Worksheet 1. Calculate the Crop Nitrogen Application Recommendations

A	B	C	D	E	F	G	H
Field Description	**Crop Information**			**Crop Nitrogen (N) Applicator Calculations**			**Crop Nitrogen Application Recommend'n**
(name or number)	Crop type to be fertilized	Crop dry yield (estimated) (tons/ac)[a]	Protein content of crop[b] (estimated) (%)	Crop Nitrogen (N) Uptake (col. C x D x 1.6 x 2) (lb N/ac)	Available soil nitrogen (nitrate plus ammonia)[c] (lab report) (lb N/ac)	Nitrogen fertility factor (Table 1) (lb N/ac)	(col. E – F - G) (lb N/ac)
501 NW Corner	*Wheat*	*4.0*	*15.0*	*192*	*41*	*90.0*	*61*
502 VD	*Wheat*	*4.0*	*15.0*	*192*	*34*	*0.0*	*158*
503 Leos	*Wheat*	*4.0*	*15.0*	*192*	*17*	*45.0*	*130*
504 North	*Spelt*	*3.5*	*14.0*	*157*	*132*	*45.0*	*-20*
505 South	*Spelt*	*3.5*	*14.0*	*157*	*32*	*45.0*	*80*
601 Tillaart Home Pivot	*Corn Gr.*	*6.0*	*9.0*	*173*	*70*	*20.0*	*83*
602 Freemans	*Spelt*	*3.5*	*14.0*	*157*	*90*	*0.0*	*67*
603 Hullcar Road	*Corn Gr.*	*6.0*	*9.0*	*173*	*58*	*0.0*	*115*
604 Tillart Back	*Spelt*	*3.5*	*14.0*	*157*	*48*	*0.0*	*109*
701 Curtis Krebbers	*corn sil*	*7.5*	*8.0*	*192*	*111*	*0.0*	*81*
702 Doug R Home	*Wheat*	*4.0*	*15.0*	*192*	*25*	*0.0*	*167*
				0			*0*
				0			*0*
				0			*0*
				0			*0*
				0			*0*

[a] convert tonnes/ha to tons/acre by dividing by 2.25
(tonnes/ha ÷ 2.25 = tons/ac)

[b] Enter value as a whole number (i.e. "16" rather than "0.16"). If protein content is unknown, use the following values:
Grass and Grass-legume mix stands for hay or silage production (up to 40% legumes): 3 cuts or less - 12%; 5 cuts or more - 16%
Silage corn - 8%
Alfalfa hay (3 cuts) - 20%
Annual ryegrass: 1 cut - 12%, 2 cuts - 15%
Cereals (1 cut, whole crop cut for forage) - 11%

[c] if lab soil nitrate or ammonia value is in ppm, mg/kg, µg/g, mg/L, µg/mL, then convert to lb N/ac by multiplying by 1.3

Table 1. Assessing Field Nitrogen (N) Fertility (see note to the right)

Frequency and Amount of Manure and Fertilizer, Previous Crop, Nitrogen Fixation by Legumes	**Nitrogen Fertility Factor (lb N/ac)**
Fertilizer application every two years or less often at low rate (less than 35 kg N/ha)	-90
Fertilizer application every two years at recommended annual rates	-45
Annual inorganic fertilizer application at recommended rates or higher	0
Previous Crop: established forage stands - 30-50% legumes OR Legume (as sole crop or in mixture) is ploughed down in spring	45
Manure application every year at agronomic nitrogen rates or higher OR Previous Crop: established forage stands - more than 50% legumes	90

Table 1 Note for South Coastal farms: A determination of soil nitrogen content does not accurately reflect a soil's available nitrogen content because in early spring when soil samples are taken, very little crop-available nitrogen is present in the soil. Microbial activity in the soil during the warm summer months breaks down organic material and releases nitrogen, which is used by the crop. For that reason, the amount of nitrogen a soil can deliver to a growing crop is more accurately predicted by assessing the previous nutrient additions to the site.

Values in Table 1 serve as a general guide. Where more than one factor applies, the values **should be added.**

Worksheet 2. Calculate the Crop Phosphorus Application Recommendation

A	B	C	D	E	F	G	H	I
Field Description	**Crop Information**		**Crop Phosphorus (P) Applicator Calculations**					**Crop**
(Worksheet 1, col. A) (name or number)	Crop type to be fertilized	Crop dry yield (estimated) (tons/ac)	Crop phosphorus factor (Table 2) (lb P/ton)	Crop Phosphorus Uptake (col. C x D) (lb P/ac)	Soil test phosphorus value (Kelowna method) [a] 0-15 cm depth (ppm)	Soil phosphorus status (Table 3, col. 2)	Soil phosphorus level factor (Table 3, col. 5)	**Phosphorus Application Recommendation (SEE NOTE BELOW)** (col. E x H) x 2.3 (lb P_2O_5/ac)
501 NW Corner	*Wheat*	*4*	*5.0*	*20*	*64*	*Optimum*	*0.5*	*23*
502 VD	*Wheat*	*4*	*5.0*	*20*	*25*	*Medium*	*0.75*	*35*
503 Leos	*Wheat*	*4*	*5.0*	*20*	*94*	*High*	*0.2*	*9*
504 North	*Spelt*	*3.5*	*4.0*	*14*	*64*	*Optimum*	*0.5*	*16*
505 South	*Spelt*	*3.5*	*4.0*	*14*	*44*	*Optimum*	*0.5*	*16*
601 Tillaart Home Pivot	*Corn Gr.*	*6*	*4.0*	*24*	*117*	*Excess*	*0*	*0*
602 Freemans	*Spelt*	*3.5*	*4.0*	*14*	*110*	*Excess*	*0*	*0*
603 Hullcar Road	*Corn Gr.*	*6*	*4.0*	*24*	*138*	*Excess*	*0*	*0*
604 Tillart Back	*Spelt*	*3.5*	*4.0*	*14*	*88*	*High*	*0.2*	*6*
701 Curtis Krebbers	*corn sil*	*7.5*	*4.0*	*30*	*98*	*High*	*0.2*	*14*
702 Doug R Home	*Wheat*	*4*	*4.0*	*16*	*147*	*Excess*	*0*	*0*
		0		*0*				*0*
		0		*0*				*0*
		0		*0*				*0*
		0		*0*				*0*
		0		*0*				*0*

[a] For each field, use Worksheet 2.1 to estimate the equivalent Kelowna test value and copy it into the table above.

