

April 25, 2008

Lawn Care Practices, Phosphorus, and Water Quality

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Chris Wible
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Established in 1868, Marysville, OH

What Do Homeowners Think About Lawns?

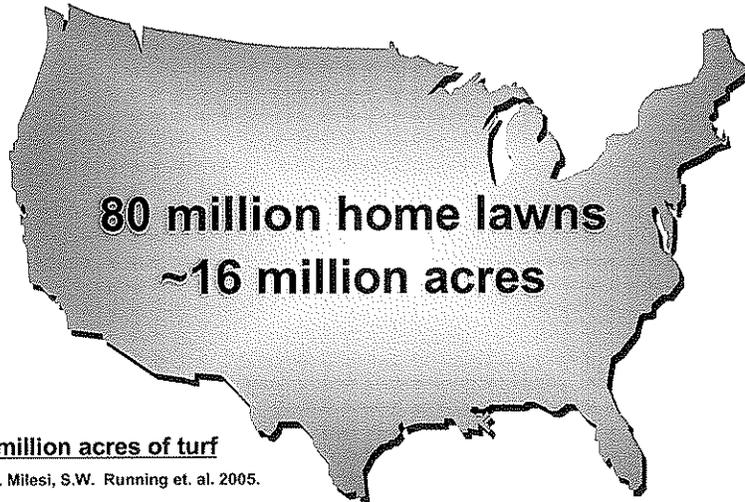
Americans Love their lawns and gardens!

- It is the # 1 household activity
- Homeowners' vision of their lawn is as diversified as the homeowners themselves
- Lawns have environmental, social and economic benefits
- Environmental benefits are often overlooked
- 82% of Americans believe lawn appearance plays an important role in the decision to buy a house

Homeowner DIY Lawn Care Practices

- Driven by homeowner choice/preferences
- Do it yourself (DIY), consumer product solutions
- Need to be effective
- Have to be simple and easy to execute

Size of Home Lawn Market



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Overview of the U.S. Fertilizer Market

Industry Segment	Tons of Fertilizer (Millions)	% of USA Total Fertilizer
USA Total	58	100
USA Agriculture	57	>98
D.I.Y. Lawn & Garden	1	2%

Is your state average?

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80 million home lawns in the US covering 16 million acres

Wisconsin Fertilizer Tonnage

FERTILIZER PROGRAM 1997-2006

Reporting Year (7/1-6/30)	Number of Licenses	Permit Applications	Tons Sold
2002-2003	NA	285	1,225,888
2003-2004	540	253	1,338,695
2004-2005	640	220	1,188,930
2005-2006	575	212	1,230,376

Source: 2006 Annual Report, Wisconsin Agrichemical Management Bureau

Scotts Lawn Fertilizer Tonnage 2006

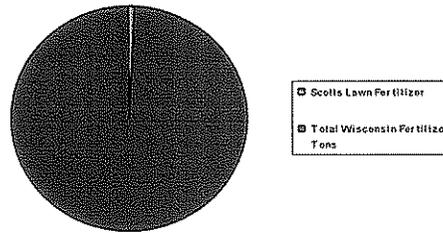
14,272 tons

0.99% of Total WI Fertilizer use

Scotts > 50% Market Share

Homeowner use is 2% of
statewide use

Scotts Lawn Fertilizer as Percentage of
Total Fertilizer Tonnage (0.99 %)



2006 Michigan Fertilizer Tonnage

Category	Product type/use pattern	2006 Tons sold*
Non-Farm	Lawns, gardens, golf, professional turf, nursery, greenhouse, landscape, potting soils w/ fertilizer	250,342
Farm	Agricultural Use	1,194.681

