Unlocking the Power of Irrigated Pasture

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Objective

Provide justification for focusing efforts on pasture and assisting interested clients to harness the power of this vast resource for economic and ecological sustainability.
Typical Ranch Acreage Breakdown

- **Native Range**: 75%
- **Dryland Pasture**: 5%
- **Irrigated Hayland**: 15%
- **Irrigated Pasture**: 5%
Native Range

• Neutral or negative trend
  – Vigor of desired key plants
  – Presence of seedlings
  – Surface erosion
  – Bare ground
• Stocking rates: 0.2 to 0.05 AUM/acre
• 1 AUM is the amount of air-dry forage a 1,000 pound, non-lactating cow consumes in 1 month (915 lbs. per month)
• Large field sizes, few watering locations, and low animal density contribute to high animal selectivity
• Desirable forage plants are subjected to overgrazing
• Overgrazing = Grazing a plant before it has fully recovered from the previous grazing event
Irrigated Pasture

- Mostly flood irrigated.
- Generally continuously grazed (high selectivity).
- Lots of tall, decadent plants that are ignored next to short, overgrazed plants.
- Field sizes are small and watering locations are close.
- Grass-legume stocking rates under sprinkler range from 2.6 to 3.9 AUMs per acre at 30% harvest efficiency.
- Stocking rates with grass under flood irrigation can range from 1 to 3 AUMs per acre at 30% harvest efficiency.
- Close proximity to ranch headquarters makes for easier observation of livestock and forage.
- Fields are often fertilized.
- Timing irrigation with livestock grazing is key.
## Where Should I Focus My Efforts?

<table>
<thead>
<tr>
<th></th>
<th>Flood</th>
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<tbody>
<tr>
<td></td>
<td>Native Range</td>
</tr>
<tr>
<td>Area (ac.)</td>
<td>1,000</td>
</tr>
<tr>
<td>Beg. Stocking Rate (AUMs/ac.)</td>
<td>0.1</td>
</tr>
<tr>
<td>Ending Stocking Rate (AUMs/ac.)</td>
<td>0.2</td>
</tr>
<tr>
<td>Beg. Forage Supply (AUMs)</td>
<td>100</td>
</tr>
<tr>
<td>Ending Forage Supply (AUMs)</td>
<td>200</td>
</tr>
<tr>
<td><strong>Relative Increase (AUMs):</strong></td>
<td><strong>100</strong></td>
</tr>
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</table>
How Do I Start?

• Paradigm Shift: Observe nature, then seek to mimic it.
• Analyze your own ranch resources for areas of potential improvement.
• Soil is where it all starts.
• Soil that lacks life (insufficient earthworm activity, dung beetles, fungi, protozoa, bacteria, etc.) will prevent plants from expressing their full genetic potential and nutrient density.
• Feed the soil to feed the plant to feed your livestock.
• What happens underneath the ground totally affects what happens above-ground. The opposite is also true.
Key Grazing Concepts

- Livestock that are spread out and remain on a pasture for long periods of time (greater than 10 days) will likely graze plants they grazed on day 1 resulting in overgrazing.
- Livestock moves should be based on condition of the plants being grazed and the desired rest periods required for plant regrowth (when grass grows fast, move fast and as grass growth slows, move slow).
- Livestock moved more often have a higher daily intake than livestock moved less often.
- Higher stock densities for shorter periods of time are very beneficial to the plant community and the soil microorganisms (feed the soil).
- Combining herds is paramount to getting required stock densities and pasture rest not to mention less labor.
- Allow pastures to fully recover before grazing them.
Stocking Rate Versus Stock Density

Field A: 1 head on 1 ac. for 3 months

Stocking Rate = 3 AUM/ac.
Stock Density = 1 AU/ac. or 1,000 lbs./ac.

Field B: 90 head on 1 ac. for 1 day

Stocking Rate = 3 AUM/ac.
Stock Density = 90 AU/ac. or 90,000 lbs./ac.
Why Higher Stock Density?

