

B e e f C a t t l e M a n a g e m e n t S e m i n a r



**Four County Auction Center
11942 Hwy 159 W
Industry, Texas
March 24, 2023**



Beef Cattle Management Seminar

Friday, March 24, 2023
Four County Auction Center, Industry
Registration - 12:30 p.m. – 1:00 p.m.
Program - 1:00 p.m. – 4:30 p.m.

Speakers and Topics:

1:00 pm – 1:10 pm	Welcome and Introductions <i>Bradley Rinn—Beef and Forage Committee Chairman</i>
1:10 pm – 2:10 pm	Update on Laws & Regulation for TDA <i>Dr. Don Renchie</i> <i>AgriLife Extension, Agriculture & Environmental Specialist</i>
2:10 pm – 2:20 pm	Break
2:20 pm – 3:20 pm	Carbon Capture in Grazinglands <i>Dr. Jamie Foster</i> <i>Professor of Forage Agronomy with Texas A&M AgriLife Research</i>
3:20 pm – 3:30 pm	Break
3:30 pm – 4:30 pm	Upcoming Changes in OTC Antibiotics for Beef Cattle Producers – Implications and Management <i>Dr. Steve Blezinger</i> <i>Nutritional & Management Consultant for Reveille Livestock Concepts</i>
4:30 pm	Wrap Up <i>Bradley Rinn—Beef and Forage Committee Chairman</i>

Program Organizers

The Beef & Forage Committee of Austin County

Individuals with disabilities who require an auxiliary aid, service or accommodation in order to participate in this activity are encouraged to contact the Extension Office in Austin County at least eight days prior to the program for assistance. The members of Texas A&M AgriLife will provide equal opportunities in programs and activities, education, and employment to all persons regardless of race, color, sex, religion, national origin, age, disability, genetic information, veteran status, sexual orientation or gender identity and will strive to achieve full and equal employment opportunity throughout Texas A&M AgriLife.

**AUSTIN COUNTY
BEEF AND FORAGE COMMITTEE**

Steve Blezinger

Don Dryer

Richard Fry

Charles Goeke

Alfred Hall

Ricky Huff

William S. Jackson

Allen Kaminski

Jo Ed Lynn

Reid Richardson

Bradley Rinn

Gregg Schubert

Dave Schulz

Gary Shupak

Ronny Woodley

Thank you to our Beef Cattle Management Seminar Sponsors!



This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

**Texas Department of Agriculture
Pesticide Applicator Record**



COMMISSIONER SID MILLER

Business/Applicator Name _____ **Address** _____

Application Date	Time Started	Name of the person for whom the application was made	Location of Land Treated		Site Treated	Wind Direction	Wind Velocity	Air Temp
Product Trade Name		EPA Registration Number	Target Pest	Rate of Product Per Unit	Method or Type of Equipment Used To Make Application	FAA "N" Number for Aerial Application Equipment:		
Is Application Applied in Regulated County: <input type="checkbox"/> Yes <input type="checkbox"/> No					Regulated Herbicide Permit Number:			
Licensed Applicator's Name and License Number			Non-licensed Applicator's Name Working Under Licensee		Total Acres or Volume of Area Treated	Total Volume of Spray Mix, Dust, Granules or Other Materials Applied Per Unit		
Documentation used to verify training of non-licensed applicator (Mark Applicable Box) <input type="checkbox"/> Direct Supervisor Affidavit <input type="checkbox"/> WPS Handler Card <input type="checkbox"/> Signed & Dated Label								

Application Date	Time Started	Name of the person for whom the application was made	Location of Land Treated		Site Treated	Wind Direction	Wind Velocity	Air Temp
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Documentation used to verify training of non-licensed applicator (Mark Applicable Box) <input type="checkbox"/> Direct Supervisor Affidavit <input type="checkbox"/> WPS Handler Card <input type="checkbox"/> Signed & Dated Label								



P.O. Box 12847 Austin, Texas 78711 ♦ (877) 542-2474 ♦ (512) 463-7476 ♦
Hearing impaired: (800) 735-2988 voice ♦ www.TexasAgriculture.gov

COMMISSIONER SID MILLER

Texas Department Of Agriculture
Pesticide Applicator Change of Information

PA-406

SECTION A	¹ VERIFICATION INFORMATION	
	Applicator Name	
	TDA Client No.	TDA License No.

Please provide ONLY the information that has changed.

SECTION B	¹ NEW PHYSICAL ADDRESS		
	Address		County
	City	State	Zip
	Directions to Physical Location if address above is difficult to find		
	² NEW MAILING ADDRESS <input type="checkbox"/> Same as Physical Address		
	Address		
	City	State	Zip
	³ NEW CONTACT INFORMATION		
	Primary Phone () -	Secondary Phone (optional) () -	Fax (optional) () -
	E-mail Address		
*** Important Note *** I understand that my email address is required for the Texas Department of Agriculture to keep me informed of critical information, including licensing and regulatory updates; renewal invoices; and other important communications. Failure to provide an email address may result in my not receiving time-sensitive information that could affect my compliance with state regulations, thereby, resulting in monetary penalties.			

This form can be emailed to license.inquiry@TexasAgriculture.gov or faxed to 800-909-8534.

This application becomes public record and is subject to disclosure. With few exceptions, you have the right to request and be informed about the information that the State of Texas collects about you. You are entitled to receive and review the information upon request. You also have the right to ask the state agency to correct any information that is determined to be incorrect. (Reference: Government Code, Sections 522.021, 522.023, and 559.004.)

Applicator Name _____

SECTION C	¹ COMMERCIAL/NONCOMMERCIAL/ NONCOMMERCIAL POLITICAL SUBDIVISION ONLY		
	Employer Name		Primary Phone () -
	² NEW EMPLOYER'S PHYSICAL ADDRESS		
	Address		
	City	State	Zip
	³ NEW EMPLOYER'S MAILING ADDRESS <input type="checkbox"/> Same as Physical Address		
SECTION D	Address		
	City	State	Zip
	¹ NEW RESIDENT AGENT - OUT-OF-STATE APPLICATORS ONLY		
	Who do you wish to designate as resident agent? <input type="checkbox"/> The Texas Secretary of State <input type="checkbox"/> Other (list below)		
	New Resident Agent Name		
	New Resident Agent Address		
SECTION E	City	Zip	Business Phone () -
	¹ SIGNATURE		
	By submitting changes to licensing information, the person submitting the changes certifies that he or she is authorized to make such changes on behalf of the licensee and that all information provided is true and correct to the best of the person's knowledge. Any misrepresentation or false statement made by the licensee or the licensee's authorized representative in connection with such changes, whether intentional or not, may result in denial, revocation, or non-renewal of any affected license and/or assessment of monetary administrative penalties.		
	Applicant Name (print)		Title
	Applicant Signature		Date / / month day year

Texas Department of Agriculture
Commissioner Sid Miller
Regulated Herbicide Spray Permit

TDA Use Only:

Type of Permit:

☐

Individual

☐

Blanket

Permit Number: _____ Date Issued: _____

County(s) Approved: _____ Region: _____

Inspector's Signature: _____ Inspector Number: _____

To Be Completed by Applicant:

Person applying for permit: _____
Name Phone

Address: _____
Street or P.O. Box City State Zip

Responsible Licensed Applicator: _____
Name License or Certificate No Phone

Address: _____
Street or P.O. Box City State Zip

Counties Where Applications will occur: _____

Acres to be treated: _____ Type of spray equipment: _____

Product Name(s) and EPA Reg. Number(s): _____

Active Ingredients: _____

The following items pertain to individual spray permits only:

Intended date(s) of application: _____

Exact location(s) of land to be treated: _____

*List the nearest susceptible crops in all directions from the target area and distances. If using highly volatile herbicides, list susceptible crops within a 4-mile radius of the target site:

TDA Remarks: _____

The Herbicide Spray Permit expires when the acreage for which the permit was granted has been sprayed or 180 days after issuance, whichever comes first.

Applications records, including spray permits, must be kept for 2 years after application date.

*Highly volatile herbicides include methyl, ethyl, butyl, isopropyl, octylamyl, and pentyl esters containing various concentrations expressed in pounds of acid equivalent per gallon. Spraying high volatile herbicides is prohibited when there are susceptible crops within a 4-mile radius from any point of the land to be sprayed. Susceptible crops may include field crops, orchards, nurseries, gardens, etc.

Return form to TDA Regional office at:

Texas Department of Agriculture

5425 Polk Street Suite G -20

Houston, Texas 77023

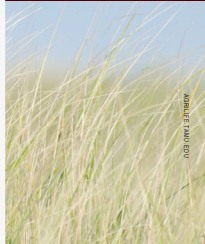
Fax: (888) 2223-5606

TEXAS A&M AGRILIFE

Carbon Capture in Grazinglands

Jamie Foster
Professor of Forage Agronomy
and
Katie Lewis
Associate Professor of Soil Chemistry and Fertility

Beef Cattle Management Seminar
March 24, 2023

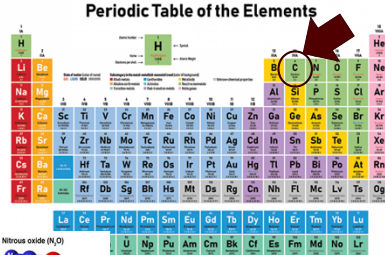




AGRI LIFE PHOTO


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
What is Carbon?


The short answer is a chemical element. Carbon is the base element of living organisms. In this context we say carbon, but mean the carbon containing compounds within the C cycle, like carbon dioxide, methane, or SOC.




 Water vapor (H₂O)


 Nitrous oxide (N₂O)


 Carbon dioxide (CO₂)


 Methane (CH₄)

2

Soil OC – Ecosystem Services

- Functions/benefits are the result of SOM (and SOC) mineralization
 - Quantity added is not indicative of benefits

Biological functions

- provides energy to biological processes
- provides nutrients (N, P, and S)
- contributes to the resilience

Physical functions

- improves the structural stability of soils
- influences the water retention properties
- alters soil thermal properties

Chemical functions

- contributes to cation exchange capacity
- enhances pH buffering
- complexes cations

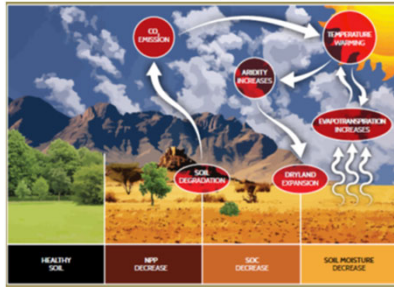
Functions of Soil Organic Matter

3

Soil OC – Ecosystem Services

• Greater stabilized SOC fractions will reduce CO₂ losses thereby reducing the greenhouse effect and mitigating climate change effects

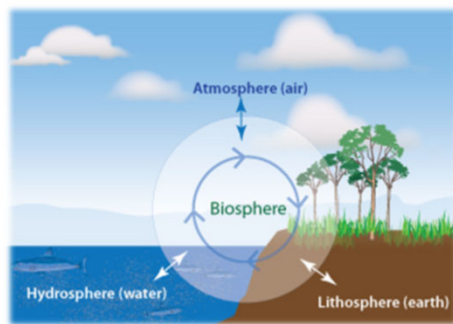
• Most important goal is to ensure sufficient food production and water supply



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Global Carbon Cycle

Biogeochemical cycle by which C is exchanged between the *biosphere*, *geosphere* (lithosphere), *hydrosphere*, and *atmosphere*



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Global Carbon Cycle

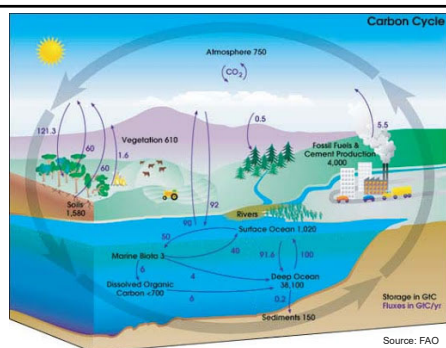
Sources (Gt C/year)

- Ocean release = 90
- Respiration = 60
- Decomposition = 60
- Fossil fuel = 9.3
- Deforestation = 1.0
- **TOTAL SOURCES = 220.3**

Sinks (Gt C/year)

- Photosynthesis = 120
- Ocean uptake = 92.7
- Soil = 0
- **TOTAL SINKS = 212.7**

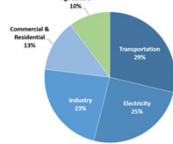
SOURCES – SINKS = 7.6 Gt C
added to atmosphere annually



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Greenhouse Gas Emissions (CO₂, N₂O, and CH₄ as CO₂ equivalents)

Total U.S. Greenhouse Gas Emissions by Economic Sector in 2019



Agriculture accounts for 10% of total U.S. greenhouse gas emissions. EPA.gov

USDA, Greenhouse Gas Inventory, 1990-2018

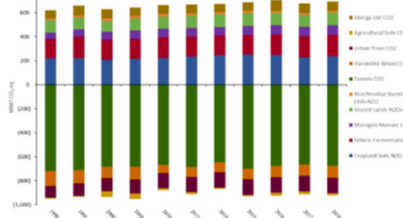


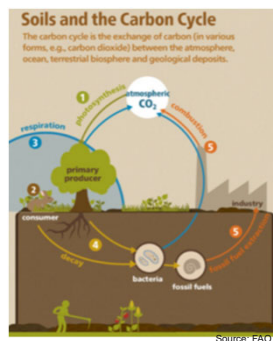
Figure 1-3 Agriculture and Forestry Emissions and Removals for 1990, 1995, 2000, 2005, 2010, 2015-2018 (GtCO₂e is a million metric tons of carbon dioxide equivalent)

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Global Carbon Cycle

• Soil is a major C reservoir, but it could have the potential to be a sink

- **Sink** is accumulating C (e.g., ocean or atmosphere)
- **Reservoir** is not actively accumulating C
 - Photosynthesis (120 Pg C/year) =
 - Respiration (60 Pg C/year)
 - + Decomposition (60 Pg C/year)



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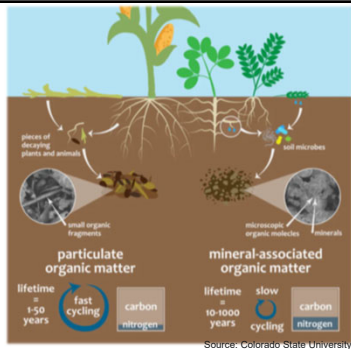
Soil OC – Source and Sink

- Anthropogenic impacts on soil can turn it into either a net sink or net source
- Source: greenhouse gases (GHG) including CO₂ and CH₄
 - CO₂ is most abundant C gas in atmosphere
 - Autotrophic and heterotrophic respiration of CO₂ is second largest terrestrial C flux
 - CH₄ is a 28x more potent GHG than CO₂
 - Released during decomposition of OM under anaerobic conditions (methanogenesis)
- Sink or SOC sequestration involves three stages:
 1. Removal of CO₂ from the atmosphere via plant photosynthesis
 2. Transfer of C from CO₂ to plant biomass
 3. Transfer of C from plant biomass to soil where it is stored as SOC in the most labile pool

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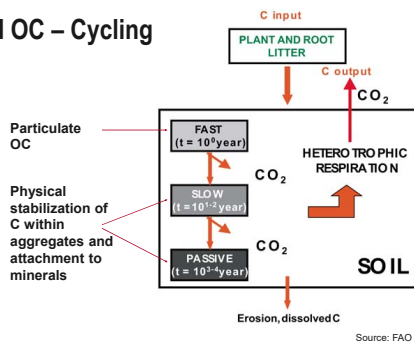
Soil OC – Cycling

- Soil organic C (OC) = 1500 Gt C/year
 - More C than the atmosphere (800 Gt C) and terrestrial vegetation (500 Gt C) combined
- Dynamic reservoir – constantly changing due to microbial cycling of soil organic matter (SOM)
- Soil organic matter contains roughly 55-60% C
- Pools are not created equally
 - Particulate OM (checking account – quick to change)
 - Mineral-associated OM (saving account – slower to change)



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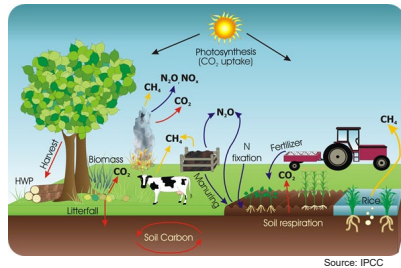
Soil OC – Cycling



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Grazingland Carbon Cycle

- 10% of the global SOC stock
- Sources
 - Livestock
 - Respiration
 - Eructation
 - Flatulence
 - Excrement
 - Soil and forage respiration
 - Fertilizer
 - Fossil fuel
 - Losses
 - Equipment
 - Fossil fuel
 - Forage decomposition
 - Burning
- Sinks or reservoirs
 - Photosynthesis
 - Soil
 - N fixation
 - Manure, poultry litter, etc. application
 - VERY climate dependent



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Soil OC – Managing to Increase Stocks

1 Continuous no-till



▪Soils depleted of SOC have greatest potential to gain C

2 Preservation of crop residues



▪Most soils are far from C saturation threshold

3 Diversification of crop system



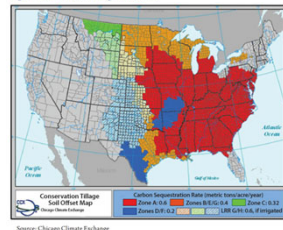
▪Great potential for increased C inputs and management that protects C stocks to maximize C sequestration

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Grazingland Carbon Storage vs Increase

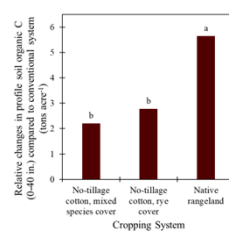
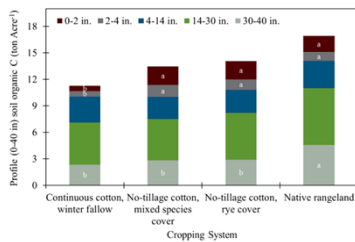
- Carbon Banking/Credits may be based on general capacity of soil carbon storage (sequestration) OR increases of soil carbon storage due to changes in management
- Well managed grasslands ARE NOT candidates for credits based on increased soil carbon
 - These land uses can serve as a target for the capacity of soil to store carbon
 - Row crop lands are most suited to this category because of a lower baseline value
- Well managed grasslands ARE candidates for credits based on soil carbon storage
- There are already well-established programs that indirectly incentivize carbon storage
 - Conservation Reserve Program (NRCS)
 - Conservation Stewardship Program (NRCS)
 - Environmental Quality Incentives Program (NRCS)
 - Conservation Easements (Various trusts, etc...)
 - Landowner Incentive Program (TPWD)

Figure 1. Conservation tillage soil offsets.



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Soil Organic C (Lewis et al., AG-CARES, est. 1998)



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Grazingland Management to Increase Stocks

Most impact

- Increase forage production
- Convert crop land to pasture
- Introduce legumes/increase diversity

Smaller impact

- Improved grazing
- Fertilization

4R Principles of Nutrient Stewardship

- RIGHT SOURCE:** Matching the nutrient source to the crop and soil.
- RIGHT RATE:** Matching the amount of nutrient to crop needs.
- RIGHT TIME:** Applying nutrients when plants can use them most efficiently.
- RIGHT PLACE:** Delivering nutrients where they are needed most.

Figure 11. Square or rectangular paddock layout uses a central lane with shared waterlines. Paddocks are separated by mobile or permanent fencing.

Contant et al., 2001

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Convert Crop Land to Pasture: A Texas Example

- Potter et al., 1999 3 soil types all vertisols in central Texas
- 60-, 26-, and 6-year restored grasslands compared to 100+ years full tillage row cropping and never tilled rangeland
- SOC increased as time after grassland restoration increased
- Carbon sequestration rate indicates 98 additional years for 60-year restored grassland site to reach carbon equivalent of the native rangeland

Soil depth, in	Row Crop	Restored grassland	Native rangeland
	-----SOC, %-----		
0-2	1.74	2.84	5.29
2-4	1.70	1.97	3.29
4-6	1.52	1.75	2.85
6-8	1.44	1.63	2.49
8-12	1.30	1.42	2.02
12-16	1.12	1.19	1.73
16-24	0.95	0.92	1.31
24-32	0.73	0.84	0.99
32-40	0.56	0.55	0.84
40-48	0.64	1.18	2.01

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Increase Forage Production

Species and diversity

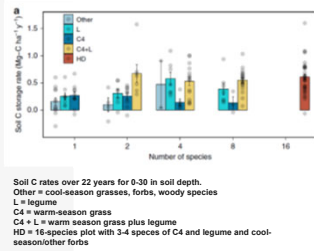
Fertility

Stocking management

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Number of Species and Functional Groups

- Yang et al., 2019
- 24 year study
- Root mass twice as much with 16 species versus monoculture
- Warm-season grasses have the greatest root mass and greatest soil C storage rate
- Adding a legume increases the soil C storage rate

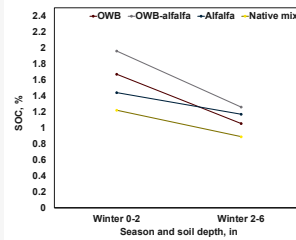


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RESEARCH

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Legume Inclusion

- Bhandari et al., 2018 Lubbock, TX
- OWB, Native mix (all warm-season grasses, OWB-alfalfa, alfalfa)
- SOC greater in OWB-alfalfa
- OWB greater herbage mass than native mix
- Legume inclusion contributed to increase of soil microbes and soil C and N
- Mineralizable N contributed to increased SOC at these shallow soil layers
- Increase of annual forage production



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Forage Species Management for Productivity



- The better adapted a forage species is, the fewer inputs and less management required to maintain the forage
 - Climate
 - Precipitation
 - Temperature
 - Soil
- Temporal or spatial mixes
 - Winter vs. summer
 - Mix, strips, etc...
- Consider legumes or forbs to increase functional groups
 - Soil microbe benefits

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4R Principles of Nutrient Stewardship

- RIGHT SOURCE:** Selecting the correct source to meet crop needs.
- RIGHT RATE:** Applying nutrients at the right rate to avoid losses.
- RIGHT TIME:** Applying nutrients at the right time to avoid losses.
- RIGHT PLACE:** Applying nutrients in the right place to avoid losses.

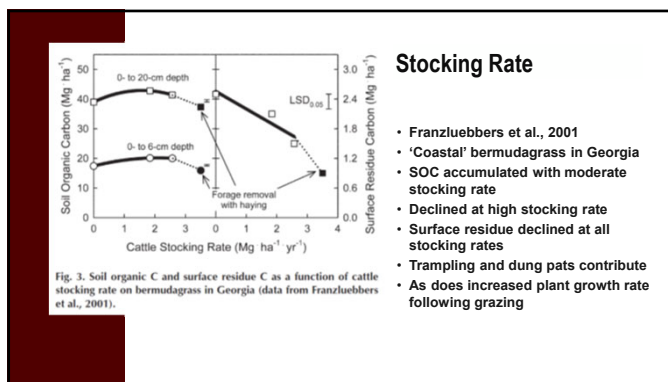
Fertilization Time & Place

- Growing season
- Reduce volatilization of N
 - Before rain/irrigation
 - Low temperature, humidity, wind, soil moisture
- Consider soil testing in management zones to increase precision
- Slopes and distance to surface water

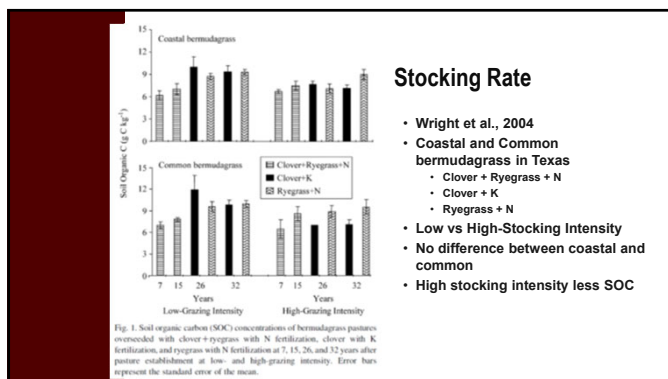


Cornille-Olson

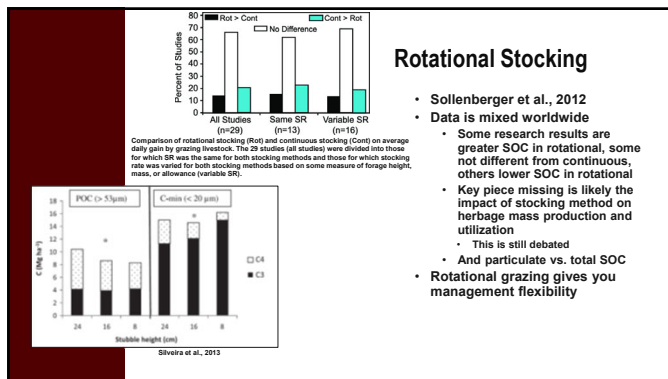
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26



27



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Determine through experience...

- But how are animals different compared to in the past?
- But how has forage productivity changed?

It's a good idea to measure and put pen to paper for long-term planning

- Avoid over- or under-grazing
- Be prepared in a drought
- Equals \$\$\$\$

Stocking Rate

FORAGE **ANIMAL REQUIREMENT**

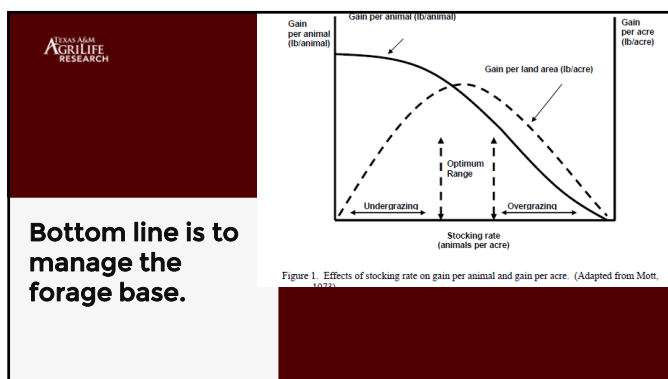
Supply

→

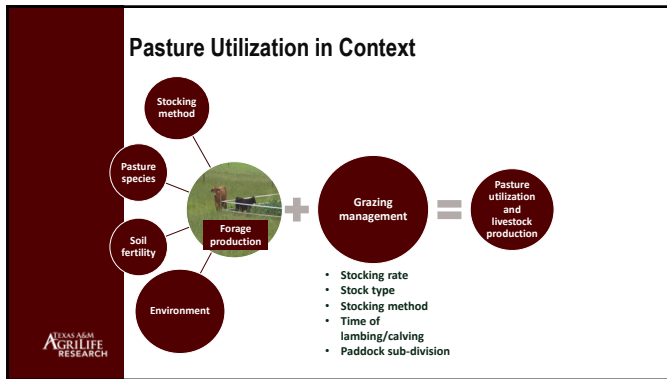
Demand

CALCULATE STOCKING RATE

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Carbon Capture and Storage in Grazingland Soils

01

Increase forage production and utilization.

Forage is the primary producer of the grassland. Grazing management, fertilization, diversity, and other management are key.

02

Eliminate soil disturbance.

Soil disturbance is a primary driver of SOC decrease.

03

Stock properly.

This advice is no different from what has been advised by Extension and NRCS for years. Stock to leave stubble remaining and avoid overgrazing.

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Contact Us

→ **Jamie Foster**
jfoster@ag.tamu.edu

→ **Katie Lewis**
Katie.lewis@agnet.tamu.edu

TEXAS A&M AGRILIFE

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(<https://agrillifetoday.tamu.edu/>)

10 questions to ask before signing a carbon credit contract

Agricultural law specialist offers considerations for landowners interested in selling carbon credits

December 6, 2022

No two carbon credit contracts are written the same, and that is why [Texas A&M AgriLife Extension Service](https://agrillifeextension.tamu.edu/) (<https://agrillifeextension.tamu.edu/>) agricultural law specialist Tiffany Lashmet, J.D., said there is a list of considerations she advises everyone to take before entering a carbon credit contract.

“That fine print is really important,” Lashmet said. “Don’t read the first paragraph, then the dollar amount, and be done.”

She recommends all landowners seeking to enter into a carbon credit contract ask up front if the company is willing to negotiate, as this will save a lot of time and trouble. Similarly, she recommends finding a good attorney to look the contract over for you. These contracts have many details that need attention before signing any document.



Reduced tillage can be one of the practices required in a carbon credit contract. (Texas A&M AgriLife photo by Sam Craft)

Questions to answer before signing a carbon contract

1. Have you read the entire contract? Read all of it. Every contract includes details in the fine print that can be problematic.
2. What agricultural practices are required within this contract? For example, some contracts may mention no-till farming, reduced tillage, cover crops or regenerative grazing. Make sure you understand what is required to comply with the specific contract.

Similarly, watch for terms like “conservation practices” that are vague and undefined. Also, be aware that some contracts have “additionality clauses” that might prohibit producers from entering into the contract if they already have certain production practices in place for a certain period.

3. How will payments be structured? Do more than just look at the dollar amount. Understand if the payment is based on practice or outcome or if the structure is a flat per-acre fee or price per ton of carbon dioxide equivalent, CO₂e. Know what is included in the measurements – carbon, carbon dioxide equivalent or greenhouse gases, for example.

Also, make sure you understand the potential for sequestration in your fields, as it can vary by locality. The national average is 0.6 ton of CO₂e per year; however, it is estimated to be 0.1 ton of CO₂e per year in some areas of Texas, such as the High Plains.

4. What is the term length of the contract? Are there any mentions of extensions? Look for a discussion of “permanence” that may require a producer to abstain from a certain activity for a set time. Explore what rights both you and the company have to terminate the contract, if desired.
5. How will the verification of carbon credits happen? For example, will confirmation be based on modeling or measurements? All contract participants should know when, where, how often, how many sites and who will be doing the measurements with what methods. On a similar note, find out who is responsible for paying for this verification.

Check for “no reversal” clauses that could cost you if the amount sequestered becomes lower instead of increases, and be aware of the factors in your area that may impact the amount you sequester. For example, drought can potentially reduce the amount of carbon sequestered in any given year. Are there any provisions for the landowner/producer to audit or appeal determinations or measurements?

6. What other uses can you make of the land? Does the contract restrict hunting, oil and gas production or wind or solar energy production if those concern your operation?
7. What penalties can be imposed on you? What triggers a penalty? Understanding the consequences and penalties that may be imposed if the contract is terminated early is critical.
8. How broad is the stacking prohibition? Nearly all contracts limit a producer’s ability to enroll the same land in multiple carbon contracts. However, some contracts are written more broadly and may also exclude enrollment in government programs.
9. What data must you provide? Be aware that some contracts require you to provide extensive data on production, including fuel use, calving dates, birth weights, yields, pesticide application volumes, fire history, etc. Also, watch for blanket entry rights onto your property and permissions to fly drones anytime over your entire operation, not just over the property enrolled in the carbon contract.

0. Do you understand the legal considerations? All of the contracts will have a number of clauses related to technical legal issues. Know what it says about rights to assign the contract, attorney fee provisions, payment for negotiating and drafting the contract, choice of law, venue clauses, dispute resolution and class action waivers, and the scope of any waiver clauses.

Bottom line on carbon credit contract

There are a number of different companies offering contracts to producers across the country, from forest landowners to row-crop farmers to rangeland owners, Lashmet said. But every operation is unique, and every contract is different, meaning producers must carefully consider various factors before entering into an agreement.

“Put pencil to paper and determine if the likelihood of payment will be worth the practices you must do under the contract,” Lashmet said. “It is critical to ensure that the anticipated return exceeds the anticipated costs of switching to one of the qualifying carbon-friendly practices.



Tiffany Lashmet, J.D., advises landowners to carefully consider carbon credit contracts before signing. (Texas A&M AgriLife photo by Laura McKenzie)

For further information or discussion, explore Lashmet’s [Ag Law in the Field](https://aglaw.libsyn.com/episode-117-anson-howard-todd-janzen-carbon-contracts) podcast (<https://aglaw.libsyn.com/episode-117-anson-howard-todd-janzen-carbon-contracts>) or her [Texas Agriculture Law Blog](https://agrilife.org/texasaglaw/2022/01/24/understanding-evaluating-carbon-contracts/) (<https://agrilife.org/texasaglaw/2022/01/24/understanding-evaluating-carbon-contracts/>) on this subject.

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Upcoming in OTC Regulations Implications Managem

Presented to:
The Austin County Bee
Management Semina
Four County Auction



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Reveille Livestock Concepts
New Ulm, TX
March 24, 2023

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Some things to discuss

- What are the changes in OTC antibiotic regulations?
- How will this affect the cattle producer?
- What does a Doctor (Veterinarian)/Client relationship mean?
- Taking a cost-effective, nutritional approach to managing herd health.
- Dealing with stress
- Developing a working/vaccination program



2

Changes in antibiotic access regulations

- Beginning on June 11, the regulations concerning access to over-the-counter antibiotics is changing (FDA Guidance to the Industry #263).
- Producers must have a prescription from a licensed veterinarian to get antibiotics for their livestock.
- This change is largely in response to the perception that use of antibiotics (fed and therapeutic) has contributed to the increased incidence of antibiotic resistance in pathogens affecting humans, especially where the treatment drug is the same or similar.



3

Changes in antibiotic access regulations

- Many doctors as well as the FDA and other regulators believe producers have, in many cases, mishandled antibiotics and thus need veterinarian involvement and oversight.
- The perception is that there has been significant overfeeding or over-use of drugs that have been easily accessible to the user.
- The belief is that because of this over-use, many pathogens that affect humans have become resistant to a variety of drugs, particularly antibiotics, commonly used in human medicine.



4

Changes in antibiotic access regulations – what does this mean to the cattle producer

- The new directive states that if a producer wants or needs any current, typical over-the-counter antibiotic, the purchase will require a prescription from a veterinarian.
- This will require that the cattle producer will have to establish a veterinarian-client relationship.
- This may result in a variety of implications.



5

Changes in antibiotic access regulations

Veterinarian-client/patient relationship (VCPR) means, by the book, that:

- The veterinarian is assuming the responsibility for making clinical judgments regarding the health of the animal and the need for medical treatment, and the client has agreed to follow the veterinarian's instructions.
- The veterinarian has sufficient knowledge of the animal to initiate at least a general or preliminary diagnosis of the medical condition of the animal. This means that the veterinarian has recently seen and is personally acquainted with the keeping and care of the animal by virtue of an examination of the animal or by medically appropriate and timely visits to the premises where the animal is kept.
- The veterinarian is readily available or has arranged for emergency coverage and for follow-up evaluation in the event of adverse reactions or the failure of the treatment regimen.



6

Managing the new antibiotic availability regulations

- **Oxytetracyclines**
 - Injectables: Liqueamycin LA-200®, Noromycin 300 LA®, Bio-Mycin 200®, Agrimycin 200®, etc.
 - Boluses: Terramycin® Scours Tablets, OXY 500® Calf Boluses
- **Penicillins** (*Penicillin G procaine, penicillin G benzathine*)
 - Injectables: Penicillin Injectable, Dura-Pen®, Pro-Pen-G®, Combi-Pen 48®, etc.
 - Intramammary tubes: Masti-Clear®, Go-dry®, Albadry Plus®
- **Sulfa-based antibiotics** (*Sulfadimethoxine, sulfamethazine*)
 - Injectables: Di-Methox 40%®, SulfMed 40%®
 - Boluses: Albon®, Sustain III® Cattle & Calf Boluses, Supra Sulfa III® Cattle & Calf Boluses
- **Tylosin**
 - Injectables: Tylan 50®, Tylan 200®
- **Cephapirin, cephapirin benzathine**
 - Intramammary tubes: ToDAY® and ToMORROW®



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Products that WILL NOT be Affected

- Current antibiotics, etc. that already require a prescription
 - Antibiotics – Draxin®, Exceed®, Baytril®, etc.
 - MultiMin®, MU-Se, etc.
- Veterinary Feed Directive Products
 - CTC
- OTC Animal Health Products
 - Vaccines
 - Dewormers
 - Fly Control
 - Implants
 - Ionophores (Rumensin®, Bovatec®)



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Typical Herd Health Issues Managed/Treated with OTC Antibiotics

- Pinkeye
- Foot rot
- Respiratory infections
- Gastrointestinal infections
- Reproductive conditions – calving issues, retained placenta
- Injuries



9

Changes in antibiotic access regulations – potential implications?

- Veterinarians, who are already stretched thin, will have to develop a way to manage the added work-load and paperwork.
- May put the Vet in the awkward position of having to say “no” to those producers who they do not have a VCPR.
- May be inclined to limit Rx's written to those drugs they sell in the clinic. May be unwilling to provide Rx's for products purchased elsewhere.
- May result in increased cost of these products.
- Some stores that have commonly sold these products may choose to no longer stock these items requiring a script.
- Some producers may be less motivated to make the effort to obtain some of these more common antibiotics and thus may not treat health issues.
 - ❖ Reduced treatments may increase severity of the problem
 - ❖ Increase ultimate cost
 - ❖ Increase in animal losses

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What can producers do to lessen the effect of these new regulations?



- Every possible treatable health issue cannot be avoided. The goal of every producer should be to develop the healthiest herd possible. Improving animal health and immune function will help reduce the use of antibiotics and other treatments.
- While most producers have some type of a health program, these changes should encourage more detailed management to improve herd health and in turn reproduction and overall performance.

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What can the producer do to lessen the effect of these new regulations?



Taking a Nutrition and Management Approach

- Improve overall herd nutrition
 - Match cow nutrient requirements with supply
 - ❖ Protein and energy
 - ❖ Minerals and vitamins
 - ❖ Using strategic additives
- Reducing stress
- Develop an inclusive herd vaccination program



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How Does Your Nutrition Program Affect This?

- With the new antibiotic directive, many producers may be resistant to going to the trouble of obtaining an Rx to purchase basic antibiotics.
- This will make supporting animal health and immune response even more important.
- So, having a good quality, well-balanced nutrition program is even more important to supporting health in all cattle operations.

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Building a Health-Focused Nutrition Program – Understanding What You Have

Steps to determining requirements:

Some definitions

- Type of cows – crossbred, purebred? What breeds or breed combinations?
- Average size of the mature cows
- Milking capacity? High, medium, low
- Average size/age of the heifers at breeding
- Age of average cow in the herd
- How are cows bred – breeding season? If so, when?
- How are cows grouped?



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Determining Supply

What do you have?

Forage base – information per forage test

- Pastures – Seasonal
 - ❖ Composition
 - ❖ Volume
 - ❖ Fertility
- Fall and Winter
 - ❖ Stored forage – Hay, haylage, silage
 - ❖ Stockpiled forage
 - ❖ Winter pastures



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Recognize that Forage Nutrients Change

• Why do changes occur?

- Nutrient values of growing plants change as they mature.
- ❖ Pastures can change as different species become more prevalent over time and with management. (native pastures).
- ❖ Change from one feeding source to another. For instance:

Summer Pastures → Hay/Haylage → Winter/Spring Pastures → Summer Pastures



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Buying Hay

In many cases, producers need to purchase the hay they feed:

- Often have no idea what the production conditions were.
- Can be very expensive
- Can be very poor quality
- Buying by the bale is not a good method economically. Too much weight variability. Purchasing by weight is preferable.
- Buy sooner rather than later.
- Always test purchased hay.
- If possible, examine any hay considered to have some idea what you will be getting.



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Forage Sampling and Analysis



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
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Building an Optimal, Health Focused Nutrition Program

Correct nutrition directly affects animal health and immune response.



 Pay me now or pay me later!

- **Protein** – often considered the most critical nutrient since so much of our focus is given here. Significant part of rumen function and health as well as involved in every system in the body, including the immune system.
- **Energy** – works like gas in your car and is the “fuel” that drives all body processes – sourced from carbohydrates (fibers and starches), fats and protein.
- **Minerals and Vitamins** – bind everything together.


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Feeding and Supplementation Options

- Range Feeds – typically 20% Protein (+/-)
- Other Feeds
 - ❖ Pellets
 - ❖ Loose or textured mixes
 - ❖ Meals
- Intake Limiting
 - ❖ Salt
 - ❖ Intake limiting technologies
- Blocks/Tubs
- Liquid Feeds
- Commodities

COST

Commodities -	\$
Liquids -	\$\$
Range cubes, other basic feeds -	\$\$\$
Blocks/Tubs -	\$\$\$\$
Intake Limiting (depends on type) -	\$\$\$\$\$



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The foundation of solid, health focused nutrition is the **mineral program**. Just like the screws, nuts and bolts that hold a car together, minerals and vitamins bind the body and all it's processes together.



Secondly, a solid mineral program depends on balance. Individual minerals in the body, and in turn, in the diet are in a relationship with other minerals. If one mineral is available in excess or is short, it can affect the balance and function of others.



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Example Nutrient Requirements for Pregnant Cows and Heifers

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Why Are Minerals Important?

- Bone Development**
Ca, P, Mg, Mn, Cu
- Fertility**
P, Cu, Zn, Se, Mn
- Appetite**
Mg, K, Zn, Co
- Muscle development**
P, S, Zn, