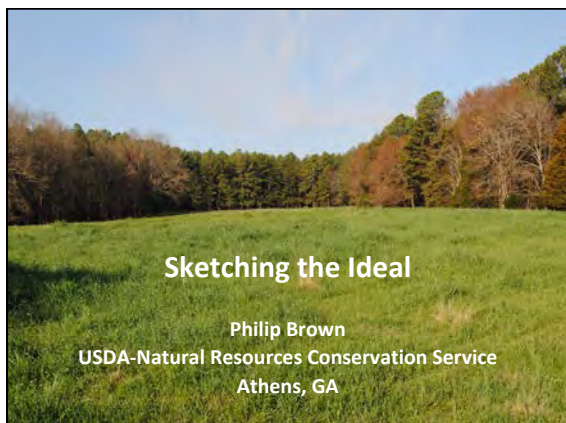


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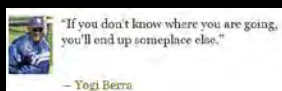
Phillip Brown
USDA-NRCS Grazinglands Specialist



Sketching the Ideal – The Reality

- Ideal is site and manager specific
- The landscape may not fit the theoretical ideal

Sketching the Ideal - Developing a Plan



- A Good Plan Will Force You to Articulate Exactly What You Are Trying to Achieve

Determine Your Objectives

- What do you want to achieve?
 - Narrow Objectives – Install a watering facility in field # 1
 - Why?
 - Increase Grazing Efficiency in field # 1
 - Exclude livestock to the stream that borders field # 1
 - Improve water quality for livestock
 - What will accomplishing those do for your operation?

Determine Your Objectives

- Increase Grazing Efficiency in field # 1
 - Remove Inefficiencies
 - Extend Grazing Season
 - Increase Stocking Rate
- Exclude livestock to the stream that borders field # 1
 - Conserve soil resources
 - Improve downstream water quality
- Improve water quality for livestock
 - Increased animal performance

Determine Your Objectives

- Often adds up to Broader Objectives
 - Profitability
 - Time / Quality of Life



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Inventory Resources

- Money / Budget
- Time
- Labor
- Skills
- Equipment / Tools
- Soil/Landscape Resources
- Forage Resources
- Livestock Resources

Identify Problems

- What Resources do you lack?
 - What's the best workaround?
- What are the specific problems that exist related to your grazing system?
 - Lack of fencing and or water to adequately manage intensity and frequency of grazing
 - Seasonal distribution of available forage
 - Soil fertility

Analyze Your Information and Formulate a Plan/Plans

- With the resources you have or can obtain how are you going to address the problems encountered and achieve your objectives.

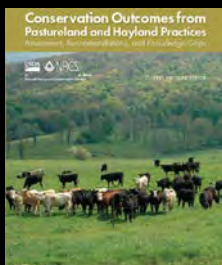
Consider Starting with Stocking Rate

5 frequently asked pasture questions

- How do I control this weed....
- Do I need to apply what the soil test recommends
- Can I broadcast seed to thicken a weakened stand
- What should I seed to improve my pasture
- The unasked question.....

Consider Starting with Stocking Rate

- Authors suggest that the decision of stocking rate is **more important than any other single grazing management decision**
- Because of its prominent role in determining forage plant growth and persistence, forage mass and allowance, animal performance, size of nutrient pools and fluxes between pools, soil chemical and physical characteristics, water quality, and profitability of the grazing operation.



Soil/Landscape - Inventory Tools

- Google Earth PRO / Soil Web / Web Soil Survey



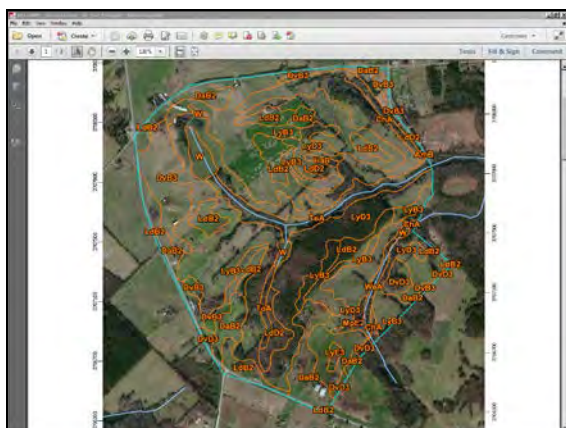
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Web Soil Survey – Aerial Photography



