Soil Test Recommendations Handbook
For Agronomic Crops

Agricultural Analytical Services Laboratory
Penn State University College of Agricultural Sciences

v.04.2019
SOIL SAMPLING INSTRUCTIONS
Follow STEPS 1-3 Below

**STEP 1** A soil test is no better than the soil sample submitted for analysis. Take samples as follows:

<table>
<thead>
<tr>
<th>AGRONOMIC</th>
<th>VEGETABLES</th>
<th>SMALL FRUIT</th>
<th>AND HOME GARDEN CROPS</th>
</tr>
</thead>
</table>

Using a trowel, shovel, or auger, and a clean pail, obtain thin slices or borings of soil from at least 13 places in a given area. Follow the diagram below to properly locate the samples. For contour strips, take 6 samples 20 feet in from the edge of the entire strip and 6 samples from the opposite side of the strip. Sample to plow depth in cultivated land; 3 to 4 inches in permanent pastures. If the field varies in kind of soil, previous fertilizer or lime treatment, or cropping history, sample each area separately.

Square, Rectangular Field or Garden

- - - - - - -

Contour Strips

- - - - - - -

**TURF SOILS**

Using a soil sampling tube, auger or trowel, and a clean pail, obtain thin slices or borings of soil from 12 or more locations. Follow the diagram below to properly locate the samples. Sample to a depth of 2 to 3 inches.

If the area varies in kind of soil, previous fertilizer or lime treatments, use separate mailing kits for each different area. Discard all grass and accumulated thatch material. Do not contaminate soil with fertilizer or other materials.

If you have a situation where a maintenance recommendation for an existing turf area is desired and also a recommendation for establishing a new turf area is desired, you must use separate soil test kits for each area.

**STEP 2** Mix the soil taken into one composite sample. Spread soil on newspaper in a warm room to air dry overnight. Do not heat.

**STEP 3** Take a 1/3 pint representative sample and place in the soil mailing kit bag. Turn back to front page and complete steps 2 through 4 of the instructions.
**USE THIS FORM FOR AGRONOMIC CROPS**

**NOTE:** PAYMENT OF $9.00 MUST BE SUBMITTED WITH YOUR SOIL SAMPLE FOR THE STANDARD FERTILITY ANALYSIS.

Enclose check made payable to Penn State University for $9.00 plus fee(s) for the optional tests listed below you may request.

The standard fertility report includes results for pH, acidity, Mehlich 3 phosphorus, potassium, calcium, magnesium, and lime and fertilizer recommendations. The nitrogen recommendation is based on crop removal. Results for Mehlich 3 copper, zinc, and sulfur are also reported and general interpretive guidelines for these elements provided.

**Optional Tests:** Optional tests available for an additional fee are listed below. Most of these tests do not include an interpretation or recommendation. If you would like any of the optional tests listed, check the test requested and submit check or money order with your sample.

<table>
<thead>
<tr>
<th>Test Description</th>
<th>Fee</th>
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<tbody>
<tr>
<td>Organic Matter*</td>
<td>$5.00</td>
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<tr>
<td>Soluble Salts</td>
<td>$5.00</td>
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<tr>
<td>Nitrate Nitrogen*</td>
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<tr>
<td>Total Nitrogen (Combustion)*</td>
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<tr>
<td>Ammonium Nitrogen*</td>
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<tr>
<td>Total Carbon *</td>
<td>$15.00</td>
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<tr>
<td>Particle Size Analysis*</td>
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<tr>
<td>Aluminum Stress Test for Forest Soils</td>
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<tr>
<td>DEP Chapter 271 General Permit*</td>
<td>$235.00</td>
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<td>Total Sorbed Metals*</td>
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<tr>
<td>Mercury*</td>
<td>$35.00</td>
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<tr>
<td>Selenium*</td>
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<tr>
<td>Arsenic*</td>
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<tr>
<td>Molybdenum*</td>
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<tr>
<td>Lead</td>
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</tr>
<tr>
<td>PCBs*</td>
<td>$80.00</td>
</tr>
<tr>
<td>Fax/Email Report (In addition to a hard copy, cost per page)</td>
<td>$1.00</td>
</tr>
<tr>
<td>Email report only: Check here and record your email address if you would prefer to have your report sent to you by email rather than surface mail. Emailed reports are received by customers 2-3 days earlier than mail reports.</td>
<td></td>
</tr>
</tbody>
</table>

**Total Cost for Optional Tests:**

*Results only. No interpretations or recommendations

Enclose check made payable to Penn State University for total cost of optional tests requested.
<table>
<thead>
<tr>
<th>CROP CODE</th>
<th>CROP NAME</th>
<th>YIELD RANGE</th>
<th>CROP CODE</th>
<th>CROP NAME</th>
<th>YIELD RANGE</th>
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<tbody>
<tr>
<td>1020</td>
<td>Planting Alfalfa</td>
<td>2-6 Ton/A</td>
<td>1042</td>
<td>Corn for Grain</td>
<td>110-270 Bu/A</td>
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<tr>
<td>1023</td>
<td>Planting Alfalfa (no-till)</td>
<td>2-6 Ton/A</td>
<td>1044</td>
<td>Corn for Grain (no-till)</td>
<td>110-270 Bu/A</td>
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<tr>
<td>1035</td>
<td>Planting Alfalfa in Oats</td>
<td>2-6 Ton/A</td>
<td>1043</td>
<td>Corn for Silage</td>
<td>17-38 Ton/A</td>
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<tr>
<td>1032</td>
<td>Planting Alfalfa in Wheat</td>
<td>2-6 Ton/A</td>
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<td>Corn for Silage (no-till)</td>
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<tr>
<td>1022</td>
<td>Planting Alfalfa-Trefoil</td>
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<td>Sorghum for Grain</td>
<td>90-170 Bu/A</td>
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<tr>
<td>1021</td>
<td>Planting Alfalfa-Grass</td>
<td>2-6 Ton/A</td>
<td>1063</td>
<td>Sorghum for Forage</td>
<td>15-31 Ton/A</td>
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<td>1001</td>
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<td>1031</td>
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<td>Planting Bromegrass</td>
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<td>1029</td>
<td>Planting Ladino Clover</td>
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<td>Planting Mixed Grasses</td>
<td>1-5 Ton/A</td>
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<td>Planting Timothy</td>
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<td>Planting Warm Season Grasses</td>
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<td>Renovating Pasture (with legume)</td>
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<td>1068</td>
<td>Spring Barley</td>
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<td>1059</td>
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<td>Wheat</td>
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<td>1061</td>
<td>Rye</td>
<td>50-90 Bu/A</td>
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<td>Canola</td>
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<td>1064</td>
<td>Soybeans</td>
<td>40-80 Bu/A</td>
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<td>Disturbed Lands</td>
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<td>Sunflowers</td>
<td>10-30 CWT/A</td>
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<td>Wheat</td>
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<td>1051</td>
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<td>4-12 T/A</td>
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<td>Wildlife Food Plot</td>
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<td>1073</td>
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</tbody>
</table>
SOIL TEST INFORMATION FORM FOR AGRONOMIC CROPS

Grower Name (Please Print):  
Business Name:  
ASCs Farm ID:  
Business Name:  
Street or R.D. No.:  
City, State, and Zip:  
County  
Telephone No.:  
Fax No.:  
E-mail:  

Send copy to:  

Email report only:  Check this box and record your email address if you would prefer to have your report sent to you by email rather than surface mail.

Penn State is committed to affirmative action, equal opportunity, and the diversity of its workforce.

<table>
<thead>
<tr>
<th>Sample/Field Info</th>
<th>Last Year’s Crop</th>
<th>Recommendations</th>
<th>Additional Analyses</th>
</tr>
</thead>
</table>
| For plow depth use code 7, 9, or 12  
7 = < 9  
9 = 9-11  
12 = > 12  | Last yr’s crop code if legume, complete this column. | | See back of form for additional analyses not listed below. Enclose payment for additional tests with checks made payable to Penn State. |
| Field ID (10 digits or less) | Plow Depth (7, 9, or 12) | # Acres | Crop-Year 1 | Crop-Year 2 | Crop-Year 3 |
| Sample bag serial # | Soil Type | | Crop Code 1 | Crop Code 2 | Crop Code 3 |
| | | | Yield goal Crop 1 | Yield goal Crop 2 | Yield goal Crop 3 |
| Field ID (10 digits or less) | Plow Depth (7, 9, or 12) | # Acres | Crop Code 1 | Crop Code 2 | Crop Code 3 |
| Sample bag serial # | Soil Type | | | | |
| | | | | | |
| Field ID (10 digits or less) | Plow Depth (7, 9, or 12) | # Acres | Crop Code 1 | Crop Code 2 | Crop Code 3 |
| Sample bag serial # | Soil Type | | | | |
| | | | | | |
| Field ID (10 digits or less) | Plow Depth (7, 9, or 12) | # Acres | Crop Code 1 | Crop Code 2 | Crop Code 3 |
| Sample bag serial # | Soil Type | | | | |
| | | | | | |
| Field ID (10 digits or less) | Plow Depth (7, 9, or 12) | # Acres | Crop Code 1 | Crop Code 2 | Crop Code 3 |
| Sample bag serial # | Soil Type | | | | |
| | | | | | |
| Field ID (10 digits or less) | Plow Depth (7, 9, or 12) | # Acres | Crop Code 1 | Crop Code 2 | Crop Code 3 |
| Sample bag serial # | Soil Type | | | | |
| | | | | | |
| Field ID (10 digits or less) | Plow Depth (7, 9, or 12) | # Acres | Crop Code 1 | Crop Code 2 | Crop Code 3 |
| Sample bag serial # | Soil Type | | | | |
| | | | | | |
| Field ID (10 digits or less) | Plow Depth (7, 9, or 12) | # Acres | Crop Code 1 | Crop Code 2 | Crop Code 3 |
| Sample bag serial # | Soil Type | | | | |
| | | | | | |
| Field ID (10 digits or less) | Plow Depth (7, 9, or 12) | # Acres | Crop Code 1 | Crop Code 2 | Crop Code 3 |
| Sample bag serial # | Soil Type | | | | |
| | | | | | |
| Field ID (10 digits or less) | Plow Depth (7, 9, or 12) | # Acres | Crop Code 1 | Crop Code 2 | Crop Code 3 |
| Sample bag serial # | Soil Type | | | | |
| | | | | | |
| Field ID (10 digits or less) | Plow Depth (7, 9, or 12) | # Acres | Crop Code 1 | Crop Code 2 | Crop Code 3 |
| Sample bag serial # | Soil Type | | | | |
| | | | | | |
| Field ID (10 digits or less) | Plow Depth (7, 9, or 12) | # Acres | Crop Code 1 | Crop Code 2 | Crop Code 3 |
| Sample bag serial # | Soil Type | | | | |
| | | | | | |

Penn State is committed to affirmative action, equal opportunity, and the diversity of its workforce.
### CROP CODES AND ADDITIONAL ANALYSES

Write Code Number (4 digits) into "Crop Code" blocks on opposite side of this page. Note also the acceptable yield range for each crop. If additional analyses are requested, record additional test request in column next to soil samples on opposite side of the page and submit payment for additional tests with sample. Make checks payable to Penn State.

#### ALFALFA GROUP

<table>
<thead>
<tr>
<th>CROP CODE</th>
<th>CROP NAME</th>
<th>YIELD RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1020</td>
<td>Planting Alfalfa</td>
<td>2-6 T / A</td>
</tr>
<tr>
<td>1023</td>
<td>Planting Alfalfa (no-till)</td>
<td>2-6 T / A</td>
</tr>
<tr>
<td>1035</td>
<td>Planting Alfalfa in Oats</td>
<td>2-6 T / A</td>
</tr>
<tr>
<td>1032</td>
<td>Planting Alfalfa in Wheat</td>
<td>2-6 T / A</td>
</tr>
<tr>
<td>1022</td>
<td>Planting Alfalfa-Trefoil</td>
<td>2-6 T / A</td>
</tr>
<tr>
<td>1021</td>
<td>Planting Alfalfa-Grass</td>
<td>2-6 T / A</td>
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<tr>
<td>1001</td>
<td>Established Alfalfa</td>
<td>4-8 T / A</td>
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<tr>
<td>1072</td>
<td>Established Alfalfa-Grass</td>
<td>4-8 T / A</td>
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#### CORN & SORGHUM GROUP

<table>
<thead>
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<th>CROP CODE</th>
<th>CROP NAME</th>
<th>YIELD RANGE</th>
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<tbody>
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<td>1048</td>
<td>Millet for Grain</td>
<td>30-70 Bu / A</td>
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<td>1049</td>
<td>Millet for Forage</td>
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<tr>
<td>1042</td>
<td>Corn for Grain</td>
<td>110-270 Bu / A</td>
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<td>110-270 Bu / A</td>
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<tr>
<td>1063</td>
<td>Sorghum for Forage</td>
<td>15-31 T / A</td>
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#### LEGUME GROUP

<table>
<thead>
<tr>
<th>CROP CODE</th>
<th>CROP NAME</th>
<th>YIELD RANGE</th>
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<tbody>
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<td>1030</td>
<td>Planting Crownvetch</td>
<td>2.5-4 T / A</td>
</tr>
<tr>
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<tr>
<td>1029</td>
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<td>Planting Red Clover</td>
<td>2-4 T / A</td>
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<td>Planting Red Clover (no-till)</td>
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</tr>
<tr>
<td>1037</td>
<td>Planting Red Clover in Oats</td>
<td>2-4 T / A</td>
</tr>
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<td>1034</td>
<td>Planting Red Clover in Wheat</td>
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</tr>
<tr>
<td>1073</td>
<td>Planting Red Clover-Grass</td>
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<tr>
<td>1024</td>
<td>Planting Trefoil</td>
<td>1-3 T / A</td>
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<td>1026</td>
<td>Planting Trefoil (no till)</td>
<td>1-3 T / A</td>
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<td>1036</td>
<td>Planting Trefoil in Oats</td>
<td>1-3 T / A</td>
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<td>Planting Trefoil in Wheat</td>
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<td>1025</td>
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<td>2-4 T / A</td>
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<td>1011</td>
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<td>1014</td>
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#### GRAIN GROUP

<table>
<thead>
<tr>
<th>CROP CODE</th>
<th>CROP NAME</th>
<th>YIELD RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1068</td>
<td>Spring Barley</td>
<td>60-100 Bu / A</td>
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<tr>
<td>1060</td>
<td>Winter Barley</td>
<td>50-130 Bu / A</td>
</tr>
<tr>
<td>1069</td>
<td>Buckwheat</td>
<td>30-70 Bu / A</td>
</tr>
<tr>
<td>1059</td>
<td>Oats</td>
<td>60-120 Bu / A</td>
</tr>
<tr>
<td>1061</td>
<td>Rye</td>
<td>50-90 Bu / A</td>
</tr>
<tr>
<td>1064</td>
<td>Soybeans</td>
<td>40-80 Bu / A</td>
</tr>
<tr>
<td>1071</td>
<td>Sunflowers</td>
<td>10-30 CWT / A</td>
</tr>
<tr>
<td>1058</td>
<td>Wheat</td>
<td>40-120 Bu / A</td>
</tr>
<tr>
<td>1012</td>
<td>Canola</td>
<td>30-80 Bu / A</td>
</tr>
<tr>
<td>1013</td>
<td>Spelt</td>
<td>70-150 Bu / A</td>
</tr>
<tr>
<td>1050</td>
<td>Barley/Soybean Double</td>
<td>50-130 Bu / A</td>
</tr>
<tr>
<td>1051</td>
<td>Small Grain Silage</td>
<td>4 – 12 T / A</td>
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#### GRASS GROUP

