Best Management Practices for Application of Turf Pesticides & Fertilizers and YardScaping

Gary Fish
Board of Pesticides Control
287-2731
gary.fish@maine.gov
Why BMPs

- Inappropriate application practices discovered after heavy spring rains of 2005

- Water sampling results from USGS and FOCB

- The Board wanted to start with BMPs instead of jumping into new regulations
2005 Lawn Applications on Saturated Soils

Lawn Pesticide Applications in Portland Area

<table>
<thead>
<tr>
<th>Company</th>
<th>Dates &amp; Precipitation Amounts</th>
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</thead>
<tbody>
<tr>
<td>Lucas Tree - Portland</td>
<td>23-May 0.87&quot;</td>
</tr>
<tr>
<td>Turf Green - Westbrook</td>
<td>24-May 0.47&quot;</td>
</tr>
<tr>
<td>Maloney Grass - York</td>
<td>25-May 1.09&quot;</td>
</tr>
<tr>
<td>The Lawn Doctor - Falmouth</td>
<td>26-May 0.81&quot;</td>
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<tr>
<td>Sterling - Gorham</td>
<td>27-May 0&quot;</td>
</tr>
<tr>
<td>Mainely Grass - York</td>
<td>28-May Trace</td>
</tr>
</tbody>
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Number of Applications & Number of Licensed Applicators
Surface water & sediment sampling in urban watersheds 2001 - 2009

- Pesticide residues detected in surface water (only highest concentration shown)
  - Diazinon up to (2.6 ppb)**
  - 2,4-D up to (36.4 ppb)**
  - Dicamba up to (4.1 ppb)
  - MCPP up to (26 ppb)**
  - MCPA up to (0.45 ppb)
  - Clopyralid up to (0.91 ppb)
  - Propiconazole up to (0.075 ppb)
  - Chlorothalonil up to (0.22 ppb)
  - Found Excess Nitrogen & Phosphorous in most water samples**

- Pesticide residues detected in sediments
  - Bifenthrin up to (37.0 ppb)**
  - Permethrin up to (47.0 ppb)**

**Values in red exceed Aquatic Life Criteria
Sampled urban streams

- Insecticides occurred more frequently in urban streams than they did in agricultural area streams
- Herbicides detected in 99% of Urban stream samples
- Phosphorous found at same levels as in agricultural streams
  - 70% of those samples exceeded the EPA level for causing excessive algal growth
The BMPs

- Site Assessment
  - Initial site visit
  - Turf assessment prior to treatment
  - Thorough periodic assessments

- Informed Product Choice
  - Pesticides
  - Fertilizers

- Operating Standards
  - Prior to application
  - Application

- Customer/Neighbor Relations
  - Notification
  - Customer education

www.maine.gov/agriculture/pesticides/turf_bmps/
Site Assessment

- Initial site visit
  - Customer expectations
  - Pest problems
  - Site plan and measure
  - Soil characteristics
  - Slope and runoff
  - Soil test
  - Sensitive areas
  - Grass species
  - Intensity of use
  - Sun exposure
  - Record assessment
Site Assessment

- Turf assessment prior to treatment
  - Soil conditions
    - Compacted, eroded, frozen, shallow, saturated, exposed bedrock or ledge?
  - Pest problems
  - Turf health
  - Watering
    - Frequency
    - Intensity
Site Assessment

- Thorough periodic assessment
  - Annually
    - Reassess the initial site visit criteria
    - Customer expectations and desire for service (This is now required)
    - Review management records
  - Every 3 – 5 years
    - Soil test
    - Consider monitoring ground water for nitrates at golf courses or sod farms or other intensively managed areas
Informed Product Choice

- **Pesticides**
  - Read labels & MSDSs
  - Choose least toxic, least persistent, lowest exposure
  - Use the WIN-PST criteria
  - Check bee warnings
  - Choose selective products
  - Do spot treatments
  - Choose low drift and low volatility products
WIN-PST

http://www.thinkfirstspraylast.org/turf_bmps/index.htm
Select slow release fertilizers

- GUARANTEED ANALYSIS
  - Total Nitrogen (N)..........................8.00%
    - 1.0 % Water Soluble Nitrogen
    - 7.5 % Water Insoluble Nitrogen
  - Available Phosphate (P2O5).............1.0 %
  - Soluble Potash (K2O)....................1.0 % Derived from corn gluten, steamed bone meal & sulfate of potash

- NON PLANT FOOD INGREDIENTS Bacillus subtilis, Bacillus licheniformis, Bacillus pumulis, Bacillus megaterium, Paenibacillus polymyxa, Paenibacillus durum each @ 275,000 CFU per gram of finished product

Look for Water Insoluble Nitrogen (WIN)
Informed Product Choice

Fertilizers

- Choose slow- or timed-release N (WIN – Water insoluble nitrogen)
  - Apply at 1 pound/1000 square feet or less
- Avoid ammonium nitrate or sulfate and calcium nitrate
  - Do not apply quick release N above ½ pound/1000 sq. ft.
- Use P-Free fertilizer unless soil test indicates need or when establishing seed
Operating Standards

