

Growing A Great Lawn

(Updated May 2022)

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Extension
Rensselaer County



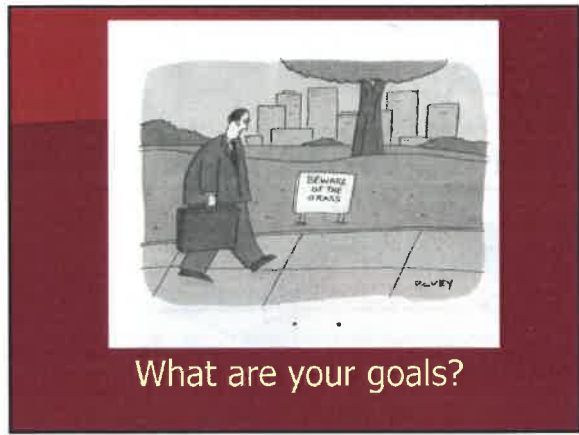
Questions? Contact Me!

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What are turfgrasses and where do we grow them?







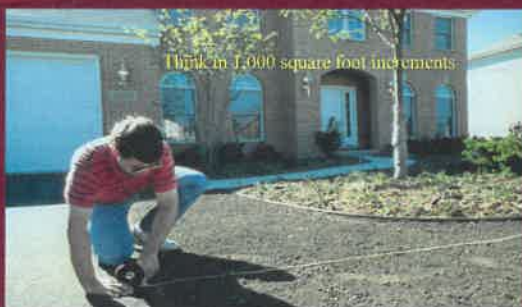


Site Evaluation

- Use of the area
- Sun or shade
- Soil type
- Irrigation
- Expected maintenance level
- Quality expectations



Just what size is your lawn?

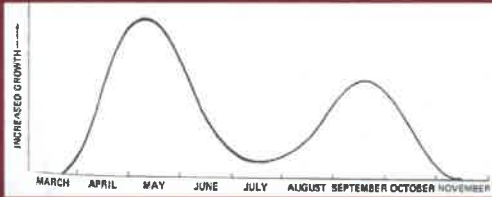


What Lawn Grasses Do We Grow?

- All are cool season grasses
- Kentucky Bluegrass
- Perennial Ryegrass
- Fine Fescues
- Tall Fescues



Typical Kentucky Bluegrass growth cycle



Optimum Root Growth 55-62 degrees F
Optimum Shoot Growth 60-75 degrees F

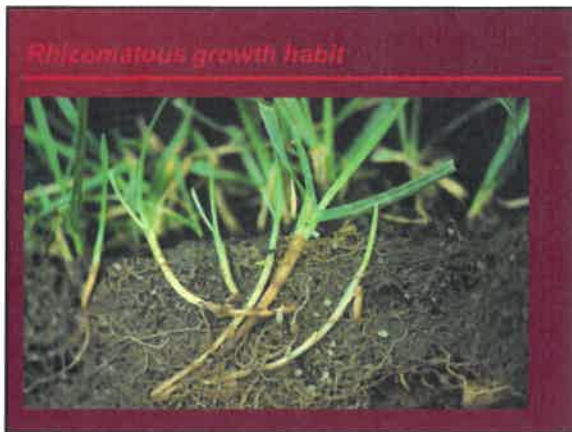
Kentucky Bluegrass



- Rhizomes - spreads and recuperates well
- Good color, medium to fine texture
- Very attractive
- Tolerates many conditions
- Likes good fertility
- Long germination time


Kentucky bluegrass






Kentucky bluegrass history

- Where is it from?
- 'Merion' was the first cultivar, in 1947
- Now over 200 cultivars



Perennial Ryegrass

- Bunch type grass
- Medium texture and color
- Likes sunny conditions best
- Does not tolerate drought well
- Some have endophytes
- Rapid germination and establishment
- Good for quick fixes




Perennial Ryegrass History

- 'Linn' – old variety – stemmy, clumpy, ugly, still sold, comes in last in NTEP (see photo)
- 1960's – 'Manhattan,' 'Pennfine'
- Today breeding for good color, disease resistance, drought tolerance, endophyte, moderate growth rate



Fine Fescues




- Include chewings fescue, creeping red fescue, hard fescue, sheep fescue
- Very fine texture, wear intolerant
- Takes poor soil, low fertility, sun or shade
- Slow growth, less clippings
- Low maint. lawns



'Beacon' Hard Fescue
October 2019



Tall Fescue



- Was/is a weed
- Coarser texture
- Tolerates drought, poor soil, and lower fertility
- Full sun to light shade
- Does not play well with other grasses
- Mod. germ. time
- Avoid "Kentucky 31"