<table>
<thead>
<tr>
<th>CROP CODE</th>
<th>CROP NAME</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1038</td>
<td>Planting Bluegrass</td>
<td>1-2 T / A</td>
</tr>
<tr>
<td>1039</td>
<td>Planting Bromegrass</td>
<td>1-5 T / A</td>
</tr>
<tr>
<td>1062</td>
<td>Planting Mixed Grasses</td>
<td>1-5 T / A</td>
</tr>
<tr>
<td>1040</td>
<td>Planting Orchardgrass</td>
<td>1-5 T / A</td>
</tr>
<tr>
<td>1085</td>
<td>Planting Reed Canarygrass</td>
<td>1-5 T / A</td>
</tr>
<tr>
<td>1041</td>
<td>Planting Timothy</td>
<td>1-5 T / A</td>
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<tr>
<td>1075</td>
<td>Planting Tall Fescue</td>
<td>1-5 T / A</td>
</tr>
<tr>
<td>1077</td>
<td>Planting Warm Season Grasses</td>
<td>1-5 T / A</td>
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<tr>
<td>1010</td>
<td>Established Bluegrass</td>
<td>1-4 T / A</td>
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<td>1016</td>
<td>Established Bromegrass</td>
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<td>1086</td>
<td>Established Reed Canarygrass</td>
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<td>Established Timothy</td>
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</tr>
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<td>1076</td>
<td>Established Tall Fescue</td>
<td>3-7 T / A</td>
</tr>
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<td>1078</td>
<td>Established Warm Season Grasses</td>
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<tr>
<td>1066</td>
<td>Sudangrass</td>
<td>1-5 T / A</td>
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<tr>
<td>1067</td>
<td>Sorghum-Sudangrass</td>
<td>15-27 T / A</td>
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<tr>
<td>1080</td>
<td>Renovating Pasture (with legume)</td>
<td>2-4 T / A</td>
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<tr>
<td>1081</td>
<td>Established Pasture (without legume)</td>
<td>2-4 T / A</td>
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<tr>
<td>1082</td>
<td>Established Pasture (without legume)</td>
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<tr>
<td>1083</td>
<td>Planting Pasture (without legume)</td>
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</tr>
<tr>
<td>1084</td>
<td>Planting Pasture (with legume)</td>
<td>2-4 T / A</td>
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#### CONSERVATION RESERVE PROGRAM

<table>
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<th>CROP NAME</th>
<th>YIELD RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1054</td>
<td>CRP Cool Season Grass</td>
<td>---</td>
</tr>
<tr>
<td>1053</td>
<td>CRP Warm Season Grass</td>
<td>---</td>
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#### MISCELLANEOUS

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>1052</td>
<td>Hops</td>
<td>---</td>
</tr>
<tr>
<td>1056</td>
<td>Wildlife Food Plots</td>
<td>---</td>
</tr>
<tr>
<td>1079</td>
<td>Brassicas</td>
<td>2-6 T / A</td>
</tr>
<tr>
<td>1800</td>
<td>Disturbed Lands</td>
<td>---</td>
</tr>
<tr>
<td>1055</td>
<td>Horticultural Cover Crop</td>
<td>---</td>
</tr>
<tr>
<td>1065</td>
<td>Tobacco</td>
<td>1-1.5 T / A</td>
</tr>
<tr>
<td>1002</td>
<td>Hemp, for seed production</td>
<td>1000-2000 lbs / A</td>
</tr>
<tr>
<td>1003</td>
<td>Hemp, for fiber production</td>
<td>6-10 T / A</td>
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#### ADDITIONAL ANALYSES AND SERVICES

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Organic Matter</td>
<td>5.00</td>
</tr>
<tr>
<td>Soluble Salts</td>
<td>5.00</td>
</tr>
<tr>
<td>Nitrate Nitrogen</td>
<td>5.00</td>
</tr>
<tr>
<td>Ammonium Nitrogen</td>
<td>10.00</td>
</tr>
<tr>
<td>Total Nitrogen (combustion)</td>
<td>10.00</td>
</tr>
<tr>
<td>DEP Chapter 271 Individual Permit¹</td>
<td>235.00</td>
</tr>
<tr>
<td>Total Sorbed Metals ‡</td>
<td>65.00</td>
</tr>
<tr>
<td>Total Sorbed Metals II plus mercury ‡</td>
<td>160.00</td>
</tr>
<tr>
<td>Mercury</td>
<td>35.00</td>
</tr>
<tr>
<td>Selenium</td>
<td>27.00</td>
</tr>
<tr>
<td>Arsenic</td>
<td>27.00</td>
</tr>
<tr>
<td>Molybdenum</td>
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<tr>
<td>Lead</td>
<td>27.00</td>
</tr>
<tr>
<td>PCBs</td>
<td>80.00</td>
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</tbody>
</table>

¹Includes arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, and PCBs

‡Includes total sorbed cadmium, copper, lead, nickel, zinc, and chromium (EPA Method 3050B/3051 + 6010)

‡Includes total sorbed arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, chromium, selenium, zinc (EPA Method 3050B/3051 + 6010)
**Pre-sidedress Soil Nitrate Test for Corn**

**Soil Test Information and Report Form**

**Grower** ______________________________________  **Date** _____________________________________

**Address** ______________________________________  **Copy to** _____________________________________

City, State, Zip ______________________________________  **Address** _____________________________________

County ______________________________________  City, State, Zip _____________________________________

**NOTE: PLEASE SEND $6.00 PAYMENT WITH SAMPLE.**

Please list a telephone, email or fax number for the person who should be contacted with the results. If no number is given, results will be mailed.

**Person to contact____________________________ Phone, Email or Fax (circle one): Phone:______ -  ______ -  _______**

Best time to call (8am – 4:30 pm): _____________  **Fax # ______ -  ______ -  _______**

**Email:** __________________________________

<table>
<thead>
<tr>
<th>Sample #</th>
<th>Lab No.</th>
<th>Field ID</th>
<th>Expected Yield Bu/A or T/A</th>
<th>Recent Manure¹</th>
<th>Previous Manure²</th>
<th>Previous Crop</th>
<th>Soil Nitrate-N (ppm)</th>
<th>N lb/A Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>__ None</td>
<td>__ None</td>
<td>__ Corn</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>__ Any</td>
<td>__ Any</td>
<td>__ Soybeans</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>__ Forage Legume</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
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<td>__ None</td>
<td>__ Corn</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>__ Any</td>
<td>__ Any</td>
<td>__ Soybeans</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>__ Forage Legume</td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td>__ Other</td>
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<td></td>
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<td>__ None</td>
<td>__ Corn</td>
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<td></td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td>__ Any</td>
<td>__ Any</td>
<td>__ Soybeans</td>
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<td></td>
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<td>__ Forage Legume</td>
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<td></td>
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<td>__ Other</td>
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<td>4</td>
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<td></td>
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<td>__ Any</td>
<td>__ Any</td>
<td>__ Soybeans</td>
<td></td>
<td></td>
</tr>
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<td></td>
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<td></td>
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<td>__ Forage Legume</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>__ Other</td>
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<td>__ Corn</td>
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</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td>__ Any</td>
<td>__ Any</td>
<td>__ Soybeans</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>__ Forage Legume</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>__ Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹Manure applied since last harvest.  ²Manure applied in the previous three years. **Complete this form and return with soil samples.**
Sampling Procedure for the Pre-sidedress Soil Nitrogen Test (PSNT)

1. Sample only those fields that have received 40 pounds of N or less as fertilizer prior to sampling for the N soil test. This test is best suited for those fields where some residual N availability is suspected because of previous manure applications, forage legume crops, or heavy N fertilizer applications.

2. Take soil samples when the corn is approximately 12 inches tall or at least a week before sidedressing is planned.

3. Sample soil by taking 10 to 20 cores across the field, to a 12 inch-depth if possible. If not, sample as deep as you can. Samples should be obtained between rows to avoid starter fertilizer bands. Also, avoid sampling any atypical areas such as wet spots, weedy areas, or those areas receiving excessive manure in the field.

4. Crumble the cores and dry samples as thoroughly and quickly as possible by spreading thinly on newspaper in a warm place and stirring occasionally. Unlike regular soil samples, these samples can be heated to speed drying. Samples should be completely dry within 24 hrs.

5. Place the dried sample in the soil test bag, complete the reverse side of this form for all of your samples, and mail or deliver the form and all samples immediately to the Agricultural Analytical Services Laboratory, Penn State University, University Park, PA 16802.

6. Be sure to include one phone number, email or fax of the individual who should be contacted with the results along with the best time to contact this person between 8 am and 4:30 pm. Results of the test and N fertilizer recommendations will be sent to this individual as soon as possible after the test has been run.

**Please note:** Send $6.00 payment with the sample. The fee that you pay for analysis covers priority analysis of the sample for nitrate-N only and for the telephoning, emailing or faxing of the soil sample results.
SOIL TEST REPORT FOR:

<table>
<thead>
<tr>
<th>DATE</th>
<th>LAB #</th>
<th>SERIAL #</th>
<th>COUNTY</th>
<th>ACRES</th>
<th>ASCS ID</th>
<th>FIELD ID</th>
<th>SOIL</th>
</tr>
</thead>
<tbody>
<tr>
<td>06/11/2014</td>
<td>S01-19627</td>
<td>55</td>
<td>Centre</td>
<td>40</td>
<td></td>
<td>Back 40</td>
<td></td>
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</tbody>
</table>

SOIL NUTRIENT LEVELS

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Level</th>
<th>Below Optimum</th>
<th>Optimum</th>
<th>Above Optimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil pH</td>
<td>5.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phosphorus (P)</td>
<td>40 ppm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potassium (K)</td>
<td>175 ppm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnesium (Mg)</td>
<td>50 ppm</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RECOMMENDATIONS:

Limestone*: 4000 lb/A for a target pH of 7.0. Magnesium (Mg): 20 lb/A

*Calcium Carbonate equivalent

Plant Nutrients: (If manure will be applied, adjust these recommendations accordingly. See back of report.)

<table>
<thead>
<tr>
<th>Year</th>
<th>Crop</th>
<th>Expected Yield</th>
<th>Nitrogen (lb N/A)</th>
<th>Phosphate (lb P₂O₅/A)</th>
<th>Potash (lb K₂O/A)</th>
<th>See ST2 for other crop recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Established Alfalfa</td>
<td>5 T/A</td>
<td>0</td>
<td>40</td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

Apply fertilizer after first cutting or, for large recommendations, split after first cutting and in the fall. Apply 2 lbs boron per acre with the fertilizer.

2 Corn for Silage

<table>
<thead>
<tr>
<th>Year</th>
<th>Crop</th>
<th>Expected Yield</th>
<th>Nitrogen (lb N/A)</th>
<th>Phosphate (lb P₂O₅/A)</th>
<th>Potash (lb K₂O/A)</th>
<th>See ST2 for other crop recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Corn for Silage</td>
<td>21 T/A</td>
<td>150</td>
<td>50</td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

A N credit for the previous Established Alfalfa crop should be subtracted from the base N recommendation listed above. Credits based on present stand of the legume crop are as follows: less than 25 % stand - 40 lb/A, 25-50 % stand - 80 lb/A, greater than 50 % stand - 110 lb/A

Use a starter fertilizer. (See Back)

3 Corn for Grain

<table>
<thead>
<tr>
<th>Year</th>
<th>Crop</th>
<th>Expected Yield</th>
<th>Nitrogen (lb N/A)</th>
<th>Phosphate (lb P₂O₅/A)</th>
<th>Potash (lb K₂O/A)</th>
<th>See ST2 for other crop recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Corn for Grain</td>
<td>130 Bu/A</td>
<td>130</td>
<td>30</td>
<td>0</td>
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</tbody>
</table>

Use a starter fertilizer. (See Back)

ADDITIONAL RESULTS:

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Value</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium (ppm)</td>
<td>1021</td>
<td>1:1 soil:water pH</td>
</tr>
<tr>
<td>Acidity (meq/100 g)</td>
<td>3.9</td>
<td>Mehlich 3 (ICP)</td>
</tr>
<tr>
<td>CEC (meq/100 g)</td>
<td>9.9</td>
<td>Mehlich Buffer pH</td>
</tr>
<tr>
<td>% Saturation of the CEC (K Mg Ca)</td>
<td>4.5 4.2 51.7</td>
<td>Summation of Cations</td>
</tr>
<tr>
<td>Organic Matter %</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Nitrate-N ppm</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Salts mmhos/cm</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Trace Elements:

<table>
<thead>
<tr>
<th>Element</th>
<th>Value (ppm)</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>Copper</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td>Sulfur</td>
<td>14.0</td>
<td></td>
</tr>
</tbody>
</table>

Test Methods: 1:1 soil:water pH, Mehlich 3 (ICP), Mehlich Buffer pH, Summation of Cations
Recommendation Messages

Enclosures
- ST-2 Fertilizer Recommendation Table- Guidelines for making recommendations for other crops and for adjusting for a different expected yield.
- ST-4 Interpreting Soil Tests for Agronomic Crops- Explains the soil test report and provides additional information on the recommendations.

Soil Nutrient Levels
Soil nutrient levels are given as parts per million (ppm) elemental P, K, and Mg. As a rule of thumb, convert ppm to lb/A multiply ppm x 2.

The elemental results in lb/A can be converted to oxide forms using the following conversions: $P \times 2.3=P_2O_5$, $K \times 1.2=K_2O$, $Mg \times 1.6=MgO$

<table>
<thead>
<tr>
<th>Below Optimum</th>
<th>Optimum</th>
<th>Above Optimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrient is deficient. There should be an economic response to adding the recommended nutrient.</td>
<td>Nutrient is adequate. There will be no yield response to adding more of a nutrient but a recommendation is made to replace what the crop removes and thus maintain the soil test in the optimum range.</td>
<td>The nutrient is more than adequate. Not only will there not be a yield response but the soil nutrient levels are also adequate to accommodate crop removal.</td>
</tr>
</tbody>
</table>

Recommendations
N, P, and K recommendations are made for three crop years on this field. New samples should be taken after 3 years. The recommendations for the 2nd and 3rd year assume that the earlier recommendations were followed. These recommendations are based on the results of the soil test and the information provided with the sample. If you think that there is an error on the report, contact the lab at the address on the front of the report. Tables that can be used to adjust or change recommendations for all crops based on the soil test can be found on the web at: www.aasl.psu.edu.

Limestone Recommendations
The recommended limestone application should be adequate for 3 years. Limestone recommendations are based on 100% calcium carbonate equivalent limestone and assume "Fine-sized" limestone with 95% passing 20 mesh, 60% passing 60 mesh and 50% passing 100 mesh. Use "ST-2 Liming Materials Conversion Table (enclosed) to adjust for limestone quality. Also see Agronomy Facts #3 "Soil Acidity and Aglime".

Magnesium
Only one Mg Recommendation is made for three years. Magnesium is most economically applied by using a limestone containing Mg. Low Mg levels in soils may result in low Mg levels in forage crops especially if a significant amount of N and/or K fertilizer is applied. This can result in potentially fatal grass tetany in animals. Use caution if grazing. Apply the recommended Mg and be sure your feed rations are properly balanced.

Starter Fertilizer
Starter fertilizer is important to get a corn crop off to a good start when planting in cold, wet conditions. However, on optimum or higher testing soils, as planting dates get later and soils warm up, the benefit from starter fertilizer goes down. An N only starter is often adequate when soil test levels are above optimum. The correct material, rate, and placement for starter fertilizer are critical to be effective. See Agronomy Facts #51 "Starter Fertilizer".

Nitrogen
Nitrogen recommendations on this report are not based on a soil test. They are based on crop requirements for the expected yield of the crop to be grown. The pre-sidedress nitrate soil tests (PSNT) and the Chlorophyll meter test are both available for improving nitrogen recommendations on corn especially when manure is being applied. See: Agronomy Facts 17 "Pre-sidedress Soil Nitrate Test for Corn" and Agronomy Facts 53 "The Early-season Chlorophyll Meter Test for Corn". For optimum efficiency, N should be applied as close to the time of crop need as practical. For corn apply 50-90% of the N when the corn is 10-20" tall. For winter grains apply the N in the spring prior to growth stage 5. For forage grasses split the recommended N for each cutting.

Manure
Manure is a very important part of a fertility program. Manure applications may supply all or most of the nutrients recommended and in some cases may apply significantly more than the crop requires. Manure nutrients should be taken into account in developing your fertility program. For details on how to do this see the Penn State Agronomy Guide. Manure analysis kits are available through your county agent.

Very High Soil Test Levels
Very high soil test levels should be avoided as much as possible. High soil nutrient levels might not only represent an economic loss but they may also indicate potential crop, animal or environmental problems.

- Very high P can result in micronutrient deficiencies and may affect the activity of some pesticides resulting in injury or poor pest control.
- Very high phosphorus levels in the soil may lead to crop production problems especially with no manure and may result in potentially harmful P loss to the environment. Best management practices may be necessary to reduce the potential for environmental problems with P.

Zinc, Copper and Sulfur Results
The normal ranges for zinc (Zn) copper (Cu), and sulfur (S) in Pennsylvania soils are listed below. Cu, Zn and S deficiencies are uncommon in PA, but may occur on soils testing below the normal range. Cu, Zn and S toxicities may occur at levels testing well above the normal range, but have not been observed in Pennsylvania in agronomic crops even on soils testing 2 to 3 times above the normal range. For additional information, see ST4.

| Normal ranges of Zn, Cu and S in Pennsylvania Soils (Mehlich 3) |
|-----------------------|-----------------|-----------------|
| Zn (ppm) | Cu (ppm) | S (ppm) |
| 1.1-9.4 | 1.2-5.5 | 10-25 |

Distribution of Soil Test Results
Summaries of soil test results may be used in educational programs. However, individual results will not be released outside of Penn State without permission of the client. Electronic copies of your results are available to you, contact the lab for more information.

