

Lawn Establishment and Maintenance

Master Gardener Training Hanover County

* Before we talk about Lawns, lets talk a little about Water Quality

The Water Cycle



Before development almost all rainfall is taken up by plants, evaporates or infiltrates through the ground. After conventional development, surface runoff increases significantly while evaporation and infiltration into the ground decrease.

Before Development <1% Surface Runoff

After Development 20 – 30% Surface Runoff

Improper Use of Lawn Fertilizers and Pesticides...



Phosphorus, Urban Runoff & Aquatic Weeds

Can Result in Non-point Source Pollution



It's All About the Watershed Shenandoah River Potomac River Rappahannock River Upper James River Chesapeake Bay / Small Coastal York River **Big Sandy River** Middle James River Atlantic Coastal Clinch/Powell River. New River Roanoke River **Chowan River** Holston River Yadkin River Albemarle Coastal

Lower James River

It's All About the Bay



Rivers north of the yellow line flow into the Chesapeake Bay Source: Virginia Department of Game and Inland Fisheries

Executive order – Chesapeake Bay Protection and Restoration?

"The Chesapeake Bay is a national treasure constituting the largest estuary in the United States and one of the largest and most biologically productive estuaries in the world.

The Federal Government has nationally significant assets in the Chesapeake Bay and its watershed in the form of public lands, facilities, military installations, parks, forests, wildlife refuges, monuments, and museums."

*Federal Leadership Committee chaired by EPA

Chesapeake Bay

75° 45°-1 **Delaware** Chesapeake Bay **District of** Watershed Columbia NEW YORK Maryland 80° 42°-**New York** Pennsylvania PENNSYLVANIA Virginia 40°-NJ 412 COSTON West Virginia MARYLAND D.C WEST VIRGINIA 38°-VIRGINIA

Chesapeake Bay

Chesapeake Bay

•Largest U.S. estuary •64,000 mi² watershed; six states and **District of Columbia** 10,000 miles of shoreline (longer than west coast) •14:1 land to water surface ratio •Average depth 21 ft •Over 3,600 species of plants and animals •\$750 million contributed annually to local economy from the Bay

•Population = 17 million and growing



Chesapeake Bay

 The Bay Total Maximum Daily Load (TMDL), a historic and comprehensive "pollution diet," was established in December 2010 based largely on implementation plans

- Reductions
 - N- 25%
 - P 24%
- Sediment 20%



Henrico's Watersheds





Hanover's Hydrologic Units

| HUC8 Code | Name of Hydrologic Unit |
|-----------|-------------------------|
| 02080106 | Pamunkey |
| 02080205 | Middle James - Willis |
| 02080206 | Lower James |

http://www.epa.gov/waters/mywatersmapper/

Pamunkey Hydrologic Unit

http://www.epa.gov/waters/mywatersmapper/



Crump Creek Watershed – YO28

| Campbell Creek | HAMOVER |
|------------------------|--|
| 62 m | Ar he |
| A X A | and the second second |
| DA | Hydrologic Units Identified |
| | 8 digit 10 digit 12 digit |
| 66-1-N ⁻ 66 | HUC 12 VAHU6 Name 020801060902 (show) YO28 Crump Creek |
| 295 N 12 N | Totopotomoy Creek |

DCR Website – VA Hydrologic Unit Explorer

Virginia Hydrologic Unit Explorer Department of Conservation and Recreation

Imagery Base Map



What is a Total Maximum Daily Load (TMDL)?

- A Total Maximum Daily Load (TMDL) calculates the maximum amount of a pollutant that a waterbody can receive while still meeting water quality standards.
- A TMDL is the sum of all the wasteload allocations (WLAs) for point sources (i.e. sewage treatment plants, industrial discharges, etc.), load allocations (LAs) for non point sources (i.e. pollutants carried by rainfall runoff from forests, agricultural lands, abandoned mine lands, etc.), and a margin of safety (MOS) to account for uncertainty.

CHESAPEAKE BAY TMDL

- Chesapeake Bay and its tidal waters are impaired due to excess nitrogen, phosphorus and sediment
 - Pollutants cause algae blooms that consume oxygen and create "dead zones", block sunlight and smother aquatic life on the bottom
- Insufficient reductions in pollution during the past 25 years by federal, state and local governments; non-governmental organizations; and stakeholders
- Executive Order issued on May 12, 2009, which directed the federal government to restore and protect the Chesapeake Bay and its watershed



TMDLs: The Bay's "Pollution Diet" for . . .



... Nitrogen, Phosphorus, and Sediment

Don't Fertilize the Bay

- Phosphorus is often a limiting factor to growth of freshwater aquatic weeds and algae
 - It takes only 25 75 ppb phosphorus to trigger excessive growth of algae and aquatic weeds.
- Release of nitrogen and phosphorus into surface waters often results in eutrophication





Responsible Lawn Fertilization

- Turfgrass requires nitrogen in the largest quantity.
- Where P is needed, as indicated by soil testing, it is IRRESPONSIBLE to NOT apply Phosphorus.





Nutrients are carried away with eroding soil

Soil Sediment is Pollution



There are several ways that pesticides and fertilizers get into water.





Stormwater Runoff



Stormwater Flows over surfaces such as roads, driveways and parking lots.

- Water falls as rain, snow, or ice. Most seeps into ground.
- If ground is saturated, frozen, or has paved surfaces, water flows & is called stormwater runoff.

Where Does Storm Water Go In Our Community?



Travels over land

- Carried through municipal separate storm sewer system (MS4)
- This polluted runoff goes to streams & lakes untreated.
- It may carry soil, pet waste, oil, pesticides, & other pollutants with it.

Sanitary vs. Storm Sewer



Healthy Lawns Protect Water Quality



A dense turf protects against soil erosion and nutrient runoff



Turfgrass Adaptation Zones



Cool Season vs. Warm Season

- Prefer cooler temps 65°
 75° F.
- Grow best in spring and fall
- * Stays green in winter
- Good color 9 months of year
- * Fescue, Bluegrass

- Prefer warmer temps
 80° to 95° F.
- * Grow best in summer
- * Go dormant in winter
- Good color 6 months of year
- * Bermuda, Zoysia

Grasses for Hanover County

| Tall Fescue | Fine Fescue | Bermuda | Zoysia |
|-------------------------------------|---------------------------------------|--|---|
| Sun-Some Shade Doesn't spread | Some Shade Dry areas Low pH & N | Full sun only Spreads Tolerates lower fertility | Some shade Slow to grow Spreads Tolerates low fertility |
| Disease: M | Disease: H | Disease: L | Disease: L |
| Heat Tolerant | Not Heat Tolerant | Heat and Drought Tolerant | Heat and Drought Tolerant |



Lawn Maintenance

LAWN MAINTENANCE Best Management Practices

- * Get a soil test
- * Measure for accuracy
- * Apply lime if needed
- * Fertilize properly
- * Mow properly



- * Core aerate each year
- * Use integrated pest management



SMART Steps to a Healthy Lawn

- * Know your **Soil**
- * Measure to save time and money
- * Aerate those roots
- * Be **<u>Right</u>** about Fertilizer
- * Practice **Trouble-free** maintenance

What to Expect From Your Lawn (and Yourself)

The overall quality and appearance of your lawn is very much dependent upon the level of maintenance you intend to provide. The following chart can help you determine your expectations for the quality and maintenance of your lawn.

