

Appendix J

2016 George DeRuyter & Son/D&A

Dairies Off-site Liquid Manure Transfer –
Field Soil Sample Results


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Measuring Crop Needs for Greater Profits

Fertility Report

George DeRuyter & Sons (Y281)

F16-0410

9635

Field: [REDACTED] Mint

Acres: 72

Sample Date: 9/2/2016

Crop: Corn

Irrigation: Rill

Previous Crop: 2016 Mint

Current Crop: 2017 Corn

Soil series: Toppenish-Track silty clay lo **Leach Hazard:**
Topography: Very gentle slope

No. of Sites: 20

Avg Sampling Depth: 1.9

Restrictive layer? Y **Where?** Light scattered rock.

Residue Incorp? N **Type?** Mint residue, disked lightly.

Comments: Sampled a two foot field composite.

<u>Sample Area</u>	<u>Depth</u>	<u>ppm</u>		<u>Mobile Nutrients (lbs/ac)</u>				<u>Exch. / Soluble Bases (meq/100g)</u>					
		<u>NO₃</u>	<u>NH₄</u>	<u>NO₃</u>	<u>NH₄</u>	<u>SO₄</u>	<u>B</u>	<u>Ca</u>	<u>Mg</u>	<u>K</u>	<u>Na</u>	<u>T.B.</u>	<u>CEC</u>
Field Composite	1'	9.6	4.7	33	16								
Field Composite	2'	6.2	2.7	21	9								
	Totals:			54	25								

Comments: Residual nitrates are low.
Ammonium is in equilibrium.

Comments:
Fertility and chemical data used to formulate a recommendation was processed and reported by Soil Test, Inc.



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Measuring Crop Needs for Greater Profits

Fertility Report

George DeRuyter & Sons (Y281)

F16-0446

9652

Field: Substation 02

Acres: 21

Sample Date: 9/15/2016

Crop: Silage Corn

Irrigation: Rill

Previous Crop: 2016 Silage Corn

Current Crop: 2017

Soil series: Toppenish silty clay loam

Leach Hazard:

No. of Sites: 14

Topography: Very gentle south slope

Avg Sampling Depth: 2.0

Restrictive layer? N **Where?**

Residue Incorp? N **Type?** Moderate corn stubble.

Comments: Sampled a two foot field composite, post harvest. At the time of sampling the soil surface was dry and rocky.

<u>Sample Area</u>	<u>Depth</u>	<u>ppm</u>		<u>Mobile Nutrients (lbs/ac)</u>				<u>Exch. / Soluble Bases (meq/100g)</u>					
		<u>NO₃</u>	<u>NH₄</u>	<u>NO₃</u>	<u>NH₄</u>	<u>SO₄</u>	<u>B</u>	<u>Ca</u>	<u>Mg</u>	<u>K</u>	<u>Na</u>	<u>T.B.</u>	<u>CEC</u>
Field Composite	1'	9.2	1.3	31	4								
Field Composite	2'	11.9	1.1	40	4								
Totals:				72	8								

Comments: Residual nitrates are low.
Ammonium is low as well.

Comments: _____

Fertility and chemical data used to formulate a recommendation was processed and reported by Soil Test, Inc.


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Measuring Crop Needs for Greater Profits

Fertility Report

George DeRuyter & Sons (Y281)

F16-0347

9576

Field: Track Road

Acres: 1

Sample Date: 8/3/2016

Crop: Wheat

Irrigation: Rill

Previous Crop: 2016 Wheat

Current Crop: 2017 Corn

Soil series:
Leach Hazard:
No. of Sites: 15

Topography: Very gentle slopes

Avg Sampling Depth: 2.0

Restrictive layer? N **Where?**
Residue Incorp? N **Type?** Wheat stubble.

Comments: Sampled a two foot field composite. At the timethe soil surface was dry.

