"The first step toward getting somewhere is to decide that you are not going to stay where you are"

Unknown

"The only man who never makes a mistake is the man who never does anything."

Theodore Roosevelt

Nutrient Management Tools!

Trevor Wallace

Len Kryzanowski, Geoff Montgomery, Laura Thygesen

Manure Management Update

Lethbridge, Jan 16, 2017

ENVIRONMENTAL STEWARDSHIP DIVISION

Alberta Government

Objectives:

- To outline what the various tools can do for you
- To provide an update / introduction to each tool
- Briefly describe what each tool can do.

Alberta Government

So What can these ‘tools’ do for my operation / me??

What do they do for me?

- Risk assessment
- Planning & Communication
  - Manure & fertilizer to be applied
  - Crops to be grown

Alberta Manure Applicator Report

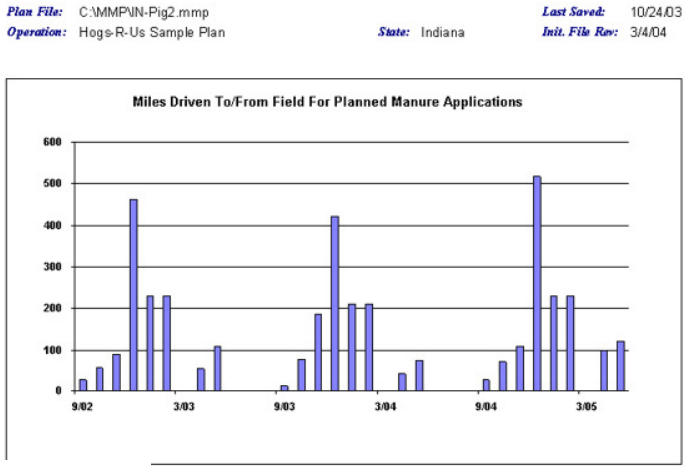
Operation: Alberta Beef Example 1, Metric
Address: 123 Rural Route
Anytown, AB T6H 5T6
Phone: 555-555-5555

Plan File: C:\MMP\TstPlans\Alberta_Test.mmp
Plan Years: 3
Last Saved: 4/25/05
Author: Mr. A. Planner

Year	Month	Field	Spread. Area	Application Date	Manure Source	Equipment	Rate	Units	Loads
2003	Sep	A	28.3		Feedlot pile	McKee Spreader	18	Tonne/Ha	64
2003	Sep	D	33.2		Feedlot pile	McKee Spreader	18	Tonne/Ha	75
2003	Sep	H	47.3		Feedlot pile	McKee Spreader	34	Tonne/Ha	202
2004	May	B	42.5		Feedlot pile	JD 830	25	Tonne/Ha	367
2004	May	E	78.9		Field pile	JD 830	18	Tonne/Ha	168
2004	May	E	78.9		Feedlot pile	JD 830	18	Tonne/Ha	322
2004	Sep	A	28.3		Feedlot pile	McKee Spreader	18	Tonne/Ha	64
2004	Sep	D	33.2		Feedlot pile	McKee Spreader	18	Tonne/Ha	75
2004	Sep	H	47.3		Feedlot pile	McKee Spreader	24.5	Tonne/Ha	145
2005	May	B	42.5		Feedlot pile	JD 830	18	Tonne/Ha	264
2005	May	E	78.9		Field pile	JD 830	18	Tonne/Ha	169
2005	May	E	78.9		Feedlot pile	JD 830	18	Tonne/Ha	321
2005	Sep	D	33.2		Feedlot pile	McKee Spreader	18	Tonne/Ha	75
2005	Sep	H	47.3		Feedlot pile	McKee Spreader	22	Tonne/Ha	131
2005	Oct	M2	85		Feedlot pile	McKee Spreader	18	Tonne/Ha	192
2006	May	B	42.5		Field pile	JD 830	18	Tonne/Ha	168
2006	May	B	42.5		Feedlot pile	JD 830	18	Tonne/Ha	96

What do they do for me?

- Decision Making & Analysis
  - Scenario testing
  - Analysis of a plan
  - Testing assumptions
  - Risk assessment



Field Nutrient Balance

Plan File: C:\MMP\IN-Pig2.mmp
Operation: Hogs-R-Us Sample Plan
State: Indiana
Last Saved: 10/24/03
Init. File Rev: 3/4/04

Year	Field ID	Sub ID	Size	Crop	Yield Goal	Fertilizer Recs[2]			Nutrients Applied[3]			Balance After Recs[4]			After Removal[5]	
						N	P_2O_5	K_2O	N	P_2O_5	K_2O	N	P_2O_5	K_2O	P_2O_5	K_2O
			Acres[1]		/Acre	Lb/A	Lb/A	Lb/A	Lb/A	Lb/A	Lb/A	Lb/A	Lb/A	Lb/A	Lb/A	Lb/A
2003	Home 60	N20	20	Corn	160	190	0	0	163	159	131	-27	159	131	100	88
2004	Home 60	N20	20	Corn	160	190	0	0	190	0	0	0	159	131	41	45
2005	Home 60	N20	20	Corn	160	190	0	0	163	159	131	-27	318	262	140	132
Total	**Home 60**	**N20**	**20**			**570**	**0**	**0**	**516**	**318**	**262**					
2003	Home 60	C20	20	Corn	160	190	0	0	190	0	0	0	0	0	-59	-43
2004	Home 60	C20	20	Corn	160	190	0	0	163	159	131	-27	159	131	100	88
2005	Home 60	C20	20	Corn	160	190	0	0	190	0	0	0	159	131	41	45
Total	**Home 60**	**C20**	**20**			**570**	**0**	**0**	**543**	**159**	**131**					

What do they do for me?

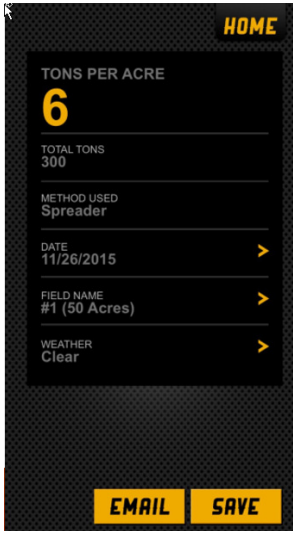
- Calculators
  - Fertilizer application rates
  - Manure application rates
  - Nutrients applied by an application
  - Calibration of equipment

6. Whole Bale Management	
Feed density (tons dry matter/acre)	19.2
Bale density (#/acre)	33.6
Number of bales needed	360
Bales fed per day	3.0
Bale spacing	
-within row (feet)	**36**
-between row (feet)	36

7. Nutrient Deposits on Land	Nitrogen	Phosphorus	Potassium	Sulfur
		(lb/acre)		
Nutrient loading from imported feed	615	68.5	583	56.1
Nutrients removed by cattle weight gain	8.4	2.0	1.2	0.56
% of time cattle spend outside of feeding area		**15**		
Net nutrient loading in feeding area from manure and waste feed	515	56.5	495	47.2

What do they do for me?

