

Put it on Smart!
The 411 on Efficient Lawn Watering

John C. Fech
University of Nebraska-Lincoln

1

Considerations

- Deciding when a lawn does and doesn't need water
- How much water should be applied
- What to do if the lawn is sloped
- The 2 bottom lines of lawn irrigation
- How to apply irrigation water evenly
- How to make changes during the growing season
- The pros & cons of various turf species
- What to do for a languishing lawn

2

Does It Need Water?
How Do You Know?

Method 1 **Method 2**



All of these methods are instructive, some are more practical than the others

3

Does It Need Water?
How Do You Know?

Method 3 **Method 4**



4

Does It Need Water? How Do You Know?

Method 5



Method 6



5

Does It Need Water? How Do You Know?

Method 7



Method 8



Good measurement technique; very practical

6

How much water should be applied?

- Is that the right question, or is it how long should the sprinkler system run?
- What are the factors that influence the length of time a zone should run?
- Soil type
- Slope
- Sun/Shade
- Season of Year
- Species

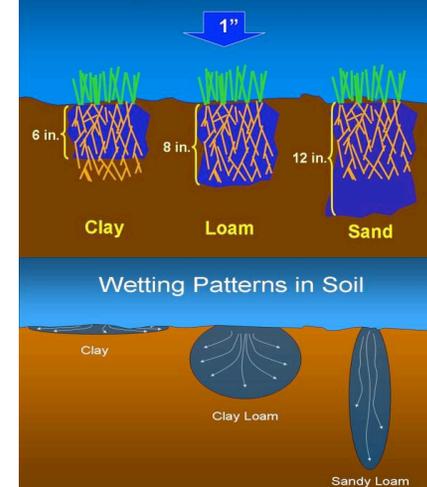


7

How Much, How Long?

Soils have different capacity to absorb irrigation water

What happens with 1 inch of water?



Images courtesy Brad Jakubowski

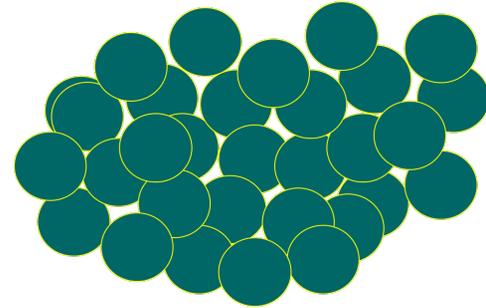
8

Soil Type/Age Influence on Infiltration



9

Soil Compaction



10

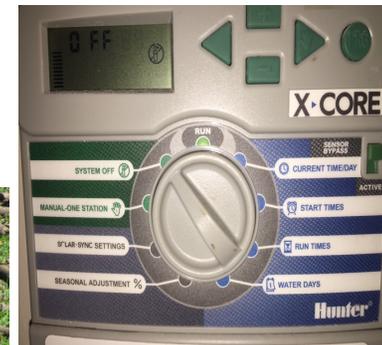
Slope



11

Strategies for a Sloped Lawn

- Delayed Starts
- Aerate for greater infiltration
- Increase application uniformity



12

Aeration Helps a Lot!

