

Spring 2018 Solids

SOLIDS WORKSHEET 2 - NUTRIENT BALANCE			
Tract	Field No.	Acres	Soil Test P Value (Mehlich 3) <input style="width: 50px;" type="text" value="120"/>
<input style="width: 50px;" type="text" value=""/>	<input style="width: 50px;" type="text" value="H2"/>	<input style="width: 50px;" type="text" value="32"/>	
1. Crop or Crop Sequence/Rotation	<input style="width: 100%;" type="text" value="Corn Silage (Ton)"/>		
2. Realistic Yield (Average from 5-10 Years on a per acre basis)	<input style="width: 100%;" type="text" value="20.0"/>		
3. Plant Nutrients Needed or Allowed (lbs/ac)	N	P₂O₅	K₂O
	<input style="width: 50px;" type="text" value="194"/>	<input style="width: 50px;" type="text" value="72"/>	<input style="width: 50px;" type="text" value="160"/>
4. Adjusted P₂O₅ Application Rate According to Threshold	<input style="width: 50px;" type="text" value="0"/>		
5. Fertilizer Credits (lbs/ac)	<input style="width: 50px;" type="text" value=""/>	<input style="width: 50px;" type="text" value=""/>	<input style="width: 50px;" type="text" value=""/>
6. Plant Nutrients Needed Minus Credits (lbs/ac)	<input style="width: 50px;" type="text" value="194"/>	<input style="width: 50px;" type="text" value="72"/>	<input style="width: 50px;" type="text" value="160"/>
7. Nutrients in Manure (lbs/ton) <small>Enter lab results in box on right to override Worksheet 1 values</small>	<input style="width: 50px;" type="text" value="10.6"/>	<input style="width: 50px;" type="text" value="4.9"/>	<input style="width: 50px;" type="text" value="8.1"/>
8. Percent Nutrients Retained in System <input style="width: 50px;" type="text" value="Table 1"/> <small>Enter Table 1 values or Enter zero if lab results are used in Step 7</small>	<input style="width: 50px;" type="text" value="80%"/>	<input style="width: 50px;" type="text" value="95%"/>	<input style="width: 50px;" type="text" value="95%"/>
9. Net Retained Nutrients in Manure (lbs./ton)	<input style="width: 50px;" type="text" value="8.5"/>	<input style="width: 50px;" type="text" value="4.7"/>	<input style="width: 50px;" type="text" value="7.7"/>
10. Percent of Available Nutrients <input style="width: 50px;" type="text" value="Table 2"/> <small>Enter Table 2 value for N</small>	<input style="width: 50px;" type="text" value="35%"/>	<input style="width: 50px;" type="text" value="80%"/>	<input style="width: 50px;" type="text" value="100%"/>
11. Net Available Nutrients (lbs./ton)	<input style="width: 50px;" type="text" value="3.0"/>	<input style="width: 50px;" type="text" value="3.7"/>	<input style="width: 50px;" type="text" value="7.7"/>
12. Application Rate (tons/ac) <small>Application limitations may apply. Enter Chosen Application Rate in box on right</small>	<input style="width: 50px;" type="text" value="4"/>	<input style="width: 50px;" type="text" value="4"/>	<input style="width: 50px;" type="text" value="4"/>
13. Net Application Amount for All Nutrients (lbs/ac)	<input style="width: 50px;" type="text" value="12"/>	<input style="width: 50px;" type="text" value="15"/>	<input style="width: 50px;" type="text" value="31"/>
14. Nutrient Needs (-) or Surpluses (+) (lbs/ac)	<input style="width: 50px;" type="text" value="-182"/>	<input style="width: 50px;" type="text" value="-57"/>	<input style="width: 50px;" type="text" value="-129"/>
Tons Available	<input style="width: 50px;" type="text" value="269"/>	-	Tons Applied in Field <input style="width: 50px;" type="text" value="128"/> = Balance <input style="width: 50px;" type="text" value="141"/>

Enter Lab Results Here to Override Calculations From Worksheet 1 on Step 7

N	P205	K20
<input style="width: 100%;" type="text" value=""/>	<input style="width: 100%;" type="text" value=""/>	<input style="width: 100%;" type="text" value=""/>