For additional information on these topics please see the current Penn State Agronomy Guide or the AASL website: www.aasl.psu.edu. This soil test is part of an ongoing research and extension program of Penn State. If you have any questions or comments about this program or would like copies of publications referenced here, please contact your Penn State County Extension agent.
The Penn State soil test report is divided into four parts:

**SOIL TEST REPORT FOR: Sample Information**
The top of the report provides information used to identify the sample including, the FIELD ID you provided and a unique LAB #. Check the FIELD ID to be sure that it is correct. Consistently identifying fields simplifies comparison of soil tests on the same fields over time to determine and react to trends.

The LAB # is important if you have a question or concern related to your lab results or recommendations. Should laboratory personnel need to retrieve your sample or soil test report to check a problem or answer a question, they will need to know the LAB #. Prompt action is important if you think there is a problem with your results, because soil samples are not retained indefinitely. If you suspect a problem with your soil analysis, contact the Agricultural Analytical Services Laboratory at (814) 863-0841.

Summaries of soil test results may be used in educational programs. However, individual results will not be released outside of Penn State without permission of the client. Password-protected access to your soil test report and soil test data is also available through the laboratory web site (www.aasl.psu.edu). Contact the laboratory for additional information and to obtain a password.

**SOIL NUTRIENT LEVELS: Interpreting the Results**
Soil nutrient levels are given as parts per million (ppm) elemental P, K, and Mg. The results of the laboratory analysis are meaningless by themselves; they must be interpreted by relating the lab values to known crop response under local conditions. Interpretation of results, based on crop response research, is given as a bar chart that indicates whether the level for each nutrient is below optimum, optimum, or above optimum for the crop to be grown. The definition for each category is given below.

**Below Optimum** soil test level indicates that the nutrient is probably deficient and that the deficiency will likely limit crop growth. There is a high probability of a profitable return from correcting a low level. The recommendation for a low-testing soil is designed to gradually build up the nutrient level to optimum and to maintain it at that level.

**Optimum** soil test level indicates that the nutrient is probably adequate and will likely not limit crop growth in a typical growing season. There is a low probability of a profitable return from increasing the soil test level above optimum. The recommendation for an optimum-testing soil is designed to offset crop removal in order to maintain the nutrient in the optimum range. If you are soil testing on an annual basis, no maintenance fertilizer is needed when the soil tests in the optimum range.

**Above Optimum** soil test level indicates that the nutrient is more than adequate and will not limit crop growth. There is a very low probability of a profitable return from applying a nutrient to a soil testing above optimum. Consequently, no fertilizer is recommended on these soils. Too much of a plant nutrient may cause a nutrient imbalance in the soil and, as a result, in the plant. Additional applications of fertilizers or manures to soils that are very high not only result in unsatisfactory economic returns, but they can also adversely affect plant growth and environmental quality.

**RECOMMENDATIONS**
The recommendations on the soil test report are made for a three year sequence of crops. These recommendations are made based on the soil test results and on the information you provided such as crop to be grown, expected yield, crop rotation and plow depth. Typical nutrient recommendations and guidelines for changing them to a different crop and/or yield level are given in ST-2 “Fertilizer Recommendation Table”. Complete recommendation tables are also available on the lab web site: www.aasl.psu.edu

**Limestone Recommendation**
Limestone is applied to neutralize the acidity in the soil and thus raise the soil pH to the optimum range for crop growth. The limestone recommendation is based on the amount of exchangeable acidity measured in the soil and the optimum soil pH level for the crop. The recommended limestone application is a one-time application for the three years on the report. For most agronomic crops the optimum pH is 6.5. For alfalfa and barley the pH goal
is 7.0. However, because only one limestone recommendation is made for three years, the recommendation on the report will adjust the pH for the most sensitive crop to be grown during this period. The actual pH goal used to make the limestone recommendation is indicated on the report.

The limestone recommendation is based on a liming material that is 100% calcium carbonate equivalent (CCE) in neutralizing power and based on liming an acre furrow slice approximately 7 inches deep. If a liming material is used that is not near to 100% CCE (90–110% CCE), the rate should be adjusted for lime quality. ST-2 “Liming Materials Conversion Table” gives the details for making this simple but important adjustment. If the limestone is going to be mixed with a larger volume of soil by deeper tillage, the recommendation is increased to account for this. Any adjustment for tillage depth is indicated on the report.

See PSU Agronomy Facts #3 “Soil Acidity and Aglime” for details on Limestone recommendations, liming material quality and liming practices.

**Magnesium (Mg) Recommendation**

If the soil magnesium level is below the optimum level, magnesium will be recommended to raise the level to optimum. Agricultural limestone is generally the most economical and convenient source of magnesium for agronomic crops. In addition to the actual amount of magnesium recommended (lb Mg/A), the magnesium recommendation is also given as the minimum percentage of Mg in the recommended amount of limestone required to meet the magnesium needs. Mg requirements vary from crop to crop. However, because the Mg recommendation is linked to the limestone recommendation, only one Mg recommendation is made. This recommendation is based on the needs of the most sensitive crop to be grown during the three years.

Low Mg levels in soils may result in low Mg levels in forage crops especially if a significant amount of N and/or K fertilizer is applied. This can result in potentially fatal grass tetany in animals. Use caution if grazing in this situation. Apply the recommended Mg; however, be aware that if the K is very high and the Mg is low it may not be possible to correct this soil imbalance immediately. Therefore, it is critical that your feed rations are properly balanced based on the actual forage mineral content.

**Nitrogen (N) Recommendation**

No soil analysis is used to make the N recommendations on the report. These recommendations are based on estimates of crop requirements for N as determined by crop response research under PA conditions. Most recommendations are based on the information you provided about the crop to be grown and the expected yield. The recommendations are given as pounds of N required per acre for each crop. Growing a legume in a rotation preceding an N-requiring crop may result in a high level of residual N in the soil that can be utilized by the following crop. The N recommendations must be adjusted using the credits indicated on the report to take into account this residual N.

Nitrogen supplied by manure should also be considered. Residual N from past manure applications may reduce the amount of N required for the current crop. The N in manure applied for the current crop must also be accounted for. Manure N availability varies depending on how it is handled and applied. See the Manure Management section of the Penn State Agronomy Guide for details. Manure analysis is available from the Agricultural Analytical Services Lab at Penn State.

Nitrogen testing is not possible as part of a routine soil testing program. N is very dynamic in the soil plant system and the available N changes throughout the season. For N testing to be valid it must be conducted very near to the time when the crop has the most demand for N. Two *in-season* N tests, the Pre-sidedress Soil Nitrate Test (PSNT) and the Chlorophyll Meter Test are available to help with N management in corn. These tests are especially useful where manure is expected to contribute significantly to the N needs of the crop and can help guide sidedress N applications if necessary. See PSU Agronomy Facts #17 “Pre-sidedress Soil Nitrate Test for Corn” or PSU Agronomy Facts #53 “The Early-Season Chlorophyll Meter Test for Corn” for details.

**Phosphorus (P) and Potassium (K) Recommendations**

Recommendations are given as pounds of P2O5 and K2O required per acre for each crop. The P and K recommendations are based on building below optimum testing soils up into the optimum range. Once an optimum level has been established the recommendation is designed to maintain that level by applying P and K to offset the amount that is removed by the harvested crop. The optimum
ranges for agronomic crops are 30-50 ppm P and 100-150 ppm K for grain crops and 150 -200 ppm K for forage crops. Once the soil level is above optimum no P or K is recommended.

Very high soil test levels should be avoided as much as possible. High soil nutrient levels not only represent an economic loss but they may also indicate potential crop, animal, or environmental problems. Very high P levels in the soil may result in potentially harmful P loss to the environment. Best management practices may be necessary to reduce the potential for environmental problems with P. Very high K levels in the soil can lead to nutrient imbalances in forage crops which can cause serious health problems in animals. Use caution when grazing forage crops especially if the soil magnesium is not also in the high range. It may not be possible to correct these soil imbalances in the short term. Feed rations must be balanced accordingly.

Very high soil test levels are often a side effect of utilizing manure to supply the N needs of crops. Usually when manure is applied to meet the N requirements of a crop excess P and K will be applied. Over time this can lead to very high P and K levels in the soil. This should be monitored with regular soil testing and appropriate management action should be taken to limit applications in excess of crop needs or to minimize potential negative crop, animal or environmental consequences.

**Recommendation Messages**

An important part of the reports are the messages and comments that accompany the recommendations. Immediately under the amounts of nutrients needed are several messages specific for the actual results and recommendations. Important general comments about the results and recommendations are found on the back of the report. These comments and the material enclosed with the report are all part of the recommendation.

**ADDITIONAL RESULTS**

Test levels for calcium (Ca) and exchangeable acidity; and optional tests for organic matter, nitrate nitrogen and soluble salts are provided in this section. Also included here are calculated values for the soil cation exchange capacity (CEC) and percent saturation of the CEC by K, Mg, and Ca. These calculated values are not used in making recommendations. They are provided for reference only.

Zinc (Zn), copper (Cu), and sulfur (S) results are also given. Deficiencies of these nutrients are rare in Pennsylvania. Consequently, reliable interpretations and recommendations based solely on soil test results are not possible; however, results can be compared to ranges normally observed in PA soils (see Table below). Soil test levels below the normal range may indicate a possible deficiency, but do not guarantee a response to additions of these nutrients. Plant tissue analysis should be used to determine if the plants are deficient and to help guide fertilizer applications.

| Normal ranges of Zn, Cu and S in Pennsylvania Soils (Mehlich 3 soil test) |
|-----------------|-----------------|-----------------|
| Zn (ppm)        | Cu (ppm)        | S (ppm)         |
| 1.1 – 9.4       | 1.2 – 5.5       | 10 – 25         |

Zinc deficiency is most likely to occur on soils with below-normal Zn levels, high pH, a sandy texture or where soil P is high from fertilizer additions. If both soil and plant zinc levels are below normal and especially if any of the above conditions exist, the recommendation is to broadcast and incorporate 8 to 10 lb/A Zn once every 5 years or apply 2 lb/A of Zn in the starter. Copper deficiency has not been observed in Pennsylvania.

Sulfur deficiency is rare in Pennsylvania because of the significant amount of S that is deposited in our rainfall. As the acid rain problem is reduced, S may become more limiting in the future. If both soil and plant S levels are below normal, it is recommended that part of the fertilizer N requirement of the crop be met with ammonium sulfate. A rate to supply 10 to 20 lb/A of S should be adequate for most crops in this situation. There is a higher likelihood of a sulfur deficiency on soils with below normal S levels that are also very low in organic matter and/or sandy-textured.

Copper and Zinc can accumulate in soil to levels that are toxic to plants. Toxicity to agronomic crops has not been observed in Pennsylvania even on soils testing 2 – 3 times the normal range, but has occurred in soils contaminated by industrial activity. Plant tissue analysis should be conducted on soils with more than 2 times the normal range to determine if levels are above normal. If both soils and crop tissues are above the normal range steps should be taken to prevent further addition of these elements to the soil. Certain agricultural practices, such as use of copper or zinc sulfate hoof baths, can
add these elements to soil.

**OTHER INFORMATION**
The soil testing procedures currently used by the Penn State soil testing program are listed on the report. This information is useful if you compare analytical results from different labs. Direct comparisons can be made only between labs using exactly the same procedures. There are many different methods in use around the country, each with strong and weak points. Which test will be used in a given area is based on research to determine how well the test works under local conditions. The tests used by the Agricultural Analytical Services Lab at Penn State have been determined to work best for Pennsylvania conditions.

**Keeping Records**
Keeping good records of soil test results can be very helpful for fine-tuning fertility management. To make the most of the result, collect samples regularly and consistently (e.g., same time of year, same depth). Once optimum soil test levels are attained, the goal is to maintain those levels. A decrease or increase in soil test level at a relatively constant yield might indicate under- or over-fertilization, respectively. Nutrient applications should be adjusted according to the observed trends. Soil test levels will vary from one test to the next; but if an unusual value is observed, the soil testing lab can recheck the results and/or you can submit a new sample for confirmation.

As with all Penn State Cooperative Extension programs your feedback and suggestions for improvement of the soil testing program are always welcome.

Prepared by: Douglas Beegle, Distinguished Professor of Agronomy; Richard Stehouwer, Professor of Environmental Soil Science; Ann Wolf, Director AASL (retired); and John Spargo, Director AASL ST-4 (Revised 6/14)
FERTILIZER RECOMMENDATION TABLE

The recommendations in the table below are to be used only if you are growing a crop different from that given on your report form. These recommendations cannot be as specific as those on your report. Detailed recommendations for all agronomic crops can also be found on our website, www.aasl.psu.edu

To use the table, follow these steps:
1. Select the Soil test level column that best represents the soil nutrient levels from your report.
2. Next, select the Crop you intend to grow from the first column.
3. Follow the Crop row across the sheet until you come to the proper Soil test level column selected in step 1. Your fertilizer recommendation is in this block, expressed as N-P\textsubscript{2}O\textsubscript{5}-K\textsubscript{2}O lbs/A.

The total amount of required plant nutrients is given. Application instructions, such as those for using a starter fertilizer, or fall versus spring application are also noted. Adjustments for expected yields are given below.

Adjustments to recommendations
EXPECTED YIELD—Adjust the recommendation in the table for different expected yield by increasing or decreasing the recommendation in the table proportionally. For example, to determine a corn grain recommendation for an expected yield of 210 bu/A, multiply the 150 bu/A recommendation in the table by 1.4 (210=150×1.4). For the low P and low K category, the new recommendation is 210-140-170.

MANURE—It is important to consider nutrient credits from manure applied previously or to the current crop and adjust fertilizer rates accordingly. To determine how to account for nutrient inputs from manure, see the Manure Nutrient Management section of the Penn State Agronomy Guide (http://extension.psu.edu/agronomy-guide).

PREVIOUS LEGUME—Reduce application of N according to guidelines provided in Table 1.2.8 of the Penn State Agronomy Guide.

<table>
<thead>
<tr>
<th>Crop (expected yield)</th>
<th>Soil test level*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn Grain (150 bu/A)</td>
<td>150-100-120</td>
</tr>
</tbody>
</table>

Notes for corn grain, corn silage, forage sorghum: Use 100 to 300 lb/A of a starter fertilizer. On soils with optimum or higher nutrient levels, a starter fertilizer may not be necessary. For corn following a legume, reduce the N recommendation accordingly. To determine how to account for nutrient inputs from manure, see the Manure Nutrient Management section of the Penn State Agronomy Guide (http://extension.psu.edu/agronomy-guide).

PREVIOUS LEGUME—Reduce application of N according to guidelines provided in Table 1.2.8 of the Penn State Agronomy Guide.

Cool-Season Grasses: Orchardgrass, Brome, Timothy, Reed Canary (4 T/A)

<table>
<thead>
<tr>
<th>Crop (expected yield)</th>
<th>Soil test level*</th>
</tr>
</thead>
</table>

Notes: Grasses: For establishment, especially under adverse conditions, banding 100 to 300 lb/A of a starter fertilizer may be beneficial. For no-till, use no starter nitrogen.

For more information consult the current Penn State Agronomy Guide (http://extension.psu.edu/agronomy-guide) or contact your local Penn State Cooperative Extension office.

Prepared by: Douglas Beegle, Distinguished Professor of Agronomy; and John Spargo, Director AASL.

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*Because of serious potential for lodging, it is very important to take the full credit for manure and residual N from previous manure applications for small grain crops.

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**Notes:**
- For establishment, especially under adverse conditions, banding 100 to 300 lb/A of a starter fertilizer may be beneficial.
- For no-till, use no starter nitrogen.
- Soybeans—Do not use a starter fertilizer with soybeans. When double cropping, add the P and K to the barley.
- Wheat, rye, barley—At planting time, 100 to 300 lb/A of a starter fertilizer may be applied, especially on low-testing soils or under adverse growing conditions. Do not apply more than 15 lb of nitrogen or 30 lb of nitrogen + potash through the drill. If plants didn’t tiller well in fall, apply the N by mid-March; otherwise, apply the N any time up to growth stage 5.
- Oats or grain sorghum—Apply 100 to 300 lb/A of a starter fertilizer. Do not apply more than 20 lb of nitrogen or 45 lb of nitrogen + potash through the drill. Apply the N with the other fertilizer before planting.