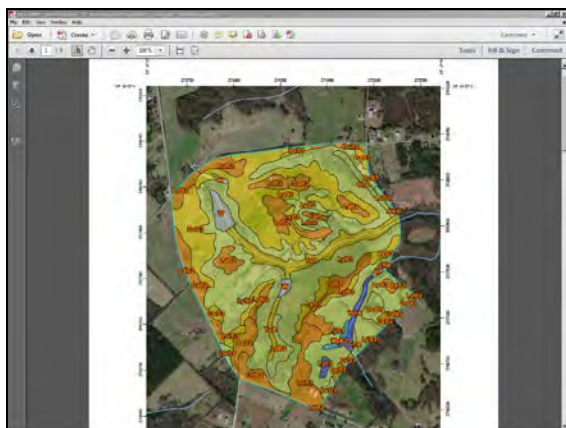
Web Soil Survey – Topographic Images



Web Soil Survey - Land Capability Class

Land Capability Class	Increased Intensity of Land Use					
	Forest	Forest	Forest	Forest	Forest	Forest
I	X	X	X	X	X	X
II	X	X	X	X	X	X
III	X	X	X	X	X	X
IV	X	X	X	X	X	X
V	X	X	X	X	X	X
VI	X	X	X	X	X	X
VII	X	X	X	X	X	X
VIII	X	X	X	X	X	X

Figure 1. Intensity with which each land capability class can be used with safety. Note the increasing limitations on the uses to which the land can safely be put as one moves from Class I to Class VIII. (Modified from R. D. Hackensmith and J. G. Steele, 1949).



Web Soil Survey – Slope & Drainage Class



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Google Earth Pro

- Free Download - <https://www.google.com/earth/desktop/>
- Google Earth Library – Download Topographic Maps and Soils Information
- <http://www.gelib.com/>
- <http://www.gelib.com/soilweb.htm>
- <http://www.gelib.com/usgs-topographic-maps-2.htm>

Soil Type and Landscape Position

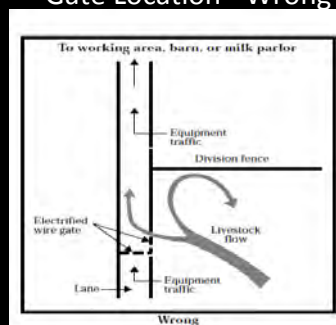


Landscape - Soils

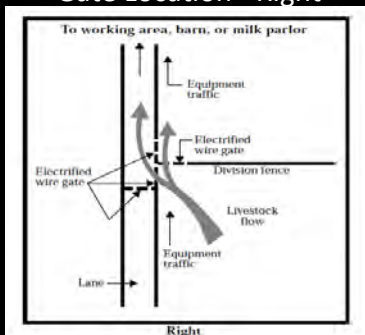
- Productivity
- Flooding & Ponding Durations
- Drainage Class
- Similar Soils Support Similar Productivity & Plant Communities



Animal Movement Gate Location - Wrong



Animal Movement Gate Location - Right



Animal Movement

- Ideally working facility would serve as a central "Hub" with easy access from all paddocks
- Realistically – landscape or infrastructure simply may not fit, or you are working with an existing facility badly placed for your new plan
- Objective – Minimize through paddock moves to other paddocks and working facility



