



Environmental Farm Action Program Beneficial Management Practices Catalogue



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Cost-sharing Opportunities for Manitoba Producers to Adopt Beneficial Management Practices (BMP) and Improve Environmental Sustainability

What is the Environmental Farm Action Program?

The Environmental Farm Action Program (EFAP) is the new beneficial management practices (BMP) incentive program, replacing the old Canada-Manitoba Farm Stewardship Program. This program will provide technical and financial assistance to producers to accelerate the adoption of BMP in Manitoba.

The Environmental Farm Action Program is a *Growing Forward* initiative set out to improve the environmental performance and sustainability of agricultural operations.

Growing Forward, the successor framework to the Agricultural Policy Framework (APF), is a five-year combined federal-provincial-territorial government initiative designed to help the agriculture and agrifood sectors become more profitable, competitive and innovative.

Manitoba producers were strong supporters of the Environmental Farm Plan (EFP) program under the APF with 6,940 producers participating. Of these, 5,611 received a Statement of Completion making them eligible to apply for cost-shared environmental improvements on their farms. Over 8.8 million acres were assessed by producers through the EFP process.

By participating, producers are able to:

- contribute to environmental protection and conservation
- confirm the environmental benefits of their current management practices
- increase awareness of environmental assets and risks associated with their farming operations
- identify options and actions to reduce the identified risks
- improve farm production efficiencies

How does the new Environmental Farm Action Program work?

You first need to complete an environmental farm plan (EFP), then arrange a review of your workbook and receive a Statement of Completion. Once you have the statement, you are eligible to apply for funding through the EFAP to reduce environmental risks on your farm. You will need to attach a copy of your Statement of Completion to your application form.

This catalogue lists the BMP categories, practices, cost-shared funding levels in Manitoba and eligibility details. For each category, limits on the funding cost-sharing are indicated, as is the maximum amount of funding available through the program for each farm operation. The maximum amount payable to one farm operation under the Environment Farm Action Program is \$160,000.

Approval from Manitoba Agriculture, Food and Rural Initiatives (MAFRI) must be in place before you begin your project. This program is not retroactive.

How to Apply

The EFAP provides eligible Manitoba producers with financial and technical assistance to:

- reduce identified environmental risks to soil, water and air quality
- enhance wildlife habitat and biodiversity

Once your EFP has been reviewed and you have received a Statement of Completion, you can apply for funding to reduce environmental risks on your farm.

Step 1: Complete a Manitoba Environmental Farm Plan

MAFRI offers a voluntary, confidential self-assessment process to increase awareness of farm practices and environmental sustainability. The process helps producers develop and implement an action plan and provides tools for developing and implementing EFPs.

Producers participate in a series of two EFP workshops delivered by MAFRI. After completion of the workshops, the producer's EFP workbook is reviewed and a Statement of Completion certificate is issued by a third party organization. The Statement of Completion is valid for five years from the date of issue. Workshops are available throughout Manitoba. Contact your local Growing Opportunities (GO) Office for workshops to be held in your area.

Step 2: Apply for funds to help implement your Environmental Farm Plan

Producers who have completed their EFP, had it reviewed and have received a Statement of Completion are eligible to apply for funds from the EFAP. The program offers incentives to support the implementation of BMPs to reduce on-farm environmental risks. See the General Program Information for details on eligibility, application process and deadlines.

For more information on EFAP

Contact your local MAFRI GO Office or GO Centre; call Manitoba Government Inquiry, toll free, 1-866-626-4862 to find the nearest GO Office or Centre; or visit www.manitoba.ca/agriculture.

General Program Information

The purpose of beneficial management practice (BMP) incentive programs in Manitoba is to support agricultural producers in reducing identified environmental risks and improving the management of agricultural land. The goal is to improve the management of Manitoba's water resources, air quality, soil productivity and wildlife habitat.

Conditions for Eligibility

Eligible applicants include individuals, partnerships or operations incorporated under federal and/or provincial laws. Applicants must own, rent, lease, manage or control agricultural land used to produce agricultural products. Applicants must also possess a valid Statement of Completion certificate for an individual Environmental Farm Plan (EFP) or an Equivalent Agri-Environmental Plan (EAEP).

Funding will be distributed by farm business, which must be independent of all other farm businesses, as identified by the farm's GST number.

Note:

- **You must receive an approval letter from the program before proceeding with your project.** Retroactive submissions for projects that were started before September 1, 2009, will not be accepted. Submissions for projects that were started before you received an approval letter from the program will not be accepted.
- You will be required to obtain all necessary licences, permits and approvals before you begin your project. Local Manitoba Agriculture, Food and Rural Initiatives (MAFRI) staff can help you identify these requirements.

Application Process

1. Complete your application form. Attach all applicable supporting documents; site plan, animal unit inventory worksheet, and Statement of Completion certificate. Within the site plan (sketch), include the location, type and estimated costs of all work to be done, and the location of all nearby water bodies.
2. Submit your application to your local MAFRI Growing Opportunities (GO) office; or mail or fax completed applications directly to:

Manitoba Agriculture Food and Rural Initiatives GO Office
Box 189
Somerset, Manitoba R0G 2L0
Fax: 204-744-4060

3. Upon receipt of your application, a notification letter will be mailed to you. The notification letter will identify a client services representative who will assist you with the program. This does not grant you approval to begin your project. **You must wait until you receive an approval letter before proceeding with your project.**



4. Before approval, program staff may inspect the project site and provide technical advice. Additional information may be requested for some projects if an environmental assessment is required under the *Canadian Environmental Assessment Act* (CEAA). If necessary, program staff may do an environmental assessment in accordance with the CEAA.
5. If the program approves your application, **an approval letter will be mailed to you.**
6. When you receive the approval letter, you may begin work and complete your project.
7. When the project is complete, submit documentation and invoices to program.
8. The program will then send you payment.
9. An audit inspection of final work may be done either before or after payment is received.

Application Forms

The Environmental Farm Action Program application form and guidelines are available at all MAFRI GO Offices and online at www.manitoba.ca/agriculture.

Application Deadlines

Deadlines for applications to the program are: February 1, April 1, June 1, September 1 and November 1.

Questions to ask as you prepare your application

- Is the project described fully and completely on the application form?
- Did you include a description of the environmental benefit associated with your intended project?
- Have you considered all expenses associated with the project?
- Have you taken measures to accurately estimate the costs of the project?

Technical Assistance

Before you submit your application, it is strongly recommended that you discuss your intended project with a MAFRI representative. Program technical leads have been designated for each BMP category. MAFRI staff can answer program questions, determine required project components, explain technical details and help you estimate project costs.

Approval Process

At each application deadline, all applications will be ranked and rated based on the merit of the proposed project to reach its objective to reduce environmental risk and improve the management of agricultural land.

If the program funds have been fully subscribed for the fiscal year (April 1 – March 31), eligible applicants will be required to submit a new application at the next intake date. Applications will not be held.

In-kind Contributions

Both labour (at \$15 per hour) and the use of the applicant's equipment may be eligible for cost sharing and included in the total cost of the project. Equipment rental rates can be claimed at the rates described in the *Farm Machinery Rental and Custom Rate Guide*. Contact your local GO Office, or visit www.manitoba.ca/agriculture for a copy of the guide.

Canadian Environmental Assessment Act (CEAA) Requirements

As part of the approval process, the CEAA may require an environmental assessment for some projects. If necessary, program staff may contact you for additional project information required for the assessment. This information may include a general project description, a description of the various project components, construction details and details on environmental parameters (ex: soil, water, geology). The information will be used to determine the potential environmental impact and required mitigation measures. **You cannot begin construction until you have received an approval letter from the program.**

BMP Category	Does CEAA Apply?
Increased Manure Storage Capacity	Yes
Improved Manure Storage and Handling	Yes
Solid-Liquid Separation of Manure	Yes
Composting of Manure	Yes
Farm Yard Runoff Control	Yes
Relocation of Livestock Confinement Facilities	Yes
Wintering Site Management	Yes
Riparian Area Management	Yes
Improved Crop Residue Management	No
Precision Agriculture Applications	No
Nutrient Management Planning	No

Rating and Ranking Process for Project Proposals

In order to maximize the environmental outcome of funded projects, project proposals are assessed according to three main criteria: *Environmental Benefits Assessment Index*, *Provincial Program Priorities* and *Project Planning*. The following provides a short description of the parameters associated with this assessment process:

Environmental Benefit Assessment Index

The level to which the project addresses environmental risk is determined using an environmental benefit assessment index (EBAI). The EBAI creates a rating of the environmental benefits that a specific land use change or other environmental practice will incur. **Environmental benefit categories included in each program's index are "weighted" to stress the importance of the environmental benefits, as dictated by the goal of each program.** For example, *MSAPP's* main objective is to reduce greenhouse gases (GHGs), therefore the emphasis and highest weighting is on the climate change category. The categories and the parameters measured are:

- The **climate change** category captures the extent to which the project results in a reduction of greenhouse gases and provides measures adaptive to climate change in a cost-efficient manner.
- The **water quality** score is based on a project's ability to improve water quality by reducing the nutrients, pesticides and pathogens that enter waterways.
- The **soil quality** category assesses the relationship between the proposed project and its ability to reduce erosion and salinization, while improving soil quality.
- The **nutrient and water use efficiency** category provides a score for the project's ability to improve environmental farming practices that relate to efficient use of nutrients and water.
- The **biodiversity and natural habitat** category assesses a project's ability to improve overall biodiversity and improved wildlife habitat through environmental farming practices.

