

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

Gary Fish

Board of Pesticides Control

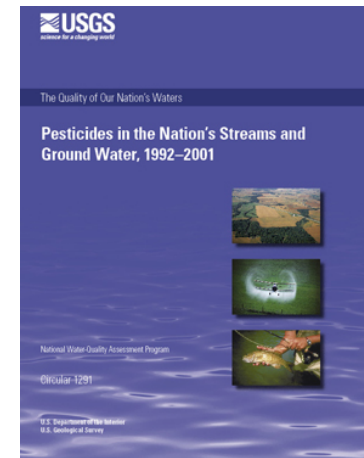
287-2731

[gary.fish@maine.gov](mailto:gary.fish@maine.gov)



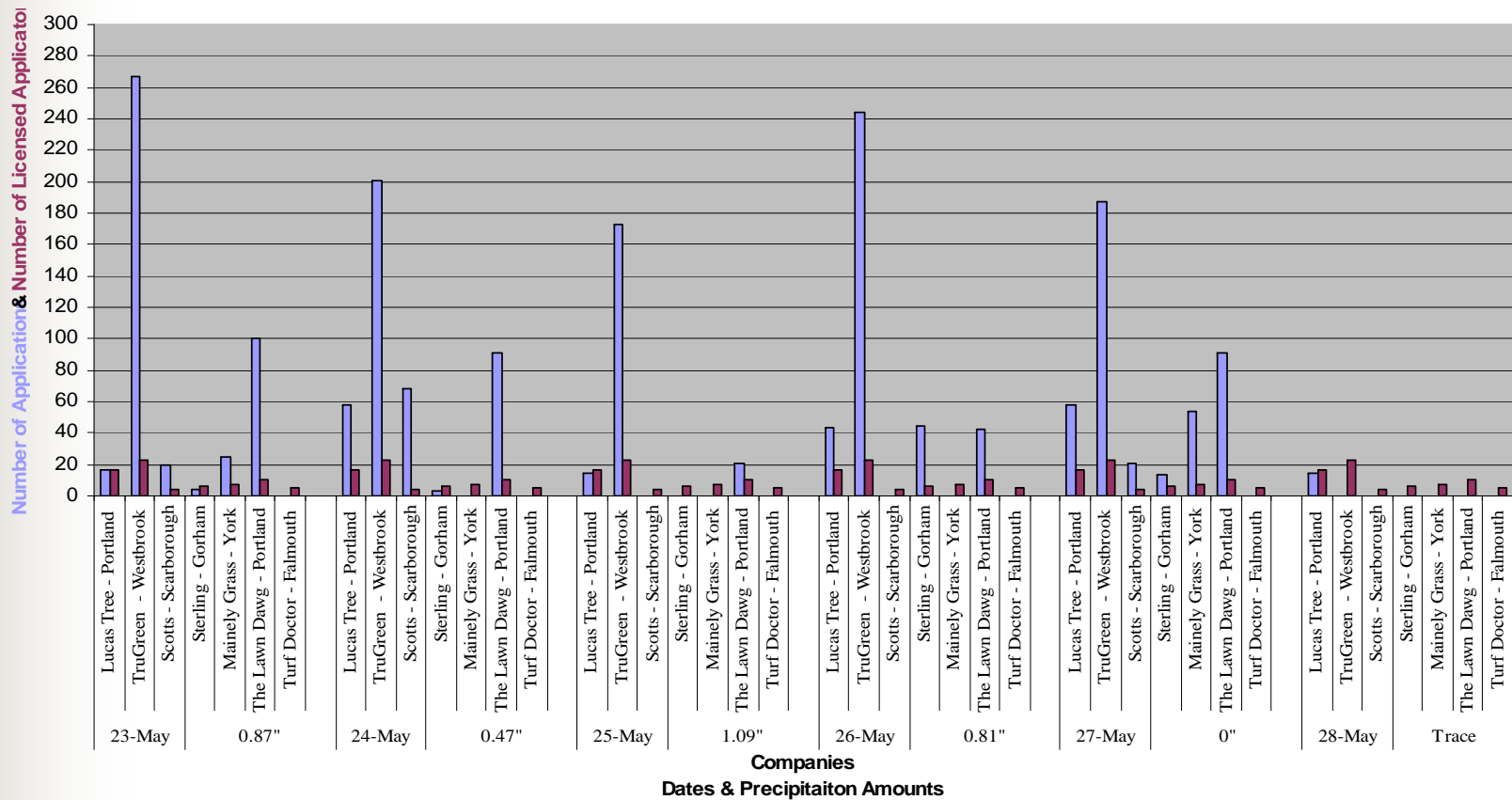
# Why BMPs

- 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



# 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

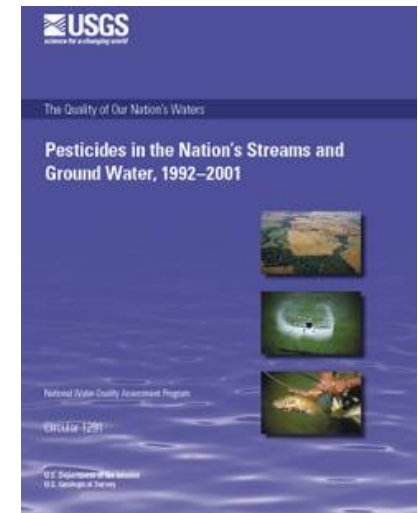
- Bifenthrin up to (37.0 ppb)\*\*
- Permethrin up to (47.0 ppb)\*\*



\*\*Values in red exceed Aquatic Life Criteria

# USGS National Water Quality Assessment – 2006 Report

- 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



## Why Best Management Practices?

Studies confirm that loss of pesticides to ground and surface waters continues to threaten water resources in the Northeast.<sup>1</sup> Applying pesticides to saturated lawns or when wet weather is predicted greatly increases the risk of loss. It is evident that lawn care companies and homeowners need to better understand the risks of applying fertilizers and pesticides under unfavorable conditions to slopes, drainage areas, storm drains, saturated soils, near wells or just prior to heavy rain events. In 2005, despite these known risks, some Maine lawn care companies made hundreds of applications during a week when it rained over 3 inches, and this was preceded by a five-week period when more than 8½ inches of rain was recorded.

Because of these inappropriate practices, the Maine Board of Pesticides Control (BPC) convened a committee to develop these Best Management Practices (BMPs). Heavy rains can easily wash away applications of fertilizers and pesticides from turf areas and move them into our precious and still somewhat pristine water resources. Surface water sampling done by Friends of Casco Bay has detected multiple herbicides and at least one insecticide and fungicide in waters leaving Southern Maine residential developments.<sup>2</sup> Some of the concentrations found in these samples have exceeded