- Record keeping
  - Succession planning
  - Sharing between family & staff
  - Reporting
  - Sustainability initiatives
  - Market access



CRSB
CANADIAN ROUNDTABLE FOR SUSTAINABLE BEEF

V.B.P™
Verified Beef Production

What do they do for me?

- Tips and Information
  - Some embedded
  - Links for online

- Automation of some tasks
  - Geolocating
  - Collection of weather data
  - Emergency information

In the end!

- Make the work easier.
- Reduce risk
- Save you money
- End save you time

"Spend too much time working in the business, and not enough time working on the business."
Stan Parsons

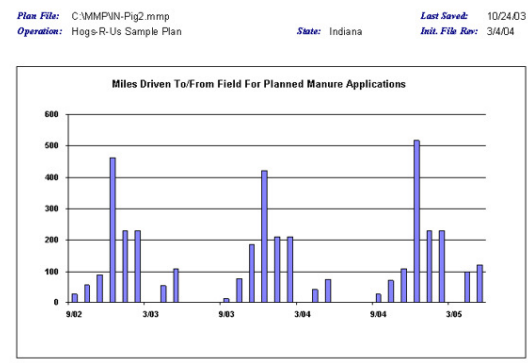
Alberta Government

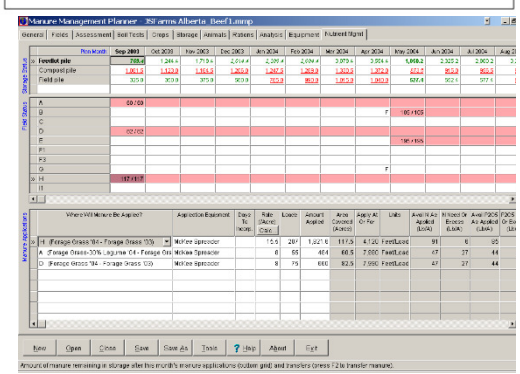
MMP
Manure Management Planner

http://www1.agric.gov.ab.ca/$department/softdown.nsf/main?openform&type=MMP&page=information

MMP

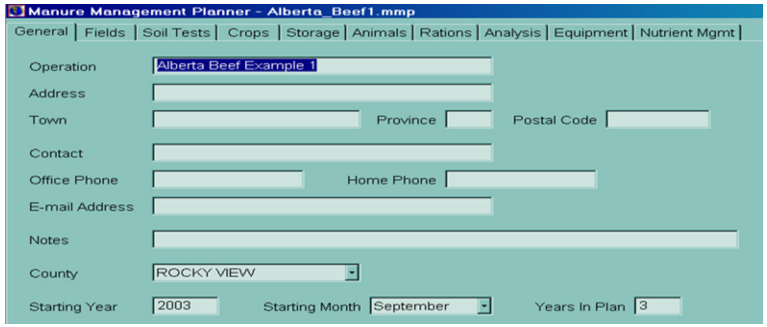
- Planning and managing manure applications
- Decision support / scenario
- Planner / analysis
- Calculator
- Communication
- Record keeping tool





MMP

- Input:
  - fields, soil, crop, animals, storage, equipment



- Output:
  - Manure & fertilizer application plan/ recommendation
  - Manure volumes, transfers

MMP

Alberta Fertilizer Applicator Report

Operation: Alberta Beef Example 1, Metric
Address: 123 Rural Route
Anytown, AB T6H 5T6
Phone: 555-555-5555

Plan File: C:\MMP\TstPlans\Alberta_Test.mmp
Plan Years: 3
Last Saved: 4/25/05
Author: Mr. A. Planner

Year	Month	Field	Subfield	App. Area	Application Coverage	For Crop	Yield Goal	Yield Units	Type Of Application
2003	Oct	M2		85.00	Entire Field	Wheat, Winter	3360	Kg/Ha	Fertilizer (1-year N)
2004	Apr	B		0.40	Non-Manure Spreadable	Forage Grass	4.5	Tonne/Ha	Fertilizer (1-year N)
2004	Apr	G		19.00	Manure Spreadable	Forage Grass	4.5	Tonne/Ha	Fertilizer (1-year N)
2004	Apr	J, K, L		161.90	Manure Spreadable	Forage Grass	4.5	Tonne/Ha	Fertilizer (1-year N)
2004	Oct	M2		85.00	Entire Field	Wheat, Winter	3360	Kg/Ha	Fertilizer (1-year N)

Year	Month	Field	Subfield	Analysis	Rate	Rate Units	N Applied	P2O5 Applied	K2O Applied	Nutrient Units	Application Method	Total Material Applied
2003	Oct	M2		28-0-0	195	Litre/Ha	70	0	0	Kg/Ha	Surface broadcast/incorporate	16,575
2004	Apr	B		28-0-0	195	Litre/Ha	70	0	0	Kg/Ha	Surface broadcast	78
2004	Apr	G		28-0-0	265	Litre/Ha	95	0	0	Kg/Ha	Surface broadcast	5,035
2004	Apr	J, K, L		28-0-0	139	Litre/Ha	50	0	0	Kg/Ha	Surface broadcast	22,504
2004	Oct	M2		28-0-0	195	Litre/Ha	70	0	0	Kg/Ha	Surface broadcast/incorporate	16,575

Alberta Manure Applicator Report

Operation: Alberta Beef Example 1, Metric
Address: 123 Rural Route
Anytown, AB T6H 5T6
Phone: 555-555-5555

Plan File: C:\MMP\TstPlans\Alberta_Test.mmp
Plan Years: 3
Last Saved: 4/25/05
Author: Mr. A. Planner

Year	Month	Field	Spread. Area	Application Date	Manure Source	Equipment	Rate	Units	Loads
2003	Sep	A	28.3		Feedlot pile	McKee Spreader	18	Tonne/Ha	64
2003	Sep	D	33.2		Feedlot pile	McKee Spreader	18	Tonne/Ha	75
2003	Sep	H	47.3		Feedlot pile	McKee Spreader	34	Tonne/Ha	202
2004	May	B	42.5		Feedlot pile	JD 830	25	Tonne/Ha	367
2004	May	E	78.9		Field pile	JD 830	18	Tonne/Ha	168
2004	May	E	78.9		Feedlot pile	JD 830	18	Tonne/Ha	322
2004	Sep	A	28.3		Feedlot pile	McKee Spreader	18	Tonne/Ha	64
2004	Sep	D	33.2		Feedlot pile	McKee Spreader	18	Tonne/Ha	75
2004	Sep	H	47.3		Feedlot pile	McKee Spreader	24.5	Tonne/Ha	145
2005	May	B	42.5		Feedlot pile	JD 830	18	Tonne/Ha	264
2005	May	E	78.9		Field pile	JD 830	18	Tonne/Ha	169
2005	May	E	78.9		Feedlot pile	JD 830	18	Tonne/Ha	321
2005	Sep	D	33.2		Feedlot pile	McKee Spreader	18	Tonne/Ha	75
2005	Sep	H	47.3		Feedlot pile	McKee Spreader	22	Tonne/Ha	131
2005	Oct	M2	85		Feedlot pile	McKee Spreader	18	Tonne/Ha	192
2006	May	B	42.5		Field pile	JD 830	18	Tonne/Ha	168
2006	May	B	42.5		Feedlot pile	JD 830	18	Tonne/Ha	96

