



How to Have Healthy, Water- Efficient Lawns

David Rice

Conservation Programs

Weber Basin Water Conservancy District

Have appropriate expectations for a yard



Lawn in appropriate areas

Artificial grass has different rules



Quiz on Problems



**DAVE MINNER
IOWA STATE UNIVERSITY
DEPARTMENT OF HORTICULTURE**









A drought stress home lawn in Oregon

















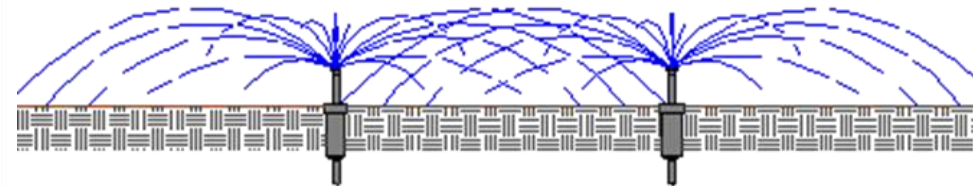
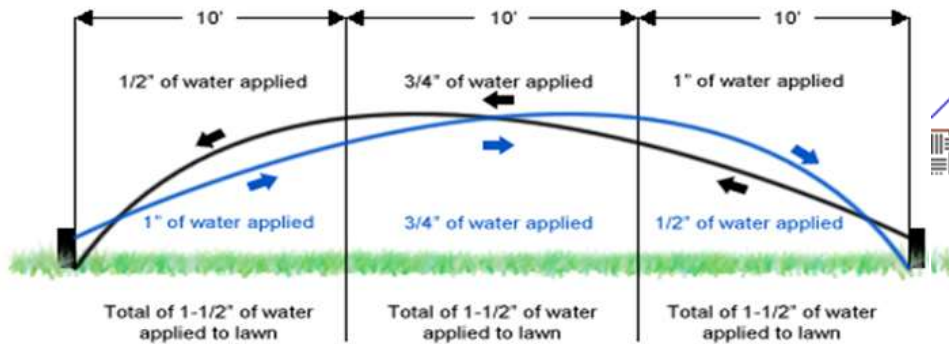




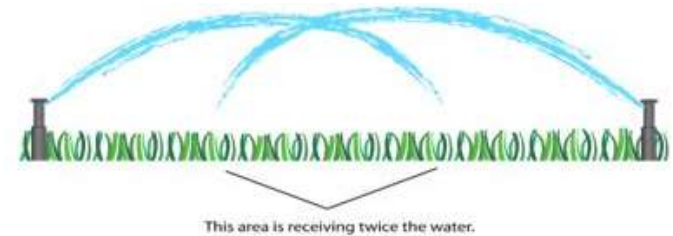
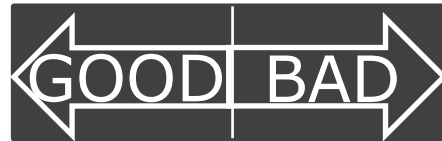
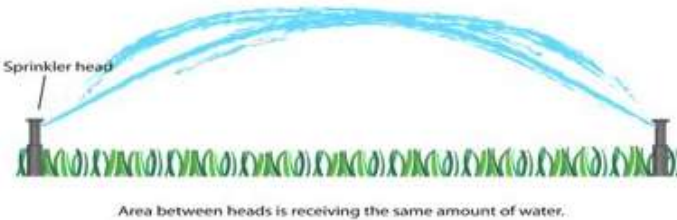
Snow Mold



Proper Irrigation is Key to an Attractive, Healthy Lawn



"HEAD-TO-HEAD COVERAGE"
THE WATER FROM ONE SPRINKLER
GOES ALL THE WAY TO THE NEXT
SPRINKLER



DIFFERENT IRRIGATION FOR DIFFERENT PLACES

Spray or Rotary for Turf

- Head-to-head coverage
- Good areas to irrigate
- Area no smaller than 8' wide
- NO IRRIGATING on SIDEWALKS/DRIVEWAYS/ROADS!

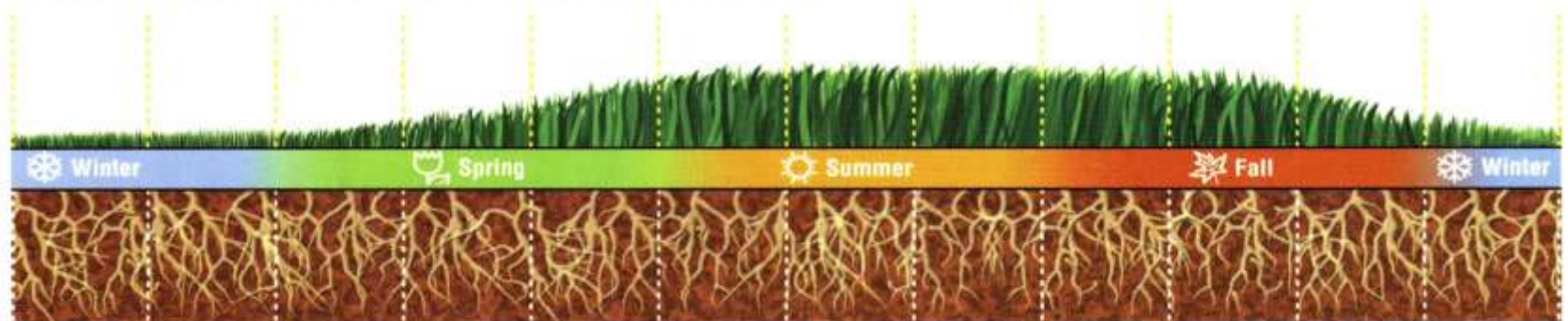
Turf Types

- **Cool Season:** Kentucky Blue Grass, Perennial Rye and Fescue (Tall and Fine)
 - Primary active growth occurs spring and fall
 - Will go dormant (brown) if drought stressed
- **Warm Season:** Buffalo Grass, Blue Grama
 - Active growth occurs in the summer months and requires heat to germinate and grow well.



