are near sources of water. Depending on the farm's unique location, biodiversity may be encouraged through careful and considerate management of natural resources including wetlands, floodplains, woodlots and natural woodlands, streams and watercourses to provide mutual benefits.
- **Other topics:** This section covers silage seepage and plastic farm waste. When harvested and stored properly, silage quality is preserved and there is little risk to the environment. Plastic waste should be disposed of in environmentally responsible ways.

Results over time from this questionnaire will reflect Canada's diverse landscape and what farmers do to protect or enhance land, water and wildlife. Some practices listed will not apply in all regions.

Milking Centre Wastewater

Milking centre wastewater is a mixture of water, milk solids and fat, chemicals used to clean and sanitize the milking system and bulk tank, and possibly, small amounts of manure and animal feed. Because it contains nutrients like phosphorus and nitrogen, as well as detergents, acids and potential pathogens, proper disposal of wastewater is required.

Note: The Environment requirements are mandatory as of September 1, 2021.

EN3: Is your milking centre wastewater managed with proper storage or a regulatory approved treatment system?

Issue: Milking centre wastewater contains contaminants which need to be managed to reduce environmental risk.

Explanation: Farmers must dispose of milking centre wastewater in a manner that does not contaminate soil, groundwater or surface water. It should not go into a ditch or stream.

Some provinces have established specific regulations pertaining to wastewater. It is the farmer's responsibility to be aware of and meet any regulations in their province.

Management options for milking centre wastewater include:

- Storage within a liquid manure storage system – construction design should incorporate expected volumes of wastewater.
- Disposal within a separate liquid storage or septic tank. Note that septic tanks need to be monitored and pumped when the level of solids in the tank approaches capacity.
- Treatment within sediment tanks and/or a flocculator. Flocculators add lime to coagulate milk solids. Liquids can be removed from the top and the heavy milk solids fall to the bottom where they can be removed. Regular maintenance of flocculators is required.
- Treatment within constructed wetlands or vegetated filter strips – often done in association with settling tanks and/or grease traps. Constructed wetlands and filter strips should be designed by an engineer. These areas will remove organic matter from the wastewater. Constructed wetlands may need to be renovated 10-15 years following construction if solids build up in the cells.
- In some cases when soil conditions are suitable and regulations allow, ejection systems into vegetated areas are acceptable.

Manure Storage

There is no agronomic value in applying manure on saturated or frozen soil. In addition, the potential for surface water contamination increases significantly because the soil cannot absorb the applied nutrients under frozen or snow-covered conditions, making manure-contaminated runoff more likely to occur.

Note: The Environment requirements are mandatory as of September 1, 2021.

EN4: Is your manure storage adequate to avoid contamination of surface and ground water and to avoid spreading manure on frozen, snow-covered or saturated ground?

Issue: Application of manure to frozen, snow-covered or saturated soil brings significant risk to contamination of surface and ground water. Insufficient storage capacity or weather-related factors are the main reasons for manure application on frozen, snow-covered or saturated ground.

Explanation: Farmers must store and use manure in a manner that avoids contamination of surface and ground water and that avoids spreading manure on frozen, snow-covered or saturated ground.

Some provinces have established specific regulations pertaining to manure storage. It is the farmer's responsibility to be aware of and meet any regulations in their province. The required number of days of storage varies by province, though some provinces have not stipulated storage capacity requirements. Most provinces allow for the temporary storage of manure in piles in a field, but stipulate that certain conditions must be met in order to avoid nutrient loss and groundwater contamination. Farms in all provinces need to take measures to avoid any application of manure which has the potential to create an environmental risk.

Beneficial practices for all manure storage types:

- In association with a qualified engineer or geoscientist, ensure storage construction meets or exceeds provincial regulations related to siting, capacity and safety.
- Regularly inspect manure storage for leaks, cracks or structural issues.
- Where possible, locate manure storage away from public roads and/or plant windbreaks to help reduce odour impacts on neighbour.
- Build secondary containment in case of leaks and/or install monitoring wells around the site.

