Organic v. Synthetic Pesticides

Portland Pesticide Task Force

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Goal: Protecting Public Health

- South Portland Draft Ordinance focuses on the wrong approach: *Organic vs. Synthetic* (more on this later)

- Better approach: **Integrated Pest Management**, which focuses on reducing the use of pesticides where appropriate. Focusing on chemical composition misses this important goal.

- Protecting the public health requires a ***balanced approach.***
  - Consider invasive species
  - Consider disease carrying insects
  - Consider condition of athletic fields
  - Consider toxicity of organic and natural compounds
  - Maintaining vegetation in urban environments is difficult and requires additional assistance (incl. street trees).

Organic Pesticides ≠ "safe"

A presentation from Gary Fish of the **Maine Board of Pesticides Control** includes a slide listing the toxicity to pollinators of certain commonly used organic pesticides.

PESTICIDE	NON-TOXIC	LOW TOXICITY	HIGHLY TOXIC
Insecticides/Repellants/Pest Barriers			
Bacillus thuringiensis (Bt)			
Beauveria bassiana			
Cydia pomonella granulosis			
Diatomaceous Earth			
Garlic			
Insecticidal Soap			
Kaolin Clay			
Neem			
Horticultural Oil			
Pyrethrins			
Rotenone			
Sabadilla			
Spinosad			
Herbicides/Plant Growth Regulators/Adjuvants			
Adjuvants			
Corn Gluten			
Gibberellic Acid			
Horticultural Vinegar			
Fungicides			
Copper			
Copper Sulfate			
Lime Sulfur			
Sulfur			

http://www.maine.gov/dacf/php/pesticides/documents2/presentations/2015_MasterGardener.pptx

Organic Pesticides May Not Work

RMB Group, LLC marketed Rest Easy, a liquid solution containing cinnamon, lemongrass, peppermint, and clove oils. The company sold it to retail chains Bed Bath & Beyond, Walgreens, and Big Lots, which in turn sold it to consumers primarily for use when staying in hotel rooms. The product was sold in a 16-ounce spray bottle, which cost $6.99 to $9.99, and a 2-ounce twin pack, which retailed for $5.99 to $7.77. It also was sold in a gallon jug for approximately $50.

A video ad appearing on a company-sponsored website stated:

"Did you Know ... Bed bugs can survive up to 10 months without feeding. They can lay between 5 and 12 eggs per day ... per bug! Why take a chance on being their next meal when you travel? Or having your business shut down because somebody unwittingly brought them in? Rest Easy ... is a real GREEN All-Natural, Non-Pesticide, designed as a preventative for just these potential problems. Rest Easy And rest assured, bed bugs no more!"

The FTC complaint charges that the RMB Group defendants make unsupported claims that Rest Easy kills and repels bed bugs, and that a consumer can create a barrier against them by spraying the product around a bed.

https://www.ftc.gov/news-events/press-releases/2012/09/ftc-takes-action-against-companies-marketing-allegedly-unproven

Organics do not work in many applications necessary to preserve the public health.

- In order for the proposed "all-organic" ordinance to work, it must be filled with waivers and exceptions because organic pesticides have limited applications.
- Control of **invasive species and pests** (e.g. spruce budworm)
- Control of **grubs** that destroy athletic fields and turf
- Control of **disease-carrying insects** (e.g. Lyme ticks)
- Control of insects related to **structures** (e.g. carpenter ants)

Athletic Fields: Organics don't stop grubs

- **Durango, Colorado** spent close to $85,000 a year to maintain nine organic parks in their Parks system, only to end the program because the organic-only treatment methods were ineffective at the heavily used athletic parks. Playing surfaces were unsafe and the soil was found unstable for repetitive use by children and sports teams.

- School officials in **North Stonington, CT** were forced to move sporting events to other towns after several school soccer fields were ruined by grub infestation and other turf pests.

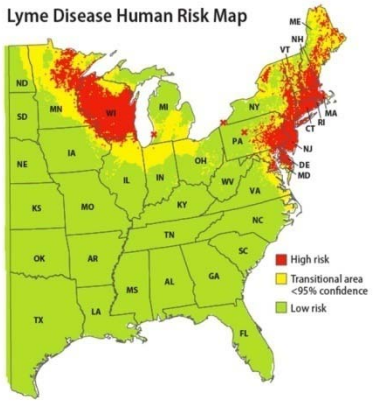
- **Scarborough, Maine.** Town started an "all-organic" program for athletic fields, but needed to supplement with synthetics in order to preserve the condition of the fields.

Tick Control: Organics Not Yet EPA Approved

Natural Tick Repellents and Pesticides

Overview

- Although tick repellents and pesticides for use on skin, clothing, or in the yard are considered safe and effective when used as directed, many people are reluctant to use them. In order to provide other options, scientists have been developing all-natural chemical compounds made from plants that can repel or kill ticks. Scientists have also studied the use of fungi to kill ticks. Many natural products that come from plants or fungi and repel or kill ticks are described below.



