

# Environmental Farm Planning Leading to On-farm Action in Manitoba

## RRBC - BMPs & Land Management to Minimize Run-off Session

January 23, 2008 – Fargo, North Dakota



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Canada 

Manitoba 

# Environment Farm Planning (EFPs)

- One of the initiatives under the Agricultural Policy Framework
- Manitoba producers have actively participated in EFP workshops over past 3 years
- **EFP initiative is a partnership between:**
  - Farm Stewardship Association of Manitoba (FSAM)
  - Manitoba Agriculture, Food & Rural Initiatives
  - Agriculture & Agri-Food Canada

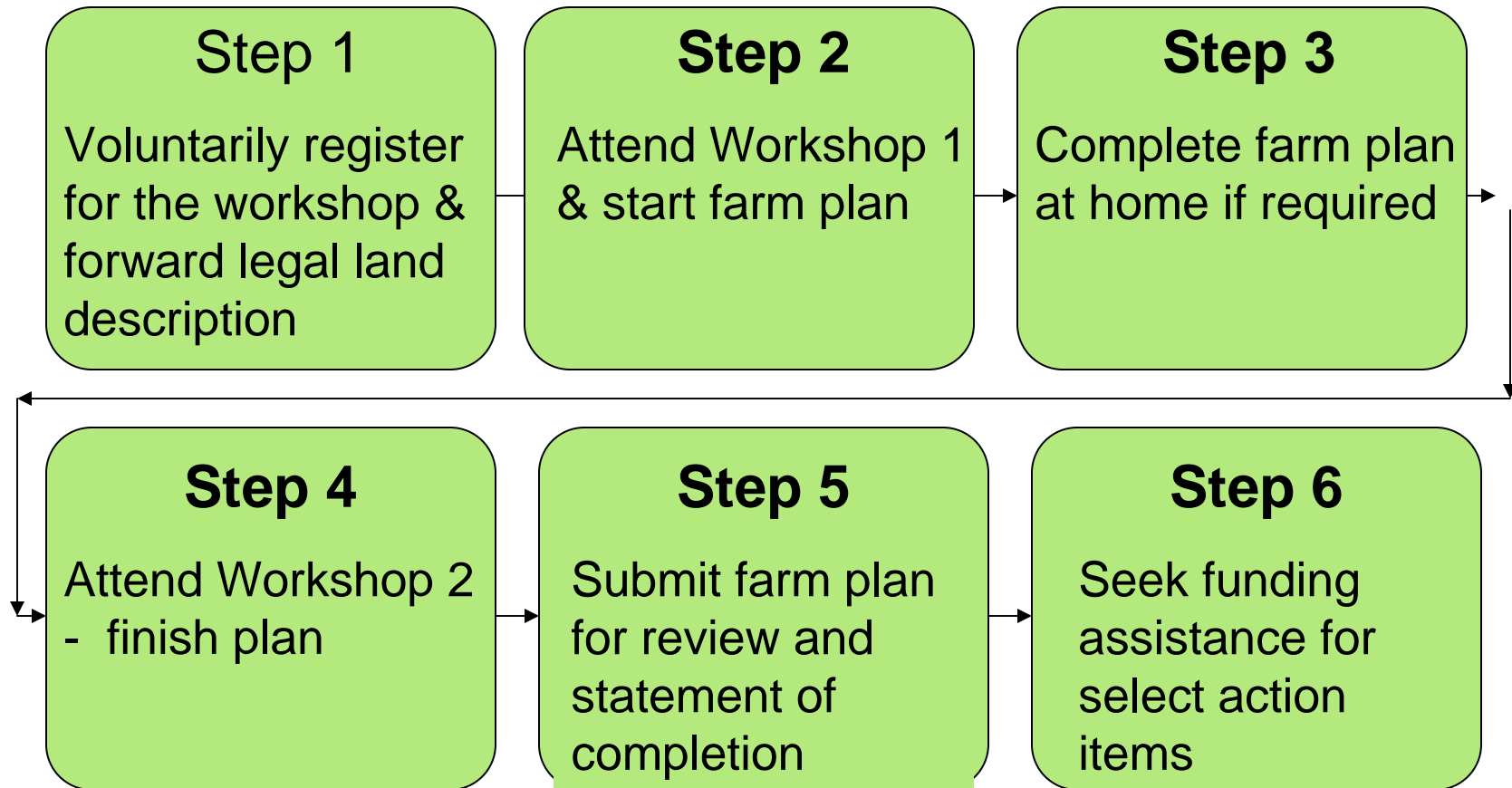


# Environment Farm Planning

- Voluntary process to assess on-farm environmental risks and benefits
- **Objectives:**
  - Increase environmental awareness
  - Assess risks and benefits
  - Develop Action Plan
  - Mitigate Environmental Risk
  - Enhance Environment Performance
- EFP workbook used as tool to carry out planning process



# The EFP Delivery Process



# EFP Progress to Date (Manitoba)

- 800 workshops have been held to date (half are workshop #1 and half are workshop #2)
- Over 6,000 producers have participated
- 5,099 workbooks have been reviewed and Statements of Completion issued (represents 85% of participants)
- Over 8.2 million acres have been assessed



# Canada-Manitoba Farm Stewardship Program (CMFSP)

- Follow-up program to EFP process (voluntary)
- overall objective of program is to accelerate the adoption of beneficial management practices (BMPs)
- A **beneficial management practice** (BMP) is any agricultural management practice that mitigates or minimizes negative impacts and risk to the environment by maintaining or improving water, land and air quality and biodiversity
- cost-shared incentives are available to producers for the implementation of BMPs to address on-farm environmental risks
- 30 different BMP categories avail. to Manitoba producers



