Who Am I?

- Former Golf Course Superintendent, 29 years
- Graduate from the University of Minnesota in Turf Science
- In the golf industry since 1970
- Instructor with the MPCA
- St. Croix Master Watershed Steward
Today’s Take Home Information:

- Your Responsibility as a watershed property manager
- What is a turf plant
- The growth cycle of a perennial turf plant, The Bi-model Graph
- Mowing, Fertilization, Plant Protectants, Weed Control and Cultural Practices
- The Matrix
Almost everything you do to your yard will impact the quality of your watershed.
Although lakes naturally age, humans accelerate the process through unknowing or uneducated choices:

- Phosphorous Introduction
  - Animal feces
  - Organic debris in the curb and gutter
  - Organic/Mulch piles by the lake shore
- Improper Fertilization Practices
- SOIL erosion
The introduction of phosphorous into a watershed accelerates the aging process through accentuated weed growth and algae blooms causing unacceptable water quality conditions.
Your lawn management practices will have a direct impact upon the introduction of phosphorous into the watershed and consequently the quality of your lake.
Why is Turf special?

- Our landscape and sports turfs are non-native
- Turf is an amazing perennial groundcover
  - Traps dust
  - Erosion control
  - Stormwater management
  - Heat reflection
  - Noise abatement
  - Bio-filtration
- Unfortunately this non-native yet beneficial plant needs inputs for survival.
The Turf Plant

Crown health = survival
Turf lives to reproduce and survive dormancy

Managing turf according to its life cycle is important:

- The health of your turf plant
- Your bottom line, the family budget

- And of most importance, the condition of your watershed
Turf and trees are both perennial plants and have the same requirements:

- Soil for minerals
- Water for translocation and metabolism
- Sunlight for photosynthesis

Competition prevails, trees win!
Shade

Before

After

Sunlight at base

Trim up
The turf plant’s goal is to perpetuate the species and survive dormancy.
Critical in the photosynthesis of sun’s energy

- Longer the turf, the greater the energy creation potential, the longer the root; a balance of growth
- Mowing practices impact the plant’s ability to survive dormancy
Critical in the photosynthesis of sun’s energy

- Dull mower blades will use 30% more energy to mow turf than a sharp blade.
- Carbohydrate “drain” going into summer dormancy.
April    May    June    July    August    September    October

Vigorous root & top growth  Root system recedes & vigor declines  Root regeneration

Appreciate the impact of close mowing on carbohydrate reserves

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Effective irrigation practices will be directly dependent upon:

- Water Window, the time it takes to irrigate your property
- Automation of the irrigation system: manual vs automatic (20% minimum potential water savings if programmed correctly)
- Age of components: nozzles, gears, valves and springs wear out
  - Upgrade to low volume irrigation heads
- Varieties of turf grown: annual bluegrass > than fescue
- Soil types: sandy soils > loam > clay

But the most important factor will be:
Irrigation Practices

Recognize the changes in root growth

Irrigate to where the roots grow seasonally

Slide design: Dr. Van Cline, The Toro Co.
• Our cultured turf is non-native, it requires fertilizer inputs to survive: nitrogen, potassium and phosphorous.

• Potassium and phosphorous based upon soil availability

• Nitrogen fertilization is based upon management practices. Recycling your clippings/mulching will reduce the additional amount of N required for turf health
  • Thatch

• Application is based upon growth cycle to enhance dormancy. Don’t fertilize going into dormancy and no need to fertilize coming out of dormancy.
Applications are timed to enhance energy reserves. Apply fertilizer when the plant will use it.

Slide design: Dr. Van Cline, The Toro Co.
• A modestly fertilized yard will improve the watershed by enhancing turf’s natural ability to act as a perennial bio-erosion control mat, capturing soil (full of nutrients and organic matter) and limiting soil migration into the watershed.

• Studies done at the UMN indicate that healthy turf is as good as many prairie plants in reducing soil erosion.

• Unfertilized turf will allow erosion and lead to watershed pollution.

• Fertilizing when soil temps are below 50 degrees, one inch below the soil surface, will waste nitrogen as the plants are too cold to metabolize it properly. Labor Day week in the fall and Mother’s Day week in the spring, no exceptions.

• Fertilizing on frozen ground or dormant turf will pollute the watershed.
Best time to fertilize? Mother’s Day and Labor Day week
Only exception would be the application of a
pre-emergent crabgrass control product in mid April

Three basic guidelines on best practices:

1) Test, read and follow a soil test of your property

2) Follow the recommendations in the Matrix

3) NEVER, “Just because you have the
Four Kinds of Weeds

Two Annual Type Weeds, grassy and broadleaf
- Germinate from seed, leaf growth, flower and seed in one year
- Best to control with a pre-emergent chemistry or when young, small
  - Broadleaf annual weeds: knotweed
  - Grass annual weed: crabgrass

Two Perennial Type Weeds, grassy and broadleaf
- Live longer than one year
- Propagate through seeds and vegetatively
- Best Controlled when storing carbohydrates
  - Broadleaf perennial weeds: dandelion
  - Grasses: quackgrass
Weed Control

April  May  June  July  August  September  October

- Vigorous root & top growth
- Root system recedes & vigor declines
- Root regeneration

Identify and treat when the weeds are susceptible to death!