* Michigan Department of Agriculture

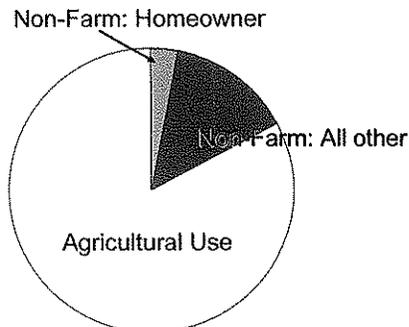
Scotts Lawn Fertilizer Tonnage 2006

22,570 tons

1.56% of Total Michigan Fertilizer use

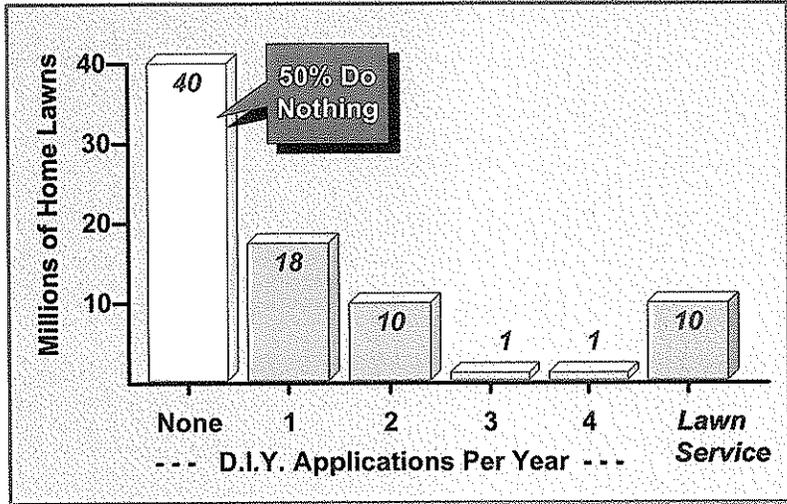
Scotts > 50% Market Share

Total Homeowner lawn
fertilizer use is 3% of state
wide fertilizer use



Home Lawn Care

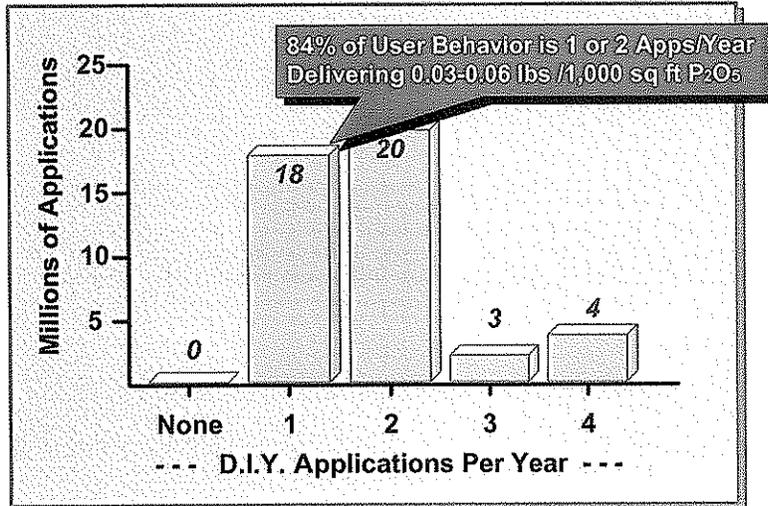
Number of Home Lawns (millions)