# CMFSP Progress to date

- Total program budget is \$33.9 M CAN (federal dollars)
- 8,604 projects approved
- Over 4,000 projects completed with \$18.5 M CAN paid to producers to date
- Top 5 categories (based on # of applications approved):
  - 1. Improved Cropping Systems (3113 applications approved)
  - 2. Product and Waste Management (1478 applications approved)
  - 3. Wintering Site Management (1105 applications approved)
  - 4. Improved Pest Management (589 applications approved)
  - 5. Nutrient Management Planning (493 applications approved)





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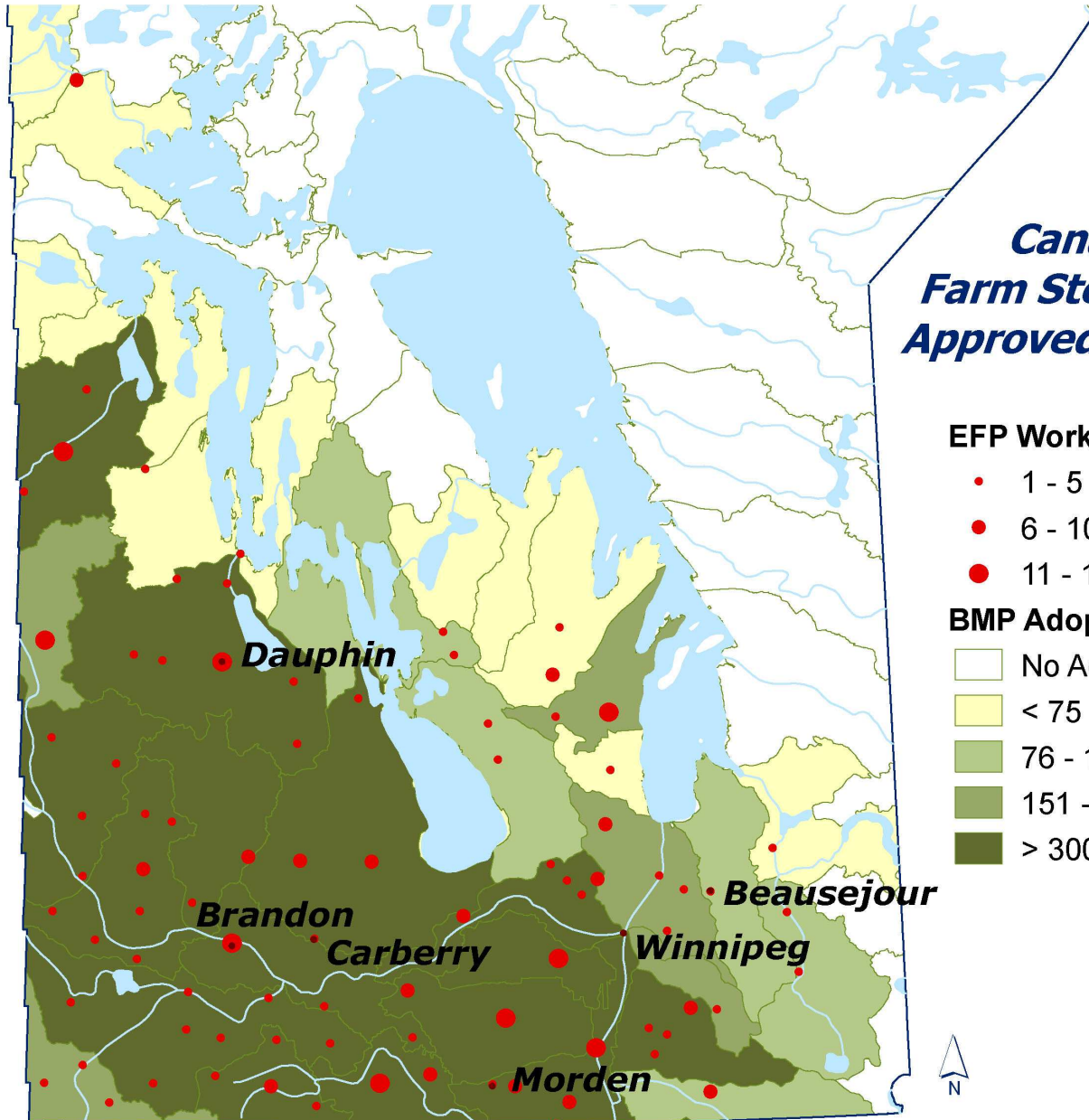
## Canada - Manitoba Farm Stewardship Program Approved & Completed BMPs

### EFP Workshops

- 1 - 5
- 6 - 10
- 11 - 19

### BMP Adoption by Watershed

- No Adoption
- < 75
- 76 - 150
- 151 - 300
- > 300



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Manitoba 

# Activities in the Red River Basin

- 7,500 acres of environmentally sensitive land converted from annual cropping to perennial cover (Greencover)
- BMPs:
  - Low to moderate uptake of erosion control BMPs
  - Moderate to high uptake of livestock management BMPs (mainly cattle)
  - Low to moderate uptake of manure management (dairy and hogs) and nutrient management planning BMPs
  - Significant uptake of Improved Cropping Systems BMPs (GPS, variable rate tech., equipment modification)

