



2016 Nutrient Management Plan

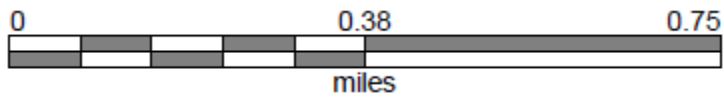
Prepared for;

Douglas Regehr

Armstrong, B.C.

2/29/2016

Prepared By: Doug Macfarlane, CCA



DOUGLAS REGEHR

2016 NUTRIENT MANAGEMENT PLAN

Producer Information;

Douglas Regehr

5042 Schubert Road

Armstrong, B.C. V0E 1B4

Mobile: 250.550.4610

I, _____ hereby certify that I have reviewed the Nutrient Management Plan with the agriculture consultant who prepared it and I shall in good faith attempt to follow and implement the recommendations as set out within the plan

Signature: _____ Date: _____

Preparer Information;

Doug Macfarlane, CCA Emerald Bay Ag Services

#10 Mary's Emerald Bay Road

Vernon, B.C. V1H 2A7

Mobile: 250.550.0545 dougmacf@shaw.ca

I, Doug Macfarlane, CCA, hereby certify that based on relevant information that was gathered in good faith and excluding unforeseen or uncontrollable circumstances, the recommendations contained in the attached Nutrient Management Plan report will, if implemented, result in acceptable management practices.

Signature: _____ Date: _____

1 OBJECTIVE

The objective of this nutrient management plan is to ensure that nutrients are applied to the ground in a responsible and timely manner to achieve;

- An economically viable organic cropping program resulting in high yielding crops using additives that are recognized through the Organic Standards program and available to the producer at reasonable costs thus allowing them to maintain production in the Organic System
- To ensure that nutrients are only applied just before or during active growth periods of the crop.
- To ensure excessive nutrients are not applied or that when crop growth is completed for a season there are not large amounts of available nutrients remaining in the soil that can be flushed out through the winter and spring.

2 INTRODUCTION

Doug Regehr is an operating organic farm that has no livestock to supply the nutrients required for crop production.

Because the soil phosphorous levels are reaching into the very high levels due to our reliance on broiler manure as the main nutrient source in the Fall of 2015 we changed the nutrient source that is being used from Broiler manure to liquid dairy manure as the nitrogen to phosphorous ratio is different and we can stop increasing soil phosphorous levels as they are now elevated to a point where only maintenance is required. We will probably start rotating between the 2 types of manure as the soil test show.

Another problem we have with the broiler manure is that the nitrogen content is quite high and for fall seeded crops applying only enough to start the crop is difficult where the nitrogen content of the dairy manure is substantially lower and an application rate down to 30 pounds per acre is much easier to manage which is what we needed for this field in the fall. Last year this was not a challenge because we had high enough residual nitrogen to start the crop comfortably.

4 GOALS AND OBJECTIVES

3.1 ENVIRONMENTAL

To ensure that all nutrients brought on to the farm are spread and used in a responsible and environmentally friendly manner on the land that minimizes any chance of on or off farm pollution, either through surface runoff or subsurface leaching.

Monitor soil nitrate and phosphorous levels to control subsoil leaching of nutrients. Use of the 30-60 cm soil test will allow us to monitor leaching potentials.

3.2 AGRONOMIC

To use manure as a nutrient source to ensure efficient crop production including;

- Adjusting the manure applications for a crop cycle that will efficiently use the nutrients applied. Both the "Agronomic Balance" (supply ample nutrients to all crops to ensure maximum growth with no crop deficiencies developing) and a "Crop Removal Balance" accounting to eliminate excessive soil building of nutrients over the complete crop rotation will be watched.
- Developing a seasonal application plan to correspond with safe spreading practices and high plant utilization periods.
- To optimize the use of the manure nutrients thus increasing its economic value while reducing or eliminating the import of excess or unnecessary nutrients.