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Situations can exist where application of manure at non-agronomic times cannot be avoided. This may occur following extreme weather, such as a flood, early or longer-than-normal winter, or due to an emergency situation, such as a manure storage failure. Practices to reduce negative environmental impacts of manure application at this time should be used, and farms should also be aware of any provincial regulations that apply to emergency situations. Regulations may specify special procedures for manure applications outside of the growing season and may include:

- ✓ only applying on un-sloped fields
- ✓ applying manure at lower rates
- ✓ respecting increased setbacks from surface water
- ✓ applying on fields with crop residues, rather than bare fields
- ✓ obtaining a license to apply outside of permitted dates

In some provinces, application is strictly forbidden even in emergency situations, and alternative storage must be found. Other concerns related to manure storage, such as odour and safety, are outside the scope of this requirement, but should also be considered in daily management of manure.

Manure Management

Manure is a source of valuable nutrients that can improve crop fertility and soil health, and can reduce the need for synthetic fertilizer. Manure use may result in savings in fertilizer purchases when managed optimally. In addition to a general prohibition against pollution that exists in every province, most provinces have some level of regulation to govern manure and fertilizer use. All farmers are expected to be aware of, and comply with, the environmental regulations in their province of operation.

Note: The Environment requirements are mandatory as of September 1, 2021.

EN5: Do you manage nutrients on your farm to make optimal use of manure and/or fertilizer on land?

Issue: When using manure, fertilizer or other soil amendments on farmland, soil testing and nutrient management planning is important for establishing adequate rates of application. This is key in ensuring optimal use of resources and reducing the risk of nutrients and manure contaminating surface or ground water.

Explanation: Farmers must have either a valid provincially approved nutrient management plan, **OR** test soil at least every three years for all lands receiving manure (or more often if required by provincial regulations), and use the results to make optimal use of manure or fertilizer on land. The exception for some soil testing shall be with written advisement from a licensed agronomist.

Some provinces have established specific regulations pertaining to manure management, nutrient management plans, and soil testing. It is the farmer's responsibility to be aware of and meet any regulations in their province.

Nutrient management plans:

A nutrient management plan (NMP) is encouraged, but not required to meet this requirement. If a farm already has a plan in place, it is not required to conduct separate soil testing. A primary goal of an NMP is to make the best agronomic use of manure and other fertilizing inputs. This can impact a farm's bottom line by reducing fertilizer purchases, improving crop yields, and reducing nutrient loss to the atmosphere or surface and ground water. NMPs are required in some provinces based on the number of animal units or an increase in farm size.

NMPs are most helpful when updated annually, but are only required to be updated in accordance with provincial regulations if being used to meet this requirement. Note that across the country, formal nutrient management plans can go by different names.

Topics covered within an NMP may include, but are not limited to:

- Proposed rate of nutrient application, particularly nitrogen, phosphorus and potassium, taking into account crop nutrient requirements, soil nutrient levels and manure nutrient levels
- Proposed timing, frequency and method (injection vs broadcast) of nutrient applications
- Location where manure and other nutrients will be applied
- Topography of the land to which manure and other nutrients will be applied
- Spreading agreements, where manure is being spread or sold off-farm
- Crop rotation and reasonable yield goal
- Tillage practices

Soil testing:

Regular soil testing is a valuable tool to ensure soil nutrient levels are adequate to meet crop requirements and to prevent over-application of manure or fertilizer. If you do not have a valid provincially approved nutrient management plan, you are required to test soil at least every three years for all lands receiving manure (or more often if required by provincial regulations).

Keep a copy of the test results and/or any other record of results. Fields with widely varying soil or topographical conditions should be broken into sections or zones for the purpose of sampling. The analysis on the soil should include both nitrogen and phosphorus to target the fertilizer requirements for that year's crop. Some provincial regulations prescribe minimum requirements for analyses. Most soil analytical labs also recommend specific analyses and provide sampling methodology for the most accurate results, and in some cases the province dictates which method is to be used.