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* Mehlich 3 soil test levels used to calculate recommendations in this table are as follows:

<table>
<thead>
<tr>
<th>Test level</th>
<th>P (ppm)</th>
<th>K (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>15</td>
<td>50</td>
</tr>
<tr>
<td>Optimum</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>High</td>
<td>60</td>
<td>200</td>
</tr>
</tbody>
</table>

---

**Notes:**
- Oats or grain sorghum—Apply 100 to 300 lb/A of a starter fertilizer. Do not apply more than 20 lb of nitrogen or 45 lb of nitrogen + potash through the drill. Apply the N with the other fertilizer before planting.
The limestone recommendation on your soil test report is based on the use of a liming material equivalent in neutralizing power to 100% calcium carbonate limestone. The recommendations are in pounds of calcium carbonate equivalent (CCE) per acre. Use of a liming material that is not equivalent in neutralizing power to pure calcium carbonate limestone (100% CCE) must be adjusted so that you actually apply enough liming material to neutralize the acidity in your soil. All agricultural liming materials sold in Pennsylvania are required by law to be labeled with their CCE. Using the CCE of your liming material, the amount required to supply the recommended amount of neutralizing power (CCE) for your soil may be calculated as shown below or read directly from the table.

It is also very important that a liming material be ground fine enough to be effective. Pennsylvania aglime regulations classify agricultural liming materials into the following three groups based on fineness:

1. Fine-sized: 95% passing 20-mesh screen
2. Medium-sized: 60% passing 60-mesh screen
3. Course-sized: all liming materials that fail to meet one of the above minimums for fineness.

A material meeting the standard for a fine-sized liming material is considered adequate for meeting soil test recommendations in most situations. It is assumed that fine-sized liming materials will react rapidly enough to effect a change in soil pH in the year of application and will typically remain effective for about three years.

Directions for using the conversion table:
Find your soil test limestone recommendation in the left hand column and then read across the table on that line until you come to the column headed by the % CCE nearest to that of your liming material. The number at that point is the pounds of liming material required to meet the limestone recommendation on your soil test.

Because there generally is little advantage to applying more than 8,000 pounds of CCE per acre in any one application to agricultural land, this table is divided into three sections suggesting how the total liming material required can be split over time for more efficient use. Separate the applications by 6 months or at least by tillage operations. (See the right hand column).

For more information consult the current Penn State Agronomy Guide (http://extension.psu.edu/agronomy-guide) or contact your local Penn State Cooperative Extension office.
Lime Recommendations

Limestone recommendations are made based on the pH goal and the amount of exchangeable acidity measured by the Mehlich Buffer soil test. The pH goal varies with the crop.

The pH goal is given on the crop sheet for each crop in this handbook. If the soil pH is already at or above the pH goal, no limestone is recommended. If the soil pH is below the pH goal for the crop, look in the left hand column and find the acidity as reported on the bottom of the soil test report then go across to the appropriate "pH Goal" column to determine the limestone recommendation. The recommendations are given as pounds of calcium carbonate equivalent (CCE) per acre.

If the limestone to be used is significantly different from 100% CCE, the recommendation must be adjusted for this difference. ST-2 "Liming Material Conversion Table" explains how to make this adjustment.

<table>
<thead>
<tr>
<th>Acidity (meq/100 g)</th>
<th>pH Goal 7.0</th>
<th>pH Goal 6.5</th>
<th>pH Goal 6.0</th>
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Table 1. Lime Recommendation (lb CCE/A)

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Magnesium Recommendations

The optimum magnesium (Mg) level varies with the crop. The optimum Mg is given on the crop sheet for each crop in this handbook. Look in the left hand column and find the soil test Mg level in ppm as reported on the bar chart in the middle of the soil test report then go across to the appropriate "Optimum Mg" column for that crop to determine the amount of Mg recommended.

Because of potential animal health problems due to an imbalance between potassium (K) and Mg, a higher Mg recommendation is made for some crops when the soil K level is greater than 200 ppm. The need for this adjustment is noted on the appropriate crop sheets in this manual. For crops where this adjustment applies, when the K soil test level as reported on the bar chart in the middle of the soil test report is above 200 ppm, then use the far right hand column in this table to determine the Mg recommendation.

Since the most common source of Mg is magnesium containing limestone, the Mg recommendation is also given on the soil test report as the percent Mg required in the recommended limestone to meet the Mg requirement. To calculate this percentage divide the Mg recommendation determined from this table by the limestone recommendation determined from table 1 and multiply by 100.

Recommendations are given as elemental Mg because limestone is required by PA law to be labeled with the elemental Mg analysis. You can convert the Mg recommendation to MgO by multiplying the Mg recommendation times 1.6.

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<th>Mg recommendation for grasses when soil test K is greater than 200 ppm</th>
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<td>Optimum Mg Level (ppm)</td>
<td>Mg recommendation for grasses when soil test K is greater than 200 ppm</td>
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## Crop & Crop Code List

### Alfalfa Group
- 1001 Established Alfalfa
- 1020 Planting Alfalfa
- 1021 Planting Alfalfa-Grass
- 1022 Planting Alfalfa-Trefoil
- 1023 Planting Alfalfa (no-till)
- 1032 Planting Alfalfa in Wheat
- 1035 Planting Alfalfa in Oats
- 1072 Established Alfalfa-Grass

### Legume Group
- 1005 Established Trefoil
- 1006 Established Trefoil-Grass
- 1011 Established Crownvetch
- 1014 Established Ladino Clover
- 1015 Established Red Clover
- 1024 Planting Trefoil
- 1025 Planting Trefoil-Grass
- 1026 Planting Trefoil (no-till)
- 1027 Planting Red Clover
- 1028 Planting Red Clover (no-till)
- 1029 Planting Ladino Clover
- 1030 Planting Crownvetch
- 1031 Planting Crownvetch (no-till)
- 1033 Planting Trefoil in Wheat
- 1034 Planting Red Clover in Wheat
- 1036 Planting Trefoil in Oats
- 1037 Planting Red Clover in Oats
- 1038 Planting Bluegrass
- 1039 Planting Bromegrass
- 1040 Planting Orchardgrass
- 1041 Planting Timothy
- 1042 Corn for Grain
- 1043 Corn for Silage
- 1044 Corn for Grain (no-till)
- 1045 Corn for Silage (no-till)
- 1046 Small Grain Silage/Corn Grain Double Crop
- 1047 Small Grain Silage/Corn Silage Double Crop
- 1048 Millet for Grain
- 1049 Millet for Forage
- 1050 Barley/Soybean Double Crop
- 1051 Small Grain Silage
- 1052 Hops
- 1053 CRP Warm Season Grass
- 1054 CRP Cool Season Grass
- 1055 Horticultural Cover Crop
- 1056 Wildlife Food Plot
- 1057 Sorghum for Grain
- 1058 Wheat
- 1059 Oats
- 1060 Barley, Winter
- 1061 Rye
- 1062 Planting Mixed Grasses
- 1063 Sorghum for Forage
- 1064 Soybeans
- 1065 Tobacco
- 1066 Sudangrass
- 1067 Sorghum-Sudangrass
- 1068 Barley, Spring
- 1069 Buckwheat
- 1070 Canola
- 1071 Sunflowers
- 1072 Established Alfalfa-Grass
- 1073 Planting Red Clover
- 1074 Established Red Clover-Grass
- 1075 Planting Tall Fescue
- 1076 Established Tall Fescue
- 1077 Planting Warm Season Grasses
- 1078 Established Warm Season Grasses
- 1079 Brassicas
- 1080 Renovating Pasture (with legume)
- 1081 Established Pasture (without legume)
- 1082 Established Pasture (with legume)
- 1083 Planting Pasture (without legume)
- 1084 Planting Pasture (with legume)
- 1085 Planting Reed Canarygrass
- 1086 Established Reed Canarygrass
- 1087 Disturbed Lands

### Grass Group
- 1010 Established Bluegrass
- 1016 Established Bromegrass
- 1017 Established Orchardgrass
- 1018 Established Timothy
- 1019 Established Mixed Grasses
- 1038 Planting Bluegrass
- 1039 Planting Bromegrass
- 1040 Planting Orchardgrass
- 1041 Planting Timothy
- 1042 Corn for Grain
- 1043 Corn for Silage
- 1044 Corn for Grain (no-till)
- 1045 Corn for Silage (no-till)
- 1046 Small Grain Silage/Corn Grain Double Crop
- 1047 Small Grain Silage/Corn Silage Double Crop
- 1048 Millet for Grain
- 1049 Millet for Forage
- 1050 Barley/Soybean Double Crop
- 1051 Small Grain Silage
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- 1053 CRP Warm Season Grass
- 1054 CRP Cool Season Grass
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- 1078 Established Warm Season Grasses
- 1079 Brassicas
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- 1081 Established Pasture (without legume)
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- 1083 Planting Pasture (without legume)
- 1084 Planting Pasture (with legume)
- 1085 Planting Reed Canarygrass
- 1086 Established Reed Canarygrass
- 1087 Disturbed Lands

### Miscellaneous
- 1002 Hemp for Seed
- 1003 Hemp for Fiber
- 1052 Hops
- 1053 CRP Warm Season Grass
- 1054 CRP Cool Season Grass
- 1055 Horticultural Cover Crop
- 1056 Wildlife Food Plot
- 1065 Tobacco
- 1079 Brassicas
- 1800 Disturbed Lands
ESTABLISHED ALFALFA  Crop Code: 1001

**Standard Message:**

Apply fertilizer after first cutting or, for large recommendations, split after first cutting and in the fall.  Apply 2 lbs boron per acre with the fertilizer.

**Lime and Magnesium Recommendation:**

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<th>Opt soil test Mg (ppm): 60</th>
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**Nitrogen Recommendation (lb N/A):**

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**Phosphorus Recommendation (lb P2O5/A):**

*Optimum soil test P: 30 - 50 ppm*

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**Phosphorus Message(s):**

*When soil test P is greater than 300 ppm:*

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
Potassium Recommendation (lb K2O/A):

(Optimum soil test K: 100 - 200 ppm)

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Potassium Message(s):

When soil test K is greater than 200 ppm and less than 400 ppm K:
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

When soil test K is greater than or equal to 400 ppm:
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
HEMP, FOR SEED PRODUCTION  Crop Code: 1002

Standard Message:

Apply up to 50 lbs of N at planting and the remainder about 30 days later. You must account for residual N from previous legumes in the rotation or manure applications, if any.

We have limited experience with hemp production in our region. These recommendations are based on the most current information available. As we learn more about nutrient needs of hemp, recommendations will be revised as-needed.

Lime and Magnesium Recommendation:

pH Goal: 6.5  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

<table>
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<tr>
<th>Yield Goal (lbs/A)</th>
<th>1000</th>
<th>1250</th>
<th>1500</th>
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Phosphorus Recommendation (lb P2O5/A):

(Optional soil test P: 30 - 50 ppm)

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Phosphorus Message(s)

When soil test P is greater than or equal to 300 ppm:

Very high P may lead to crop production problems and may result in P loss to the environment.
Potassium Recommendation (lb K\textsubscript{2}O/A):
(Optimum soil test K: 100 - 150 ppm)

<table>
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<tr>
<th>Soil test K (ppm)</th>
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Potassium Message(s):
When soil test K is greater than 200 ppm:
Very high K can lead to imbalances in forage crops grown later in the rotation which can cause serious health problems in animals (See Back)
HEMP, FOR FIBER PRODUCTION
Crop Code: 1003

Standard Message:

Expected yield and nutrient recommendations are for field retted stalks. Apply up to 50 lbs of N at planting and the remainder about 30 days later. You must account for residual N from previous legumes in the rotation or manure applications, if any.
We have limited experience with hemp production in our region. These recommendations are based on the most current information available. As we learn more about nutrient needs of hemp, recommendations will be revised as-needed.

Lime and Magnesium Recommendation:
pH Goal: 6.5
Opt soil test Mg (ppm): 60
See Table 1 for lime recommendations based on target pH
See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

<table>
<thead>
<tr>
<th>6</th>
<th>7</th>
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</table>

Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

<table>
<thead>
<tr>
<th>Soil test P (ppm)</th>
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Phosphorus Message(s)

When soil test P is greater than or equal to 300 ppm:
Very high P may lead to crop production problems and may result in P loss to the environment.
HEMP, FOR FIBER PRODUCTION  Crop Code: 1003

Potassium Recommendation (lb K2O/A):

(Optimum soil test K: 100 - 150 ppm)

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Potassium Message(s):

When soil test K is greater than 200 ppm:
Very high K can lead to imbalances in forage crops grown later in the rotation which can cause serious health problems in animals (See Back)
ESTABLISHED TREFOIL  Crop Code: 1005

Standard Message:
Apply fertilizer after first cutting or, for large recommendations, split after first cutting and in the fall.

Lime and Magnesium Recommendation:
pH Goal: 6.5  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):
Optimum soil test P: 30 - 50 ppm

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Phosphorus Message(s):
When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
### Potassium Recommendation (lb K2O/A):

(Optimum soil test K: 100 - 200 ppm)

<table>
<thead>
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</table>

### Potassium Message(s):

When soil test K is greater than 200 ppm and less than 400 ppm K:
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

When soil test K is greater than or equal to 400 ppm:
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
ESTABLISHED TREFOIL-GRASS  Crop Code: 1006

Standard Message:
Apply fertilizer after first cutting or, for large recommendations, split after first cutting and in the fall.

Lime and Magnesium Recommendation:
- pH Goal: 6.5  
  "See Table 1 for lime recommendations based on target pH"
- Opt soil test Mg (ppm): 60  
  "See Table 2 for Mg recommendations based on optimum soil test Mg"

Nitrogen Recommendation (lb N/A):

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<th>Yield Goal (T/A)</th>
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Phosphorus Recommendation (lb P2O5/A):
- (Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):
- When soil test P is greater than 300 ppm:
  Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
Potassium Recommendation (lb K2O/A):

*(Optimum soil test K: 100 - 200 ppm)*

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<th>Soil test K (ppm)</th>
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**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
ESTABLISHED BLUEGRASS  Crop Code: 1010

Standard Message:
For optimum efficiency, the recommended N should be split and applied separately for each harvest, cutting or grazing. As a guide, apply 40 lb N/A per ton of expected yield for each harvest. Any recommended P and K can be applied after first harvest or in the fall.

Lime and Magnesium Recommendation:

<table>
<thead>
<tr>
<th>pH Goal: 6.5</th>
<th>Opt soil test Mg (ppm): 120</th>
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</table>

See Table 1 for lime recommendations based on target pH

See Table 2 for Mg recommendations based on optimum soil test Mg

Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

Nitrogen Recommendation (lb N/A):

<table>
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<tr>
<th>Yield Goal (T/A)</th>
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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 -50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
## ESTABLISHED BLUEGRASS

### Potassium Recommendation (lb K2O/A):

*(Optimum soil test K: 100 - 200 ppm)*

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### Potassium Message(s):

*When soil test K is greater than 200 ppm and less than 400 ppm K:*

Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*

Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
ESTABLISHED CROWNVETCH  Crop Code: 1011

Standard Message:

Lime and Magnesium Recommendation:

<table>
<thead>
<tr>
<th>pH Goal: 6.5</th>
<th>See Table 1 for lime recommendations based on target pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opt soil test Mg (ppm): 60</td>
<td>See Table 2 for Mg recommendations based on optimum soil test Mg</td>
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Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
Potassium Recommendation (lb K2O/A):

(Optimum soil test K: 100 - 200 ppm)

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</table>

Potassium Message(s):

When soil test K is greater than 200 ppm and less than 400 ppm K:
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

When soil test K is greater than or equal to 400 ppm:
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
**CANOLA  Crop Code: 1012**

**Standard Message:**

**Lime and Magnesium Recommendation:**

<table>
<thead>
<tr>
<th>pH Goal:</th>
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<tbody>
<tr>
<td>Opt soil test Mg (ppm):</td>
<td>60</td>
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</table>

*See Table 1 for lime recommendations based on target pH*

*See Table 2 for Mg recommendations based on optimum soil test Mg*

**Nitrogen Recommendation (lb N/A):**

<table>
<thead>
<tr>
<th>Yield Goal (Bu/A)</th>
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**Phosphorus Recommendation (lb P2O5/A):**

*(Optimum soil test P: 30 -50 ppm)*

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**Phosphorus Message(s):**

*When soil test P is greater than 300 ppm:*

Very high P may lead to phosphorus loss to the environment.
Potassium Recommendation (lb K2O/A):

(Optimum soil test K: 100 - 200 ppm)

<table>
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<th>Soil test K (ppm)</th>
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Potassium Message(s):

*When soil test K is greater than 200 ppm:*

Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).
**SPELT**  **Crop Code:** 1013

**Standard Message:**

**Lime and Magnesium Recommendation:**

<table>
<thead>
<tr>
<th>pH Goal: 6.5</th>
<th>Opt soil test Mg (ppm): 60</th>
</tr>
</thead>
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See Table 1 for lime recommendations based on target pH

See Table 2 for Mg recommendations based on optimum soil test Mg

**Nitrogen Recommendation (lb N/A):**

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**Phosphorus Recommendation (lb P2O5/A):**

*Optimum soil test P: 30-50 ppm*

**Soil test P (ppm)**

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</table>

**Phosphorus Message(s):**

*When soil test P is greater than 300 ppm:*

Very high P may lead to phosphorus loss to the environment.
**SPELT** Crop Code: 1013

**Potassium Recommendation (lb K2O/A):**
*(Optimum soil test K: 100 - 200 ppm)*

<table>
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<tr>
<th>Soil test K (ppm)</th>
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**Potassium Message(s):**

*When soil test K is greater than 200 ppm:*

Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).
ESTABLISHED LADINO CLOVER  Crop Code: 1014

Standard Message:
Apply fertilizer after first cutting or, for large recommendations, split after first cutting and in the fall.