4 FARM DESCRIPTION

4.1 LAND BASE

D. REGEHR HOME FARM

	Description	Acres	2016 Crop
1	Main Home Field	38.4	W. Wheat
2	Old Feedlot	7.7	W. Wheat
3	Buffer Strip	1.6	Grass
	Total acres	47.7	

5.1 2015 Projected Manure Use

Field	Acres	Application Gallon per acre	Date	Total tons
1 & 2	46.1	3,000	Sept 1, 2015	138,300 gal
1 & 2	46.1	9,000	1-Apr	415,000 gal
3	1.6	none		
	47.7			553,300 gal

The Field will be resampled by the 1st of April 2015 and that sample will help determine a final spring application rate.

5 SAMPLING PROCEDURES

6.1 SOIL

Soil sampling will be done annually on field # 1 and any other field receiving nutrient applications. The samples normally include;

- 0-6" - complete with micro nutrients and E.C.
- 6-12" and 12-24" basic N-P-K with E.C.

Soil samples are to be geo referenced to ensure sample data that will correspond with field changes over time. In fields that may be E.C. mapped 2 sites of 8 cores will be sampled. In unmapped fields 15 geo referenced cores representing the whole field will be gathered.

When possible, soil sampling is to be carried out in the fall after crop are harvested and before any field work begins.

6.2 2015 OBJECTIVES AND TIMETABLE

	Event	Responsibilities	Actions
April 1,2016	Complete soil and manure sampling	To determine starting soil nutrient content.	
April 15,2016	Complete Spring manure application plan	To ensure spring manure application amounts match with in season crop nitrogen requirements.	
Oct 2016	Complete post-harvest soil testing	To determine soil nutrient levels after crops are harvested and before and soil amendments are added or tillage operations are preformed	
Nov/Dec 2016	Plan NMP for the upcoming year	Match after crop residual soil nutrient content with proposed crop production requirements and available manure resources.	Annually

A & L Canada Laboratories Inc.



Report Number: C15232-10089
 Account Number: 05219
 To: EMERALD BAY AG SERVICES
 10 MARYS EMERALD BAY ROAD
 VERNON, BC V1H 2A7

2136 Jetstream Road, London, Ontario, N5V 3P5
 Telephone: (519) 457-2575 Fax: (519) 457-2664
 For: DOUG REGHER

Attn: DOUG MACFARLANE
 250-546-3847

Grower Code: 05219093
 Farm: HOME
 Field: 101 HOME

05219-N818

Report Date: 2015-08-24 Print Date: 2016-03-01

SOIL TEST REPORT

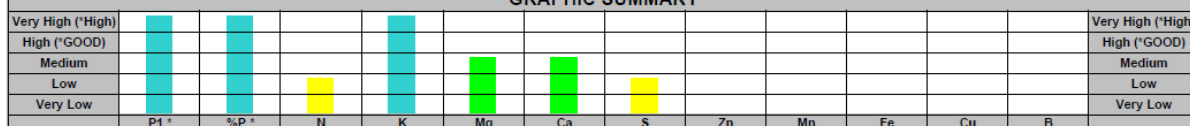
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Sample Number	Legal Land Descpt:	Depth	Lab Number	Organic Matter	Phosphorus - P ppm Bicarb	Phosphorus - P ppm Bray-P1	Potassium K ppm	Magnesium Mg ppm	Calcium Ca ppm	pH	CEC meq/100g	Percent Base Saturations					
										Buffer		% K	% Mg	% Ca	% H	% Na	
1011A		6	32280	4.2	74 H	198 H	389 VH	285 M	2680 M	6.8	6.9	18.1	5.5	13.1	74.1	6.5	0.7
1011B		12	32281														
1011C		24	32282														

Sample Number	Sulfur ppm S lbs/ac	Nitrate Nitrogen ppm NO3-N lbs/ac	Zinc Zn ppm	Manganese Mn ppm	Iron Fe ppm	Copper Cu ppm	Boron B ppm	Soluble Salts ms/cm	Saturation %P	Aluminum Al ppm	Saturation %Al *	K/Mg Ratio	ENR	Chloride Cl ppm	Sodium Na ppm	Molybdenum Mo ppm
1011A	29 L	52	8 L	14					40 H	633	0.1 G	0.42	54		30 M	
1011B	0	6 L	11													
1011C	0	5 L	18													