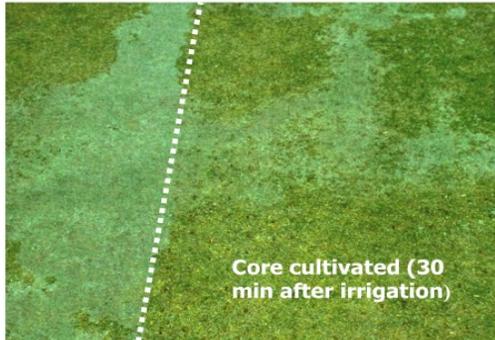


Image courtesy Roch Gaussoin, UNL

13

Sun vs. Shade



14

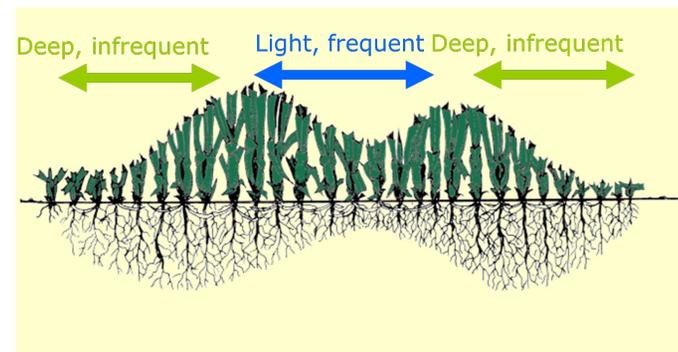
Strategies for Fixing Sun/Shade Conflicts

- Right Plant Right Place...sun turf species in sun; shade turf species in shade
- Rezone the turf area...run the sunny areas longer due to higher use rate/evapotranspiration
- Run shorter cycles and supplement the sunny parts with portable hose sprinklers



15

Season of Year Influences How Much, How Long?



Two Bottom Lines: Water to the bottom of the roots and keep it moist, not soggy or dry

16

What Happens It Runs Too Long or Too Short?



17

What Happens It Runs Too Long or Too Short?



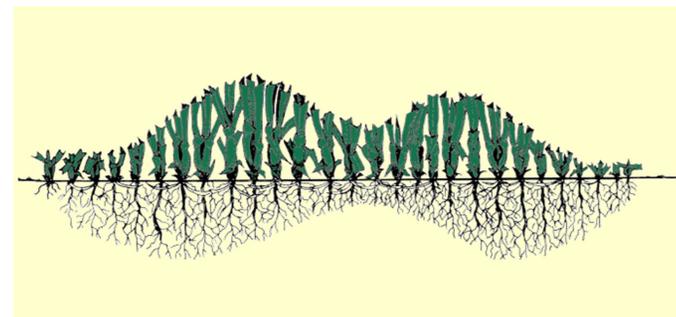
18

The 2 Bottom Lines

1. Keep the soil and roots moist, not soggy or dry
2. Water to the bottom of the roots
 - The first is easy; use a screwdriver
 - The second is more difficult to determine and implement...how do you know how deep the roots are?
 - Historical average throughout the year
 - Consider how much NPK has been applied; N & P especially will influence rooting depth; both deeper and shallower
 - Dig and look!

19

Historical Average Throughout the Year



Ok, that's interesting, but what is this based on?

20

Historical Average Throughout the Year



Images courtesy Keith Karnok, UGA



21

Fertility Level – Too Little vs. Too Much

- Unattractive yellow color (chlorosis)
- Reduced shoot density
 - Weeds, bare soil, runoff issues
- Low nitrogen/low growth rate disease
 - Dollar spot, rust, leaf spot, etc.
- Unsafe playing conditions
- **Reduced root growth**
- **Increased mowing requirement**
- Excessive thatch development
- **Reduced root growth**
- Reduced plant health
- Increases incidence of many diseases
- brown patch, snow mold, gray leaf spot, take-all patch
- Nitrogen leaching risk

Courtesy Bill Kreuser, PhD

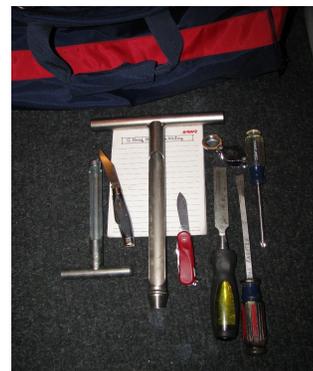
22

Dig and Look



23

When You Dig...



24

Big Need - How to Apply Water Evenly



25

Big Need – How to Apply Water Evenly



26

Why Does This Happen?



27

Big Need – How to Apply it Evenly



Watch it run...frequently...look for flaws

28

Ever See This? What's Going On?



