

Virginia Nutrient Management Standards and Criteria July 2014 Revision Update

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Regulation Changes

- July 1, 2013 authority was transferred from the Department of Conservation and Recreation to the Virginia Soil and Water Conservation Board
- Regs renumbered from:
4 VAC 5-15 to 4 VAC 50-85

Regulation Changes

- The definition of “Slope” was repositioned to the correct alphabetical location
- Definition of “Tillering” was changed from:
“is the” to “means” formation of lateral shoots from the auxillary buds of small grains and grasses

Regulation Changes

- The references to the October 2005 Standards and Criteria were changed to the July 2014 Standards and Criteria

Standards and Criteria Changes

- Changes were made to section VI to reflect the recommendations of the December 2011 VDACS report concerning the use of slowly available nitrogen in lawn fertilizer and lawn maintenance fertilizer
 - [http://leg2.state.va.us/dls/h&sdocs.nsf/By+Year/RD3962011/\\$file/RD396.pdf](http://leg2.state.va.us/dls/h&sdocs.nsf/By+Year/RD3962011/$file/RD396.pdf)

Standards and Criteria Changes

Definitions

For the purposes of this section, the following definitions, as presented by the Association of American Plant Food Control Officials (AAPFCO), apply:

“Enhanced efficiency fertilizer” describes fertilizer products with characteristics that allow increased plant nutrient availability and reduce the potential of nutrient losses to the environment when compared to an appropriate reference product.

“Slow or controlled release fertilizer” means a fertilizer containing a plant nutrient in a form which delays its availability for plant uptake and use after application, or which extends its availability to the plant significantly longer than a reference “rapidly available nutrient fertilizer” such as ammonium nitrate, urea, ammonium phosphate or potassium chloride. A slow or controlled release fertilizer **must contain a minimum of 15 percent** slowly available forms of nitrogen.

Per Application Rates

Per Application Rates

Do not apply more than 0.7 pounds of water soluble nitrogen per 1,000 ft² within a 30-day period. For cool season grasses, do not apply more than 0.9 pounds of total nitrogen per 1,000 ft² within a 30-day period. For warm season grasses, do not apply more than 1.0 pounds of total nitrogen per 1,000 ft² within a 30-day period. Lower per application rates of water soluble nitrogen sources or use of slowly available nitrogen sources should be utilized on very permeable sandy soils, shallow soils over fractured bedrock, or areas near water wells.

Old October 2005 Standards and Criteria Per Application Rates

Per Application Rates

Do not apply more than one (1) pound of water soluble nitrogen per 1,000 ft² within a 30 day period. For applications of materials containing slowly available sources of nitrogen, higher application rates are acceptable if the water soluble nitrogen contained in the fertilizer does not exceed the maximum recommended rate for a 30 day period. Lower per application rates of water soluble nitrogen sources or use of slowly available nitrogen sources should be utilized on very permeable sandy soils, shallow soils over fractured bedrock, or areas near water wells.

Annual Nitrogen Rates

Annual Application Rates for Home Lawns and Commercial Turf

Up to 3.5 pounds per 1,000 ft² of nitrogen may be applied annually to cool season grass species or up to 4 pounds per 1,000 ft² may be applied annually to warm season grass species using 100 percent water soluble nitrogen sources. Lower rates of nitrogen application may be desirable on those mature stands of grasses that require less nitrogen for long-term quality. As a result, lower application rates will probably be more suited to the fine leaf fescues (hard fescue, chewings fescue, creeping red fescue, and sheep fescue) and non-overseeded zoysiagrass. Lower rates should also be used on less intensively managed areas.

No change to annual home lawn and commercial turf nitrogen rates

Slowly Available Forms of Nitrogen

Use of Slowly Available Forms of Nitrogen

For slow or controlled release fertilizer sources, or enhanced efficiency fertilizer sources, no more than 0.9 pounds of nitrogen per 1,000 ft² may be applied to cool season grasses within a 30 day period and no more than 1.0 pounds of nitrogen per 1,000 ft² may be applied to warm season grasses within a 30 day period.

Provided the fertilizer label guarantees that the product can be used in such a way that it will not release more than 0.7 pounds of nitrogen per 1,000 ft² in a 30 day period, no more than 2.5 pounds of nitrogen per 1,000 ft² may be applied in a single application. Additionally, total annual applications shall not exceed 80 percent of the annual nitrogen rates for cool or warm season grasses.