- Prior to application
  - Check site for people & pets
  - Sensitive individuals nearby
  - Toys, sandboxes, pet dishes present?
  - Open windows?
  - 24-hour weather forecast
  - Record current conditions
  - Calibrate equipment frequently
Operating Standards

Application
- Base applications on soil characteristics
- Never apply when there is standing water
- Never apply to saturated soils
- Never apply to frozen ground
- Never apply when temperature exceeds 85°F
- Follow label temperature requirements
Operating Standards

- Application – continued
  - Never apply until soil warms to 50 - 55°F at 3” soil depth
  - Never apply between December 1 and April 1 (unless fungicide for snow mold)
  - Consider forecasted rains
  - Avoid application when wind is below 3 mph or above 10 mph
  - Do not apply pesticides if rain or irrigation is imminent, unless specified by label
  - Do not apply if moderate or heavy rain is imminent regardless of label statements
  - Never apply to impervious surfaces
Operating Standards

Application – continued

- Never apply near areas prone to runoff, i.e., culverts, drains, drainageways or wells
- Never apply to bare ground unless establishing seed
- Cover seed to prevent erosion
- Clean up spills immediately
- Never leave materials on impervious surfaces
- Lightly water-in fertilizers
- When the label directs, assure that pesticides are watered in as directed

Consult your local State Agricultural Experiment Station or State Extension Turf Specialists for more specific information regarding timing of application.

NOTE: For optimum control, irrigation or rainfall should occur within 24 hours after application to move the active ingredient through the thatch. On golf courses, irrigate treated areas following application. Do not apply more than 200 lb (0.4 lb of active ingredient) per acre per year. Avoid pooling turf or lawn area until irrigation or rainfall has occurred so that uniformity of application will not be affected.
Operating Standards

- Application – continued
  - Fill spreader on hard surface
  - Use a drop spreader near sensitive areas
  - Leave an 25-foot buffer of untreated vegetation near water bodies
  - Manage pests with spot applications
Customer/Neighbor Relations

- Notification
  - Remind customer annually about right to request labels and MSDSs
  - When requested, always provide labels and/or MSDSs
  - When requested always notify customers and/or neighbors at least 24 hours prior to applications
  - After application inform customers/neighbors about treatments
    - Need for watering
    - Re-entry period
Customer/Neighbor Relations

Customer Education

Customers must know when their expectations are too high and should know the limitations like:

- Soil depth & texture
- Soil pH and nutrient imbalances
- Grass species limitations
- Proper mowing & watering
- Soil compaction & thatch depth
- Need for buffers around wells, water, etc.
- Low risk control options
- Slow-release & P-Free fertilizer options
25-foot buffer zone to be required next to waters and wetlands

- Applies to all terrestrial “Broadcast” applications
  - Except stinging insect and arthropod vector control, and
  - Man-made Ag wetlands, e.g., Cranberry bog areas

- Variances may be granted if the Board approves and protections are reasonably equivalent
New Regional Lawn Nutrient Recommendations–U-Conn/Cornell

- **Nitrogen Standards**
  - If the existing lawn is acceptable, no need for fertilizer
  - Do not apply before spring green-up and no later than September 15th (NNE) or October 15th (SNE)
  - Apply no more than 1/2 to 1/3 of a pound of nitrogen in any 1 application
  - Slow release formulations are preferable
  - When a soil test indicates adequate P or K, use N only
  - On lawns that are 10 years or older apply a maximum of 2 lbs N/1000 per season
    - Newer lawns may require 3 lbs N/1000 per season
New Regional Lawn Nutrient Recommendations - continued

- When seeding a new lawn amend the soil to get organic matter up to 3% to 5%
- Mow high (3 inches) and return clippings
- Choose tall or fine fescues because they require less nutrients and water – Avoid KBG
- Maintain soil pH levels between 5.5 and 6.5
- Consider introduction of white clover or other low growing legumes to provide natural nitrogen
- Start testing soil for nitrates and base application rates on need (this is experimental right now)
- Avoid using combination fertilizer and pesticide products
Phosphorus Standards

- If the existing lawn is acceptable, no need for fertilizer
- Soil test for P – do not guess
- Frank Rossi at Cornell says P is only needed on the poorest of soils
- Avoid P fertilizers on bare ground or low density lawns, unless seeding
- Use P-free next to water unless soil test shows very low phosphorus
New Regional Lawn Nutrient Recommendations - continued

- Avoid application of P prior to heavy or moderate rains
- Maintain pH between 5.5 and 6.5
- Never apply to saturated or frozen ground
- Soil test annually for P if using organic fertilizer or composts
- Avoid combination fertilizer and pesticide products
- Go to www.maine.gov/agriculture/pesticides/turf_bmps/