Chosen Application Rate MUST ENTER

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Go to Worksheet 3 Solids

SOLIDS WORKSHEET 2 - NUTRIENT BALANCE

Tract	Field No.	Acres
	H5	19

Soil Test P Value (Mehlich 3)

1. Crop or Crop Sequence/Rotation	<input type="text" value="Corn Silage (Ton)"/>		
2. Realistic Yield (Average from 5-10 Years on a per acre basis)	<input type="text" value="20.0"/>		
3. Plant Nutrients Needed or Allowed (lbs/ac)	N	P₂O₅	K₂O
	194	72	160
4. Adjusted P ₂ O ₅ Application Rate According to Threshold	<input type="text" value="0"/>		
5. Fertilizer Credits (lbs/ac)	<input type="text"/>		
6. Plant Nutrients Needed Minus Credits (lbs/ac)	194	72	160
7. Nutrients in Manure (lbs/ton) Enter lab results in box on right to override Worksheet 1 values	10.6	4.9	8.1
8. Percent Nutrients Retained in System First Worksheet 2 values are used or zero if lab results are used	80%	95%	95%
9. Net Retained Nutrients in Manure (lbs./ton)	8.5	4.7	7.7
10. Percent of Available Nutrients Enter Table 2 value for N	35%	80%	100%
	<input type="text" value="Table 2"/>		
11. Net Available Nutrients (lbs./ton)	3.0	3.7	7.7
12. Application Rate (tons/ac) Application limitations may apply. Enter Chosen Application Rate in box on right	7	7	7
13. Net Application Amount for All Nutrients (lbs/ac)	21	26	54
14. Nutrient Needs (-) or Surpluses (+) (lbs/ac)	-173	-46	-106
Tons Available <input type="text" value="141"/> - Tons Applied in Field <input type="text" value="133"/> = Balance <input type="text" value="8"/>			

Enter Lab Results Here to Override Calculations From Worksheet 1 on Step 7		
N	P205	K20
<input type="text"/>	<input type="text"/>	<input type="text"/>

Chosen Application Rate MUST ENTER
<input type="text" value="7"/>

[Go to Worksheet 3 Solids](#)

Each corn field was to receive 4 T/ac because that is what the farmer requested. The extra manure would be best utilized in field H5, because the P soil levels are below 45 lbs./ac. When making a plan the goal is to balance of the recommendations of the tool, soil test results, and what the farmer is willing to do.

SOLIDS WORKSHEET 3 - APPLICATION RATES AND LAND REQUIREMENTS ¹

Tract No.										
Field No.	Acres	Soil Test Phosphorus (STP)	Crop Rotation / Sequence	Planned Application Date or Timing	Planned Application Rate ² (tons/ac)	Solid or Commercial Fertilizer (S or C)	Actual Application Date	Actual Application Rate ² (tons/ac)	Weather at Time of Application ³ (Cloudy, Raining, Sunny)	
									24 Hours Before	24 Hours After
									H2	32
H5	19	36	Corn Silage (Ton)	Spring 2018	7					
0	0	0	0		0					
0	0	0	0		0					
0	0	0	0		0					
0	0	0	0		0					
0	0	0	0		0					
0	0	0	0		0					
0	0	0	0		0					
0	0	0	0		0					
0	0	0	0		0					

1. Where land application is occurring under long term lease or agreement with adjacent landowner, fields must be included in the above table.
 2. Fields that have a "High" soil test phosphorus (>400) should implement Best Management Practices (BMPs) to reduce the risk of nutrient movement to sensitive waterbodies. BMPs may include, but not be limited to: installing conservation buffers, reducing P2O5 application rate, incorporating manure, adding chemical treatments to litter that tie up soluble P and keep it from moving over the landscape, and/or adjusting application timing.
 3. It illegal to make land applications when the ground is frozen. It is recommended that land applications are not made within 48 hours of forecasted precipitation.