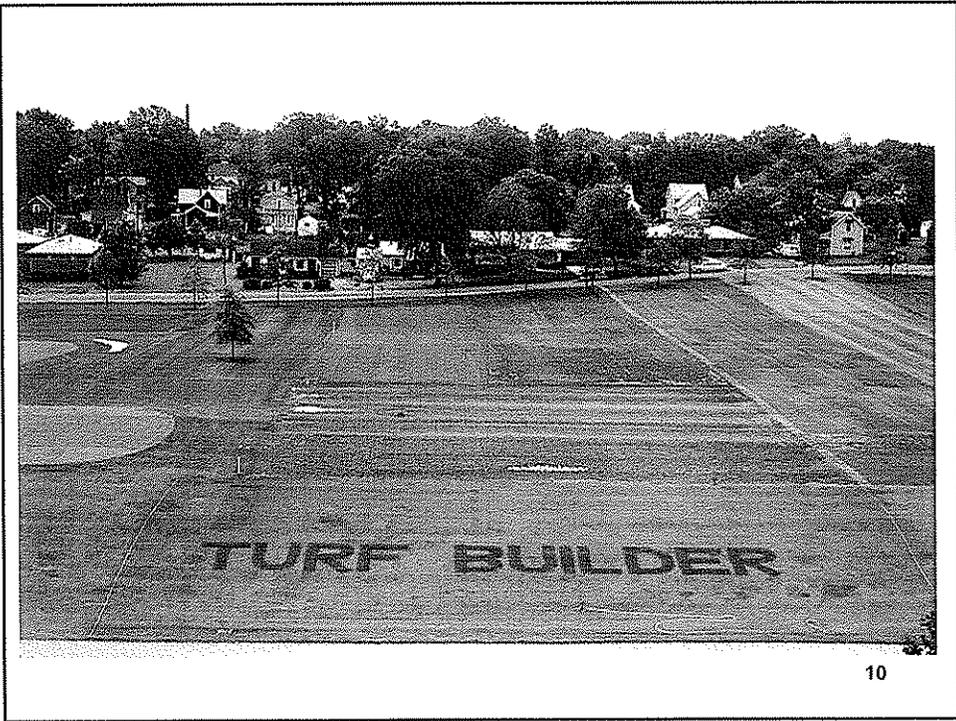
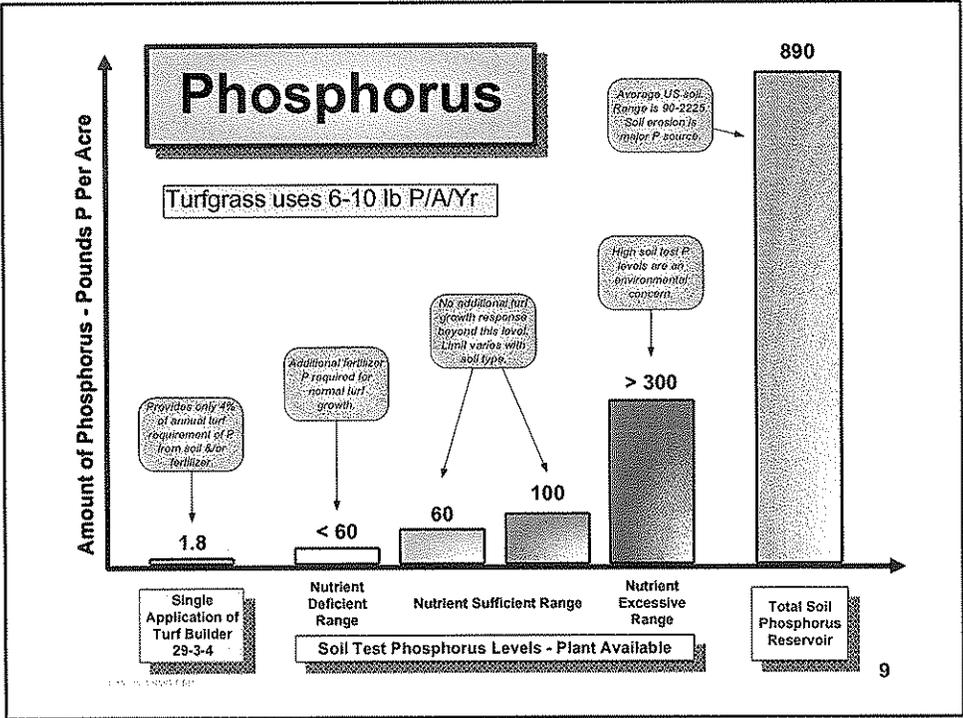
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