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

80 million home lawns
~16 million acres

40 million acres of turf

Overview of the U.S. Fertilizer Market

<table>
<thead>
<tr>
<th>Industry Segment</th>
<th>Tons of Fertilizer (Millions)</th>
<th>% of USA Total Fertilizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA Total</td>
<td>58</td>
<td>100</td>
</tr>
<tr>
<td>USA Agriculture</td>
<td>57</td>
<td>&gt;98</td>
</tr>
<tr>
<td>D.I.Y. Lawn &amp; Garden</td>
<td>1</td>
<td>2%</td>
</tr>
</tbody>
</table>

Is your state average?

80 million home lawns in the US covering 16 million acres
Wisconsin Fertilizer Tonnage

<table>
<thead>
<tr>
<th>Reporting Year (7/1-6/30)</th>
<th>Number of Licenses</th>
<th>Permit Applications</th>
<th>Tons Sold</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-2003</td>
<td>NA</td>
<td>285</td>
<td>1,225,888</td>
</tr>
<tr>
<td>2003-2004</td>
<td>540</td>
<td>253</td>
<td>1,338,695</td>
</tr>
<tr>
<td>2004-2005</td>
<td>640</td>
<td>220</td>
<td>1,189,920</td>
</tr>
<tr>
<td>2005-2006</td>
<td>575</td>
<td>211</td>
<td>1,230,976</td>
</tr>
</tbody>
</table>

Source: 2008 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

2006 Michigan Fertilizer Tonnage

<table>
<thead>
<tr>
<th>Category</th>
<th>Product type/use pattern</th>
<th>2006 Tons sold*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Farm</td>
<td>Lawns, gardens, golf, professional turf, nursery, greenhouse, landscape, potting soils w/ fertilizer</td>
<td>250,342</td>
</tr>
<tr>
<td>Farm</td>
<td>Agricultural Use</td>
<td>1,194,681</td>
</tr>
</tbody>
</table>

* 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 statewide fertilizer use
Home Lawn Care
Number of Home Lawns (millions)

- 50% Do Nothing

<table>
<thead>
<tr>
<th>Lawn Service</th>
<th>Millions of Lawns</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>40</td>
</tr>
<tr>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

Home Lawn Care – 2
Total Number of Applications (millions)

84% of User Behavior is 1 or 2 Apps/Year Delivering 0.03-0.06 lbs/1,000 sq ft P2O5

<table>
<thead>
<tr>
<th>D.I.Y. Applications Per Year</th>
<th>Millions of Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>
Phosphorus

Turfgrass uses 6-10 lb P/A/Yr

Amount of Phosphorus - Pounds P Per Acre

- 1.8
- 60
- 100
- > 300

Nutrient Deficient Range
Nutrient Sufficient Range
Nutrient Excessive Range
Total Soil Phosphorus Reservoir

Soil Test Phosphorus Levels - Plant Available

Single Application of Turf Builder 28-3-4

Addressing turf performance issues:
- Improved turf color
- Enhanced growth
- Reduced stress

High levels of Phosphorus can be harmful:
- Environmental concerns
- Erosion issues

Grassways LLC, Inc.
Soil erosion is a major P source.
<table>
<thead>
<tr>
<th></th>
<th>105</th>
<th>106</th>
<th>107</th>
<th>108</th>
<th>205</th>
<th>206</th>
<th>207</th>
<th>208</th>
<th>305</th>
<th>306</th>
<th>307</th>
<th>308</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
<td>No P</td>
<td>Control</td>
<td>1.0 P</td>
<td>3.0 P</td>
<td>Control</td>
<td>No P</td>
<td>1.0 P</td>
<td>Control</td>
<td>No P</td>
<td>1.0 P</td>
<td>3.0 P</td>
</tr>
</tbody>
</table>

![Diagram showing field layout with markers at 108, 24 ft, and 8 ft.](image)

![Image of field with a person working and a close-up of a manhole cover.](image)
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
- Rodosso Downs, NM

Chesapeake Bay Program 2006: EPA and Bay States
- Scotts, Lebanon or Seaboard, Chesapeake Bay Program developed a collaborative partnership:
  • 50% reduction in phosphorus use by 2010
  • Annual reporting against 2005 baseline year
  • Scotts reported 27% reduction in first year