Provincial Program Priorities

Agriculture sustainability should address both agricultural objectives to promote a profitable and competitive agricultural sector and environmental objectives to reduce the impact of agricultural activities on the environment. The priorities include:

- Potential to mitigate and adapt to climate change.
- Potential to increase level of carbon stored in the soil.
- Strategies that improve environmental stewardship.
- Strategies that assist with meeting regulatory compliance and mitigating potential complaints.

Project Planning

Project proposals are scored based on their ability to clearly show the integrity of the project's intent and design. Specifically, that:

- The BMP applied for matched the risks identified in the Environmental Farm Plan workbook.
- The project intent was properly described and it fully explained the environmental benefit.
- The project costs were specific, realistic and properly itemized.
- The project application has adequate design, including well defined locations and steps, and realistic completion timelines.

Questions?

For more information, visit your local MAFRI GO Office; (call Manitoba Government Inquiry at 1-866-626-4862 to help locate your nearest GO Office); e-mail agrienv@gov.mb.ca; fax 204-744-4060; or write to Box 189, Somerset, Manitoba R0G 2L0.

Beneficial Management Practices (BMP) Categories and Practice Codes

Beneficial Management Practices offered under the Environmental Farm Action Program include the following:

BMP Category	Practice Code	Eligible Practices	Cost Share	Category Cap
Increased Manure Storage Capacity	0101	Increased storage capacity to eliminate winter application – for operations under 300 animal units (AU) only	65%	\$160,000
	0102	Engineering design work – this practice code will stand alone if project does not proceed for economic, technical or environmental reasons (CEAA)		
Improved Manure Storage and Handling	0201	Re-establishment of existing manure storage facility	65%	\$70,000
	0202	Improved features to prevent risks of water contamination		
	0203	Containment systems for solid manure storage facilities (includes construction of impermeable base, covers)		
	0204	Assessment and monitoring of existing manure storage infrastructure		
	0205	Engineering design work – this practice code will stand alone if project does not proceed for economic, technical or environmental reasons (CEAA)		
Solid-Liquid Separation of Manure	0301	Solid-liquid separation	50%	\$150,000
	0302	Engineering design work – this practice code will stand alone if project does not proceed for economic, technical or environmental reasons (CEAA)		
Composting of Manure	0401	Composting manure	65%	\$70,000
	0402	Engineering design work – this practice code will stand alone if project does not proceed for economic, technical or environmental reasons (CEAA)		
Farm Yard Runoff Control	0501	Upstream diversion of runoff around farmyards Downstream protection (ex: catch basins, retention ponds, constructed wetlands)	75%	\$70,000
	0502	Construction of impermeable base and roof for minimizing runoff from livestock pen areas and confinement areas		
	0503	Engineering design work – this practice code will stand alone if project does not proceed for economic, technical or environmental reasons (CEAA)		
Relocation of Livestock Confinement Facilities	0601	Relocation of livestock facilities such as corrals, paddocks and wintering sites away from riparian areas	75%	\$70,000
	0602	Engineering design work – this practice code will stand alone if project does not proceed for economic, technical or environmental reasons (CEAA)		

BMP Category	Practice Code	Eligible Practices	Cost Share	Category Cap
Wintering Site Management	0701	Shelterbelt establishment	75%	\$30,000
	0702	Portable shelters and windbreaks		
	0703	Alternative watering systems (solar, wind or grid power)		
	0704	Field access improvements: alleyway/access lane upgrades		
	0705	Fencing (including perimeter fencing when required) and fence modifications		
Riparian Area Management	0801	Alternative watering systems (solar, wind or grid power) to manage livestock: pumping, delivery, storage, power and pipeline construction equipment – only riparian pastures are eligible (non-riparian pastures may be eligible under Improved Pasture and Forage Quality (MSAPP)).	75%	\$30,000
	0802	Buffer establishment: establishment and planting forages		
	0803	Fencing to manage grazing and improve riparian condition/function		
	0804	Native rangeland restoration or establishment: seeding and planting native plant material and ongoing maintenance of established or restored site		
	0805	Improved stream crossings: costs associated with improved structures or removal of structures to enhance riparian condition.		
Improved Crop Residue Management	0901	Chaff collectors or spreaders installed on combines	50%	\$30,000
	0902	Straw choppers – equipment to manage crop residue at harvest time Modifications can be made to existing machinery or straw chopping components of new equipment are eligible		
	0903	Heavy harrows – purchased for residue management		
Precision Agriculture Applications	1001	Complete variable fertility includes: GPS to collect information, software, GPS guidance system and manual or variable rate controllers for variable rate fertilizer application	50%	\$30,000
Nutrient Management Planning	1101	Consultant fees to conduct nutrient management plan and produce report for farmer Planning and decision support tools (ex: computer software and aerial photos)	50%	\$15,000

Note: The maximum amount payable to one farm under the EFAP is \$160,000. However, collectively for all agri-environment BMP incentive programs in Manitoba, the maximum amount payable is \$160,000 over the life of the programs.

Additional BMP categories are available to Manitoba producers through the Manitoba Sustainable Agriculture Practices Program (MSAPP).

- Reduced Greenhouse Gas (GHG) Emissions from Manure Storage
- Manure Land Application
- Reduced Tillage
- Spring Fertilizer Application
- Perennial Cover for Sensitive Land
- Cover Crops
- Improved Pasture and Forage Quality
- Increased Perennial Legumes in Annual Crop Rotation
- Grazing and Pasture Management Planning

For more information on these additional BMP categories, see the *Manitoba Sustainable Agriculture Practices Program – Beneficial Management Practices Catalogue* or visit www.manitoba.ca/agriculture.

Increased Manure Storage Capacity



Background/Objective:

Appropriate sizing of manure storage structures plays a key role in reducing the risk of nutrient and pathogen loss to the environment. Sufficient storage capacity provides flexibility and ensures that manure can be applied when field and crop conditions are suitable.

Increased manure storage capacity can significantly reduce environmental risk by eliminating winter application.

Relevant sections of the *Manitoba Environmental Farm Plan Workbook*:

- Storage and Transportation of Livestock Manure (B9)

Related BMP categories:

In addition to this BMP category, you may also want to consider practices funded under the following:

- Improved Manure Storage and Handling (EFAP)
- Solid-Liquid Separation of Manure (EFAP)
- Composting Manure (EFAP)
- Farm Yard Runoff Control (EFAP)
- Nutrient Management Planning (EFAP)
- Reduced Greenhouse Gas Emissions from Manure Storage (MSAPP)
- Manure Land Application (MSAPP)

Please note that you must complete a new application form for each BMP category.

Practices eligible for funding:

Eligible Practice	Practice Code	Cost Share	Maximum
Increased storage capacity to eliminate winter application (for operations under 300 animal units (AU) only)	0101	65%	\$160,000
Engineering design work	0102		

Eligible costs and in-kind contributions:

Eligible costs	Engineering and/or contractor fees
	Geotechnical costs
	Earthwork
	Cost of materials
	Remediation of old site (this includes engineering design, contractor fees, materials and labour)
	Monitoring well installation
Eligible in-kind costs	Labour (\$15 per hour)
	Use of applicant's equipment (at set program rates)
Ineligible costs	Decommissioning existing facilities (as a stand-alone practice)
	Pipelines used to move manure from the storage facility to the field
	Flexible drag hose used to move manure to an injector system
	Fence and signs for safety
	Groundwater monitoring

Increased Manure Storage Capacity

Notes:

- If manure storage is constructed or improved to facilitate expanded production, the eligible cost will be proportionately reduced to reflect the cost required to implement the BMP at the existing level of production.
- Monitoring devices, such as piezometers or shallow observation wells, may be recommended for new structures to help identify any potential impacts of manure leaks and spills on groundwater. In such cases, the cost of purchasing and installing monitoring devices are considered eligible costs within the specific infrastructure practice.
- Site assessment costs are considered an eligible expense when building new infrastructure. However, site assessment costs that do not contribute directly to the construction of an improved manure storage facility are not eligible under this category. Site assessments that are not intended to result in the construction of improved manure storage facilities can be considered under the Nutrient Management Planning BMP category.
- All manure storage infrastructure should be considered permanent. However, it is acceptable if some structures are not used continuously, but seasonally or periodically (ex: satellite storage).
- Cost of transporting manure from the main livestock yard to satellite manure storage is not eligible.
- Non-livestock producers who obtain manure as part of their nutrient management plan are eligible if they store, treat or apply the manure to produce their own crops. However, this incentive is not available to operations intending to store, treat or sell manure strictly as a commercial venture.