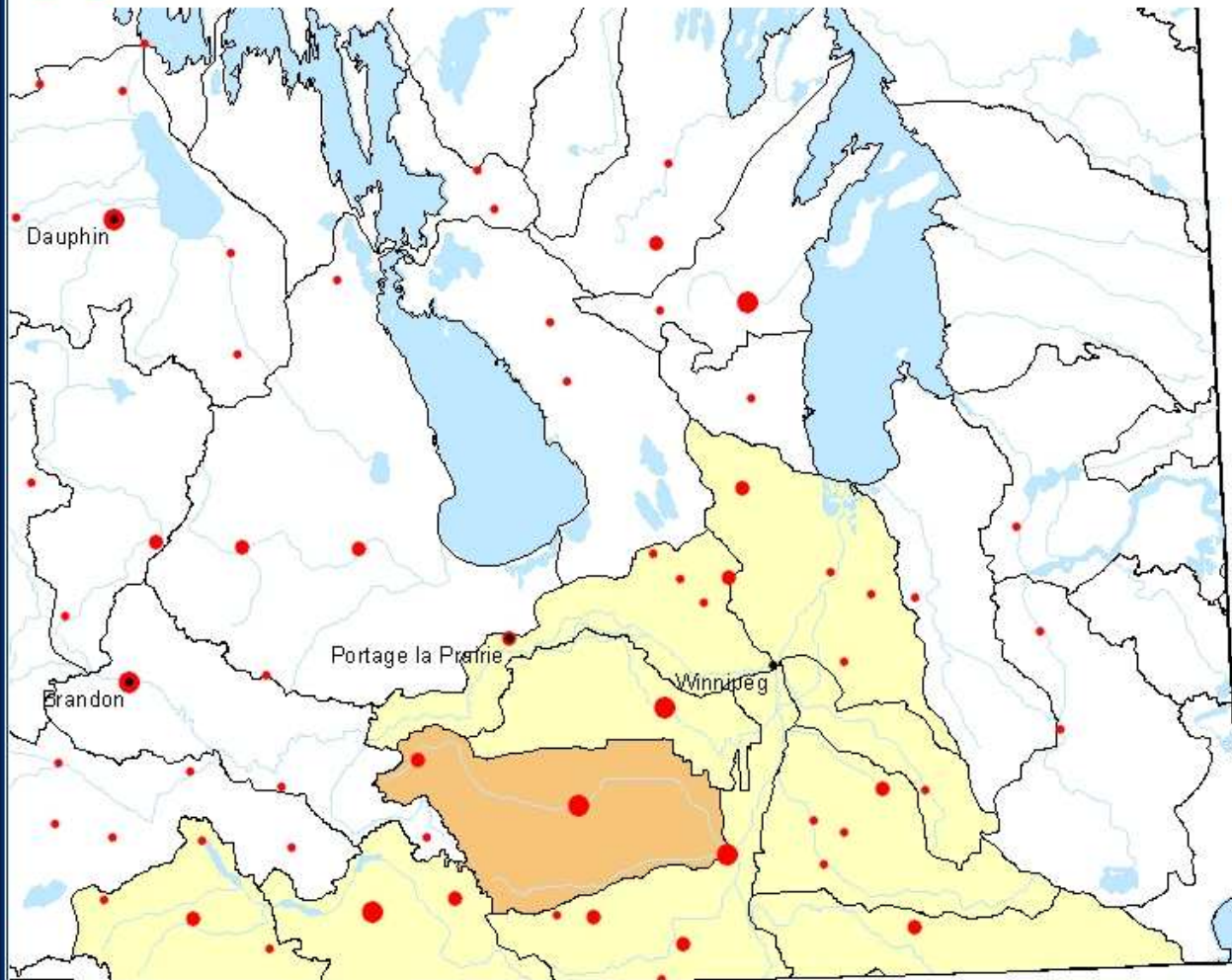




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**Canada - Manitoba Farm Stewardship Program (CMFSP) Approved & Completed Erosion Control BMPs in Watersheds of the Red River Basin**

**Number of EFP Workshops**

- 1 - 5
- 6 - 10
- 11 - 19

**Erosion Control BMP Adoption**

- < 30
- 30 - 60
- 61 - 90
- 91 - 120
- > 120

The following BMP Category from CMFSP is represented  
 11 - Erosion Control Structures (Riparian)  
 12 - Erosion Control Structures (Non-Riparian)  
 13 - Land Management for Soils at Risk  
 19 - Shelterbelt Establishment

North Dakota

Minnesota

Data compiled as of December 31, 2007 by PFRA.