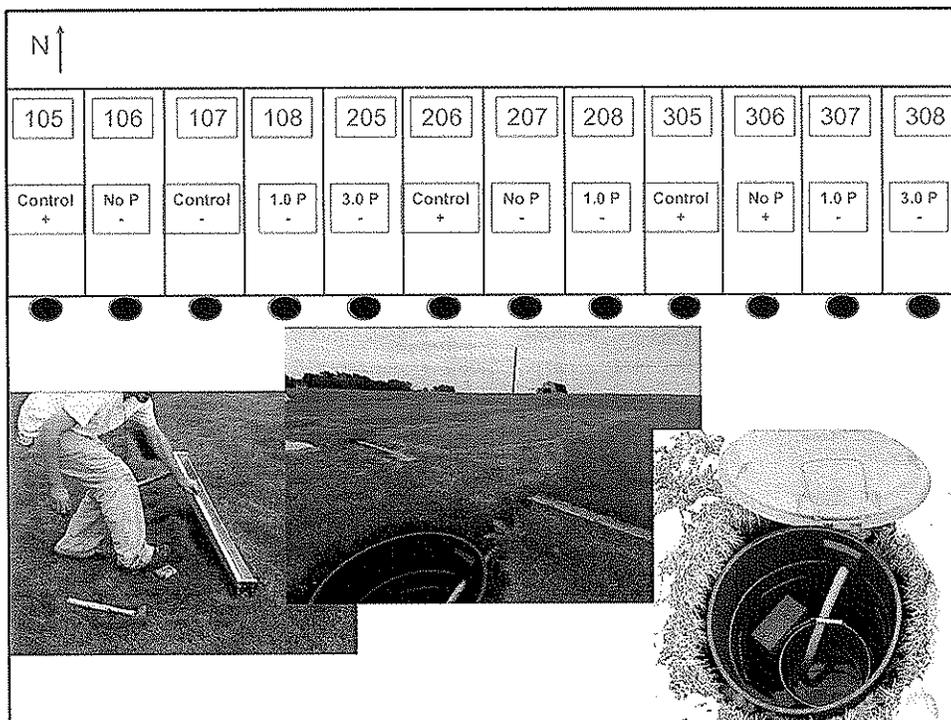
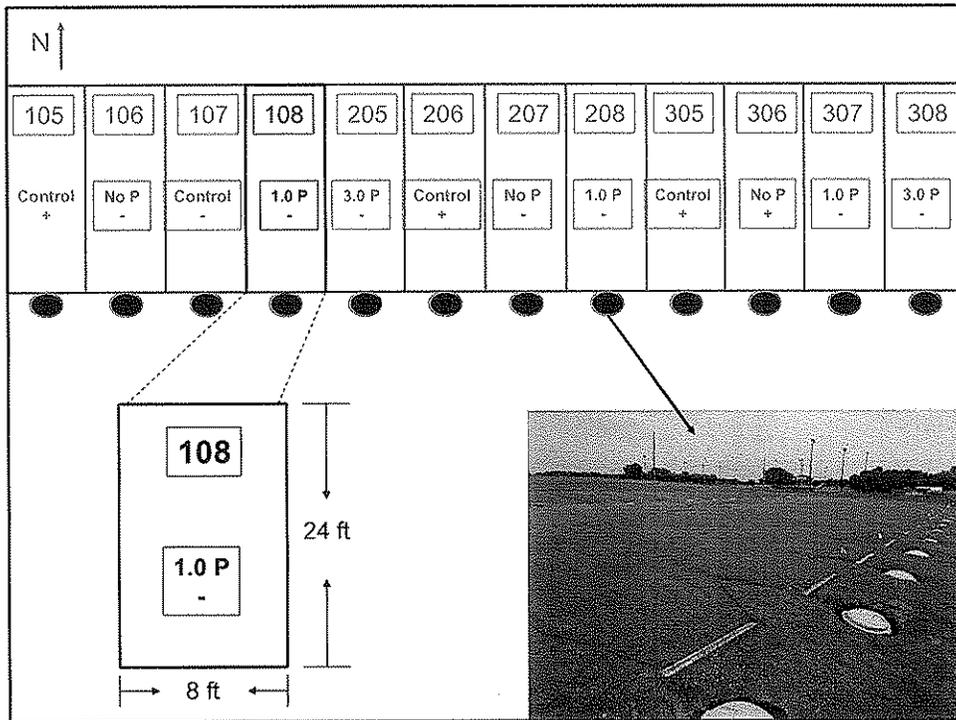
Home Lawn Care - 2