Your Application Form:

Before you submit your application, it is strongly recommended that you discuss your designated project with a MAFRI representative. Program Technical Leads have also been established for each BMP category to help with your application. MAFRI staff can answer program questions, determine required project components, explain technical details and help estimate project costs.

Providing a clear and complete application containing all of the following information will speed up the application process. As you fill out your application, consider how your project will address environmental risk on your farm. **Questions to ask as you write your project description include:**

- What is your current storage capacity? Do you apply manure during the winter months (ex: on snow-covered or frozen ground)?
- What are the soil conditions of the storage site? Will the storage require a base or lining to protect groundwater?
- Are you considering expanding your livestock operation as you implement this BMP?

Reference Materials:

The following reference materials will provide you with more information on increasing your manure storage capacity:

- **Manitoba Agriculture, Food and Rural Initiatives**
www.manitoba.ca/agriculture

Farm Practice Guidelines for Hog/Poultry/Dairy/Beef Producers
www.gov.mb.ca/agriculture/livestock/beef/baa08s01.html

Living with Livestock Production fact sheet series
www.gov.mb.ca/agriculture/livestock/publicconcerns/cwa01s00.html

Manure Management Facts fact sheet series
www.gov.mb.ca/agriculture/soilwater/nutrient/fnm01s00.html
 - Budgeting for Phosphorus - How Efficient is Your Farm?
 - Calculating Manure Application Rates
 - Managing Manure within Tillage Systems and Crop Rotations
 - Manure Nutrients and their Behaviour in Soil
 - Weed Seeds in Manure
- **Manitoba Conservation**
www.manitoba.ca/conservation

The Environment Act Livestock Manure and Mortalities Management Regulation 42/98

Other information and fact sheets
www.gov.mb.ca/conservation/envprograms/livestock/index.html
 - manure management plan
 - obtaining a permit to construct, modify, or expand a manure storage facility
 - application for permit to construct, modify or expand a manure storage facility
- **Ontario Ministry of Agriculture, Food and Rural Affairs**
Livestock Manure and Nutrient Management
www.omafra.gov.on.ca/english/livestock/index.html

Improved Manure Storage and Handling



Background/Objective:

Appropriate design and management of manure storage structures play a key role in reducing the risk of nutrient and pathogen loss to the environment. Re-establishing a manure storage facility to a more suitable location and/or with an improved design may decrease the risk of groundwater and/or surface water contamination.

Improvements to manure storage and handling that significantly reduce environmental risk include:

- re-establishment of existing manure storage facilities with improved design and/or to a more suitable location
- modifications to liquid manure storage facilities that prevent leaks and spills
- preventing manure leaks through the use of solid manure containment systems

Relevant sections of the *Manitoba Environmental Farm Plan Workbook*:

- Storage and Transportation of Livestock Manure (B9)

Related BMP categories:

In addition to this BMP category, you may also want to consider practices funded under the following:

- Increased Manure Storage Capacity (EFAP)
- Solid-Liquid Separation of Manure (EFAP)
- Composting Manure (EFAP)
- Farm Yard Runoff Control (EFAP)
- Nutrient Management Planning (EFAP)
- Reduced Greenhouse Gas Emissions from Manure Storage (MSAPP)
- Manure Land Application (MSAPP)

Please note that you must complete a new application form for each BMP category.

Practices eligible for funding:

Eligible Practice	Practice Code	Cost Share	Maximum
Re-establishment of existing manure storage facility	0201	65%	\$70,000
Improved features to prevent risks of water contamination	0202		
Containment systems for solid manure storage facilities	0203		
Assessment and monitoring existing manure storage infrastructure	0204		
Engineering design work	0205		

Eligible costs and in-kind contributions:

Eligible costs	Engineering and/or contractor fees
	Geotechnical costs
	Earthwork
	Cost of materials
	Remediation of old site (this includes engineering design, contractor fees, materials and labour)
	Monitoring well installation
Eligible in-kind costs	Labour (\$15 per hour)
	Use of applicant's equipment (at set program rates)
Ineligible costs	Decommissioning existing facilities (as a stand-alone practice)
	Pipelines used to move manure from the storage facility to the field
	Flexible drag hose used to move manure to an injector system
	Fence and signs for safety
	Groundwater monitoring

Notes:

- If manure storage is constructed or improved to facilitate expanded production, the eligible cost will be proportionately reduced to reflect the cost required to implement the BMP at the existing level of production.
- Monitoring devices, such as piezometers or shallow observation wells, may be recommended for new structures to help identify any potential impacts of manure leaks and spills on groundwater. In such cases, the cost of purchasing and installing monitoring devices are considered eligible costs within the specific infrastructure practice.
- Site assessment costs are considered an eligible expense when building new infrastructure. However, site assessment costs that do not contribute directly to the construction of an improved manure storage facility are not eligible under this category. Site assessments that are not intended to result in the construction of improved manure storage facilities can be considered under the Nutrient Management Planning BMP category.
- All manure storage infrastructure should be considered permanent. However, it is acceptable if some structures are not used continuously, but seasonally or periodically (ex: satellite storage).
- Cost of transporting manure from the main livestock yard to satellite manure storage is not eligible.
- Non-livestock producers who obtain manure as part of their nutrient management plan are eligible if they store, treat or apply the manure to produce their own crops. However, this incentive is not available to operations intending to store, treat or sell manure strictly as a commercial venture.

Improved Manure Storage and Handling

Your Application Form:

Before you submit your application, it is strongly recommended that you discuss your intended project with a MAFRI representative. Program technical leads have also been designated for each BMP category to help with your application. MAFRI staff can answer program questions, determine required project components, explain technical details and help estimate project costs.

Providing a clear and complete application containing all of the following information will speed up the application process. As you fill out your application, consider how your project will address environmental risk on your farm. **Questions to ask as you write your project description include:**

- What is your current storage capacity? Do you apply manure during the winter months (ex: on snow-covered or frozen ground)?
- If you are applying for reestablishment of your existing manure storage facility, what environmental benefits will occur by relocating to a more suitable location and/or improving the design of your manure storage?
- What are the soil conditions of the storage site? Will the storage require a base or lining to protect groundwater?
- Are you considering expanding your livestock operation as you implement this BMP?

Reference Materials:

The following reference materials will provide you with more information on improved manure storage and handling:

- **Manitoba Agriculture, Food and Rural Initiatives**
www.manitoba.ca/agriculture

Farm Practice Guidelines for Hog/Poultry/Dairy/Beef Producers
www.gov.mb.ca/agriculture/livestock/beef/baa08s01.html

Living with Livestock Production fact sheet series
www.gov.mb.ca/agriculture/livestock/publicconcerns/cwa01s00.html

Manure Management Facts fact sheet series
www.gov.mb.ca/agriculture/soilwater/nutrient/fnm01s00.html
 - Budgeting for Phosphorus - How Efficient is Your Farm?
 - Calculating Manure Application Rates
 - Managing Manure within Tillage Systems and Crop Rotations
 - Manure Nutrients and their Behaviour in Soil
 - Weed Seeds in Manure
- **Manitoba Conservation**
The Environment Act Livestock Manure and Mortalities Management Regulation 42/98

Other information and fact sheets
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 - manure management plan
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 - application for permit to construct, modify or expand a manure storage facility
- **Ontario Ministry of Agriculture, Food and Rural Affairs**
Livestock Manure and Nutrient Management
www.omafra.gov.on.ca/english/livestock/index.html

Solid-Liquid Separation of Manure



Background/Objective:

Manure treatment can reduce odour and pathogens, reduce greenhouse gas (GHG) emissions, and increase efficiency of nutrient management. Manure treatment may be necessary where a livestock operation's land base is not large enough to spread manure at phosphorus (P) based application rates. Without manure treatment, producers must access land farther away from their operations. However, manure contains a significant amount of water, making it very expensive to haul long distances. Although solid-liquid separation does not reduce the P content of manure, it does concentrate the P in the solid portion of the manure. This decreases transportation costs and provides greater flexibility for manure application by making it more economical to reach fields that are further away and lower in P.