Note Worksheet 2: Even if the soil phosphorus concentration indicates that no phosphorus is recommended for this field, a small amount of starter phosphorus fertilizer (15 - 25 kg/ha of P_2O_5) is recommended for fields being put into annual crops such as corn and cereals.

Table 2. Phosphorus in Crop Material (book values)

Crop	Crop Phosphorus Factor (lb P/ton)
Grass or Alfalfa	7.4
Corn	4

Table 3. Soil Phosphorus (P) Rating and Management Options

1	2	3	4	5
Soil Phosphorus (Kelowna method) (ppm, µg/mL or mg/L)	**Status**	**Expected Response to Added Phosphorus**	**Suggested Management Strategy**	**Soil Phosphorus level factor**
0 - 20	Deficient	Good crop response to added phosphorus	Add full crop phosphorus uptake	1
21 - 40	Medium	Medium crop response to added phosphorus	Add 75% of crop phosphorus uptake this year	0.75
41 - 75	Optimum	Very small crop response to added phosphorus	Add 50% of crop phosphorus uptake this year	0.5
76 - 100	High	No immediate response to added phosphorus	Add 20% of crop phosphorus uptake this year	0.2
> 100	Excess	No crop response to added phosphorus	No manure or fertilizer phosphorus required this year	0

Worksheet 2.1. Soil test P conversion factors

A	B	C	D	E
Soil pH	Soil test phosphorus method [a] (lab report)	Soil test phosphorus value [b] (lab report) (ppm, µg/mL, mg/L,µg/g or mg/kg)	Equivalent Kelowna method value [c] (ppm, µg/mL, mg/L,µg/g or mg/kg)	Strength of relationship with Kelowna method [d] r^2
soil pH < 7.2	*Bray-1*	*158*	*117*	*0.96*

[a] If unknown, ask the laboratory or refer to the Nutrient Management Reference Guide, Factsheet 1.
*For bicarbonate, most commercial laboratories use "bicarbonate-colorimetry."

[b] If soil test reports P as P_2O_5, convert to P by multiplying P_2O_5 by 0.436. If lab reports have ranges for soil test P results (e.g. ">60"), ask the laboratory to report absolute values.

[c] Copy this value into Column F of Worksheet 2.

[d] Greater r^2 values indicate stronger relationships with the Kelowna method: 0 = no relationship; 1 = perfectly linear relationship

*The conversion factor for bicarbonate-colorimetry is uncertain. No r^2 value is provided because bicarbonate-colorimetry was not evaluated in the study of relationships between soil test methods (Kowalenko 2010). For details, see the Nutrient Management Reference Guide, Factsheet 3.

Relationships are based on soil samples from the Lower Fraser Valley and Okanagan-Similkameen and are proposed for the rest of British Columbia.
Source: Kowalenko, C.G. 2010.

Worksheet 3. Calculate the Crop Potassium Application Recommendation

A	B	C	D	E	F	G	H	I
Field Description	**Crop Information**		**Crop Potassium (P) Applicator Calculations**					**Crop**
(Worksheet 1, col. A)	Crop type to be fertilized	Crop dry yield	Crop potassium factor	Crop potassium uptake	Soil test potassium value (Kelowna method) [a]	Soil potassium status	Soil potassium level factor	**Potassium Application Recommendation**
(name or number)		(estimated)	(Table 4)	(col. C x D)	0-15 cm depth	(Table 5, col. 2)	(Table 5, col. 5)	(col. E x H) * 1.2
		(tons/ac)	(lb K/ton)	(lb K/ac)	(ppm)			(lb K_2O/ac)
501 NW Corner	*Wheat*	*4*	*20.0*	*80*	*411*	*Excess*	*0*	*0*
502 VD	*Wheat*	*4*	*20.0*	*80*	*131*	*Optimum -*	*0.6*	*58*
503 Leos	*Wheat*	*4*	*20.0*	*80*	*318*	*High*	*0*	*0*
504 North	*Spelt*	*3.5*	*20.0*	*70*	*129*	*Optimum -*	*0.6*	*50*
505 South	*Spelt*	*3.5*	*20.0*	*70*	*171*	*Optimum +*	*0.3*	*25*
601 Tillaart Home Pivot	*Corn Gr.*	*6*	*20.0*	*120*	*293*	*High*	*0*	*0*
602 Freemans	*Spelt*	*3.5*	*20.0*	*70*	*245*	*Optimum +*	*0.3*	*25*
603 Hullcar Road	*Corn Gr.*	*6*	*20.0*	*120*	*353*	*Excess*	*0*	*0*
604 Tillart Back	*Spelt*	*3.5*	*20.0*	*70*	*214*	*Optimum +*	*0.3*	*25*
701 Curtis Krebbers	*corn sil*	*7.5*	*20.0*	*150*	*113*	*Optimum -*	*0.6*	*108*
702 Doug R Home	*Wheat*	*4*	*20.0*	*80*	*292*	*High*	*0*	*0*
		0		*0*				*0*
		0		*0*				*0*
		0		*0*				*0*
		0		*0*				*0*
		0		*0*				*0*

[a] For each field, use Worksheet 3.1 to estimate the equivalent Kelowna test value and copy it into the table above.

Table 4. Potassium in Crop Material (book values)

Crop	Crop Potassium Factor (lb K/ton)
Grass or Alfalfa	40.0
Corn	20.0

Table 5. Soil Potassium (K) Rating and Management Options

1	2	3	4	5
Soil Potassium (Kelowna method) (ppm, µg/mL or mg/L)	**Status**	**Expected Response to Added Potassium**	**Suggested Management Strategy**	**Soil Potassium level factor**
0 - 100	Deficient	Good crop response to added potassium	Add full crop potassium uptake	1
101 - 150	Optimum -	Reasonable crop response to added potassium	Add 60% of crop potassium uptake	0.6
151 - 250	Optimum +	Some crop response to added potassium	Add 30% of crop potassium uptake	0.3
251 - 320	High	No crop response this year to potassium	No manure or fertilizer potassium required this year	0
> 320	Excess	No crop response for 2 years to potassium	No manure or fertilizer potassium required for 2 years	0

Worksheet 3.1. Soil test K conversion factors

B	C	D	E
Soil test potassium method [a]	Soil test potassium value [b]	Equivalent Kelowna method value [c]	Strength of relationship with Kelowna method [d]
(lab report)	(lab report)		
	(ppm, µg/mL, mg/L,µg/g or mg/kg)	(ppm, µg/mL, mg/L,µg/g or mg/kg)	r^2
Mehlich-3	*390*	*293*	*0.99*

[a] If unknown, ask the laboratory and refer to the Nutrient Management Reference Guide, Factsheet 1.