Liquids

LIQUIDS WORKSHEET 2 - NUTRIENT BALANCE			
Tract	Field No.	Acres	Soil Test P Value (Mehlich 3) <input style="width: 50px;" type="text" value="120"/>
	H2	32	
1. Crop or Crop Sequence/Rotation	<input style="width: 100%;" type="text" value="Corn Silage (Ton)"/>		
2. Realistic Yield (Average from 5-10 Years on a per acre basis)	<input style="width: 100%;" type="text" value="20.0"/>		
3. Plant Nutrients Needed or Allowed (lbs/ac)	N	P₂O₅	K₂O
	194	72	160
4. Adjusted P ₂ O ₅ Application Rate According to Threshold	<input style="width: 100%;" type="text" value="0"/>		
5. Fertilizer Credits (lbs/ac)	8	9	15
6. Plant Nutrients Needed Minus Credits (lbs/ac)	186	63	145
7. Nutrients in Manure (lbs/1,000 gallons) <small>Enter lab results in box on right to override Worksheet 1 values</small>	2.0	1.0	2.0
8. Percent Nutrients Retained in System <input style="width: 50px;" type="text" value="Table 1"/> <small>Enter Table 1 values or Enter zero if lab results are used in Step 7</small>	35%	50%	65%
9. Net Retained Nutrients in Manure (lbs/1,000 gallons)	2.0	1.0	2.0
10. Percent of Available Nutrients <input style="width: 50px;" type="text" value="Table 2"/> <small>Enter Table 2 value for N</small>	45%	80%	100%
11. Net Available Nutrients (lbs/1,000 gallons)	0.9	0.8	2.0
12. Application Rate (1,000 gallons/ac) <small>Application limitations may apply. Enter Chosen Application Rate in box on right</small>	4	4	4
13. Net Application Amount for All Nutrients (lbs/ac)	4	3	8
14. Nutrient Needs (-) or Surpluses (+) (lbs/ac)	-182	-60	-137
Gallons Available <input style="width: 50px;" type="text" value="356,664"/> - Gallons Applied in Field <input style="width: 50px;" type="text" value="128,000"/> = Balance <input style="width: 50px;" type="text" value="228,664"/>			

Enter Lab Results Here to Override Calculations From Worksheet 1 on Step 7

N	P205	K20
2	1	2

Chosen Application Rate
MUST ENTER

Go to Worksheet 3 Liquids

When applying manure to corn, remember to look at the soil test and follow the recommendations of a split application when it comes to N. The fertilizer credit (step 5) is used because we are applying liquid and solid manure. The numbers for the credit come from worksheet 2 solids step. 13.

LIQUIDS WORKSHEET 2 - NUTRIENT BALANCE

Tract	Field No.	Acres
	H5	19

Soil Test P Value (Mehlich 3)

1. Crop or Crop Sequence/Rotation	Corn Silage (Ton)		
2. Realistic Yield (Average from 5-10 Years on a per acre basis)	20.0		
3. Plant Nutrients Needed or Allowed (lbs/ac)	N	P ₂ O ₅	K ₂ O
	194	72	160
4. Adjusted P ₂ O ₅ Application Rate According to Threshold	0		
5. Fertilizer Credits (lbs/ac)	11	12	20
6. Plant Nutrients Needed Minus Credits (lbs/ac)	183	60	140
7. Nutrients in Manure (lbs/1,000 gallons) Enter lab results in box on right to override Worksheet 1 values	2.0	1.0	2.0
8. Percent Nutrients Retained in System First Worksheet 2 values used or zero if lab results are used	0%	0%	0%
9. Net Retained Nutrients in Manure (lbs/1,000 gallons)	2.0	1.0	2.0
10. Percent of Available Nutrients Enter Table 2 value for N	45%	80%	100%
	<input type="button" value="Table 2"/>		
11. Net Available Nutrients (lbs/1,000 gallons)	0.9	0.8	2.0
12. Application Rate (1,000 gallons/ac) Application limitations may apply. Enter Chosen Application Rate in box on right	6	6	6
13. Net Application Amount for All Nutrients (1,000 gallons/ac)	5	5	12
14. Nutrient Needs (-) or Surpluses (+) (lbs/ac)	-178	-55	-128

Gallons Available 228,664 - Gallons Applied in Field 114,000 = Balance 114,664

Enter Lab Results Here to Override Calculations From Worksheet 1 on Step 7		
N	P205	K20
2	1	2

Chosen Application Rate MUST ENTER
6

[Go to Worksheet 3 Liquids](#)

The farmer wants to apply liquids to soybeans at 2,000 G/ac. This is not the best utilization of the manure because soybeans are a legume. The best utilization would be to put the manure on field H5 because it is not a legume and the soil test P is below 45 lbs./ac. We need to make a plan that the farmer will use but without polluting the water/environment.