OE VL = VERY LOW L = LOW M = MEDIUM H = HIGH VH = VERY HIGH * G = GOOD, M = MARGINAL, MT = MODERATE PHYTO-TOXIC, T = PHYTO-TOXIC, ST = SEVERE PHYTO-TOXIC

GRAPHIC SUMMARY



SOIL FERTILITY GUIDELINES (lbs/ac)

Sample Number	Previous Crop	Intended Crop	Yield Goal	Lime Tons/Acre	N	P205	K2O	Mg	Ca	S	Zn	Mn	Fe	Cu	B
1011A	Wheat HR Winter	Wheat HR Winter	80 bu	0.0	125	25	20	10	0	5					

Crop yield is influenced by a number of factors in addition to soil fertility. No guarantee or warranty concerning crop performance is made by A & L.



C15232-10089

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Fall 2015 soil test shows the total available nitrogen is at 42 pounds with the top foot of soil down to only 14 pounds of available Nitrogen. This shows a 33% reduction is available so nitrogen and levels that are low. There is very little available residual nitrogen left in the field so leaching is not a concern.

Using the spring 2016 soil test and with the intentions and ability to produce an 80 bushel Hard Red Spring Wheat for Rogers Flour Mill the recommended a total application rate for nitrogen of 125 pounds per acre. As Mr. Regher uses manure as the sole nutrient source for his organic farming operation and manure has a slower total release pattern than commercial fertilizer and as he has now been applying manure since 2012 cropping season we will consider the total manure nitrogen content in the manure as available for this year.

125 pound N required Divided by 10.1 pounds per 1,000 gallons = 12,000 gallons per acre total application rate of Liquid Dairy manure split into 3,000 gallons applied in the Fall of 2015 before planting and the balance of 9,000 gallons to be applied in the spring for 2016 before crop growth gets to advanced, April 1st.

Manure will be applied to the 46.1 acres included in fields 1 and 2, no manure or nutrients will be applied in field #3.

8 SUMMARY

- All nutrients used on this farm are brought on in an organic form and with the freight, handling and spreading costs care has been and will be used to not over apply manure.
- Due to the light soil type and apparent nutrient leaching taking place in the winter and spring season's. Nutrients will only be applied in the spring after runoff is complete or a limited application could be required in the fall for starting a winter crop. This would be limited to the fall crop expected uptake amounts with the main nutrient application still being done in the spring.
- Fall sampling will be done to determine the amount of N that has been released through the summer and not taken up by the crop. This will be balance with the early season plant requirements to develop an application rate for the field that addresses both the crop and the possibility of nutrient leaching in the off season.

Supporting Documentations

Fall 2015 Manure Test

REPORT NO. C15232-80002
ACCOUNT NO. 05219

A&L CANADA LABORATORIES INC.

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VERNON, BC V1H 2A7
CANADA
ATTN: DOUG MACFARLANE

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MANURE ANALYSIS

LAB NUMBER: 2328004
SAMPLE ID: #1 LAGOON

DATE RECEIVED: 2015-08-20
DATE REPORTED:
DATE PRINTED: 2015-08-27

PARAMETER	ANALYSIS RESULT	POUNDS PER 1,000 GAL	ESTIMATED AVAILABILITY PER 1,000 GAL
Dry Matter	1.4 %		
Nitrogen (Total)	0.101 %	10.1	
NH4-N	677 ppm	6.8	
Phosphorus (Total)	0.0213 %		
Phosphate (P as P2O5) **	0.0490 %	4.9	2.0
Potassium (Total)	0.1204 %		
Potash (K as K2O) **	0.1445 %	14.4	13.0

* All Parameters are reported on an as is basis.

**Available nutrients are reported as total available. Only a portion of these nutrients will be available the year of application. For information on nitrogen availability, see reverse side of page.

More information available: http://www.alcanada.com/files/Manure_Analysis.pdf



C15232-80002

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Nutrient Removal Calculator

APPROXIMATE NUTRIENT REMOVAL (lbs/ac)

	N	P	K	Mg	Ca	S
Wheat (grain)	128	48	32	8	4	8
Straw	40	9.6	96	19.2	16.8	10.4
Total	168	57.6	128	27.2	20.8	18.4

Note:

Nutrient removal calculator is supplied by A&L Canada Laboratories Inc.