EPA Registration

- Before insect repellents can be sold to the public, most must be registered by the Environmental Protection Agency (EPA). EPA registration means that a product has been evaluated and approved as safe and effective for people to use on their skin when applied according to label instructions. Any EPA-registered product will have an EPA Registration Number on the product label (for example, 123456-1).
- Some insect repellent products for sale in the United States do not currently require EPA registration. In the 1990s, EPA evaluated the active ingredients in these unregistered products for safety (but not effectiveness). EPA determined that these all natural plant oils (like peppermint, thyme, eucalyptus, garlic, etc.) used in insect repellent products were safe for people and posed minimal risk to human health. EPA determined that products made from these all-natural ingredients do not require registration. **Note that products made from these ingredients have not been evaluated by EPA for effectiveness**.

http://www.cdc.gov/lyme/prev/natural-repellents.html

IPM = A Practice for Reducing Pesticide Use, Where Appropriate

Integrated Pest Management:

The selection, integration and implementation of pest damage prevention and control based on predicted socioeconomic and ecological consequences, including: (1) understanding the system in which the pest exists, (2) establishing dynamic economic or aesthetic injury thresholds and determining whether the organism or organism complex warrants control, (3) monitoring pests and natural enemies, (4) when needed, selecting the appropriate system of cultural, mechanical, genetic, including resistant cultivars, biological or chemical prevention techniques or controls for desired suppression, and (5) systematically evaluating the pest management approaches utilized.

"Standard" Pest Control	Integrated Pest Management
• Chemical intensive • Largely reactive to pest outbreaks • Less emphasis on prevention • Emphasizes killing pests directly • Major purpose of most site visits is to apply pesticides • General and widespread use of pesticides	• Knowledge intensive • Systematic program of long-term pest control • Major emphasis on prevention of pest problems • Emphasizes modifications of conditions that favor pests • Major purpose of most site visits is to inspect and monitor • Pesticide use is limited in terms of types, amounts, and locations

IPM Requires use of "Best Practices" for Pesticides

Chapter 27, Rules of Maine Board of Pesticides Control

5.B. *All pest management activities* should be conducted using appropriate elements of integrated pest management as described in the latest Cooperative Extension or Department of Agriculture training manuals for pest management in and/or on school property. Pest management activities should also be conducted in accordance with the **Best Management Practices for Athletic Fields & School Grounds**, or other applicable **Best Management Practices** approved by the Board.

- **All Maine schools must follow IPM.**
- **No municipality in Maine has adopted IPM for its property – yet…**

Adopted "Best Practices" are VERY detailed

Adopted by BPC 2/24/2012

Best Management Practices for Athletic Fields & School Grounds

#1 Goal—Reduce human pesticide exposure!

- Minimize pesticide use
- Maintain healthy plants
- Choose pest resistant plant varieties
- Apply spot treatments whenever possible
- Choose products proven to be effective at low application rates
- Choose products that leave little or no residue
- Apply when school is not in session or over extended vacations
- Keep people off treated areas for as long as possible
- Check product label for minimum reentry time

Introduction

In 2011, The Maine Legislature directed the Board of Pesticides Control to evaluate the use of pesticides on school grounds and to develop Best Management Practices (BMPs) for pesticide use with a goal of minimizing human exposure to pesticides. This brochure explains how schools should implement these BMPs. Applying these recommendations should also help schools keep maintenance costs down while improving the safety and appearance of school grounds.

Getting Started

Schools should identify the employees who are involved in school grounds maintenance decisions, including the IPM coordinator, the facilities manager, the athletic director and varsity coaches. The IPM coordinator must be included so that management decisions involving pesticides will be consistent with state law and all notification requirements will be followed.

These grounds maintenance decision makers should assign a Grounds Maintenance Priority Level to all school grounds.* How fields are classified will vary by school and by district, based on use, priorities and available funds.

Assigning Grounds Maintenance Priority Levels

The grounds care BMPs are separated into four levels that roughly correspond to the intensity of use and aesthetic importance of each area. High impact varsity athletic fields may be Level 1 or Level 2. Due to the intensity of use, practice fields that need a high level of maintenance are usually designated Level 2 or 3. Lawn areas and playgrounds generally won't warrant a high level of maintenance and will be assigned to Level 3 or 4. Making a simple map of the maintenance levels for future reference will be helpful to both maintenance personnel and the decision makers (*see map example on opposite side and attached Level-Specific BMPs*).