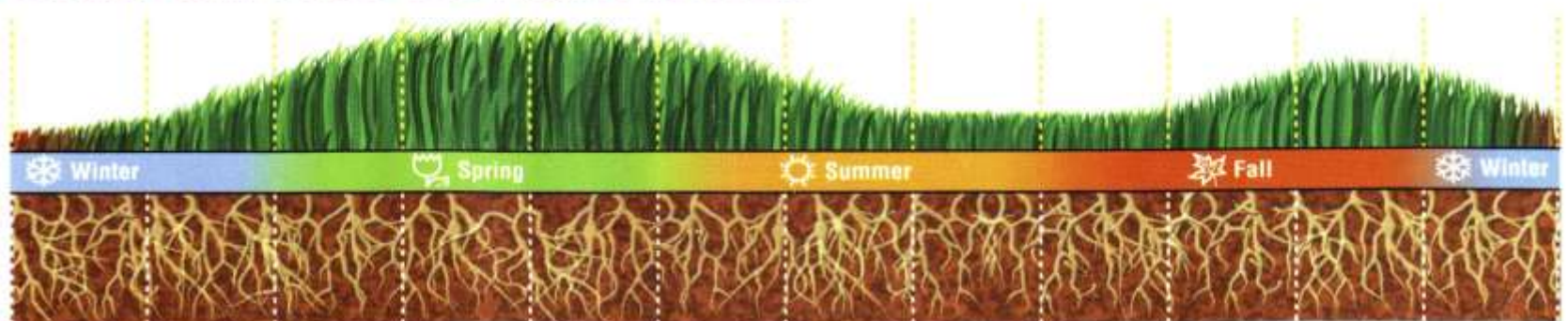
Grass Growth Cycle

Growth calendar for warm-climate grasses



Warm-climate grasses grow slower during the summer months when the temperatures are above 95 degrees F. When the weather cools down (below 80 degrees), the growing rate speeds up. It slows down again when temperatures fall below 55 degrees.

Growth calendar for cool-climate grasses



Cool-climate grasses have two distinct growing periods, the main one in the spring and a shorter one in the fall. During the hot, stressful summer months, growth slows.

Turf Varieties



Cool Season Grasses

- These are the primary grasses used in our climate. Utah is in a transitional zone, so both cool and warm season grasses grow here.
- Kentucky Bluegrass blends are the primary lawn type grass used

Tall Fescue

- Bunchgrass
- Not rhizomateous
- Drought Resistant if soil is prepared properly before installation



Rye

- Non rhizomateous bunch grass
- Can stay green longer in the winter
- Is drought resistant if installed on proper soil bed



Kentucky Bluegrass

- Grass of choice in this region
- Rhizomateous – Repairs itself
- Drought tolerance improved with correct maintenance practices
- Most grass purchased is a blend of multiple varieties.
- There are hundreds of cultivations of Kentucky Bluegrass





Bouteloua spp. BUFFALO AND BLUE GRAMA

- 40-50% Less water than Kentucky Bluegrass
- Warm-season: Best green in the Summer
- Don't handle high traffic



Lawn care practices do help create more drought tolerance.

- Mowing
- Fertilization
- Aeration
- Weed Control
- Proper Irrigation



Mowing



- Wait as long as you can to mow
 - Mow to a 2.5-3" height
 - Never mow more than 1/3 the blade
 - Mulch clippings and leave on the lawn
 - Taller Grass means deeper roots
 - Keep blades sharp



Fertilization



Fertilizing

- 2-5 lbs/per 1000 ft² nitrogen per year (average need)
- Balanced Weed and Feed –April to Memorial Day
- **Optional**-Regular Fertilizer --Independence Day
- **Optional**-Regular Fertilizer - Labor Day
- Winterizer - after Halloween (This is the most important fertilization of the year!)