Alberta AOPA Report

Operation: Alberta Beef Example 1, Metric
Address: 123 Rural Route
Anytown, AB T6H 5T6
Phone: 555-555-5555

Plan File: C:\MMP\TstPlans\Alberta_Test.mmp
Plan Years: 3
Last Saved: 4/25/05
Author: Mr. A. Planner

Animal Production

Animal ID	Animal Type	Count	Ave. Wt.	Units	Confinement Period	% Of Manure Collected
Finishers	Beef finisher	1,300	544	Kg	Jan Early - Dec Late	100
Growers	Beef feeder/backgrounder	1,700	317	Kg	Jan Early - Dec Late	100
Cows on pasture	Beef cow/bull/bred heifer	300	590	Kg	Jan Early - Dec Late	0

Manure Production

Storage ID	Storage Type	Estimated Production	Units	Total N	Units
Feedlot pile	Open lot (no straw)	5172	Tonne/Year	10	Kg/Tonne

Field Information

Field	Subfield	Legal Land Description	Spread. Area	Soil Test Year	Nitrate Nitrogen Level (ppm in 0-60 cm)	E.C. (dS/m in 0-15 cm)	Soil Texture (0-15 cm)	Soil Texture (15-30 cm)
A			28.3	2003	4			
B			42.5	2002	6			
C			38.4	2003	21			
D			33.2	2003	11			
E			78.9	2003	14			

Alberta Government

MTC
Manure Transportation Calculator

http://www1.agric.gov.ab.ca/$Department/softdown.nsf/main?openform&type=MTC&page=information

MTC

- Excel based tool
- Decision support / calculator
  - Net cost of applying manure or fertilizer
  - Estimates nutrient use / availability
  - Estimate application cost versus benefit

Total Input Requirements

SELECT Manure Type ○ Solid Manure ◉ Liquid Manure

	Year 1	Year 2	Year 3	Year 4	Year 5	5 Year Cost/Benefit Summary
	Spring Wheat	Canola	Spring Wheat	Barley	Peas	
N Requirement	110 lbs/ac	159 lbs/ac	116 lbs/ac	118 lbs/ac	77 lbs/ac	
N Available from Applied Manure	134 lbs/ac	40 lbs/ac 119 lbs/ac Deficient	8 lbs/ac 108 lbs/ac Deficient	4 lbs/ac 114 lbs/ac Deficient	2 lbs/ac 75 lbs/ac Deficient	
N Utilized from Applied Manure	110 lbs/ac	40 lbs/ac	8 lbs/ac	4 lbs/ac	2 lbs/ac	

Recommended Rate of Manure Application (gal./ac) 2863.1 Warning: A minimum practical application rate (3,000 ga/ac) cannot be acheived for this field without causing an over-application of Nitrogen.

Do You Wish to Apply a Different Amount of Manure? Yes

...Enter the rate of Manure to Apply 3,500.0 Up to a Maximum Rate of 4690.3 gal./ac (given the available manure supply)

MTC

- Inputs:
  - Manure nutrient content, fertilizer recommendation, rotation & yield goal, transportation/application info/cost

- Output:
  - Manure production
  - Manure application rate
  - Nutrient contributions
  - Cost/benefit of manure application

Summary of 5 Year Cost Analysis

Select Units
- Imperial
- Metric

Select Manure
- Solid
- Liquid

Field1

Note: Selecting a new field will also reset the Manure Application Rate to the model's recommendation

Spreadable Size	320 acres
Planned Crop (year 1)	Spring Wheat
Target Yield	55.0 bu/acre

Manure Application Rate - Currently Set At: 3,500.0 gal./ac

Warning: A minimum practical application rate (3,000 gal/ac) cannot be met with the volume of liquid manure available.

Do You Wish to Apply a Different Amount of Manure? Yes

...Enter the rate of Manure to Apply on Analysis Tab <Click Here>

YOU have chosen to apply 3500 gal./ac to this field. Based on this, the following Nutrients are Available & Utilized:

	Nutrient Recommendation from Lab (in Year 1 of Plan) lbs/ac	Nutrients Available from Manure (in Year 1 of Plan) lbs/ac	Nutrients Utilized from Manure (in Year 1 of Plan) lbs/ac	Nutrient Shortfall/Excess (based on N optimization) (in Year 1 of Plan) lbs/ac	
N	110	134	110	24	*This nutrient is over-applied and it's value at risk of being lost*
P_2O_5	44	81	44	37	*This nutrient is over-applied and it's value at risk of being lost*
K_2O	99	267	99	168	*This nutrient is over-applied and it's value at risk of being lost*
S	16	11	11	5	

Economic Cost/Benefit

	In Year 1		Over 5 Years	
	Total $	$/acre	Total $	$/acre
Cost to Apply Manure	$12,667	$40	$12,667	$40
Value of Manure Nutrients Utilized:	Total $	$/acre	Total $	$/acre
N	$20,822	$65	$31,029	$97
P_2O_5	$7,694	$24	$21,466	$67
K_2O	$22,509	$70	$60,633	$189
S	$1,511	$5	$1,511	$5
Total	$52,536	$164	$114,639	$358
Net Economic Benefit	$39,869	$125	$101,973	$319

Alberta Government

Wintering Site Assessment and Design Tool

http://www1.agric.gov.ab.ca/$Department/deptdocs.nsf/all/epw12912/$FILE/aafc-wintering-sites-booklet.pdf

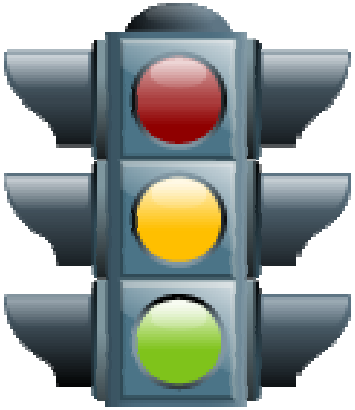
WSADT

- Risk assessment tool
- Assess risk of wintering sites & nutrient loss
- Assess at an field/site level
  - Management practices
  - Landscape conditions
- Suggests BMPs to reduce losses

Format

- Series of questions.