Solid-liquid separation of manure is the treatment option available under this BMP category.

Relevant sections of the *Manitoba Environmental Farm Plan Workbook*:

- Management of Farm Waste, Mortalities and Hazardous Products (B7)
- Livestock Facilities and Wintering Sites (B8)
- Storage and Transport of Livestock Manure (B9)
- Manure Application (B18)

Related BMP categories:

In addition to this BMP category, you may also want to consider practices funded under the following:

- Increased Manure Storage Capacity (EFAP)
- Improved Manure Storage and Handling (EFAP)
- Composting of Manure (EFAP)
- Nutrient Management Planning (EFAP)
- Reduced Greenhouse Gas Emissions from Manure Storage (MSAPP)
- Manure Land Application (MSAPP)

Please note that you must complete a new application form for each BMP category.

Practices eligible for funding:

Eligible Practice	Practice Code	Cost Share	Maximum
Solid-liquid separation	0301	50%	\$150,000
Engineering design work	0302		

Eligible costs and in-kind contributions:

Eligible costs	Engineering and/or contractor fees
	Infrastructure and specialized equipment required for manure treatment
Eligible in-kind costs	Labour (\$15 per hour)
	Use of applicant's equipment (at set program rates)
Ineligible costs	Equipment operation and maintenance
	Purchase of additives or other feedstock to supplement raw manure
	Transportation of raw manure or treated manure from or to another location
	Transportation of raw manure or finished compost from or to another location

Solid-Liquid Separation of Manure

Notes:

- If a new or improved solid-liquid separation system is constructed to facilitate expanded production, the eligible costs will be proportionately reduced to the amount required to implement the BMP for the existing level of production.
- Non-livestock producers who are accepting livestock manure as part of their nutrient management plan and who are storing, treating and applying the manure to produce agricultural crops, are eligible. However, this incentive does not apply for operations that intend to store, treat or sell manure strictly for commercial venture.

Your Application Form:

Before you submit your application, it is strongly recommended that you discuss your project with a MAFRI representative. Program technical leads have been designated for each BMP category to help with your application. Resource staff can answer program questions, determine required project components, technical standards, considerations and ways to estimate project cost.

Providing a clear, complete application containing all of the following information will speed up the application process. As you fill out your application, consider how your project will address environmental risk on your farm.

Questions to ask as you write your project description include:

- Is your current land base (including land you own, lease, rent or have a manure application agreement for) large enough to support P-based manure application? Can you access additional land for manure application?
- Have you considered improving feed efficiency, reducing feed P content, or altering crop rotations to increase P removal before implementing manure treatment technology?
- How do you plan to manage the treated manure? Where and how will it be applied?
- Are you considering expanding your livestock operation as you implement this BMP?

Reference Materials:

The following reference materials will provide you with more information on manure treatment:

- **Manitoba Agriculture, Food and Rural Initiatives**
The Bare Bones of Carcass Composting
www.gov.mb.ca/agriculture/livestock/composting/com02s00.html
- **National/International Resources**
Advantages of manure solid-liquid separation
www.aces.edu/pubs/docs/A/ANR-1025

Ridgetown College Manure Links
www.ridgetownc.uoguelph.ca/research/research_reports_topic.cfm?ref=MANURE

Composting of Manure



Background/Objective:

Composting is a natural process through which organic material is converted into a soil-like product called compost or humus. Proper manure composting is a manure treatment strategy that improves the nutrient use efficiency of manure as well as its handling characteristics. It reduces the volume and moisture content of manure, destroys pathogens and weed seeds while producing a pleasant earthy-smelling organic material. Although composting does not reduce the P content of manure, the volume reduction that is achieved decreases transportation costs and provides greater flexibility for application by making it more economical to reach fields that are further away and lower in P.

Composting of manure is the treatment option available under this BMP category.

Relevant sections of the *Manitoba Environmental Farm Plan Workbook*:

- Management of Farm Waste, Mortalities and Hazardous Products (B7)
- Livestock Facilities and Wintering Sites (B8)
- Storage and Transport of Livestock Manure (B9)
- Manure Application (B18)

Related BMP categories:

In addition to this BMP category, you may also want to consider practices funded under the following:

- Increased Manure Storage Capacity (EFAP)
- Improved Manure Storage and Handling (EFAP)
- Solid-Liquid Separation of Manure (EFAP)
- Nutrient Management Planning (EFAP)
- Reduced Greenhouse Gas Emissions from Manure Storage (MSAPP)
- Manure Land Application (MSAPP)

Please note that you must complete a new application form for each BMP category.

Practices eligible for funding:

Eligible Practice	Practice Code	Cost Share	Maximum
Composting	0401	65%	\$70,000
Engineering design work	0402		

Eligible costs and in-kind contributions:

Eligible costs	Engineering and/or contractor fees
	Infrastructure and specialized equipment required for composting
Eligible in-kind costs	Labour (\$15 per hour)
	Use of applicant's equipment (at set program rates)
Ineligible costs	Equipment operation and maintenance
	Conventional farm equipment used in composting process
	Purchase of additives or other feedstock to supplement raw manure
	Transportation of raw manure or finished compost from or to another location

Composting of Manure

Notes:

- If a new or improved composting system is constructed to facilitate expanded production, the eligible costs will be proportionately reduced to the amount required to implement the BMP for the existing level of production.
- Non-livestock producers who are accepting livestock manure as part of their nutrient management plan and who are storing, treating and applying the manure to produce agricultural crops are eligible. However, this incentive does not apply for operations that intend to store, treat or sell manure strictly for commercial venture.

Your Application Form:

Before you submit your application, it is strongly recommended that you discuss your project with a MAFRI representative. Program technical leads have been designated for each BMP category to help you with your application. Resource staff can answer program questions, determine required project components, technical standards, considerations and ways to estimate project cost.

Providing a clear and complete application containing all of the following information will speed up the application process. As you fill out your application, you will want to consider how your project will address environmental risk on your farm. **Questions to ask as you write your project description include:**

- Is your current land base (including land you own, lease, rent or have a manure application agreement for) large enough to support P-based manure application? Can you access additional land for manure application?
- Have you considered improving feed efficiency, reducing feed P content, or altering crop rotations to increase P removal before implementing manure composting technology?
- How do you plan to manage the composted manure? Where and how will it be applied?
- Are you considering expanding your livestock operation as you implement this BMP?

Reference Materials:

The following reference materials will provide you with more information on composting and manure management:

- **Manitoba Agriculture, Food and Rural Initiatives**
Manure, Litter Treatment, Composting and Mortality Management
www.gov.mb.ca/agriculture/livestock/poultry/bba03s01.html

Manure Management Facts fact sheet series
www.gov.mb.ca/agriculture/soilwater/nutrient/fnm01s00.html
 - Budgeting for Phosphorus - How Efficient is Your Farm?
 - Calculating Manure Application Rates
 - Manure Nutrients and their Behaviour in Soil
 - Weed Seeds in Manure
- **National/International Resources**
Composting Solid Manure
www.agriculture.gov.sk.ca/adx/asp/adxGetMedia.aspx?DocID=2880,2879,346,185,81,1,Documents&MediaID=6458&Filename=Composting+Solid+Manure++Printer+Friendly.pdf
Manure Compost Manual
[www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex8875](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex8875)
Composted Manure vs Raw Manure
www.oldscollege.ca/schools/ocsi/CTC/pdf/CompostedManurevsRawManure.pdf
Ridgetown College Manure Links
www.ridgetownc.uoguelph.ca/research/research_reports_topic.cfm?ref=MANURE <http://www.ridgetownc.uoguelph.ca/research/research_reports_topic.cfm?ref=MANURE>
www.ridgetownc.uoguelph.ca/research/research_reports_topic.cfm?ref=MANURE

Farm Yard Runoff Control



Background/Objective:

Implementing runoff control measures helps minimize the impact farm yard and/or livestock facilities have on surface water quality.