aquatic life criteria, violating State and Federal water quality law and may be adversely impacting aquatic invertebrates and fish species. Industry professionals and the BPC agree these BMPs will improve the practices of commercial lawn care operations, golf course superintendents, athletic field managers, sod growers, and home lawn enthusiasts.

Adding to this concern is the dramatic increase in distribution and use of lawn and garden pesticides in the State of Maine. BPC distribution and use reports show a sharp rise from 800,000 pounds in 1995 to 3,000,000 pounds in 2004.<sup>3</sup> Most of this material was a combination of fertilizers and pesticides (weed & feed products) applied to residential and commercial lawns. Another purpose for these BMPs is to demonstrate the BPC's desire for turf managers to minimize reliance on pesticides.

The Board recognizes that homeowners who apply pesticides under unfavorable conditions can also threaten water quality. But, our hope is the use of these BMPs by commercial lawn care operators, golf course superintendents, athletic field managers, and sod growers will help reach the ultimate goal of reducing human and environmental risks and set the example for do-it-yourselfers.

<sup>1</sup>USGS Circular 1291 and Friends of Casco Bay surface water sampling results.

<sup>2</sup>Friends of Casco Bay surface water sampling results.

<sup>3</sup>Data derived from sales and distribution reports provided by pesticide manufacturers and distributors and commercial applicator summary reports provided annually to the Maine Board of Pesticides Control.

# 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



Figure 8

# Site Assessment

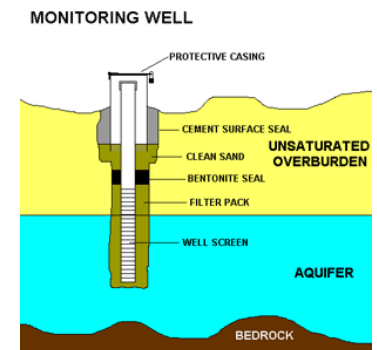
- Turf assessment prior to treatment
  - Soil conditions
    - Compacted, eroded, frozen, shallow, saturated, exposed bedrock or ledge?
  - Pest problems
  - Turf health
  - Watering
    - Frequency
    - Intensity