LIQUIDS WORKSHEET 2 - NUTRIENT BALANCE

Tract	Field No.	Acres
	H6	11

Soil Test P Value (Mehlich 3)

If applying to a legume, apply based on phosphorus. (Unless STP exceeds 600)

1. Crop or Crop Sequence/Rotation	Soybean Grain (Bushel) (legume)		
2. Realistic Yield (Average from 5-10 Years on a per acre basis)	60.0		
3. Plant Nutrients Needed or Allowed (lbs/ac)	N	P₂O₅	K₂O
	228	50	78
4. Adjusted P ₂ O ₅ Application Rate According to Threshold	0		
5. Fertilizer Credits (lbs/ac)			
6. Plant Nutrients Needed Minus Credits (lbs/ac)	228	50	78
7. Nutrients in Manure (lbs./1,000 gallons) <small>Enter lab results in box on right to override Worksheet 1 values</small>	2.0	1.0	2.0
8. Percent Nutrients Retained in System <small>First Worksheet 2 values used or zero if lab results are used</small>	0%	0%	0%
9. Net Retained Nutrients in Manure (lbs./1,000 gallons)	2.0	1.0	2.0
10. Percent of Available Nutrients <small>Enter Table 2 value for N</small>	45%	80%	100%
11. Net Available Nutrients (lbs./1,000 gallons)	0.9	0.8	2.0
12. Application Rate (1,000 gallons/ac) <small>Application limitations may apply. Enter Chosen Application Rate in box on right</small>	3	3	3
13. Net Application Amount for All Nutrients (1,000 gallons/ac)	3	2	6
14. Nutrient Needs (-) or Surpluses (+) (lbs/ac)	-225	-48	-72

Table 2

Enter Lab Results Here to Override Calculations From Worksheet 1 on Step 7		
N	P205	K20
2	1	2

<i>Chosen Application Rate MUST ENTER</i>
3

Gallons Available 114,664 - Gallons Applied in Field 33,000 = Balance 81,664

Go to Worksheet 3 Liquids

LIQUIDS WORKSHEET 2 - NUTRIENT BALANCE

Tract	Field No.	Acres	Soil Test P Value (Mehlich 3) <input style="width: 50px;" type="text" value="450"/>		
	H7	32			

1. Crop or Crop Sequence/Rotation	Soybean Grain (Bushel) (legume)		
2. Realistic Yield (Average from 5-10 Years on a per acre basis)	60.0		
	N	P₂O₅	K₂O
3. Plant Nutrients Needed or Allowed (lbs/ac)	228	50	78
4. Adjusted P ₂ O ₅ Application Rate According to Threshold	50.4		
5. Fertilizer Credits (lbs/ac)			
6. Plant Nutrients Needed Minus Credits (lbs/ac)	228	50	78
7. Nutrients in Manure (lbs./1,000 gallons) <small>Enter lab results in box on right to override Worksheet 1 values</small>	2.0	1.0	2.0
8. Percent Nutrients Retained in System <small>First Worksheet 2 values used or zero if lab results are used</small>	0%	0%	0%
9. Net Retained Nutrients in Manure (lbs./1,000 gallons)	2.0	1.0	2.0
10. Percent of Available Nutrients <small>Enter Table 2 value for N</small>	45%	80%	100%
	<input style="width: 50px;" type="text" value="Table 2"/>		
11. Net Available Nutrients (lbs./1,000 gallons)	0.9	0.8	2.0
12. Application Rate (1,000 gallons/ac) <small>Application limitations may apply. Enter Chosen Application Rate in box on right</small>	2	2	2
	Do not exceed phosphorus application rate. Implement a phosphorus drawdown plan.		
13. Net Application Amount for All Nutrients (1,000 gallons/ac)	2	2	4
14. Nutrient Needs (-) or Surpluses (+) (lbs/ac)	-226	-49	-74

Gallons Available 81,664 - Gallons Applied in Field 64,000 = Balance 17,664

Enter Lab Results Here to Override Calculations From Worksheet 1 on Step 7

N	P205	K20
2	1	2

Chosen Application Rate **MUST ENTER**

2

Go to Worksheet 3 Liquids

If applying to a legume, apply based on phosphorus. (Unless STP exceeds 600)

• 401-600 STP - Phosphorus applications at rates not to exceed the estimated removal of phosphorus in the harvested plant biomass.
 • 601-800 STP - Phosphorus applications at rates not to exceed 1/2 of the estimated removal of phosphorus in the harvested plant biomass.
 • > 800 STP - Phosphorus applications are no longer allowed (manure may not be land applied in accordance with this guidance).

