Natural (Organic) Lawn & Turf Management
Homeowners
Lawn Care Professionals
Municipalities

Based on a Systems Approach
What is Organic Land Care?

Adoption of a System’s Based Approach vs. a Product Approach

Conceptually different
Problem solving not symptom treating
Creation of a healthy biologically active soil environment
Soil testing as a basis for inputs
What is Organic Land Care?

Organic by neglect is sometimes the general public’s perception “I do nothing therefore I am organic”

Organic implies a proactive, thoughtful approach to management. A series of preventative steps is put in place to build a system.
Why go organic?

What is a pesticide?
What are synthetic fertilizers?
Does 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?

Because we want the landscape to get better
What is Driving This?
Of what are average citizens becoming aware?

Science is beginning to understand that LD50 and Risk Assessment as written are not aligned with newer research.

Science and Medicine: Newest Research
Very low, sub-lethal exposures are problematic

Public health
Children’s health
Pollinator health
Pet health
Environmental health
Why Go Organic

Human Health
Environment
Pesticide 101

What do you know?
How do you perceive pesticide use?
Are they safe when used as directed?
Have you been told they are no big deal?
Have you been told they are safe when they are dry to the touch?
Do you know what a half-life is?
Federal law defines Pesticides as any of the following:

- Herbicides  
  - post-emergence  
  - pre-emergence  
- Insecticides
- Fungicides
- Miticides
- Anti-microbials
- Rodenticides
- Algicides

Weed and Feed
Crabgrass control
Dial soap
Swimming pools

Any compound designed to kill, repel, or mitigate a pest
What’s In A Pesticide?

**Active Ingredients** are by nature biologically and chemically active against the target pest, be it an insect or fungus. By definition, these materials kill living things.

**Inert Ingredients** are often as toxic as the active ingredient, although the law defines these materials as “secret business information.” Inerts, often petrochemicals, like benzene, toluene or xylene, generally make up the largest percentage of a pesticide formulation. Inerts are the solution, dust, or granule in which the active ingredient is mixed. Inerts generally make up the majority of the pesticide product formulation.

**Contaminants and impurities** are often a part of the pesticide product and are responsible for the product hazards. Dioxins are contaminants in pentachlorophenol, created as a function of the production process.

**Metabolites**, often more hazardous than the active ingredients, are breakdown products which form when the pesticide mixes with air, water, soil or living organisms.
Current Testing
Risk Assessment
LD 50  Lethal Dose
Science and Medicine
Newest Research
“The Dose Makes the Poison”
What if the Half-life is 30 days?

Does this do any good?
With what we know or suspect....

Does this make sense?
American homeowners, municipalities, and sports account for as much (or more) pesticide use than agriculture.
TOO MUCH GRASS in the world

We often put it where it doesn’t belong

Some should go away
Some must stay

Reasonable expectations

Non-chemical management
Fertilizer 101

What is synthetic fertilizer?
What does it do?
Do you know how it works?
Can it have unintended consequences?

What is organic fertilizer?
Do you know how it works?
Can it have unintended consequences?
Organic
Minerals, plants, animal by-products

Organic based
Above plus bio-solids or urea

Synthetic
Haber-Basch Process or acid reacted
Urea
Ammonium Sulfate
Potassium Nitrate
Ammonium Nitrate

Commonly used synthetic, soluble sources of nitrogen
Following a SOLUBLE NITROGEN application to turf:

- Growth rate increases sharply 2 days after application.
- Peak growth rate 7-10 days after application.
- Tapers off to original growth rate in 4-6 weeks.

