Benefits of a lawn

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Why choose to have a lawn?
Why choose not to have a lawn?
Why choose not to have a lawn?
Which is easier to maintain?
Which uses less inputs?
Why choose to have a lawn?

- Easy to maintain.
- A mower is all you really need.
- Perhaps easier to find someone to mow than to hand-weed...
Functional:
Soil Loss and Erosion Control.
Environmental Protection: (Eutrophication Protection)
Dust Control
Defensible Barrier:

- Stack firewood away from home 30' or more.
- Prune branches to 10' above the ground.
- Remove dead limbs, leaves, and other litter.
- Clean roofs & gutters.
- Dispose of slash & debris left from thinning.
- Maintain 10' to 12' distance between tree crowns.
- Thin tree & brush cover.
- Maintain irrigated greenbelt.
- Reduce density of surrounding forest.
- Keep dry grasses & weeds mown low.
Ground Water Recharge
Solar Heat Abatement

Photos courtesy L.B. McCarty, Clemson University
Carbon Sequestration
Security - Visibility
Entertainment:
Physical Health Benefits:
Mental Health Benefits:

According to University of Illinois study, ADD symptoms in children are relieved after spending time in nature. The greener the setting the more the relief.
Survives adverse conditions.
Greens up when it rains.
Do these provide the same benefits?
Maintaining a lawn with limited inputs.
Mower Selection

- Carbon Footprint
  - Where does electricity come from?

- ground driven reel mower
- solar powered mower
- electric mower
Mulching reduces the need for fertilizer inputs by as much as 25%.

1990’s

Convertible Mulch or Catch mowers introduced
What plants (turf) needs to grow

- Water
- Nutrition Supplemented by Humans
- Sunlight
- Air (CO2) Provided by Nature
- Temperature
What plants (turf) needs to grow

- Growth – mowing  
- Water  
- Nutrition  

Affected by Humans

Supplemented by Humans
Items we can influence...

• 3 primary cultural practices for lawn maintenance

  • Growth = Mowing
  • Water = Irrigation
  • Nutrition = Fertilization
Turfgrass Cultural Practices

- Mowing
- Irrigation
- Fertilization
Primary Cultural Practices
Primary Cultural Practices

- Mowing
- Fertilization
- Irrigation

Turfgrass
Primary Cultural Practices

- Turfgrass
- Fertilization
- Irrigation
Primary Cultural Practices
Primary Cultural Practices
Summary of Discussion

• Healthy turf = Less weeds
  • Mowing: Improper = weeds
  • Water: Deficient = weeds
  • Nutrition: Deficient = weeds

• If you have to spray herbicides = make it count
Turfgrass Cultural Practices

- Mowing
- Irrigation
- Fertilization
Turfgrass Cultural Practices

• Mowing

• Irrigation

• Fertilization
Mowing

- Basic Guidelines:
Mowing

• Basic Guidelines:

• Don’t leave clippings
Mowing

• Basic Guidelines:
  • Don’t Scalp
  • Don’t leave clippings
• Scalping...
• Scalping...
  • Causes a brown appearance
  • Stops growth and development
  • Depletes carbohydrates
  • Makes turf susceptible to environmental stress
Scalping =

Sunlight

4"

3"

Sunlight
Scalping = Weed Germination

Sunlight

4”

Sunlight

2”
• Excess Clippings ...
• Excess Clippings ...
  • Block light (can kill turf)
  • Increase disease
  • Poor appearance
Excess Clippings = Weak Turf
Excess Clippings = Weak Turf
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Sunlight

4”
Excess Clippings = Weak Turf
Excess Clippings = Weak Turf
Excess Clippings = Weak Turf

Sunlight

4”
Excess Clippings = Sad Turf
How to mow properly?

• Follow recommended height of cut!
  • Erect growing grasses:
    • 2.0” to 3.0” (can go higher, but quality will decrease)
      • Tall Fescue
    • 1.5” to 2.5” (can go higher, but quality will decrease)
      • Perennial Ryegrass
      • Kentucky bluegrass
      • Fine Fescue

• Prostrate growing grasses:
  • 0.5” to 1.5” (does not perform well at higher heights)
    • Bentgrass
Perennial Ryegrass as an example
Recommended height (1.5” to 2.5”)

At 1.5”, turf dense, fine textured and looks great!

Below 1.5” Annual Bluegrass invades...
What about bentgrass?

Bentgrass
Recommended height (0.5” to 1.5”)

2.0” 0.75”
Bentgrass appearance mowed at 2.5”
Internode elongation (called “false crowning”).

Note internode elongation.

False Crowns
In lawns, mowing can improve aesthetics quickly.
Turfgrass Cultural Practices

- Mowing
- Irrigation
- Fertilization
Turfgrass Cultural Practices

• Mowing

• Irrigation

• Fertilization
Irrigation

- Adjust your rates with the seasons
  - Spring
    - 0.0-0.75 inch week
  - Summer
    - 0.75-1.5 inch week
  - Fall
    - 0.0-0.75 inch week
Irrigation

- Weeds associated with drought conditions...
Unirrigated site loaded with False Dandelion
How do these compare?
Irrigation

- Weeds associated with over irrigation...
Wet site with English Daisy
Turfgrass Cultural Practices

- Mowing
- Irrigation
- Fertilization
Turfgrass Cultural Practices

- Mowing
- Irrigation
- Fertilization
Why Fertilize?

• Turf Density = Less weeds

• Fertilizer improves turf health
  • Resists weed encroachment
  • Reduces disease pressure
  • Resists insect pests
  • More drought resistant
Fertilization

• Low fertility weeds include...
  • White clover
  • Plantain
  • Black medic
Fertilize to reduce weed:

- Proper turf fertilizer program will:
  - Reduce white clover by up to 62 %
  - Reduce dandelion by up to 66 %
  - Reduce crabgrass by up to 35 %
Low N fertility favors clover
Mature perennial ryegrass lawn, clippings removed, fertilized regularly.

Young perennial ryegrass lawn, imported soil, clippings removed, not fertilized regularly.
Lawns often need more fertilizer the first year – don’t get off to a bad start!
Bentgrass climax:

- Mowed weekly
- Clippings returned
- Irrigated
- 0-1 fertilizer application
What to apply?

- Nitrogen will be the limiting nutrient
- Low or no Phosphorus
- Variable levels of Potassium (depends on soil test)
A lower nitrogen (N) percentage means you need more fertilizer for the same amount of nitrogen. Organic fertilizers have a low nitrogen percentage so you need to apply a lot more fertilizer to get the same amount (lbs.) of nitrogen.
When to Fertilize?

- The holiday plan
  - 2-5 lbs N 1000 ft² year

- Memorial day
  - 1.0-1.5 lbs N 1000 ft²

- 4th of July
  - 0.5-1.0 lbs N 1000 ft²

- Labor day
  - 0.5-1.0 lbs N 1000 ft²

- Thanksgiving
  - 1.0-1.5 lbs 1000 ft²
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How to apply fertilizer?
Turfgrass Cultural Practices

- Mowing
- Irrigation
- Fertilization
What is a weed?
What is a weed?
“One year's seeding makes seven years' weeding.”
“One year's seeding makes seven years' weeding.”
Why do weeds occur in turf?

- Competition for limited resources...

Sunlight

Nutrients

Water
What weeds compete well?

- Broadleaves
  - Prostrate Growth
  - Tap Root
How to manage weeds:

• Chemical

• Mechanical

• Biological

• Cultural
Integrated Weed Management (IWM)
Ways of Managing Weeds:

• Chemical
• Mechanical
• Biological
• Cultural
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- Chemical
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Ways of Managing Weeds:

- Chemical
- Mechanical
- Biological
- Cultural
If you spray = Make it count

- Spray healthy, actively growing weeds
  - Best not to mow before or after
  - Irrigate prior to, but not after

- Spray at the appropriate time
  - Depends on life cycle
  - Spray twice for perennial weeds
Perennial Broadleaves

- Perennial Broadleaves
  - Application Timing
    - Late Summer / Early Fall
  - May need to spray twice !!!
    - Follow label, (2\textsuperscript{nd} spray 2 to 4 weeks later for best success)
Perennial Broadleaves