Blends & Mixes

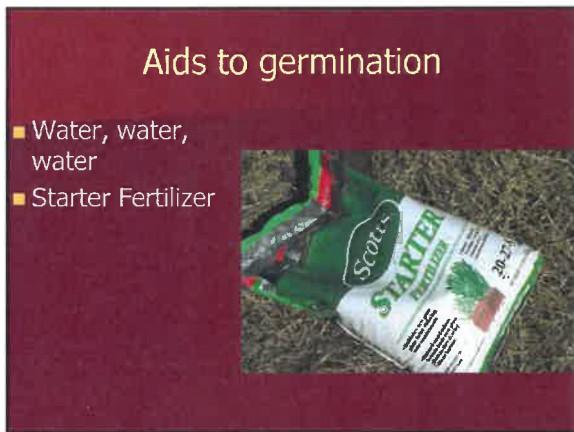
	Sunny, medium to high maintenance	
	65% Kentucky bluegrass blend 15% perennial ryegrasses 20% fine fescues	3 to 4 lbs. per 1,000 sq. ft.
	Sunny, low maintenance	
	65% fine fescue blend 15% perennial ryegrasses 20% Kentucky bluegrass blend	4 to 5 lbs. per 1,000 sq. ft.
	100% tall fescue blend	7 to 10 lbs. per 1,000 sq. ft.
	Shady	
	100% fine fescue blend	4 to 5 lbs. per 1,000 sq. ft.

Grass seed is expensive and in short supply (spring 2022)



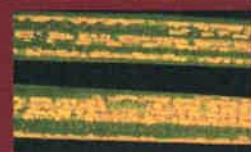
- Drought, poor weather in Pacific NW
- Less acreage is being planted
- Beware of "coated seed"
- Prices are high!!







Some problems like rust and chinch bugs can be avoided by buying resistant seed



- Surface-feeding insects such as chinch bug can be discouraged by using "endophyte-enhanced" grasses
- Many grasses have been bred for disease resistance

Trebro Sod Harvester at Saratoga Sod Farm, Rensselaer County, NY



Installation...



What can go wrong?

- Poor soil/site preparation
- Watering – too much or too little
- Wrong site for sod type
- Wrong site for turfgrass



Think twice before planting:

- Annual ryegrass
- Zoysiagrass

Annual ryegrass

- What word in this plant's name provides a clue this would not be a good lawn grass?



Zoysiagrass



What about white clover?



- Once common in seed blends
- Potential for bee stings, grass stains and poor footing
- Drought tolerant. N fixing
- Used 2 lbs. seed per acre or 0.05 lbs. Per 1000 sq. ft.

Do we have to have lawns everywhere?



Maintaining a Lawn in the Capital District





Soil challenges

- Sandy soil
- Heavy clay soil
- Stony soil
- Topsoil has been removed
- Slopes
- Compacted soil (good quality or poor quality)
- Dry conditions