[b] If soil test reports K as K_2O, convert to K by multiplying K_2O by 0.83.

[c] Estimated Kelowna values are from a comparison of extractants, not specific laboratories. For details, see the Nutrient Management Reference Guide, Factsheet 3.

[d] greater r^2 values indicate stronger relationships with the Kelowna method: 0 = no relationship; 1 = perfectly linear relationship

Relationships are based on soil samples from the Lower Fraser Valley and Okanagan-Similkameen and are proposed for the rest of British Columbia.
Source: Kowalenko, C.G. 2010.

Worksheet 4. Calculate Crop Nutrients in the Manure Sources

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Manure Source and Application Method	**Manure Nitrogen (N) Availability Calculation**									**Manure P_2O_5 and K_2O**			
	Total nitrogen content (lab report) (%)[a]	Ammonium content (NH_4-N) (lab report) (ppm)[a]	Organic nitrogen content (col. B – C / 10^4) x 20 (lb N/ton)	N Mineralization factor (Table 6) (select from drop-down list)	Organic nitrogen mineralized this cropping year (col. D x E) (lb N/ton)	Ammonia (NH_4-N) retention factor (Table 7)	Ammonia (NH_4-N) remaining after volatilization (col. C / 10^4 x 20) x col. G (lb N/ton)	Nitrate (NO3-N) content of manure (lab report) (ppm)[a,b]	First-year plant available nitrogen (col. F + H) + (col. I / 10^4) (lb N/ton)	Total P (lab report) (%)[a]	Total P_2O_5 (col. K x 20 x 2.3) (lb P_2O_5/ton)	Total K (lab report) (%)[a]	Total K_2O (col. M x 20 x 1.2) (lb K_2O/ton)
Flush Lagoon	*0.09*	*134*	*1.5*	*0.35*	*0.54*	*0.7*	*0.19*		*0.72*	*0.010*	*0.5*	*0.11*	*2.6*
Dairy Solids	*0.32*	*318*	*5.8*	*0.25*	*1.44*	*0.58*	*0.37*		*1.81*	*0.070*	*3.2*	*0.17*	*4.0*
Settling Lagoon	*0.09*	*412*	*1.0*	*0.35*	*0.34*	*0.7*	*0.58*		*0.92*	*0.010*	*0.5*	*0.11*	*2.6*
			0.0		*0.00*		*0.00*		*0.00*		*0.0*		*0.0*
			0.0		*0.00*		*0.00*		*0.00*		*0.0*		*0.0*
			0.0		*0.00*		*0.00*		*0.00*		*0.0*		*0.0*
			0.0		*0.00*		*0.00*		*0.00*		*0.0*		*0.0*
			0.0		*0.00*		*0.00*		*0.00*		*0.0*		*0.0*

Worksheet 5. Estimate the Agronomic Balance for Nitrogen, Phosphorus and Potassium

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
Field Description	**Crop type**	**Field Size**	**Manure Source and Application Method**	**Manure Application Rate**	**Available Nutrients in the Year of Application**							**Crop Nutrient Recommendation (based on estimated soil nutrient supply)**			**Agronomic Balance (crop nutrient recommendation minus available nutrients in the year of application)**		
					Manure Sources				**Fertilizer**								
(Worksheet 1, col. A)	(Worksheet 1, col. B)		Show/Hide Manure Source #2 / Show/Hide Manure Source #3 — Click here for help to use the show/hide buttons.	See note below for guidance in determining rate[a]	**N** (Col E x Worksheet 4, col. J)	**P_2O_5** First-year P availability coefficient *	**P_2O_5** (Col E x G x Worksheet 4, col. L)	**K_2O** (Col E x Worksheet 4, col. N)	**N** Sum all planned fertilizer additions for the year. Use Worksheet 6.1 to the right to help.	**P_2O_5**	**K_2O**	**N** (Worksheet 1, col. H)	**P_2O_5** (Worksheet 2, col. I)	**K_2O** (Worksheet 3, col. I)	**N[a]** (col. M – F – J)	**P_2O_5[a]** (col. N – H – K)	**K_2O[a]** (col. O – I – L)
(name or number)		(ac)	(select from drop-down list)	(tons/ac)	(lb N/ac)	-	(lb P_2O_5/ac)	(lb K_2O/ac)	(lb N/ac)	(lb P_2O_5/ac)	(lb K_2O/ac)	(lb N/ac)	(lb P_2O_5/ac)	(lb K_2O/ac)	(lb N/ac)	(lb P_2O_5/ac)	(lb K_2O/ac)
501 NW Corner	Wheat	25.0	Flush Lagoon	30	22	0.65	9	79									
			Dairy Solids	0	0	0.65	0	0									
				0	0	0.65	0	0									
			all manures		22	n/a	9	79	0			61	23	0	39	14	-79
502 VD	Wheat	28.0	Flush Lagoon	20	14	0.50	5	53									
			Dairy Solids		0	0.50	0	0									
					0	0.50	0	0									
			all manures		14	n/a	5	53	0			158	35	58	144	30	5
503 Leos	Wheat	101.6	Flush Lagoon	30	22	0.75	10	79									
			Dairy Solids		0	0.75	0	0									
					0	0.75	0	0									
			all manures		22	n/a	10	79	0			130	9	0	108	-1	-79
504 North	Spelt	62.8	Flush Lagoon	0	0	0.65	0	0									
			Dairy Solids		0	0.65	0	0									
					0	0.65	0	0									
			all manures		0	n/a	0	0	0			-20	16	50	-20	16	50
505 South	Spelt	88.9	Flush Lagoon	20	14	0.50	5	53									
			Dairy Solids		0	0.50	0	0									
					0	0.50	0	0									
			all manures		14	n/a	5	53	0			80	16	25	65	12	-28
601 Tillaart Home Pivot	Corn Gr.	104.2	Flush Lagoon	40	29	0.85	16	106									
			Dairy Solids	0	0	0.85	0	0									
					0	0.85	0	0									
			all manures		29	n/a	16	106	0			83	0	0	54	-16	-106
602 Freemans	Spelt	101.0	Flush Lagoon	0	0	0.85	0	0									
			Dairy Solids	0	0	0.85	0	0									
				0	0	0.85	0	0									
			all manures		0	n/a	0	0	0			67	0	25	67	0	25
603 Hullcar Road	Corn Gr.	124.5	Flush Lagoon	25	18	0.85	10	66									
			Dairy Solids	0	0	0.85	0	0									
					0	0.85	0	0									
			all manures		18	n/a	10	66	0			115	0	0	97	-10	-66
604 Tillart Back	Spelt	37.8	Flush Lagoon	20	14	0.75	7	53									
			Dairy Solids		0	0.75	0	0									
					0	0.75	0	0									
			all manures		14	n/a	7	53	0			109	6	25	94	0	-28
701 Curtis Krebbers	corn sil	73.0	Flush Lagoon	60	43	0.75	21	158									
			Dairy Solids		0	0.75	0	0									
					0	0.75	0	0									
			all manures		43	n/a	21	158	0			81	14	108	38	-7	-50
702 Doug R Home	Wheat	41.7	Flush Lagoon	20	14	0.85	8	53									
			Dairy Solids		0	0.85	0	0									
					0	0.85	0	0									
			all manures		14	n/a	8	53	0			167	0	0	153	-8	-53
	0		Flush Lagoon		0		#VALUE!	0									
			Dairy Solids		0		#VALUE!	0									
					0		0	0									
			all manures		0	n/a	#VALUE!	0	0			0	0	0	0	#VALUE!	0
	0		Flush Lagoon		0		#VALUE!	0									
			Dairy Solids		0		#VALUE!	0									
					0		0	0									
			all manures		0	n/a	#VALUE!	0	55			0	0	0	-55	#VALUE!	0
	0		Flush Lagoon		0		#VALUE!	0									
			Dairy Solids		0		#VALUE!	0									
					0		0	0									
			all manures		0	n/a	#VALUE!	0	0			0	0	0	0	#VALUE!	0
	0		Flush Lagoon		0		#VALUE!	0									
			Dairy Solids		0		#VALUE!	0									
					0		0	0									
			all manures		0	n/a	#VALUE!	0	55			0	0	0	-55	#VALUE!	0
	0		Flush Lagoon		0		#VALUE!	0									
			Dairy Solids		0		#VALUE!	0									
					0		0	0									
			all manures		0	n/a	#VALUE!	0	0			0	0	0	0	#VALUE!	0
Total		*788.5*															