<u>Sample Area</u>	<u>Depth</u>	<u>ppm</u>		<u>Mobile Nutrients (lbs/ac)</u>				<u>Exch. / Soluble Bases (meq/100g)</u>					
		<u>NO₃</u>	<u>NH₄</u>	<u>NO₃</u>	<u>NH₄</u>	<u>SO₄</u>	<u>B</u>	<u>Ca</u>	<u>Mg</u>	<u>K</u>	<u>Na</u>	<u>T.B.</u>	<u>CEC</u>
Field Composite	1'	58.6	3.9	205	14								
Field Composite	2'	33.8	3.8	118	13								
Totals:				323	27								

Comments: Residual nitrates are generally high.

Comments:
Fertility and chemical data used to formulate a recommendation was processed and reported by Soil Test, Inc.


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Measuring Crop Needs for Greater Profits

Fertility Report

George DeRuyter & Sons (Y281)

F16-0348

9575

Field: Steven Road

Acres: 85

Sample Date: 8/3/2016

Crop: Wheat

Irrigation: Rill

Previous Crop: 2016 Wheat

Current Crop: 2017 Corn

Soil series: Toppenish silt loam

Leach Hazard:
No. of Sites: 21

Topography: Very gentle slopes

Avg Sampling Depth: 2.0

Restrictive layer? N **Where?**
Residue Incorp? N **Type?** Wheat stubble.

Comments: Sampled a two foot field composite. At the timethe soil surface was dry.

<u>Sample Area</u>	<u>Depth</u>	<u>ppm</u>		<u>Mobile Nutrients (lbs/ac)</u>				<u>Exch. / Soluble Bases (meq/100g)</u>					
		<u>NO₃</u>	<u>NH₄</u>	<u>NO₃</u>	<u>NH₄</u>	<u>SO₄</u>	<u>B</u>	<u>Ca</u>	<u>Mg</u>	<u>K</u>	<u>Na</u>	<u>T.B.</u>	<u>CEC</u>
Field Composite	1'	10.0	5.6	35	20								
Field Composite	2'	4.9	3.6	17	13								
	Totals:			52	32								

Comments: Residual nitrates are low.

Comments:
Fertility and chemical data used to formulate a recommendation was processed and reported by Soil Test, Inc.


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Measuring Crop Needs for Greater Profits

Fertility Report

George DeRuyter & Sons (Y281)

F16-0428

9651

Field:
Acres: 240

Sample Date: 9/13/2016

Crop: Silage Corn

Irrigation: Center Pivot

Previous Crop: 2016 Silage Corn

Current Crop: 2017 Silage Corn

Soil series:
Leach Hazard:
No. of Sites: 30

Topography:
Avg Sampling Depth: 1.6

Restrictive layer? Y **Where?** Scattered rock.

Residue Incorp? N **Type?** Moderate corn stubble, not disked.

Comments: Sampled a two foot field composite. At the time of sampling, this field was post-harvest. The soil surface was dry.

Sample Area	Depth	ppm		Mobile Nutrients (lbs/ac)				Exch. / Soluble Bases (meq/100g)					
		NO ₃	NH ₄	NO ₃	NH ₄	SO ₄	B	Ca	Mg	K	Na	T.B.	CEC
Field Composite	1'	21.7	1.6	76	6								
Field Composite	2'	26.6	0.7	93	2								
Totals:				169	8								

Comments: Residual nitrates are moderate.
Ammonium is low.

Comments:

Fertility and chemical data used to formulate a recommendation was processed and reported by Soil Test, Inc.

Western Laboratories.com

211 Highway 95 • P.O. Box 1020 • Parma, ID 83660

800-658-3858 • FAX 208-722-6550

<http://www.westernlaboratories.com>Methods: www.westernlaboratories.com/methods

Dealer: 17-63

Reported: 3-15-2016

Test #: 1

Grower: El Rancho

Field ID: Dekker And Van Belle

Lab #:

29384

AGRICULTURAL SOIL REPORT

ELEMENT		ANSWER	INTERP	SHOULD BE	ELEMENT		ANSWER	INTERP	SHOULD BE
pH-Soil		8.2	Moderately Basic		Sulfur-ppm		33	Optimum	20 +
pH-SMP					Calcium-ppm		3646	High	1,800 +
Soluble Salts		0.30	Optimum	< 1.5	Magnesium-ppm		577	High	250 +
% Lime		M	3.1 to 5.5 % lime		Sodium-ppm		160	Optimum	< 225
% Organic Matter		1.85	Low		Zinc-ppm		2.0	Optimum	1.0 - 3.0
Nitrates-ppm		5	Very Low	10 - 35	Copper-ppm		1.7	Optimum	0.8 - 2.5
Ammonium-ppm		2	Low	5 +	Manganese-ppm		5	Low	6 - 30
Phosphorus-ppm		84	Very High	25 - 40	Iron-ppm		11	Optimum	7 +
Phos-ppm-Bray				50 - 100	Boron-ppm		0.7	Low	0.7 - 1.5
Potassium-ppm		637	High	300 +	TBS%		59		
Texture	Loam		Water Holding Capacity/foot		2.06		Bulk Density		1.4
Cation Exchange Capacity - CEC			16	P Index		43		Fertilizer Suggestions in Pounds per Acre for the whole season	
Percent Base Saturation			159						
BASES		IDEAL	YOURS		NO3 ppm	NH4 ppm	Crop	Alfalfa	Alfalfa
Calcium-% of CEC		65-80	114	1 Ft	5	2	Yield Goal	7 Tons	10 Tons
Magnesium-% of CEC		10-20	30	2 Ft			Past Crop		
Potassium-% of CEC		2-6	10	3 Ft			Acres		
Sodium-% of CEC (ESP)		< 5	4	Total N PPM		7	Nitrogen	133	199
Hydrogen-% of CEC		< 15		Lbs N / Acre		21	Phosphate		
Ratio	Ideal	Yours	Evaluation	Recommendations			Add Phos for P INDEX		
Ca:Mg	6-20:1	6 :1	OK				Potash		
Ca:K pH >7	15:1	6 :1	OK				P.F. Sulfur		
Ca:K pH <7	10:1	:1					Elemental Sulfur	205	
Ca:P pH >7	100:1	43:1	OK				Gypsum		
Ca:P pH <7	40:1	:1					Lime		
P:Zn	15:1	42 :1	High	Watch Zn			Dolomite		
P:Mn	4:1	17:1	High	Watch Mn			Magnesium		
P:Cu	25:1	49 :1	High	Watch Cu			Zinc	3	7
Zn:Cu	3:1	1 :1	OK				Manganese	1	6
Mn:Zn	3:1	3 :1	OK				Copper		
Mn:Cu	7:1	3 :1	OK				Boron	1	2
K:B	200:1	910 :1	High	Watch B					
Mg:K	2:1	1 :1	Low	Watch Mg					
Elemental Sulfur = Reclamation Sulfur P.F. Sulfur = Plant Food Sulfur									

Elemental Sulfur = Reclamation Sulfur

P.F. Sulfur = Plant Food Sulfur

*"Always practice the laws of Agronomy."**John P. Taberna, Soil Scientist*

Split apply Nitrogen. Tissue and soil test in-season gives the best results


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Measuring Crop Needs for Greater Profits

Fertility Report

George DeRuyter & Sons (Y281)

F16-0177

9348

Field:
Acres: 1

Sample Date: 4/25/2016

Crop: Triticale

Irrigation: Wheel Line

Previous Crop: 2015

Current Crop: 2016 Triticale

Soil series:
Leach Hazard:
No. of Sites:
Topography:
Avg Sampling Depth: 2.0

Restrictive layer? N **Where?**
Residue Incorp? N **Type?**
Comments: Sampled a two foot field composite. At the time of sampling the soil surface was dry, triticale at 14-20" tall.

Sample Area	Depth	ppm		Mobile Nutrients (lbs/ac)				Exch. / Soluble Bases (meq/100g)					
		NO ₃	NH ₄	NO ₃	NH ₄	SO ₄	B	Ca	Mg	K	Na	T.B.	CEC
Field Composite	1'	62.8	8.9	220	31								
Field Composite	2'	46.4	6.1	162	21								
	Totals:			382	53								

Comments:
Comments:

Fertility and chemical data used to formulate a recommendation was processed and reported by Soil Test, Inc.