# 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

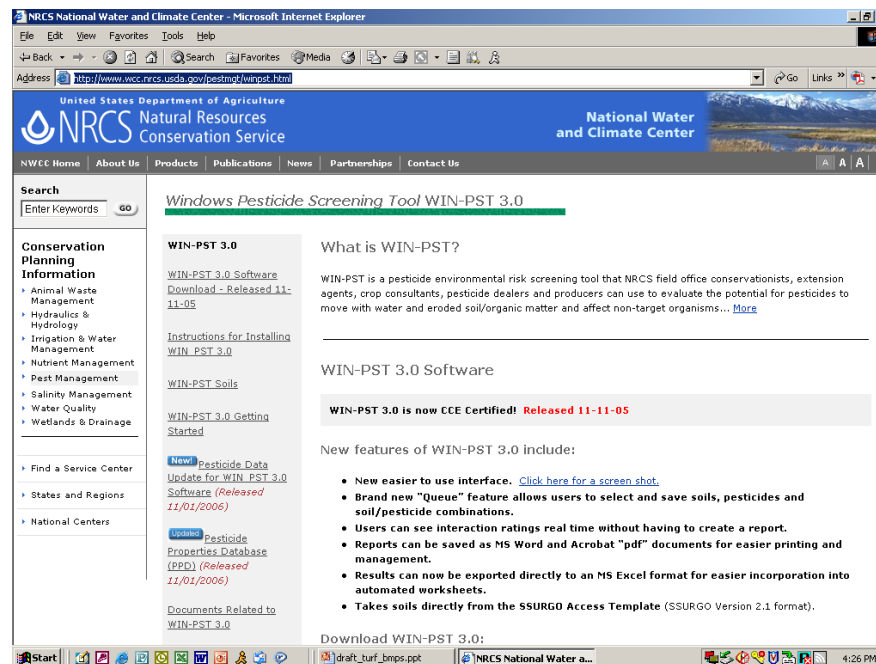
- Read labels & MSDSs
- Choose least toxic, least persistent, lowest exposure
- Use the WIN-PST criteria
- Check bee warnings
- Choose selective products
- Do spot treatments
- Choose low drift and low volatility products

**WIN-PST Ratings for Turf Products**

Product	Name	PIP	PSIP	PMP	EATHuman	EATMHC	EATSTV
0.10% DIMENSION PLUS FERTILIZER							
3338 F	Dithiopyr	HIGH	HIGH	INTERMEDIATE	INTERMEDIATE	INTERMEDIATE	VERY LOW
3338 G	Thiophanate-methyl	LOW	INTERMEDIATE	INTERMEDIATE	INTERMEDIATE	HIGH	LOW
ACCLAIM EXTRA HERBICIDE	Thiophanate-methyl	LOW	INTERMEDIATE	INTERMEDIATE	INTERMEDIATE	HIGH	LOW
ACEPHATE 75SP	Fenoxaprop-p-ethyl	LOW	INTERMEDIATE	INTERMEDIATE	INTERMEDIATE	INTERMEDIATE	VERY LOW
ALAMO FUNGICIDE	Acetophate	LOW	INTERMEDIATE	LOW	HIGH	VERY LOW	LOW
AQUETTE WDG BRAND FUNGICIDE	Propiconazole	INTERMEDIATE	HIGH	HIGH	HIGH	LOW	VERY LOW
ANDERSON'S GOLF PRODUCTS 11-0-02 FERTILIZER PLUS FUNGICIDE	Fosetyl-AI	VERY LOW	INTERMEDIATE	LOW	VERY LOW	VERY LOW	VERY LOW
ANDERSON'S GOLF PRODUCTS 14-3-33 FF-I WITH PONE FUNGICIDE	Iprodione	LOW	HIGH	LOW	HIGH	LOW	VERY LOW
	Thiophanate-methyl	LOW	INTERMEDIATE	INTERMEDIATE	INTERMEDIATE	HIGH	LOW
	Pentachloronitrobenzene	LOW	LOW	INTERMEDIATE	HIGH	INTERMEDIATE	VERY LOW
	Pentachloronitrobenzene	LOW	LOW	INTERMEDIATE	HIGH	INTERMEDIATE	VERY LOW



# WIN-PST



- [http://www.thinkfirstspraylast.org/turf\\_bmps/index.htm](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 (P205).....1.0 %
- Soluble Potash (K20).....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

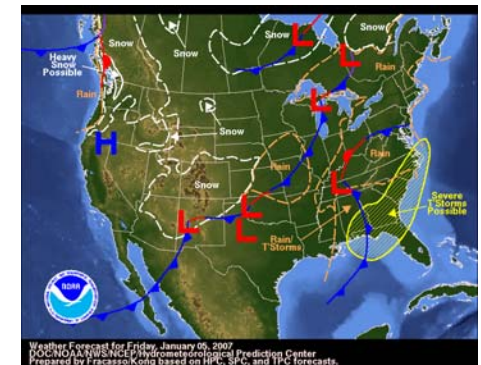
## ■ Fertilizers

- 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 1/2 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 mowing 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