SMART Lawns Expectations for Cool-Season Grasses

| Quality Expectations | Maintenance Levels |
|--|---|
| High Quality Turf Deep green color Manicured appearance Thick, dense turf Few to no weeds | High Maintenance Sunny to mostly sunny exposure. Regular irrigation to maintain active growth. Optimum fall fertilization (3-3.5 pounds N/1,000 ft ² /year). Frequent mowing (2x per week) to meet max of 1/3 blade removal rule Clippings returned to lawn. Multiple grassy and broadleaf weed control applications. Preventative or early curative treatments for insect & disease pressure Fall aerate every year. Over-seed as needed to maintain dense coverage. |
| Moderate to Good Turf Quality Good green color Mostly dense, some areas thinner Some weeds present (<15%) | Regular Maintenance Sunny to mostly sunny exposure. Rarely irrigated once established. Good fertilization program (2-2.5 pounds N/1,000 ft ² /year). Weekly mowing to meet max of 1/3 blade removal rule. Clippings returned to lawn. Grassy weed control in spring; spot applications for broadleaf weeds. Insect and disease pests addressed only if pressure is extreme. Fall aerate every two to three years. Over-seed as needed. |
| Acceptable Turf Quality Moderate green color Moderate density Noticeable weeds (20-30%) | Reduced Maintenance Sun to partial shade exposure. No irrigation. Moderate fall fertilization (1-1.5 pounds N/1,000 ft ² /year). Mowing every 10-14 days to meet max of 1/3 blade removal rule. No weed control anticipated. Insect and disease pests addressed only if catastrophic. |

Next, compare the current quality of your lawn with what you hope to achieve through the SMART Lawns program to determine your Management Objective.

SMART Lawns Management Objectives for Cool-Season Grasses

Management Objectives

- Maintain High Turf Quality
- Improve Turf Quality (denser turf, fewer weeds)
- Decrease Turf Maintenance (may result in lower turf quality)
- Convert Some Areas to Turf Alternatives

What are your Expectations?

- Lawn Quality
- Maintenance
 Level
- Management
 Objective

SMART Step One

Know Your <u>S</u>oil

Soil Testing

* Will provide information about

- * рН
- * P and K, Ca and Mg, some micros
- * Will provide recommendations about
 - lime applications
 - fertilizer types and rates
- Recommended every two to four years

Soil Test Box and Form



Test every 2 to 3 years

Virginia Cooperative Extension

PUBLICATION 452-125

Virginia Tech Soil Testing Laboratory

Soil Sample Information Sheet for Home Lawns, Gardens, Fruits, and Ornamentals

Please Print

INSTRUCTIONS: See other side for sampling instructions. For a recommendation, be sure to fill in the **plant code number**. Place check marks (\checkmark) where appropriate. Use another form for commercial crop production. Send samples, forms, and payment to Virginia Tech Soil Testing Lab, 145 Smyth Hall (0465), Blacksburg, VA 24061, in a sturdy shipping carton. Processing will be delayed if soil is not received in an official sample box. See *www.soiltest.vt.edu* for more information.

| Your NameStreet, Route | | Date sampled: |
|--------------------------------|----------------------|--|
| City Telephone No | ZIP (required)County | Office Use only Extension Unit Code; |
| Extra Copy For (Dealer, etc.): | * 5000 No. 0 | 087 |



| PLANT C Lawn: Kentucky Bluegrass, Fescue, or Ryegrass | CODE LIST Non-Acid-Loving Shrubs and Trees | | |
|---|--|--|--|
| 201 Establishing New Lawn 202 Maintaining Lawn, Repair of Bare Spots | 245 Shrubs - Lilac, Forsythia, Box- wood, etc. 246 Trees - Pine, Maple, Oak, etc. | | |
| Lawn: Bermudagrass. | Fruits | | |
| Zoysiagrass, or St. Agustine 203 Brabishing New Lawn 204 Maintaining Lawn, Repair of Bare Spots Garden 210 Vegetable Garden 211 Flower Garden | 220 Apples 221 Blackberries 222 Blueberries 223 Currants 224 Gooseberries 225 Grapes 226 Nectarines 227 Peaches 228 Pears 229 Peurs | | |
| 212 Roses Acid-Loving Shrubs | 230 Quince 231 Raspberries | | |
| 240 Azaleas 241 Andromedas 242 Camellias 243 Laurel | 232 Sour Cherry 233 Strawberries 234 Sweet Cherries House Plants | | |
| 244 Rhododendron | 250 Potted House Plants | | |

| SOIL TESTS DESIDED AND FEES | COST PER SAMPLE | |
|--|-----------------|--------------|
| SOIL LESTS DESIRED AND LEES | IN-STATE | OUT-OF-STATE |
| Routine (soil pH, P, K, Ca, Mg, Zn, Mn, Cu, Fe, B, and estimated CEC) | \$ 10.00 | \$16.00 |
| Organic Matter - Determines percentage in soil - no recommendation given | · \$4.00 | \$ 6.00 |
| Soluble Salts - Determines if fertilizer salts are too high | \$ 2.00 | \$ 3.00 |
| Fax Results: FAX # () | \$ 1.00 | \$ 2.00 |
Accurate Soil Testing



- Requires a representative sample
- Sample from 1
- * Sample to 4-6
- Mix soil toget
- Place 1 cup of sample box



How To Take Composite Samples of Each Bed or Section





Send to Soil Testing Lab



Soil pH

- * A measure of soil alkalinity or acidity.
- Many nutrients become unavailable if pH is not correct.
- * May need 100 pounds of lime per 1000 square feet to raise pH 1 point.

Proper pH for Lawns 6.2 to 6.5

How soil pH affects availability of plant nutrients



| 0 | JOHNSTON GENNE | C F | |
|---|-----------------------|-----|--|
| w | JOHNSTON GENNE | 0 0 | |
| N | 11724 PARSONS WALK CT | P R | |
| Е | | Y | |
| R | | | |

SAMPLE DISTORY

GLEN ALLEN, VA 23059

| | | | | | SAL | MILL | HISTOR | 1 | | | | | | | | | |
|--------|----------------|-----------------|------------------|----------|----------------|-----------------------|---------------|--------------------------|------|----------------|------|------------------|------------|-------------------|-----------------------|--|--|
| Sample | Field | | LAST CROP | | | | | LAST LIME APPLICATION | | | | SOIL INFORMATION | | | | | |
| ID | ID | | Name | | Yield | Yield Months Prev. | | Tons/Acre | | IS/Acre SM | | SMU-2 % | SMU-3 % | Yield Estimate | Productivity Group | | |
| GMJ07 | | | | | | | | | | | | | | | | | |
| | | | | L | AB TEST | r res | ULTS (se | e Note 1 |) | | | | | | | | |
| Analys | sis P (lb/A) | K (lb/A) | Ca (lb/A) | Mg | Mg (lb/A) | | (ppm) | Mn (p | opm) | Cu (p | opm) | Fe (ppr | n) H | 3 (ррт) | S.Salts (ppm) | | |
| Resul | t 56 | 88 | 1807 | 1 | .59 | 67 | 8.6 | 8.3 | | 0. | 6 | 19.5 | 5 | 0.3 | | | |
| Ratin | g H | M- | н | 1 | н- з | | UFF | SUFF | | SU | FF | SUFI | 7 | SUFF | | | |
| Analys | Soil sis pH | Buffer Index | EstCE (meq/10 | C Og) | Acidity (%) | | y Base | | C: | Ca Sat. (%) | | Mg Sat. (%) | K (| Sat. %) | Organic Matter (%) | | |
| Resul | t 6.7 | 6.47 | 5.3 | | 0.8 | | 99. | | 84.8 | | | 12.3 | 2 | .1 | | | |