Appendix I: Environmental Questionnaire Question List

The environmental questionnaire is designed to help farms take note of the positive actions they already take with respect to the environment, and will provide an overview of performance on soil health, greenhouse gases, biodiversity, and other topics. This will help identify potential areas that could further benefit your farm and mitigate impacts on the environment. Some questions may be less applicable to your farm due to its specific location or circumstances. If this is the case, please answer to the best of your knowledge when filling out the questionnaire.

Please note that the following list is provided for information only. You will need to complete the questionnaire online or with the assistance of a Provincial Coordinator for it to be valid. Completion of the questionnaire in this booklet will not be considered valid.

A glossary follows this list.

Soil Health

1. Do you use any of the following to reduce soil compaction?

- Controlled traffic patterns / traffic limited to specific areas
- Traffic in fields is avoided when conditions are unsuitable (e.g. very wet)
- Frequency of traffic is limited
- Equipment that enters fields is equipped with large width tires, dual or triple wheels, or tracks
- Tractor tires are properly inflated and tractor is properly ballasted (balanced)
- Liquid manure is applied with a dragline (instead of with tankers)
- Farm does not use any of the above practices

2. Do you use any of the following to reduce soil erosion?

- Minimum tillage is practices consistently on all fields
- Grassed waterways or permanent cover in areas prone to erosion
- Shelterbelts or tree windbreaks around fields
- Riparian zones or buffer strips to prevent soil loss to surface water
- Landscape restoration is practiced to replace eroded soil to hilltops, where applicable
- Cover crops are planted in shoulder seasons or inter seeded in long season row crops
- Cross slope or contour cropping
- Tile outlet protection (e.g. rock chutes)
- Water and sediment control basins
- There is no/very little evidence of erosion on farm (examples of evidence include: exposed subsoil on knolls; knolls are different colour than rest of field; inconsistent growth throughout the field; existence of rills or gullies; accumulation of soil in low areas of the field after heavy rain; dirty snow observed; springtime evidence of soil being carried to ditches; blowing soil observed during windy conditions)
- Farm does not use any of the above practices

3. Do you use any of the following to build soil carbon?

- A minimum of a 3-year crop rotation (including deep-rooted or long-term perennials at least 2 years in a row)
- Rotational grazing
- Spreading manure at a rate for crop requirements, preferentially to application of synthetic N fertilizer
- Intercropping
- Farm does not use any of the above practices

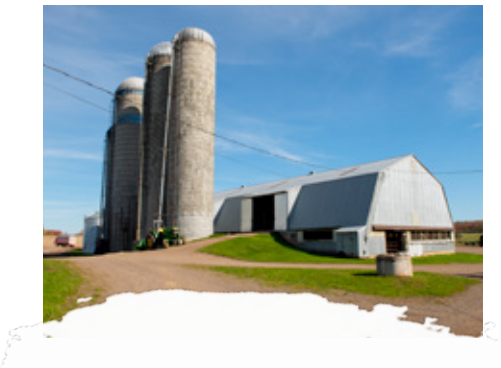
4. If you have areas of low productivity or salinity, do you treat these field areas differently? *(e.g. keep them in perennials, salt-tolerant crops)*

- Yes
- No
- Farm does not have areas of low productivity or salinity

Greenhouse Gases

1. Do you use any of the following to assess and reduce energy use on the farm?

- Farm has undertaken an energy audit / assessment
- Farm has installed energy efficient...
  - Lighting
  - Ventilation
  - Milk house equipment (e.g. efficient vacuum pumps, plate coolers, water heaters)
  - Other farm equipment (e.g. irrigation equipment)
- Farm consistently uses reduced tillage practices
- One or more pieces of farm machinery have been converted from diesel to electric or renewable natural gas motors
- Farm does not use any of the above practices