HELPING TO GROW THE



THINGS YOU LOVE®

4STEP

Fertilizer Program



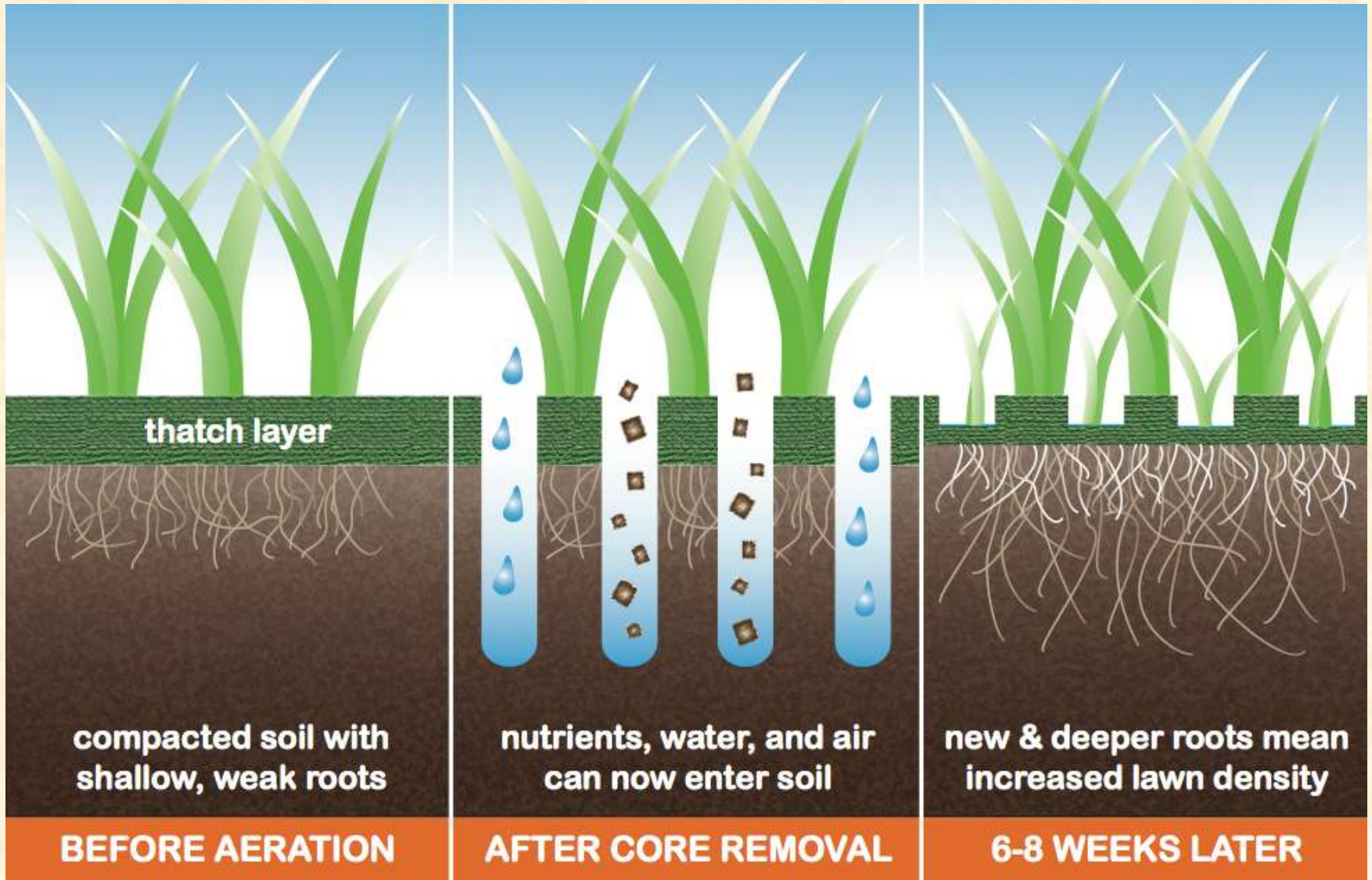
BUILDING YOUR HEALTHY LAWN
one step at a time, throughout the year

N, P, K (Nitrogen, Phosphate, Potash) 16-16-16 (16% of each by weight)
N- top growth and foliage
P- Rooting, flower blooms and fruiting
K-strong cells, plant tissues (helps with disease, stress, pests, etc.)