The benefits of runoff control measures include:

- improved water quality due to reduced loading of sediments, nutrients, and/or pathogens
- prevention of soil erosion
- protection of farm infrastructure and health of livestock

Relevant sections of the *Manitoba Environmental Farm Plan Workbook*:

- Water Source Protection and Management (B1)
- Feed Storage (B2)
- Livestock Facilities and Wintering Sites (B8)
- Storage and Transportation of Livestock Manure (B9)
- Water Bodies, Natural Areas and Biodiversity (B16)
- Drainage and Irrigation (B17)

Related BMP categories:

In addition to this BMP category, you may also want to consider practices funded under the following:

- Increased Manure Storage Capacity (EFAP)
- Improved Manure Storage and Handling (EFAP)
- Solid-Liquid Separation of Manure (EFAP)
- Composting of Manure (EFAP)
- Relocation of Livestock Confinement Facilities (EFAP)
- Wintering Site Management (EFAP)
- Nutrient Management Planning (EFAP)
- Manure Land Application (MSAPP)

Please note that you must complete a new application form for each BMP category.

Practices eligible for funding:

Eligible Practice	Practice Code	Cost Share	Maximum
Upstream diversion of runoff around farmyards Downstream protection (ex: catch basins, retention ponds, constructed wetlands)	0501	75%	\$70,000
Construction of impermeable base and roof for minimizing runoff from livestock pen areas and confinement areas	0502		
Engineering design work	0503		

Farm Yard Runoff Control

Eligible costs and in-kind contributions:

Eligible costs	Engineering and consulting fees
	Geotechnical costs
	Earthwork
	Construction materials, including seed
Eligible in-kind costs	Labour (\$15 per hour)
	Use of applicant's equipment (at set program rates)
Ineligible costs	Licences and permits
	Fence and signs for safety

Notes:

- Construction of an impermeable base or roof as a stand-alone practice is not eligible. Your project must also involve upstream diversion or downstream protection.
- If you are not planning downstream runoff protection works along with your pen surface development, refer to the Improved Manure Storage and Handling BMP – Containment systems for solid manure storage facilities (Practice Code 0203).
- Diversion of runoff not associated with farm yard and/or livestock facility protection for water quality purposes (field drainage, for example) will not be considered for funding.
- Funding is available to construct or improve runoff control for existing farm yards and livestock facilities. New sites are not eligible for funding.

Your Application Form:

Before you submit your application, it is strongly recommended that you discuss your project with a MAFRI representative. Program technical leads have been designated for each BMP category to help with your application. MAFRI staff can answer program questions, determine required project components, explain technical details and help estimate project costs.

Providing a clear, complete application containing all of the following information will speed up the application process. As you fill out your application, consider how your project will address environmental risk on your farm.

Questions to ask as you write your project description include:

- What is the current impact of your livestock facility on nearby or downstream water bodies or groundwater?
- Is the issue facing your livestock confinement facility due to water running on or off, or a combination of both?
- How does lack of runoff control affect current operations?
- What portion and parts of your livestock confinement facility require improvement?
- What are the current site conditions? What modifications need to be considered in terms of pen floor reconstruction, water conveyance, drain and access lane upgrades?
- Where runoff containment is necessary, how do you plan on managing the effluent?

Reference Materials:

The following reference materials will provide you with more information on farm yard runoff control:

- **Manitoba Agriculture, Food and Rural Initiatives**
www.manitoba.ca/agriculture
Controlling Runoff from Confined Livestock Areas
www.gov.mb.ca/agriculture/soilwater/nutrient/fnm01s03.html
- **Manitoba Conservation**
www.manitoba.ca/conservation
The Environment Act Livestock Manure and Mortalities Management Regulation 42/98
Construction Requirements for Confined Livestock Areas and Collection Basins fact sheet
www.gov.mb.ca/conservation/envprograms/livestock/index.html
- **Saskatchewan Agriculture and Food**
www.agriculture.gov.sk.ca/
Holding Pond Site Selection and Design
www.agriculture.gov.sk.ca/Planning
- **Alberta Agriculture, Food and Rural Development**
www.agric.gov.ab.ca/
Alberta Feedlot Management Guide: Facilities and Environment
[www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/beef12234](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/beef12234)
- **Ohio State University**
Ohio Livestock and Wastewater Management Guide – Chapter 5: Farmstead Runoff Control
<http://ohioline.osu.edu/b604/0006.html>

Relocation of Livestock Confinement Facilities



Background/Objective:

During settlement, many farm sites were established near water bodies to provide access to water, food, transportation routes and protection from the elements.

However, this close proximity often results in a high potential for water contamination by manure, nutrients, pesticides or other agricultural products. In some cases, the environmental risks associated with livestock facilities may be minimized to an acceptable level by implementing practices such as farm yard runoff control, out-of-yard livestock wintering, and other riparian stewardship practices. In other cases, the most appropriate response may be to relocate the livestock facility away from the water body.

The intent of this BMP is to move livestock facilities away from water bodies to:

- improve water quality by reducing off-site transportation of sediments, nutrients, and pathogens
- reduce stream bank degradation and soil and vegetation loss
- potentially improve livestock herd health

Relevant sections of the *Manitoba Environmental Farm Plan Workbook*:

- Water Source Protection and Management (B1)
- Nuisance Control (B3)
- Livestock Facilities and Wintering Sites (B8)
- Storage and Transportation of Livestock Manure (B9)
- Water Bodies, Natural Areas and Biodiversity (B16)

Related BMP categories:

In addition to this BMP category, you may also want to consider practices funded under the following:

- Increased Manure Storage Capacity (EFAP)
- Improved Manure Storage and Handling (EFAP)
- Solid-Liquid Separation of Manure (EFAP)
- Composting of Manure (EFAP)
- Farm Yard Runoff Control (EFAP)
- Wintering Site Management (EFAP)
- Riparian Area Management (EFAP)
- Nutrient Management Planning (EFAP)
- Perennial Cover for Sensitive Land (MSAPP)

Please note that you must complete new application form for each BMP category.

Practices eligible for funding:

Eligible Practice	Practice Code	Cost Share	Maximum
Relocation of livestock facilities, such as corrals, paddock and wintering sites, away from riparian areas	0601	75%	\$70,000
Engineering design work	0602		

Eligible costs and in-kind contributions:

Eligible costs	Engineering and consulting fees
	New site construction
	Abandoned site remediation
Eligible in-kind costs	Labour (\$15 per hour)
	Use of applicant's equipment (at set program rates)
Ineligible costs	Upgrades from old site
	Manure and non-livestock waste removal

Notes:

- Your existing livestock facility must have a direct impact on a major water body or aquifer to qualify for relocation funds
- Removal of manure packs at the site to be decommissioned is a condition of funding. However, costs associated with manure pack removal will not be eligible for cost sharing.
- As a condition of funding assistance, existing sites must be decommissioned from future livestock use. In situations where relocation of the entire facility is not feasible, partial relocation may be considered, but only if a case can be made for significant environmental improvement. Decommissioning requirements will be discussed during the initial site inspection.
- If new livestock confinement facilities are constructed to also facilitate expanded production, the eligible costs will be proportionally reduced to the amount required to implement the BMP for the existing level of production.

Your Application Form:

Before you submit your application, it is strongly recommended that you discuss your project with a MAFRI representative. Program technical leads have been designated for each BMP category to help with your application. MAFRI staff can answer program questions, determine required project components, explain technical details and help estimate project costs.

Relocation of Livestock Confinement Facilities

Providing a clear, complete application containing all of the following information will speed up the application process. As you fill out your application, consider how your project will address environmental risk on your farm.

Questions to ask as you write your project description include:

- What is the current impact of your livestock facility on nearby or downstream water bodies or groundwater?
- Have you considered farm yard runoff control, winter site management or riparian area management to minimize the impact of your livestock containment facility on existing water bodies?
- Have you given consideration to the cleanup and restoration of the old site?
- Where do you plan to relocate your facility? What are the site conditions? Is it an appropriate location for the new facility? What type of infrastructure needs to be built, modified, or moved?
- Are you considering a full or partial relocation of your livestock confinement facility?

Reference Materials:

The following reference materials will provide you with more information on relocation of livestock confinement facilities:

- **Manitoba Agriculture, Food and Rural Initiatives**
www.manitoba.ca/agriculture

Sustainable livestock wintering: How can it work for you?
www.gov.mb.ca/agriculture/crops/forages/bjb00s36.html

Livestock Wintering: Locating and managing your site to make it more sustainable
www.gov.mb.ca/agriculture/crops/forages/bjb00s37.html
- **Manitoba Conservation**
www.manitoba.ca/conservation

The Environment Act Livestock Manure and Mortalities Management Regulation 42/98
- **Alberta Agriculture, Food and Rural Development**
www.agric.gov.ab.ca

Beef Production fact sheets
www.agric.gov.ab.ca/app21/infopage?cat1=Livestock&cat2=Beef
 - Cattle Wintering Sites
 - Managing Feedlot Shutdowns
 - Siting to Prevent Water Pollution
 - Alberta Feedlot Management Guide
- **Canada Plan Service**
Farm Structures and Handling Facilities plans
www.cps.gov.on.ca/english/planmenu

Wintering Site Management



Background/Objective:

Traditionally, livestock have been wintered in close proximity to necessities such as food, water and shelter. This often results in excessive use of in-yard feeding and confinement areas. By concentrating livestock in these key areas, producers are often faced with an accumulation of manure and urine, high feeding costs and low production efficiency. Infrastructure enhancements such as portable or permanent fencing, remote watering systems and portable windbreaks and shelters can add flexibility to your operation. This management flexibility enables you to fully use your land base by adopting an out-of-yard strategy to livestock feeding and sheltering.