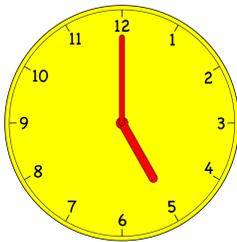
29

Answer = Human Nature/\$\$ and Irrigation for the Dry Spots



30

When? Timing – 5-10 am Helps with application uniformity



31

Audits

- 1. Turn it on and watch it run
- 2. Fix obvious flaws; fix the biggest flaw first
- 3. Measure output with cans/ruler
- 4. Replace parts/make adjustments
- 5. Re-measure output with cans/ruler
- 6. Trim – reduce runtime a little
- 7. Review an expanded version on go.unl.edu/waterdogs



32

Trim 10%

- **Scale back the runtime**
- I.e. from 30 minutes per zone to 27 minutes
- Not likely to notice the difference in turf quality, and it's an easy 10% savings



33

Audit Steps



34

Audit Steps



35

How to Make Changes During the Growing Season

- Monitor natural rainfall received onsite
- Consider season of the year and draw of water from the atmosphere
- Monitor soil moisture
- **TURN THE SYSTEM OFF** and run each zone according to its unique needs
- Make weekly changes in runtime
- KBG – on average – 0.5 to 0.75 inch/week in April & May, 1.0 in June, 1.5 in July & August, 0.75 in Sept., 0.5 in October
- TF – 0.5 to 0.75 that amount. Why?

36

Kentucky Bluegrass

Pros

- Self repairing via rhizomes
- Low evapotranspiration rate
- Excellent low temperature tolerance
- Good plant for sunny sites

Cons

- Shallow root system in the heat of summer
- Susceptible to many diseases and grub/billbug damage
- Needs at least 7-8 hours of sun per day to perform well

37

Turf Type Tall Fescue

Pros

- Extensive root system
- Disease resistant except for brown patch
- Recent breeding efforts have produced narrow, finer texture cultivars
- Shade and sun adapted; needs at least 4 hours of sun to perform well

Cons

- No capacity to recover from drought stress except for the rhizomatous cultivars
- Slightly wider leaf texture
- Brown patch susceptible

38

Fine Fescue

Pros

- Shade adaptable. Will usually grow reasonably well with only 3-4 hours of sun per day
- Very fine texture

Cons

- Sun intolerant
- Non self repairing, even the creeping red fescues, which are very slow spreaders
- Need reseeding every few years

39

Perennial Ryegrass

Pros

- Germinates quickly
- Wear and traffic tolerant
- Mixes well with KBG

Cons

- Short lived
- Non self repairing
- Susceptible to pythium blight

40

Zoysiagrass

Pros

- Very extensive root system; rarely needs supplemental irrigation water to perform well
- Very thick; high density chokes out most weeds
- Can perform well with low fertility
- Resistant to many diseases

Cons

- Slow to green up in spring and early to go dormant compared to KBG and TF
- Strong spreader; hard to keep out of landscape beds and neighbor's property
- Heavy thatch producer

41

Buffalograss

Pros

- Very extensive root system; rarely needs supplemental irrigation water to perform well
- Fine texture
- Very disease and insect resistant

Cons

- Slow to green up in spring and early to go dormant compared to KBG and TF
- Weak spreader; can be hard to keep out of landscape beds and neighbor's property

42

What to do for a Languishing Lawn

- Irrigation Audit
- Bottom 2 lines
- Count # of hours of sun per day - RPRP
- Identify possible disease and insect problems
- Identify abiotic maladies – slope, compaction, etc.
- Aerate/power rake extensively and renovate; consider switching turf species



43

44

Site – Right Plant, Right Place



For shade - overstory

In shade - understory

45

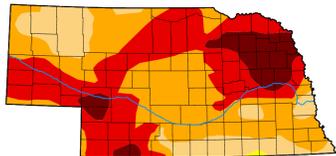
Site – Separate Turf and Trees,



46

Soil Moisture Nebraska

Nebraska



Map released: Thurs. January 12, 2023

Data valid: January 10, 2023 at 7 a.m. EST

Intensity

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

Authors

United States and Puerto Rico Author(s):
Richard Tinker, NOAA/NWS/NCEP/CPC

47