- Question layout:
  - **Green**: low concerns
  - **Orange**: medium concerns
  - **Red**: high concerns



  - Potential Concerns
    - i.e., Why does this question matter

  - BMP suggestions to address concerns

Format

1. In each WSADT chart, identify your current situation in the left-hand portion of the chart.
2. Consider the level of environmental risk associated with your current situation.
3. Consider the potential concerns.
4. Consider the options for BMPs to address the concerns.
5. Go to the Resources section of this publication to find detailed information to help you decide which particular BMPs would best meet the needs of your own operation.

Example:

Site Characteristic	Environmental Risk Factor and Risk Level			Potential Concerns	Beneficial Management Practices
Slope length of wintering site	Less than 300 ft	300 ft to 1300 ft (1/4 mile)	Greater than 1300 ft	With longer slopes, the potential for increased water flow/velocity and associated erosion and/or nutrient transport increases.	If possible, place feeding areas on slopes less than 300 ft in length. For longer slopes, add berms or other barriers to slow runoff.
Depth to groundwater	Greater than 100 ft	25 ft to 100 ft	Less than 26 ft	The risk of nutrients contaminating groundwater increases on sites with shallow, permanent water tables.	Move site to high ground or a location that is at least 25 ft above the water table.
Amount of bare ground on Perennial forage or annual cropland	Perennial pasture with <25% bare ground	Annual cropland with stubble and aftermath with 25 to 50% bare ground or perennial pasture with >25% bare ground	Annual cropland with >75% bare ground	There is a greater risk of nutrient, pathogen, and sediment movement into water sources if the site has little groundcover or crop residue.	Select a site with good groundcover or establish groundcover so that at least 75% of the surface is covered with plant material prior to winter feeding. For annual cropland, do not use fall tillage prior to winter feeding.

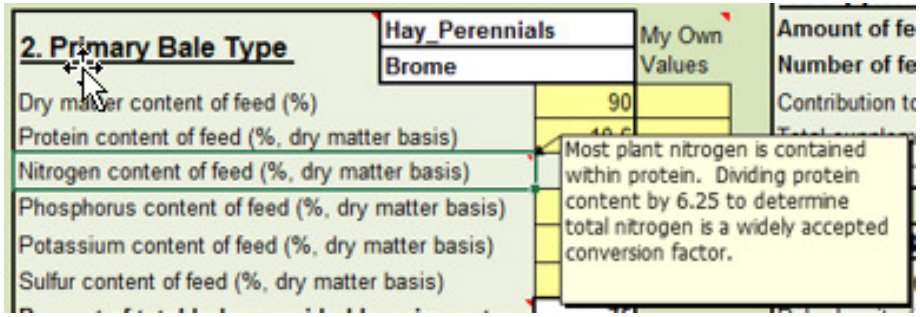
Alberta Government

Nutrient Loading Calculator

http://www1.agric.gov.ab.ca/$Department/softdown.nsf/main?openform&type=NLC&page=information

NLC

- Excel based tool
- Decision support / calculator
  - Calculated feed requirements
  - Estimates nutrient additions from extensive livestock winter feeding
  - Help make in field feeding/siting decisions
- Risk Assessment



NLC

- Inputs:
  - Livestock, feed types, feeding plan
- Output:
  - Amount feed required
  - Estimated nutrient additions
  - Warning on nutrient loading

6. Whole Bale Management	
Feed density (tons dry matter/acre)	19.2
Bale density (#/acre)	33.6
Number of bales needed	360
Bales fed per day	3.0
Bale spacing	
-within row (feet)	**36**
-between row (feet)	36

7. Nutrient Deposits on Land	Nitrogen	Phosphorus	Potassium	Sulfur
		(lb/acre)		
Nutrient loading from imported feed	615	68.5	583	56.1
Nutrients removed by cattle weight gain	8.4	2.0	1.2	0.56
% of time cattle spend outside of feeding area		**15**		
Net nutrient loading in feeding area from manure and waste feed	515	56.5	495	47.2

1. Cow Management

		My Own Value
Number of cows	100	
Average cow weight (lbs)	1300	
Daily feed requirement of cow (lb dry matter/day)	33.8	
Area of land used for feeding (acres)	10.7	
Number of feeding days	120	
Cow Days per Acre	1121	
Animal Unit Days per Acre	1458	
Net feed density (tons dry matter/acre)	18.9	

2. Primary Bale Type

	Hay_Perennials / Brome	My Own Values
Dry matter content of feed (%)	90	
Protein content of feed (%, dry matter basis)	10.6	
Nitrogen content of feed (%, dry matter basis)	1.70	
Phosphorus content of feed (%, dry matter basis)	0.17	
Potassium content of feed (%, dry matter basis)	1.50	
Sulfur content of feed (%, dry matter basis)	0.14	
Percent of total bales provided by primary type	75	
Average bale weight (actual lbs)	1300	
Percentage of primary feed on a dry matter basis	76.6	
Feed wastage of primary bale type (%)	10	

3. Secondary Bale Type

	Straw / Wheat	My Own Values
Dry matter content of feed (%)	89	
Protein content of feed (%, dry matter basis)	3.9	
Nitrogen content of feed (%, dry matter basis)	0.62	
Phosphorus content of feed (%, dry matter basis)	0.08	
Potassium content of feed (%, dry matter basis)	1.40	
Sulfur content of feed (%, dry matter basis)	0.12	
Percent of total bales provided by secondary type	25	
Average bale weight (actual lbs)	1200	
Percentage of secondary feed on a dry matter basis	23.4	

4. Supplementary Feed Type

	Grain / Barley	My Own Values
Dry matter content of feed (%)	89	
Protein content of feed (%, dry matter basis)	12.5	
Nitrogen content of feed (%, dry matter basis)	2.00	
Phosphorus content of feed (%, dry matter basis)	0.38	
Potassium content of feed (%, dry matter basis)	0.54	
Sulfur content of feed (%, dry matter basis)	0.14	

5. Supplementary Feed Management

Amount of feed provided at one time (lbs)	300
Number of feedings per day (eg. 2 = twice per day)	1
Contribution to daily feed requirement of cow (lbs dry matter/day)	2.66
Total supplementary feed needed (actual tons)	18.0
Supplementary feed density (tons dry matter/acre)	1.49

6. Whole Bale Management

Feed density (tons dry matter/acre)	19.2
Bale density (#/acre)	33.6
Number of bales needed	360
Bales fed per day	3.0
Bale spacing	
-within row (feet)	36
-between row (feet)	36

7. Nutrient Deposits on Land

	Nitrogen	Phosphorus	Potassium	Sulfur
	(lb/acre)			
Nutrient loading from imported feed	615	68.5	583	56.1
Nutrients removed by cattle weight gain	8.4	2.0	1.2	0.56
% of time cattle spend outside of feeding area	15			
Net nutrient loading in feeding area	515	56.5	495	47.2

Alberta Government

APMT

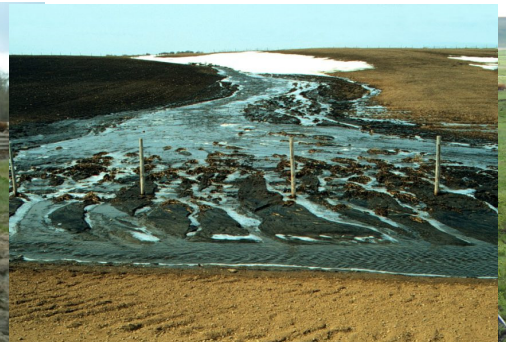
Alberta Phosphorus Management Tool

Alberta Government

Coming to a Computer near you soon!