2. Have you taken any of the following actions to reduce greenhouse gas emissions on the farm?

- Farm works with a ruminant nutritionist with the aim of:
  - achieving low milk urea nitrogen (MUN)
  - targeting reduced enteric emissions (through e.g. additives, fats in ration, etc.)
  - increasing feed efficiency
  - improving animal health
- Farm fully empties manure storage 2+ times per year
- Manure management technology to reduce emissions is used - e.g. cover, composting with or without solid-liquid separation, biodigester
- Farm has invested in renewable energy and these are in operation on the farm
  - biogas (e.g. biodigester)
  - solar (e.g. solar panels)
  - wind (e.g. wind turbines)
  - other
  - farm purchases renewable energy for use on the farm
- Participated in a research project related to greenhouse gases
- Used a recognized on-farm tool (i.e. Dairy Farms +, Holos, Cool Farm Tool) to estimate greenhouse gas emissions.
- Farm does not use any of the above practices

Biodiversity

1. What actions have you taken (beneficial or detrimental*) in relation to wetlands and watercourses on your farm?

- Restored / enhanced any wetlands in the past 10 years, including those constructed to filter manure or milking centre wastewater
- Drained any wetlands in the past 10 years*
- Access to watercourses have been fenced or otherwise managed to limit livestock access
- Wetlands have been fenced to exclude livestock
- Left a vegetated area to buffer watercourses or wetlands
- There have never been wetlands on farm
- There are not any watercourses on farm
- Farm has wetlands, but none of the above actions has been taken on farm

2. What actions have you taken (beneficial or detrimental*) to manage or protect biodiversity on your farm?

- Installed bat boxes, cavity nest boxes or bird boxes
- Fenced off or maintained natural areas for wildlife habitat
- Maintain corridors between natural areas through active cropping or other agricultural areas, e.g. through fencerows, ditches, buffer strips, shelterbelts, flower strips, prairie strips, etc.
- Converted forest or native grassland into crop production in the past 10 years*
- Converted tame pastureland into crop production in the past 10 years*
- Returned cropland to forest or to grassland in the past 10 years
- Left piles of rocks undisturbed in uncropped areas, e.g. shelterbelts or field edges (for reptile habitat)
- If you cut firewood from your forest, left standing dead trees (for woodpeckers and cavity-nesting birds)
- In the past two years, changed your actions on farm due to the presence of a particular species (e.g. practices delayed hay harvest until after July 15th or left area uncut after seeing bobolink, increased buffer around a wetland because of duck nesting, etc.)
- Practice rotational grazing
- Developed a biodiversity plan for your farm in partnership with a conservation organization
- Signed a conservation/stewardship agreement or Conservation Easement with a conservation organization to set aside parts of your farm for wildlife habitat? Examples of conservation organizations include: Ducks Unlimited Canada (DUC), Nature Conservancy of Canada (NCC), Manitoba Habitat Heritage Corporation (MHHC), Fondation de la faune (fauna foundation), or other agro stewardship group, or watershed or conservation authority
- None of the above actions has been taken on farm

3. Do you use any of the following practices to manage pollinator habitat and health on your farm?

- Installed, or have allowed others to install, beehives on farm
- Taken steps to minimize the use of agro-chemicals, especially pesticides, through actions such as prairie strips, intercropping, maintenance of diverse habitat around fields, etc.
- Practice integrated pest management (IPM) or are certified organic their crop production.
- Monitor and identify pests prior to applying pesticides at a pre-determined threshold. Blanket applications of pesticides are avoided.
- Pesticide application records are maintained (for example: pesticide vendor, reason for spraying, trigger for spraying (i.e. threshold), product name, rate applied, area sprayed, date, time of day, weather conditions (wind speed, temperature, cloud cover, relative humidity), soil moisture, growth stage of crop and growth stage of weeds / insects / disease)
- Farm does not use any of the above practices