*** First-year phosphorus (P) availability coefficients.**
In situations where soil P levels are high or excess, the first-year availability of P in manures may be higher than indicated below.

Soil test P level (Kelowna method)	Coefficient
0 - 50	0.50
51 - 75	0.65
76 - 100	0.75
> 100	0.85

[a] Note Column E: Selecting the manure application rate is based in part on trying to meet crop nutrient requirements and in part on sustainably utilizing the amount of manure that is produced annually on the farm. If, in columns Q and R, the agronomic phosphorus or potassium balance is negative, the field in question will be oversupplied with either phosphorus or potassium for optimal crop production. It is advisable not to apply any manure to these fields as there is an increased risk of causing high potassium forage which can lead to herd health problems, or increased risk of phosphorus into surface water or ditches, as soil levels of these nutrients increase. However, if manure must be applied, select the manure application rates based on the following:

(a) Dairy or beef operations: manage nutrient application rates based on potassium if soils over 300 ppm K (from Worksheet 3, col. F).
If under 300 ppm go to (b).
Non cattle operations: manage nutrient application rates based on potassium if soils over 400 ppm K (from Worksheet 3, col. F).
If under 400 ppm go to (b).
If managing for potassium, the total potassium applied should not exceed the expected crop potassium removal *(i.e. aim to avoid negative values in Worksheet 6, col. L)*

(b) Manage nutrient application rates based on phosphorus if field runoff or erosion may enter a phosphorus sensitive environment.
Generally phosphorus sensitive environments are located where runoff water enters lakes in the interior of BC.
If suitable buffers are utilized and no runoff reaches the watercourse, or if not in a phosphorus sensitive environment go to (c).
If managing for phosphorus, the total phosphorus applied should not exceed the expected crop phosphorus removal *(i.e. aim to avoid negative values in Worksheet 6, col. K)*

(c) Manage nutrient application rates based on nitrogen.
If managing for nitrogen, the plant available nitrogen should not exceed the expected crop nitrogen application recommendation (i.e. aim to avoid negative values in Worksheet 5, col. P).