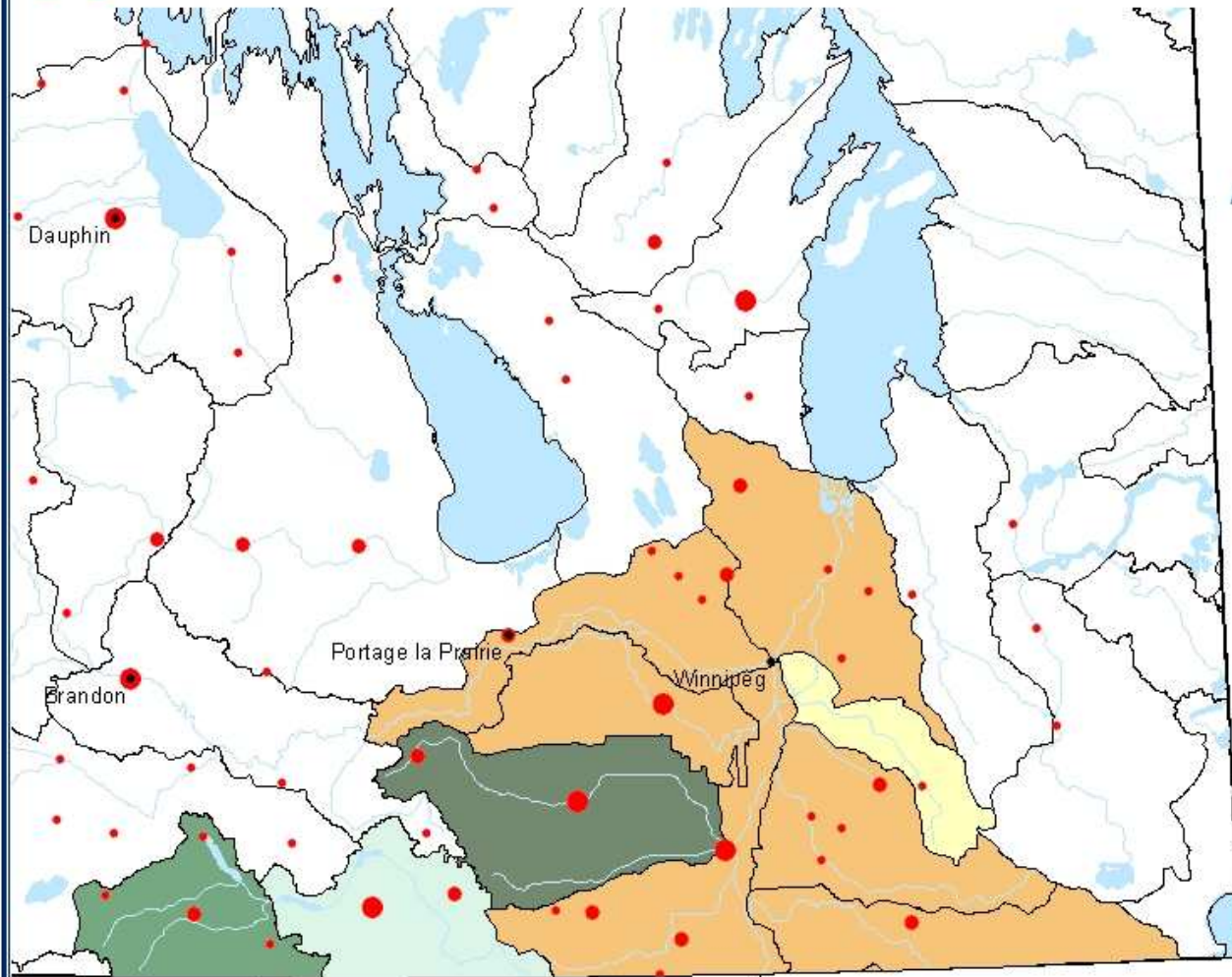




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**Canada - Manitoba Farm Stewardship Program (CMFSP) Approved & Completed Livestock BMPs in Watersheds of the Red River Basin**

**Number of EFP Workshops**

- 1 - 5
- 6 - 10
- 11 - 19

**Livestock BMP Adoption**

- < 30
- 30 - 60
- 61 - 90
- 91 - 120
- > 120

The following BMP Category from CMFSP is represented  
 05 - Farmyard Runoff Control  
 06 - Relocation of Livestock Confinement Facilities  
 07 - Wintering Site Management  
 10 - Riparian Area Management