FERTILIZER AND LIMESTONE RECOMMENDATIONS

Crop: LAWN MAINTENANCE - BLUEGRASS, FESCUE (202)

619. Lime recommendations: NONE NEEDED.

208. FERTILIZER RECOMMENDATIONS: Use any complete "turf-type" fertilizer according to the instructions in the enclosed note on lawn fertilization. (A "turf-type" fertilizer is typically high in nitrogen, and low in phosphorus and potassium, e.g., 25-3-7.)

pH = 6.7; Lime Recommendation ?

| 0 | UEADN BROOKE | С | F |
|---|------------------|---|---|
| W | HEARN BROOKE | 0 | C |
| N | 1402 GILLSPUR RD | р | R |
| E | | Y | |
| R | | | |

RICHMOND, VA 23238

| | | | | | | | moron | | | | | | | | | | | |
|---------|---|-----------------|-------------------|---------|----------------|-----------------|------------|------------|--------------------------|----------------|----|----------------|------------------|---------------|-------------|-----------------------|-----------------------|--|
| Sample | Field | | LAST CROP | | | | | | LAST LIME APPLICATION | | | | SOIL INFORMATION | | | | | |
| ID | ID | Name | | Yield | | Months Prev. | | Tons/Acr | | [ons/Acre | | SMU-1 % | SMU-2 % | SMU % | -3 Y Est | ield imate | Productivity Group | |
| TBACK | | | | | | | | | | | | | | | | | | |
| | | | | L | AB TEST | RES | ULTS (se | e Note 1 |) | | | | | | | | | |
| Analysi | lysis P (lb/A) K (lb/A) Ca (lb/A) Mg (lb/ | | (lb/A) | Zn | (ppm) Mr | | opm) | Cu | (ppm) | Fe (ppr | n) | В (ррг | n) | S.Salts (ppm) | | | | |
| Result | 56 | 115 | 948 | 1 | .55 | | 3.0 | 7. | 8 | 0 | .9 | 30.8 | 3 | 0.2 | | | | |
| Rating | н | м | M- | 1 | H- | S | UFF | SU | FF | FF SUF | | SUFI | 7 | SUF | F | | | |
| Analysi | Soil s pH | Buffer Index | EstCE (meq/100 | C g) | Acidity (%) | | Base (% | Sat. 6) | Ca (| Ca Sat. (%) | | Mg Sat. (%) | | K Sat. (%) | | Organic Matter (%) | | |
| Result | 5.6 | 6.17 | 4.5 | | 30. | 2 | 69 | 69.8 52 | | 2.4 | | 14.1 | | 3.3 | | | | |

SAMPLE DISTORY

FERTILIZER AND LIMESTONE RECOMMENDATIONS

Crop: LAWN MAINTENANCE - BLUEGRASS, FESCUE (202)

612. LIME RECOMMENDATIONS: Apply 60 pounds of agricultural limestone (ground or pulverized) per 1000 square feet in several small applications of up to 50 lbs each, at intervals of 1 to 6 months, until the full amount is applied.

208. FERTILIZER RECOMMENDATIONS: Use any complete "turf-type" fertilizer according to the instructions in the enclosed note on lawn fertilization. (A "turf-type" fertilizer is typically high in nitrogen, and low in phosphorus and potassium, e.g., 25-3-7.)

pH = 5.6; Lime Recommendation ?

W Ν Е

| O W N | HEARN BROOKE 1402 GILLSPUR RD | C F O O P R | |
|-------------|----------------------------------|-------------------|--|
| Е | | Y | |
| R | | | |

AND F TRATATO

RICHMOND, VA 23238

| | | | | | SAI | IPLE | HISTOR | .1 | | | | | | | | | | |
|-------------------------------|---|-----------------|-------------------|----------|----------------|----------|------------|------------|--------------------------|----------------|-----------|----------------|------------------|---------------|-----------|-----------------------|-------------------|-----------------------|
| Sample | Field | | LAST CROP | | | | | | LAST LIME APPLICATION | | | | SOIL INFORMATION | | | | | |
| ID | ID | | Name | | | Yield | | 1 | Tons/Acre | | Fons/Acre | | SMU-1 % | SMU-2 SM % | | U-3 6 | Yield Estimate | Productivity Group |
| FRONT | | | | | | | | | | | | | | | | | | |
| LAB TEST RESULTS (see Note 1) | | | | | | | | | | | | | | | | | | |
| Analysi | alysis P (lb/A) K (lb/A) Ca (lb/A) Mg (lb/A | | (lb/A) | Zn | (ppm) | Mn (ppm) | | Cu | (ppm) | Fe (ppr | n) | В | (ppm) | S.Salts (ppm) | | | | |
| Result | 46 | 146 | 396 | 2 | 205 | 2 | 2.3 | 6. | 6.7 0 | | 0.3 | 28.7 | 7 | (| 0.1 | | | |
| Rating | 5 H- | м | L | | H+ | S | UFF | SUFF | | SUFF | | SUFF | | S | UFF | | | |
| Analysi | Soil is pH | Buffer Index | EstCE (meq/100 | C)g) | Acidity (%) | | Base (% | Sat. 6) | Ca | Ca Sat. (%) | | Mg Sat. (%) | | К S (% | at. 6) | Organic Matter (%) | | |
| Result | 4.8 | 5.75 | 5.9 | | 65.6 | | 34 | 34.4 | | 16.8 | | 14.4 | | з. | 2 | | | |

FERTILIZER AND LIMESTONE RECOMMENDATIONS

Crop: LAWN MAINTENANCE - BLUEGRASS, FESCUE (202)

612. LIME RECOMMENDATIONS: Apply 170 pounds of agricultural limestone (ground or pulverized) per 1000 square feet in several small applications of up to 50 lbs each, at intervals of 1 to 6 months, until the full amount is applied.

208. FERTILIZER RECOMMENDATIONS: Use any complete "turf-type" fertilizer according to the instructions in the enclosed note on lawn fertilization. (A "turf-type" fertilizer is typically high in nitrogen, and low in phosphorus and potassium, e.g., 25-3-7.)

pH = 4.8; Lime Recommendation ?

SMART Step Two

Measure to Save Time and Money

Measuring Lawn Areas

Measure smaller areas and add up for total lawn area.









Measuring Lawn Areas

Measure smaller areas and add up for total lawn area.



SMART Step Three

Aerate Those Roots

Aeration

- Relieves soil compaction and/or thatch buildup.
- Allows oxygen, water and nutrients to reach the root system.
- * Good soil moisture is important.
- Fall for cool-season turf.
- * Core or hollow-tine aerators recommended.





SMART Step Four

Be **R**ight About Fertilizer

Right Fertilizer Right Time Right Amount



Which One is Right for Your Lawn?

