

BMP: Resource Management Planning (101)

This BMP supports comprehensive planning of the management of a farm's resources to mitigate risks to air, land and water.

Input from a knowledgeable professional helps a farmer to face complex, multi-variable production limitations that also pose environmental risks. Supported with the right expertise and data, farmers are encouraged to integrate, rather than compartmentalize, the opportunities and challenges in their operations. Benefits can accrue for both farmers and society as a whole.

For instance, in optimizing nutrient management, the focus should not be entirely on fertilizer use if there are overriding production limitations associated with soil quality and excess water. Before a producer can be expected to adopt a more expensive, advanced level of management, alternatives must be presented and critically assessed during a thorough planning phase.

For example, controlled or conservation drainage offers potential for climate change adaptation. However, the practice involves higher capital investment and more intensive management. As retro-fitting a sub-surface drainage network is not practical, including control structures as a design consideration is critical for its potential adoption.

Cost share ratio and funding caps

There is a cost share ratio of 50:50 and a funding cap of \$15,000 for this beneficial management practice.

Eligible costs

- consultant fees
- sample collection
- data analysis and interpretation
- preparation of written plans including descriptions and analysis, test reports, input prescriptions, step-by-step instructions, calculations, contour maps, soil polygon delineations and other elements
- designs that can include engineering schematics and calculations

Ineligible costs

- consultant fees paid to the applicant's own consulting company (e.g., an individual who owns a farm and a consulting company)
- personal labour and personal equipment use

Project components

- Conceptually, this category enables intelligence gathering to support sound thinking. Therefore, any information process or product is eligible, provided it is directly relevant to the applicant's operation (e.g., resources, production systems and environmental risks).
- Applicants will be offered the following menu of plans to pursue, sorted by resource component.

| AIR | LAND | WATER |
|--|--|--|
| <p>4R Nutrient Stewardship plan</p> <ul style="list-style-type: none"> targeting nitrogen (nitrous oxide emissions) elements based on the 4Rs: Right Source, Rate, Time and Place <ul style="list-style-type: none"> e.g., Right Source - Enhanced Efficiency Fertilizers e.g., Right Rate - N sufficiency assessment and variable rate prescriptions e.g., Right Time - split applications e.g., Right Place - delineation of soil management units <p>Carbon management plan</p> <ul style="list-style-type: none"> fuel efficiency strategy carbon sequestration strategy <p>Grazing management plan</p> <ul style="list-style-type: none"> planned grazing to increase pasture productivity and forage quality, targeting increased animal performance, reduced methane emissions and sequestered carbon <p>Ammonia reduction strategy</p> <ul style="list-style-type: none"> feed formulation to optimize protein supply and reduce excreted N | <p>Productivity and land use assessment</p> <ul style="list-style-type: none"> delineation of parcels of varying productivity (Ag Capability ratings) identification of parcels to be set aside from intensive production due to inherent limitations (i.e. areas of poor reliability due to excess moisture, salinity or other) <p>Landscape restoration plan</p> <ul style="list-style-type: none"> remediation of tillage erosion on sloping landscapes potential links to surface drainage <p>Alternative cropping plan for strategic landscape locations</p> <ul style="list-style-type: none"> perennial crops to address soil quality and carbon cover crops to address water problems | <p>Excess water assessment and surface drainage design</p> <ul style="list-style-type: none"> delineation of water accumulation and movement on a farm erosion control measures alternative surface inlets <p>Excess water assessment and sub-surface drainage design</p> <ul style="list-style-type: none"> controlled drainage sub-irrigation bioreactors detailed soil and hydrogeological site investigations <p>Water retention design</p> <ul style="list-style-type: none"> Capture of excess water drained by surface or sub-surface flow <p>Drainage water utilization design</p> <ul style="list-style-type: none"> Addition of irrigation to a water capture project <p>4R Nutrient Stewardship plan</p> <ul style="list-style-type: none"> targeting phosphorus (transfer to surface water) |

BMP specific questions

You will be asked to answer the following questions as part of your application:

1. What environmental risks have you identified on your farm? Are there links between those risks?
2. What practice changes are you considering? Are those changes linked in any ways?
3. What plans will you develop to potentially undertake those changes?
4. How would planning efforts benefit from professional input?

AIR

4R Nutrient Stewardship plan

1. Estimate the number of acres to be assessed (total and broken down by each of the 4Rs, avoiding multi-counting).
2. According to each of the 4Rs, describe current fertilization practices used on your farm and how the plan will examine potential improvements.
3. What strategies will be investigated to reduce nitrous oxide emissions or increase N-use efficiency?

Carbon management plan

1. Describe, or if possible, estimate current fuel consumption (e.g., gallons/acre, litres of propane).
2. Explain the calculations that you will make in assessing fuel use and potential for improved efficiency.
3. What strategies will be investigated to improve fuel efficiency or reduce emissions from fuel use?
4. What strategies will be investigated to build soil carbon?
5. How many acres will be assessed?

Grazing management plan

1. How many acres will be assessed?
2. Describe the land to be assessed.
3. Explain how the plan will examine changes to grazing management that may generate environmental improvements and other benefits.

Ammonia reduction strategy

1. What sources of feed will you consider for enhancing formulations on your farm?
2. What proportion of your herd will be considered for alternative feed formulations?

LAND

Productivity and land use assessment

1. Briefly describe the methods of parcel or zone delineation that will be used.
2. Estimate the number of parcels or zones (high, medium and low productivity) that will be delineated.
3. Describe the climate-landscape-soil regime in which your farm operates.

Landscape restoration plan

1. Provide a conceptual description and evidence of the damage to your land caused by erosion. Include type (tillage, wind and water), locations (landscape position and fields), extent (number of acres) and severity (estimated soil loss or qualitative description).
2. Identify the strategies that will be investigated to remediate eroded areas.

Alternative cropping plan for strategic landscape locations

1. Describe your current crop rotation(s) and what new one(s) will be examined.
2. How many acres will be assessed for an alternative cropping plan?
3. How many, and which years in the rotation, will be under consideration for cover crops or other alternative cropping scenarios?

WATER

Excess water assessment and surface drainage design

1. Estimate the numbers of acres to be assessed, including areas already drained and new areas that could be drained.
2. Estimate the number of in-field and edge-of-field drains to be assessed.
3. What is the current surface drainage system? What changes will be examined and what are the potential environmental and other benefits?

Excess water assessment and sub-surface drainage design

1. Estimate the numbers of acres to be assessed, including areas already drained and new areas that could be drained.
2. Describe the fields that will be assessed in terms of soils, landscape and moisture conditions.
3. What particular practices will be assessed for potential adoption with environmental and other benefits?

Water retention design

1. Estimate the target volume of drainage water to be retained and the capacity of a retention structure.
2. Conceptually, describe the design of the retention structure and how water will be directed into it.

Drainage water utilization design

1. Estimate the target volume of drainage water to be recycled via an irrigation.
2. Estimate the number of acres to be irrigated with drainage water.
3. Describe the irrigation system, including the connection to stored drainage water.
4. Describe the crop rotation that will benefit from the recycling of the water.

4R Nutrient Stewardship plan

1. Estimate the numbers of acres to be assessed (total and breakdown by each of the 4Rs, avoiding multi-counting).
2. According to each of the 4Rs, (most importantly Time and Place) describe current fertilization practices used on your farm and how the plan will examine possible improvements.
3. What strategies will be investigated to reduce phosphorus losses or increase P-use efficiency?

Reference materials

For more guidance in developing your application, visit:

- **4R Nutrient Stewardship**
- Manitoba Agriculture
 - **Nutrient Management**
 - **Soil and Water Management**
- **The Agricultural BMP Handbook for Minnesota**
- **www.transformingdrainage.org**

Additional information

- Draw from the plan menu as appropriate. If multiple plans are proposed, describe how they are interrelated.
- Data collected and the contents of plans will vary by climate-soil-landscape setting, production limitation, environmental risk and corresponding corrective practice.
- The strength of an application and, if approved, completed plans will be assessed based on an applicant's ability to clearly link multiple site and operation-specific risks leading to an appropriately multi-variate, comprehensive resource management plan.
- Links between risks, practices and resources must be established genuinely with a sound basis, not forced or presented with generic language.
- Outline the level and type of expertise needed for each plan to be developed.