Annual weeds
Perennial Weeds

Slide design: Dr. Van Cline, The Toro Co.
Spot Spray

Limit the use of the “weed and feed” products

Quinclorac on the 4th of July: targets young annuals and newly emerged crabgrass

Broadleaf perennials AFTER the first frost in the fall

Surfactants. Be very careful as they strip fish of their protection “slime” and damage their gills.
Cultural Practices

Aeration: improves gas exchange, water infiltration, de-compacts soil, allows for soil mitigation.

Vertical Mowing: Is it necessary?

Timing is equally important.
Don’t abuse your turf when going into dormancy

April    May    June    July    August    September    October

Vigorous root & top growth

Root system recedes & vigor declines

Root regeneration

Think, carbohydrate reserve.

Slide design: Dr. Van Cline, The Toro Co.
• **Read the label:**
  - Seed has a shelf life and will lose viability over time

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<tr>
<th>1</th>
<th>Greenview Fairway Formula</th>
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<tr>
<td>2</td>
<td>Turf Type Tall Fescue Shady Mixture</td>
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<th>Pure Seed</th>
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<tr>
<td>29.81% Picasso Tall Fescue</td>
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<td>29.72% Rembrandt Tall Fescue</td>
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<tr>
<td>29.58% Masterpiece Tall Fescue</td>
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<td>0.04% Other Crop Seed</td>
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<tr>
<td>0.00% Weed Seed</td>
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<tr>
<td>1.09% Inert Matter</td>
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<td>Noxious Weeds: None Found</td>
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- Net Wt. 5 lbs.
- Lot No. 2829213-3036
- Test date: JAN. 2003
- Lebanon Seaboard Corporation
  - 340 South Muddy Creek Road
  - Denver, PA. 17517
• The best time to renovate or start a lawn from seed is second week of August through Labor Day week, second best time is between the second week of April and Mothers Day week.

• Phosphorus is very important for good establishment: Use a starter fertilizer.

• The right plant in the right location, KBG sun, fescue in the shade

• You get what you pay for. Buy premium seed from your feed mill.

• Soil seed contact
Seed so the new plants can create a carbohydrate reserve before dormancy

Slide design: Dr. Van Cline, The Toro Co.
# Turfgrass Maintenance Best Practices Matrix

The Matrix offers ecologically sound advice without compromising turfgrass quality expectations. It is a concise summary of maintenance recommendations. The Best Practices Matrix (available on the Minnesota Pollution Control Agency's website) offers practical guidelines based on your turfgrass quality expectations (light, average, high). It offers straightforward advice for cultural practices, fertilizing, and other typical turfgrass maintenance activities. It is divided into six sections, each with custom recommendations based on soil type and sun exposure. The Best Practices Matrix is not intended to take the place of the training or the manual, rather it is intended to be used as a tool after completing the course.

To use the Best Practices Matrix in the field, download this file from the NFCA website (see Resources section of the Turfgrass manual). Print on colored paper (we recommend a different color for each site condition) for easy reference. Laminate each sheet and connect them by punching a hole in the upper left corner and inserting a metal ring.

The Best Practices Matrix is a default scheme to be used when soil test data is not available. It is highly recommended that each site's soil be tested to get site-specific fertilizer recommendations. The Matrix fertilizer recommendations are based on the University of Minnesota Extension recommendations, given the following assumptions: The soils have medium to high organic matter, and grass clippings are not removed.

To use the Matrix, identify your turfgrass quality expectations from the choices below and use the table for the appropriate site conditions (sun or shade, and compacted soils, rich soils or sandy soils).

### Using the Best Practices Matrix:

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• What is a turf plant
• The growth cycle of a perennial turf plant, The Bi-model Graph
• Mowing, Fertilization, Plant Protectants, Weed Control and Cultural Practices
• The Matrix, your recipe for success
• Advanced Turfgrass Management:
  • How to take a soil test
  • How to read a soil test
  • How to follow a soil test
  • What does 24 – 0 – 12 mean?
  • Fertilizer education: Understanding the ingredients in a bag of fertilizer, the amount of nutrients on the label, calibration of your spreader/sprayer and more.

Contact the CLFLWD office for dates and times info@clflwd.org or call 651/ 395-5850
Thank you for your attention and more importantly, your interest in the health of your watershed.

Questions