Total Number of Applications (millions)



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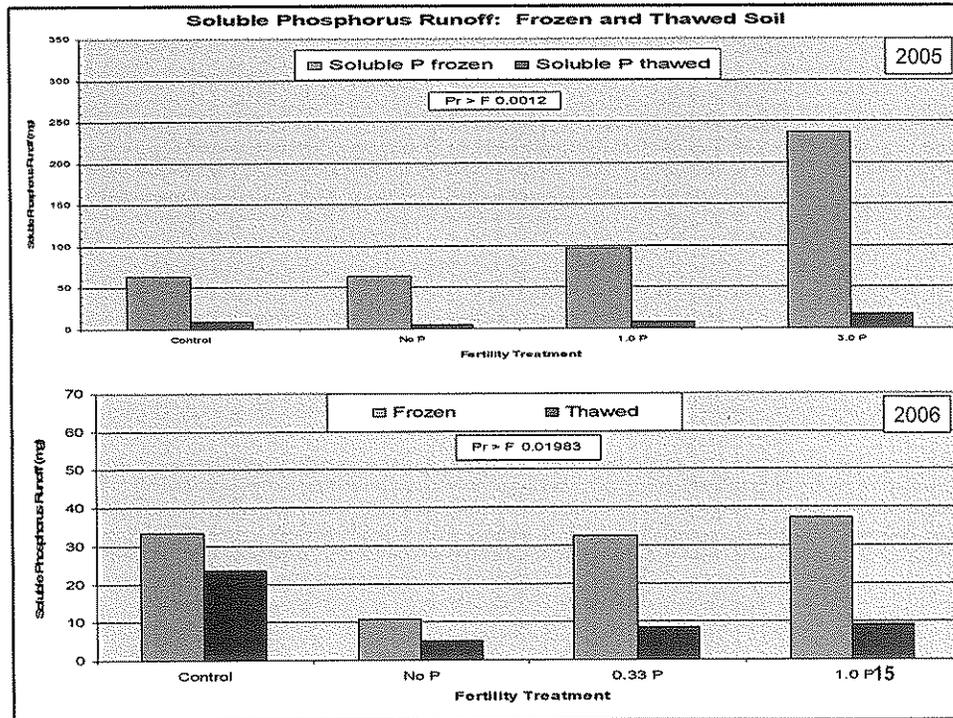




Turf Plots: Home Lawn

Summary: Dr. Brian Horgan, University of Minnesota

- Most P runoff was soluble P
- Majority of P runoff occurred when soil was frozen (~85%)
- In 2005, P runoff was greatest from turf receiving high rates of P
- In 2006, no P had same amount of P runoff as those receiving P fertilizer
- No fertilizer plots had same amount of P runoff as the plots receiving high P fertilizer
- Late fall fertilizers should not contain P



Determining Phosphorus Loading Rates Based on Land Use in an Urban Watershed

Zachary M. Easton¹ and A. Martin Petrovic²

¹ Department of Biological and Environmental Engineering,
Cornell University, Ithaca, NY 14853

- Fertilization in this study has proven to reduce runoff volumes over the unfertilized land uses, which reduced the total mass loss of nutrient.
- Unmanaged or low maintenance land uses (i.e. abandoned areas, minimally managed areas) are a potential source of nutrients and particularly sediment
- Best management practices to reduce P loss from fertilized areas could include reducing P fertilization of the turfgrass unless a soil test indicates a need, moving the typical late Fall P application to an earlier date

Legislative History

Minnesota: Statewide phosphorus ban in 2004

- Governor Jesse Ventura
- Enacted to resolve of conflicting local ordinances to facilitate trade

Local Government Ordinances:

- City of Madison, Dane County, WI
- City of Bellingham, WA
- Rioduso Downs, NM

Chesapeake Bay Program 2006: EPA and Bay States

- Scotts, Lebanon Seaboard, Chesapeake Bay Program developed a collaborative partnership:
 - 50% reduction in phosphorus use by 2010
 - Annual reporting against 2006 baseline year
 - Scotts reported 27% reduction in first year

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THE **Scotts Miracle-Gro**
COMPANY

2007/2008 Turf Builder Line

	Turf Builder Halts Crabgrass Preventer	Turf Builder Plus 2 Weed Control	Turf Builder SummerGuard	Turf Builder Lawn Fertilizer	Turf Builder WinterGuard and WinterGuard+2	
Use Time	Early Spring	Late Spring	Summer	Early Fall / Any Time	Late Fall	
Coverage	5,000 Sq. Ft.	5,000 Sq. Ft.	5,000 Sq. Ft.	5,000 Sq. Ft.	5,000 Sq. Ft.	
Net Weight (lbs)	14.05	14.29	13.35	15.52	14.23/14.29	
Fertilizer N-P-K Analysis 2008	30-0-4	28-2-3	28-0-8	29-2-4	22-2-14/28-2-12	
P205 lbs/1,000	0	0.057	0	0.062	0.057 / 0.057	Annual Total
P lbs/1,000	0	0.03	0	0.03	0.03/ 0.03	0.03-0.09

Minnesota Report to Legislature (3 years after statewide phosphorus Ban)

*As reported by Ron Struss, Minnesota Department of Agriculture,
Water Quality : 2007 Report to the Legislature*

“The elimination of P from lawn fertilizers has had no effect on water quality at this time (after 3 years).”