Soil compaction during construction

Soil types are influential

Foot traffic

Compaction at surface

Layering

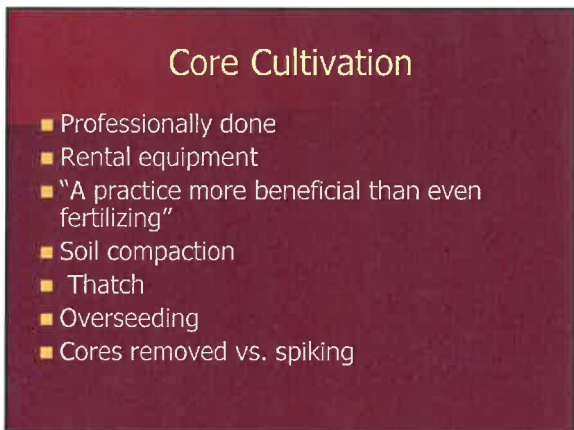


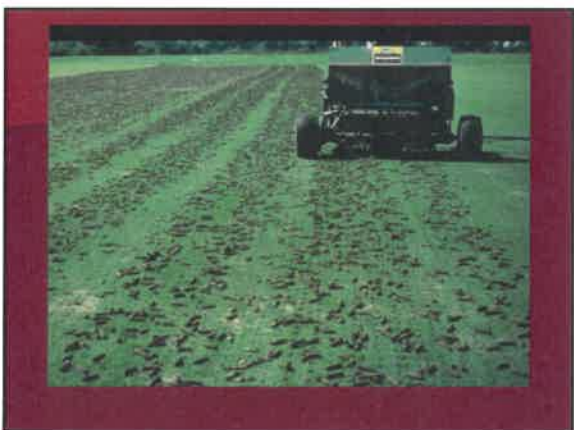
Compaction

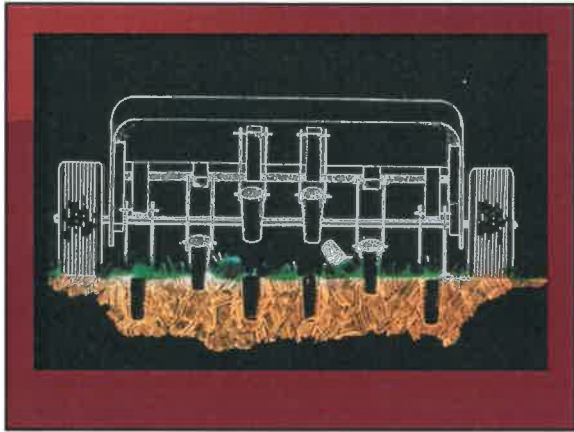


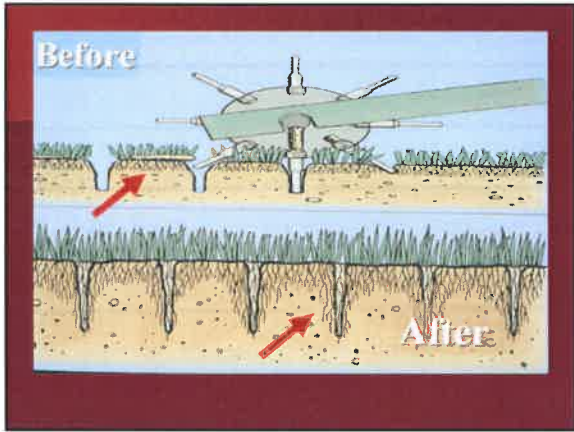
- »Crushed soil
- »Low oxygen
- »Low infiltration
- »Reduced rooting







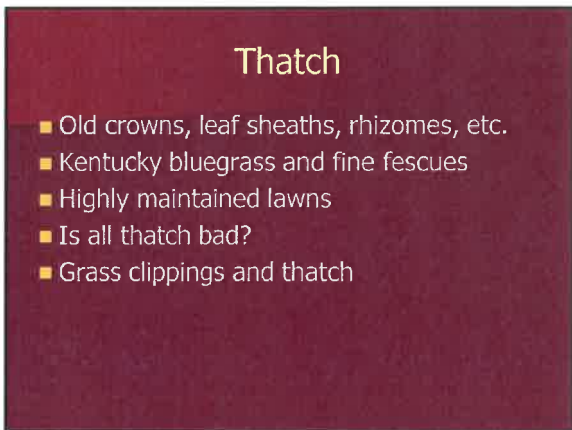






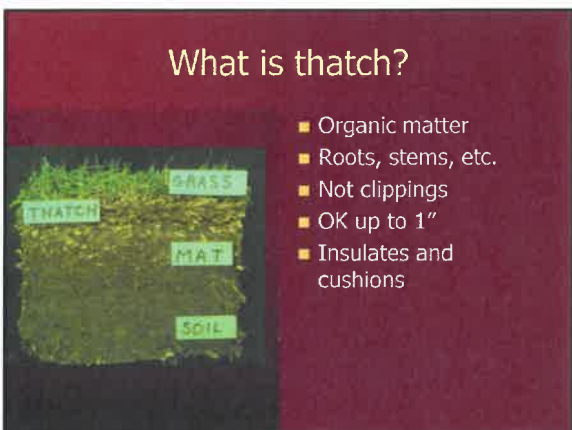


Aerators



Thatch

- Old crowns, leaf sheaths, rhizomes, etc.
- Kentucky bluegrass and fine fescues
- Highly maintained lawns
- Is all thatch bad?
- Grass clippings and thatch



What is thatch?

- Organic matter
- Roots, stems, etc.
- Not clippings
- OK up to 1"
- Insulates and cushions

How do you alleviate thatch?

- Core cultivation
- De-thatching machines
- Liquid de-thatching products



Thatch removal



Equipment



What is overseeding?

- Overseeding is a practice which adds seed to an existing lawn or turf area to improve the density of the stand of grass
- You may also use it to introduce a new grass type, or a pest-resistant grass



Which grass species will work best in overseeding?



PERENNIAL RYEGRASS!