Some caution is needed in adopting different systems for wintering site management. Producers should carefully assess both the advantages and risks of alternatives to existing wintering sites and practices. A change in wintering site management should offer benefits such as elevated pasture fertility without simply transferring a problem like excess nutrients to a new location on the farm. Factors to consider include:

- careful site selection that avoids or minimizes the use of areas susceptible to manure, nutrient and pathogen loss, such as those with very rapid or poor internal drainage, steep slopes or close proximity to surface water
- appropriate location of feed and water to facilitate better cattle and manure distribution on nutrient-deficient areas
- rotation of fields to allow recovery of standing crops and draw-down of soil nutrient levels with subsequent crops
- soil testing to monitor nutrient accumulation and trigger rotation of the wintering site; allowing manure to accumulate excessively poses an environmental risk and is an inefficient use of nutrients

By pursuing the Wintering Site Management BMP category, producers can obtain financial support for infrastructure that improves management of range livestock in the winter. By improving management of wintering sites you can:

- reduce the risk of manure, nutrients and pathogens being released into the environment
- improve feed use
- reduce the volume of fossil fuels consumed in harvesting, storing and distributing livestock feed
- enhance the use of your land base
- potentially improve herd health

Relevant sections of the *Manitoba Environmental Farm Plan Workbook*:

- Water Source Protection and Management (B1)

Related BMP categories:

In addition to this BMP category, you may also want to consider practices funded under the following:

- Farm Yard Runoff Control (EFAP)
- Relocation of Livestock Confinement Facilities (EFAP)
- Riparian Area Management (EFAP)
- Improved Pasture and Forage Quality (MSAPP)
- Grazing and Pasture Management Planning (MSAPP)

Please note that you must complete a new application form for each BMP category.

Wintering Site Management

Practices eligible for funding:

Eligible Practice	Practice Code	Cost Share	Maximum
Shelterbelt establishment (see BMP description for eligible items)	0701	75%	\$30,000
Portable shelters and windbreaks	0702		
Alternative watering systems (solar, wind or grid power)	0703		
Field access improvements: alleyway/access lane upgrades	0704		
Fencing (including perimeter fencing when required) and fence modifications	0705		

Eligible costs and in-kind contributions:

Eligible costs	Construction materials (fencing supplies, portable shelter materials, culverts/pipes, fill material, gravel, geosynthetics, mobile water system components); installation costs
Eligible in-kind costs	Labour (\$15 per hour)
	Use of applicant's equipment (at set program rates)
Ineligible costs	Annual maintenance of shelterbelts
	Water source development (ex: dugouts, wells, springs)
	Portable feed bunks
	Steel corral panels and livestock handling systems

Notes:

- Pipelines associated with an alternative water system (ex: pipe from well or water source to nearby trough) are eligible.
- Field access improvements must directly facilitate winter site management of livestock to qualify for funding. Upgrades to in-yard driveways or approaches to fields do not qualify.
- Funding for perimeter fencing will only be considered where it directly supports sustainable winter site management practices.
- Modification, improvement, or expansion of in-yard confinement facilities will not qualify for funding within this BMP category.

Your Application Form:

Before you submit your application, it is strongly recommended that you discuss your project with a MAFRI representative. Program technical leads have been designated for each BMP category to help with your application. MAFRI staff can answer program questions, determine required project components, explain technical details and help estimate project costs.

Providing a clear, complete application containing all of the following information will speed up the application process. As you fill out your application, consider how your project will address environmental risk on your farm. **Questions to ask as you write your project description include:**

- What is/will be the distance between the wintering site and the nearest water body? Livestock should be managed to control or eliminate access to areas adjacent to a water body.
 - A water body is a river, stream, lake, wetland, slough, ditch or any flowing or standing body of water that is capable of draining from one property to another. For example, a dugout that is entirely contained on a property that does not drain off the property is not considered as a water body for these purposes. Roadside ditches are considered to be water bodies.
- What are the soil and landscape features in the wintering area(s)? Could the land benefit from added fertility? Where does water tend to move or collect? A good wintering site should pose low environmental risk with good management as well as production advantages.
- Have you explained your long term plan for effectively managing a wintering site(s)? Do you have flexibility in rotating wintering areas as nutrients accumulate in the soil?
- Will any of the development be temporary works? If so, what parts and where will they be located?
 - Construction includes both permanent and temporary developments – development of portable off-stream watering systems.

Reference Materials:

The following reference material will provide you with more information on enhancing wintering site management:

- **Manitoba Forage Council**
www.mbforagecouncil.mb.ca
- **Alberta Agriculture and Rural Development**
www.agric.gov.ab.ca
Cattle Wintering Sites: Managing for Good Stewardship
[www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex3517](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex3517)
- **Foragebeef.ca**
www.foragebeef.ca
Wintering Sites
[www1.foragebeef.ca/\\$foragebeef/frgebeef.nsf/all/ccf154](http://www1.foragebeef.ca/$foragebeef/frgebeef.nsf/all/ccf154)
- **Greenhouse Gas Mitigation Program for Canadian Agriculture – Canadian Cattlemen’s Association**
www.cattle.ca/greenhouse-gas-mitigation/
- **Saskatchewan Ministry of Agriculture**
www.agriculture.gov.sk.ca
Stewardship and Economics of Cattle Wintering Sites
www.agriculture.gov.sk.ca/Default.aspx?DN=c2eb0d6d-c071-437d-b301-17b57e642c8a

Riparian Area Management



Background/Objective:

Riparian areas are the green zones around rivers, streams, lakes and wetlands. A riparian area is considered a transition zone or interface between the surface water of a river, stream, wetland or lake and the surrounding drier upland.

Riparian areas need to be healthy to function properly. Healthy riparian areas can produce an abundance of forage and provide shelter for wildlife, livestock and fish. A producer can maintain economic productivity, but also environmental productivity, by improving both the condition and function of a riparian area.

By improving riparian areas, you can:

- build and maintain banks and shorelines
- protect aquatic life
- store water and reduce flood during high water events
- maintain the quality of surface water
- ensure the riparian areas serve as islands and corridors for biodiversity

Relevant sections of the Environmental Farm Plan Workbook:

- Water Source Protection and Management (B1)
- Livestock Facilities and Wintering Sites (B8)
- Pasture Management (B15)
- Water Bodies, Natural Areas and Biodiversity (B16)

Related BMP categories:

In addition to this BMP category, you may also want to consider practices funded under the following:

- Wintering Site Management (EFAP)
- Perennial Cover for Sensitive Land (MSAPP)
- Grazing and Pasture Management Planning (MSAPP)

Please note that you must complete a new application form for each BMP category.

Practices eligible for funding:

Eligible Practice	Practice Code	Cost Share	Maximum
Alternative watering systems (solar, wind or grid power) to manage livestock: pumping, delivery, storage, power and pipeline construction equipment	0801	75%	\$30,000
Buffer establishment: establish/plant forages	0802		
Fencing to manage grazing and improve riparian condition/function	0803		
Native rangeland restoration or establishment: seeding and planting native plant material and ongoing maintenance of established or restored site	0804		
Improved stream crossings: costs associated with improved structures or removal of structures to enhance riparian condition	0805		

Eligible costs and in-kind contributions:

Eligible costs	Engineering and consulting fees
	Fencing/construction materials and fees
	Watering systems equipment and installation costs
	Seed and seeding operation for revegetation
Eligible in-kind costs	Labour (\$15 per hour)
	Use of applicant's equipment (at set program rates)
Ineligible costs	Perimeter fencing for upland grazing management

Notes:

- Only riparian pastures are eligible under this category. Non-riparian pastures may be eligible under the Improved Pasture and Forage Quality BMP category (MSAPP).
- Pipelines associated with an alternative water system (ex: pipe from wet well or water source to nearby trough) are also eligible.

Your Application Form:

Before you submit your application, it is strongly recommended that you discuss your intended project with a MAFRI representative. Program technical leads have been designated for each BMP category to help with your application. MAFRI staff can answer program questions, determine required project components, explain technical details and help estimate project costs.

