

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 |
| K-Lake | 20 | 644 | Corn Silage (Ton) | Spring 2017 | 45 | | | | | |
| H | 19 | 538 | Alfalfa Hay (Ton) (legume) | Spring 2017 | 1 | | | | | |
| A | 20 | 553 | Alfalfa Hay (Ton) (legume) | Spring 2017 | 1 | | | | | |
| 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 | | | | | |
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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.

Anytime the soil test P level is over 600 we need to apply ½ (or less) the amount the of nurients the plant will take up. You should also look at the soil test recommendations and follow accordingly. Applying manure in any of these fields is a waste disposal but this is all the land the farmer has. I applied the maxium amount of manure based upon the amount of P the corn would take up. Truly these fields don't need any manure but it needs a draw down system.

LIQUIDS WORKSHEET 2 - NUTRIENT BALANCE

| Tract | Field No. | Acres |
|-------|-----------|-------|
| | K-Lake | 20 |

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 | | 36 | |
| 5. Fertilizer Credits (lbs/ac) | | | |
| 6. Plant Nutrients Needed Minus Credits (lbs/ac) | 194 | 36 | 160 |
| 7. Nutrients in Manure (lbs/1,000 gallons) Enter lab results in box on right to override Worksheet 1 values | 1.0 | 1.0 | 4.0 |
| 8. Percent Nutrients Retained in System <input type="text" value="Table 1"/> Enter Table 1 values or Enter zero if lab results are used in Step 7 | 35% | 50% | 65% |
| 9. Net Retained Nutrients in Manure (lbs/1,000 gallons) | 1.0 | 1.0 | 4.0 |
| 10. Percent of Available Nutrients Enter Table 2 value for N <input type="text" value="Table 2"/> | 75% | 80% | 100% |
| 11. Net Available Nutrients (lbs/1,000 gallons) | 0.8 | 0.8 | 4.0 |
| 12. Application Rate (1,000 gallons/ac) Application limitations may apply. Enter Chosen Application Rate in box on right | 45 | 45 | 45 |
| 13. Net Application Amount for All Nutrients (lbs/ac) | 34 | 36 | 180 |
| 14. Nutrient Needs (-) or Surpluses (+) (lbs/ac) | -160 | 0 | 20 |

Gallons Available 939,562 - Gallons Applied in Field 900,000 = Balance 39,562

- 401-500 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).

| Enter Lab Results Here to Override Calculations From Worksheet 1 on Step 7 | | |
|--|------|-----|
| N | P205 | K20 |
| 1 | 1 | 4 |

| Chosen Application Rate MUST ENTER |
|---------------------------------------|
| 45 |

One time application rate should not exceed 13,500 gallons per acre (or 1/2 inch per acre)

LIQUIDS WORKSHEET 2 - NUTRIENT BALANCE

| Tract | Field No. | Acres |
|-------|-----------|-------|
| | H | 19 |

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="Alfalfa Hay (Ton) (legume)"/> | | |
| 2. Realistic Yield (Average from 5-10 Years on a per acre basis) | <input type="text" value="8.0"/> | | |
| 3. Plant Nutrients Needed or Allowed (lbs/ac) | N | P₂O₅ | K₂O |
| | 408 | 112 | 440 |
| 4. Adjusted P ₂ O ₅ Application Rate According to Threshold | <input type="text" value="112"/> | | |
| 5. Fertilizer Credits (lbs/ac) | | | |
| 6. Plant Nutrients Needed Minus Credits (lbs/ac) | 408 | 112 | 440 |
| 7. Nutrients in Manure (lbs/1,000 gallons) Enter lab results in box on right to override Worksheet 1 values | 1.0 | 1.0 | 4.0 |
| 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) | 1.0 | 1.0 | 4.0 |
| 10. Percent of Available Nutrients Enter Table 2 value for N <input type="text" value="Table 2"/> | 80% | 80% | 100% |
| 11. Net Available Nutrients (lbs/1,000 gallons) | 0.8 | 0.8 | 4.0 |
| 12. Application Rate (1,000 gallons/ac) Application limitations may apply. Enter Chosen Application Rate in box on right | 1 | 1 | 1 |
| 13. Net Application Amount for All Nutrients (1,000 gallons/ac) | 1 | 1 | 4 |
| 14. Nutrient Needs (-) or Surpluses (+) (lbs/ac) | -407 | -111 | -436 |

• 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).

| Enter Lab Results Here to Override Calculations From Worksheet 1 on Step 7 | | |
|--|------|-----|
| N | P205 | K20 |
| 1 | 1 | 4 |

