USDA

United States Department of Agriculture

Natural Resources Conservation Service

Economics of Southern Forages

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Objectives

Points we will cover:

- Philosophy
  - Decision making
  - Forage Economics
- Forage Establishment
- Nutrient Management
- Harvest Management
- Stored Forages

Will not cover:

- Economics in detail
- Management of specific forages.

Recommended Reading:

"Southern Forages" 5th edition.

D.M. Ball, C.S. Hoveland and G.D. Lacefield

Our clients are trying to make a profit!

Profits are based on the decisions that are made.

"Decisions about forage should be based on several factors":

- "The cost of production or procurement measured at the point where the animal consumes the forage,"
- "The impact of forage choices on the total feed cost,"
- "The impact on animal performance, and"
- "The impact of year-to-year variations in yield and quality."

Source: "***Forage Economics"*** Geoffrey A. Benson, Professor Emeritus, Department of Agricultural and Resource Economics, and James T. Green, Jr., Professor Emeritus, Department of Crop Science, NC State University. https://content.ces.ncsu.edu/forage-economics

ALL Forage Economics Are Local

Generalizations are difficult and dangerous!

- The cost to establish and maintain forages varies widely across the southeast.

Each farm or ranch is unique

- Location, soils, hydrology, etc.

Land Prices and Taxes

- Higher land price, rent and taxes require higher production.

Management

- Cultural beliefs / values affect management choices**.**
  - Many believe, but few try new methods.
  - Not convinced the return will be greater than the cost.

Weather Has a Huge Effect

- **Management decisions must consider the weather.**
- **Profitable systems are adapted to the local climate.**
  - Central Florida has difficulty growing cool season forages for winter grazing because of dry conditions and high temperatures. Conversely, North Florida usually has favorable growing conditions.
  - Other states struggle growing warm season forage to fill their "Summer Slump" when weather limits growth of cool season forages.
- **The southeast US has a great deal of seasonal and interannual climate variability due to the proximity to the Atlantic Ocean and Gulf of Mexico.**
- **SE is impacted by warm tropical storms as well as cold weather systems originating in the Atlantic, Arctic or Pacific oceans.**

El Niño/La Niña

El Niño Southern Oscillation (ENSO) phenomenon exerts a strong influence on the climate of the Southeast U.S.

- El Niño years: The SE tends to be cooler and wetter.
- La Niña years: The SE tends to be warmer and drier between October and April and may be slightly wetter during the summer.
- Effects of the ENSO are not consistent across the region.
- The ENSO effect in the region is strongest in the fall and winter months.
- Indications that La Niña summers are slightly wetter than normal.
  - Corn yields tended to be high in La Niña years and low in the years that follow La Niñas (Hansen et. al., 1998)

Forage is expensive

- **Enterprise budgets from several states show the cost to establish various forages varies widely across the southern U.S.A.**
  - Hybrid Bermudagrass $220 to $440/ac.
  - Cool Season Grasses $123 to $286/ac.
- **Maintenance costs also vary widely:**
  - Hybrid Bermudagrass for hay ranged $485 to $660.
  - Based on a 5 ton yield that is $97 to $132/ton.
- **Plant it right**
  - It is too expensive to do it twice.
- **Mistakes have long term consequences**
  - Reduced yields.
  - Increased weed control costs.

Manage Nutrients Wisely

Management of nutrients affects the level and economic efficiency of forage production more than any other factor.

- **Soil Test or Plant Tissue Test**
  - Get test done at least once every 3 years.
  - Make sure to get the pH tested.
- **Lime**
  - Use lime to adjust the pH as needed to maintain production.
  - Lime is relatively inexpensive.
  - The pH affects the availability of many nutrients.
- **Fertilize**
  - Use fertilizer efficiently.
  - Do not fertilize areas where production is low.
  - Shaded areas or areas near watering facilities.
- **Plant legumes and cover crops where possible**
  - To fix nitrogen.
  - To build organic matter.

Harvest Management- Timing

Time harvests appropriately to optimize the amount of nutrients harvested and to promote a healthy and productive stand of forage .

- **Grazing**
  - Is it ready? Plants may not have enough energy for rapid regrowth.
  - Is there enough? Low yields may not be cost effective to harvest.
  - Is the quality adequate? Why harvest low quality forage?
- **Hay/Silage**
  - Is it ready? Is the crop at the proper stage for harvest?
  - How long can I wait without losing quality?
    - The nutrient content of hybrid Bermudagrass:
      - 4 weeks regrowth= 13.6% crude protein, 57.1% TDN
      - 6 weeks regrowth= 9.0% crude protein, 52.6% TDN
  - How will it affect the regrowth?

Harvest Management - Utilization

- **Adjust stocking rate to manage the utilization as the forage quality and rate of regrowth changes.**
- **Use fences and adjust herd size to manage utilization.**
- **Low utilization often results in:**
  - Spot grazing.
    - Large amounts of forage ungrazed.
    - Areas in pasture/paddock that are overgrazed.
  - Poor animal production per acre.
- **Excessive utilization results in:**
  - Overgrazing.
  - Reduced yields.
  - Loss of desirable forage.
  - Increased weed populations.
  - Increased soil erosion.
  - Water quality issues.

Stored Forages/Feedstuffs

- **Minimize the need for stored feed.**
  - Use rotational grazing system to extend the grazing season.
  - Plant cover crops or cool-season forages where possible.
  - Manage utilization.
  - Stockpile forage.
- **Reduce losses due to waste during storage.**
  - On farm hay storage may result in losses greater than 30%.
  - Store hay on where it is protected from the weather and will not absorb moisture from the ground.
- **Reduce loss due to feeding.**
  - Poor hay feeding techniques can result in losses over 50%.

How Expensive Are The Losses?

- **Assumptions:**
  - 100 acres of Bermudagrass for hay yielding 4.5 ton per acre.
  - Cost = $594 to produce one acre of hay in North Carolina in 2013.
  - Storage loss = 30% or 600 lbs...
  - Feed loss = 20% or 400 lbs...
- **Results:**
  - Harvested 450 tons
  - Cost of hay = $132.04 /ton or $0.066 /pound.
  - Storage loss = 600 lbs.. or $39.61 per ton.
  - Feeding loss = 400 lbs.. or 26.41 per ton.
  - Total loss = 1,000 lbs.. or $66.02 /ton
  - Loss per acre = $297.09
  - Loss per year = $29,709
- **Actual cost of forage consumed is:**
  - $264.08 /ton or $0.132 /pound.

Summary

- **Profits are made or lost because of the manager's decisions.**
- **Decisions must be based on local conditions.**
- **Growing forage is expensive.**
- **Planting - Do not cut corners.**
- **Nutrient Management – Be wise - Don't waste ~~fertilizer~~ money on unproductive areas.**
- **Harvest quality forage.**
- **Don't waste what you harvest.**

References

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Thank You for listening.
Any Questions?

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What is our role as Conservation Planners?

There are several answers to this question.

This is the one I like.

- "Our job is not to tell the landowner what to do."
- "Our job is not to recommend the landowner take a certain action."
- "Our job is to help the landowner learn enough to make good decisions."
  - Jeff Repp, retired SCS/NRCS Rangeland Management Specialist