Worksheet 6. Estimate the Crop Removal Balance for Phosphorus and Potassium

A	B	C	D	E	F	G	H	I	J	K	L
Field Description	Field Size	Manure Source and Application Method	Manure Application Rate	Total Available Nutrients Applied in Manure Sources		Total Available Nutrients Applied in Fertilizer		Expected Crop Removal		Crop Removal Balance (crop removal - total available nutrients)	
				P_2O_5	K_2O	P_2O_5	K_2O	P_2O_5	K_2O	P_2O_5	K_2O
(Worksheet 1, col. A) (name or number)	(ac)	(Worksheet 5, col. D)	(Worksheet 5, col. E) (tons/ac)	Col. D x (Worksheet 4, col. L) (lb P_2O_5/ac)	Col. D x (Worksheet 4, col. N) (lb K_2O/ac)	(Worksheet 5, col. J) (lb P_2O_5/ac)	(Worksheet 5, col. K) (lb K_2O/ac)	(Worksheet 2, col. E) x 2.3 (lb P_2O_5/ac)	(Worksheet 3, col. E) x 1.2 (lb K_2O/ac)	(col. I – E – G) (lb P_2O_5/ac)	(col. J – F – H) (lb K_2O/ac)
501 NW Corner	25	Flush Lagoon	30	14	79						
		Dairy Solids	0	0	0						
		0	0	0	0						
		all manures		14	79	0	0	46	96	32	17
502 VD	28	Flush Lagoon	20	9	53						
		Dairy Solids	0	0	0						
			0	0	0						
		all manures		9	53	0	0	46	96	37	43
503 Leos	101.6	Flush Lagoon	30	14	79						
		Dairy Solids	0	0	0						
			0	0	0						
		all manures		14	79	0	0	46	96	32	17
504 North	62.8	Flush Lagoon	0	0	0						
		Dairy Solids	0	0	0						
			0	0	0						
		all manures		0	0	0	0	32	84	32	84
505 South	88.9	Flush Lagoon	20	9	53						
		Dairy Solids	0	0	0						
			0	0	0						
		all manures		9	53	0	0	32	84	23	31
601 Tillaart Home Pivot	104.2	Flush Lagoon	40	18	106						
		Dairy Solids	0	0	0						
			0	0	0						
		all manures		18	106	0	0	55	144	37	38
602 Freemans	101	Flush Lagoon	0	0	0						
		Dairy Solids	0	0	0						
			0	0	0						
		all manures		0	0	0	0	32	84	32	84
603 Hullcar Road	124.5	Flush Lagoon	25	12	66						
		Dairy Solids	0	0	0						
			0	0	0						
		all manures		12	66	0	0	55	144	44	78
604 Tillart Back	37.8	Flush Lagoon	20	9	53						
		Dairy Solids	0	0	0						
			0	0	0						
		all manures		9	53	0	0	32	84	23	31
701 Curtis Krebbers	73	Flush Lagoon	60	28	158						
		Dairy Solids	0	0	0						
			0	0	0						
		all manures		28	158	0	0	69	180	41	22
702 Doug R Home	41.7	Flush Lagoon	20	9	53						
		Dairy Solids	0	0	0						
			0	0	0						
		all manures		0	0	0	0	37	96	37	96
	0	Flush Lagoon	0	0	0						
		Dairy Solids	0	0	0						
			0	0	0						
		all manures		0	0	0	0	0	0	0	0
	0	Flush Lagoon	0	0	0						
		Dairy Solids	0	0	0						
			0	0	0						
		all manures		0	0	0	0	0	0	0	0
	0	Flush Lagoon	0	0	0						
		Dairy Solids	0	0	0						
			0	0	0						
		all manures		0	0	0	0	0	0	0	0
	0	Flush Lagoon	0	0	0						
		Dairy Solids	0	0	0						
			0	0	0						
		all manures		0	0	0	0	0	0	0	0
	0	Flush Lagoon	0	0	0						
		Dairy Solids	0	0	0						
			0	0	0						
		all manures		0	0	0	0	0	0	0	0

Worksheet 7. Assess Farm Manure Balances

A	B	C	D	E	F	G	H
Manure Source and Application Method (Worksheet 4, Col. A)	Total Weight to be Applied on All Fields (Worksheet 5, ∑(Col. C x E)) (tons/yr)	Manure Type e.g. Dairy-liquid	Total Weight of Manure Produced and Imported [a] (tons/yr)	Total Weight of Manure to be Applied (sum appropriate values from col. B) (tons/yr)	Total Weight of Manure to be Exported (tons/yr)	Excess or Deficiency of Manure [b] (col. D – E – F) (tons/yr)	Percentage Excess or Deficiency of Manure ((col. G/col. D) x 100) (%)
Flush Lagoon	*19386.5*	*Dairy Liquid*	*99950*	*95000*		*4950*	*5*
Dairy Solids	*0*	*Dairy Solids*	*2650*	*3077*		*-427*	*-16*
0	*0*					*0*	*n/a*
						0	*n/a*
						0	*n/a*
						0	*n/a*
						0	*n/a*
						0	*n/a*

[a] if dairy manure, complete Worksheet 7.1 and copy the values from A (A) other manures, use Table 8 or Table 9

[b] positive value indicates surplus, negative value indicates deficit

Table 8. Annual Manure Production for Non-Dairy Animals

Solid Manure - Livestock / Poultry Type		Manure (tons/yr/animal)	Liquid Manure - Livestock Type		Manure (tons/yr/animal)
Beef	open lot	2.3	Sows *	farrow to finish	28.9
	Paved	3.5		farrow to wean	8.2
Layers	100 birds	1.9	Pigs	Weaner	0.9
Pullets	100 birds	1.2		Feeder	2.9
Broilers *	100 birds	1.2			
Breeders	100 birds	2.9			
Turkeys *	100 hens	5.3			
	100 toms	6.1			

* per sow place

* assumes 6 production cycles per year for broilers and 3 production cycles per year for turkeys

Example: if 36,000 turkey toms are produced per year, this corresponds to 12,000 bird places (assuming 3 production cycles). The total annual production of manure from the toms is then 12,000 bird places x 6.1 tons per year per 100 bird places = 732 tons/year

Table 9. Typical Solid Manure Density

Livestock / Poultry Type	Manure Density (tons/yd³)
Beef	0.51
Dairy	0.59
Layers	0.42
Broilers	0.39
Breeders	0.40
Turkeys	0.33

Worksheet 7.1. Annual Manure Production for Dairy Cattle

Manure and Waste Generation

Type of Milk Cow: Holstein

Number of Cows Milking: *960*

Average milk production per milked cow (lb/day): *72.3*

Days Grazing: (if unknown, use the default value provided)

Type of Animal	Typical Number	Your Number	Slurry	Primary Manure Type	Using Solid/Liq. Separation	% Slurry Separated to Solid fraction	Total Manure Generation Slurry (ft³/day)	Solid (ft³/day)
Milk Cow	960	*960*	☑	Slurry	☑	*6*	*2,390*	*263*
Dry Cow	192	*120*	☑	Slurry	☑	*6*	*279*	*31*
Heifers (16 to 26 months)	317	*0*	☑	Slurry	☑	*10*	*0*	*0*
Heifers (7 to 15 months)	269	*0*	☑	Slurry	☑	*15*	*0*	*0*
Calves (4 to 6 months)	96	*0*	☑	Slurry	☑	*20*	*0*	*0*
Calves (0 to 3 months)	96	*100*	☑	Slurry	☑	*20*	*20*	*9*
Total	1,930	1,180			**Total Daily Manure Production**		*2,689*	*302*

Milk House Effluent (typically 0.75 to 1.5 ft³/day/milk cow): *4* ft³/day/milk cow — *3,840* (ft³/day)

1000 L = 35.3 ft³

PLUS Other **Liquid** Wastes (silage effluent,etc.) *100* (ft³/day)

PLUS Other **Solid** Wastes (spoiled feed, etc.) *100* (ft³/day)

6629 *402* (ft³/day)

Assumed bulk density of solids: *580* (kg/m³)

OR *0.488* (tons/yd³)

Manure and Waste Production *89610* *5438* (yd³/year) *75522* *2654* (tons/year)

Rainwater Collection

This applies only to rainwater that *enters* liquid manure handling systems.