PreBiotic

Information on a Fertilizer Label



18 - 24 - 6

Total Nitrogen..... 18 % 5.6% WIN (Water Insoluble Nitrogen)

Available Phosphoric acid (P₂O₅)... 24 %

Sulfate of Potash (K₂O).....6 %

Virginia Test Soil Test Report

| 0 | MCCLENNY VEVIN | C F |
|----|--------------------|-----|
| w | MCCHEMMI KEVIN | 0 0 |
| N | 5402 MONCURE AV | PR |
| E | | Y |
| R. | | |
| | RICHMOND, VA 23231 | |

| | | | | | SAL | MF LE | HISTOR | .1 | | | | | | | | |
|---------|-------------------------------|-----------------|-------------------|----------|----------------|-----------------|--------------------------|------------|----------|---------------|------------------|----------------|-------------------|-----------------------|-----------------------|--|
| Sample | Field | | LAST CRO | OP | | | LAST LIME APPLICATION | | | | SOIL INFORMATION | | | | | |
| ID | ID | | Name | Yield | | Months Prev. | | Tons/Acre | | SMU-1 % | SMU-2 % | SMU-3 % | Yield Estimate | Productivity Group | | |
| 71757 | | | | | | | | | | | | | | | | |
| | LAB TEST RESULTS (see Note 1) | | | | | | | | | | | | | | | |
| Analysi | s P (lb/A) | K (lb/A) | Ca (lb/A) | Mg | (lb/A) | Zn | (ppm) | Mn (j | (ppm) Cu | | (ppm) | Fe (ppr | n) | B (ppm) | S.Salts (ppm) | |
| Result | 23 | 57 | 1107 | | 97 | 78. | | 9. | 9.1 0 | | .9 | 41.7 | 7 | 0.2 | | |
| Rating | м | L+ | М | | м | SUFF | | SU | SUFF | | JFF | SUFI | 7 | SUFF | | |
| Analysi | Soil s pH | Buffer Index | EstCE (meq/100 | C)g) | Acidity (%) | | Base (% | Sat. Ø) | Ca (| a Sat. (%) | 1 | Mg Sat. (%) | | Sat. %) | Organic Matter (%) | |
| Result | 5.3 | 5.97 | 5.8 | | 44.1 | | L 55 | | 9 47.7 | | | 6.9 | | .3 | | |

AMBLE HISTORY

FERTILIZER AND LIMESTONE RECOMMENDATIONS

Crop: LAWN MAINTENANCE - BLUEGRASS, FESCUE (202)

612. LIME RECOMMENDATIONS: Apply 110 pounds of agricultural limestone (ground or pulverized) per 1000 square feet in several small applications of up to 50 lbs each, at intervals of 1 to 6 months, until the full amount is applied.

207. FERTILIZER RECOMMENDATIONS: Apply a 3-1-2 or 4-1-2 ratio fertilizer (examples of grades to use are 12-4-8, 16-4-8, etc.) according to the instructions in the enclosed note on lawn fertilization.

| O W N E | LANGE CAROLYN 2003 RAINTREE DR | C F O O P R Y | |
|------------------|-----------------------------------|------------------------|--|
| R | RICHMOND, VA 23238 | | |

| Sample | Field | | LAST CR | | | L AP | AST LI PLICAT | ME TION | | SOIL INFORMATION | | | | | |
|-------------------------------|--------------|-----------------|-------------------|----------|----------------|---------|------------------|------------|------------------|------------------|------------|----------------|------------|------------------|-------------------------|
| ID | ID | | Name | | Yiel | d | Months Prev. | 1 | Fons/Acr | e ^S | SMU-1 % | SMU-2 % | SMU-3 % | Yield Estimat | Productivity e Group |
| 31642 | | | | | | | 18+ | 1 11 | 10-50 1b/1000 | | | | | | |
| LAB TEST RESULTS (see Note 1) | | | | | | | | | | | | | | | |
| Analysi | s P (lb/A) | K (lb/A) | Ca (lb/A) | Mg | (lb/A) | Zn | (ppm) | Mn (j | ppm) | Cu (| (ppm) | Fe (ppr | n) | B (ppm) | S.Salts (ppm) |
| Result | 189 | 145 | 2620 | 5 | 548 | 4 | 1.1 | 14 | .2 | 0 | .2 | 10.0 | 5 | 0.5 | |
| Rating | VH | м | VH | | VH | S | UFF | នប | FF | SU | JFF | SUFI | 7 | SUFF | |
| Analysi | Soil s pH | Buffer Index | EstCE (meq/100 | C)g) | Acidity (%) | | Base (9 | Sat. 6) | Ca (| a Sat. (%) |] | Mg Sat. (%) | K | Sat. (%) | Organic Matter (%) |
| Result | 7.1 | N/A | 9.0 | .0 | | A | 100 | .0 72.8 | | 2.8 | | 25.1 | 2 | 2.1 | |

FERTILIZER AND LIMESTONE RECOMMENDATIONS

Crop: LAWN MAINTENANCE - BLUEGRASS, FESCUE (202)

619. Lime recommendations: NONE NEEDED.

208. FERTILIZER RECOMMENDATIONS: Use any complete "turf-type" fertilizer according to the instructions in the enclosed note on lawn fertilization. (A "turf-type" fertilizer is typically high in nitrogen, and low in phosphorus and potassium, e.g., 25-3-7.)

No Deficiencies

| 0 | DOCKED KATUY | С | F |
|---|---------------------------|---|---|
| W | KOCKER KRIHI | 0 | 0 |
| N | 1601 LAKESIDE AVE APT 202 | Р | R |
| E | | Υ | |
| P | | | |

RICHMOND, VA 23228

| | | | | | | | 1115101 | | | | | | | | | |
|---------|-------------------------------|-----------------|-------------------|----------|--------------|-----------------|------------|------------------|------------|---------------|------------------|----------------|-----|-------------------|-----------------------|-----------------------|
| Sample | Field | | LAST CRO | OP | | | L AP | AST LI PLICAT | ME TION | | SOIL INFORMATION | | | | | |
| ID | ID | Name | | Yield | | Months Prev. | | Tons/Acre | | SMU-1 % | SMU-2 SM % 9 | | U-3 | Yield Estimate | Productivity Group | |
| 12345 | | | | | | | | | | | | | | | | |
| | LAB TEST RESULTS (see Note 1) | | | | | | | | | | | | | | | |
| Analysi | s P (lb/A) | K (lb/A) | Ca (lb/A) | Mg | (lb/A) | Zn | (ppm) | Mn (p | opm) | Cu | (ppm) | Fe (ppr | n) | В | (ppm) | S.Salts (ppm) |
| Result | 4 | 97 | 1137 | 2 | 261 | 2 | 2.8 | 9. | 7 | 0 |).3 | 28.4 | 4 | | 0.2 | |
| Rating | L | M- | м | | VH | S | UFF | SU | FF | S | UFF | SUFI | 7 | ន | SUFF | |
| Analysi | Soil s pH | Buffer Index | EstCE (meq/100 | C)g) | Acidi (%) | ty | Base (% | Sat. 6) | Ca (| a Sat. (%) | 1 | Mg Sat. (%) | | К S (% | 5at. 6) | Organic Matter (%) |
| Result | 6.1 | 6.22 | 5.1 | | 20. | 9 | 79 | .1 | 5 | 5.6 | | 21.1 | | 2. | . 4 | |

SAMPLE HISTORY

FERTILIZER AND LIMESTONE RECOMMENDATIONS

Crop: NEW LAWN ESTAB. - BLUEGRASS, FESCUE (201)

609. LIME RECOMMENDATIONS: Apply 50 pounds of agricultural limestone (ground or pulverized) per 1000 square feet.

201. FERTILIZER RECOMMENDATIONS: Apply a 1-2-1 ratio fertilizer (examples of grades to use are 5-10-5, 15-30-15, etc.) Using the rate listed in the "2.5" LB. nitrogen column in Table 3 in the enclosed note on lawn fertilization. Be sure to incorporate the fertilizer into the soil (along with lime, if needed) to a depth of 4 to 6 inches. After the turf has been established (6 to 8 weeks) follow one of the maintenance fertilization programs described in the Note.