Rates up to 2.5 lbs of N per 1,000 ft² can be applied at one time, but once the 0.9 or 1.0 lbs of N per 1,000 ft² is exceeded annual nitrogen rates must be reduced by 20%

Knowing how the product will release nitrogen is critical to applying the correct amount

P&K Established Turf Needs

Phosphorus and Potassium Nutrient Needs (Established Turf)

Apply phosphorus (P_2O_5) and potassium (K_2O) fertilizers as indicated necessary by a soil test using the following guidelines:

<u>Soil Test Level</u>	<u>Nutrient Needs (pounds per 1000 ft²)*</u>	
	P_2O_5	K_2O
L	2-3	2-3
M	1-2	1-2
H	0.5-1	0.5-1
VH	0	0

* For the lower soil test level within a rating, use the higher side of the range and for higher soil test level within a rating use the lower side of the recommendation range. (For example the recommendation for a P_2O_5 soil test level of L- would be 3 pounds per 1,000 ft².)

Do not use high phosphorus ratio fertilizers such as 10-10-10 or 5-10-10, unless soil tests indicate phosphorus availability below the M+ level.

Establishment of Turf

Nitrogen Applications

At the time of establishment, apply no more than 0.9 pounds per 1,000 ft² of total nitrogen for cool season grasses or 1.0 pounds per 1,000 ft² of total nitrogen for warm season grasses, using a material containing slowly available forms of nitrogen, followed by one or two applications beginning 30 days after planting, not to exceed a total of 1.8 pounds per 1,000 ft² total for cool season grasses and 2.0 pounds per 1,000 ft² for warm season grasses for the establishment period. Applications of WSN cannot exceed more than 0.7 pounds per 1,000 ft² within a 30 day period.

Phosphorus and Potassium Recommendations for Establishment

<u>Soil Test Level</u>	<u>Nutrient Needs (pounds per 1000 ft²) *</u>	
	<u>P₂O₅</u>	<u>K₂O</u>
L	3-4	2-3
M	2-3	1-2
H	2-1	0.5-1
VH	0	0

Nitrogen Rates for Golf Courses

	Grass Type	Maximum WSN Rate Per Application pounds per 1,000 ft ²	Total Annual N Rate pounds per 1,000 ft ² ^a
Greens		0.7 ^(b)	3-6
Tees		0.7 ^(b)	2-5
Fairways	Cool Season	0.7 ^(c)	2-3
	Warm Season	0.7 ^(c)	3-4
Fairways - Intensive Management	Cool Season	0.5 ^(d)	3-4
	Warm Season	0.5 ^(d)	3.5-4.5
Overseeding Warm Season Fairways		0.5	1.25
Roughs		0.7 ^(e)	1-3

Nitrogen Rates for Golf Courses

- (a) Use higher rates for intensively used turf where accelerated growth and/or rapid recovery are required, use lower rates for maintenance of lesser used areas; do not exceed total annual nitrogen levels as stated above.

- (b) Greens and Tees - Per application timing must be a minimum of 30 days between applications. A rate of 0.9 pounds per 1,000 ft² of total nitrogen may be applied for cool season grasses or 1.0 pounds per 1,000 ft² of total nitrogen may be applied for warm season grasses **using a material containing slowly available forms of nitrogen.**

Slowly available forms of nitrogen can be used at higher rates, but annual application rates must be reduced as stated before

Nitrogen Rates for Golf Courses

	Grass Type	Maximum WSN Rate Per Application pounds per 1,000 ft ²	Total Annual N Rate pounds per 1,000 ft ² ^a
Greens		0.7 ^(b)	3-6
Tees		0.7 ^(b)	2-5
Fairways	Cool Season	0.7 ^(c)	2-3
	Warm Season	0.7 ^(c)	3-4
Fairways - Intensive Management	Cool Season	0.5 ^(d)	3-4
	Warm Season	0.5 ^(d)	3.5-4.5
Overseeding Warm Season Fairways		0.5	1.25
Roughs		0.7 ^(e)	1-3

Nitrogen Rates for Golf Courses

(c) Fairways-Normal Management (Non-Irrigated or Irrigated) - Per Application timing must be a minimum of 30 days between applications. Total nitrogen application rates of 0.9 pounds per 1,000 ft² of total nitrogen may be applied for cool season grasses or 1.0 pound per 1,000 ft² of total nitrogen may be applied for warm season grasses using a material containing slowly available forms of nitrogen.

Slowly available forms of nitrogen can be used at higher rates, but annual application rates must be reduced as stated before

Nitrogen Rates for Golf Courses

	Grass Type	Maximum WSN Rate Per Application pounds per 1,000 ft ²	Total Annual N Rate pounds per 1,000 ft ² ^a
Greens		0.7 ^(b)	3-6
Tees		0.7 ^(b)	2-5
Fairways	Cool Season	0.7 ^(c)	2-3
	Warm Season	0.7 ^(c)	3-4
Fairways - Intensive Management	Cool Season	0.5 ^(d)	3-4
	Warm Season	0.5 ^(d)	3.5-4.5
Overseeding Warm Season Fairways		0.5	1.25
Roughs		0.7 ^(e)	1-3

Nitrogen Rates for Golf Courses

- (d) Fairways-Intensive Management (Irrigated) - Per Application timing must be a minimum of 15 days between applications. This option requires optimized timing of more frequent applications of nitrogen with lesser rates per application. Alternatively, a maximum application rate of 0.9 pounds per 1,000 ft² of total nitrogen for cool season grasses or 1.0 pounds per 1,000 ft² of total nitrogen for warm season grasses using a material containing slowly available forms of nitrogen may be applied with a minimum of 30 days between applications.

Slowly available forms of nitrogen can be used at higher rates, but annual application rates must be reduced as stated before

Nitrogen Rates for Golf Courses

	Grass Type	Maximum WSN Rate Per Application pounds per 1,000 ft ²	Total Annual N Rate pounds per 1,000 ft ² ^a
Greens		0.7 ^(b)	3-6
Tees		0.7 ^(b)	2-5
Fairways	Cool Season	0.7 ^(c)	2-3
	Warm Season	0.7 ^(c)	3-4
Fairways - Intensive Management	Cool Season	0.5 ^(d)	3-4
	Warm Season	0.5 ^(d)	3.5-4.5
Overseeding Warm Season Fairways		0.5	1.25
Roughs		0.7 ^(e)	1-3

Nitrogen Rates for Golf Courses

- (e) Foliar fertilizer may be applied to warm season grasses within 30 days prior to the first killing frost in the fall, at a rate not to exceed 0.1 pounds per 1,000 ft² of nitrogen per application. This application must be accounted for in the total annual nitrogen rate.

Applies to all uses of warm season grasses on golf courses

Nitrogen Rates for Golf Courses

	Grass Type	Maximum WSN Rate Per Application pounds per 1,000 ft ²	Total Annual N Rate pounds per 1,000 ft ² ^a
Greens		0.7 ^(b)	3-6
Tees		0.7 ^(b)	2-5
Fairways	Cool Season	0.7 ^(c)	2-3
	Warm Season	0.7 ^(c)	3-4
Fairways - Intensive Management	Cool Season	0.5 ^(d)	3-4
	Warm Season	0.5 ^(d)	3.5-4.5
	Overseeding Warm Season Fairways	0.5	1.25
Roughs		0.7 ^(e)	1-3

Nitrogen Rates for Golf Courses

Fairways-Overseeding Warm Season Fairways

- For warm season grasses, up to 0.7 pounds of nitrogen per 1,000 ft² in a 30 day period may be applied in the Fall after perennial ryegrass overseeding is well established. An additional nitrogen application of 0.7 pounds per 1,000 ft² may be made in February-March to overseeded perennial ryegrass if growth and color indicate need. Applications using WSN may not exceed 0.7 pounds per 1,000 ft² within a 30 day period.

The maximum annual amount of nitrogen for overseeded warm season turf is 1.25 lbs N per 1,000 ft².
This note needs more clarification.

Nitrogen Rates for Athletic Fields

Cool Season Grasses	Maintenance Program ^a	
	Normal	Intensive
When to Apply ^b	Pounds per 1,000 ft ² Nitrogen	
After August 15	-----	0.5
September	0.7 (c)	0.7 (c)
October	0.7 (c)	0.7 (c)
November	0.5	0.7 (c)
April 15 - May 15	0.5 (c)	0.5
June 1 - June 15	----	0.5

Annual nitrogen maximums did not change from the October 2005 Standards and Criteria

Nitrogen Rates for Athletic Fields

- Soluble nitrogen rates of 0.25 pounds per 1,000 ft² or less which may be a component of a pesticide or minor element application may be applied any time the turf is actively growing, but must be considered with the total annual N application rate.
 - WSN = water soluble nitrogen; WIN = water insoluble nitrogen
- (a) Intensive managed areas must be irrigated.
 - (b) The beginning and ending dates for application of nitrogen shall be determined using guidance and frost date maps contained in the preceding Season of Application for Nitrogen section, using Figures 6-1 and 6-2.
 - (c) Rates up to 0.9 pounds per 1,000 ft² of total nitrogen can be applied using a material containing slowly available forms of nitrogen, with a minimum of 30 days between applications.
 - (d) Make this application only if turf use warrants additional N for sustaining desirable growth and /or color.

Nitrogen Rates for Athletic Fields

Nitrogen Management on Athletic Fields - Warm Season Grasses

The following comments apply to both Naturally Occurring or Modified Sand based Fields and Predominantly Silt/Clay Soil Fields:

- Annual nitrogen rates for warm season grasses shall not exceed **4 pounds** in areas which have the average first killing frost on or before October 20, and shall not exceed **5 pounds** in areas which have the average first killing frost after October 20 as shown in Figure 6-1. Nitrogen rates and timings for overseeding warm season grasses are not included in these rates.
- April 15 - May 15 applications should not be made until after complete green-up of turf.
- Nitrogen applications June through August should be coordinated with anticipated rainfall if irrigation is not available.

Nitrogen Rates for Athletic Fields

Bermudagrass - Predominantly Silt/Clay Soil Fields ^a		
When to Apply ^b	Pounds per 1,000 ft ² Nitrogen	First Fall Killing Frost Date ^b
April 15 - May 15	0.5 - 0.7 ^(c)	Before Oct. 20
June	0.7	
July	0.5 - 0.7 ^(d)	
August	0.5 - 0.7 ^(d)	
Sept 1 - Sept 15	0.5 - 0.7 ^(c)	After Oct. 20
If overseeded with perennial ryegrass		
Oct - Nov	0.5 ^(e)	
Feb-Mar	0.5 ^(e)	

Nitrogen Rates for Athletic Fields

- (b) The beginning and ending dates for application of nitrogen shall be determined using guidance and frost date maps contained in the Season of Application for Nitrogen section, Figures 6-1 and 6-2.
- (c) WSN must be applied as **two applications** not to exceed **0.35** pounds per 1,000 ft² each with a minimum of 15 days between applications. Alternatively, using a material that contains slowly available nitrogen sources, **split applications of 0.5 pounds per 1,000 ft²** may be applied with a minimum of 15 days between applications.
- (d) If a material containing slowly available forms of nitrogen is used, rates up to **1.0** pounds of nitrogen per 1,000 ft² may be applied in a single application with a minimum of 30 days between applications.

Split the nitrogen applications at the beginning and end of the application window on silt/clay fields. Different from October 2005 Standards and Criteria because slow release percentage is lower

Nitrogen Rates for Athletic Fields

Bermudagrass - Naturally Occurring or Modified Sand based Fields ^a		
When to Apply ^b	Lbs/1,000 ft ² Nitrogen ^c	First Fall Killing Frost Date ^b
April 15 - May 15	0.5 - 0.7 ^(c)	Before Oct. 20
June	0.7 ^(c)	
July	0.7 ^(c)	
August	0.7 ^(c)	
Sept 1 - Sept 15	0.7 ^(c)	After Oct. 20
If overseeded with perennial ryegrass		
Oct - Nov	0.5 ^(e)	
Feb - Mar	0.5 ^(e)	

Nitrogen Rates for Athletic Fields

- (c) WSN must be applied as two applications not to exceed 0.35 pounds per 1,000 ft² each with a minimum of 15 days between applications. Alternatively, using a material that contains slowly available nitrogen sources, split applications of 0.5 pounds per 1,000 ft² may be applied with a minimum of 15 days between applications.
- (e) For overseeded warm season grasses, an additional 0.7 pounds per 1,000ft² of WSN may be applied in the Fall after the perennial ryegrass overseeding is well established. The WSN must be applied as two applications not to exceed 0.35 pounds per 1,000 ft² of nitrogen each, with a minimum of 15 days between applications. Additional WSN application of 0.5 pounds per 1,000 ft² may be made in February-March to overseeded perennial ryegrass if growth and color indicate need. Alternatively, split applications of 0.5 pounds of nitrogen per 1,000 ft² each with a minimum of 15 days between applications may be applied using a material containing slowly available nitrogen sources.