Other Key Points for Maintaining Quality Grounds and Reducing Risks

- Maintain good communication between staff and contractors involved in grounds maintenance and the IPM coordinator
- Emphasize practices that improve turf density and help minimize need for pesticides
- Identify pests specifically and confirm a pest exceeds threshold levels before authorizing any treatments
- Make sure all pest control products (weed, insect, rodent or plant disease controls) are labeled for use on school grounds and applied by licensed commercial pesticide applicators
- Confirm that all contracts for grounds maintenance services follow these BMPs and the guidelines shown on the opposite side of this bulletin
- Develop a maintenance schedule for the more intensively managed areas so that key steps aren't missed
- Keep detailed records of soil tests, aeration, seeding, top dressing, nutrients and pesticides applied for at least two years

**School grounds means: land associated with a school building including playgrounds, athletic fields and agricultural fields used by students or staff of a school and any other outdoor area used by students or staff including property owned by a municipality or a private entity that is regularly utilized for school activities.*

www.maine.gov/dacf/php/integrated_pest_management/school/documentsSchool_Grounds_BMPs_2012.pdf

Additional best practices mandated by IPM…

http://www.maine.gov/dacf/php/pesticides/documents2/bmps/turf_bmps_Spring_2009.pdf

Recommended BMPs

Site Assessment

Initial Site Visit

- Determine customer expectations.
- Assess weed, insect, or disease problems to determine pest management needs.
- Make a site plan showing turf areas and determine square footage to be treated.
- Determine soil texture and structure, thatch depth, rooting depth, compaction, and erosion
- Do a soil test on new sites to determine Phosphorus (P), Potassium (K), Calcium (Ca), Magnesium (Mg) levels, pH, and Cation Exchange Capacity.
- Note presence of sensitive areas on and off site, e.g., sandy/gravelly soils, shallow water table, drinking water wells, surface water storm drains, etc. Observe slope/grade, culverts and storm drains to determine where water runs off turf area.
- Determine grass species mix.
- Evaluate intensity of use.
- Note turf sun exposure.
- Keep records including the assessor's name and date of assessment.

Turf Assessment Prior to Treatment

- Check soil conditions, e.g., compaction, erosion, frozen ground, shallow soils, exposed ledge or bedrock, saturated with water, etc.
- Identify incidence and severity of weed, insect, or disease problems.
- Determine current health of turf.
- Determine watering frequency and intensity.

Thorough Periodic Assessments

- Annually
  - Reassess the criteria under the initial site visit (*see above*).
  - Check customer expectations.
  - Assure customer still wants the service.
  - Review records of all management measures.
- Every Three to Five Years
  - Test soil pH and nutrient levels.
  - Consider monitoring ground water for nitrates and pesticides at golf courses, sod farms, or other intensively managed areas.

Informed Product Choice

Pesticides

- Read labels and Material Safety Data Sheets thoroughly prior to making a choice.
- Choose least-toxic and least-persistent products with the lowest exposure potential.
- Choose products with the lowest pesticide leaching potential.[4]
- Choose products with the lowest pesticide solution runoff potential.[4]
- Choose products with the lowest pesticide adsorbed runoff potential.[4]
- Choose products with the lowest exposure adjusted toxicity for humans (EATHuman).[4]
- Choose products with the lowest exposure adjusted toxicity maximum acceptable toxicant concentration for fish (EATMATC).[4]
- Choose products with the lowest exposure adjusted toxicity sediment toxicity value for fish (EATSTV).[4]
- Choose products that are not highly toxic to bees or other pollinators.
- Choose products that are selective and that affect the narrowest range of organisms.
- Choose products that are separate from fertilizers and that can be used for spot treatments.
- Choose products with low drift potential and low volatility.

[4] *See separate Windows Pesticide Screening Tool chart or go to www.thinkfirstspraylast.org/turf_bmps/index.htm.*

South Portland Pesticides Ordinance: Reasons not to Adopt in Portland

- The ordinance allows "organic" pesticides. This has nothing to do with the toxicity of a pesticide (as noted above).
- South Portland ordinance relies on exemptions and waivers to work. It implicitly recognizes that synthetic materials are needed for many applications, including disease control, invasive species control, structural applications, control of noxious/poisonous plants, control of invasive pests.
- The fact that the South Portland ordinance removed enforcement is a further signal that developing an ordinance built on distinguishing among pesticides does not work from a practical perspective.
- The ordinance does not call for IPM on municipal property, unlike the approach Portland has taken. An ordinance framed around IPM would better protect the public health. IPM is required for schools; however, no municipality has formally adopted IPM for municipal property -- yet.
- Application to private property. Shouldn't the City study the impact of the ordinance BEFORE determining that the ordinance should be applied to private property? Portland has already adopted a policy to test the effectiveness of organics vs. IPM.
- Only Ogunquit and Montgomery County, MD restrict the use of synthetic pesticides on private property, and those actions have been in place for a very short time.