Phosphorus is low

| O W N E | MCCLENNY KEVIN 5402 MONCURE AV | C F O O P R Y | |
|------------------|-----------------------------------|------------------------|--|
| R | RICHMOND, VA 23231 | | |

SAMPLE HISTORY

| Sample | Field | | LAST CROP | | | | LAST LIME APPLICATION | | | | SOIL INFORMATION | | | | |
|---------|-------------------------------|-----------------|-------------------|---------|--------------|----|--------------------------|------------|-----------|--------------|------------------|----------------|------------|---------------------|-----------------------|
| ID | ID | | Name | | Yield | | Months Prev. | 1 | Fons/Acre | e SN | IU-1 % | SMU-2 % | SMU-3 % | 3 Yield Estimate | Productivity Group |
| 71757 | | | | | | | | | | | | | | | |
| | LAB TEST RESULTS (see Note 1) | | | | | | | | | | | | | | |
| Analysi | s P (lb/A) | K (lb/A) | Ca (lb/A) | Mg | (lb/A) | Zn | (ppm) | Mn (j | ppm) | Cu (pj | pm) | Fe (ppr | n) | B (ppm) | S.Salts (ppm) |
| Result | 23 | 57 | 1107 | (| 97 | æ | 3.0 | 9. | 1 | 0.9 | 9 | 41.7 | 7 | 0.2 | |
| Rating | м | L+ | м | | м | S | UFF | SU | FF | SUF | F | SUFI | 7 | SUFF | |
| Analysi | Soil s pH | Buffer Index | EstCE (meq/100 | C g) | Acidi (%) | ty | Base (% | Sat. Ø) | Ca (| ı Sat. %) | 1 | Mg Sat. (%) |] | 5 Sat. (%) | Organic Matter (%) |
| Result | 5.3 | 5.97 | 5.8 | | 44. | 1 | 55 | .9 | 47 | 7.7 | | 6.9 | | 1.3 | |

FERTILIZER AND LIMESTONE RECOMMENDATIONS

Crop: LAWN MAINTENANCE - BLUEGRASS, FESCUE (202)

612. LIME RECOMMENDATIONS: Apply 110 pounds of agricultural limestone (ground or pulverized) per 1000 square feet in several small applications of up to 50 lbs each, at intervals of 1 to 6 months, until the full amount is applied.

207. FERTILIZER RECOMMENDATIONS: Apply a 3-1-2 or 4-1-2 ratio fertilizer (examples of grades to use are 12-4-8, 16-4-8, etc.) according to the instructions in the enclosed note on lawn fertilization.

Potassium (K) is low

A&L Soil Test Report



A&L Eastern Laboratories

7621 Whitepine Road Richmond, Virginia 23237 (804) 743-9401 Fax (804) 271-6446

| | | 8/12/2014 | SOIL ANALYSIS |
|------------------------------------|------------------------|------------------------|----------------------|
| Client : HENRICO CO/VA COOP EXT | Grower : TIM CASHEL | Report No: Cust No: | 14-223-0630 77450 |
| KAREN CARTER | 12321 NORTHLAKE CT | Date Printed: | 08/12/2014 |
| POB 27032 | HENRICO VA 23233 | Date Received | 08/11/2014 |
| RICHMOND VA 23273 | | Date Analysis : | 08/12/2014 |
| | PO: | Page : | 1 of 2 |

Lab Number: 03464

Field Id :

Sample Id : FRONT

| | | | SOI | L TEST RATIN | IGS | | Calculater | d Cation |
|------------------|---------------|----------|-----|--------------|---------|-----------|------------|----------|
| lest | Results | Very Low | Low | Medium | Optimum | Very High | Exchange | Capacity |
| Soll pH | 6.1 | | | | | | 11.6 | |
| Buffer pH | 6.77 | | | | | | meq/100g | |
| Phosphorus (P) | 16 ppm | | | | | | Calculater | d Cation |
| Potassium (K) | 121 ppm | | | | | | Satura | ition |
| Calcium (Ca) | 1577 ppm | | | | Γ | | %К | 2.7 |
| Magnesium (Mg) | 222 ppm | | | | | | %Ca | 68.0 |
| Sulfur (S) | | | | | Γ | | %Mg | 15.9 |
| Boron (B) | | 1 | | | | | %Н | 13.8 |
| Copper (Cu) | |] | | | | | Hmeq | 1.6 |
| Iron (Fe) | |] | | | | | | |
| Manganese (Mn) | |] | | | | | | |
| Zinc (Zn) | | 1 | | | | | K:Mg | Ratio |
| Sodium (Na) | | 1 | | | | | 0.17 | Datta |
| Soluble Salts | | 1 | | | | | Ca. Mg | Rauo |
| Organic Matter | 6.3 % ENR 150 |] | | | | | 4.20 | , 🗖 🕴 |
| Nitrate Nitrogen | |] | | | | | | |
| l | | | | | | | | |

Nutrient Target

3.0-2.5-1.0

SOIL FERTILITY GUIDELINES

| Cro | op:Law | vn | | | | | | | | Rec U | nits: | LB | /1000 SF |
|-----------|-------------------|------|--------|-----|--------|------|----|---|---|-------|-------|----|----------|
| | (Ibs) | LIŅE | (tons) | N | P2 0 6 | K ±0 | Mg | S | в | Cu | Mn | Zn | Fe |
| | 25 | | | 3.5 | 2.5 | 1.0 | 0 | | | | | | |
| Cro | Crop : Rec Units: | | | | | | | | | | | | |
| \square | | | | | | | | | | | | | |

Comment :

Target Nutrient Recommendations

| Soil Tost Loval | Nutrient Need | s (lbs/1000 ft ²) |
|-----------------|-------------------------------|-------------------------------|
| Son rest Lever | P ₂ 0 ₅ | K ₂ O |
| L- | 3.0 | 3.0 |
| L | 2.5 | 2.5 |
| L+ | 2.0 | 2.0 |
| M- | 2.0 | 2.0 |
| Μ | 1.5 | 1.5 |
| M+ | 1.0 | 1.0 |
| H- | 0 | 0.5 |

2014 Lawn Products

SMART LA®NS

Lawn Fertilizer Products List - 2014 Complied for the Henrico SMART Lawns Program

Disclaimer: Commercial products are named in this publication for informational purposes only. Virignia Cooperative Extension does not endorse these products and does not intend discrimination against other products which also may be suitable.

Maintenance Fertilizers

| | | | | SAN as % | lbs/1000 | | | |
|-----------|-------|-------------|---------------------|----------|--------------|-------|-----------------------------------|----------------------|
| <u>%N</u> | %P205 | <u>%K2O</u> | Brand | Total N | <u>sq ft</u> | lbs N | Ibs P ₂ O ₅ | Ibs K ₂ O |
| | | | | | | | | |
| 25% | 0 | 3% | Landscape Supply | 32% | 3.6 | 0.9 | 0 | 0.11 |
| | | | | | | | | |
| 26% | 0 | 2% | Scotts Green Max | 25% | 3.5 | 0.9 | 0 | 0.07 |
| | | | | | | | | |
| 29% | 0 | 4% | Vigoro | 27% | 3.1 | 0.9 | 0 | 0.12 |
| 20% | | 596 | StaGreen | 23% | 3.1 | | | 0.16 |
| 23/0 | | 376 | Studieen | 2370 | 3.1 | 0.5 | • | 0.10 |
| 32% | 0 | 4% | Southern States | 20% | 2.8 | 0.9 | o | 0.11 |
| | | | Contto Turf Buildon | 2.0% | | | | |
| 32% | 0 | 4% | scotts run builder | 28% | 2.8 | 0.9 | 0 | 0.11 |
| 32% | 0 | 7% | Landscape Supply | 32% | 2.8 | 0.9 | o | 0.20 |
| | | | Scotts Super Turf | | | | | |
| 32% | 0 | 10% | Builder | 33% | 2.8 | 0.9 | 0 | 0.28 |
| | | | | | | | | |
| 35% | 0 | 5% | Vigoro | 34% | 2.6 | 0.9 | 0 | 0.13 |