New Idea: Heavy Repetitive Overseeding

- Put out perennial ryegrass with a drop spreader 3 or more times at 2 week intervals
- Use a rate of 2 to 4 lbs. of seed per 1,000 square feet
- Best starting right after Labor Day



3 rates of seed on heavily trafficked area



About 11 months later, density was over 90% in all plots



As the crabgrass dies out in the fall, the perennial ryegrass can move in







Repetitive Overseeding Fact Sheet

Repetitive Overseeding Can Replace Mowing for 4 Weeks or Longer

Cornell Cooperative Extension
Rensselaer County

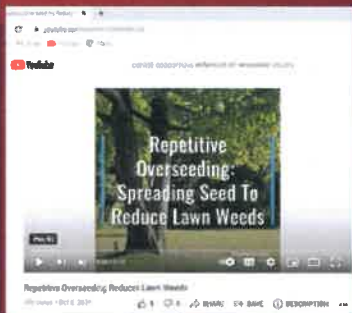
What are the benefits of repetitive overseeding? Although many homeowners have heard that mowing is better than overseeding, mowing has its own benefits. Mowing is a low-cost, low-maintenance, and low-risk method of lawn care. It can be done throughout the year, and it can be done in a way that is safe for the lawn. However, mowing alone is not enough to keep a lawn healthy. Repetitive overseeding is a more effective method of lawn care. It can be done throughout the year, and it can be done in a way that is safe for the lawn. Repetitive overseeding can help to keep a lawn healthy and green throughout the year.

Overseeding is an annual task with some great benefits which guarantee there will be early spring and green lawn. (Phase 1) If it's successful, the overseeder releases a large amount of seed into the lawn. After mowing, the seed is left in the lawn and will be eaten by the grass. The seed will then grow and will be eaten by the grass. Overseeding is a simple task that can be done in a few minutes. It can be done in a way that is safe for the lawn. Overseeding can help to keep a lawn healthy and green throughout the year.

Find this on the Cornell Cooperative Extension of Rensselaer County website at:

ccerensselaer.org

Repetitive Overseeding Video

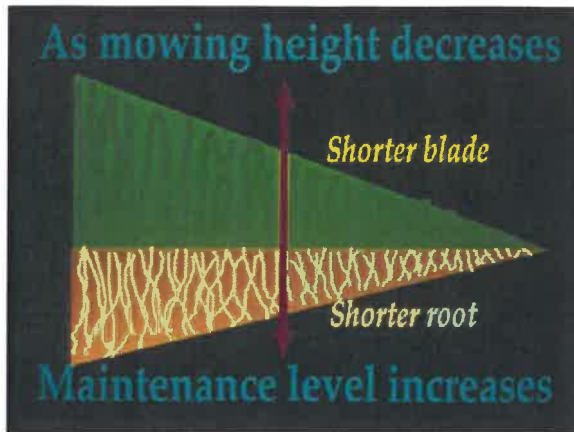


In YouTube, search for the "Cornell Cooperative Extension of Rensselaer County" Channel



MOWING





Leaving Clippings

- Does not influence disease pressure
- Does not influence thatch
- Increases earthworm activity
- Does not reduce annual bluegrass infestations
- May return about 1 lb. of Nitrogen per 1000 sq. ft. per year
- May reduce dandelion infestations

Rotary mowers vs...

The image shows a green rotary mower on the left. On the right, there is a close-up illustration of the mower's blades cutting through grass, showing the blades' curved shape and the way they lift and cut the grass.

Reel mowers



What is going on here?





Mowing efficiency

- A sharp mower blade increases efficiency 20-30%
- A 3.5 HP mower used for one hour releases as many pollutants as a new car driven 340 miles
- A fairway type mower uses 4 gallons of fuel per hour and emits 80 lbs. of CO₂
- Small equipment can release 25% of the gasoline in the tank as unburned exhaust

Mowing height matters



As mowing height increases, crabgrass decreases

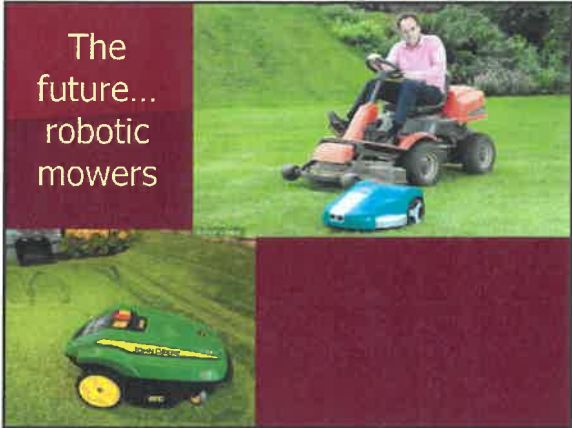
Mowing Height (Inches)	% Crabgrass in September
1	96
2	63
3	22
4	4

Tall fescue turfgrass, with large crabgrass seeded into it. Doyle, Michigan State University, 2008














Visit **YouTube** and search "**Cornell Cooperative Extension of Rensselaer County**" to view our video on "**Reducing Carbon Emissions in Lawns and Landscapes**"





Lime

Do you need to add lime?