- Additional research is needed to quantify benefits of the law for water quality planners and **to avoid unintended consequences of phosphorus-free lawn fertilizer use on turfgrass health and water quality.**

• **Dr. Brian Horgan, University of Minnesota**

“Elimination of phosphorus and high rates of phosphorus both lead to soil imbalances that require correction. Low levels of phosphorus are utilized by the plant during the growing season. Solution is low levels not bans.”

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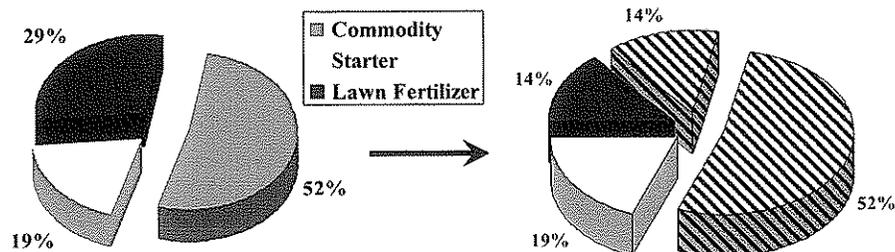
University of Wisconsin-Madison/Extension

Professor Emeritus Wayne R. Kussow

- Annual Phosphorus inputs from “turf fertilizers” match quantities removed by the grasses
- Soils have high P adsorption capacities. To “saturate” the soil requires massive doses of P that exceed the amounts applied to lawns
- Phosphorus run-off from lawns is less small (<2% of applied) and 85% of run-off amount occurred during winter months (desiccated turf)
- When fertilizer P is not applied to a home lawn, soil test P declines 2-3 ppm per year
 - when P is withheld, lawn will become deficient
 - when this happens the turfgrass will thin out, quantities of runoff will increase, and will carry with them increasing amounts of P

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Phosphorus Fertilizers – Current State to Future State (Over 70% Reduction in Phosphorus Inputs)



<u>Phosphorus Source</u>	<u>Action</u>	<u>Result</u>
Commodity	→ Remove from use	→ Goes to zero
Starter	→ Retain lawn use	→ Unchanged
Lawn Fertilizer	→ Reduce Phosphorus	→ 50% reduction

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RM 2/0/08

Phosphorus Stewardship Three Principles

1. Use products designed for turf
 - Not to exceed 0.25 lb P₂O₅/1,000 sq ft/application
2. Apply at turf maintenance rates
 - Not to exceed 0.50 lb P₂O₅/1,000 sq ft/year
3. Follow best management practices
 - Use label rates
 - Keep off hard surfaces (sidewalk, street)

Results in >70 reduction in use, and >>70% reduction in potential loads 24

Simplify Consumer Navigation at Retail

“Products Designed for Turf”

1. Delete spreader settings from products that do not have lawn uses
 - All-purpose garden & landscape products do not need spreader settings (implies lawn use and confuses consumers)
2. Move garden & landscape products away from lawn fertilizers (Products Designed for Turf)
 - Simplify the consumer selection process
3. Reduce package size
 - Large package implies lawn use

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Public Outreach Opportunities



Clean Water NJ



Scotts_Ed_Campaign_4-9-07.wma

KAB Radio Script



KAB Brochure: Healthy Lawns

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HEALTHY LAWNS & CLEAN WATER:

You Can Make a Difference.

A healthy lawn prevents erosion, filters pollution, recharges groundwater, and cools our environment. Feeding your lawn with fertilizer keeps lawns healthy. But fertilization must be done properly to prevent potential harm to our waterways. Over fertilization can harm grass, and pollute water.