Size of Yard Areas That Runoff Needs to be Collected From: *696000* (ft²)

Size of Roof Area That Discharge to Yard Areas Listed Above or That Discharge Directly Into the Manure Storage: *323000* (ft²)

Unroofed Surface Area of Manure Storage Facilities: *257500* (ft²)

Floating crust on manure surface: ☐ No

Weather Data Site to be used: Vernon

How is this calculated?

Total Rainwater Collection *28975.5* (yd³/year) *24419.9* (tons/year)

Total Weight of Manure

(A) **Total Weight of Manure Produced** Slurry *99941.6* Solid *2654* (tons/year)

Worksheet 8. Convert Manure Application Rate (tons/ac) to Solid or Liquid Application Rates and Spreader Loads per Area

A	B	C	D		E	F	G	H	I
Field Description	**Manure Application Rate**	**Manure Source and Application Method**	**Spreader Volume[a]**		**Solid Manure**			**Liquid Manure**	
(name or number)	(Worksheet 5, col. E) (tons/ac)	(Worksheet 5, col. D)	(enter a number)	Choose a unit from the drop-down list: - imperial gallons for liquid manure - cubic yards for solid manure	Density of solid manure (Table 9) ($tons/yd^3$)	Solid manure application rate (col. B / E) (yd^3/ac)	Spreader loads/hectare (col. F / D) (loads/ac)	Liquid manure application rate (col. B)[b] (imp. gallons/ac)	Spreader loads/hectare (col. H / D) (tankers/ac)
501 NW Corner	30.0	Flush Lagoon	700	imp. gallons		0.0	0.0	5987	8.6
	0.0	Dairy Solids	0	cubic yards		0.0	0.0	0	0.0
	0.0	0				0.0	0.0	0	0.0
502 VD	20.0	Flush Lagoon	700	imp. gallons		0.0	0.0	3991	5.7
	0.0	Dairy Solids	0	cubic yards		0.0	0.0	0	0.0
	0.0			0.0		0.0	0.0	0	0.0
503 Leos	30.0	Flush Lagoon	700	imp. gallons		0.0	0.0	5987	8.6
	0.0	Dairy Solids		cubic yards		0.0	0.0	0	0.0
	0.0			0.0		0.0	0.0	0	0.0
504 North	0.0	Flush Lagoon	700	imp. gallons		0.0	0.0	0	0.0
	0.0	Dairy Solids		cubic yards		0.0	0.0	0	0.0
	0.0			0.0		0.0	0.0	0	0.0
505 South	20.0	Flush Lagoon	700	imp. gallons		0.0	0.0	3991	5.7
	0.0	Dairy Solids		cubic yards		0.0	0.0	0	0.0
	0.0			0.0		0.0	0.0	0	0.0
601 Tillaart Home Pivot	40.0	Flush Lagoon	700	imp. gallons		0.0	0.0	7982	11.4
	0.0	Dairy Solids		cubic yards		0.0	0.0	0	0.0
	0.0			0.0		0.0	0.0	0	0.0
602 Freemans	0.0	Flush Lagoon		imp. gallons		0.0	0.0	0	0.0
	0.0	Dairy Solids		cubic yards		0.0	0.0	0	0.0
	0.0			0.0		0.0	0.0	0	0.0
603 Hullcar Road	25.0	Flush Lagoon	6000	imp. gallons		0.0	0.0	4989	0.8
	0.0	Dairy Solids		cubic yards	0.58	0.0	0.0	0	0.0
	0.0			0.0		0.0	0.0	0	0.0
604 Tillart Back	20.0	Flush Lagoon	700	imp. gallons		0.0	0.0	3991	5.7
	0.0	Dairy Solids		cubic yards		0.0	0.0	0	0.0
	0.0			0.0		0.0	0.0	0	0.0
701 Curtis Krebbers	60.0	Flush Lagoon	700	imp. gallons		0.0	0.0	11973	17.1
	0.0	Dairy Solids		cubic yards	0.58	0.0	0.0	0	0.0
	0.0			0.0		0.0	0.0	0	0.0
702 Doug R Home	20.0	Flush Lagoon	700	imp. gallons		0.0	0.0	3991	5.7
	0.0	Dairy Solids		cubic yards		0.0	0.0	0	0.0
	0.0			0.0		0.0	0.0	0	0.0
0	0.0	Flush Lagoon		imp. gallons		0.0	0.0	0	0.0
	0.0	Dairy Solids		cubic yards		0.0	0.0	0	0.0
	0.0			0.0		0.0	0.0	0	0.0
0	0.0	Flush Lagoon		imp. gallons		0.0	0.0	0	0.0
	0.0	Dairy Solids	15	cubic yards	0.58	0.0	0.0	0	0.0
	0.0			0.0		0.0	0.0	0	0.0
0	0.0	Flush Lagoon	6000	imp. gallons		0.0	0.0	0	0.0
	0.0	Dairy Solids		cubic yards	0.58	0.0	0.0	0	0.0
	0.0			0.0		0.0	0.0	0	0.0
0	0.0	Flush Lagoon		imp. gallons		0.0	0.0	0	0.0
	0.0	Dairy Solids	15	cubic yards	0.59	0.0	0.0	0	0.0
	0.0			0.0		0.0	0.0	0	0.0
0	0.0	Flush Lagoon		imp. gallons		0.0	0.0	0	0.0
	0.0	Dairy Solids	15	cubic yards	0.59	0.0	0.0	0	0.0
	0.0			0.0		0.0	0.0	0	0.0

[a] if manure spreader volume reported in US gal. convert to imperial gallons by multiplying US gal. by 0.833
if spreader volume reported in cubic m convert to cubic yards by multiplying US gallons by

[b] The density of most liquid manure is 1 tonne per m^3

Table 9. Typical Solid Manure Density

Livestock / Poultry Type	Manure Density ($tons/yd^3$)
Beef	0.51
Dairy	0.59
Layers	0.42
Broilers	0.39
Breeders	0.40
Turkeys	0.33