This field has a high P level in the soil, applying to this field would be a waste of money because the plant does not need N or P. We are still allowed to apply to this field because the P levels are below 800 lbs./ac. This is not the best utilization, but when making a NMP you need to explain why we should not apply to this field.

LIQUIDS WORKSHEET 2 - NUTRIENT BALANCE

Tract	Field No.	Acres
	H10	8

Soil Test P Value (Mehlich 3)

If applying to a legume, apply based on phosphorus. (Unless STP exceeds 600)

1. Crop or Crop Sequence/Rotation	<input type="text" value="Soybean Grain (Bushel) (legume)"/>		
2. Realistic Yield (Average from 5-10 Years on a per acre basis)	<input type="text" value="60.0"/>		
3. Plant Nutrients Needed or Allowed (lbs/ac)	N	P₂O₅	K₂O
	228	50	78
4. Adjusted P ₂ O ₅ Application Rate According to Threshold	<input type="text" value="0"/>		
5. Fertilizer Credits (lbs/ac)	<input type="text"/>		
6. Plant Nutrients Needed Minus Credits (lbs/ac)	228	50	78
7. Nutrients in Manure (lbs./1,000 gallons) <small>Enter lab results in box on right to override Worksheet 1 values</small>	2.0	1.0	2.0
8. Percent Nutrients Retained in System <small>First Worksheet 2 values used or zero if lab results are used</small>	0%	0%	0%
9. Net Retained Nutrients in Manure (lbs./1,000 gallons)	2.0	1.0	2.0
10. Percent of Available Nutrients <small>Enter Table 2 value for N</small>	45%	80%	100%
	<input type="text" value="Table 2"/>		
11. Net Available Nutrients (lbs./1,000 gallons)	0.9	0.8	2.0
12. Application Rate (1,000 gallons/ac) <small>Application limitations may apply. Enter Chosen Application Rate in box on right</small>	2	2	2
13. Net Application Amount for All Nutrients (1,000 gallons/ac)	2	2	4
14. Nutrient Needs (-) or Surpluses (+) (lbs/ac)	-226	-49	-74

Gallons Available 17,664 - Gallons Applied in Field 16,000 = Balance 1,664



Enter Lab Results Here to Override Calculations From Worksheet 1 on Step 7		
N	P205	K20
2	1	2

<i>Chosen Application Rate MUST ENTER</i>
<input type="text" value="2"/>

Go to Worksheet 3 Liquids

LIQUIDS WORKSHEET 3 - APPLICATION RATES AND LAND REQUIREMENTS ¹

Tract No.										
Field No.	Acres	Soil Test Phosphorus (STP)	Crop Rotation / Sequence	Planned Application Date or Timing	Planned Application Rate ² (1,000 gal/ac)	Liquid or Commercial Fertilizer (L or C)	Actual Application Date	Actual Application Rate ² (1,000 gal/ac)	Weather at Time of Application ³ (Cloudy, Raining, Sunny)	
									24 Hours Before	24 Hours After
									H2	32
H5	19	36	Corn Silage (Ton)	Spring 2018	6					
H6	11	79	Soybean Grain (Bushel) (1,000)	Spring 2018	3					
H7	32	450	Soybean Grain (Bushel) (1,000)	Spring 2018	2					
H10	8	126	Soybean Grain (Bushel) (1,000)	Spring 2018	2					
0	0	0	0		0					
0	0	0	0		0					
0	0	0	0		0					
0	0	0	0		0					
0	0	0	0		0					

1. Where land application is occurring under long term lease or agreement with adjacent landowner, fields must be included in the above table.
 2. Fields that have a "High" soil test phosphorus (>400) should implement Best Management Practices (BMPs) to reduce the risk of nutrient movement to sensitive waterbodies. BMPs may include, but not be limited to: installing conservation buffers, reducing P2O5 application rate, incorporating manure, adding chemical treatments to litter that tie up soluble P and keep it from moving over the landscape, and/or adjusting application timing.
 3. It is illegal to make land applications when the ground is frozen. It is recommended that land applications are not made within 48 hours of forecasted precipitation.