North Dakota

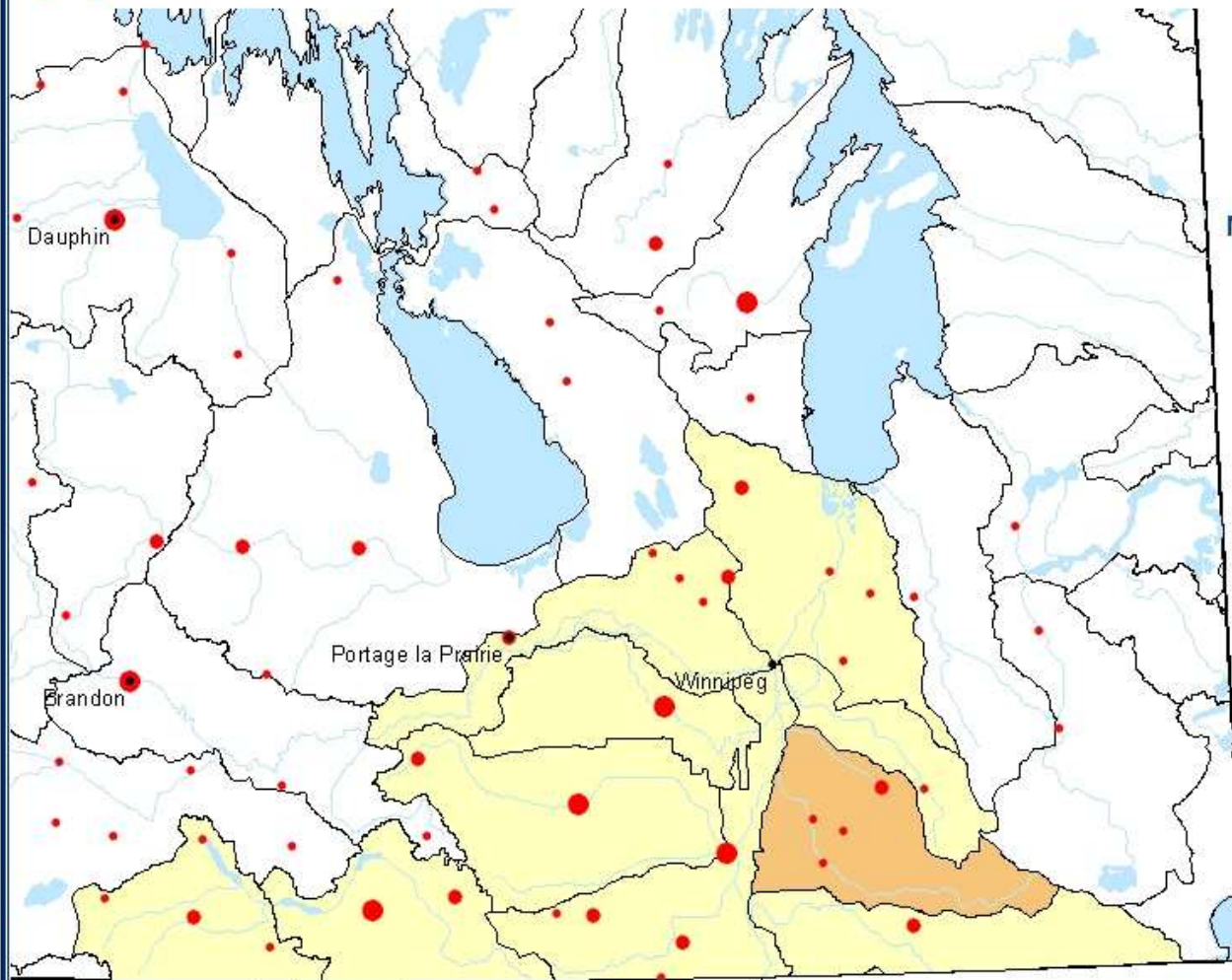
Minnesota

Data compiled as of December 31, 2007 by PFRA.





### Canada - Manitoba Farm Stewardship Program (CMFSP) Approved & Completed Manure Management BMPs in Watersheds of the Red River Basin



#### Number of EFP Workshops

- 1 - 5
- 6 - 10
- 11 - 19

#### Manure BMP Adoption

- < 30
- 30 - 60
- 61 - 90
- 91 - 120
- > 120

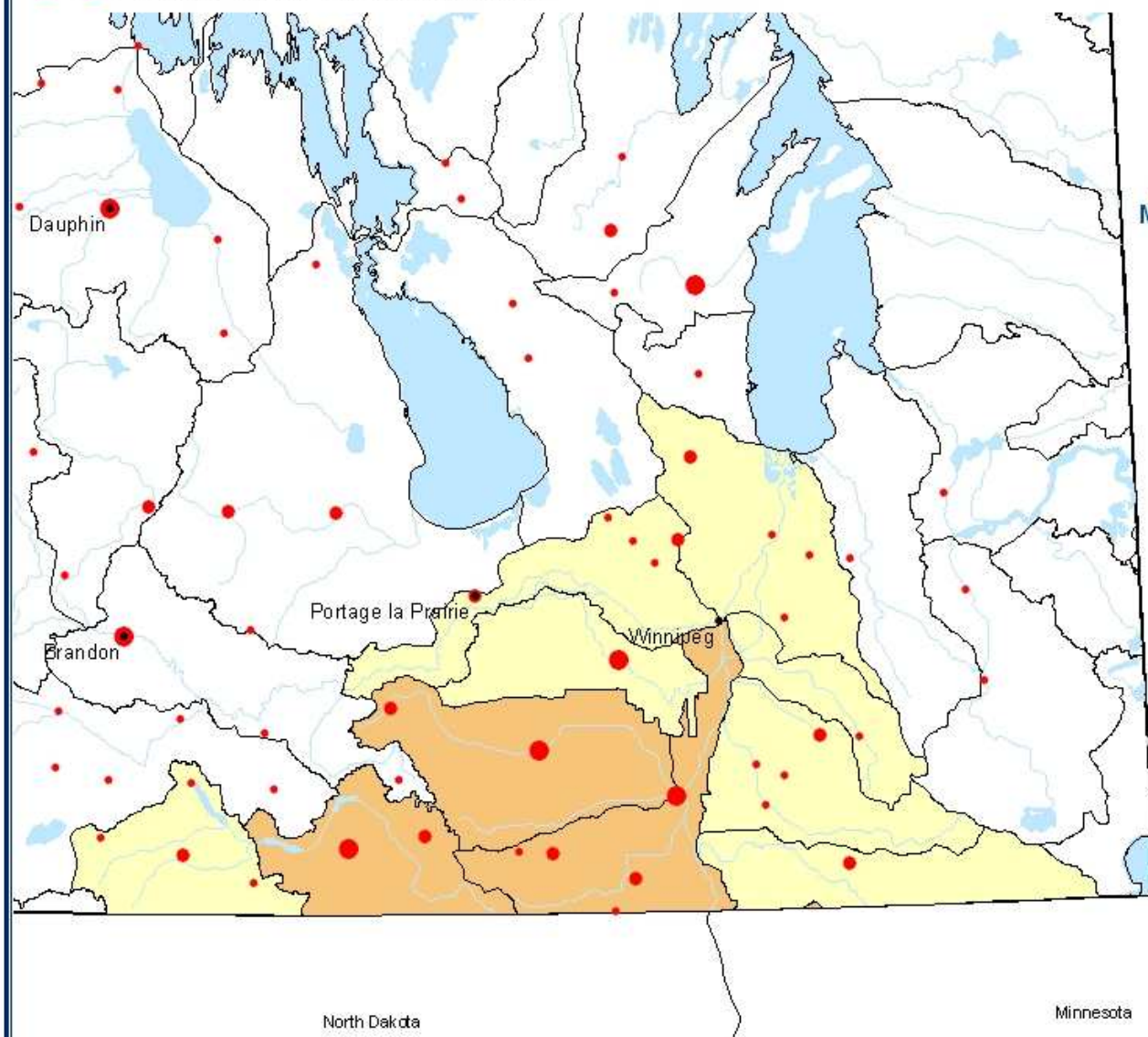
The following BMP Category from CMFSP is represented

- 01 - Improved Manure Storage and Handling
- 02 - Manure Treatment
- 03 - Manure Land Application

Data compiled as of December 31, 2007 by PFRA.