Note (e) is confusing and needs clarification. The annual nitrogen maximum for overseeded warm season athletic fields is 1.0 lbs N per 1,000 ft².

Establishment Recommendations

(These rates replace normal maintenance fertilizer applications that would have occurred during these time periods.)

Warm Season Grasses:

Predominantly Silt/Clay Soils

- ◆ Plant Date - late May - June for sprigs, plugs, sod, or seeding.
- ◆ Apply P_2O_5 and K_2O as needed based on soil test recommendations, incorporate into the top 2 inches if possible.
- ◆ At Planting - Up to 1.0 pounds of nitrogen per 1,000 ft² using a material containing slowly available forms of nitrogen may be applied as one application or lesser amounts applied at regular intervals, through the first 4 weeks, not to exceed a total of 1.0 pounds of nitrogen per 1,000 ft².
- ◆ Four weeks after planting - 0.25 pounds of WSN per 1,000 ft² per week for the next 4 weeks.

Establishment Recommendations

Naturally Occurring or Modified Sand Based Soils

- ◆ Plant Date - late May -June for sprigs, plugs, sod, or seeding.
- ◆ Apply P_2O_5 and K_2O as needed based on soil test recommendations, incorporate into the top 2 inches if possible.
- ◆ At Planting - Up to 1.0 pounds of nitrogen per 1,000 ft² using a material containing slowly available forms of nitrogen may be applied as one application or lesser amounts applied at regular intervals, through the first 4 weeks, not to exceed a total of 1.0 pounds of nitrogen per 1,000 ft².
- ◆ Four weeks after planting - 0.25 pounds per 1,000 ft² using a material containing slowly available forms of nitrogen per week for the next 4 weeks.

No need to use slowly available forms of nitrogen for each week after the first four weeks. Spoon feeding is adequate.

Establishment Recommendations

Cool Season Grasses:

Predominantly Silt/Clay Soils

- ◆ Plant Date - August - September (preferred)
- ◆ Apply P_2O_5 and K_2O as needed based on soil test recommendations, incorporate into the top 2 inches if possible.
- ◆ At Planting - up to 0.9 pounds of nitrogen per 1,000 ft² using a material containing slowly available forms of nitrogen may be applied; 30 days after planting, apply up to 0.5 pounds of nitrogen per 1,000 ft² every week for the next 4 weeks.

Naturally Occurring or Modified Sand Based Soils

- ◆ Plant Date - August -September (preferred)
- ◆ Apply P_2O_5 and K_2O as needed based on soil test recommendations, incorporate into the top 2 inches if possible.
- ◆ At Planting - up to 0.9 lbs pounds of nitrogen per 1,000 ft² using a using a material containing slowly available forms of nitrogen may be applied.
- ◆ Apply up to 0.25 pounds of nitrogen per 1,000 ft² per week after germination is complete, for the next 8 weeks. If using a material containing slowly available forms of nitrogen, up to 0.5 pounds of nitrogen per 1,000 ft² every two weeks may be applied after germination is complete for the next 8 weeks.

Establishment Recommendations

Sod Installations:

Site preparation should include a soil test, which can be done several months before the project begins in order to have time to get test results back. Phosphorus, potassium and lime applications should be based on soil test analysis to increase the likelihood of a successful installation. Shallow incorporation of material into the top 2 inches of the soil is preferred prior to sod installation, especially if lime is required.

No more than **0.7** pounds of nitrogen per 1,000 ft² of WSN may be applied before sod is installed. Alternatively, using a material with slowly available forms of nitrogen, **0.9** pounds of nitrogen per 1,000 ft² for cool season grasses or **1.0** pounds of nitrogen per 1,000 ft² for warm season grasses may be applied before sod is installed.

Establishment Recommendations

Phosphorus and Potassium Recommendations for Establishment/Grow-In/Installation

<u>Soil Test Level</u>	<u>Nutrient Needs (pounds per 1000 ft²) *</u>	
	<u>P₂O₅</u>	<u>K₂O</u>
L	3-4	2-3
M	2-3	1-2
H	2-1	0.5-1
VH	0	0

* For the lower soil test level within a rating, use the higher side of the range and for higher soil test level within a rating use the lower side of the recommendation range.

No changes