Lawns like a pH of approximately pH 6.5

You must do a soil test!

Testing Soil pH

- Buy a test kit and test it yourself
- Take a sample to a local garden center or Cornell Cooperative Extension



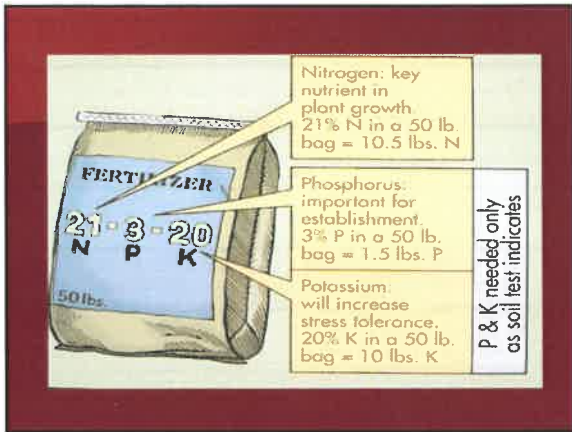
Feed it right!



- ≈ Soil test
- ≈ Know size of area
- ≈ Proper setting
- ≈ Impervious surfaces
- ≈ Spreader type



All spreaders need to be calibrated, especially when they come new out of the box!



A NYS Fertilizer Law!

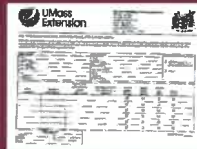
- As of January 1, 2012:
- No P application on a lawn unless you are establishing a new lawn or a soil test indicates the need for P
- Prohibits the application of lawn fertilizer on impervious surfaces and requires clean-up of spills
- Prohibits the application of lawn fertilizer within 20 feet of any surface water (with some exceptions)

- Prohibits the application of lawn fertilizer between December 1 and April 1
- See our website for a summary of the law:
- <http://www.ccerensselaer.org/Home.aspx>



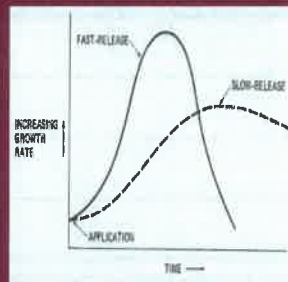
Testing Soil for Nutrients

- University of Massachusetts
- pH, P, K
- Mg, Ca, Al, Fe, Mn, Zn
- Organic matter
- Provides a fertility recommendation for up to three "crops"
- Lead level



Nitrogen Fertilizers

- Quick release
- Slow release, organic or synthetic
- Without a soil test, we generally base what we do in turf on supplying nitrogen
- General rule: no more than 1 lb. of N per 1,000 square feet per application



Slow vs. Quick Release Fertilizers

- | | |
|-------------------------------------|-----------------------------|
| ■ More constant supply of nutrients | ■ Quickly supply nutrients |
| ■ Lower burn potential | ■ Higher burn potential |
| ■ Slower response | ■ Faster response |
| ■ Low leaching potential | ■ Higher leaching potential |
| ■ More expensive | ■ Less expensive |

Fast release N fertilizers

Source	Ratio	Comments
Ammonium nitrate	33-0-0	Fast release
Ammonium sulfate	21-0-0	Strongly acidifying, 24% S
Urea	45-0-0	High burn potential

Types of Slow Release Nitrogen

Nitrogen Name	Fertilizer Grade	Comments
Ureaformaldehyde (UF)	38-0-0	67% slow release by microorganisms, 33% quick release by water. Availability may be limited during times of cool soil temperatures.
Sulfur-coated urea (SCU)	32-0-0	About 30% quickly available. Releases over 10 to 15 weeks. Coated with varying thicknesses of wax and sulfur.
Isobutyridenediuree (IBDU)	31-0-0	About 30 % quickly available. Release time depends upon particle size, not soil temperature. Blends release over 3 to 4 months.
Polymer-coated urea	39 to 44-0-0	Coating absorbs moisture, which dissolves urea and diffuses into soil. Uniform release rate.