Lime and Magnesium Recommendation:

pH Goal: 6.5  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optional soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
**ESTABLISHED LADINO CLOVER**  
**Crop Code:** 1014

**Potassium Recommendation (lb K2O/A):**  
*(Optimum soil test K: 100 - 200 ppm)*

<table>
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<tr>
<th>Soil test K (ppm)</th>
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</table>

**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*  
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*  
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
ESTABLISHED RED CLOVER  

**Crop Code:** 1015

### Standard Message:

Apply fertilizer after first cutting or, for large recommendations, split after first cutting and in the fall.

### Lime and Magnesium Recommendation:

- **pH Goal:** 6.5  
  *See Table 1 for lime recommendations based on target pH*
- **Opt soil test Mg (ppm):** 60  
  *See Table 2 for Mg recommendations based on optimum soil test Mg*

### Nitrogen Recommendation (lb N/A):

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### Phosphorus Recommendation (lb P2O5/A):

*(Optimum soil test P: 30 - 50 ppm)*

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### Phosphorus Message(s):

When soil test P is greater than 300 ppm:

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
ESTABLISHED RED CLOVER  Crop Code: 1015

Potassium Recommendation (lb K2O/A):

(Optimum soil test K: 100 - 200 ppm)

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Potassium Message(s):

When soil test K is greater than 200 ppm and less than 400 ppm K:
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

When soil test K is greater than or equal to 400 ppm:
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
**ESTABLISHED BROMEGRASS**  
**Crop Code: 1016**

**Standard Message:**

For optimum efficiency, the recommended N should be split and applied separately for each cutting. As a guide, apply 50 lb N/A per ton of expected yield for each cutting. Any recommended P and K can be applied after first cutting or in the fall.

**Lime and Magnesium Recommendation:**

<table>
<thead>
<tr>
<th>pH Goal: 6.5</th>
<th>Opt soil test Mg (ppm): 120</th>
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</thead>
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See Table 1 for lime recommendations based on target pH  
See Table 2 for Mg recommendations based on optimum soil test Mg  
Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

**Nitrogen Recommendation (lb N/A):**

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**Phosphorus Recommendation (lb P2O5/A):**

*(Optimum soil test P: 30-50 ppm)*

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</table>

**Phosphorus Message(s):**

When soil test P is greater than 300 ppm:  
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.

**Potassium Recommendation (lb K2O/A):**
**ESTABLISHED BROMEGRASS**  
**Crop Code:** 1016

*(Optimum soil test K: 100 - 200 ppm)*

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**Potassium Message(s):**

When soil test K is greater than 200 ppm and less than 400 ppm K:
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

When soil test K is greater than or equal to 400 ppm:
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).

Revised: 10/10/2002
**ESTABLISHED ORCHARDGRASS**  
**Crop Code:** 1017

**Standard Message:**
For optimum efficiency, the recommended N should be split and applied separately for each cutting. As a guide, apply 50 lb N/A per ton of expected yield for each cutting. Any recommended P and K can be applied after first cutting or in the fall.

**Lime and Magnesium Recommendation:**
- **pH Goal:** 6.5  
- **Opt soil test Mg (ppm):** 120  

See Table 1 for lime recommendations based on target pH  
See Table 2 for Mg recommendations based on optimum soil test Mg  
Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

**Nitrogen Recommendation (lb N/A):**

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<tr>
<th>Yield Goal (T/A)</th>
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**Phosphorus Recommendation (lb P2O5/A):**
*(Optimum soil test P: 30 - 50 ppm)*

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**Phosphorus Message(s):**
When soil test P is greater than 300 ppm:  
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.

**Potassium Recommendation (lb K2O/A):**
### ESTABLISHED ORCHARDGRASS

**Crop Code: 0107**

*(Optimum soil test K: 100 - 200 ppm)*

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**Potassium Message(s):**

When soil test K is greater than 200 ppm and less than 400 ppm K:
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

When soil test K is greater than or equal to 400 ppm:
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).

Revised: 8/19/2002
ESTABLISHED TIMOTHY  Crop Code: 1018

Standard Message:
For optimum efficiency, the recommended N should be split and applied separately for each cutting. As a guide, apply 50 lb N/A per ton of expected yield for each cutting. Any recommended P and K can be applied after first cutting or in the fall.

Lime and Magnesium Recommendation:

- **pH Goal**: 6.5
- **Opt soil test Mg (ppm)**: 120

See Table 1 for lime recommendations based on target pH
See Table 2 for Mg recommendations based on optimum soil test Mg

Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

Nitrogen Recommendation (lb N/A):

<table>
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<th>Yield Goal (T/A)</th>
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Phosphorus Recommendation (lb P2O5/A):

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.

Potassium Recommendation (lb K2O/A):
**ESTABLISHED TIMOTHY**  
**Crop Code:** 1018

(Optimum soil test K: 100 - 200 ppm)

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**Potassium Message(s):**

When soil test K is greater than 200 ppm and less than 400 ppm K:
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

When soil test K is greater than or equal to 400 ppm:
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
**ESTABLISHED MIXED GRASSES**  
*Crop Code: 1019*

**Standard Message:**

For optimum efficiency, the recommended N should be split and applied separately for each cutting. As a guide, apply 50 lb N/A per ton of expected yield for each cutting. Any recommended P and K can be applied after first cutting or in the fall.

**Lime and Magnesium Recommendation:**

- **pH Goal:** 6.5  
  - See Table 1 for lime recommendations based on target pH
- **Opt soil test Mg (ppm):** 120  
  - See Table 2 for Mg recommendations based on optimum soil test Mg  
  - Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

**Nitrogen Recommendation (lb N/A):**

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**Phosphorus Recommendation (lb P2O5/A):**  
*(Optimum soil test P: 30-50 ppm)*

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**Phosphorus Message(s):**

When soil test P is greater than 300 ppm:
- Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.

**Potassium Recommendation (lb K2O/A):**
### ESTABLISHED MIXED GRASSES

**Crop Code:** 1019

*(Optimum soil test K: 100 to 200 ppm)*

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**Potassium Message(s):**

When soil test K is greater than 200 ppm and less than 400 ppm K:
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

When soil test K is greater than or equal to 400 ppm:
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING ALFALFA  

Crop Code: 1020

Standard Message:

Lime and Magnesium Recommendation:

pH Goal: 7.0  
Opt soil test Mg (ppm): 60  
See Table 1 for lime recommendations based on target pH  
See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
**PLANTING ALFALFA**  
**Crop Code:** 1020

**Potassium Recommendation (lb K2O/A):**  
*(Optimum soil test K: 100 - 200 ppm)*

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**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*  
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*  
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING ALFALFA-GRASS  Crop Code: 1021

Standard Message:

Lime and Magnesium Recommendation:

pH Goal: 7.0  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
**PLANTING ALFALFA-GRASS**  
**Crop Code:** 1021

**Potassium Recommendation (lb K2O/A):**  
*(Optimum soil test K: 100 - 200 ppm)*

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**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*
Very high K can lead to imbalances in forages which can cause serious health problems in animals.  (See Back).

*When soil test K is greater than or equal to 400 ppm:*
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING ALFALFA-TREFOIL  Crop Code: 1022

Standard Message:

Lime and Magnesium Recommendation:

pH Goal: 7.0  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
Potassium Recommendation (lb K2O/A):

(Optimum soil test K: 100 - 200 ppm)

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<th>Soil test K (ppm)</th>
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</table>

Potassium Message(s):

When soil test K is greater than 200 ppm and less than 400 ppm K:
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

When soil test K is greater than or equal to 400 ppm:
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING ALFALFA (NO TILL)  Crop Code: 1023

Standard Message:

Lime and Magnesium Recommendation:

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
PLANTING ALFALFA (NO TILL)  Crop Code: 1023

Potassium Recommendation (lb K2O/A):
(Optimum soil test K: 100 – 200 ppm)

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Potassium Message(s):

When soil test K is greater than 200 ppm and less than 400 ppm K:
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

When soil test K is greater than or equal to 400 ppm:
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING TREFOIL  Crop Code: 1024

Standard Message:

Lime and Magnesium Recommendation:

pH Goal: 6.5  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
PLANTING TREFOIL  Crop Code: 1024

Potassium Recommendation (lb K2O/A):
(Optimum soil test K: 100 - 200 ppm)

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Potassium Message(s):

*When soil test K is greater than 200 ppm and less than 400 ppm K:*
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING TREFOIL-GRASS  Crop Code: 1025

Standard Message:

Lime and Magnesium Recommendation:

pH Goal: 6.5  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):  
(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
### PLANTING TREFOIL-GRASS

**Crop Code:** 1025

**Potassium Recommendation (lb K2O/A):**

*Optimum soil test K: 100 - 200 ppm*

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**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*

Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*

Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING TREFOIL (NO-TILL)  Crop Code: 1026

Standard Message:

Lime and Magnesium Recommendation:

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<th>pH Goal:</th>
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See Table 1 for lime recommendations based on target pH
See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
**PLANTING TREFOIL (NO-TILL)**  Crop Code: 1026

**Potassium Recommendation (lb K2O/A):**

(Opimum soil test K: 100 - 200 ppm)

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**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*
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PLANTING RED CLOVER  Crop Code: 1027

Standard Message:

Lime and Magnesium Recommendation:

<table>
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<tr>
<th>pH Goal: 6.5</th>
<th>Opt soil test Mg (ppm): 60</th>
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<tr>
<td>See Table 1 for lime recommendations based on target pH</td>
<td>See Table 2 for Mg recommendations based on optimum soil test Mg</td>
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Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

<table>
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Phosphorus Message(s):

When soil test P is greater than 300 ppm:

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.

Lime and Magnesium Recommendation:

- Opt soil test Mg (ppm): 60
- See Table 2 for Mg recommendations based on optimum soil test Mg
### PLANTING RED CLOVER  
**Crop Code: 1027**

**Potassium Recommendation (lb K2O/A):**

*Optimum soil test K: 100 - 200 ppm*

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**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING RED CLOVER (NO-TILL)  Crop Code: 1028

Standard Message:

Lime and Magnesium Recommendation:

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<th>pH Goal: 6.5</th>
<th>Opt soil test Mg (ppm): 60</th>
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<td>See Table 1 for lime recommendations based on target pH</td>
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<td>See Table 2 for Mg recommendations based on optimum soil test Mg</td>
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Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

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Phosphorus Message(s):

*When soil test P is greater than 300 ppm:*

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
PLANTING RED CLOVER (NO-TILL)

Potassium Recommendation (lb K2O/A):

(Optimum soil test K: 100 - 200 ppm)

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</table>

Potassium Message(s):

*When soil test K is greater than 200 ppm and less than 400 ppm K:*
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING LADINO CLOVER  Crop Code: 1029

Standard Message:

Lime and Magnesium Recommendation:

pH Goal: 6.5  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
# PLANTING LADINO CLOVER

**Crop Code:** 1029

## Potassium Recommendation (lb K2O/A):

*(Optimum soil test K: 100 - 200 ppm)*

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**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*

Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*

Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING CROWNVETCH  Crop Code: 1030

Standard Message:

Lime and Magnesium Recommendation:

pH Goal: 6.5  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
PLANTING CROWNVETCH  Crop Code: 1030

Potassium Recommendation (lb K2O/A):
(Opimum soil test K:  100 - 200  ppm)

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Potassium Message(s):

When soil test K is greater than 200 ppm and less than 400 ppm K:
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

When soil test K is greater than or equal to 400 ppm:
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING CROWNVETCH (NO-TILL)  Crop Code: 1031

Standard Message:

Lime and Magnesium Recommendation:

pH Goal: 6.5  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
PLANTING CROWNVETCH (NO-TILL)  Crop Code: 1031

Potassium Recommendation (lb K2O/A):
(Opimum soil test K:  100 - 200  ppm)

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Potassium Message(s):

*When soil test K is greater than 200 ppm and less than 400 ppm K:*
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING ALFALFA IN WHEAT  Crop Code: 1032

Standard Message:

Lime and Magnesium Recommendation:

pH Goal: 7.0  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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<th>Yield Goal (T/A)</th>
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</table>

Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):
When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
## PLANTING ALFALFA IN WHEAT

**Crop Code:** 1032

### Potassium Recommendation (lb K2O/A):

*(Optimum soil test K: 100 - 200 ppm)*

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<th>Soil test K (ppm)</th>
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### Potassium Message(s):

*When soil test K is greater than 200 ppm and less than 400 ppm K:*

Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*

Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).

Revised: 7/1/2000
PLANTING TREFOIL IN WHEAT  Crop Code: 1033

Standard Message:

Lime and Magnesium Recommendation:

pH Goal: 6.5  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
**PLANTING TREFOIL IN WHEAT**  
Crop Code: 1033

**Potassium Recommendation (lb K2O/A):**  
(Optimum soil test K: 100 - 200 ppm)

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</table>

**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).  

Revised: 12/31/2000
PLANTING RED CLOVER IN WHEAT  

Crop Code: 1034

Standard Message:

Lime and Magnesium Recommendation:

| pH Goal: 6.5 | See Table 1 for lime recommendations based on target pH |
| Opt soil test Mg (ppm): 60 | See Table 2 for Mg recommendations based on optimum soil test Mg |

Nitrogen Recommendation (lb N/A):

<table>
<thead>
<tr>
<th>Yield Goal (T/A)</th>
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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
**PLANTING RED CLOVER IN WHEAT**  
_Crop Code: 1034_

**Potassium Recommendation (lb K2O/A):**  
_(Optimum soil test K: 100 - 200 ppm)_

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**Potassium Message(s):**

_When soil test K is greater than 200 ppm and less than 400 ppm K:_
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

_When soil test K is greater than or equal to 400 ppm:_
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING ALFALFA IN OATS  Crop Code: 1035

Standard Message:

Lime and Magnesium Recommendation:

pH Goal: 7.0  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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<th>Yield Goal (T/A)</th>
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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
**PLANTING ALFALFA IN OATS**  Crop Code: 1035

Potassium Recommendation (lb K2O/A):

*(Optimum soil test K: 100 - 200 ppm)*

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**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*

Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*

Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING TREFOIL IN OATS  Crop Code: 1036

Standard Message:

Lime and Magnesium Recommendation:

- pH Goal: 6.5
- Opt soil test Mg (ppm): 60

See Table 1 for lime recommendations based on target pH
See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
**PLANTING TREFOIL IN OATS**  
Crop Code: 1036

**Potassium Recommendation (lb K2O/A):**  
*Optimum soil test K: 100 - 200 ppm*

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**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING RED CLOVER IN OATS  Crop Code: 1037

Standard Message:

Lime and Magnesium Recommendation:

| pH Goal: 6.5 | See Table 1 for lime recommendations based on target pH |
| Opt soil test Mg (ppm): 60 | See Table 2 for Mg recommendations based on optimum soil test Mg |

Nitrogen Recommendation (lb N/A):

<table>
<thead>
<tr>
<th>Yield Goal (T/A)</th>
<th>2</th>
<th>2.5</th>
<th>3</th>
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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

*When soil test P is greater than 300 ppm:*

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
PLANTING RED CLOVER IN OATS  Crop Code: 1037

Potassium Recommendation (lb K2O/A):

(Optimum soil test K: 100 - 200 ppm)

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Potassium Message(s):

When soil test K is greater than 200 ppm and less than 400 ppm:
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

When soil test K is greater than or equal to 400 ppm:
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING BLUEGRASS  
**Crop Code:** 1038

**Standard Message:**
For optimum efficiency, the recommended N should be split and applied separately for each cutting. As a guide, apply 40 lb N/A per ton of expected yield for each cutting. Recommended Limestone, phosphorus (P) and potassium (K) should be applied before planting.

**Lime and Magnesium Recommendation:**

<table>
<thead>
<tr>
<th>pH Goal</th>
<th>Opt soil test Mg (ppm)</th>
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</table>

See Table 1 for lime recommendations based on target pH

See Table 2 for Mg recommendations based on optimum soil test Mg

Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

**Nitrogen Recommendation (lb N/A):**

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<th>Yield Goal ( T/A )</th>
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**Phosphorus Recommendation (lb P2O5/A):**

*(Optimum soil test P: 30 -50 ppm)*

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**Phosphorus Message(s):**

*When soil test P is greater than 300 ppm:*

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
PLANTING BLUEGRASS  
Crop Code: 1038

Potassium Recommendation (lb K2O/A):
(Optimum soil test K: 100 - 200 ppm)

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Potassium Message(s):

*When soil test K is greater than 200 ppm and less than 400 ppm K:*
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).

Revised: 5/15/2008
**PLANTING BROMEGRASS**  
*Crop Code: 1039*

**Standard Message:**

For optimum efficiency, the recommended N should be split and applied separately for each cutting. As a guide, apply 50 lb N/A per ton of expected yield for each cutting. Recommended Limestone, phosphorus (P) and potassium (K) should be applied before planting.

**Lime and Magnesium Recommendation:**

- **pH Goal:** 6.5
- **Opt soil test Mg (ppm):** 120

*See Table 1 for lime recommendations based on target pH*

*Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2*

**Nitrogen Recommendation (lb N/A):**

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**Phosphorus Recommendation (lb P2O5/A):**

*(Optimum soil test P: 30 - 50 ppm)*

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**Phosphorus Message(s):**

*When soil test P is greater than 300 ppm:*

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.

**Potassium Recommendation (lb K2O/A):**

*See Table 2 for Mg recommendations based on optimum soil test Mg*

*Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2*
**PLANTING BROMEGRASS**  
Crop Code: 1039

*(Optimum soil test K: 100 – 200 ppm)*

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</table>

**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING ORCHARDGRASS  Crop Code: 1040

Standard Message:
For optimum efficiency, the recommended N should be split and applied separately for each cutting. As a guide, apply 50 lb N/A per ton of expected yield for each cutting. Any recommended P and K can be applied after first cutting or in the fall.

Lime and Magnesium Recommendation:

pH Goal: 6.5  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 120  See Table 2 for Mg recommendations based on optimum soil test Mg
Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

Nitrogen Recommendation (lb N/A):

<table>
<thead>
<tr>
<th>Yield Goal ( T/A )</th>
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<th>3</th>
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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.

Potassium Recommendation (lb K2O/A):
**PLANTING ORCHARDGRASS**  
*Crop Code: 1040*

*(Optimum soil test K: 100 - 200 ppm)*

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<tr>
<th>Soil test K (ppm)</th>
<th>Yield Goal (T/A)</th>
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</table>

**Potassium Message(s):**

When soil test K is greater than 200 ppm and less than 400 ppm K:
Very high K can lead to imbalances in forages which can cause serious health problems in animals.  (See Back).

When soil test K is greater than or equal to 400 ppm:
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING TIMOTHY  Crop Code: 1041

Standard Message:

For optimum efficiency, the recommended N should be split and applied separately for each cutting. As a guide, apply 50 lb N/A per ton of expected yield for each cutting. Recommended Limestone, phosphorus (P) and potassium (K) should be applied before planting.

Lime and Magnesium Recommendation:

<table>
<thead>
<tr>
<th>pH Goal: 6.5</th>
<th>Opt soil test Mg (ppm): 120</th>
</tr>
</thead>
<tbody>
<tr>
<td>See Table 1 for lime recommendations based on target pH</td>
<td></td>
</tr>
<tr>
<td>See Table 2 for Mg recommendations based on optimum soil test Mg</td>
<td></td>
</tr>
<tr>
<td>Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2</td>
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</table>

Nitrogen Recommendation (lb N/A):

<table>
<thead>
<tr>
<th>Yield Goal (T/A)</th>
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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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<th>Soil test P (ppm)</th>
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</table>

Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.

Potassium Recommendation (lb K2O/A):

---
# PLANTING TIMOTHY  
**Crop Code:** 1041

(Optimum soil test K: 100 - 200 ppm)

<table>
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<tr>
<th>Soil test K (ppm)</th>
<th>Yield Goal (T/A)</th>
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</table>

**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*

Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*

Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).

Revised: 5/15/2008
CORN FOR GRAIN  Crop Code: 1042

Standard Message:

Lime and Magnesium Recommendation:

pH Goal:  6.5 See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm):  60 See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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<tr>
<th>Yield Goal (Bu/A)</th>
<th>110</th>
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<tbody>
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</table>

Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 3050 ppm)

<table>
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</table>

Phosphorus Message(s):

When soil test P is less than 50 ppm:
Use a starter fertilizer.

When soil test P is greater than or equal to 50 ppm P and less than 300 ppm P:
A starter fertilizer is probably not necessary.

When soil test P is greater than or equal to 300 ppm P:
A starter fertilizer is probably not necessary.
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
**CORN FOR GRAIN**  
**Crop Code:** 1042

**Potassium Recommendation (lb K2O/A):**  
*(Optimum soil test K: 100 150 ppm)*

<table>
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<tr>
<th>Soil test K (ppm)</th>
<th>Yield Goal (Bu/A)</th>
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</table>

**Potassium Message(s):**

When soil test K is greater than 200 ppm:
Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).
CORN FOR SILAGE  Crop Code: 1043

Standard Message:

Lime and Magnesium Recommendation:

pH Goal: 6.5  
Opt soil test Mg (ppm): 60  
See Table 1 for lime recommendations based on target pH  
See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

<table>
<thead>
<tr>
<th>Yield Goal (T/A)</th>
<th>17</th>
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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 3050 ppm)

<table>
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<tr>
<th>Soil test P (ppm)</th>
<th>17</th>
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Phosphorus Message(s):

When soil test P is less than 50 ppm:
Use a starter fertilizer.

When soil test P is greater than or equal to 50 ppm P and less than 300 ppm P:
A starter fertilizer is probably not necessary.

When soil test P is greater than or equal to 300 ppm P:
A starter fertilizer is probably not necessary.
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
### CORN FOR SILAGE  

**Crop Code:** 1043

**Potassium Recommendation (lb K2O/A):**

*(Optimum soil test K: 100 200 ppm)*

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<tr>
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**Potassium Message(s):**

When soil test K is greater than 200 ppm and less than 400 ppm K:
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

When soil test K is greater than or equal to 400 ppm:
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
CORN FOR GRAIN (NO-TILL)  Crop Code: 1044

Standard Message:

Lime and Magnesium Recommendation:

pH Goal: 6.5  
Opt soil test Mg (ppm): 60

Nitrogen Recommendation (lb N/A):

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<tr>
<th>Yield Goal (Bu/A)</th>
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<th>150</th>
<th>190</th>
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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 3050 ppm)

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</table>

Phosphorus Message(s): 

When soil test P is less than 50 ppm: 
Use a starter fertilizer.

When soil test P is greater than or equal to 50 ppm P and less than 300 ppm P: 
A starter fertilizer is probably not necessary.

When soil test P is greater than or equal to 300 ppm P: 
A starter fertilizer is probably not necessary. 
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
CORN FOR GRAIN (NO-TILL)  Crop Code: 1044

Potassium Recommendation (lb K2O/A):

(Optimum soil test K: 100 150 ppm)

<table>
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Potassium Message(s):

When soil test K is greater than 200 ppm:
Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).
CORN FOR SILAGE (NO-TILL)  Crop Code: 1045

Standard Message:

Lime and Magnesium Recommendation:

pH Goal: 6.5  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

<table>
<thead>
<tr>
<th>Yield Goal (T/A)</th>
<th>17</th>
<th>22</th>
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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 3050 ppm)

<table>
<thead>
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<th>Soil test P (ppm)</th>
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Phosphorus Message(s):

When soil test P is less than 50 ppm:
Use a starter fertilizer.

When soil test P is greater than or equal to 50 ppm P and less than 300 ppm P:
A starter fertilizer is probably not necessary.

When soil test P is greater than or equal to 300 ppm P:
A starter fertilizer is probably not necessary.
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
CORN FOR SILAGE (NO-TILL) Crop Code: 1045

Potassium Recommendation (lb K2O/A):

(Optimum soil test K: 100 200 ppm)

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</table>

Potassium Message(s):

When soil test K is greater than 200 ppm and less than 400 ppm K:
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

When soil test K is greater than or equal to 400 ppm:
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
### Lime and Magnesium Recommendation:

- **pH Goal:** 6.5  
  See Table 1 for lime recommendations based on target pH
- **Opt soil test Mg (ppm):** 60  
  See Table 2 for MgO recommendations based on optimum soil test Mg

### Standard Nitrogen Recommendation (lb N/A):  

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### Nitrogen Credit (lb N/A) for Previous Legume:

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<th>Corn Yield Goal (Bu/A)</th>
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### Phosphorus Recommendation (lb P2O5/A):

*(Optimum soil test P: 30 - 50 ppm)*

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### Phosphorus Message(s):

*When soil test P is greater than 300 ppm:*

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
Potassium Recommendation (lb K2O/A):

*(Optimum soil test K: 100 - 200 ppm)*

<table>
<thead>
<tr>
<th>Soil test K (ppm)</th>
<th>100</th>
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**Potassium Message(s):**

*When soil test K is greater than 200 ppm:*

Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).
SM GRAIN SIL/CORN SIL DBL CROP

**Crop Code:** 1047

### Lime and Magnesium Recommendation:

- **pH Goal:** 6.5
- **Opt soil test Mg (ppm):** 60

See Table 1 for lime recommendations based on target pH

See Table 2 for MgO recommendations based on optimum soil test Mg

### Standard Nitrogen Recommendation (lb N/A):

<table>
<thead>
<tr>
<th>T/A</th>
<th>17</th>
<th>21</th>
<th>25</th>
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<th>33</th>
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<tbody>
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### Nitrogen Credit (lb N/A) for Previous Legume:

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<td>Alfalfa &gt; 50% stand</td>
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<td>Trefoil &lt; 25% stand</td>
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### Phosphorus Recommendation (lb P2O5/A):

*(Optimum soil test P: 30 - 50 ppm)*

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**Phosphorus Message(s):**

*When soil test P is greater than 300 ppm:*

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
Potassium Recommendation (lb K2O/A):

(Optimum soil test K: 100 - 200 ppm)

<table>
<thead>
<tr>
<th>Soil test K (ppm)</th>
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Potassium Message(s):

*When soil test K is greater than 200 ppm:*

Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).
MILLET FOR GRAIN  Crop Code: 1048

Standard Message:

Lime and Magnesium Recommendation:

- **pH Goal:** 6.0  
  See Table 1 for lime recommendations based on target pH
- **Opt soil test Mg (ppm):** 60  
  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

*(Optimum soil test P: 30 - 50 ppm)*

<table>
<thead>
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Phosphorus Message(s):

*When soil test P is greater than 300 ppm:*

Very high P may lead to phosphorus loss to the environment.
MILLET FOR GRAIN  Crop Code: 1048

Potassium Recommendation (lb K2O/A):
(Optimum soil test K: 100 - 200 ppm)

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Potassium Message(s):

When soil test K is greater than 200 ppm:
Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).

Revised: 1/12/2010
MILLET FOR FORAGE  Crop Code: 1049

Standard Message:
Nitrogen recommendation should be split based on the expected yield of the following harvest.

**Lime and Magnesium Recommendation:**
- pH Goal: 6.0
- Opt soil test Mg (ppm): 60

See Table 1 for lime recommendations based on target pH
See Table 2 for Mg recommendations based on optimum soil test Mg

**Nitrogen Recommendation (lb N/A):**

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<tr>
<th>Yield Goal (T/A)</th>
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**Phosphorus Recommendation (lb P2O5/A):**

Optimum soil test P: 30 - 50 ppm

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Phosphorus Message(s):

*When soil test P is greater than 300 ppm:*

Very high P may lead to phosphorus loss to the environment.
Potassium Recommendation (lb K2O/A):

(Optimum soil test K: 100 - 200 ppm)

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<th>Yield Goal (T/A)</th>
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Potassium Message(s):

When soil test K is greater than 200 ppm:

Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).
BARLEY/SOYBEAN DOUBLE CROP  

Crop Code: 1050

Standard Message:

N RECOMMENDATIONS ARE FOR BARLEY CROP. N applications should be topdressed in the early spring or split with a small amount at planting and the balance topdressed in the early spring. Account for residual N from previous manure applications if any. No N recommended on soybeans.

Lime and Magnesium Recommendation:

<table>
<thead>
<tr>
<th>pH Goal: 6.5</th>
<th>Opt soil test Mg (ppm): 60</th>
</tr>
</thead>
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See Table 1 for lime recommendations based on target pH
See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optional soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
**BARLEY/SOYBEAN DOUBLE CROP**  
Crop Code: 1050

**Potassium Recommendation (lb K2O/A):**  
*(Optimum soil test K: 100 - 200 ppm)*

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**Potassium Message(s):**

*When soil test K is greater than 200 ppm:*

Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation.  (See Back).
SMALL GRAIN SILAGE  Crop Code: 1051

Standard Message:

IMPORTANT: N should be topdressed in the spring or split applied with a small amount in the fall at planting and the balance topdressed in early spring.

Lime and Magnesium Recommendation:

pH Goal: 6.5  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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<th>Yield Goal (T/A)</th>
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Phosphorus Recommendation (lb P2O5/A):
(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
**SMALL GRAIN SILAGE**  
**Crop Code:** 1051

**Potassium Recommendation (lb K2O/A):**  
*(Optimum soil test K: 100 - 200 ppm)*

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**Potassium Message(s):**

*When soil test K is greater than 200 ppm:*
Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).
HOPS  Crop Code: 1052

Standard Message:
N recommendations are for established hops. At planting, only apply 75 lb N/A

Lime and Magnesium Recommendation:
- pH Goal: 6.5
- Opt soil test Mg (ppm): 60

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):
- Optimum soil test P: 30 - 50 ppm

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Phosphorus Message(s):
- When soil test P is greater than 300 ppm:
  - Very high P may lead to phosphorus loss to the environment.
Potassium Recommendation (lb K2O/A):

(Optimum soil test K: 100 - 200 ppm)

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Potassium Message(s):

When soil test K is greater than 200 ppm:

Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).
CRP WARM SEASON GRASS  Crop Code: 1053

Standard Message:

Do not apply any fertilizer before or at planting.
Apply fertilizer during the second growing season following germination.
Warm-season grass stands are considered established when there are one to three seedlings per square foot (may be the first or second growing season).

Lime and Magnesium Recommendation:

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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 15 - 30 ppm)

Phosphorus Message(s): 

When soil test P is greater than 300 ppm:
Very high P may lead to phosphorus loss to the environment.
### CRP WARM SEASON GRASS

**Crop Code:** 1053

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**Potassium Message(s):**

- 100

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Revised: 3/21/2001
CRP COOL SEASON GRASS  Crop Code: 1054

Standard Message:

For legumes or legume grass mixtures, the N recommended above should not be required after the establishment year. CRP acreage should be evaluated periodically and if plant cover is not acceptable, the soil should be retested to determine if pH and nutrient levels are still adequate to maintain acceptable cover.

