

Appendix F
2019 Liberty/H&S Bosma Dairies Off-Site
Liquid Manure Transfer – Field Soil Sample
Results



Measuring Crop Needs for Greater Profits

Fertility Report



F19-0375
10005

Crop: Triticale **Acres:** 13 **Sample Date:** 5/28/2019
Irrigation: Wheel Line **Previous Crop:** 2018 Silage Corn
Current Crop: 2019 Triticale

Soil series: **Leach Hazard:** **No. of Sites:** 10
Topography: **Avg Sampling Depth:** 2.0

Restrictive layer? Y **Where?** Rocky ground.

Residue Incorp? N **Type?**

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

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'	50.8	2.4	178	8								
Field Composite	2'	36.7	1.0	128	4								
Totals:				306	12								

Comments: The second foot nitrate level is below 45 ppm.

Comments: _____

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



Measuring Crop Needs for Greater Profits

Fertility Report



F19-0376
9320

Crop: Triticale **Acres:** 23 **Sample Date:** 5/28/2019
Irrigation: Wheel Line **Previous Crop:** 2018 Sudangrass
Current Crop: 2019 Triticale

Soil series: Burke silt loam **Leach Hazard:** **No. of Sites:** 14
Topography: South undulating **Avg Sampling Depth:** 1.9
Restrictive layer? N **Where?**
Residue Incorp? N **Type?**

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

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'	49.6	3.2	174	11								
Field Composite	2'	30.9	0.5	108	2								
Totals:				282	13								

Comments: The second foot nitrate level is below 45 ppm.

Comments: _____

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



Measuring Crop Needs for Greater Profits

Fertility Report

F19-0398

9584

Crop: Triticale

Acres: 33

Sample Date: 6/7/2019

Irrigation: Wheel Line

Previous Crop: 2018 Oats-Sudangrass

Current Crop: 2019 Triticale

Soil series: Burke-Scoon silt loams

Leach Hazard:

No. of Sites: 14

Topography: Undulating

Avg Sampling Depth: 1.7

Restrictive layer? Y **Where?** Very compact soil and rocky.

Residue Incorp? N **Type?**

Comments: Sampled a two foot field composite. Soil surface dry, light weeds.

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'	6.4	2.6	22	9														
Field Composite	2'	6.5	2.5	23	9														
Totals:				45	18														

Comments: The second foot nitrate level is below 45 ppm.

Comments: _____

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



Fertility Report

F19-0384

9316

Crop: Triticale

Acres: 32

Sample Date: 5/30/2019

Irrigation: Wheel Line

Previous Crop: 2018 Oats-Sudangrass

Current Crop: 2019 Triticale

Soil series: Burke-Scoon silt loams

Leach Hazard:
No. of Sites: 14

Topography: Undulating

Avg Sampling Depth: 1.7

Restrictive layer? Y **Where?** Rocky

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

Comments: Sampled a two foot field composite, post harvest. At the time of sampling the soil surface was dry, regrowth at 10".

<u>Sample Area</u>	<u>Depth</u>	<u>ppm 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'	11.2	2.5	39	9								
Field Composite	2'	9.0	2.8	32	10								
	Totals:			71	19								

Comments: The second foot nitrate level is below 45 ppm.

Comments: _____

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



Measuring Crop Needs for Greater Profits

Fertility Report

██████████ 9585
 ██████████ ██████████
Crop: Triticale **Acres:** 58 **Sample Date:** 5/30/2019
Irrigation: Wheel Line **Previous Crop:** 2018 Oats-Sudangrass
Current Crop: 2019 Triticale

Soil series: Burke-Scoon silt loams **Leach Hazard:** **No. of Sites:** 16
Topography: Undulating **Avg Sampling Depth:** 1.3

Restrictive layer? Y **Where?** Rocky
Residue Incorp? N **Type?** Moderate stubble.

Comments: Sampled a two foot field composite, post harvest. At the time of sampling the soil surface was dry, regrowth at 6".