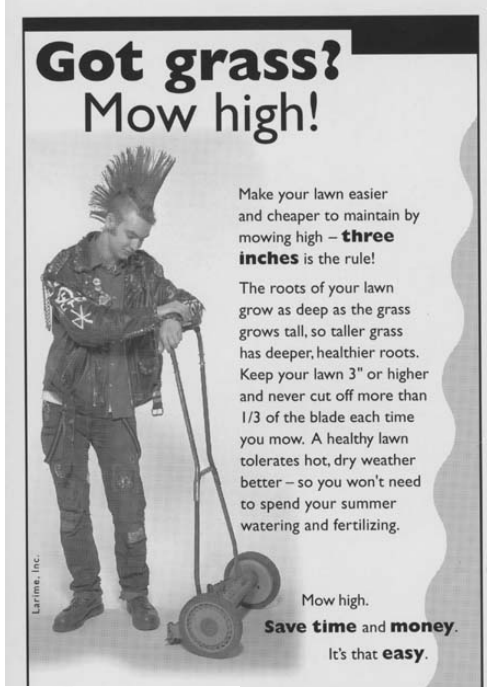
- Remind customer annually about right to request labels and MSDSs
- When requested, always provide labels and/or MSDSs
- When requested always notify customers and/or neighbors at least 24 hours prior to applications
- After application inform customers/neighbors about treatments
  - Need for watering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



**Got grass?  
Mow high!**

Make your lawn easier and cheaper to maintain by mowing high – **three inches** is the rule!

The roots of your lawn grow as deep as the grass grows tall, so taller grass has deeper, healthier roots. Keep your lawn 3" or higher and never cut off more than 1/3 of the blade each time you mow. A healthy lawn tolerates hot, dry weather better – so you won't need to spend your summer watering and fertilizing.

Mow high.  
**Save time and money.**  
It's that **easy.**

Lawnmower, Inc.

Huron River Watershed Council, City of Ann Arbor, Michigan Groundwater Stewardship Program, City of Milford, Ypsilanti Township, USEPA and MDEQ. For more information, call the Huron River Watershed Council at 734-769-1234 or visit our website at www.huronriver.org. Ask for a free tip card.



# 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 15<sup>th</sup> (NNE) or October 15<sup>th</sup> (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



# New Regional Lawn Nutrient Recommendations - continued

## ■ 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

# FMI

Maine Board of Pesticides Control - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address [http://www.maine.gov/agriculture/pesticides/turf\\_bmps/index.htm](http://www.maine.gov/agriculture/pesticides/turf_bmps/index.htm)

Maine.gov Agencies | Online Services | Web Policies | Help

State Search:  GO

Maine Board of Pesticides Control

Home | Site Index PUBLIC APPLICATORS DEALERS REGISTRANTS

ABOUT BPC  
CERTIFICATION & LICENSING  
PRODUCT REGISTRATION  
LAWS & REGULATIONS  
ENFORCEMENT  
WATER QUALITY PROGRAM  
DOWNLOAD LIBRARY  
CONTACT BPC

**Draft Best Management Practices for Application of Turf Pesticides & Fertilizers**

**Best Management Practices for the Application of Turf Pesticides and Fertilizers**  
Recommendations of the Turf Best Management Practices Committee—Winter 2007

**Why Best Management Practices?**  
Studies confirm that loss of pesticides to ground and surface waters continues to threaten water resources in the Northeast. Applying pesticides to saturated lawns or when wet weather is predicted greatly increases the risk of loss. It is evident that lawn care companies and homeowners need to better understand the risks of applying fertilizers and pesticides under unfavorable conditions such as to saturated soils or just prior to heavy rain events. In 2005 despite these known risks, some Maine lawn care companies made hundreds of applications during a week when it rained over 3 inches and was preceded by a 5 week period when more than 8.5 inches of rain was recorded.

Because of these inappropriate practices, the Maine Board of Pesticides Control (BPC) convened a committee to develop these Best Management Practices (BMPs). Heavy rains can easily wash away applications of fertilizers and pesticides from turf areas and move them into our precious and still somewhat pristine water resources. Surface water sampling done by The Friends of Casco Bay has detected multiple herbicides and at least one

**MORE ON the Draft Turf BMPs ...**

The Complete Draft (PDF)

WIN-PST data for turf pesticides (PDF)

What does EATHuman mean? Understanding WIN-PST acronyms

Draft Turf BMP Presentation (PDF)

Where to see a Draft Turf BMP informational presentation

- Maine Golf Course Superintendents Association Annual Meeting January 11, 2007 - Holiday Inn by the Bay

Related Links to Other Sites

Done Internet

- Go to [www.maine.gov/agriculture/pesticides/turf\\_bmps/](http://www.maine.gov/agriculture/pesticides/turf_bmps/)