Aeration





Tine Aeration & Overseeding

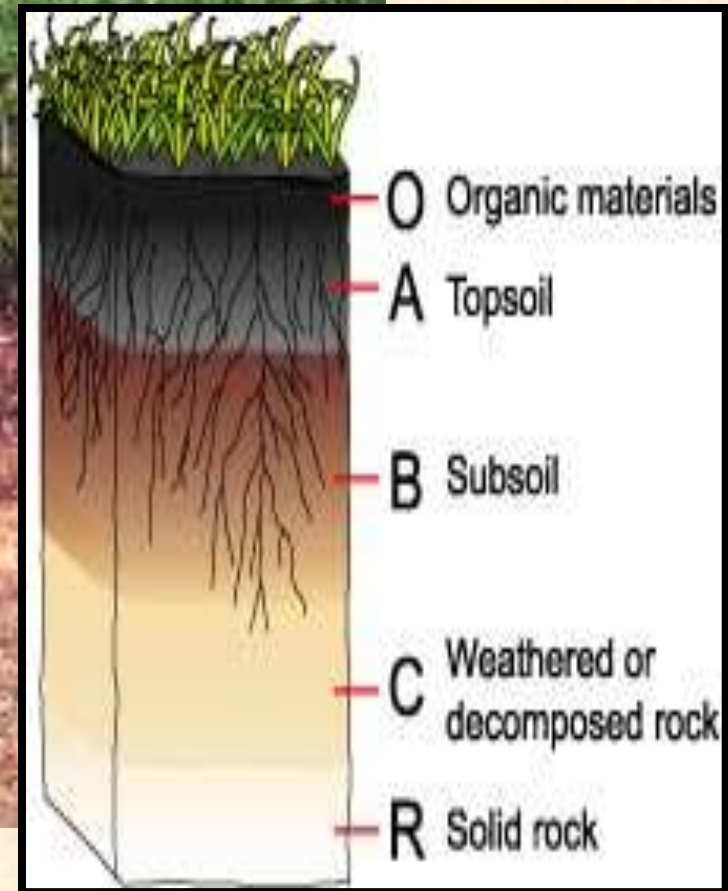


Other Factors You Need to Know

- Soils
- Soil/Water Movement
- Irrigation Practices
- Weed and Pest Control



Soils



Soil Profiles

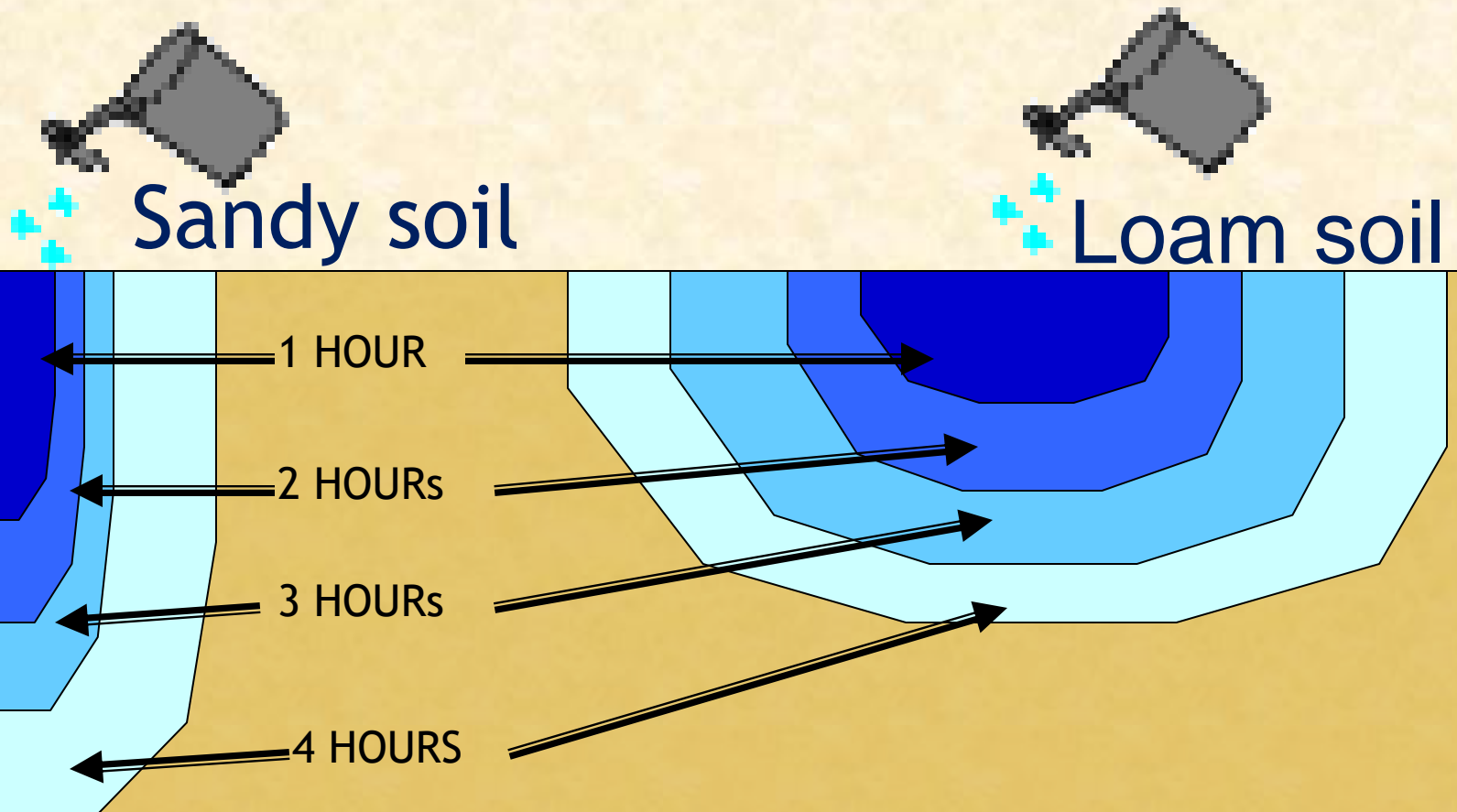
- Sandy Loam – Best for filling water table
- Sand – Loses water quickly. Shorter more frequent watering necessary
- Clay – Compacts easily. Water pools and runs. Shorter cycles necessary but when full, less frequent water needed.

Soil Water Movement

- Water moves in response to two driving forces
- Gravity pulls water downward through macropores
 - **Infiltration**: moving into soil
 - **Percolation**: moving through soil
 - **Leaching**: moving beneath plant roots
- Magnetic charge of surfaces from micropores holding water against gravity: capillarity

Soil Water Movement

- Percolation a function of soil texture/ structure, and changes in texture (impermeable interfaces)

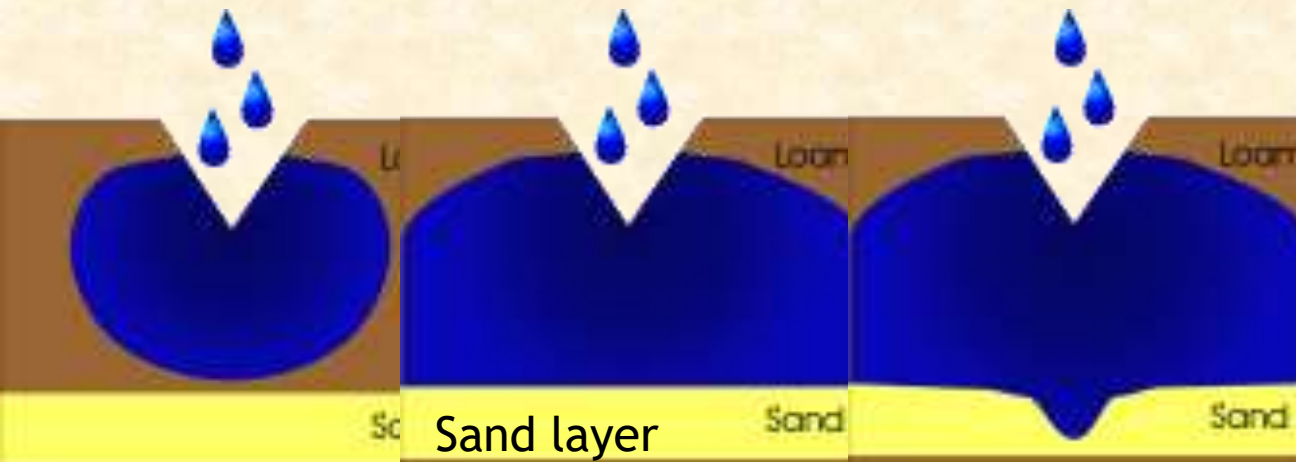


Soil Water Movement

- Any change in texture or density can impede water percolation through soil



A clay, or compacted layer creates saturated or perched water layer



A sand layer impedes water movement until overlying layer is saturated

Soil Water Capacity: Texture

- Can determine soil texture by
 - Lab analysis: practical if accuracy (rarely) needed
 - Settling in jar:
 - Fine particles, clay, fully settled out after 24 hours
 - Intermediate particles, silt, settle within 1 hour
 - Coarser particles settle out first; sand falls out within a minute
 - Need to add compound (such as Dawn dishsoap) to disperse clay particles



Efficient Irrigation Practices



Why Irrigate?