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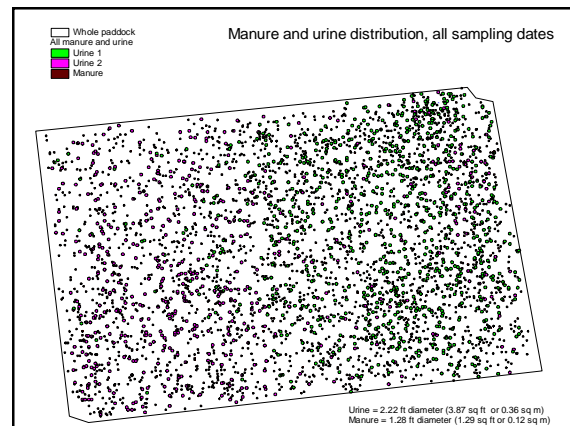
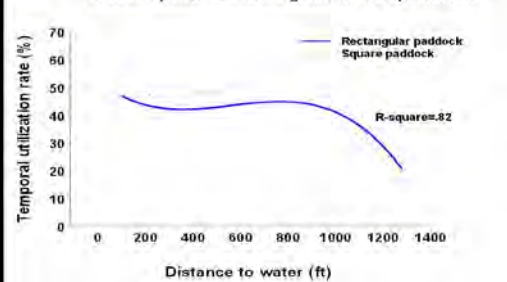
Animal Movement

- Lanes May Be Necessary
- Follow Contours
- Avoid Poorly Drained Areas
- Keep Vehicle Traffic Off
- Wide Enough For Equipment
- Grazeable



Grazing Distribution - Water

Figure 2. Impact of distance from water on temporal utilization rate in square and rectangular 10 acre paddocks.



Grazing Distribution



Utilization & Uniformity of Use



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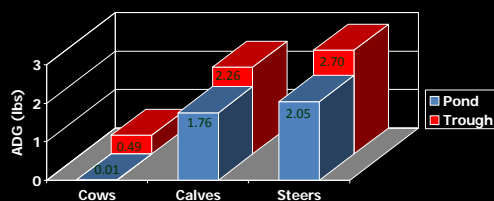
Providing Water

- Water Location
 - Centralized
 - Allows for easier subdivision and better animal distribution
 - Ideally all pasture would be within 800 feet or less of a water source
 - Away from shade and mineral feeder
- Think flexibility related to further subdivision. Whether temporary or permanent

Missed Opportunity....



Water source effect on animal performance



Willms et al., 2002

35

Mineral Feeder

- Portable Mineral Feeder
 - Easily moved away from water source and shade
 - Relatively inexpensive
 - Portability allows for flexibility
 - Don't Group Shade, Minerals, and Water



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Heat stress and cattle performance

- Subject of lively debate.
- Radiant energy (sunlight) increases surface and air temperatures.
- Beef cattle in the sun vs. shade in hot environments had:
 - higher internal body temperature (Mitlohner et al., 2001)
 - increased respiration (Mitlohner et al., 2002)
 - increased heart rate (Brosh et al., 1998)
 - lower DMI, ADG and meat quality (Mitlohner et al., 2002)
 - decreased conception rates (Roman-Ponce et al., 1976)

Heat Stress Problem – Sketch Ways to Address it



Heat Stress Problem – Sketch Ways to Address it



Have a Contingency Plan

- What If...
 - Drought
 - Excessive moisture
 - The well goes out



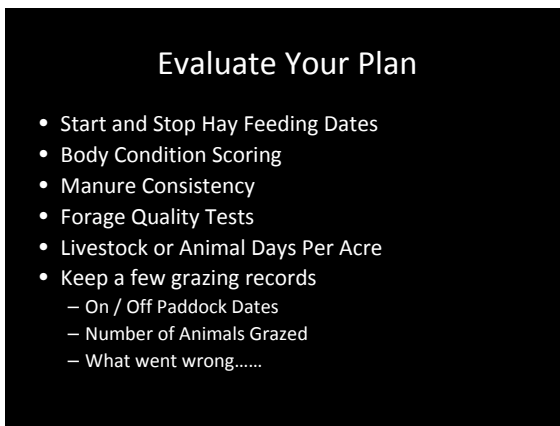
Implementing the Plan

- Try it on limited acres first
- Minimize the Investment
 - Temporary Fence & Water
- Adapt the setup as you work with temporary equipment
- Transition to more permanent facilities as the system grows and you become more comfortable with the setup and management



Evaluate Your Plan

- Start and Stop Hay Feeding Dates
- Body Condition Scoring
- Manure Consistency
- Forage Quality Tests
- Livestock or Animal Days Per Acre
- Keep a few grazing records
 - On / Off Paddock Dates
 - Number of Animals Grazed
 - What went wrong.....