Lime and Magnesium Recommendation:

pH Goal: 6.5  
Opt soil test Mg (ppm): 60

See Table 1 for lime recommendations based on target pH
See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optional soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to phosphorus loss to the environment.
Potassium Recommendation (lb K2O/A):

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<tr>
<th>Soil test K (ppm)</th>
<th>Yield Goal</th>
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</thead>
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<tr>
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</table>

Potassium Message(s):

When soil test K is greater than 200 ppm:
Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).
HORTICULTURAL COVER CROP  

Crop Code: 1055

Standard Message:

Lime and Magnesium Recommendation:

<table>
<thead>
<tr>
<th>pH Goal</th>
<th>Opt soil test Mg (ppm)</th>
</tr>
</thead>
<tbody>
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</tr>
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</table>

See Table 1 for lime recommendations based on target pH

See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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<tr>
<th>Yield Goal ( )</th>
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</thead>
<tbody>
<tr>
<td>40</td>
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<tr>
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</tbody>
</table>

Phosphorus Recommendation (lb P2O5/A):

<table>
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<th>Soil test P (ppm)</th>
<th>Yield Goal ( )</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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Optimum soil test P: 30 - 50 ppm

See Table 2 for Mg recommendations based on optimum soil test Mg

Phosphorus Message(s):

When soil test P is greater than 300 ppm:

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
**Potassium Recommendation (lb K2O/A):**

*(Optimum soil test K: 100 - 150 ppm)*

<table>
<thead>
<tr>
<th>Soil test K (ppm)</th>
<th>Yield Goal ( )</th>
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</thead>
<tbody>
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<tr>
<td>10</td>
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<td>190</td>
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<tr>
<td>200</td>
<td></td>
</tr>
</tbody>
</table>

**Potassium Message(s):**

*When soil test K is greater than 200 ppm:*

Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).
WILDLIFE FOOD PLOTS  Crop Code:1056

Standard Message:

Nitrogen (N) recommendations: For non-legumes such as corn, small grains, grasses, brassicas, etc. or for mixtures that contain substantial amounts of non-legumes, apply 75 lb N/A at planting time. Up to 20 lb/A of the recommended N can be applied with a similar amount of phosphorus (P) and potassium (K) at seeding as a starter fertilizer.
On poor soils with low fertility and low organic matter levels or on highly productive soils where higher yield is desired, increase the rate to 75-100 lb N/A. When following a legume the previous year or if manure is applied, reduce the rate to 50-75 lb N/A.
For legumes such as Alfalfa, Clover, Trefoil, or Soybeans or mixtures that are largely legumes, no N should be applied. Be sure to properly inoculate legume seed before planting.

Lime and Magnesium Recommendation:

- **pH Goal:** 6.5  
  See Table 1 for lime recommendations based on target pH
- **Opt soil test Mg (ppm):** 60  
  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

<table>
<thead>
<tr>
<th>Yield Goal ( )</th>
<th>NA</th>
<th>NA</th>
<th>NA</th>
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<tbody>
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<td></td>
<td>See Below</td>
<td>See Below</td>
<td>See Below</td>
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</tbody>
</table>

Phosphorus Recommendation (lb P2O5/A):

- **(Optimum soil test P:** 30 -50 ppm)

<table>
<thead>
<tr>
<th>Soil test P (ppm)</th>
<th>0</th>
<th>5</th>
<th>10</th>
<th>15</th>
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<th>35</th>
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<th>45</th>
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</thead>
<tbody>
<tr>
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<td>120</td>
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</table>

Phosphorus Message(s):

*When soil test P is greater than 300 ppm:*
Very high P may lead to phosphorus loss to the environment.
## WILDLIFE FOOD PLOTS  Crop Code: 1056

Potassium Recommendation (lb K2O/A):

*Optimum soil test K: 100 - 200 ppm*

<table>
<thead>
<tr>
<th>Soil test K (ppm)</th>
<th>Yield Goal ( )</th>
</tr>
</thead>
<tbody>
<tr>
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<td>200</td>
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</tbody>
</table>

**Potassium Message(s):**

*When soil test K is greater than 200 ppm:*

Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation.  (See Back).
SORGHUM FOR GRAIN  Crop Code: 1057

Standard Message:

Lime and Magnesium Recommendation:

pH Goal: 6.5  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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</table>

Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
Potassium Recommendation (lb K2O/A):

(Optimum soil test K: 100 - 150 ppm)

<table>
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<th>Soil test K (ppm)</th>
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</tbody>
</table>

Potassium Message(s):

When soil test K is greater than 200 ppm:
Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).
**WHEAT**  Crop Code: 1058

**Standard Message:**

You must account for residual N from previous manure applications if any.

**Lime and Magnesium Recommendation:**

pH Goal: 6.5  See Table 1 for lime recommendations based on target pH

Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

**Nitrogen Recommendation (lb N/A):**

<table>
<thead>
<tr>
<th>Yield Goal (Bu/A)</th>
<th>40</th>
<th>60</th>
<th>80</th>
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<th>120</th>
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<tbody>
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<td>60</td>
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</table>

**Phosphorus Recommendation (lb P2O5/A):**

(Optimum soil test P: 3050 ppm)

<table>
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</tbody>
</table>

**Phosphorus Message(s):**

When soil test P is greater than 300 ppm:

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
WHEAT  Crop Code: 1058

Potassium Recommendation (lb K2O/A):

(Opimum soil test K: 100 150 ppm)

<table>
<thead>
<tr>
<th>Soil test K (ppm)</th>
<th>40</th>
<th>60</th>
<th>80</th>
<th>100</th>
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Potassium Message(s):

When soil test K is greater than 200 ppm:
Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).
OATS  Crop Code: 1059

Standard Message:
You must account for residual N from previous manure applications if any.

Lime and Magnesium Recommendation:
- pH Goal: 6.5
- Opt soil test Mg (ppm): 60

See Table 1 for lime recommendations based on target pH
See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
## Potassium Recommendation (lb K2O/A):

*(Optimum soil test K: 100 - 150 ppm)*

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<th>Soil test K (ppm)</th>
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### Potassium Message(s):

*When soil test K is greater than 200 ppm:*

Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. *(See Back).*
WINTER BARLEY  Crop Code: 1060

Standard Message:
You must account for residual N from previous manure applications if any.

Lime and Magnesium Recommendation:

pH Goal:  7.0  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm):  60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
Potassium Recommendation (lb K2O/A):

(Optimum soil test K: 100 - 150 ppm)

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Potassium Message(s):

When soil test K is greater than 200 ppm:
Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).
RYE  Crop Code: 1061

Standard Message:

You must account for residual N from previous manure applications if any.

Lime and Magnesium Recommendation:

pH Goal: 6.5  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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<th>Yield Goal (Bu/A)</th>
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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 3050 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
### RYE

**Crop Code:** 1061

#### Potassium Recommendation (lb K2O/A):

*(Optimum soil test K: 100 150 ppm)*

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#### Potassium Message(s):

When soil test K is greater than 200 ppm:

Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).
PLANTING MIXED GRASSES  

Crop Code: 1062

Standard Message:

For optimum efficiency, the recommended N should be split and applied separately for each cutting. As a guide, apply 50 lb N/A per ton of expected yield for each cutting. Recommended Limestone, phosphorus (P) and potassium (K) should be applied before planting.

Lime and Magnesium Recommendation:

pH Goal: 6.5
Opt soil test Mg (ppm): 120

See Table 1 for lime recommendations based on target pH
See Table 2 for Mg recommendations based on optimum soil test Mg

Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.

Potassium Recommendation (lb K2O/A):
## PLANTING MIXED GRASSES

**Crop Code:** 1062

**Optimum soil test K:** 100 - 200 ppm

### Soil test K (ppm)

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</tbody>
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### Potassium Message(s):

*When soil test K is greater than 200 ppm and less than 400 ppm K:*

Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*

Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).

Revised: 5/15/2008
SORGHUM FOR FORAGE  Crop Code: 1063

Standard Message:

Lime and Magnesium Recommendation:

pH Goal: 6.5  
Opt soil test Mg (ppm): 120  
See Table 1 for lime recommendations based on target pH  
See Table 2 for Mg recommendations based on optimum soil test Mg  
Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

Nitrogen Recommendation (lb N/A):

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<th>Yield Goal (T/A)</th>
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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm: 
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
### Potassium Recommendation (lb K2O/A):

*(Optimum soil test K: 100 - 200 ppm)*

<table>
<thead>
<tr>
<th>Soil test K (ppm)</th>
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**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*

Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*

Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
SOYBEANS  Crop Code: 1064

Standard Message:

Lime and Magnesium Recommendation:

pH Goal: 6.5  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optional soil test P: 3050 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
SOYBEANS  Crop Code: 1064

Potassium Recommendation (lb K2O/A):

(Optimum soil test K: 100 150 ppm)

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</table>

Potassium Message(s):

When soil test K is greater than 200 ppm:
Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).
TOBACCO  Crop Code: 1065

Standard Message:
Nitrogen (N) needs vary by tobacco type. Use the following guidelines and adjust N based on expected yield and previous manure application: MD 609, 60 - 80 lbs N/A; PA-41, 90 - 120 lbs N/A; Burley, 125 - 175 lbs N/A

Lime and Magnesium Recommendation:

\[
\begin{array}{c|c|c|c|c}
\text{pH Goal:} & 6.5 & \text{See Table 1 for lime recommendations based on target pH} \\
\text{Opt soil test Mg (ppm):} & 60 & \text{See Table 2 for Mg recommendations based on optimum soil test Mg} \\
\end{array}
\]

Nitrogen Recommendation (lb N/A):

\[
\begin{array}{c|c|c|c|c|c}
\text{Yield Goal (T/A)} & 1 & 1 & 1.5 & 1.5 \\
\text{See Below} & \text{See Below} & \text{See Below} & \text{See Below} & \text{See Below} \\
\end{array}
\]

Phosphorus Recommendation (lb P2O5/A):

\[
\begin{array}{c|c|c|c|c|c}
\text{Soil test P (ppm)} & 1 & 1 & 1.5 & 1.5 \\
\text{Yield Goal (T/A)} & \text{See Below} & \text{See Below} & \text{See Below} & \text{See Below} \\
\end{array}
\]

(\text{Optimum soil test P: 30 - 50 ppm})

\[
\begin{array}{c|c|c|c|c|c|c|c|c|c}
\text{Soil test P (ppm)} & 0 & 5 & 10 & 15 & 20 & 25 & 30 & 35 & 40 & 45 & 50 \\
\text{Yield Goal (T/A)} & 195 & 160 & 130 & 100 & 70 & 40 & 10 & 10 & 10 & 0 & 0 \\
\text{Yield Goal (T/A)} & 195 & 160 & 130 & 100 & 70 & 40 & 10 & 10 & 10 & 0 & 0 \\
\text{Yield Goal (T/A)} & 200 & 170 & 140 & 110 & 80 & 50 & 20 & 10 & 10 & 0 & 0 \\
\text{Yield Goal (T/A)} & 200 & 170 & 140 & 110 & 80 & 50 & 20 & 10 & 10 & 0 & 0 \\
\end{array}
\]

Phosphorus Message(s)

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
**Potassium Recommendation (lb K2O/A):**

*(Optimum soil test K:  100 - 200 ppm)*

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<th>Soil test K (ppm)</th>
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</table>

**Potassium Message(s):**

When soil test K is greater than 200 ppm:
- Very high K can lead to imbalances in forage crops grown later in the rotation which can cause serious health problems in animals (See Back)
**SUDANGRASS**  Crop Code: 1066

**Standard Message:**

**Lime and Magnesium Recommendation:**

- **pH Goal:** 6.5
- **Opt soil test Mg (ppm):** 120

See Table 1 for lime recommendations based on target pH

See Table 2 for Mg recommendations based on optimum soil test Mg

Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

**Nitrogen Recommendation (lb N/A):**

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<th>Yield Goal (T/A)</th>
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**Phosphorus Recommendation (lb P2O5/A):**

*(Optimum soil test P: 30 - 50 ppm)*

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<th>Soil test P (ppm)</th>
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</table>

**Phosphorus Message(s):**

*When soil test P is greater than 300 ppm:*

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
**Potassium Recommendation (lb K2O/A):**

*(Optimum soil test K: 100 - 200 ppm)*

<table>
<thead>
<tr>
<th>Soil test K (ppm)</th>
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</table>

**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
SORGHUM-SUDANGRASS  
Crop Code: 1067

Standard Message:

Lime and Magnesium Recommendation:

pH Goal: 6.5  
Opt soil test Mg (ppm): 120  
See Table 1 for lime recommendations based on target pH  
See Table 2 for Mg recommendations based on optimum soil test Mg  
Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

Nitrogen Recommendation (lb N/A):

<table>
<thead>
<tr>
<th>Yield Goal (T/A)</th>
<th>15</th>
<th>18</th>
<th>21</th>
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</table>

Phosphorus Recommendation (lb P2O5/A):

( Optimum soil test P: 30 - 50 ppm)

<table>
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<tr>
<th>Soil test P (ppm)</th>
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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
**SORGHUM-SUDANGRASS**  
Crop Code: 1067

**Potassium Recommendation (lb K2O/A):**  
*Optimum soil test K: 100 - 200 ppm*

<table>
<thead>
<tr>
<th>Soil test K (ppm)</th>
<th>15</th>
<th>18</th>
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**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
SPRING BARLEY  Crop Code: 1068

Standard Message:

You must account for residual N from previous manure applications if any.

Lime and Magnesium Recommendation:

pH Goal: 7.0
Opt soil test Mg (ppm): 60
See Table 1 for lime recommendations based on target pH
See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A): (Optimum soil test P: 30 - 50 ppm)

Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
SPRING BARLEY  Crop Code: 1068

Potassium Recommendation (lb K2O/A):

(Opimum soil test K: 100 - 150 ppm)

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Potassium Message(s):

When soil test K is greater than 200 ppm:
Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).
BUCKWHEAT  Crop Code: 1069

Standard Message:

Lime and Magnesium Recommendation:

<table>
<thead>
<tr>
<th>pH Goal: 6.5</th>
<th>Opt soil test Mg (ppm): 60</th>
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</thead>
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See Table 1 for lime recommendations based on target pH
See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
**BUCKWHEAT**  
**Crop Code:** 1069

**Potassium Recommendation (lb K2O/A):**  
*(Optimum soil test K: 100 - 150 ppm)*

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**Potassium Message(s):**

*When soil test K is greater than 200 ppm:*

Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).
SUNFLOWERS  Crop Code: 1071

Standard Message:

Lime and Magnesium Recommendation:

- pH Goal: 6.5  
  See Table 1 for lime recommendations based on target pH
- Opt soil test Mg (ppm): 60  
  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
Potassium Recommendation (lb K2O/A):

(Optimum soil test K: 100 - 150 ppm)

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Potassium Message(s):

*When soil test K is greater than 200 ppm:*
Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).
ESTABLISHED - ALFALFA GRASS  Crop Code: 1072

Standard Message:

Apply fertilizer after first cutting or, for large recommendations, split after first cutting and in the fall. Apply 2 lbs boron per acre with the fertilizer.

Lime and Magnesium Recommendation:

pH Goal: 7.0  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30 - 50 ppm)

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<th>Yield Goal (T/A)</th>
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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
**Potassium Recommendation (lb K2O/A):**

*(Optimum soil test K:  100 - 200  ppm)*

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**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING RED CLOVER-GRASS  Crop Code: 1073

Standard Message:

Lime and Magnesium Recommendation:

pH Goal: 6.5  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

<table>
<thead>
<tr>
<th>Yield Goal (T/A)</th>
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<th>3</th>
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</table>

Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30-50 ppm)

<table>
<thead>
<tr>
<th>Soil test P (ppm)</th>
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</table>

Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
### PLANTING RED CLOVER-GRASS

**Crop Code: 1073**

**Potassium Recommendation (lb K2O/A):**

*(Optimum soil test K: 100 - 200 ppm)*

<table>
<thead>
<tr>
<th>Soil test K (ppm)</th>
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</tr>
</tbody>
</table>

**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*

Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*

Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
ESTABLISHED RED CLOVER-GRASS  Crop Code: 1074

Standard Message:
Applies fertilizer after first cutting or, for large recommendations, split after first cutting and in the fall.

Lime and Magnesium Recommendation:
pH Goal: 6.5  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm): 60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

<table>
<thead>
<tr>
<th>Yield Goal (T/A)</th>
<th>2</th>
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Phosphorus Recommendation (lb P2O5/A):
Optimum soil test P: 30 - 50 ppm

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<tr>
<th>Soil test P (ppm)</th>
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</table>

Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
## ESTABLISHED RED CLOVER-GRASS

**Crop Code:** 1074

### Potassium Recommendation (lb K2O/A):

*(Optimum soil test K: 100 - 200 ppm)*

<table>
<thead>
<tr>
<th>Soil test K (ppm)</th>
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<th>3</th>
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<th>5</th>
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### Potassium Message(s):

*When soil test K is greater than 200 ppm and less than 400 ppm K:*

Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*

Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING TALL FESCUE  Crop Code: 1075

**Standard Message:**

For optimum efficiency, the recommended N should be split and applied separately for each cutting. As a guide, apply 50 lb N/A per ton of expected yield for each cutting. Recommended Limestone, phosphorus (P) and potassium (K) should be applied before planting.

**Lime and Magnesium Recommendation:**

<table>
<thead>
<tr>
<th>pH Goal: 6.5</th>
<th>Opt soil test Mg (ppm): 120</th>
</tr>
</thead>
</table>

See Table 1 for lime recommendations based on target pH

See Table 2 for Mg recommendations based on optimum soil test Mg

Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

**Nitrogen Recommendation (lb N/A):**

<table>
<thead>
<tr>
<th>Yield Goal (T/A)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>100</td>
<td>150</td>
<td>200</td>
<td>250</td>
<td></td>
</tr>
</tbody>
</table>

**Phosphorus Recommendation (lb P2O5/A):**

(Optimum soil test P: 30 - 50 ppm)

<table>
<thead>
<tr>
<th>Soil test P (ppm)</th>
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<th>2</th>
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<th>5</th>
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</table>

**Phosphorus Message(s):**

*When soil test P is greater than 300 ppm:*

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.

**Potassium Recommendation (lb K2O/A):**
# PLANTING TALL FESCUE

**Crop Code:** 1075

(Optimum soil test K: 100 - 200 ppm)

## Soil test K (ppm)

<table>
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<tr>
<th>Soil test K (ppm)</th>
<th>Yield Goal (T/A)</th>
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</thead>
<tbody>
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</table>

## Potassium Message(s):

*When soil test K is greater than 200 ppm and less than 400 ppm K:*
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).

Revised: 5/15/2008
ESTABLISHED TALL FESCUE  

Crop Code: 1076

Standard Message:
For optimum efficiency, the recommended N should be split and applied separately for each cutting. As a guide, apply 50 lb N/A per ton of expected yield for each cutting. Any recommended P and K can be applied after first cutting or in the fall.

Lime and Magnesium Recommendation:

<table>
<thead>
<tr>
<th>pH Goal:</th>
<th>6.5</th>
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</thead>
<tbody>
<tr>
<td>Opt soil test Mg (ppm):</td>
<td>120</td>
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</tbody>
</table>

See Table 1 for lime recommendations based on target pH

See Table 2 for Mg recommendations based on optimum soil test Mg

Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

Nitrogen Recommendation (lb N/A):

<table>
<thead>
<tr>
<th>Yield Goal (&quot;T/A&quot;)</th>
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Phosphorus Recommendation (lb P2O5/A):

(Opium soil test P: 30 - 50 ppm)

<table>
<thead>
<tr>
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Phosphorus Message(s):
When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.

Potassium Recommendation (lb K2O/A):
ESTABLISHED TALL FESCUE  Crop Code: 1076

(Optimum soil test K: 100 - 200 ppm)

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</table>

Potassium Message(s):

When soil test K is greater than 200 ppm and less than 400 ppm K:
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

When soil test K is greater than or equal to 400 ppm:
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING WARM SEASON GRASSES  Crop Code: 1077

Standard Message:

Do not apply any N at seeding unless an herbicide is used to control competition from other grasses or weeds. Once the stand is well established N can be applied. Recommended Limestone, phosphorus (P) and potassium (K) should be applied before planting.

Lime and Magnesium Recommendation:

| pH Goal: | 6.0 |
| Opt soil test Mg (ppm): | 120 |

See Table 1 for lime recommendations based on target pH

See Table 2 for Mg recommendations based on optimum soil test Mg

Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

Nitrogen Recommendation (lb N/A):

<table>
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<th>Yield Goal (T/A)</th>
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Phosphorus Recommendation (lb P2O5/A):  
(Optimum soil test P: 15 -30 ppm)

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:  
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
### PLANTING WARM SEASON GRASSES

**Crop Code:** 1077

**Potassium Recommendation (lb K2O/A):**

*(Optimum soil test K: 50 - 100 ppm)*

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</table>

**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*

Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*

Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).

Revised: 5/15/2008
ESTABLISHED WARM SEASON GRASSES  Crop Code: 1078

Standard Message:
Apply one half of the recommended N in mid-May after green-up and the other half after first cutting. For grazing only apply the second N application if the forage will be used.

Lime and Magnesium Recommendation:

| pH Goal: 6.0 | See Table 1 for lime recommendations based on target pH |
| Opt soil test Mg (ppm): 120 | See Table 2 for Mg recommendations based on optimum soil test Mg |

Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

Nitrogen Recommendation (lb N/A):

<table>
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<tr>
<th>Soil test P (ppm)</th>
<th>Yield Goal ( T/A )</th>
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Phosphorus Recommendation (lb P2O5/A):

| Optimum soil test P: 15 - 30 ppm |

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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
**Established Warm Season Grasses**  
**Crop Code:** 1078

**Potassium Recommendation (lb K2O/A):**

*(Optimum soil test K: 50 - 100 ppm)*

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</table>

**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
**BRASSICAS**  **Crop Code:** 1079

**Standard Message:**

**Lime and Magnesium Recommendation:**

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<th>pH Goal</th>
<th>Opt soil test Mg (ppm)</th>
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</table>

See Table 1 for lime recommendations based on target pH

See Table 2 for Mg recommendations based on optimum soil test Mg

**Nitrogen Recommendation (lb N/A):**

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<th>Yield Goal (T/A)</th>
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Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 30-50 ppm)

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Phosphorus Message(s):  

*When soil test P is greater than 300 ppm:*

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
### BRASSICAS

**Crop Code:** 1079

**Potassium Recommendation (lb K2O/A):**

*(Optimum soil test K: 100 - 150 ppm)*

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</table>

**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*

Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*

Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).

Revised: 7/1/2000
RENOVATING PASTURE (WITH LEGUME)  Crop Code: 1080

Standard Message:

Do not add any N when renovating a pasture with a legume. Recommended P and K can be applied between grazings any time after the first grazing.

Lime and Magnesium Recommendation:

pH Goal: 6.5  
Opt soil test Mg (ppm): 120  
See Table 1 for lime recommendations based on target pH
See Table 2 for Mg recommendations based on optimum soil test Mg
Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

Nitrogen Recommendation (lb N/A):

<table>
<thead>
<tr>
<th>Yield Goal (T/A)</th>
<th>2</th>
<th>2.5</th>
<th>3</th>
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Phosphorus Recommendation (lb P2O5/A):
(Optimum soil test P: 30 - 50 ppm)

<table>
<thead>
<tr>
<th>Soil test P (ppm)</th>
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</table>

Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
Potassium Recommendation (lb K2O/A):

(Optimum soil test K: 100 - 200 ppm)

<table>
<thead>
<tr>
<th>Soil test K (ppm)</th>
<th>2</th>
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</table>

Potassium Message(s):

*When soil test K is greater than 200 ppm and less than 400 ppm K:*
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).

Revised: 1/18/2001
ESTABLISHED PASTURE (WITHOUT LEGUME)  

**Standard Message:**

For optimum efficiency, the recommended N should be split and applied between grazings in 2-4 applications based on anticipated forage growth in the pasture. As an example apply 1/3 to 1/2 of the N in the spring, 1/4 to 1/3 in the summer, and 1/3 to 1/2 in the early fall. Recommended P and K can be applied between grazings any time after the first grazing.

**Lime and Magnesium Recommendation:**

<table>
<thead>
<tr>
<th>pH Goal: 6.5</th>
<th>Opt soil test Mg (ppm): 120</th>
</tr>
</thead>
<tbody>
<tr>
<td>See Table 1 for lime recommendations based on target pH</td>
<td></td>
</tr>
<tr>
<td>See Table 2 for Mg recommendations based on optimum soil test Mg</td>
<td></td>
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<tr>
<td>Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2</td>
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</table>

**Nitrogen Recommendation (lb N/A):**

<table>
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<th>Yield Goal (T/A)</th>
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**Phosphorus Recommendation (lb P2O5/A):**

*(Optimum soil test P: 30 -50 ppm)*

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**Phosphorus Message(s):**

*When soil test P is greater than 300 ppm:*

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.

**Potassium Recommendation (lb K2O/A):**
**ESTABLISHED PASTURE (WITHOUT LEGUME)  Crop Code: 1081**

(Optimum soil test K: 100 - 200 ppm)

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</table>

**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).

Revised: 5/13/2008
ESTABLISHED PASTURE (WITH LEGUME)  Crop Code: 1082

Standard Message:

Do not add any N. Recommended P and K can be applied between grazings any time after the first grazing.

Lime and Magnesium Recommendation:

- **pH Goal:** 6.5
- **Opt soil test Mg (ppm):** 120

See Table 1 for lime recommendations based on target pH

Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

Nitrogen Recommendation (lb N/A):

<table>
<thead>
<tr>
<th>Yield Goal (T/A)</th>
<th>2</th>
<th>2.5</th>
<th>3</th>
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</table>

Phosphorus Recommendation (lb P2O5/A):

<table>
<thead>
<tr>
<th>Soil test P (ppm)</th>
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<th>2.5</th>
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</table>

Phosphorus Message(s):

When soil test P is greater than 300 ppm:

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
### ESTABLISHED PASTURE (WITH LEGUME)  
**Crop Code:** 1082

**Potassium Recommendation (lb K2O/A):**

(Optimum soil test K: 100 - 200 ppm)

<table>
<thead>
<tr>
<th>Soil test K (ppm)</th>
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</table>

**Potassium Message(s):**

When soil test K is greater than 200 ppm and less than 400 ppm K:
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

When soil test K is greater than or equal to 400 ppm:
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING PASTURE (WITHOUT LEGUME)  Crop Code: 1083

Standard Message:

For optimum efficiency, the recommended N should be split and applied between grazings in 2-4 applications based on anticipated forage growth in the pasture. As an example apply 1/3 to 1/2 of the N at planting, 1/4 to 1/3 in the summer, and 1/3 to 1/2 in the early fall. Recommended Limestone, phosphorus (P) and potassium (K) should be applied before planting.

Lime and Magnesium Recommendation:

- pH Goal: 6.5  
- Opt soil test Mg (ppm): 120

See Table 1 for lime recommendations based on target pH

See Table 2 for Mg recommendations based on optimum soil test Mg

Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

Nitrogen Recommendation (lb N/A):

<table>
<thead>
<tr>
<th>Yield Goal (T/A)</th>
<th>2</th>
<th>2.5</th>
<th>3</th>
<th>3.5</th>
<th>4</th>
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<td>150</td>
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</tr>
</tbody>
</table>

Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 3650 ppm)

<table>
<thead>
<tr>
<th>Soil test P (ppm)</th>
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<th>3</th>
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</table>

Phosphorus Message(s):

When soil test P is greater than 300 ppm:

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
### PLANTING PASTURE (WITHOUT LEGUME)

**Crop Code:** 1083

**Potassium Recommendation (lb K2O/A):**

*(Optimum soil test K: 100 200 ppm)*

<table>
<thead>
<tr>
<th>Soil test K (ppm)</th>
<th>2</th>
<th>2.5</th>
<th>3</th>
<th>3.5</th>
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</thead>
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</table>

**Potassium Message(s):**

When soil test K is greater than 200 ppm and less than 400 ppm K:
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

When soil test K is greater than or equal to 400 ppm:
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
PLANTING PASTURE (WITH LEGUME)  

Crop Code: 1084

Standard Message:
Do not apply any nitrogen (N) when establishing legumes in pasture. Recommended limestone, phosphorus (P) and potassium (K) should be applied before planting.

Lime and Magnesium Recommendation:

<table>
<thead>
<tr>
<th>pH Goal: 6.5</th>
<th>Opt soil test Mg (ppm): 120</th>
</tr>
</thead>
</table>

See Table 1 for lime recommendations based on target pH

See Table 2 for Mg recommendations based on optimum soil test Mg

Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

Nitrogen Recommendation (lb N/A):

<table>
<thead>
<tr>
<th>Yield Goal (T/A)</th>
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<tbody>
<tr>
<td>2</td>
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</table>

Phosphorus Recommendation (lb P2O5/A):

(Optimum soil test P: 3050 ppm)

<table>
<thead>
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<th>Soil test P (ppm)</th>
<th>Yield Goal (T/A)</th>
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</thead>
<tbody>
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<th>Yield Goal (T/A)</th>
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Phosphorus Message(s):

When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
### PLANTING PASTURE (WITH LEGUME)  
**Crop Code:** 1084

**Potassium Recommendation (lb K2O/A):**  
*(Optimum soil test K: 100-200 ppm)*

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<thead>
<tr>
<th>Soil test K (ppm)</th>
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</table>

**Potassium Message(s):**

When soil test K is greater than 200 ppm and less than 400 ppm K:
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

When soil test K is greater than or equal to 400 ppm:
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
**PLANTING REED CANARYGRASS**  
**Crop Code:** 1085

**Standard Message:**

For optimum efficiency, the recommended N should be split and applied separately for each cutting. As a guide, apply 50 lb N/A per ton of expected yield for each cutting. Recommended Limestone, phosphorus (P) and potassium (K) should be applied before planting.

**Lime and Magnesium Recommendation:**

<table>
<thead>
<tr>
<th>pH Goal:</th>
<th>6.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opt soil test Mg (ppm):</td>
<td>120</td>
</tr>
</tbody>
</table>

See Table 1 for lime recommendations based on target pH

See Table 2 for Mg recommendations based on optimum soil test Mg

Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

**Nitrogen Recommendation (lb N/A):**

<table>
<thead>
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<th></th>
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<th>2</th>
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<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield Goal (T/A)</td>
<td>50</td>
<td>100</td>
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<td>200</td>
<td>250</td>
</tr>
</tbody>
</table>

**Phosphorus Recommendation (lb P2O5/A):**

(Optimum soil test P: 30 - 50 ppm)

<table>
<thead>
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<th>Soil test P (ppm)</th>
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</table>

**Phosphorus Message(s):**

When soil test P is greater than 300 ppm:

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
## PLANTING REED CANARYGRASS

**Crop Code:** 1085

**Potassium Recommendation (lb K2O/A):**

*(Optimum soil test K: 100 - 200 ppm)*

<table>
<thead>
<tr>
<th>Soil test K (ppm)</th>
<th>1</th>
<th>2</th>
<th>3</th>
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**Potassium Message(s):**

*When soil test K is greater than 200 ppm and less than 400 ppm K:*
Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

*When soil test K is greater than or equal to 400 ppm:*
Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).

Revised: 5/15/2008
**ESTABLISHED REED CANARYGRASS**  Crop Code: 1086

**Standard Message:**

For optimum efficiency, the recommended N should be split and applied separately for each cutting. As a guide, apply 50 lb N/A per ton of expected yield for each cutting. Any recommended P and K can be applied after first cutting or in the fall.

**Lime and Magnesium Recommendation:**

<table>
<thead>
<tr>
<th>pH Goal: 6.5</th>
<th>Opt soil test Mg (ppm): 120</th>
</tr>
</thead>
</table>

See Table 1 for lime recommendations based on target pH

See Table 2 for Mg recommendations based on optimum soil test Mg

Note: Special Mg recommendation is made for this crop when soil test K is greater than 200 ppm. See Table 2

**Nitrogen Recommendation (lb N/A):**

<table>
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<tr>
<th>Yield Goal (T/A)</th>
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**Phosphorus Recommendation (lb P2O5/A):**

*(Optimum soil test P: 30 - 50 ppm)*

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<th>Soil test P (ppm)</th>
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**Phosphorus Message(s):**

When soil test P is greater than 300 ppm:

Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.

**Potassium Recommendation (lb K2O/A):**
# ESTABLISHED REED CANARYGRASS

**Crop Code:** 1086

(Optimum soil test K: 100 - 200 ppm)

## Soil test K (ppm) vs Yield Goal (T/A)

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## Potassium Message(s):

When soil test K is greater than 200 ppm and less than 400 ppm K:

Very high K can lead to imbalances in forages which can cause serious health problems in animals. (See Back).

When soil test K is greater than or equal to 400 ppm:

Very high K can lead to dangerous nutrient imbalances in forage crops which can cause serious health problems in animals (See Back).
DISTURBED LANDS  Crop Code: 1800

Standard Message:
80 lb/A of the N recommendation should be from a slow release source. When available, use manure or other organic material to supply this slow release N.
Soluble Salts level is printed under Laboratory Results on the bottom of this report.
< 0.2: Low
0.2-0.8: Optimum for all but salt-sensitive plants

Lime and Magnesium Recommendation:
pH Goal:  6.5  See Table 1 for lime recommendations based on target pH
Opt soil test Mg (ppm):  60  See Table 2 for Mg recommendations based on optimum soil test Mg

Nitrogen Recommendation (lb N/A):

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Phosphorus Recommendation (lb P2O5/A):
(Optimum soil test P: 30 - 50 ppm)

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Phosphorus Message(s):
When soil test P is greater than 300 ppm:
Very high P may lead to crop production or feed quality problems and may result in P loss to the environment.
## Disturbed Lands

**Crop Code:** 1800

### Potassium Recommendation (lb K2O/A):

*(Optimum soil test K: 100 - 150 ppm)*

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### Potassium Message(s):

*When soil test K is greater than 200 ppm:*

Very high K may lead to crop production or feed quality problems for the current crop or other crops in the rotation. (See Back).