THERE ARE TWO WAYS YOU CAN HELP PROTECT NEW JERSEY'S WATERWAYS AND KEEP YOUR LAWNS HEALTHY:

1. Select a low or no phosphorus fertilizer designed for lawns.
2. Apply it to your lawn properly.

FOLLOW THESE LAWN CARE BEST PRACTICES TO DO YOUR PART TO IMPROVE THE QUALITY OF NEW JERSEY'S WATER:

1. Choose a low or no phosphorus fertilizer. Check the second number on the package formula, 26-0-3, for example, means no phosphate.



Bags of lawn fertilizer have 3 numbers on them (Example 26-0-3). Find the phosphorus percent by looking at the middle number. A "zero in the middle" means no phosphorus, a 2 or 3 in the middle means low phosphorus.

26-0-3

2. Choose a fertilizer designed for lawns. If the product does not say "Lawn" on the label or list a spreader setting or a spreader type, it should not be used on home lawns. Avoid use of "All-Purpose" type fertilizer products on your lawn.
3. Read and follow fertilizer label directions. Apply fertilizer at the correct spreader setting shown on the bag. Over fertilization can harm your lawn and the environment.
4. Use a drop spreader or a rotary spreader with a deflector shield to keep fertilizer on the lawn. Keep fertilizer off walks, driveways, and roadways where it can be washed into storm sewers.
5. Mow your lawn at a high or the highest mower setting and leave the grass clippings on your lawn. Mowing high allows the grass to develop a deep root system that retains and uses water more efficiently. Returning clippings to the lawn recycles nutrients and moisture back into the soil.
6. Fertilize in the spring after the first lawn cutting and once again in the fall between Labor Day and Halloween. Only apply fertilizer when your grass is growing enough to be mowed. Fall is the best time to fertilize your lawn, for a healthier, greener lawn next spring.
7. Following application, return any unused product to the original bag for future use.

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Promote Stewardship and Best Practices

We are all accountable for good stewardship

Scott's & Your Environment

We care. Scott's products are designed with care to grow thicker, greener lawns. Because green is good. A healthy lawn cleans the air, produces oxygen and prevents runoff and soil erosion. You can make a difference. Help keep our water resources clean. Apply this product only to your lawn, and sweep any product that lands in the driveway, sidewalk or street back on to your lawn.

Tips for Lawn Care Success:

- **Feed regularly for your best lawn.** Regular feedings of Scott's Turf Builder will help build a lawn you and your family can enjoy. Scott's Turf Builder provides the nutrients your lawn needs to look its very best and withstand the stresses of heat, drought and family activity.
- **Mow your lawn high.** Mowing high allows the grass to develop a deep root system & helps your lawn use water more effectively.
- **Leave the grass clippings on your lawn.** This recycles the plant nutrients back into the soil.
- **Conserve water.** Your lawn will begin to wilt when water is needed. As much as possible, take advantage of nature's sprinkler and only go on the risk to water your lawn.



Plan your feeding schedule. Choose the right product for your lawn.

ANY SEASON	Early Spring: February-April	LATE SPRING: April-June	SUMMER: July-August
Apply any season if weeds or bugs are not a problem. Scott's Turf Builder Lawn Fertilizer	To prevent crabgrass: Scott's Turf Builder with Hots Crabgrass Preventer	To Kill weeds: Scott's Turf Builder with Plus of Weed Control	To Kill bugs: Scott's Turf Builder with SummerGuard
			Scott's Turf Builder WinterGuard To Kill fall weeds: Scott's Turf Builder WinterGuard with Plus 2 nd Weed Control

Best practices!

Consumer messaging can address a broad range of water quality concepts and Best Management Practices

Improved Labeling – Easy to Use



Well-fed lawns are more efficient at using available water.
 Feeding with Scotts® Water Smart™ Formula helps build a thick lawn with more roots to better absorb water and nutrients. This helps protect your lawn against drought and other stresses.



Get expert advice for your lawn NOW!
 Want information on what to use and when? Sign up today to get free expert advice specifically for your lawn.