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Livestock or Animal Days Per Acre

$$\text{Livestock Days per Acre} = \frac{\# \text{ Livestock} \times \text{Total Grazing Days}}{\text{Paddock Acres}}$$

$$X = \frac{50 \text{ head} \times 32 \text{ Total Days}}{5 \text{ Acres}}$$

$$X = 320$$

Take Home Message

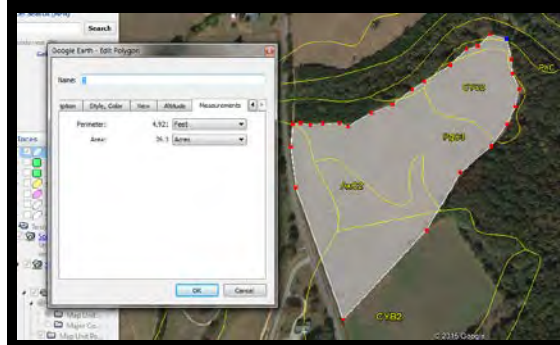
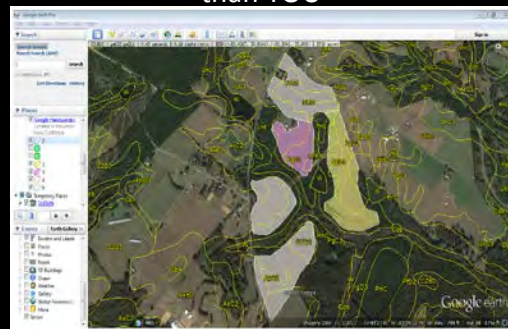
- Try to Develop a Flexible System That Gives You the Ability to Manage the Intensity and Frequency of Grazing
- Put the Ideal on Paper First
- Start Slow
- Evaluate and Adapt as Your Comfort Level Increases



Take Home Message – Grow Roots

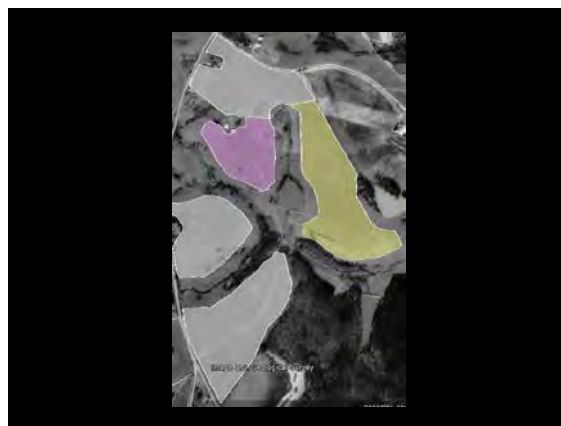
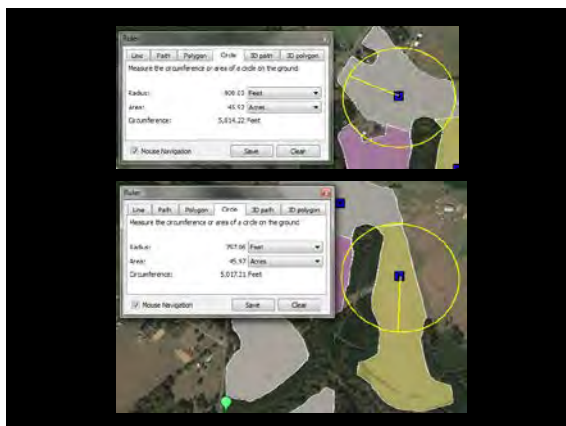


Nobody can sketch YOUR plan better than YOU



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