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'	5.2	3.6	18	13								
Field Composite	2'	7.1	4.1	25	14								
Totals:		43		27									

Comments: The second foot nitrate level is below 45 ppm.

Comments: _____

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



Measuring Crop Needs for Greater Profits

Fertility Report

[REDACTED] 9317
[REDACTED] [REDACTED] **Acres:** 83 **Sample Date:** 5/30/2019
Crop: Triticale **Irrigation:** Wheel Line **Previous Crop:** 2018 Oats-Sudangrass

Soil series: Scoon silt loam **Leach Hazard:** **No. of Sites:** 20
Topography: Moderate E slope **Avg Sampling Depth:** 1.3

Restrictive layer? Y **Where?** Rocky with compact soil.

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

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

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'	5.4	4.1	19	14								
Field Composite	2'	6.1	2.8	21	10								
Totals:		40		24									

Comments: The second foot nitrate level is below 45 ppm.

Comments: _____

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



Fertility Report

████████████████████

████████████████████ 9721

Crop: Triticale

Acres: 47
Irrigation: Wheel Line

Sample Date: 5/28/2019
Previous Crop: 2018 Corn
Current Crop: 2019 Triticale

Soil series:

Leach Hazard:

No. of Sites: 16

Topography:

Avg Sampling Depth: 2.0

Restrictive layer? N *Where?*

Residue Incorp? N *Type?*

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

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'	87.6	0.5	307	2								
Field Composite	2'	88.7	2.1	310	7								
Totals:				617	9								

Comments: The second foot nitrate level is above 45 ppm.

Comments: _____

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



Measuring Crop Needs for Greater Profits

Fertility Report

████████████████████

████████████████████ 9318

████████████████████

Acres: 42
Irrigation: Wheel Line

Sample Date: 5/31/2019
Previous Crop: 2018 Oats-Sudangrass
Current Crop: 2019 Triticale

Soil series: Burke-Shano silt loam
Topography: Undulating
Restrictive layer? Y **Where?** Rocky
Residue Incorp? N **Type?**

Leach Hazard:
No. of Sites: 16
Avg Sampling Depth: 1.8

Comments: Sampled a two foot field composite. At the time of sampling the soil surface was dry. Recently disked.

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'	36.3	1.7	127	6								
Field Composite	2'	46.1	1.2	161	4								
Totals:				288	10								

Comments: The second foot nitrate level is above 45 ppm.

Comments: _____

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



Measuring Crop Needs for Greater Profits

Fertility Report

████████████████████

████████████████████ 9319

████████████████████

Acres: 57
Irrigation: Wheel Line

Sample Date: 5/31/2019
Previous Crop: 2018 Oats-Sudangrass
Current Crop: 2019 Triticale

Soil series: Burke-Scoon silt loams
Topography: South slope
Restrictive layer? Y **Where?** Rocky
Residue Incorp? N **Type?**

Leach Hazard:

No. of Sites: 16
Avg Sampling Depth: 1.7

Comments: Sampled a two foot field composite. At the time of sampling the soil surface was dry. Recently disked.

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'	56.6	12.0	198	42									
Field Composite	2'	70.1	2.2	245	8									
Totals:				443	50									

Comments: The second foot nitrate level is above 45 ppm.

Comments: _____

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



Measuring Crop Needs for Greater Profits

Fertility Report

[REDACTED] 10007
[REDACTED] [REDACTED] **Acres:** 70 **Sample Date:** 6/7/2019
Crop: Triticale **Irrigation:** Wheel Line **Previous Crop:** 2018 Sudangrass

Soil series: Burke-Shano silt loams **Leach Hazard:**

Topography:

Restrictive layer? Y **Where?** Rocky

Residue Incorp? N **Type?**

Comments: Sampled a two foot field composite. Soil surface 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'	4.8	4.9	17	17									
Field Composite	2'	7.3	3.2	26	11									
Totals:				42	28									

Comments: The second foot nitrate level is below 45 ppm.

Comments: _____

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