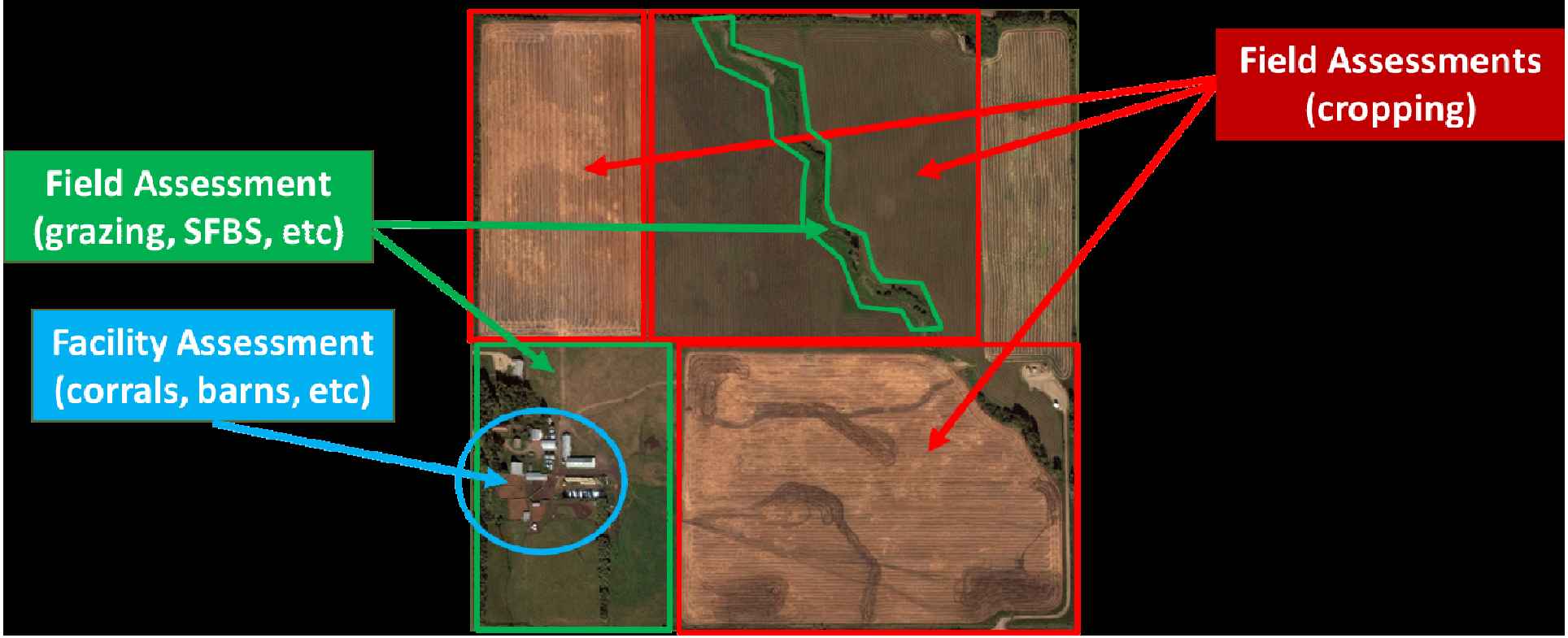
APMT

- Excel-based risk assessment tool
- Assesses the risk of phosphorus loss
- Focus on surface water
- Risk is based on a variety of environmental and management factors



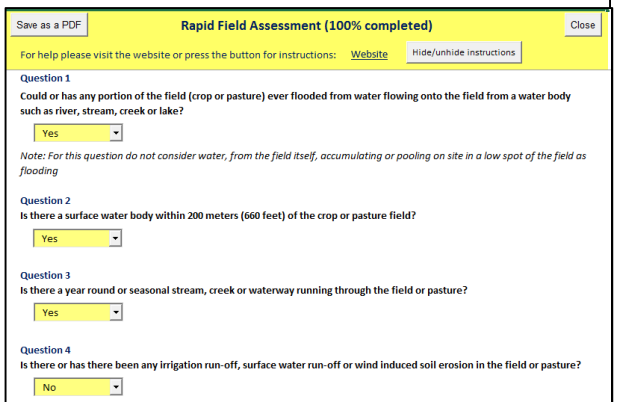
APMT

- Site specific
  - Can split into sub-fields or areas.



APMT

- Series of worksheet
- Series of question in each
  - Yes/no or practice based
- Questions are tailored based on answers



Save as a PDF | **Rapid Field Assessment (100% completed)** | Close

For help please visit the website or press the button for instructions: Website | Hide/unhide instructions

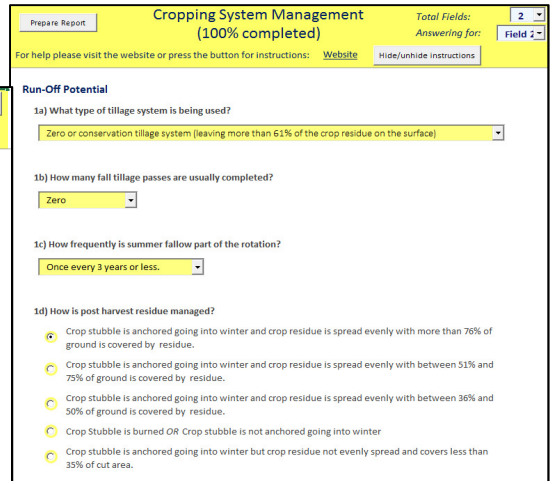
Question 1
Could or has any portion of the field (crop or pasture) ever flooded from water flowing onto the field from a water body such as river, stream, creek or lake?
Yes

Note: For this question do not consider water, from the field itself, accumulating or pooling on site in a low spot of the field as flooding

Question 2
Is there a surface water body within 200 meters (660 feet) of the crop or pasture field?
Yes

Question 3
Is there a year round or seasonal stream, creek or waterway running through the field or pasture?
Yes

Question 4
Is there or has there been any irrigation run-off, surface water run-off or wind induced soil erosion in the field or pasture?
No



Prepare Report | Cropping System Management (100% completed) | *Total Fields:* 2 | *Answering for:* Field 1

For help please visit the website or press the button for instructions: Website | Hide/unhide instructions