Organic Fertilizers (all slow release)

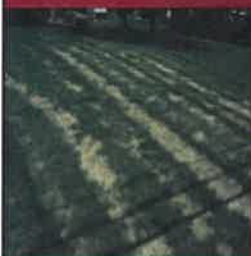
Name Brand	Ratio	Comments
Milorganite	6-2-0	Activated sewage sludge
Ringer	6-1-3	Bone, blood and seed meal
Sustane	5-2-4	Composted turkey waste
Jonathan Greene	8-3-1	Feather, bone, blood, kelp meal, wheat shorts, amino and humic acids

Cornell's Home Lawn Program

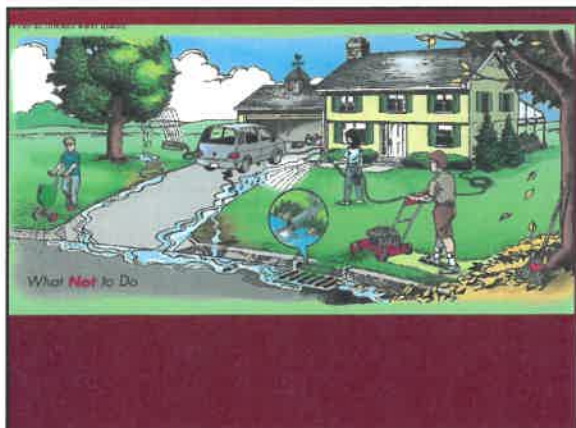
Maintenance Level	May	Jun	Jul	Aug	Sep	Fall	Total
Low					1		1-2
Medium	1				1		2
High	1				1	1	3

Lbs. of N /1000 sq. ft. /month

Fertilizer can be a problem in the environment



- Fertilizer (especially P, or phosphorous) can contaminate surface waters
- Do not apply fertilizer near a water source or on a paved surface
- Don't apply more than 1 lb./M of quick release N per application
- Be careful on sandy soils



Lawn Diseases

When in doubt, call or bring a turf sample to CCE.

Capital District Turfgrass Diagnostic Lab



- How do you know what is wrong with your turf just by looking at it??
- Call Cornell Cooperative Extension of Rensselaer County at (518) 272-4210



Lawn Weeds

- Grassy or Broadleaf?
- Annual, Biennial, or Perennial?

Lawn Weed Removal



Must-have weed removal tools



Herbicide



A fun and dangerous tool

Cultural Practices are Important!



- Spring raking...why?
- Broadleaved plantain seeds stay viable for 60 years
- Need light to germinate
- When you rake, you give weed seeds the "green light" to grow

Want to get rid of your weeds?

- How many weeds can you tolerate?
- Weed ID is critical
- Some weeds (such as annual bluegrass, quackgrass, orchardgrass) are almost impossible for homeowners to manage

- Herbicides are the quickest and easiest option



How can we manage broadleaved weeds?

- 2,4-D herbicide will kill many broadleaved weeds but leaves the grass alone
- 2,4-D is used in spring or fall
- 2, 4-D is sometimes mixed with other herbicides (including triclopyr or dicamba) and is readily available to homeowners
- Timing is key for good weed death!

Ground ivy



Ground ivy

- Rounded leaves with teeth on edges
- Tubular light purple flower in spring
- Aggressive spreader via stolons
- Spread into landscape beds
- Distinctive odor

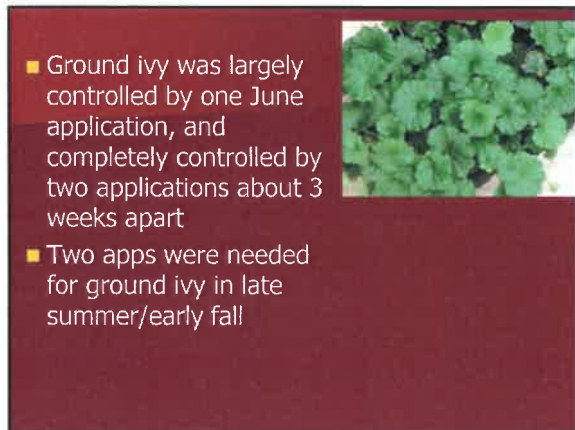


Iron Herbicides

- Introduced in 2011
- Spot treatment application
- Contains iron, which is absorbed and oxidizes the plant
- Selectively kills weeds, causes grasses to turn darker green
- Liquid formulation
- Said to manage dandelion, English daisy, white clover, black medic, bull thistle, Canada thistle, common chickweed, creeping buttercup, Persian speedwell, slender speedwell, broadleaf plantain, narrow-leaved plantain, mosses, algae
- "Ortho Elementals Lawn Weed Killer" and "Fiesta"
- Will likely need 2 to 3 applications 3 to 4 weeks apart








Broadleaf plantain

- Two June apps gave about 90% control in a sunny area; 3 apps needed for 100% control
- Two late summer/fall apps seemed to be slightly more effective



Sprayed on June 8
and June 21




Photo on June 3



Photo on July 12

What is this and why do we grow it?