### Canada - Manitoba Farm Stewardship Program (CMFSP) Approved & Completed Nutrient Management BMPs in Watersheds of the Red River Basin



- Number of EFP Workshops**
- 1 - 5
  - 6 - 10
  - 11 - 19

- Nutrient Management BMP Adoption**
- < 30
  - 30 - 60
  - 61 - 90
  - 91 - 120
  - > 120

The following BMP Category from CMFSP is represented  
24 - Nutrient Management Planning

Data compiled as of December 31, 2007 by PFRA.





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### Canada - Manitoba Farm Stewardship Program (CMFSP) Approved & Completed Improved Cropping Systems BMPs in Watersheds of the Red River Basin

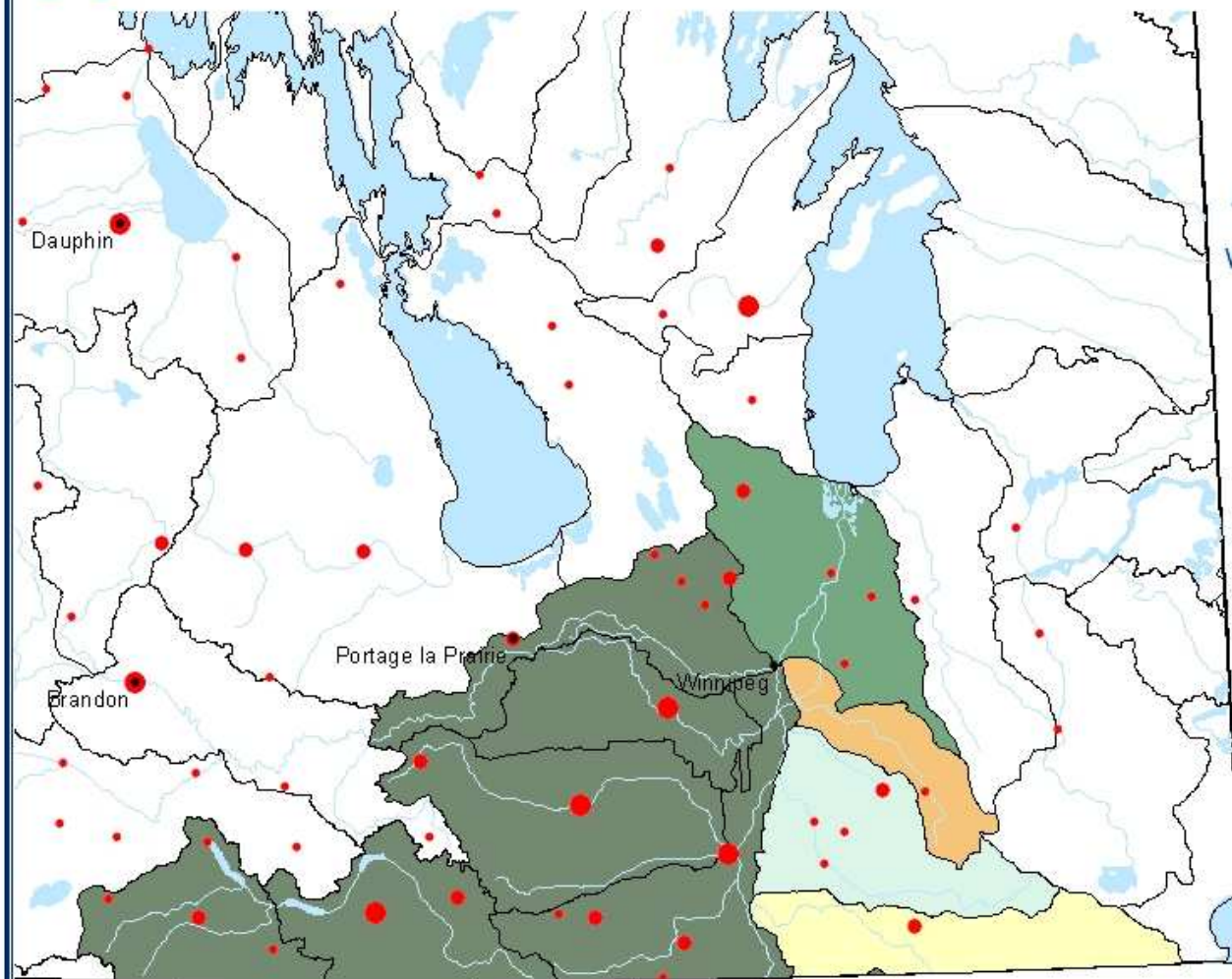
#### Number of EFP Workshops

- 1 - 5
- 6 - 10
- 11 - 19

#### Improved Cropping BMP Adoption

- < 30
- 30 - 60
- 61 - 90
- 91 - 120
- > 120

The following BMP Category from CMFSP is represented  
14 - Improved Cropping Systems



North Dakota

Minnesota

Data compiled as of December 31, 2007 by PFRA.