Worksheet 9a. Timing and Amount of Each Field Application of Liquid Manure

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Field Description (name or number)	Crop Type	Manure Source (Worksheet 8, col. C)	Annual Application Rate (Worksheet 8, col. H) (imp. gallons/ac)	Annual Spreader Loads per Hectare (Worksheet 8, col. I) (tankers/ac)	Planned Manure Applications (Scroll down to see options for Fourth, Fifth and Sixth applications)								
					First			Second			Third		
					Percent (Table 10) %	Amount (D x E) (tankers/ac)	Proposed Spreading Date	Percent (Table 10) %	Amount (D x H) (tankers/ac)	Proposed Spreading Date	Percent (Table 10) %	Amount (D x K) (tankers/ac)	Proposed Spreading Date
501 NW Corner	Wheat	Flush Lagoon	5987	8.6	100%	8.6	15-Apr		0.0			0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	
502 VD	Wheat	Flush Lagoon	3991	5.7	100%	5.7	15-Apr		0.0			0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	
503 Lees	Wheat	Flush Lagoon	5987	8.6	50%	4.3	10-Jul	50%	4.3	25-Aug		0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	
504 North	Spelt	Flush Lagoon	0	0.0	50%	0.0	10-Jul	50%	0.0	25-Aug		0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	
505 South	Spelt	Flush Lagoon	3991	5.7	100%	5.7	10-May		0.0			0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	
601 Tillsort Home Pivot	Corn Gr.	Flush Lagoon	7982	11.4	100%	11.4	15-Apr		0.0			0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	
602 Freemans	Spelt	Flush Lagoon	0	0.0	100%	0.0	10-Jul		0.0			0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	
603 Hullcar Road	Corn Gr.	Flush Lagoon	4989	0.8	100%	0.8	20-Apr		0.0			0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	
604 Tillart Back	Spelt	Flush Lagoon	3991	5.7	100%	5.7	12-Jul		0.0			0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	
701 Curtis Krebbers	corn sil	Flush Lagoon	13973	17.1	50%	8.6	15-Jul	50%	8.6	25-Aug		0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	
702 Doug R Home	Wheat	Flush Lagoon	3991	5.7	50%	2.9	15-Jun	50%	2.9	30-Aug		0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	
0	0	Flush Lagoon	0	0.0		0.0			0.0			0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	
0	0	Flush Lagoon	0	0.0		0.0			0.0			0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	
0	0	Flush Lagoon	0	0.0	50%	0.0	12-Jul	50%	0.0	22-Aug		0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	
0	0	Flush Lagoon	0	0.0		0.0			0.0			0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	
0	0	Flush Lagoon	0	0.0		0.0			0.0			0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	

A	B	C	D	E	F	G	H	I	J	K	L	M	N	
Field Description (name or number)	Crop Type	Manure Source (Worksheet 8, col. C)	Annual Application Rate (Worksheet 8, col. H) (imp. gallons/ac)	Annual Spreader Loads per Hectare (Worksheet 8, col. I) (tankers/ac)	Planned Manure Applications									
					Fourth			Fifth			Sixth			
					Percent (Table 10) %	Amount (D x N) (tankers/ac)	Proposed Spreading Date	Percent (Table 10) %	Amount (D x Q) (tankers/ac	Proposed Spreading Date	Percent (Table 10) %	Amount (D x T) (tankers/ac)	Proposed Spreading Date	Sum of Applications
501 NW Corner	Wheat	Flush Lagoon	5987	8.6		0.0			0.0			0.0		100%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%
502 VD	Wheat	Flush Lagoon	3991	5.7		0.0			0.0			0.0		100%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%
503 Lees	Wheat	Flush Lagoon	5987	8.6		0.0			0.0			0.0		100%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%
504 North	Spelt	Flush Lagoon	0	0.0		0.0			0.0			0.0		100%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%
505 South	Spelt	Flush Lagoon	3991	5.7		0.0			0.0			0.0		100%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%
601 Tillsort Home Pivot	Corn Gr.	Flush Lagoon	7982	11.4		0.0			0.0			0.0		100%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%
602 Freemans	Spelt	Flush Lagoon	0	0.0		0.0			0.0			0.0		100%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%
603 Hullcar Road	Corn Gr.	Flush Lagoon	4989	0.8		0.0			0.0			0.0		100%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%
604 Tillart Back	Spelt	Flush Lagoon	3991	5.7		0.0			0.0			0.0		100%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%
701 Curtis Krebbers	corn sil	Flush Lagoon	13973	17.1		0.0			0.0			0.0		100%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%
702 Doug R Home	Wheat	Flush Lagoon	3991	5.7		0.0			0.0			0.0		100%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%
0	0	Flush Lagoon	0	0.0		0.0			0.0			0.0		0%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%
0	0	Flush Lagoon	0	0.0		0.0			0.0			0.0		0%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%
0	0	Flush Lagoon	0	0.0		0.0			0.0			0.0		100%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%
0	0	Flush Lagoon	0	0.0		0.0			0.0			0.0		0%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%
16	0	Flush Lagoon	0	0.0		0.0			0.0			0.0		0%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%

Table 10. Amount of Manure to Apply Each Application for Different Crops

Number of Grass Cuts	Percent Annual Manure Applications to Grass						
	Spring		Post 1st Cut	Post 2nd Cut	Post 3rd Cut	Post 4th Cut	Post 5th Cut
Single cut	80		20				
2-cuts	60		30	10			
3-cuts	40		25	30	5		
4-cuts	30		20	20	25	5	
5-cuts	25		20	15	15	20	5

Crop	Percent Annual Manure Applications to Crop		
	Spring		Fall*
Corn	100		
Cover crop	90		10
Barley crop	75		25
Spring cereals	100		