Providing a clear, complete application containing all of the following information will speed up the application process. As you fill out your application, consider how your project will address environmental risk on your farm.

Questions to ask as you write your project description include:

- What is the distance to the nearest waterbody? What is the distance from the construction closest to the waterbody to the waterbody?
 - A waterbody is a river, stream, lake, wetland, slough, ditch or any flowing or standing body of water that is capable of draining from one property to another. For example, a dugout that is entirely contained on a property that does not drain off the property is not considered as a waterbody for these purposes. Roadside ditches are considered to be waterbodies.
- Is your project located at least 30 metres from water?
 - We recommend that all construction (except for fences) be 30 metres or more from a waterbody. In some cases, this may not be desirable. If this is not desirable, why not?
- Will any of the development be temporary works? If so, what parts and where will they be located?
 - Construction includes both permanent and temporary developments - development of portable off-stream watering systems
- Does the waterbody have fish in it? Have fish ever been in the waterbody?
- If any water pipelines are to be developed, where are they located? Are they on the surface or buried? If they are buried, how deeply are they buried?
- If the project involves establishing or re-establishing vegetation, what kind of vegetation will be used? Will native vegetation be used? If so, what kinds?

Riparian Area Management

Reference Materials:

The following reference material will provide you with more information on managing riparian areas:

- **Federal Legislation**

Canadian Environmental Assessment Act

Fisheries Act

Navigable Waters Protection Act

- **Agriculture and Agri-Food Canada**

www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1187362338955&lang=eng

- *Quality Farm Dugouts*
- *Shelterbelts for Dugouts*
- *Water Quality Protection*
- *Healthy and Diverse Ecosystems*
- *Species at Risk*
- *Agri-environment Indicators*
- *Land and Water Information*
- *Designing Tree Plantings for Wildlife*
- *Combat Wildlife Damage with Common Sense Control Methods*

Contact your regional office for publications or publications@agr.gc.ca

- **Health Canada**

www.hc-sc.gc.ca/ewh-semt/contact/index-eng.php#_Water_Quality

Publications information – Toll free: 1-866-225-0709

- **Manitoba Conservation**

www.gov.mb.ca/conservation/

The Environment Act

- *Onsite Wastewater Management Systems Regulations 83/03*
- *Livestock Manure and Mortalities Management Regulation 42/98*

- **Manitoba Water Stewardship**

www.gov.mb.ca/waterstewardship/index.html

1-800-282-8069 (toll-free)

The Water Protection Act Nutrient Management Regulation 62/08

Other Information and fact sheets:

- *Riparian Areas and Wetlands*
www.gov.mb.ca/waterstewardship/water_info/riparian/index.html
- *Clean Water Guide*
www.gov.mb.ca/waterstewardship/cleanwater/
- *Manitoba Water Quality Standards, Objectives, and Guidelines*
www.gov.mb.ca/waterstewardship/water_quality/quality/website_notice_mwqsog_2002.html

- **Alberta Cows and Fish**

www.cowsandfish.org

- *Riparian Areas and Management*
www.cowsandfish.org/publications/management.html

- **Manitoba Habitat Heritage Corporation**

www.mhhc.mb.ca

- *Managing the Water's Edge*
www.mhhc.mb.ca/riparian/index.html

- **Ducks Unlimited**

www.ducks.ca

Publications - 1-866-251-3825

- *Conservation Easements*
- *Forage Establishment Programs*
- *Managing Grasslands*
- *Winter Cereals*
- *Native Plants Materials Program*
- *Re-vegetating Your Land with Native Grasses*
- *Rotational Grazing Layout*
- *Rotational Grazing (video for loan)*
- *Planned Grazing (video for loan)*

Improved Crop Residue Management



Background/Objective:

Crop residue is an important component of soil health and burning straw ultimately costs producers money. There are several benefits from leaving standing stubble in the field, including trapping snow, minimizing water and wind erosion, and returning valuable nutrients to the soil. Trapping snow during the winter months has several advantages in enhancing the supply of moisture in the spring for the crop and in improving the survival of winter wheat crops.

Crop residue can be a very effective tool in preventing soil erosion. During heavy rain, exposed soil is much more likely to be eroded away than soil that is protected by crop residue. The straw absorbs the impact of the rain and allows the water to infiltrate the soil rather than simply running off, carrying off valuable topsoil. Wind erosion is also greatly reduced by leaving crop residue on the field. Standing straw helps slow wind speeds at ground level, protecting the topsoil from being blown away and trapping blowing soil.

Leaving straw in the field also returns nutrients that are valuable to crop growth back to the soil. These nutrients include carbon, nitrogen, phosphorus, potassium, sulphur, calcium and magnesium. When straw is burned, about 90 per cent of these nutrients are lost. As a result, the soil requires supplemental amounts of fertilizer to be productive, which costs producers money.

By incorporating straw into the soil, you are also returning organic matter back to it. Organic matter from straw, stubble and chaff binds soil particles, improving soil structure. Well-structured soils drain faster and make better seedbeds. Most importantly, good soil structure improves the ability of the soil to deliver water and nutrients to crops.

At harvest, it is best to chop the straw as finely as possible and spread both the straw and chaff across as wide an area as possible. A chaff spreader can be added on to a combine at reasonable cost. Chopping straw does not influence its rate of breakdown. However, it does facilitate harrowing or cultivation, placing the straw in closer contact with soil which does speed decomposition.

By improving your crop residue management, you can:

- improve soil quality through decreased erosion risk and increased organic matter content
- enhance soil fertility
- improve air quality and reduce greenhouse gas (GHG) emissions by eliminating stubble burning practices

Relevant sections of the *Manitoba Environmental Farm Plan Workbook*:

- Soil Management (B10)
- Commercial Fertilizer Management for Crop Production (Nutrient Management) (B11)
- Field Crop Management (B13)

Related BMP categories:

In addition to this BMP category, you may also want to consider practices funded under the following:

- Precision Agriculture Applications (EFAP)
- Nutrient Management Planning (EFAP)
- Reduced Tillage (MSAPP)
- Spring Fertilizer Application (MSAPP)
- Perennial Cover for Sensitive Land (MSAPP)
- Cover Crops (MSAPP)
- Increased Perennial Legumes in Annual Crop Rotation (MSAPP)

Please note that you must complete a new application form for each BMP category.

Practices eligible for funding:

Eligible Practice	Practice Code	Cost Share	Maximum
Chaff collectors or spreaders installed on combines	0901	50%	\$30,000
Straw choppers – equipment to manage crop residue at harvest time – modifications to existing machinery or straw chopping components of new equipment eligible	0902		
Heavy harrows – purchased for residue management	0903		

Eligible costs and in-kind contributions:

Eligible costs	Materials, supplies and modifications
	Installation costs
Eligible in-kind costs	Labour for modification of specialized equipment (\$15 per hour)
Ineligible costs	Equipment rental and custom work

Notes:

- Equipment does not have to be purchased new. Used equipment is also eligible.
- Heavy harrows must meet program criteria of 26 to 28 inches long by 1/2" to 9/16" diameter. Anything smaller will be considered ineligible.
- Projects located within RMs designated by the Manitoba Crop Residue Burn Program as no burn zones where burning permits are required will receive a higher rating score.

Your Application Form:

Before you submit your application, it is strongly recommended that you discuss your intended project with a MAFRI representative. Program technical leads have been designated for each BMP category to help with your application. MAFRI staff can answer program questions, determine required project components, explain technical details and help estimate project costs.

Providing a clear, complete application containing all of the following information will speed up the application process. As you fill out your application, consider how your project will address environmental risk on your farm.

Questions to ask as you write your project description include:

- What crop residue management practices do you currently use on your farm?
- Do you currently use stubble burning as a crop residue management tool? Will the purchase of this equipment eliminate the need for stubble burning on your farm?
- Do you live near a urban center or major highway?
- Are you located inside the Manitoba Crop Residue Burn Program Priority area? Do you frequently require a permit to burn crop residue on your farm?

Reference Materials:

The following reference material will provide you with more information on managing riparian areas:

- **Manitoba Agriculture, Food and Rural Initiatives**
www.manitob.ca/agriculture
 - *The costs of stubble burning*
www.gov.mb.ca/agriculture/soilwater/soil/fbd09s07.html
 - *Farmer alternatives to burning straw*
www.gov.mb.ca/agriculture/soilwater/soil/fbd09s08.html
 - *Combine chaff spreaders and residue management*
www.gov.mb.ca/agriculture/soilwater/soil/fbd01s06.html
 - Manitoba Crop Residue Burning Program
www.gov.mb.ca/agriculture/soilwater/soil/fbd09s00.html

Precision Agriculture Applications



Background/Objective:

Precision agriculture relies on the existence of in-field variability. The concept implies doing the right thing, in the right place, in the right way, at the right time.