- When a plant can't get enough water from the environment
- Four irrigation situations
 - Temporary: after transplanting
 - Temporary: during drought
 - Permanent: Using plants not adapted to available natural moisture conditions
 - Permanent: in areas that have no natural water source (Pots and indoors)
- Irrigation systems
 - Sprinkler versus drip/low volume



Irrigation Hydro-zoning



N

Separate irrigation zones should be based on:

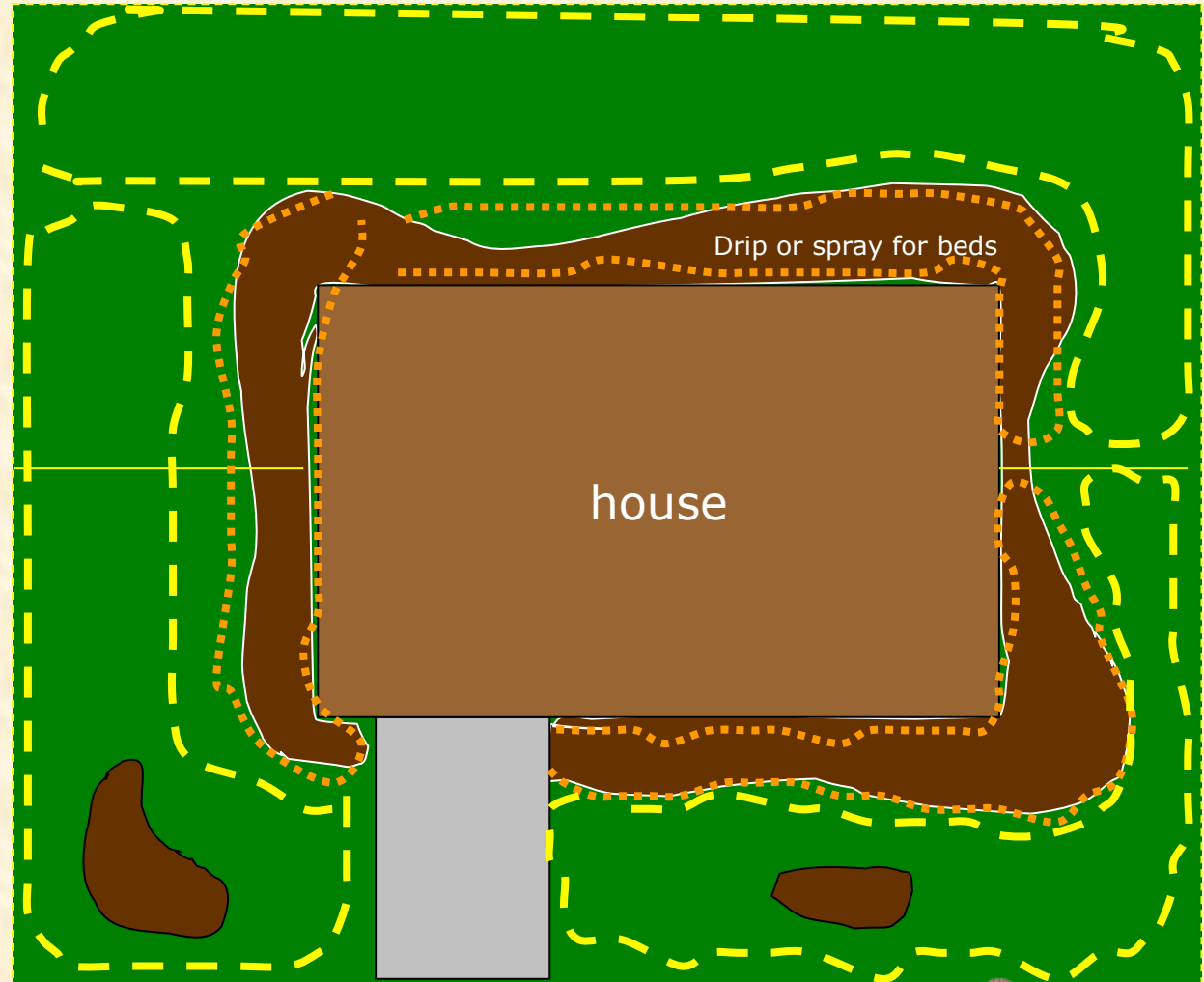
- Turf
- Shrub/Flower beds
- Exposure/Micro-climate conditions
- Soil types

Run time is based on:

- **How long it takes to fill soil reservoir (root zone)**

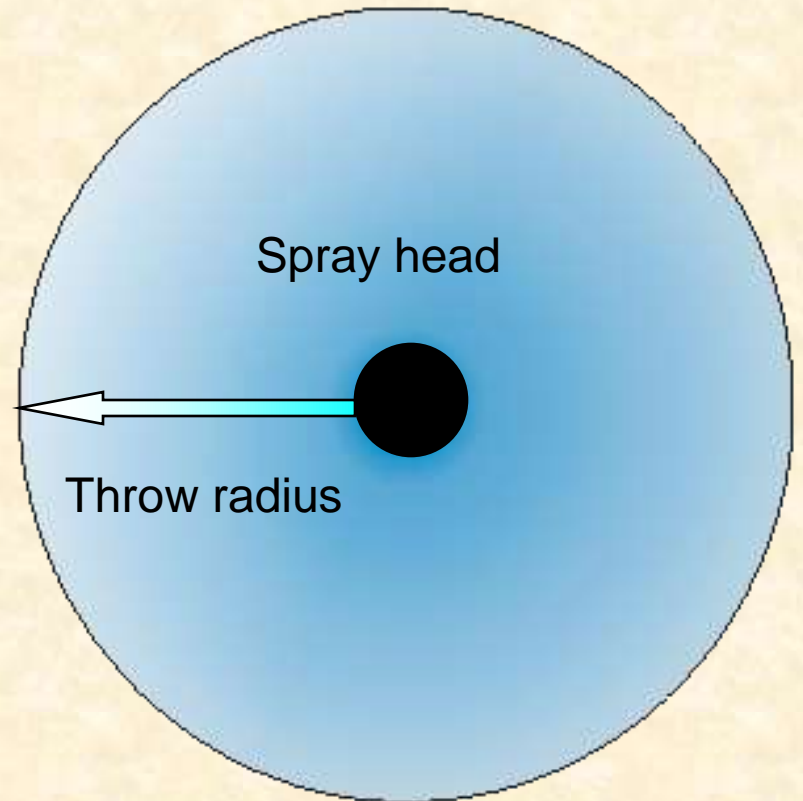
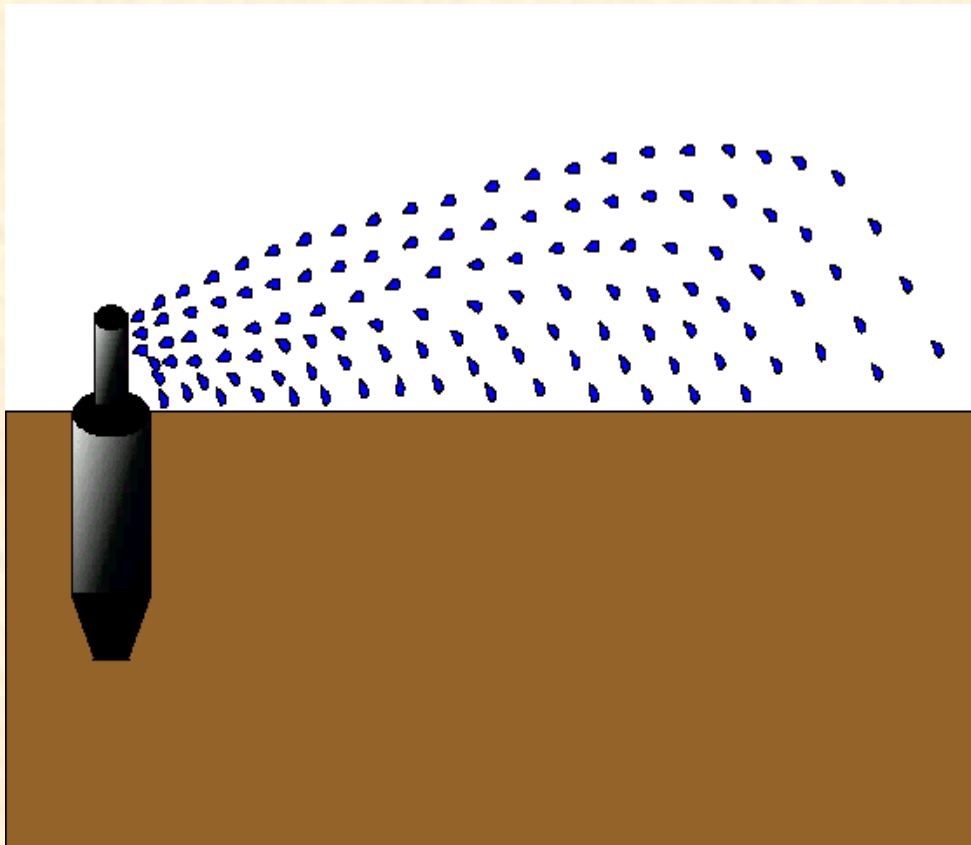
Frequency based on:

- **Seasonal changes in temperature.**



Irrigation Design

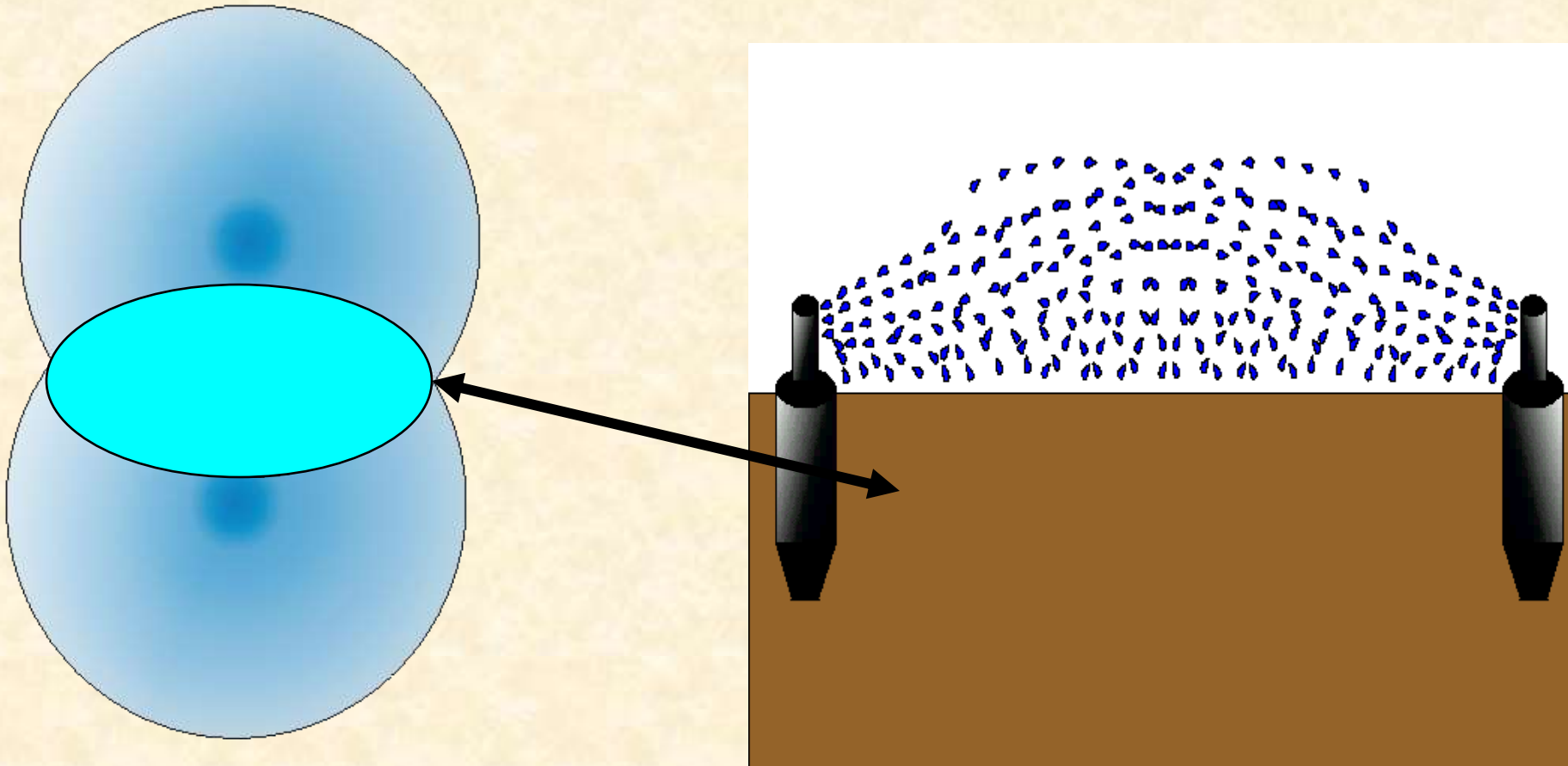
- Single sprinkler heads have non-uniform coverage
- Spray heads apply less water the farther away from the head



Irrigation Design

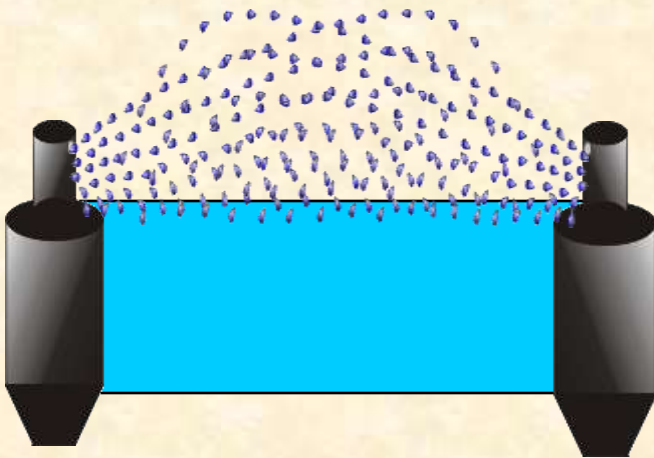
- Sprinklers: need to achieve overlap coverage to emulate rainfall

Precipitation (application) rate calculated from spray overlapped area

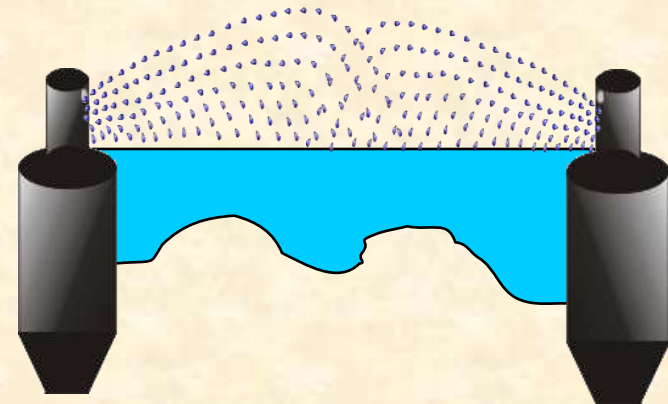


Irrigation Design

- Pressure below or above the specified range results in poor coverage



Coverage within
specified pressure range



Coverage when below
specified pressure range

Irrigate Efficiently

- Proper irrigation saves water and results in healthier more drought resistant plants and happy neighbors 😊.
- **Apply the proper amount and only when needed**
- Understand different water requirements for different areas of the landscape- Hydro-zones
- Program the system in response to changing seasonal variations in temperature and rain.
- Be aware and monitor your sprinkler system and make adjustments as needed to get a good uniform application.

Determine Watering Practices By Watching Your Lawn

- Try to apply needed water in 1 application
- If you get run-off or puddling break up into cycles on same day (called cycle and soak)
- If your lawn goes dry between watering break into watering on several days

Watering New Sod

Volume (depth) in Inches To Apply

| Week | 1st | 2nd | 3rd | 4th |
|--------------------|---------------------------------|-----------------|-----------------|------------------|
| How often to water | Every day | Every other day | Every third Day | Every fourth day |
| April | * | | | |
| May | * | 1/3 | 1/2 | 2/3 |
| June | 1/4 | 1/2 | 2/3 | 3/4 |
| July | 1/4 | 1/2 | 3/4 | 1 |
| August | 1/4 | 1/2 | 2/3 | 3/4 |
| September | * | 1/3 | 1/2 | 2/3 |
| October | * | | | |
| | *Apply 1/4 of an inch as needed | | | |