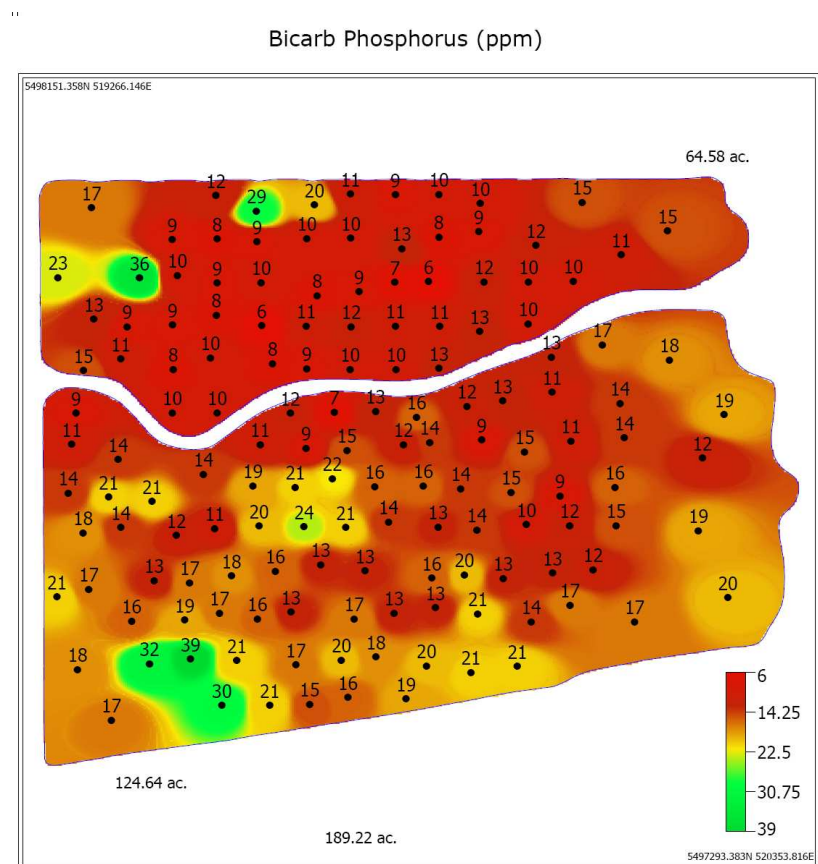
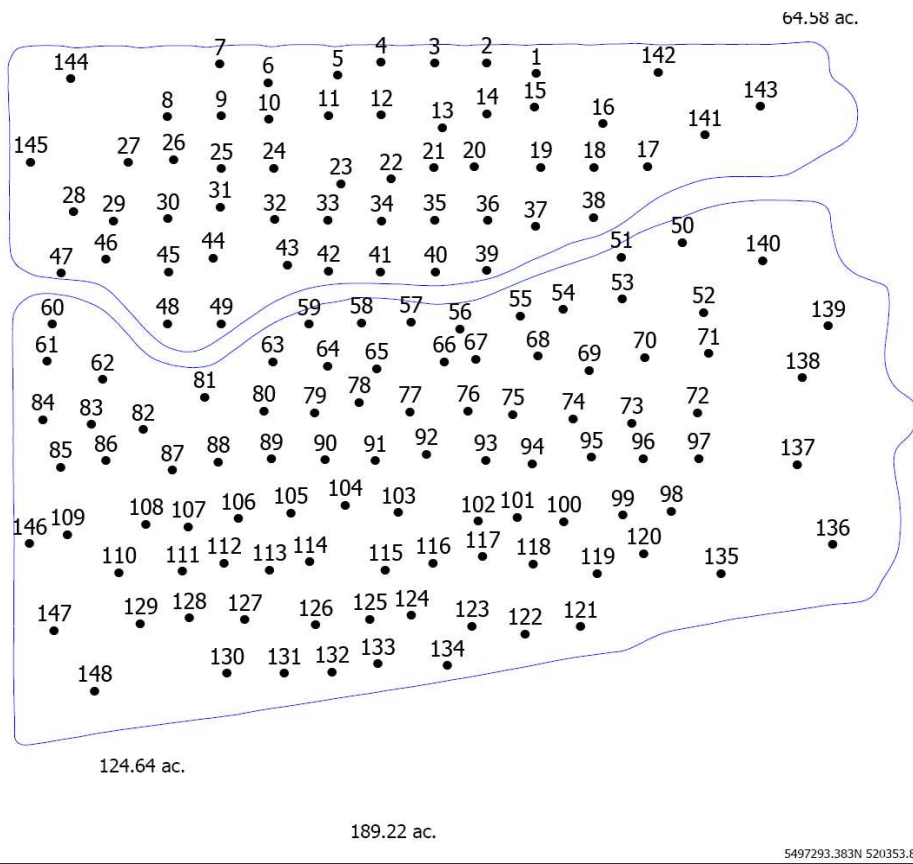


# Environmental Considerations

- Limited monitoring of environmental effectiveness on the landscape
- Studies on effectiveness at the watershed (WEBs) level
- Anecdotal information – nutrient management planning, improved cropping systems
- More science and technical information required on environmental effectiveness of specific BMPs