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Turf Builder 2007/2008 Turf Builder Line

<table>
<thead>
<tr>
<th>Scotts Miracle-Gro COMPANY</th>
<th>2007/2008 Turf Builder Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Time</td>
<td>Early Spring</td>
</tr>
<tr>
<td>Coverage</td>
<td>5,000 Sq. Ft.</td>
</tr>
<tr>
<td>Fertilizer N-P-K</td>
<td>14-0-6</td>
</tr>
<tr>
<td>Annual Total</td>
<td>0.03-0.09</td>
</tr>
<tr>
<td>P2O5</td>
<td>0</td>
</tr>
<tr>
<td>nitrogen</td>
<td>0</td>
</tr>
<tr>
<td>Potassium</td>
<td>0</td>
</tr>
<tr>
<td>Fertilizer N-P-K</td>
<td>28-0-6</td>
</tr>
<tr>
<td>Annual Total</td>
<td>0.057</td>
</tr>
<tr>
<td>P2O5</td>
<td>0.002</td>
</tr>
<tr>
<td>nitrogen</td>
<td>0.002</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.003</td>
</tr>
<tr>
<td>Fertilizer N-P-K</td>
<td>20-2-4</td>
</tr>
<tr>
<td>Annual Total</td>
<td>0.067</td>
</tr>
<tr>
<td>P2O5</td>
<td>0.067</td>
</tr>
<tr>
<td>nitrogen</td>
<td>0.067</td>
</tr>
<tr>
<td>Potassium</td>
<td>0.067</td>
</tr>
</tbody>
</table>
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."

University of Wisconsin-Madison/Extension
Professor Emeritus Wayne R. Kussrow

• 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
Shift to Phosphorus Limits versus Phosphorus Bans

Florida Urban Turf Fertilizer Rule
- Limits phosphorus 0.25 lb/M per application and 0.5 lb/M/yr
- Adds Stewardship language to product labels

Maryland Pending Legislation
- Limits phosphorus 0.25 lb/M per application and 0.5 lb/M/yr (currently also limits to 3% P2O5 for ast lawns)
- Restricts commodity from use on lawns

New Jersey MOU
- Rate reductions: Low and No-phosphorus products
- Remove commodity (1-1-1) products

Provide Products “Designed for Turf”

“All Purpose” type fertilizers deliver multiple years of phosphorus (3-6 yrs) in a single application. Turf fertilizers apply appropriate maintenance levels.

<table>
<thead>
<tr>
<th>Coverage</th>
<th>5,000 Sq. Ft.</th>
<th>5,000 Sq. Ft.</th>
<th>5,000 Sq. Ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Weight (lbs)</td>
<td>15.52</td>
<td>42.50</td>
<td>40.00</td>
</tr>
<tr>
<td>Analysis</td>
<td>20-2-4</td>
<td>6-2-0</td>
<td>10-10-10</td>
</tr>
<tr>
<td>Lb P2O5/1,000</td>
<td>0.96</td>
<td>0.34-0.51</td>
<td>0.80</td>
</tr>
<tr>
<td>Ratio to Lawn Fertilizer</td>
<td>1.0</td>
<td>5.5 - 8.2</td>
<td>12.9</td>
</tr>
</tbody>
</table>
Phosphorus Fertilizers —
Current State to Future State
(Over 70% Reduction in Phosphorus Inputs)

<table>
<thead>
<tr>
<th>Phosphorus Source</th>
<th>Action</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commodity</td>
<td>Remove from use</td>
<td>Goes to zero</td>
</tr>
<tr>
<td>Starter</td>
<td>Retain lawn use</td>
<td>Unchanged</td>
</tr>
<tr>
<td>Lawn Fertilizer</td>
<td>Reduce Phosphorus</td>
<td>50% reduction</td>
</tr>
</tbody>
</table>

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
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
- KAB Radio Script
- KAB Brochure: Healthy Lawns
Improved Labeling – Easy to Use

Application

- Easy to follow instructions
- Simple, graphics for use!!
- Encourage good stewardship!!

Easy to follow instructions!!

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.

Alliance for the Great Lakes 4-3-08

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