| | | | Fail / W | interizer | Dienus | | | |
|-----------|------|-------------|-------------------|-----------|--------------|-------|-----------------------------------|----------------------|
| | | | | SAN as % | lbs/1000 | | | |
| <u>%N</u> | %P_0 | <u>%K,O</u> | Brand | Total N | <u>sq ft</u> | lbs N | Ibs P ₂ O ₅ | Ibs K ₂ O |
| | | | | | | | | |
| 6% | 1% | 11% | Lebanon ProScape | 72% | 15 | 0.9 | 0.15 | 1.65 |
| | | | | | | | | |
| 22% | 0% | 14% | StaGreen | 22% | 4.1 | 0.9 | 0 | 0.57 |
| | | | Sunniland Turfgro | | | | | |
| 24% | 0% | 11% | Pro | 50% | 3.8 | 0.9 | 0 | 0.41 |
| | | | | | | | | |
| 24% | 0% | 11% | Southern States | 100% | 3.8 | 0.9 | 0 | 0.41 |
| | | | Scotts | | | | | |
| 32% | 0% | 10% | WinterGuard | 33% | 2.8 | 0.9 | 0 | 0.28 |
| | | | Scotts Fall Lawn | | | | | |
| 32% | 0% | 12% | Food Step 4 | 21% | 2.8 | 0.9 | 0 | 0.34 |

Fall /Winterizer Blends

| | | | Star | ter Fertili | zers | | | |
|-----------|-------|-------------|------------------|-------------|--------------|-------|-----------------------------------|----------------------|
| | | | | SAN as % | lbs/1000 | | | |
| <u>%N</u> | %P205 | <u>%K2O</u> | Brand | Total N | <u>sq ft</u> | lbs N | Ibs P ₂ O ₅ | Ibs K ₂ O |
| | | | | | | | | |
| 10% | 20% | 15% | Southern States | 15% | 9 | 0.9 | 1.80 | 1.35 |
| | | | | | | | | |
| 18% | 24% | 6% | StaGreen | 21% | 5 | 0.9 | 1.20 | 0.30 |
| | | | | | | | | |
| 18% | 24% | 12% | Lesco | 22% | 5 | 0.9 | 1.20 | 0.60 |
| | | | | | | | | |
| 20% | 27% | 5% | Vigoro | 20% | 4.5 | 0.9 | 1.22 | 0.23 |
| | | | | | | | | |
| 24% | 25% | 4% | Scotts | 28% | 3.8 | 0.9 | 0.94 | 0.15 |
| | | | | | | | | |
| 14% | 20% | 14% | Landscape Supply | 30% | 6.4 | 0.9 | 1.29 | 0.90 |

Organic Fertilizers

| | | | | SAN as % | lbs/1000 | | | |
|-----------|-------|-------------|-------------------|----------------|--------------|-------|-----------------------------------|----------------------|
| <u>%n</u> | %P205 | <u>%K20</u> | Brand | <u>Total N</u> | <u>sq ft</u> | lbs N | Ibs P ₂ O ₅ | Ibs K ₂ O |
| | | | | | | | | |
| 5% | 0% | 3% | Agway Organic | 99% | 18 | 0.9 | 0 | 0.54 |
| | | | | | | | | |
| 5% | 2% | 0% | Milorganite | 70% | 18 | 0.9 | 0.36 | 0 |
| | | | | | | | | |
| 5% | 3% | 2% | Chickity Doo Doo | 60% | 18 | 0.9 | 0.54 | 0.36 |
| | | | Espoma Spring | | | | | |
| 8% | 0% | 0% | Lawn Booster | 85% | 11.3 | 0.9 | 0 | 0 |
| | | | Espoma Summer | | | | | |
| 8% | 0% | 0% | Revitalizer | 80% | 11.3 | 0.9 | 0 | 0 |
| | | | Espoma Fall | | | | | |
| 8% | 0% | 5% | Winterizer | 84% | 11.3 | 0.9 | 0 | 0.56 |
| | | | | | | | | |
| 8% | 5% | 5% | Nature Safe | 85% | 11.3 | 0.9 | 0.56 | 0.56 |
| | | | | | | | | |
| 9% | 0% | 0% | Espoma All Season | 80% | 10 | 0.9 | 0 | 0 |
| | | | | | | | | |
| 10% | 2% | 8% | Nature Safe | 90% | 9 | 0.9 | 0.18 | 0.72 |
| | | | Scotts Natural | | | | | |
| 11% | 2% | 2% | Lawn Food | 91% | 8.2 | 0.9 | 0.16 | 0.16 |
| | | | | | | | | |
| 13% | 0% | 0% | Nature Safe | 93% | 6.9 | 0.9 | 0 | 0 |
| | | | Espoma Lawn | | | | | |
| 18% | 0% | 3% | Food | 56% | 5 | 0.9 | 0 | 0.15 |

Lawn Fertilizer Examples



"Maintenance"



"Starter" For More P



"Winterizer" For More K

Natural or Organic Fertilizer Choices



Espoma Lawn Food



Espoma_® Lawn Food 18-0-3 GUARANTEED ANALYSIS

| Total Nitrogen (N)18.0% |
|-------------------------------------|
| 2.1% Ammoniacal Nitrogen |
| 11.1% Other Water Soluble Nitrogen* |
| 0.3% Urea Nitrogen |
| 4.5% Water Insoluble Nitrogen* |
| Soluble Potash (K ₂ O) |
| Sulfur (S) |

Derived from: Pasteurized Poultry Manure, Methylene Urea, Ammonium Sulfate, Urea and Sulfate of Potash

*Contains 10% Slow Release Nitrogen from Pasteurized Poultry Manure and Methylene Urea.



Mixing and Matching Nutrients

| | | | *as % tot | al N | | | | | | | |
|--------------|-----------------------------------|----------------------|-----------|-----------|------------------------------------|------------------------|---|-------------|-------|-----------------------------------|----------------------|
| Tar | get (1st y | ear) | | Fertili | zer Anal | yses | | | Nut | trients Sup | plied |
| <u>lbs N</u> | Ibs P ₂ O ₅ | Ibs K ₂ O | SAN* | <u>%N</u> | <u>%P₂O₅</u> | <u>%K₂O</u> | | lbs product | lbs N | Ibs P ₂ O ₅ | lbs K ₂ O |
| 3 | 1.5 | 1.5 | 30% | 14 | 20 | 14 | S | 6.4 | 0.9 | 1.29 | 0.9 |
| | | | 33% | 32 | 0 | 10 | М | 2.8 | 0.9 | 0 | 0.28 |
| | | | 33% | 32 | 0 | 10 | М | 2.8 | 0.9 | 0 | 0.28 |
| | | | | | | | | TOTALS | 2.7 | 1.29 | 1.46 |
| | | | | | | | | | | | |