# Nutrient Management Planning

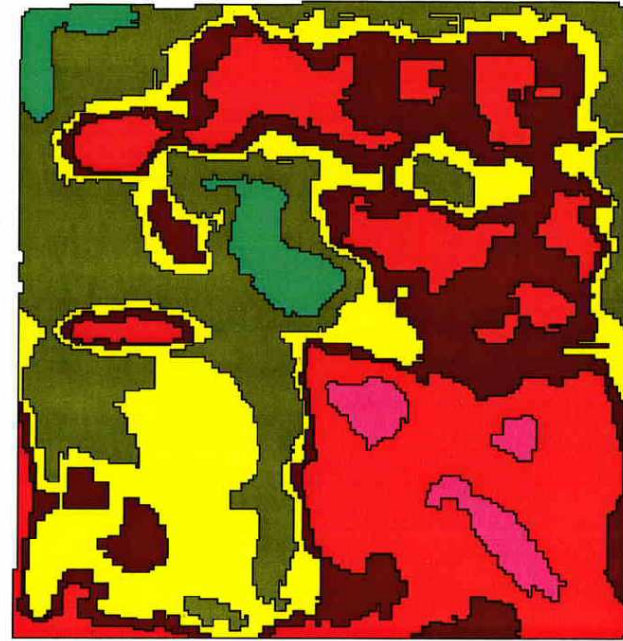


**Example: intensive grid sampling for potatoes**



# Nutrient Management Planning

## Variable Rate – Zone Map



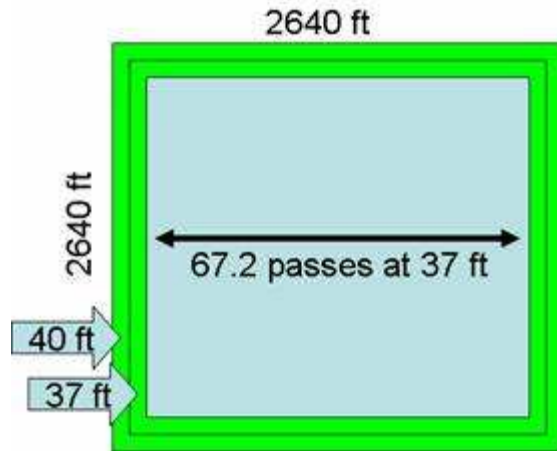
ZONES

9..	0.00 acres
8..	0.00 acres
7..	0.00 acres
6..	6.13 acres
5..	38.35 acres
4..	33.49 acres
3..	36.71 acres
2..	45.54 acres
1..	4.54 acres
0..	0.00 acres



# Improved Cropping Systems - GPS

Figure 1



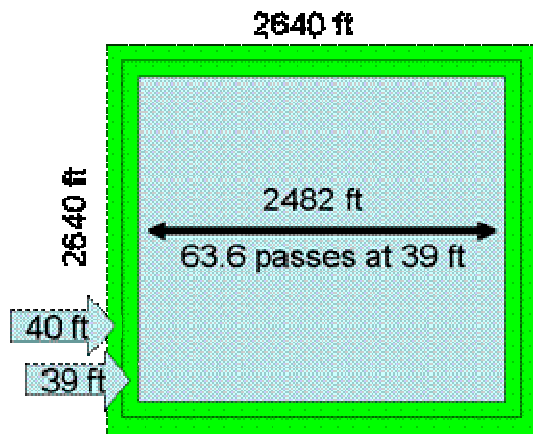
A canola grower is applying seed and fertilizer in one pass using a 40-foot air seeder with an average overlap of 3 feet (without GPS). Figure 1 shows how many passes are required to finish an entire square quarter section. This example assumes two rounds for headlands and rounds up the number of passes to the nearest complete pass. After the first outside round, each pass is gaining 37 feet towards completion of the field but is actually working 40 feet.

Outside round	= 40 x 4 passes x 2640 ft = 422 400 ft <sup>2</sup>
Second round	= 40 x 4 passes x 2560 ft = 409 600 ft <sup>2</sup>
Remaining passes	= 40 ft x 68 passes x 2486 ft = 6 761 920 ft <sup>2</sup>
<b>Total area worked</b>	<b>= 7 593 920 ft<sup>2</sup> , 43 560 ft<sup>2</sup>/ac = 174.3 acres</b>



# Improved Cropping Systems - GPS

Figure 2



If GPS technology can reduce that overlap to an average of just 1 foot per pass, the grower works 9.3 fewer acres, or about 5.3% less (Figure 2). The potential savings in seed and fertilizer costs alone are considerable. Using 2007 cost of production estimates for canola of \$66.33/acre for seed and fertilizer from Manitoba Agriculture, Food and Rural Initiatives (MAFRI), it works out to just under \$617 on this hypothetical quarter section.

Outside round	= 40 x 4 passes x 2640 ft = 422 400 ft <sup>2</sup>
Second round	= 40 x 4 passes x 2560 ft = 409 600 ft <sup>2</sup>
Remaining passes	= 40 ft x 64 passes x 2482 ft = 6 353 920 ft <sup>2</sup>
<b>Total area worked</b>	<b>= 7 185 920 ft<sup>2</sup> , 43 560 ft<sup>2</sup>/ac = 165.0 acres</b>



## Improved Cropping Systems - GPS

- **\$617 savings per quarter on fertilizer only by reducing overlap by only one foot..and one pass only?**
- **Add on time, fuel savings and two passes per year per section and the savings come close to \$3-4,000 per section**
- **Add yield loss from crop stress on double application in the overlap and the reduced environmental risk to water quality**

