Natural Turf Management
Organic Lawn Care
~ Choices and Challenges ~
My background

- Professional horticulturist for 40 years
- Osborne Organics—Natural Turf Consultant
- Chairman-Town of Marblehead Recreation & Park Commission
- Held pesticide applicator’s license for many years as a greenhouse grower
What is:

Natural Turf Management
Organic Lawn Care

Define:

Organic
Natural, organic
No longer on the fringe
Fastest growing sector of the landscape industry

Public perception becoming favorable

Municipal/school district emerging voluntary vs. legislative mandate
There is clearly a regional component to acceptance of

The Issue
The Protocols

from both the general public, the industry, and the municipal sector
Myths Surrounding Organic Lawns

• Too Expensive

• Does Not Work

• Means a Lot of Weeds

• No Training Available
Myths Surrounding Athletic Turf

- Too Expensive
- Does Not Work
- Means a Lot of Weeds
• Playing Fields Become Dangerous
• Fields Need More Work / Labor
• Compaction Increases
• Need To Be Rested
• Can’t Take Heavy Use
Miscellaneous Myths

• All Pesticides are approved by EPA for safety
• No chemicals = Grub and Insect pressure
• Grass areas (lawns or fields) are filled with bare spots
• Organic is NOT science based
Remember:

A pesticide by definition Kills, Repels, or Mitigates a Pest

There is no pesticide that grows grass
Why should we consider a pesticide-free approach?

Landscape Contractors
**Respond to capture a share of a growing market**

Turf managers and municipal officials
**Respond to citizen concerns**
“Pesticide 101”
Believe it or Not--
It’s Your Choice
“The Dose Makes the Poison”

Science and Medicine
Newest Research

Risk Assessment
CAUTION
PESTICIDE APPLICATION
KEEP OFF

CUSTOMER: PLEASE REMOVE AFTER 48 HRS.
GEMPLER'S, INC. 1-800-382-6473 BRAND # MD-4X8
30 Commonly Used Pesticides

- 19 are likely, probable or possible carcinogens
- 13 are linked to birth defects
- 21 are reproductive toxicants
- 26 cause kidney or liver damage
- 27 are sensitizers/irritants
- 16 are toxic to birds
- 24 are toxic to fish and other aquatic life
- 11 are toxic to bees

30 Commonly Used Pesticides

- 17 are groundwater contaminants
- 23 can leach through soil or runoff
Whether or not we all agree about the use of synthetics---

The fact is that homeowners, parents, citizens are beginning to ask about and request a non-toxic approach

The market is changing
Reasons for these discussions

Public Health
Children’s Health
Water Quality
Storm Water Runoff

Different Reasons—Same Goal
Pesticide Reduction
Why go organic?

- What is a pesticide?
- Doesn’t the law protect us?
- What are the health risks?
- How are children uniquely vulnerable?
- What are the environmental risks?
- What can we do to reduce & eliminate exposure in our lives?
Town of Marblehead
Board of Health

Adopts
Organic Pest Management
Policy
for all
Town-owned Land
(including Athletic/Playing Fields) in 2001.

Policy becomes regulation
December 2005.
History and Description of Conventional Turfgrass Management
• Conventional turf management has its origins in WW II era

• Chemical warfare research produced biocides

• After war needed to recoup money spent on research and development
• Found that these chemicals worked effectively against insects, weeds, and fungal pathogens

• Marketed to the agricultural sector with promises of increased yields per acre

• Yields skyrocketed

• Today those same farms have yields per acre less than 1930
• Substantial soil damage

• Many years to recover

• Ag market saturated then moved to homeowner

• During the late 1950’s and early 1960’s the conventional lawn care industry was born
• These products were then marketed to homeowners and the concept of the picture perfect lawn began to be promoted

• Prior to this period clover was part of all grass seed mixtures

• Nitrogen fixed and natural fertility was provided, there was no need for lawn fertilizer
• The industry convinced us clover was a weed

• They had a product to kill the “weed”

• They also had developed a synthetic, inorganic form of N to provide the fertility that was lost when the clover was eradicated
The monoculture of non-native C3 and C4 grasses was born
Difference between Conventional and Natural Lawn and Turf Management
Conventional

• Synthetic Fertilizers

• Chemical Pesticides

• Quick Fix Product approach

• Industry more about revenue than what is best for grass and us
• Prophylactic use

• Treats Symptoms

• Applications based on calendar date

• Multiple “preventative” applications

• Generally low mowing heights
Natural

• Natural, organic product

• Soil Testing as a basis for all inputs

• Product use is based on sustained benefit
• Does not treat symptoms

• Solves problems

• Objective is to create and establish healthy soil
Systems Approach not Product Approach

Three-fold

1  Proper understanding of the soil

2  Use of natural, organic product as indicated by soil testing

3  Proper Cultural Practices
By following a Systems Approach to Natural Turf Management®
We are putting practices into action that will assist in preventing serious pest problems by putting a series of preventative steps in place
Insects   Weeds   Disease
As Municipal Officials and Turf managers we need to be aware that things are changing and there are viable alternatives to conventional turf management that will produce quality turf for lawns, sports fields, parks.
Healthy Turf
Every Athlete
Deserves It
The Basics of a Natural, Organic Lawn and Turf Management Program

- Soil Testing—Soil Biology
- Use of Compost Tea Sprays
- Top-dressing with Compost for OM
- Use of Natural, Organic Fertilizer
- Aggressive Seeding and Over-seeding
- Proper Aerating: De-thatching
- Proper Mowing, Irrigation

These are generally not recognized in many conventional management programs.
It's all about the soil.