*Only if fall soil test indicates nutrients required

Worksheet 9b. Timing and Amount of Each Field Application of Solid Manure

A	B		C	D	E	F	G	H	I	J	K	L	M
Field Description	Crop Type	Manure Source	Annual Application Rate	Annual Spreader Loads per Hectare	Planned Manure Applications (Scroll down to see options for Fourth, Fifth and Sixth applications)								
					First			Second			Third		
(name or number)		(Worksheet8, col. C)	(Worksheet 8, col. F) (usgal/ac)	(Worksheet 8, col. G) (loads/ac)	Percent (Table 10) %	Amount (D x E) (loads/ac)	Proposed Spreading Date	Percent (Table 10) %	Amount (D x H) (loads/ac)	Proposed Spreading Date	Percent (Table 10) %	Amount (D x K) (loads/ac)	Proposed Spreading Date
501 NW Corner	Wheat	Flush Lagoon	0	0.0		0.0			0.0			0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	
502 VD	Wheat	Flush Lagoon	0	0.0		0.0			0.0			0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	
503 Lees	Wheat	Flush Lagoon	0	0.0		0.0			0.0			0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	
504 North	Spelt	Flush Lagoon	0	0.0		0.0			0.0			0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	
505 South	Spelt	Flush Lagoon	0	0.0		0.0			0.0			0.0	
		Dairy Solids	0	0.0		0.0			0.0			0.0	
		0	0	0.0		0.0			0.0			0.0	
601 Tillsort Home Pivot	Corn Gr.	Flush Lagoon	0	0.0		0.0			0.0			0.0	
		Dairy Solids	0	0.0									
		0	0	0.0									
602 Freemans	Spelt	Flush Lagoon	0	0.0		0.0			0.0			0.0	
		Dairy Solids	0	0.0									
		0	0	0.0									
603 Hullcar Road	Corn Gr.	Flush Lagoon	0	0.0		0.0			0.0			0.0	
		Dairy Solids	0	0.0									
		0	0	0.0									
604 Tillart Back	Spelt	Flush Lagoon	0	0.0		0.0			0.0			0.0	
		Dairy Solids	0	0.0									
		0	0	0.0									
701 Curtis Krebbers	corn sil	Flush Lagoon	0	0.0		0.0			0.0			0.0	
		Dairy Solids	0	0.0									
		0	0	0.0									
702 Doug R Home	Wheat	Flush Lagoon	0	0.0		0.0			0.0			0.0	
		Dairy Solids	0	0.0									
		0	0	0.0									
0	0	Flush Lagoon	0	0.0		0.0			0.0			0.0	
		Dairy Solids	0	0.0									
		0	0	0.0									
0	0	Flush Lagoon	0	0.0		0.0			0.0			0.0	
		Dairy Solids	0	0.0	100%		01-Apr						
		0	0	0.0									
0	0	Flush Lagoon	0	0.0		0.0			0.0			0.0	
		Dairy Solids	0	0.0									
		0	0	0.0									
0	0	Flush Lagoon	0	0.0		0.0			0.0			0.0	
		Dairy Solids	0	0.0	100%		01-Apr						
		0	0	0.0									
0	0	Flush Lagoon	0	0.0		0.0			0.0			0.0	
		Dairy Solids	0	0.0	100%		01-Apr						
		0	0	0.0									

A	B	-	C	D	N	O	P	Q	R	S	T	U	V	
Field Description	Crop Type	Manure Source	Annual Application Rate	Annual Spreader Loads per Hectare	Planned Manure Applications									
					Fourth			Fifth			Sixth			
(name or number)		(Worksheet8, col. C)	(Worksheet 8, col. F) (usgal/ac)	(Worksheet 8, col. G) (loads/ac)	Percent (Table 10) %	Amount (D x N) (loads/ac)	Proposed Spreading Date	Percent (Table 10) %	Amount (D x Q) (loads/ac)	Proposed Spreading Date	Percent (Table 10) %	Amount (D x T) (loads/ac)	Proposed Spreading Date	Sum of applications
501 NW Corner	Wheat	Flush Lagoon	0	0.0		0.0			0.0			0.0		0%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%
502 VD	Wheat	Flush Lagoon	0	0.0		0.0			0.0			0.0		0%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%
503 Lees	Wheat	Flush Lagoon	0	0.0		0.0			0.0			0.0		0%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%
504 North	Spelt	Flush Lagoon	0	0.0		0.0			0.0			0.0		0%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%
505 South	Spelt	Flush Lagoon	0	0.0		0.0			0.0			0.0		0%
		Dairy Solids	0	0.0		0.0			0.0			0.0		0%
		0	0	0.0		0.0			0.0			0.0		0%
601 Tillsort Home Pivot	Corn Gr.	Flush Lagoon	0	0.0		0.0			0.0			0.0		0%
		Dairy Solids	0	0.0										0%
		0	0	0.0										0%
602 Freemans	Spelt	Flush Lagoon	0	0.0		0.0			0.0			0.0		0%
		Dairy Solids	0	0.0										0%
		0	0	0.0										0%
603 Hullcar Road	Corn Gr.	Flush Lagoon	0	0.0		0.0			0.0			0.0		0%
		Dairy Solids	0	0.0			10-Apr							0%
		0	0	0.0										0%
604 Tillart Back	Spelt	Flush Lagoon	0	0.0		0.0			0.0			0.0		0%
		Dairy Solids	0	0.0										0%
		0	0	0.0										0%
701 Curtis Krebbers	corn sil	Flush Lagoon	0	0.0		0.0			0.0			0.0		0%
		Dairy Solids	0	0.0			01-May							0%
		0	0	0.0										0%
702 Doug R Home	Wheat	Flush Lagoon	0	0.0		0.0			0.0			0.0		0%
		Dairy Solids	0	0.0										0%
		0	0	0.0										0%
0	0	Flush Lagoon	0	0.0		0.0			0.0			0.0		0%
		Dairy Solids	0	0.0										0%
		0	0	0.0										0%
0	0	Flush Lagoon	0	0.0		0.0			0.0			0.0		0%
		Dairy Solids	0	0.0			15-Sep							100%
		0	0	0.0										0%
0	0	Flush Lagoon	0	0.0		0.0			0.0			0.0		0%
		Dairy Solids	0	0.0			15-Oct							0%
		0	0	0.0										0%
0	0	Flush Lagoon	0	0.0		0.0			0.0			0.0		0%
		Dairy Solids	0	0.0										100%
		0	0	0.0										0%
0	0	Flush Lagoon	0	0.0		0.0			0.0			0.0		0%
		Dairy Solids	0	0.0										100%
		0	0	0.0										0%

Table 10. Amount of Manure to Apply Each Application for Different Crops

Number of Grass Cuts	Percent Annual Manure Applications to Grass						
	Spring		Post 1st Cut	Post 2nd Cut	Post 3rd Cut	Post 4th Cut	Post 5th Cut
Single cut	80		20				
2 cuts	60		30	10			
3 cuts	40		25	30	5		
4 cuts	30		20	20	25	5	
5 cuts	25		20	15	15	25	5

Crop	Percent Annual Manure Applications to Crop		
	Spring		Fall *
Corn	100		
Cover crop	90		10
Rotog crop	75		25
Spring cereals	100		

* Only if fall soil test indicates nutrients required