Chosen Application Rate **MUST ENTER**

Gallons Available 39,562 - Gallons Applied in Field 19,000 = Balance 20,562

Go to Worksheet 2 Liquids

LIQUIDS WORKSHEET 2 - NUTRIENT BALANCE

| | | |
|-------|-----------|-------|
| Tract | Field No. | Acres |
| | A | 20 |

Soil Test P Value (Mehlich 3)

| | | | |
|--|----------------------------|-------------------------------|------------------|
| 1. Crop or Crop Sequence/Rotation | Alfalfa Hay (Ton) (legume) | | |
| 2. Realistic Yield (Average from 5-10 Years on a per acre basis) | 8.0 | | |
| 3. Plant Nutrients Needed or Allowed (lbs/ac) | N | P ₂ O ₅ | K ₂ O |
| | 408 | 112 | 440 |
| 4. Adjusted P ₂ O ₅ Application Rate According to Threshold | | 112 | |
| 5. Fertilizer Credits (lbs/ac) | | | |
| 6. Plant Nutrients Needed Minus Credits (lbs/ac) | 408 | 112 | 440 |
| 7. Nutrients in Manure (lbs./1,000 gallons) Enter lab results in box on right to override Worksheet 1 values | 1.0 | 1.0 | 4.0 |
| 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) | 1.0 | 1.0 | 4.0 |
| 10. Percent of Available Nutrients Enter Table 2 value for N | 80% | 80% | 100% |
| 11. Net Available Nutrients (lbs./1,000 gallons) | 0.8 | 0.8 | 4.0 |
| 12. Application Rate (1,000 gallons/ac) Application limitations may apply. Enter Chosen Application Rate in box on right | 1 | 1 | 1 |
| 13. Net Application Amount for All Nutrients (1,000 gallons/ac) | 1 | 1 | 4 |
| 14. Nutrient Needs (-) or Surpluses (+) (lbs/ac) | -407 | -111 | -436 |

Gallons Available 20,562 - Gallons Applied in Field 20,000 = Balance 562

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).

| Enter Lab Results Here to Override Calculations From Worksheet 1 on Step 7 | | |
|--|------|-----|
| N | P205 | K20 |
| 1 | 1 | 4 |

| Chosen Application Rate MUST ENTER |
|------------------------------------|
| 1 |

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 |
| K-Lake | 20 | 644 | Alfalfa Hay (Ton) (legume) | Fall 2017 | 47 | | | | | |
| 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 | | | | | |
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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.

We cannot apply to fields I and G because the soil test phosphorus is above 800. The only field left to apply to is field K. Applying manure to this alfalfa field is a waste of nutrients because it doesn't need the P and it will create its own N. At this point applying manure to this field is a waste disposal, the alfalfa will still take up manure that is applied but it will become lazy and will not create nodules to produce its own N.

LIQUIDS WORKSHEET 2 - NUTRIENT BALANCE

| Tract | Field No. | Acres |
|-------|-----------|-------|
| | K-Lake | 20 |

Soil Test P Value (Mehlich 3) **644**

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

| | | | |
|--|----------------------------|-------------------------------|------------------|
| 1. Crop or Crop Sequence/Rotation | Alfalfa Hay (Ton) (legume) | | |
| 2. Realistic Yield (Average from 5-10 Years on a per acre basis) | 8.0 | | |
| 3. Plant Nutrients Needed or Allowed (lbs/ac) | N | P ₂ O ₅ | K ₂ O |
| | 408 | 112 | 440 |
| 4. Adjusted P ₂ O ₅ Application Rate According to Threshold | | 56 | |
| 5. Fertilizer Credits (lbs/ac) | | | |
| 6. Plant Nutrients Needed Minus Credits (lbs/ac) | 408 | 56 | 440 |
| 7. Nutrients in Manure (lbs/1,000 gallons) Enter lab results in box on right to override Worksheet 1 values | 1.0 | 1.0 | 4.0 |
| 8. Percent Nutrients Retained in System Table 1 Enter Table 1 values or Enter zero if lab results are used in Step 7 | 35% | 50% | 65% |
| 9. Net Retained Nutrients in Manure (lbs/1,000 gallons) | 1.0 | 1.0 | 4.0 |
| 10. Percent of Available Nutrients Table 2 Enter Table 2 value for N | 80% | 80% | 100% |
| 11. Net Available Nutrients (lbs/1,000 gallons) | 0.8 | 0.8 | 4.0 |
| 12. Application Rate (1,000 gallons/ac) Application limitations may apply. Enter Chosen Application Rate in box on right | 47 | 47 | 47 |
| 13. Net Application Amount for All Nutrients (lbs/ac) | 38 | 38 | 188 |
| 14. Nutrient Needs (-) or Surpluses (+) (lbs/ac) | -370 | -18 | -252 |

• 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).

| Enter Lab Results Here to Override Calculations From Worksheet 1 on Step 7 | | |
|--|------|-----|
| N | P205 | K20 |
| 1 | 1 | 4 |

| Chosen Application Rate MUST ENTER |
|---|
| 47 |
| One time application rate should not exceed ~13,500 gallons per acre (or 1/2 inch per acre) |

Gallons Available 939,562 - Gallons Applied in Field 940,000 = Balance **Applied more than Available**

The manure will need a split application 47,000 gallons/13,500 gallons (maximum one time application) = 3.48 (number of split applications)