Other Topics

1. What actions do you undertake to limit the production and runoff of silage seepage from the farm's silage storage?

- A silage seepage collection system is installed and maintained on the farm
- Silage storage is located away from AND down slope from surface water or directed away from wells and watercourses
- Horizontal silos are covered or have a roof AND are located on a concrete pad instead of directly on soil
- Farm does not use or store silage
- Farm does not use any of the above practices

2. How do you manage plastic farm waste to avoid burning or burying it on farm?

Chemical containers

- Disposed of at landfill
- Recycled
- Returned using a take-back program
- Reused or repurposed
- Farm reduces plastic waste by using less plastics and/or choosing products/product packaging that have a lower impact on the environment (e.g. reusable, biodegradable, less plastic)
- Farm does not have access to plastic waste disposal facilities for chemical containers
- Farm does not use or does not dispose of plastic chemical containers (e.g. uses a custom applicator)

Other plastic waste
(e.g. twine, bale wrap, silage covers, feed bags, etc.)

- Disposed of at landfill
- Recycled
- Returned using a take-back program
- Reused or repurposed
- Farm reduces plastic waste by using less plastics and/or choosing products/product packaging that have a lower impact on the environment (e.g. reusable, biodegradable, less plastic)
- Farm does not have access to plastic waste disposal facilities for other plastic waste
- Farm does not use or does not dispose of other plastic waste

Glossary

Ballasted or balanced – The addition of fluid to tractor tires to help counterbalance weight across all tires, to help improve traction and lower the centre of gravity for larger tires. Assists in improving productivity of tractor use in the field and potentially reducing tractor ruts when spreading manure.

Biodigester (or anaerobic digester) – A tank that digests and decomposes organic material (manure, food waste, or crop residues) using bacteria in an oxygen-free (anaerobic) environment. The process creates a renewable energy called biogas (methane and carbon dioxide) and digested organic matter that can be applied to the land as fertilizer.

Dairy Farms + – A free online tool developed by Dairy Farmers of Canada which allows farmers to assess on-farm environmental and socio-economic practices. Individual farms can calculate their carbon and water footprints, as well as other indicators like fertilizer and pesticide use, and compare their performance to provincial and national averages. By estimating your dairy farm's environmental footprint, you can customize your action plan and prioritize your actions based on the tool's recommendations and your own preferences or expected benefits. Website: https://dairyfarmsplus.ca/

Dragline – Flexible hose that is usually 6-10" in diameter used to transport manure that is pumped from manure storage to field application equipment, can vary in length and be several miles long.

Contour cropping – The agricultural practice of planting across a slope that follows a field's elevation contour lines to help reduce erosion. These contour lines create a water break to help reduce the formation of rills and gullies during times of heavy water run-off.

Cool Farm Tool – A free online tool to assess greenhouse gas emissions, biodiversity management, and water management on individual farms. It is intended to help farmers choose management options that improve their environmental performance, and to track and measure improvement over time. Website: https://coolfarmtool.org/

Enteric emissions – Discharge of gas produced by a digestive process of micro-organisms when feed is digested in the rumen of cattle. It is one source of greenhouse gas emissions from agricultural production and may be further managed by adjusting feed, ionophores and other practices.

Greenhouse gas (GHG) – Gas that absorbs and emits radiant energy. The primary GHGs in the earth's atmosphere are water vapour (H_2O), carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and ozone (O_3).

Grassed waterway – A shaped or graded channel established with suitable vegetation to carry surface water at a non-erosive velocity to a stable outlet, to help protect soil and riparian areas from erosion in higher water conditions. Can be natural and/or man-made with grass and other vegetation, and assists diverting water to a desirable location.

Holos – A free downloadable software tool developed by Agriculture and Agri-Food Canada to estimate and provide suggestions to reduce greenhouse gas emissions on individual farms. Users can select scenarios and farm management practices that best describe their operation and then adjust these practices to see the effect on emissions. Examples of these adjustments include changing livestock feed, reducing tillage or including perennial forages in rotation.