PEAKS and VALLEYS.
Why not synthetic

Production consumes fossil fuels
Releases greenhouse gasses
Disturbs soil ecosystem
High salt
Upsets balance
Leaches
Boulder, CO
2011-2014
2010 Before organic management

mid-August during growing season
First attempt at soil testing

Compaction
All thatch--unhealthy
Minimal turf density
Unhealthy system
Weed pressures
Transition complete
Weeds replaced with grass
Healthy system
Expectations met
MA
8 years organic

Softball, field hockey, phys ed classes
Close up
No weeds-good density
Why go organic on athletic fields?
Because it can be done ~
~ and because our kids and athletes need protection from exposure to pesticides.
History and Description of Conventional Turf grass Management
Two Approaches to Natural Turf and Grounds Management

Management using **allowed** pesticides

Management without pesticides
If we Choose to Intervene with Allowed Materials

We embrace the concept of Organic IPM

US EPA 25b exempt materials,
Bio-rational US EPA registered
We manage to communicated expectations

Lower expectations/low input/low cost
not always bad

Higher expectations/higher input/higher cost
not always good
Difference between Conventional and Natural Lawn and Turf Management
## Conventional / Synthetic

<table>
<thead>
<tr>
<th>Conventional</th>
<th>Synthetic, Inorganic</th>
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</thead>
<tbody>
<tr>
<td>N=urea or other</td>
<td>Quick release</td>
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<tr>
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- Water-soluble is efficient for rapid uptake and quick release.
- Synthetic compounds are expensive, but ensure effective nutrient delivery.

Feed the plant efficiently through encapsulation and multiple applications.
What do I do?

Communicate with your landscape contractor if you use one
DIY homeowner change practices

Set personal expectations
Low cost = low product input  
Higher cost = higher product input

Evaluate the site  
Do a soil test  
Implement a program
How to take a soil test

1. Using a trowel dig down 3” to 4”
2. Collect a sample of soil
3. Place it in a clean container
4. Repeat several times collect about 2 cups
5. Mix together well
6. Let sit out overnight if very damp
7. Remove blades and roots
8. Place 1 cup in baggie
9. Download submittal form
10. UPS to lab
Lime

Ideally, apply in Fall, but can be applied early Spring

50 lbs. per 1000 ft. maximum rate in 1 application...may have to do a split application.

Lime can take 100 days to breakdown and effect a change in pH of soil.
Do you think fertilizer is plant food?

We see products that say “plant food”, ”lawn food”, ”rose food”. There is no food for grass or any plant in fertilizer. Fertilizer is a raw material that acts as a catalyst.

Photosynthesis makes the “food”
Conventional / Synthetic

N=urea
Water-soluble
Fast green-up
Encapsulation
Multiple apps
Was inexpensive

Synthetic, Inorganic
Quick release
Rapid uptake
Feed the plant
Leaves soil quickly
Cost increases
Natural, Organic

Nutrients are
Plant (grains), animal, or mineral based

WIN water-insoluble N  Slow release
Broken down by microbes  Feed the Soil
Sustained benefit  Organic N
Measured growth  Cost effective
What is the difference?

**Fertilizer** has a guaranteed analysis

**Soil amendments and foods** primarily build, change, or adjust soils in relation to soil tests

Conventional management focuses primarily on fertilizer only

Organic focuses equally on fertilizer and amendments
3 Year organic trial
Fall 2017
Top dress with a good quality compost
Cultural practices are important

Chemical management less so
Mowing High –
the best “Herbicide”

Mow high 3”
Think “lush”

Avoid “scalping” = major stress to grass plant

Longer grass blade = deeper root system & > photosynthesis

Deep roots = drought resistance
Compaction
The greatest enemy of turf grass

With heavy use or traffic, air particles are squeezed out

Aeration introduces air back into turf system
Spring patch seed to fill bare spots

Rake well, or aerate and de-thatch first if necessary. Spread ¼” of compost either mixed with or to lightly cover seed if possible. Apply seed by spreader or hand-broadcast

SEED-TO-SOIL CONTACT

Water it in and keep moist, but not soaked.
Seeding  Fall is best

Spring  Long, hot days = GOOD FOR WEEDS!
Fall   Short, cool days = GOOD FOR GRASS SEED!

Mid-August to the end of September is best time for seeding a lawn

Should be the only time for new construction
No weed pressure, days shorter and cooler
Water Good or Bad?
A little is good
A lot is bad
Why go organic?

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