- Spring Applications –
  - Not the ideal time
Perennial Broadleaves

- Apply in the fall (October 4 = 10/4 Good Buddy)
Choosing a Herbicide

- Standard 3-way mix (2,4-D, MCPP, Dicamba)
  - Good control for many broadleaf weeds
    - False and Common Dandelion
    - Plantains
  - Fair control
    - Clover
    - Black Medic
  - Poor Control
    - Oxalis
    - English Daisy
    - Yarrow
Standard 3-way mix

- Best to apply in the late summer, early fall
- Sometimes 2 applications needed
Common Dandelion

(Taraxacum officinale)

- Perennial
- Hollow stem
- 3-way Trimec Herbicide
  - Usually good control with one Fall application
False or Catsear Dandelion

(*Hypochoeris radicata*)

- Perennial (Spring seeding)
- Solid stem
- 3-way Trimec Herbicide
  - Repeat applications often necessary
Broadleaf Plantain
*(Plantago major)*

- Perennial
- 3-way Trimec Herbicide
  - Repeat applications often necessary
Mouseear Chickweed
(Cerastium vulgatum)

- Perennial
- Fairly easy to control
- 3-way Trimec Herbicide
Spotted Spurge  
*Ephorbia maculata*

- Summer Annual
- Germinates @ 50 °F, dies from first frost
- Early in season best.
- 3-way Trimec Herbicide
  - Repeat applications may be necessary
More than the Trimec Classic!

- Clover
- Black Medic
- Oxalis
- English Daisy
- Yarrow
White Clover 
(Trifolium repens)

- Perennial
- Grows well in N- Deficient Soils
- Use mixtures that include one of the following:
  - Clopyralid
  - Fluroxypyr
  - Triclopyr
  - Carfentrazone
    - Repeat applications often necessary
Black Medic

*(Medicago lupulina)*

- Treat in Spring
  - (Annual)
- Treat before or at early flowering stage
- Use mixtures including one of the following:
  - Clopyralid
  - Fluroxypyr
  - Triclopyr
  - Carfentrazone
English Daisy  
(\textit{Bellis perennis})

- Perennial
- Can be difficult to Control
- Fall timing absolutely essential!
- Repeat application often necessary
- Mixtures should include one of the following:
  - Dicamba
  - Clopyralid
  - Fluroxypyr
  - Triclopyr
Woodsorrel
*(Oxalis corniculata)*

- Perennial
- Can be difficult to Control.
- Fall timing best.
- Repeat application often necessary.
- Use mixtures with:
  - Triclopyr
Amines vs. Esters

- **Amines**
  - Better in warm weather.

- **Esters**
  - Better in cooler weather.
  - Better on perennials
  - Uptake through cuticle better
Ester Warning

• Esters volatilizes in warm weather.
  • Avoid spraying in the spring when other plants are leafing out.

• Off target injury to trees and shrubs from ester formulations, especially those containing triclopyr are common.
Scenario #1 – Unirrigated site with False Dandelion
Scenario #1 - Steps

1. Irrigate / Wait for first rains
2. Fertilize
3. Get grass and weeds healthy and growing
4. Make application of “Standard” 3-Way mix in Late Summer/Early Fall.
5. Apply in cool weather if you use esters.
Scenario #2 – Neglected lawn that is irrigated. Weeds: clover, common dandelion, plantain.

Low N fertility favors clover
Scenario #2 - Steps

1. Irrigate, if needed
2. Fertilize
3. Get grass and weeds healthy and growing
4. Make 2 herbicide applications in Late Summer/Early Fall.
   • (Will need to add Carfentrazone, Triclopyr, or Fluroxypyr to get good clover control)
5. Apply in cool weather if you use esters.
Summary:

- Dense turf =
  - Less weeds

- If you have to spray = Make it count
Perennial Weeds

- Apply in the fall (October 4 = 10/4 Good Buddy)
- May need two applications to eradicate weeds
Thank you!

Benefits of a lawn (with limited inputs)

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