Visit our website: www.scotts.com Consumer Helpline: 1-800-543-TURF (8873)

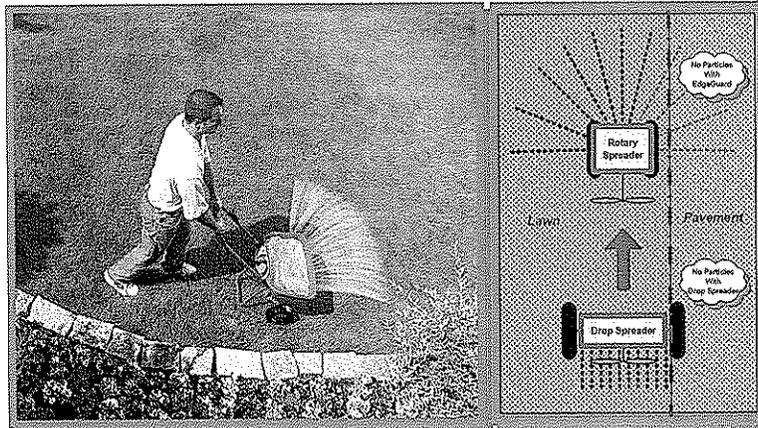
Application	Aplicación
<p>Lawn products work in harmony with the environment when used correctly. Read and follow package recommendations and instructions for use.</p> <ul style="list-style-type: none"> Apply to dry grass type, including newly seeded and sodded areas. Can be applied to a wet or dry lawn. Allow six to eight weeks between applications. <p>Easy to Follow Instructions Apply with a drop or rotary spreader. For best results, use a Scotts® Spreader.</p> <p>STEP 1 - Set and Fill Spreader</p> <ul style="list-style-type: none"> Set spreader according to label below. Fill spreader over back granular feed surface and clean up any spilled product. <p>STEP 2 - Apply Product</p> <ul style="list-style-type: none"> For best results, lightly water in. Product does not require watering in. <p>STEP 3 - Clean-Up</p> <ul style="list-style-type: none"> Return unused product to original container. To keep lawn products from reaching storm sewers, avoid or clear any spill outside from hard surfaces back into container. Do not clean up spills over hard surfaces or near storm drains. <p>STEP 4 - Enjoy your lawn</p> <ul style="list-style-type: none"> Lawn is safe to re-enter immediately after product is applied. 	<p>Los productos para el césped trabajan en armonía con el medio ambiente cuando se usan correctamente. Lea y siga las recomendaciones e instrucciones en el paquete.</p> <ul style="list-style-type: none"> Aplique a cualquier tipo de grama, incluyendo áreas recién sembradas y áreas con sodas nuevas. Puede aplicarse a césped húmedo o seco. Permita seis a ocho semanas entre aplicaciones. <p>Instrucciones fáciles de seguir Aplique con un esparcidor de Scotts®. Para mejores resultados, use un esparcidor de Scotts®.</p> <p>PASO 1 - Ajuste y llene el esparcidor</p> <ul style="list-style-type: none"> Ajuste el esparcidor de acuerdo con el diagrama a continuación. Llene el esparcidor sobre la superficie de alimentación de gránulos y limpie cualquier producto que se derrame fuera del contenedor. <p>PASO 2 - Aplique el producto</p> <ul style="list-style-type: none"> Riegue ligeramente para facilitar la absorción. El producto no requiere riego. <p>PASO 3 - Limpie</p> <ul style="list-style-type: none"> Regrese el producto de la bolsa a su envase original. Para evitar que los productos lleguen a los alcantarillados, evite o limpie cualquier derrame fuera del contenedor de regreso al contenedor. No limpie derrames sobre superficies duras o cerca de drenajes de aguas pluviales. <p>PASO 4 - Disfrute su césped</p> <ul style="list-style-type: none"> El césped es seguro para re-ingresar inmediatamente después de aplicar el producto.

Easy to follow instructions!!!

Simple, graphics for use!!!

Encourage good stewardship!!!

Scotts Proactive Stewardship EdgeGuard™ Spreader



Sustainable outreach and water quality awareness

Sound Environmental Practices Sustainable Outreach Partnerships

- Healthy lawns are good for water quality and the environment. Turfgrass is the most effective groundcover (roadsides, parks, lawns, etc).
- Degraded turf contributes to runoff, soil erosion, is more susceptible to weed infestation and less able to withstand drought.
- Product selection, application, cultural and maintenance practices are inter-related and must be balanced appropriately.
- Communication and Outreach are key drivers.

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Alliance for the Great Lakes 4-3-08

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