Integrated Pest Management (IPM) – A decision-making process for managing pests in an effective, economical and environmentally sound way. It involves planning and managing agricultural production systems to prevent insects, plant diseases and weeds from becoming pests through prevention, monitoring and control. Controls can be biological, physical, behavioural or chemical.

Intercropping – An agricultural practice where two or more crops are grown together in the same field, used as a mechanism by which the functional diversity of an agro-ecosystem can be increased.

Natural area – A geographical area that has developed through natural growth without intervention from humans. Examples include native prairie grasslands, natural forests or uncropped areas near wetlands.

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Nutrient Management Plan (NMP) – Planned use of livestock manure in an environmentally responsible manner that balances source of nutrients from fertilizer and manure with an application strategy to meet crop/field requirements. NMPs are required by many provincial authorities for livestock operations that meet a minimum size (e.g. 300 animal units) or defined nutrient units (e.g. 25 kg P_2O_5). NMPs may or may not include storage facility design, application limits, setback distances from water bodies, record keeping and soil testing. NMPs are not mandatory within proAction but can be used to demonstrate how a farm is meeting environmental requirements for managing manure. These types of plans may go by different names in different regions. For example, in Manitoba, the legislation calls this plan a Manure Management Plan, while an NMP refers only to synthetic fertilizers.

Minimum tillage (minimum till) – Soil conservation method to manage post-harvest residue from crops with the goal of minimum soil disturbance. Efforts include actions that avoid turning the soil over to minimize moisture and organic matter loss in the soil. Sometimes referred to as conservation tillage.

Pollinator habitat – An area with a variety of flowering plants that provide food and nesting space for bees and other insects that carry pollen from plant to plant. This may be a natural setting, such as a prairie meadow, or a man-made area of flowering plants cultivated specifically for pollinators.

Riparian strip – A strip of land (typically 10 to 15 metres wide) between water and land environments that provides wildlife habitat, streambank stability, or a corridor for wildlife. It is adjacent to a permanent or temporary waterbody and helps recharge groundwater or enhance nutrient uptake. This area can include trees, grasses, shrubs and other enhancements to help stabilize soil or improve biodiversity.

Riparian zone – A transition zone between water and land environments along creeks, streams, gullies, rivers and wetlands. Healthy riparian areas may have any combination of trees, shrubs, and/or grasses depending on the local conditions. The term is derived from the Latin word ripa, which means riverbank.

Rock chute – A spillway designed to reduce erosion of surface water flowing to an outlet, using rocks and/or other material to help stabilize banks or the bottom of waterways.

Rotational grazing – Shifting of livestock to different units of pasture or grasslands in a sequence to enhance the recovery and growth of plants after grazing. The sequence considers livestock density, ground cover, forage utilization and the time needed for plants to rest and re-grow before being grazed again. It can improve use efficiency of grazing land by ruminants.

Tiled protection – Use of tiles under agriculture land surfaces as a type of drainage system to remove excess water from soil below its surface. The use of tiles increases the amount of air in pores of the soil to augment conditions for optimal growth of crops.

Upland habitat – Habitat that is up-land from a waterbody. The riparian zone (see definition above) is the first upland habitat zone you encounter as you move outward from a waterbody.

Watercourse – A natural or artificial channel through which water flows, including the movement of water in rivers, creeks, and other streams which naturally pass over the surface of the land.

Water and sediment control basin – A basin that collects or stores runoff water and traps sediment, reducing erosion and preventing gully formation. It is usually placed at the lower end of slopes. Once the water is collected, it sits in the basin, allowing time for the particles, soil and nutrients to settle and separate from the water. Water is then slowly released through a tile intake and/or through soil infiltration, and sediment is periodically removed.

Wetland – A biologically diverse ecosystem permanently or seasonally flooded by water. Wetlands are areas where oxygen-free processes prevail and are characteristically comprised of aquatic plants that are adapted to the unique hydric soil. Wetlands help to purify water, process nutrients, stabilize shorelines and support plant and animal life.

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