What is happening on the higher stock density field that isn’t happening on the low stock density field when livestock are present?

- More animal impact on every square foot of area (hoof is perfectly designed to push carbon into the soil to feed the soil microbes).
- Nearly all plants are getting consumed, not just the “ice cream” plants (even some weeds).
- If the plant isn’t grazed, it’s getting trampled.
- More even distribution of nutrients from dunging and urinating.
Why Higher Stock Density?

What are the long-term benefits to the pasture under higher stock densities?

- Potentially higher forage yields for the next grazing cycle (previously bare areas populated with plants and stronger existing plants).
- More biological activity beneath the soil to help break down carbon and convert it into humus which increases the soil’s water holding capacity.
- Higher soil humus content.
- Potentially less water required to produce the same pasture crop.
- Reduction or elimination of nitrogen-based fertilizer applications.
- Longer root systems for plants to scavenge minerals.
- More nutrient dense forages to meet animal requirements and reduce supplementation.
- Fewer weeds.
- Quicker pasture recovery.
Why Higher Stock Density?

So how do quicker moves affect livestock performance and behavior?

- Although top animal performance (highest gains per animal) is achieved under continuous stocking (very low stocking densities for long periods of time), gains per acre are extremely low and we would go broke.
- What is the quality of feed on day 1 when animals enter the field?
- What is the quality of feed on days 2, 3, 4 and so on?
- Research by David Pratt with Ranch Management Consultants showed that livestock moved every two days versus every five days had higher average daily intakes.
- Livestock at higher intakes gain better than animals at lower intakes.
Why Higher Stock Density?

What are the long-term benefits to livestock under higher stock densities?

- Better gains.
- Calmer animals.
- Easier to move when needed.
- Potentially healthier animals since livestock are grazing a more mineralized forage stand and they are not grazing as deep into the sward where there’s greater potential for parasite re-infestation.
Some Common Questions

• Time: Where do I find time to move animals more often than what I do now? I have several groups of animals scattered throughout the ranch and I’m too busy putting up hay.

  Solution: Can you purchase your hay for less than what it costs you to raise and harvest it? Which takes less time to make pasture moves: 1 group of 400 head or 4 groups of 100 head?

• Money: How do I cross-fence all my fields in advance before introducing the animals? Wouldn’t this be expensive and difficult to work around if I needed to hay that pasture?

  Solution: Portable electric fencing is very flexible and easily removed if needed. The cost is quite low compared to permanent, non-electric fences.
Some Common Questions

• Risk Factor: If I’m moving animals every day or two, what if I’m late in moving the animals?

   Depending on the density the livestock are at, livestock will graze deeper into the sward than what you may want. The higher the stock density, the more “on time” you must be to prevent severe grazing hence a higher risk factor. Also, the higher the stock density, the faster you will see a response in your pasture. This system is flexible. If you don’t have the resources to move more often then every five days you can do that too, but it will take a much longer period of time to realize the results of higher stock densities associated with one day or more often pasture moves.
Some Common Questions

• Education: How long will it take for me to successfully implement this management system on my own operation?

Converting to a higher density system takes some time (2 to 3 years) and a little patience. Your power to observe will be important to monitor plant and animal performance. It is helpful to implement a higher level of management on just a small area for a short period of time to lessen the negative effects of making an incorrect pasture move. Once you’ve learned on a smaller area, it’s relatively easy to scale up from there.
Implementation

How do I pull all this off? Is there assistance? Yes!!

• Objectives
• Prioritize which pasture(s) you want to focus on
• Plan the fence design and additional watering locations if necessary
• Detailed map showing pasture layout and fencing materials
• Materials list for fencing hardware and watering systems (estimated costs)
• Install materials in Spring of next year
• Inventory forage resources to determine initial stocking rate and stock density to achieve objectives
• Implement the system
• Monitor livestock, plants, and soils to make adjustments throughout the growing season
• Evaluate the completed grazing system during the winter to plan for the following year
For Further Information

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