Watering Chart

| North/Central Utah | |
|---------------------------|--|
| April | No irrigation recommended, unless needed under extremely dry periods |
| May | 1 inch every 7-10 days |
| June | 1 inch every 4-7 days |
| July | 1 inch every 3-5 days |
| August | 1 inch every 3-6 days |
| September | 1 inch every 7-10 days |
| October | A good soaking to a depth of six to eight inches around the middle of the month- Each year may be different |
| November | No irrigation recommended unless unusually warm and lawn shows signs of stress Trees should be watered good going into winter |

Watering Tips

- Avoid watering in the wind
- Water at night or early in the morning
- Water deep and less frequently
- Stressing your lawn by going longer between watering will create a healthier, more drought tolerant lawn (healthy, deep roots), but soils play a major role

Reading Your Lawn

Usually an area of the lawn will turn a blue-gray color before the rest of the lawn.

When this happens apply 1/2 inch for your irrigation cycle.



Summer Dormancy

- Dormancy is acceptable in established cool season lawns
- When temperatures exceed 90 degrees bluegrass growth slows and the lawn can go into dormancy if water isn't available.
- Bluegrass recovers more quickly than Rye or Fescue

Weed and Pest Control

- Weed and Feed Fertilizer; good pre-emergent or post-emergents that will take care of many weeds. Apply early in Spring- early summer for the summer weeds.
- Hand weeding is the most effective form of weed control in most cases.

Summary Turf Maintenance Basics

- Fertilize spring and fall (Nitrogen or Blend)
- Mow long, 2-3 inches, except for the last mowing in the fall.
- Aerate compacted and heavy soils once per year.
- Don't over water, water deep to develop deep healthy root system.
- Don't use turf as the cover all- mix it up and beautify your year with perennials, shrubs and trees. (Localscape)

Turf Water Needs

Don't over water the entire lawn just to cover one dry spot. Do some hand watering, or spot watering and try to fix irrigation system problems which are causing the poor coverage in uniformity.

Efficiency and conservation require us to be involved in what we are doing. This isn't really a "Set it and Forget it" situation.

Turf Water Needs

- Determine how long it takes you to put down $\frac{1}{2}$ inch of water, then only adjust the frequency of irrigation needed to maintain the lawn.
- Example: it takes 20 minutes to put down $\frac{1}{2}$ inch, so I should set the timer for 20 min. and only change the days of the week or the number of days to skip as the water needs change through the season.

Weeds and Pest Control



Dandelions

- Perennial weeds:
- Pull or dig out
- Broadleaf post-emergent herbicides can be applied in late fall or late spring



Black Medic

- Annual weed
- Usually grows in compacted soils (indicator of soil issues)
- Controlled by good aeration
- Can be controlled with broadleaf herbicide.



Clover

- Perennial weed
- Thrives when lawns are undernourished (it produces its own nitrogen)
- Control by proper fertilization & proper mow height
- Kill with broadleaf herbicide or hand dig



Tall Fescue as a weed

- Cool Season perennial grass
- Course and clump forming
- Planted for pasture or for grass hay
- Control by digging them out then reseed or sod
- Kill by using non-selective herbicide



Spurge

- Summer annual weed
- Thrives in the heat
- Proper fertilization and healthy lawn will outcompete spurge
- One plant can produce thousands of seeds
- Use broadleaf herbicide for kill



Crab Grass

- Annual Grassy Weed
- Removing by hand is most effective but must also remove and replace soil.
- Apply pre-emergent in late winter or early spring or a post-emergent once it has germinated



Goosegrass

- Annual Grassy Weed
- Remove by hand if you can get at least $\frac{3}{4}$ of the root
- Selective pre-emergent herbicide if necessary



Redstem Filaree

- Annual or biennial broadleaf weed
- Hand weeding is the best way to eliminate
- Broadleaf weed herbicide can be used



Bluegrass going to seed

- Caused by overly stressed lawn and lack of fertilization
- Cut lawn and bag clippings 2 to 3 times
- Fertilize with high nitrogen content fertilizer



Billbug



- Damage appears as a small circular pattern that turns yellow-brown as the Billbugs feed on the grass.
- Billbugs can be controlled by a pesticide designed for Billbugs.
- Pesticides are generally not very selective. They kill good bugs too.

Cutworms / Grubs





Cutworm / Grubs



- Cutworms and Grubs leave small patches of brown grass, usually one to two inches wide.
- Cutworms can be controlled by a pesticide designed for cutworms.

Fairy Ring and Mushrooms

- Fungus is caused by prolonged wet weather and lack of fertility.
- Control by aerating around the edges, adding nitrogen, and mowing frequently



Necrotic Ring Spot

- https://digitalcommons.usu.edu/extension_curall/924/
- Fungal Disease that affects the roots of primarily Kentucky Bluegrass
- Difficult to treat, use the above fact sheet



Turf Water Needs

- How often do I water cool season turf? Each irrigation event should put down ½ inch of water (one inch per week during summer months) so depending on your system the duration of irrigation will change.

Basic Irrigation Schedule

| <u>Month</u> | <u>Interval</u> |
|------------------------|-------------------|
| Startup until April 30 | Once every 6 days |
| May | Once every 4 days |
| June | Once every 3 days |
| July | Once every 3 days |
| August | Once every 3 days |
| September | Once every 5 days |
| October 1 to shutdown | Once every 9 days |

This schedule is based upon average or normal weather conditions. Unusual warm conditions may require an occasional irrigation a day earlier than scheduled. Rain storms or cool periods may allow postponing or skipping

Create Practical Turf Areas



Resources

- <https://extension.usu.edu/yardandgarden/lawns>
- <https://extension.usu.edu/yardandgarden/research/northern-utah-turfgrass-management-calendar>