

Urban Nutrient Management in Virginia is like this doorbell... it is hard to put a finger on!



*Beginning 12/31/13, no lawn maintenance fertilizer containing phosphorus can be registered in Virginia; retailers will be allowed to sell any existing inventory; this does not impact "starter" fertilizers with phosphorus

*Also beginning 12/31/13, lawn fertilizers must include "good housekeeping" language on the label (identical to Florida requirement)

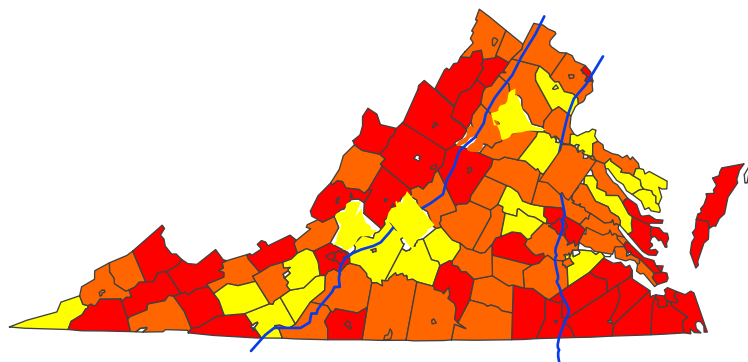
*The "use and application" of fertilizer is added to the list of what local government cannot regulate, except when provided for in certain Acts

Phosphorus– a known source of water quality issues that has direct links to urban landscapes



It only takes 25-75 ppb phosphorus contaminating a water source to trigger something this bad... hence P is **'bad'**.

Agronomic Soil Test P Data Base in Virginia for years 2004-2006. (% soils rated "Very High")



32,172 Lawn & Garden Samples

≥10%-Yellow

≥20%-Orange

≥33%-Red

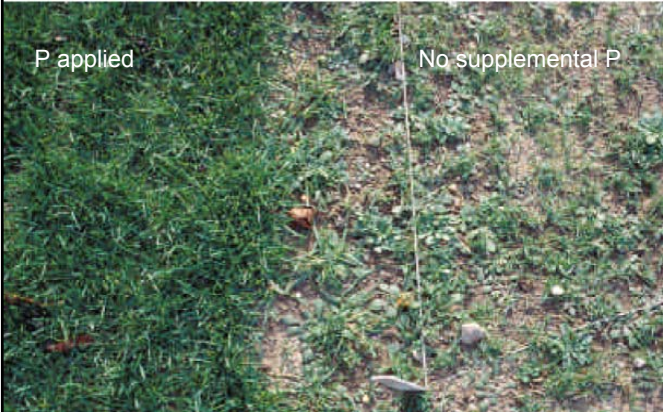
Heckendorn and Maguire, 2007

Worrisome?

- Sure. But do these data correspond to all lawns statewide?
- Still, if P is not needed, then why apply it?



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“What’s the difference between a poison and a cure?”

Where it IS needed, it would be environmentally irresponsible to NOT use P. Note the difference in turf establishment success from pre-plant P fertilization when needed as indicated by soil testing (left) vs. failure in establishment due to P deficiency (right) (photo courtesy of Dr. Tom Turner, University of Maryland).

19-0-19

LESCO® PROFESSIONAL TURF FERTILIZER
 For use in Rotary Spreaders Only
 Contains LESCO® Poly Plus® Sulfur Coated Urea to provide uniform growth with extended nitrogen feeding.
50 lb COVERS 9,500 sq ft

DIRECTIONS FOR USE: This LESCO product is a professional quality turf fertilizer for use on all lawn areas. The best results with this product are obtained when it is applied to actively growing grass, and watered into the turf soon after application. Avoid mowing immediately following application to prevent pick-up.
 For best results, sweep or blow the fertilizer off walks and painted surfaces following application to avoid discoloration.
 Recommended applications are at the rate of one pound of nitrogen and potash per 1,000 sq ft. Actual rates and timing of applications will vary with weather, soil and turf conditions.
 For additional product assistance, call LESCO, Inc. in Strongsville, Ohio at 1-800-321-5325.

COVERAGE: 50 pounds of LESCO 19-0-19 Fertilizer covers approximately 9,500 sq ft at the application rate of one pound of nitrogen and potash (5.3 pounds of fertilizer) per 1,000 sq ft.

ROTARY SPREADER SETTINGS: Apply LESCO Fertilizers and Combination Products only with a rotary spreader. The following rotary spreader settings are approximate for the application rates of one pound of nitrogen and potash per 1,000 square feet. You may need to adjust the setting depending on walking speed, spreader condition and product.

ROTARY SPREADER	SETTINGS
LESCO	#17
SCOTT'S® MSA	K 1/4
Cyprus® or Spyrer®	4 1/2
LESCO Pendulum	32
Lely®	4 1/2

GUARANTEED ANALYSIS

TOTAL NITROGEN (N)	19.00%
18.00% Urea Nitrogen*	
SOLUBLE POTASH (K ₂ O)	19.00%
SULFUR (S) Total	11.00%
4.20% Free Sulfur (S)	
6.80% Combined Sulfur (S)	
IRON (Fe) Total	2.00%
0.122% Water Soluble Iron	
MANGANESE (Mn) Total	3.00%
0.43% Water Soluble Manganese (Mn)	
DERIVED FROM: Polymer Coated Sulfur Coated Urea, Urea, Sulfate of Potash, Iron Sulfate, Manganese Sulfate.	
CHLORINE (Cl) Max	2.00%
*12.80% Slowly Available Urea Nitrogen from Polymer Coated Sulfur Coated Urea.	

WARRANTY
 LESCO, Inc. warrants that this product conforms to the analysis on its label. When used in accordance with label directions, under normal conditions, this product is reasonably fit for its intended purposes. Since time, method of application, weather, plant and soil conditions, mixture with other chemicals, and other factors affecting the use of this product are beyond our control, no warranty is given concerning the use of this product contrary to label directions or under conditions which are abnormal or not reasonably foreseeable. The user assumes all risks of any such use.
 Information concerning the raw materials comprising this product can be obtained by writing to LESCO, Inc., Attn: Tech Dept., 19880 Sprague Pl., Strongsville, OH 44136-7752, referring to the item number found on this bag.
 Information regarding the contents and levels of metals in this product is available on the Internet at www.lesco.com/technical.
 LESCO and Poly Plus are registered trademarks and the sampling design is a trademark of LESCO Technologies, LLC. Poly Plus is composed of Polymer Coated Sulfur Coated Urea. SCOTT'S is a registered trademark of The SCOTT Company. Cyprus and Spyrer are registered trademarks of Spyrer Spreaders, LLC. Lely is a registered trademark of C. Van Der Lely NV.
 G:\BECAL\WP\1905\VA\and Lab - Ver060807.doc Rev. 8/22/06 EB

NET WEIGHT 50 lb (22.7 kg)
 Made in U.S.A. Distributed by LESCO, Inc. • 1301 East 9th Street • Cleveland, OH 44114-1849

This type of fertilizer source is no longer 'unusual' on our big box retailer shelves, and as a matter of fact, is now becoming the norm.

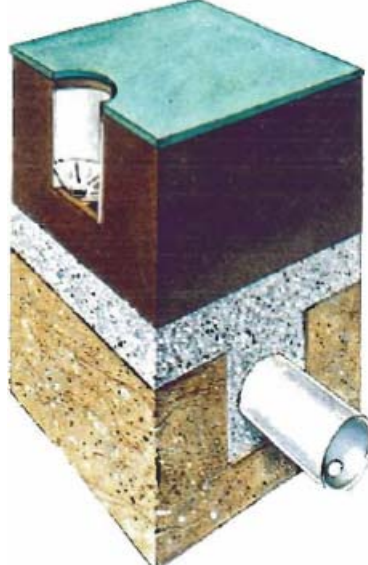
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Name	QAS #
Urea	87734
Potassium Sulfate	7778-80-5
Iron Sulfate	5047-87-4
Manganese Complex	5429-56-6



Worst Case Scenarios in Turfgrass Nutrient Management: Completely Modified Soils

4" Gravel



12" Sand Rootzone Mixture

Subsurface Drainage

Pollution Potential from Modified Soils

EPA Maximum
Contaminant Level
10 mg L⁻¹ NO₃⁻-N

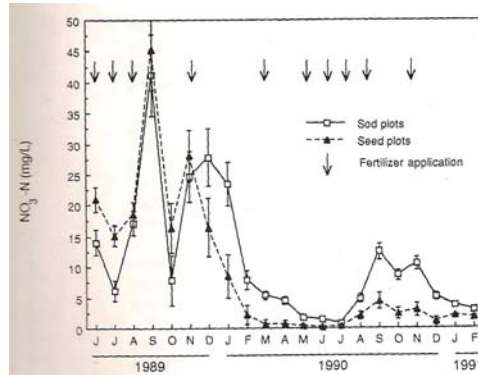
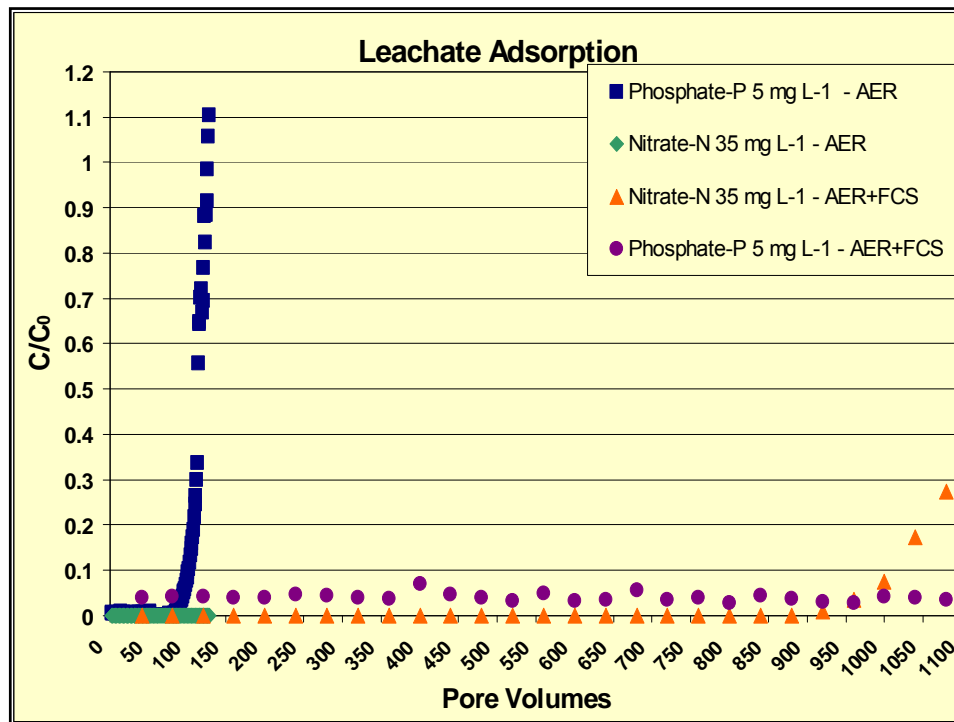


Fig. 2. Monthly average flow-weighted NO₃-N concentrations for sod and seed plots averaged across all flow-weighted treatments. Error bars are plus and minus one SE.

Geron, C. A., Danneberger, T. K., Traina, S. J., Logan, T. J., and Street, J. R. 1993. The Effects of Establishment Methods and Fertilization Practices on Nitrate Leaching from Turfgrass. *J. Environ. Qual.* 22, 119-125.

Filter Testing





Water Soluble Nitrogen Sources

- Virginia Standards and Criteria provide for total application levels of WSN up to 1 lb N/1000 sq ft (depending on the timing, source etc.).
- What is happening upstream? Maryland and Pennsylvania are now promoting no more than 0.9 lb WSN/1000 sq ft per application.

*Contractor-applicators who are in compliance with training and nutrient management standards cannot be regulated by local government in regard to fertilizer use and application

*Annual reporting by contractor-applicators is limited to those who apply lawn fertilizer on more than 100 acres beginning with calendar year 2012

*VDACS will publish a list of contractor-applicators who have completed required training and encourage consumers to consult the list when hiring a lawn care professional (part of the 'Certified Fertilizer Applicator' program)

*VDACS will prepare a report with stakeholder input on the use of slowly available nitrogen in lawn fertilizers

Defining Slowly Available N (SAN)

- "Slowly available nitrogen" means nitrogen sources that have delayed plant availability involving compounds which dissolve slowly, materials that must be microbially decomposed, or soluble compounds coated with substances highly impermeable to water such as polymer coated products, methylene urea, isobutylidene diurea (IBDU), urea formaldehyde based (UF), sulfur coated urea, and natural organics.