***SAN%** must be at least 15% to apply nitrogen at 0.9 lbs

Target Nutrient Recommendations

| Soil Tost Loval | Nutrient Needs (lbs/1000 ft ²) | | | | | | |
|-----------------|--|--|-----|-------------|--|--|--|
| Son rest Lever | P ₂ 0 ₅ | P ₂ O ₅ Starters | | Winterizers | | | |
| L- | 3.0 | 2 | 3.0 | | | | |
| L | 2.5 | 2 | 2.5 | 72 | | | |
| L+ | L+ 2.0 | | 2.0 | 2-3 | | | |
| M- | 2.0 | 1 | 2.0 | | | | |
| Μ | 1.5 | T | 1.5 | | | | |
| M+ | 1.0 | | 1.0 | 1 | | | |
| H- | 0 | | 0.5 | | | | |

SMART Lawns Lime & Fertilizer Plan

SMART Lawns Lime and Fertilizer Plan

| Name: | Eunice Burrow | | Prepared: | 10/10/14 | | | |
|------------------|-------------------|-----------------|-------------|--------------|-----------|--|--|
| Address: | 4815 Suecla Drive | 815 Sueda Drive | | | 10/10/17 | | |
| Management Area: | Front | Turf Species | Tall Fescue | Square Feet: | 4,460 ft2 | | |

 Recommendations for Year 1

 Image: A start of the st

There should be a total of 3 fertilizer applications per year. Visit our fertilizer calculator at http://www.co.henrico.va.us/extension/anr/homeowner/lawncare/smartlawns/tertcalc/

| | Application Date (month/day)* | Amount (Ibs / 1,000 ft ²) | ft²/1,000 | Total Amount to Apply (pounds) |
|------|----------------------------------|--|-----------|-----------------------------------|
| | 10/15 | 50 | | 223 |
| Lime | 11/15 | 10 | | 45 |
| Dian | | | 4.46 | |
| Plan | | | | |
| | | | | |
| | Totals | 60 | | 268 |

| | Annual Target | Application Date | Fertilizer | Fertilizer Type** | SAN*** | Fertilizer | Nutrients Supplied | | | |
|------------|----------------|---------------------|------------|----------------------|-------------|---------------------------|--------------------|-------------------------------|------------------|--|
| | Nutrient Needs | | Anatysis | | | Amount | N | P ₂ O ₅ | K ₂ O | |
| Fertilizer | N-P205-K20 | month/day* | N-P-K % | M/S/F | %Total N | lbs/1,000 ft ³ | 0 | bs/1,000 ft ³ | 1 | |
| Dian | 3 0-1 0-2 0 | 10/15 | 24-25-4 | S | 28% | 3.8 | 0.9 | 0.94 | 0.15 | |
| FIGH | | 11/15 | 22-0-14 | F | 22% | 4.1 | 0.9 | 0 | 0.57 | |
| | | 12/15 | 22-0-14 | F | 22% | 4.1 | 0.9 | 0 | 0.57 | |
| | İ | · · · | | | Total Nutri | ents Supplied | 2.7 | 0.94 | 1.29 | |

* The month and day designations may not always be followed due to weather, etc. Apply as close to the month as possible, using the day designation to determine the interval between applications.

" M - Maintenance blend; S - Starter blend; F - Fail or winterizer blend

*** Slowly Available Nitrogen as percentage of total nitrogen (must be at least 15%)

<u>Years 2 and 3:</u> Make 3 applications of a lawn maintenance fertilizer in September, October, and November. If you start fertilizer applications late in the fail of the first year and are not able to make three applications, repeat the same recommended applications in the fail of the second year. Switch to a maintenance fertilizer the third year. <u>Year 4</u>; Submit a soil sample for analysis to determine nutrient needs.

3.0-1.0-2.0

- * Phosphorus is needed
 - * 1 starter applications

* Potassium is needed

* 2 winterizer applications

Timing of Fertilizer Applications for Cool Season Grasses

- * September
- * October
- * November

Fertilizing Cool Season Lawns



Timing of Fertilizer Applications for Warm Season Grasses

* April
* May
* June
* July/August



Use this formula and the first number on the bag:

Desired lbs. of nitrogen per 1,000 sq. ft.

% nitrogen in fertilizer

x 100

= lbs. of fertilizer to apply per 1,000 sq. ft.

<u>Examples</u> For 16-0-8 Fertilizer

To apply 1 pound of nitrogen per 1,000 square feet: 1 / 16 × 100 = 6.25 lbs.

SMART Lawns Fertilizer Calculator

http://henrico.us/extension/anr/homeowner/lawncare/ smartlawns/fertcalc/

| SE | | | | | | | |
|--|---|--|--|--|--|--|--|
| HEN HOME ABOUT HE | NRICO COUNTY VIRGINIA | Tuesday, Sep 9, 2014 76.0°F Overcast | | | | | |
| SMART Lawns Program • SMART Lawns Fertilizer | Home > Extension Office > Agriculture & Natural Resources > Homeowner > Lawn Care > SMART Lawns Program > SMART Lawns Fertilizer Calculator SMART Lawns Fertilizer Calculator | Contact Us Henrico Extension Office | | | | | |
| Calculator Extension Office • 4-H Youth Development • Agriculture & Natural Resources • Family & Consumer | What Section? Front Square Footage of Area: | Henrico Extension Offic P. O. Box 90775 Henrico, VA 23273-077 Physical Address: Henrico Government Complex Human Services Buildin 8600 Dixon Powers Driv Henrico, VA 23228 | | | | | |
| Sciences • Gardens Growing Families • Virginia Cooperative Extension | 1st Number (%N) 2nd Number (%P) 3rd Number (%K) %N %P %K Calculate Reset | Phone: (804) 501-5160 Fax:(804) 501-5169 Office hours: 8:00 a.m 4:30 p.m. ES Monday through Friday | | | | | |

Amount of Fertilizer per 1000 square feet

Total Amount of Fertilizer for Entire Area (Pounds)

How Much Does 1 LB of N Cost?

| Product | Price/ bag | Pounds/ bag | Price/ pound | SAN as % Total N | Lbs. Fertilizer to deliver 1 lb N | Cost/1 lb N |
|------------------------------------|---------------|----------------|-----------------|---------------------|---|-------------|
| Conventional Product 1 32-0-4 | \$15.99 | 14 lbs | \$1.14 | 28% | 3.125 | \$3.56 |
| Conventional Product 2 10-20-15 | \$21.90 | 40 lbs | \$0.55 | 15% | 10 | \$5.50 |
| Organic Product 1 5-2-0 | \$12.99 | 36 lbs | \$0.36 | 70% | 20 | \$7.22 |
| Organic Product 2 10-2-8 | \$38.70 | 50 lbs | \$0.77 | 90% | 10 | \$7.74 |
| Organic Product 3 18-0-3 | \$42.99 | 20 lbs | \$2.15 | 80% | 5.56 | \$11.95 |
| Organic Product 4 5-3-2 | \$21.99 | 40 lbs | \$0.55 | 60% | 20 | \$11.00 |
| Product A | | | | | | |
| Product B | | | | | | |
| Product C | | | | | | |



Drop vs. Rotary Spreaders

Both must be calibrated!