When the forsythia blooms, it is time to apply your pre-emergent crabgrass product.

Can we use a pre-emergent herbicide on a newly seeded patch or entire lawn???

- No!
- And yes!
- Siduron (or Tupersan) and mesotrione are the only safe herbicides for new lawns

What is Mesotrione?

- Sold as "Tenacity"
- Sometimes sold mixed with starter fertilizer
- A "reduced risk" pesticide
- Rapidly degraded by soil microorganisms to CO₂
- Has low leaching potential
- Can be used as a pre-emergent as well as a post-emergent herbicide



What is Mesotrione? #2

- Disrupts pigment development and causes "bleaching" in over 50 weed species
- Safe on grasses including KBG, PRG; use care with FF



Inspired by the lemon bottlebrush plant, which produces leptospermone as an allelopathic substance. Mesotrione is based on leptospermone.

A Few Lawn Pests

"What is killing my lawn?"

The left photograph shows a residential lawn with a significant portion of the grass turned brown and dead. The right photograph shows a person operating a lawnmower on a lawn, with a similar brown patch visible in the background.



Chinch Bug

- Adult 3/16 inch long
- Start red, then gray, then black with white wings
- Piercing-sucking mouthparts
- Prefer hot dry weather
- "True bug"
- Incomplete metamorphosis

Chinch Bug Cycle

- Two generations per year
- Adults overwinter in leaf litter and thatch
- Female lays up to 300 eggs in 40-50 days



Chinch Bug Damage



Voorheesville, NY
Fall 2018

- Cool weather promotes the fungus disease *Beauveria*
- Second generation = more damage
- Feed on all types of grasses
- Monitor in July and August
- Yellowing then browning patches

Chinch bug detection device



Chinch Bug Treatment

- Management primarily using insecticides
- Some cultivars differ
- 'Baron' and 'Newport' Kentucky Bluegrass and 'Pennfine' and 'Manhattan' perennial ryegrass show some resistance
- Endophytes



Chemical insecticides for chinch bug management (homeowners)

- Carbaryl, bifenthrin, cyfluthrin, imidacloprid
- Read label before applying, but probably will have to:
- Water lawn before and maybe after applying
- May need a follow-up treatment in 2 to 3 weeks

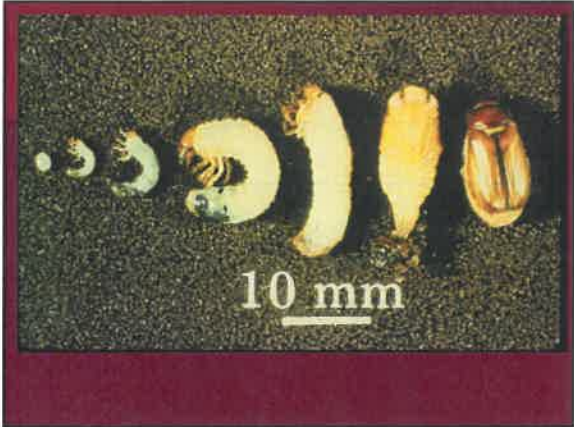




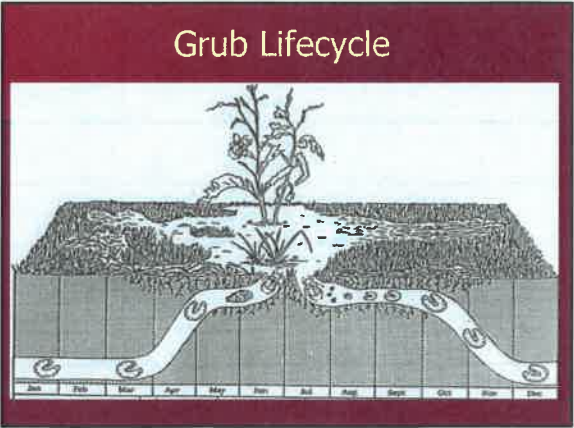
April 23,
2019



Turfgrass is dead from feeding of grubs

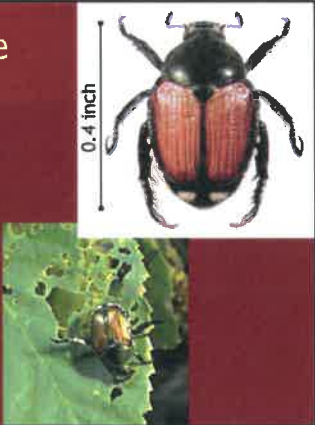






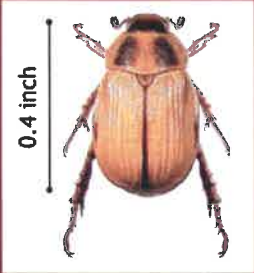
Japanese Beetle

- Feeds within 2 inches of surface
- Often feeds within thatch
- Record count = 122 grubs per sq. ft.