It requires the use of new technologies, such as global positioning systems (GPS), sensors, satellites or aerial images, and information management tools (GIS) to assess and understand variations. Precision agriculture allows flexible application of information and the ability to study and manage variations within fields, considering landscape variability (ex: steep slopes) and environmental sensitive areas (ex: surface water bodies).

Precision agriculture has changed the conventional way of managing a large field. Rather than treating the field as a uniform element, it is divided into separately managed zones. The zones are based on nutrient concentration, soil type, landscape and environmental sensitivity. Larger fields generally need variable crop information for effective crop yield. The traditional practice of uniform application of crop information may lead towards run-off and leaching of nutrients, chemicals, and sediments. These are the major contributing factors influencing the degradation of surface water quality. Excess nitrogen from over-application can cause emission of greenhouse gases (GHG), such as nitrous oxide (N_2O). Besides being an environmental concern, leaching and run-off of nutrients also results in low fertilizer use efficiency as the application rate may be more or less than the crop requirement.

Site-specific farming is one practice that helps reduce environmental risk considering the spatial variability in a field. Precision agricultural technologies can reduce the residual nitrogen level in soil and potentially reduce GHG emissions. Variable rate application is an example of site-specific farming, using technical information and special equipment to optimize profit.

Variable rate application will allow a producer to:

- automatically deliver target rates to meet crop requirements
- reduce the risk of over-application and overlap
- improve efficiency of fertilizer application
- identify environmentally sensitive areas
- reduce the potential for non-point source pollution

Relevant sections of the *Environmental Farm Plan Workbook*:

- Soil Management (B10)
- Commercial Fertilizer Management for Crop Production (Nutrient Management) (B11)
- Field Crop Management (B13)

Related BMP categories:

In addition to this BMP category, you may also want to consider practices funded under the following:

- Nutrient Management Planning (EFAP)
- Spring Fertilizer Application (MSAPP)

Please note that you must complete a new application form for each BMP category.

Precision Agriculture Applications

Practices eligible for funding:

Eligible Practice	Practice Code	Cost Share	Maximum
Precision farming applications for a complete variable rate fertility system, includes: GPS to collect information, software, GPS guidance system and manual or variable rate controllers for variable rate fertilizer application	1001	50%	\$30,000

Eligible costs and in-kind contributions:

Eligible costs	Materials, supplies and modifications
	Installation costs
Eligible in-kind costs	Labour for modification of specialized equipment (\$15 per hour)
Ineligible costs	Seeding implement frames, air carts or tanks, fertilizer delivery systems (hoses), variable rate fertility components for sprayers, ammonia fall application equipment (will allow spring application with seeding operation) and deep tiller components (i.e. ammonia or liquid for fall application).
	Equipment rental and custom work

Notes:

- Funding under this BMP is intended for complete conversion to a variable fertility rate system at time of seeding.
- Assistance for GPS service subscriptions is available for one year only.
- Equipment does not have to be purchased new. Used equipment is also eligible.
- One unit only per application, no multiples (i.e. one GPS unit, one autosteer, etc.)

Your Application Form:

Before you submit your application, it is strongly recommended that you discuss your intended project with a MAFRI representative. Program technical leads have also been designated for each BMP category to help with your application. MAFRI staff can answer program questions, determine required project components, explain technical details and help estimate project costs.

Providing a clear, complete application containing all of the following information will speed up the application process. As you fill out your application, consider how your project will address environmental risk on your farm.

Questions to ask as you write your project description include:

- With what type of implement do you plan to use this technology (ex: seeder, combine, swather, deep tiller, etc.)?
- Is this your first precision agriculture purchase, or is it an upgrade of existing technology?
- What other components have you purchased, or do you plan on purchasing to use with this system, if any?
- What is your current fertility system on your farm?
- How will the project benefit the environment and your farming operation compared to your current fertility practice?

Reference Materials:

The following reference materials will provide you with more information on precision agriculture applications:

- **Alberta Agriculture, Food and Rural Development**
www.agric.gov.ab.ca/app21/
 - Ag Engineering page
www.agric.gov.ab.ca/app21/infopage?cat1=Ag%20Engineering
 - *About precision farming*
[www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/sag1950?opendocument](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/sag1950?opendocument)

- **National/International Resources**
North Dakota State University Extension Service
 - *GPS applications in crop production*
www.ag.ndsu.edu/pubs/ageng/gis/ae1264w.htm
 - *Site specific farming and soil sampling in Western North Dakota*
www.ag.ndsu.edu/pubs/ageng/gis/ae1291w.htm

- **Other**
Top Crop Manager
www.topcropmanager.com

Precision Ag Buyer's Guide
www.precisionag.com

Nutrient Management Planning



Background/Objective:

Conducting annual nutrient management planning enables producers to optimize the use of all nutrient sources for annual and perennial crop production. This maximizes profitability while minimizing environmental risk.

By implementing a nutrient management plan, you can:

- accurately target and deliver nutrient applications
- improve production efficiency
- improve air, water and soil quality
- minimize nuisance odour

A nutrient management plan should be developed by a qualified person and must:

1. Identify and locate all fields and any relevant facilities (ex: feedlots, wintering sites, manure storage structures, barns, dry lots, etc.) on visual aids such as maps or aerial photos
2. Identify environmentally sensitive areas on or adjacent to land being managed
3. Specify past and projected crop rotations
4. Estimate yields of annual crops, hay and pasture forages
5. Incorporate results of soil, plant and manure analyses
6. Account for nutrient contributions from all sources available to the farm (commercial fertilizer, manure, soil, past crops)
7. Develop a nutrient budget for each field, land parcel or management unit
8. Provide recommendations for nutrient form, rate, timing and method of application (the 4R Nutrient Stewardship* concept promoted by the International Plant Nutrient Institute and the Canadian Fertilizer Institute); suggest alternative approaches to current management system
9. Allow an opportunity to review and modify plan as needed
10. Suggest best options for maintaining records

A complete nutrient management plan contains all of the information needed to fulfill any regulatory requirements that may apply to a given operation.

Relevant sections of the *Manitoba Environmental Farm Plan Workbook*:

- Soil Management (B10)
- Commercial Fertilizer Management for Crop Production (Nutrient Management)
- Manure Management (B18)

Related BMP categories:

In addition to this BMP category, you may also want to consider practices funded under the following:

- Improved Crop Residue Management (EFAP)
- Precision Agriculture Applications (EFAP)
- Reduced Tillage (MSAPP)
- Spring Fertilizer Application (MSAPP)
- Grazing and Pasture Management Planning (MSAPP)

Please note that you must complete a new application form for each BMP category.

* 4R Nutrient Stewardship – The 4R nutrient stewardship concept defines the right source, rate, time and place for plant nutrient application as producing the economic, social and environmental results to the soil-plant ecosystem desired by all stakeholders.

Practices eligible for funding:

Eligible Practice	Practice Code	Cost Share	Maximum
Consulting fees to develop nutrient management plan and produce a report	1101	50%	\$15,000
Planning and decision support tools (ex: computer software and aerial photos)			

Eligible costs and in-kind contributions:

Eligible costs	Consulting fees
	Computer software, maps, aerial photos
	Training
Ineligible costs	Computer hardware

Notes:

- Plans must be completed by a consultant or accredited individual or agency. When filling out your application, please provide information on your consultant and the services to be completed.
- A copy of your nutrient management plan will be required to receive payment. Your plan will remain confidential.
- Applicants are only eligible for a one-time payment per field under this BMP.

Your Application Form:

Before you submit your application, it is strongly recommended that you discuss your intended project with a MAFRI representative. Program technical leads have been designated for each BMP category to help with your application. Resource staff can answer program questions, determine required project components, technical standards, considerations and ways to estimate project costs.

Reference Materials:

The following reference material will provide details about nutrient management planning:

- **Manitoba Agriculture, Food and Rural Initiatives**
www.gov.mb.ca/agriculture/soilwater/index.html
 - o Soil Fertility Guide
 - o Soil Management Guide
 - o Tri-Provincial Manure Application and U
 - o Nitrogen Rate Calculator for Wheat, Barley and Canola

For more information, contact:

Manitoba Agriculture, Food and Rural Initiatives

Mail: Box 189

Somerset, Manitoba R0G 2L0

Phone: 1-866-626-4862 to locate your nearest GO Office

Fax: 204-744-4060

E-mail: agrienv@gov.mb.ca

Website: www.manitoba.ca/agriculture