Nutrient Management Training and Certification Regulations 4 VAC 5-15.

Defining SAN Sources

- There will be a designation on the label's guaranteed analysis indicating a specific percentage of SAN, Water Insoluble Nitrogen (WIN), Controlled Release Nitrogen (CRN) or Slow Release Nitrogen (SRN)
- For standardization the goal is to follow guidelines defined by AAPFCO– Assoc. of American Plant Food Control Officials)
- Slowly Available N is due to either:
 - Inherent synthesis/composition of the product (e.g. ureaformaldehyde, natural organics, or isobutyraldehyde diurea)
 - Coating (sulfur, polymer, or a combination of the two)

FERTILIZER

GUARANTEED ANALYSIS

Total Nitrogen (N).....	32%
3.5% Ammoniacal Nitrogen	
5.6% Water Insoluble Nitrogen	
17.2% Urea Nitrogen	
5.7% Other Water Soluble Nitrogen*	
Available Phosphate (P ₂ O ₅).....	4%
Soluble Potash (K ₂ O)	4%
Total Sulfur (S)	2%
2.0% Combined Sulfur (S)	

(5.6 % WIN + 5.7 % SAN)/32 = 35% SAN... this product could be safely applied at levels up to 1.25 lb N/1000 sq ft under optimal growing conditions.

Chlorine (Cl) not more than 4%

*5.7% Slowly Available Nitrogen from Methylene Urea.

Considering SAN characteristics in nutrient management planning

- If the fertilizer is ≥ 50 percent SAN then up to 1.5 lb N/1000 sq ft in a single application is acceptable during optimal growing windows.
- If the fertilizer is 25 to 49 percent SAN then up to 1.25 lbs N/1000 sq ft in a single application is acceptable during optimal growing periods.
- If the fertilizer is $\leq 25\%$ SAN then no more than 1 lb N/1000 sq ft should be applied in a single application during optimal growing periods, and it is preferable to split the application into $\frac{1}{2}$ lb N increments on 2 wk intervals when possible.

'Stabilized' Nitrogen

- Additives to/with urea (45-0-0) that reduce the rate of its conversion to plant available N or gaseous loss (volatilization).
- The additives are extremely effective in the laboratory setting, but their level of effectiveness in specific turfgrass uses in the field are not yet clearly understood as to their overall effectiveness. Research in this area continues in order to better understand chemical approaches to improve N-use efficiency of urea.

'Stabilized' Nitrogen

- Stabilized N is not classified as SAN or WIN or CRN by AAPFCO. Will this change or will classification by AAPFCO change? It is opinion of the VT scientists that at this time nutrient management programs still consider these N sources as WSN materials for plan writing.

How is the industry addressing nutrient management?

- Fertilizer source and application strategies: In particular at higher budgeted golf courses, liquid feeding on both large (fairways) and small (greens/tees) areas has quickly gained in popularity as a means of providing an overall 'lean and mean' nutritional approach.



How is the turf industry addressing nutrient management?

- Formulation technology (e.g. Dispersible Granule products, resulting in granular delivery with 'liquid-carrier type performance'.)



Other ways the turf industry is addressing nutrient management.

- More micronutrients being used.
- Microbial 'activators', biostimulants, supplemental plant growth products.
- Use of organics (fertilizers and compost sources) in appropriate locations.

Education: Trying to convince homeowners and municipalities that lawn debris on hardscapes has water quality concerns



- *The major sources of phosphorus in runoff in storm sewers are from lawn clippings and tree leaves left in the streets and gutters. Other sources of phosphorus may come from soil particles either blown into the lakes by wind erosion or carried in runoff over bare soil.*

FO-2903, Rosen and Horgan, Univ. of Minnesota Extension Service Publication.

Acceptance (albeit SLOW) and utilization of Buffers

*The logical utilization of buffer zones to enhance water quality protection continues to grow. 'Buffers' do not even need to be as dramatic as these to be effective.





*As promoted by the golf course industry, all courses must have a nutrient management plan by 2017 and DCR is to create a cost-share program by 2015 to help with the expense

*Golf courses that have a nutrient management plan cannot be regulated by local government in regard to fertilizer use and application



Other things?

- Urban Nutrient Management Planner Training and Certification was initiated in fall 2009. This 'just published' book was developed to support the training effort.

pubs.ext.vt.edu/430/430-350/430-350_pdf.pdf