Nutrient removal is calculated for an average production of 80 bushels per acre wheat crop. As Wheat is the closest relative they have to Spelt for nutrient recommendations we use Wheat in the recommendations.

The crop removes 128 pounds of N for the grain and an additional 40 pounds in the straw. This plan is written for a total removal of 125 pounds.

SPRING 2016 MANURE TEST

The spring 2016 liquid manure test results show a total nitrogen content of 11.1 pounds per 1,000 gallons versus 10.1 pounds in the fall 2015 testing. I see no need to change or reduce the planned application rate from the latest manure test.

REPORT NO. C16067-80000
ACCOUNT NO. 05219

A&L CANADA LABORATORIES INC.

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CANADA

FOR: HS JANSEN

ATTN: DOUG MACFARLANE

PAGE: 1

MANURE ANALYSIS

LAB NUMBER: 678001
SAMPLE ID: BIG LAGOON

DATE RECEIVED: 2016-03-07
DATE REPORTED:
DATE PRINTED: 2016-03-14

PARAMETER	ANALYSIS RESULT	POUNDS PER 1,000 GAL	ESTIMATED AVAILABILITY PER 1,000 GAL
Dry Matter	1.3 %		
Nitrogen (Total)	0.111 %	11.1	
NH4-N	730 ppm	7.3	
Phosphorus (Total)	0.0150 %		
Phosphate (P as P2O5) **	0.0345 %	3.5	1.4
Potassium (Total)	0.1039 %		
Potash (K as K2O) **	0.1247 %	12.5	11.3
Organic Matter *	0.8 %		
Carbon:Nitrogen Ratio (C:N)	4 : 1		
Calcium	0.0606 %	6.1	
Magnesium	0.0245 %	2.5	

* All Parameters are reported on an as is basis.

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More information available: http://www.alcanada.com/files/Manure_Analysis.pdf



C16067-80000

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Water Testing – Ground Water Sampling Results

Regarding Section 2- b) of the Information Order written March 6, 2014 until now I have assumed that the active soil and manure testing fulfilled the requirements and spirit of the section.

As we have been controlling the inputs to crop requirements and applying them with the correct crop timing and along with the extensive water testing Steel Springs Water District, the various Ministries of Government involved and the Jansen Dairy have been doing resampling his well would be complete redundancy.

Enclosed is this Springs water sample , ID #1 –DR 86 is from the well on the farm and the second one Sample ID #2 is from the overflow on Steel Springs.

A commonly accepted premise is that the nitrate content in the ground water under the farm may be coming from other non-point sources and the best practice is to ensure that excess nutrients are not applied to the surface on that property and then they will not contribute excessively to the overall water problem.



SAMPLE ANALYTICAL DATA

REPORTED TO PROJECT	Steele Springs Waterworks Analytical Testing	WORK ORDER REPORTED	6010865 Jan-26-16
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Analyte	Result / Recovery	Standard / Guideline	MRL / Units Limits	Prepared	Analyzed	Notes
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Sample ID: #1 DR. 86 (6010865-01) [Water] Sampled: Jan-19-16 10:45

Anions

Nitrate as N	8.83	MAC = 10	0.010 mg/L	N/A	Jan-20-16	
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Sample ID: #2 Overflow (6010865-02) [Water] Sampled: Jan-19-16 11:00

Anions

Nitrate as N	12.6	MAC = 10	0.010 mg/L	N/A	Jan-20-16	
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CONTINGENCY PLAN

As per section 2 - a) of the Order we have not included a detailed contingency plan because it does not apply to this operation. There is no livestock on the farm to produce nutrients.

All nutrients are purchased onto the farm and the Plan is to reduce purchases to what is required for efficient crop production and to ensure acceptable soil nutrient levels at the end of the growing season.

2016 OPERATIONAL PLANS AND CHANGES

As Doug Regehr has been farming his ground organically the last number of years but with the costs involved, low economic returns and effort required to continue he will not be applying any nutrients this year on his fields.

Mr. Regehr will be leasing the land to a local forage producer and we will be planting an Alfalfa/Grass forage mix for the next 5 years. This will eliminate the need to add nitrogen or manure to the fields during that time and will be using chemical fertilizer where required.