We take a “Feed the Soil” approach as opposed to feed the plant.
Improving Soil Health and Quality Is Our Number One Goal
In 1 teaspoon of agricultural soil there are…

<table>
<thead>
<tr>
<th>Group</th>
<th>Quantity/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacteria</td>
<td>100 million to 1 billion</td>
</tr>
<tr>
<td>Fungi</td>
<td>6-9 ft fungal strands put end to end</td>
</tr>
<tr>
<td>Protozoa</td>
<td>Several thousand flagellates &amp; amoeba</td>
</tr>
<tr>
<td></td>
<td>One to several hundred ciliates</td>
</tr>
<tr>
<td>Nematodes</td>
<td>10 to 20 bacterial feeders and a few fungal feeders</td>
</tr>
<tr>
<td>Arthropods</td>
<td>Up to 100</td>
</tr>
<tr>
<td>Earthworms &amp; potworms (enchytraeids)</td>
<td>5 or more</td>
</tr>
</tbody>
</table>
Take a Soil Test

Abandon the Cookie Cutter Approach

Think Site Specific
Conventional view of soil

- Structural
- Chemical
- Biological
Emerging view of soil health

Structural

Chemical

Biological

Soil Health
Managing Lawns and Turf naturally is about reducing and eliminating turfgrass stresses.
Difference Between Conventional Fertilizer and Natural, Organic Fertilizer
Conventional

<table>
<thead>
<tr>
<th>Conventional Characteristics</th>
<th>Synthetic, Inorganic Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>N</em>=urea</td>
<td>Quick release</td>
</tr>
<tr>
<td>Water-soluble</td>
<td>Rapid uptake</td>
</tr>
<tr>
<td>Fast green-up</td>
<td>Feed the plant</td>
</tr>
<tr>
<td>Encapsulation</td>
<td>Leaves soil quickly</td>
</tr>
<tr>
<td>Multiple apps</td>
<td>Cost increases</td>
</tr>
<tr>
<td>Was inexpensive</td>
<td></td>
</tr>
</tbody>
</table>
Natural, Organic

N = plant, animal, mineral based

WIN water-insoluble N
Broken down by microbes
Sustained benefit
Measured growth

Slow release
Feed the Soil
Organic N
Cost effective
Sound fertilizer programs call for low, uniform supply of nitrogen during the growing season.

Goal is to build up reserve soil N.

This is what organic Fertilizers do.
# Sources of N

<table>
<thead>
<tr>
<th>Traditional</th>
<th>Non-traditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Granular fertilizer</td>
<td>Compost topdressing</td>
</tr>
<tr>
<td></td>
<td>Liquid fertilizer-fish</td>
</tr>
<tr>
<td></td>
<td>Clippings returned</td>
</tr>
<tr>
<td></td>
<td>Microbial inoculants</td>
</tr>
</tbody>
</table>
Soil Additives

Compost tea
Kelp / Seaweed
Humic acid / Humates
Biological inoculum
Molasses
Meeting Site Objectives
Satisfying Expectations
Be honest with assessments

Low level inputs = low cost - meets low expectations
High level inputs = higher cost – meets higher expectations

Different levels of management
Realities of Organic Management

Not a Quick Fix program

Not instant gratification
Can be some slight cost weighting to the front end (but isn’t always) depending on site conditions

Founded on concept of healthy soil
Will mitigate most pest pressures

Will require less N

Uses non-traditional product

There is a Transition Period
Transition Period

When a turf management program changes from a conventional approach to a natural approach there is a period of time referred to as a Transition Period.
The length of time is directly related to the intensity of current and past synthetic management practices and overall turf quality.
Important to address the soil and the biomass

Adopt products and cultural practices that support biomass and turf

Biggest issue is to move fertility from a conventional program to a natural approach that addresses soil health and microbial life
When we move to a natural program we do not expect to see a deterioration in the turf. Transition process must involve the whole system:

- Soil microbiology
- Natural product
- Cultural practices
Why go organic on athletic fields and public lands?
Because it can be done ~
~ and because our kids and athletes need protection from exposure to pesticides.
Why go organic?

“In our every deliberation, we should consider the impact of our decisions on the next seven generations.”