Run-Off Potential

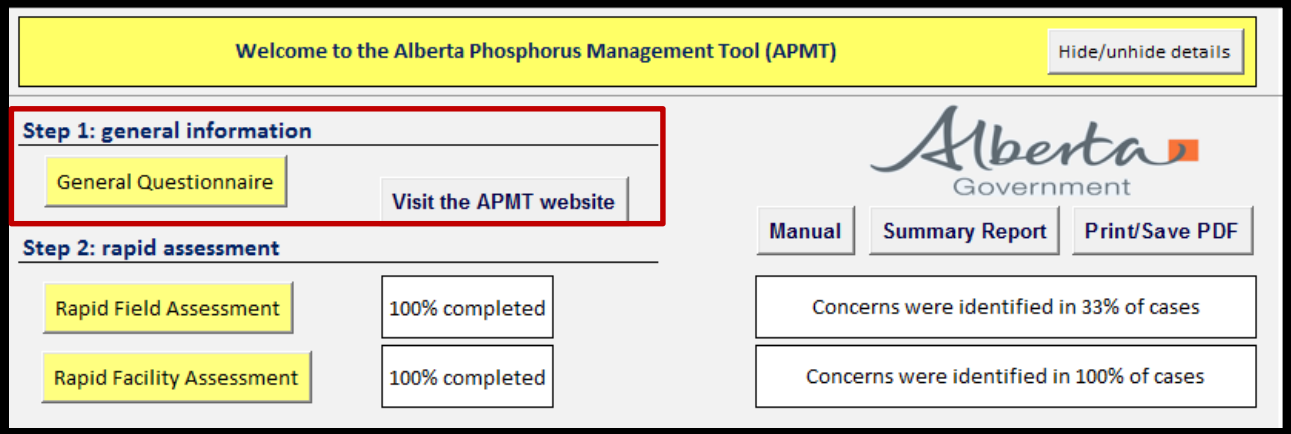
1a) What type of tillage system is being used?
Zero or conservation tillage system (leaving more than 61% of the crop residue on the surface)

1b) How many fall tillage passes are usually completed?
Zero

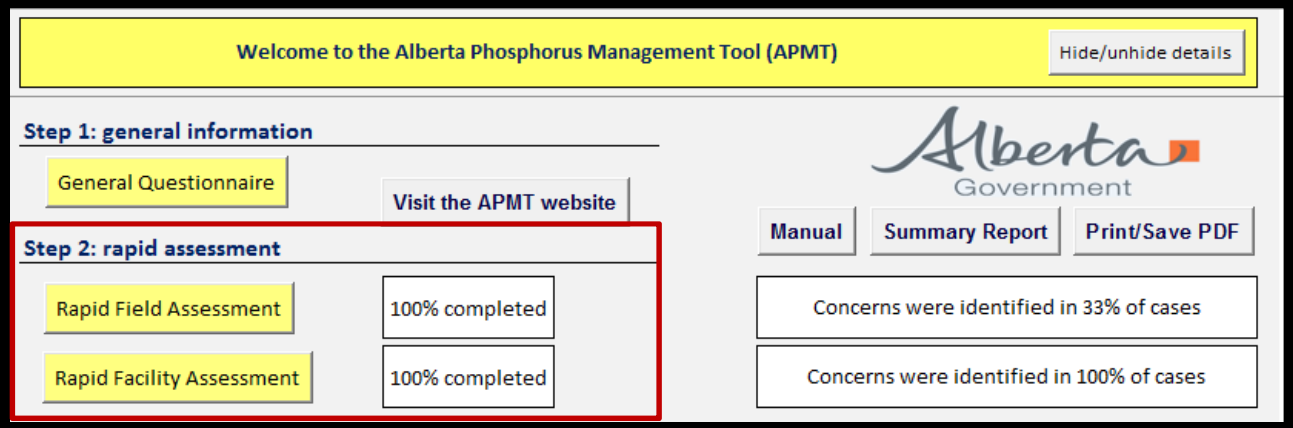
1c) How frequently is summer fallow part of the rotation?
Once every 3 years or less.

1d) How is post harvest residue managed?
- Crop stubble is anchored going into winter and crop residue is spread evenly with more than 76% of ground is covered by residue.
- Crop stubble is anchored going into winter and crop residue is spread evenly with between 51% and 75% of ground is covered by residue.
- Crop stubble is anchored going into winter and crop residue is spread evenly with between 36% and 50% of ground is covered by residue.
- Crop Stubble is burned *OR* Crop stubble is not anchored going into winter
- Crop stubble is anchored going into winter but crop residue not evenly spread and covers less than 35% of cut area.

APMT


Welcome to the Alberta Phosphorus Management Tool (APMT)
Hide/unhide details
Step 1: general information
General Questionnaire
Visit the APMT website
Alberta
Government
Manual
Summary Report
Print/Save PDF
Step 2: rapid assessment
Rapid Field Assessment
100% completed
Concerns were identified in 33% of cases
Rapid Facility Assessment
100% completed
Concerns were identified in 100% of cases

APMT


Welcome to the Alberta Phosphorus Management Tool (APMT)
Hide/unhide details
Step 1: general information
General Questionnaire
Visit the APMT website
Alberta
Government
Manual
Summary Report
Print/Save PDF
Step 2: rapid assessment
Rapid Field Assessment
100% completed
Concerns were identified in 33% of cases
Rapid Facility Assessment
100% completed
Concerns were identified in 100% of cases

APMT

Welcome to the Alberta Phosphorus Management Tool (APMT)

Hide/unhide details

Alberta Government

Step 1: general information

General Questionnaire

Visit the APMT website

Manual | Summary Report | Print/Save PDF

Step 2: rapid assessment

Rapid Field Assessment	100% completed	Concerns were identified in 33% of cases
Rapid Facility Assessment	100% completed	Concerns were identified in 100% of cases

Step 3: detailed assessments

Cropping System Management	not started
Field Management	not started
Grazing and Riparian Pasture	not started
Seasonal Feedings & Beddings	not started
Corrals, Loafing or Day Pastures	not started
Barns/Livestock Housing	not started
Catch Basin Management	not started
Solid Manure Storage	not started
Temporary Manure Storage	46% completed
Liquid Manure Storage	not started

Developed by serecon

APMT

- Includes potential concern descriptions
- Ranking of risk
  - low, low/medium, medium/high and high
- BMP suggestions to address loss
  - Each BMP has a relative financial cost environmental benefit

APMT

Seasonal Sites Report

Risks profile:

Based on the rapid and detailed assessments, 2 seasonal feedings/beddings are at risk. The detailed questionnaire is 93% completed.

Identifies Sites with risk

The most attention may be required for the Site 1, Site 2:

Site 1 (, high run-off risk, high site management and nutrients accumulation risk)
Site 2 (, high flood risk, high site management and nutrients accumulation risk)

The high risk of flood was identified for the Site 2.

The high risk of run-off was identified for the Site 1.

Identifies the Highest risk

The high risk in sites management and nutrients accumulation was identified for the Site 1, Site 2.