• Covers up to 5,000 square feet

SPREADER SETTINGS

| Cyclone | |
|---------|---|
| Scott | |
| Central | 7 |
| Sears | |

The above settings are approximate. Variation can occur because of condition of the spreader, speed it is operated and the pattern of application. This bag should be applied to 5,000 sq. ft.

| Covers up to 7,000 square feet | |
|--|--|
| SPREADER SETTIN | IGS |
| Cyclone | 4-41/4 |
| Statesman and Republic (Drop) | 9 |
| Statesman and E-Z Spreader (Broadcast) | 12 |
| Scotts Drop | 5-51/2 |
| Scotts Broadcast | E-F |
| The above settings are approximate. Variation cause of condition of the spreader, speed it is pattern of application. This bag should be applied to the spreader of application. | on can occur be- operated and the ied to 7,000 sq. ft. |

Follow Bag Instructions
Trial and Error Calibration



W. I. N. = Water Insoluble Nitrogen

18-8-6

NET WEIGHT 25 LBS (11.33 kg) Espona Organic 18-8-6

GUARANTEED ANALYSIS

Derived from: Dehydrated Manure, Feathermeal, Kelp Meal, Rock Phosphate, Iron Humate, Ureaform, Ammonium Sulfate, Triple Superphosphate, and Sulfate of Potash.

6.6% of Nitrogen, 1% of Phosphate, and 1% of Potash is Natural Organic.

The Espoma Co. • 6 Espoma Rd. • Millville, NJ 08332 F1381

W. I. N. = Water Insoluble Nitrogen

- Water Insoluble Nitrogen is the portion of nitrogen that is slowly available.
- * The rest that is not WIN is water-soluble or quickly available nitrogen.
- If a fertilizer contains 15% WIN or more, you may apply nitrogen at a higher rate. 0.9 # per application in a 30 day period vs. 0.7# per application in a 30 day period.



SMART Step Five

Practice **T**rouble-free Maintenance

Mowing

Watering

Weed Control

Measuring Mower Height



Keep mower blades sharp





Mowing Height and Weeds

Height

1 inch

3 inch

42.3

Broadleaf

Weeds per 100 sq. ft.

2 inch

2.5

0.2

One-Third Rule

- Mow frequently enough so that no more than onethird of grass blade is removed each time.
- Research shows that when turf height is reduced by 50% or more, root growth is slowed or even stopped.





Don't Bag the Clippings!

(Unless there's a good reason)



What is Thatch?

- Layer of dead and decaying tissue between green vegetation and soil surface.
- Problems when greater than ½".
- Roots, rhizomes, stolons major cause.
- Tall fescue has low thatch potential.



Watering "All or Nothing"

- * Avoid light, frequent irrigations
- * Turf needs 1 inch of water per week
- Calibrate your irrigation system
- * Water early in the day, not late
- * Use the "screwdriver test"





Integrated Pest Management for Home Lawns

- * Insects
 - white grubs most problematic, but insecticides needed only rarely on home lawns.
- Diseases
 - * variety selection and cultural practices
 - * Brown patch most problematic, but fungicides seldom needed on home lawns.
- Weeds
 - * mowing practices and fertility management
 - * herbicide type and timing

Organic Pest Management for Home Lawns

- Insects No insecticides needed!
 white grubs most problematic
- * Diseases No fungicides needed!
 - variety selection and cultural practices
- * Weeds Adjust tolerance!
 - * mowing practices and fertility management
 - Naturally derived herbicides available; most have contact activity and result in short-term injury to the turf

If Herbicides are Necessary

- * Identify the weed
 - * Grassy vs. Broadleaf
 - * Annual vs. perennial
 - * Summer annual vs. winter annual
- * Determine best time to treat
- * Determine most effective product
- * Hire a professional?
 - * Most consumer products will calculate to 40 to 70% of the standard professional rate.
 - * See professional equivalency formula discussion in PMG

Types of Lawn Weeds



Crabgrass vs. Wiregrass



www.ppws.vt.edu/weedindex.htm

Some Weeds Can Be Selectively Controlled





Common Lespedeza



Spotted Spurge

Difficult to Selectively Control





Common Bermudagrass



Pre-Emergent Products

Crabgrass



Mid-March 2-3 applications

Annual Bluegrass (Poa annua)



August



Chickweed



Winter Annuals

October & November



Henbit



Common Lespedeza





Spotted Spurge

Summer Annuals

April & May

A Simple Weed Management Plan

- * Mid-March
 - * Apply a crabgrass preventer
 - Repeat for season-long control
- * April and May
 - * Broadleaf weed killer for summer weeds
- * October and November
 - * Broadleaf weed killer for winter weeds

Weed Control Products

- * Most broadleaf weed problems
 - * 2,4-D + MCPP
 - * 2,4-D + MCPP + dicamba
- Harder to control broadleaf weeds
 - * triclopyr and carfentrazone
- Lots of weeds or perennial grasses
 glyphosate (non-selective)
- * Read label for wait time before seeding

Broadleaf Weed Control

Read the Label



MCPA + triclopyr + dicamba





MCPA + triclopyr + dicamba



Read the Label







MCPA + MCPP + dicamba + carfentrazone



carfentrazone+ 2,4-D + MCPP + dicamba

2014 VA Pest Management Guide

Home Grounds and Animals ENTO-36P



PUBLICATION 456-018

Virginia Cooperative Extension Virginia Tech · Virginia State University

2014 PEST

GUIDE Published by:

of Horticulture

www.ext.vt.edu

Content Coordinators: Joyce G. Latimer and

race, color, reditional origin, per-tion, or maritel or family status.

www.pubs.ext.vt.edu/456/456-018



Lawn Establishment

Overseed or Start Over?



How Many Weeds? How Much Time?

When to Establish

- Cool-season Turf
 - * Kentucky bluegrass, tall fescue, perennial ryegrass
 - * fall (mid-Sept to mid-Oct)
 - * late winter/early spring (mid-Feb to mid-Mar)
- Warm-season Turf
 - * Zoysiagrass, bermudagrass
 - * May and June

Purchase Quality Seed

- * Compare labels, not price
 - * Pure Live Seed = Germination % X Pure Seed %
- Certified Seed
 - Blue label guarantees kind and variety of seed named on label

Recommended Tall Fescue Varieties – Annual List

Biltmore, Bingo, Chochise III, Constitution, Coyote II, Crossfire II, Endeavor, Fidelity, Firecracker LS, Grande, Greenkeeper WAF, Houndog 5, Inferno, Justice, Magellan, Masterpiece, Matador GT, Padre, Penn 1901, Raptor, Raptor II, Rebel Exeda, Rendition, Spyder LS, Tarheel II, Tombstone

Lawn Establishment

- Choose species / variety for site conditions
- * Seed, Sprigs, Plugs or Sod
- * Soil Test
- Weed Control
- * Installation of Irrigation and Drainage
- * Soil Preparation
 - * final topsoil depth 6 to 8-inch minimum

Lawn Establishment

* Lime

* pH 6.2

* incorporate to 4 to 6 inch depth

- * Fertilizer
 - correct deficiencies
 - incorporate 2/3; broadcast remaining 1/3 to surface

Seeding, Mulching, Irrigating

- Good seed to soil contact
- * Seed lightly covered with soil
- Straw mulch to cover 50% to 75% of soil surface (1 ½ to 2 bales / 1,000 ft²)
- Light, frequent watering to keep seed and soil surface moist
- * Maintain for at least 30 days after seeding

Renovation/Overseeding

- Less expense and mess
- * Steps are similar to establishment
- Good seed to soil contact
 - * dethatching
 - * aerification
- * Lower rates for lime, fertilizer and seed


| Kentucky Bluegrass | 2 to 3 |
|---------------------|--------|
| Tall Fescue | 4 to 6 |
| Creeping Red Fescue | 3 to 5 |
| Perennial Ryegrass | 3 to 5 |











Rototill

Incorporate lime, fertilizer, organic matter





Rake smooth

Seed in 2 directions





Drag chain link fence to cover seed lightly

Roll for good seed to soil contact followed by straw mulch





Best Lawn in the Neighborhood