Oriental beetle

- Initially these grubs feed on dead organic matter, but they later feed on live turfgrass roots
- Prevalent in parts of our area (Averill Park!)



European Chafer



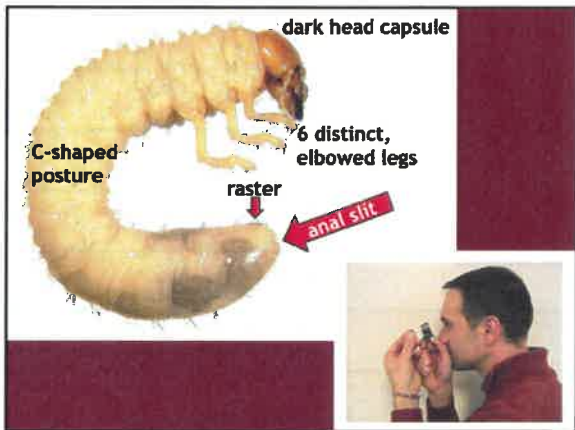
European chafer adult

- Feeds within 1-2 inches of surface
- Mobile pests
- Feed later in fall and earlier in spring
- Often hard to kill with chemical pesticides
- Larger than Japanese

"Grub ID Key Cornell"



<http://grubid.cals.cornell.edu/>



dark head capsule

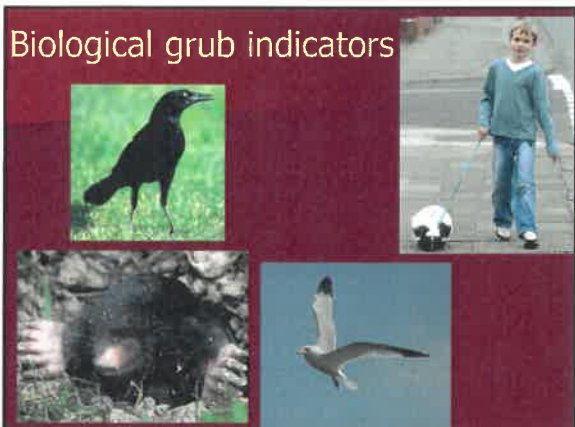
C-shaped posture

6 distinct, elbowed legs

raster

anal slit

Biological grub indicators



Looking for eggs or first instars



Insecticides for White Grub Control

- Chlorantraniliprole – branded "Grubex," "Acelepryn," others
- Imidacloprid – can be branded "Grubex" as well!
- Trichlorfon – "Fast-acting"
- Carbaryl
- Azadiractin
- Acephate
- Chlorpyrifos
- Bifenthrin
- Cyfluthrin


Biologicals for White Grub Management

- Entomogenous nematodes
 - *Steinernema glaseri*
 - *Heterorhabditis bacteriophora*



Nematodes for white grub management

- Entomogenous nematodes
 - Heterorhabditis bacteriophora*
- Sensitive to UV light, temp., pesticide residue
- Apply at 250 million to 1 billion per acre
- Cost: \$250 for 250 million (March 2019)
- Check for VITALITY when the arrive in the mail!



"B.t." for for **NEW!** White Grub Management


- Bacillus thuringiensis* Variety *galleriae* Strain *SDS-502*

"B.t." is a bacteria. The grubs eat it, and it acts as a stomach poison. They stop eating in hours, but may not die for days.



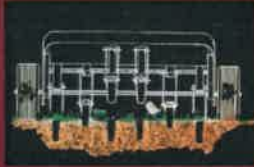
Mechanical management for grub control

- Whitney Cranshaw, University of Colorado, claimed in 1989 that 3" spiked sandals controlled 56% of the grubs in test plots
- No mention of how much aerifying was actually done



Mechanical management for grub control

- Dr. Ben McGraw of SUNY-Delhi has demonstrated that up to 81% of the grubs can be killed by aerifying
- 2 times, same day, 1 inch tines, hollow or solid tines, spaced 1.5 inches apart



The End