APMT

Summary of questions & responses

Risk of flood: Low to Moderate Risk	
2a) Could or has any part of the pasture ever been flooded from water flowing on to the field from a waterbody such as a river, stream, creek or lake? Note: Do not consider water, from the field itself, accumulating or pooling on site in a low spot of the field as flooding.	Yes
2b) Does either the watering site or the area where the animals shelter/ruminate ever impacted by the flood water coming from the river, stream, creek or lake? Note: Do not consider water, from the field itself, accumulating or pooling on site in a low spot of the field as flooding.	Yes
2c) How frequently does the watering area or shelter area flood?	At least part of the site floods once every 16 to 30 years
2d) What percentage of the watering area or shelter area is impacted by the flooding?	Between 26% and 50% of the field floods

Tailored recommendations to cover the Risk of flood: for the Pasture 1

Evaluate and map the site to determine the flooding risk potential of the field ($, E).
Complete soil testing over time to monitor soil nutrient levels in the area that floods ($, EE).
Do not fall or winter broadcast fertilizer or manure in the area that floods ($, EEE).
Delay livestock access to the field/site until after flooding and run-off events have occurred and riparian soils are no longer saturated. This will reduce livestock impacts on the area, nutrient accumulation and nutrient loss ($, EE).

Monitor the site during spring melt to manage any flooding, run-on or run-off issues, have an emergency plan in place ($, EE).

Enhance environmental management through training of staff and farm managers ($-$$, EE).
Do not feed or bed livestock over the winter in the area adjacent to or in the area that floods ($-$$, EEE).

Decommission and relocate the portion of the shelter area (if present) from the area that floods, to a new location ($-$$, EEE).

Adopt manure application setbacks from the area that floods (based on slope, environmental conditions, time of year and method of application) to reduce losses of nutrients and manure ($-$$, EE).
Locate the any shelter areas 200 m from the area that floods ($-$$, EE-EEE).
Provide the livestock an alternative shelter or lounging area outside of the area that floods so that manure and nutrients no longer accumulate in the flood zone. ($-$$, EE-EEE)

BMP suggestions

Alberta Government

AFFIRM

Alberta Farm Fertilizer Information & Recommendation Manager

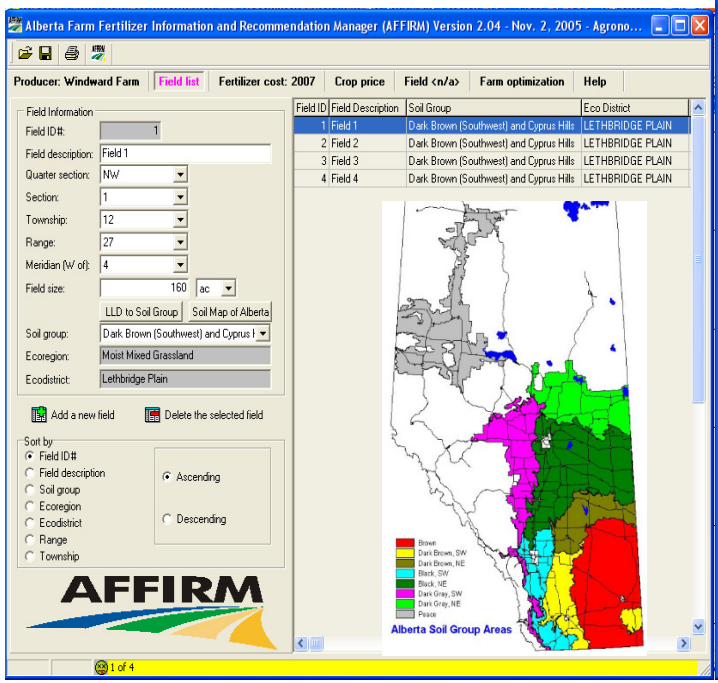
http://www1.agric.gov.ab.ca/$department/softdown.nsf/main?openform&type=AFFIRM&page=information

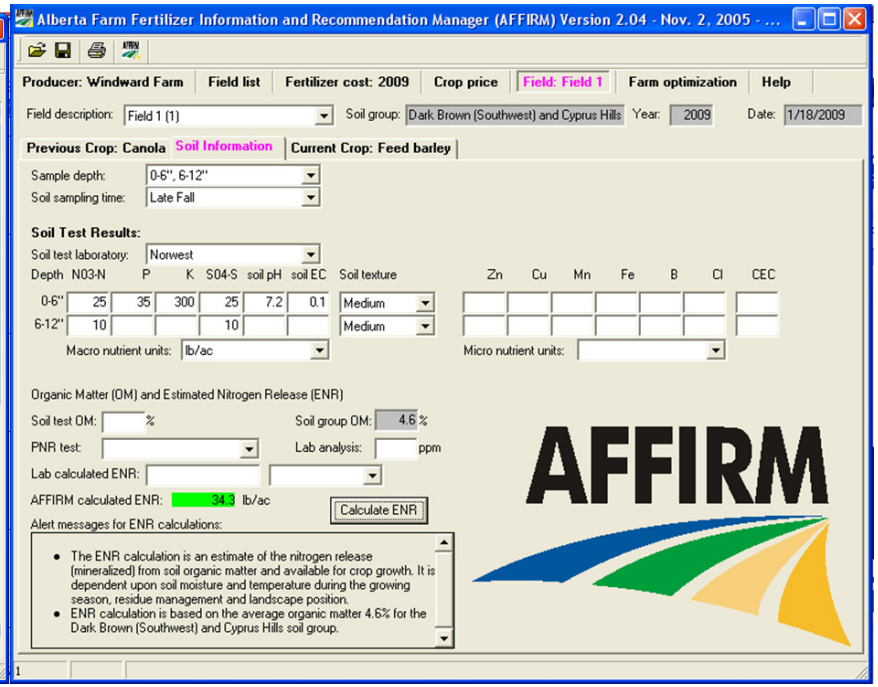
AFFIRM

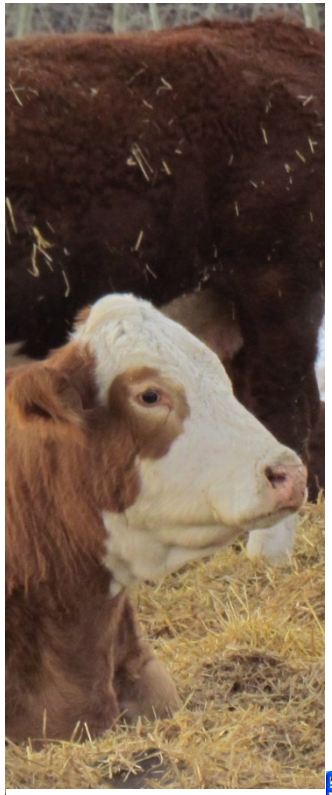
- Fertilizer decision support tool
- Calculator & planner
- Scenario running
- Analytics
- Record keeping

AFFIRM

- Input: fields, crops, soil info

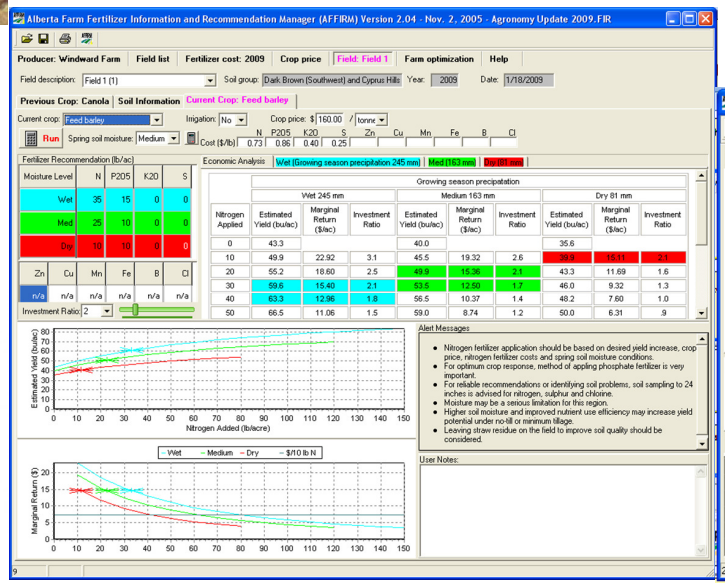


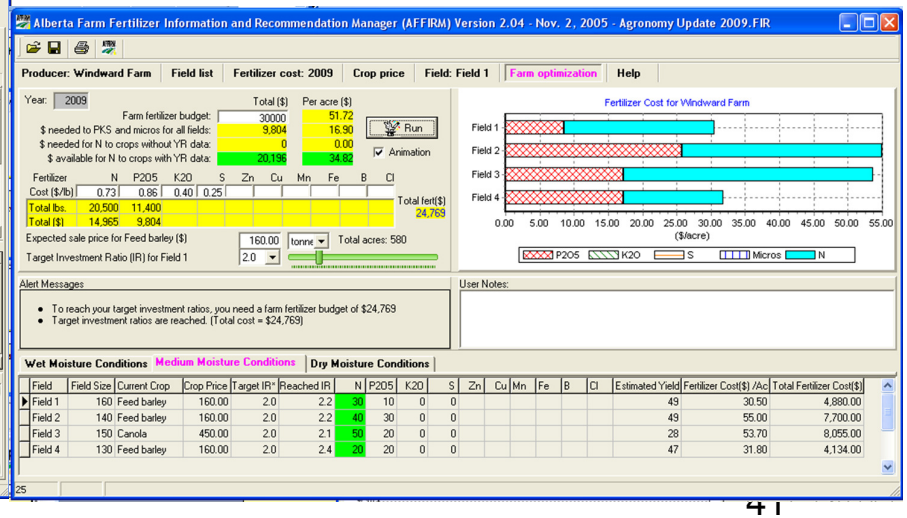




AFFIRM

- Output nutrient recommendations
- Evaluation of fertilizer decisions
- Farm optimization of fertilizer $





AFFIRM

AFFIRM

- Enhancing functionality
  - Newer operating systems
- New research data
- 4-R nutrient stewardship principles
- Manure management features!!

Alberta Government

Manure Calculator

Alberta Government

Coming to a Smart Phone near you soon!

Manure Calculator

- Smart phone application
- Manure decision support tool
- Calculator & planner

Manure Calculator

- Input:
  - Applicator size and spread, type of manure, application rate, fertilizer cost
- Output:
  - Calibration of applicator
  - Estimation of nutrients applied
  - Value of nutrients applied

Manure Calculator

Alberta Government

Manure Record Keeping App

Alberta Government

Coming to a Smart Phone near you soon!

Record Keeping App

- Smart phone application
  - Computer portal
  - Cloud syncing
- Record Keeping
  - Automation
- Emergency Response
  - Features & information

Record Keeping App

- Inputs:
  - Manure application, soil, field
  - Emergency info
  - Geolocating
- Automation:
  - Weather data
- Outputs:
  - Information and tips
  - Collected data

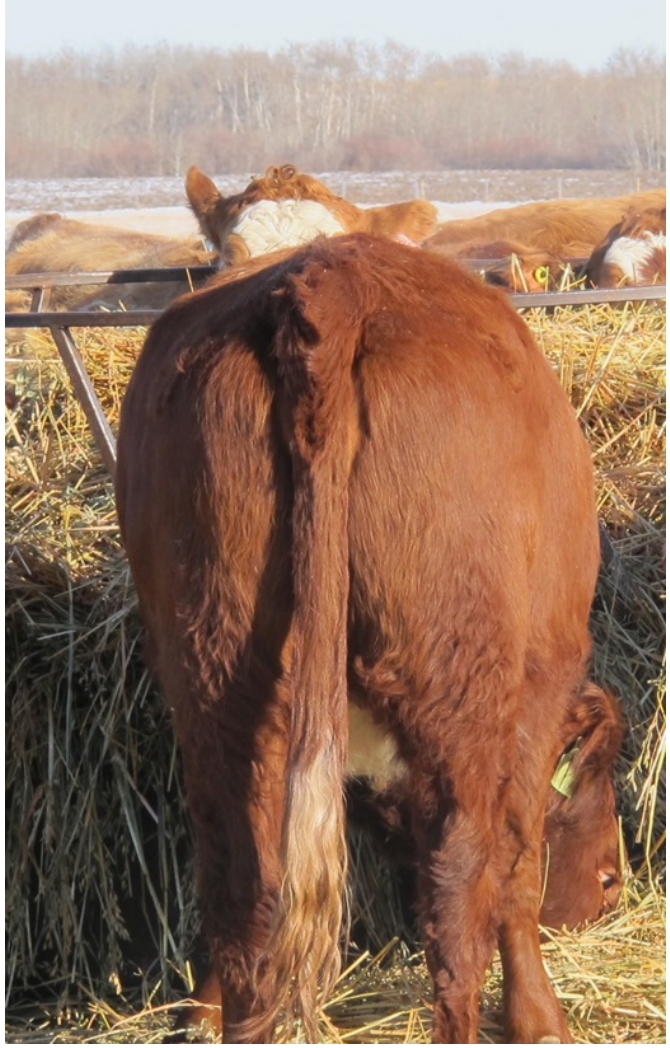
Key Take Away

- Several tools available today… more are on the way
- Advanced capabilities
- Know the assumptions behind them
- Only as good as the information that goes into them

Key Take Away

- Tools help with:
  - Risk assessment
  - Planning operations
  - Communication !!!
  - Decision making
    - scenarios / testing ideas / risk assessment
  - Record keeping
    - Reporting for sustainability programs or mkts
  - Automation of some work

Thank You



And that's Just One point of View!!

Trevor Wallace
Trevor.Wallace@gov.ab.ca
780.980.7587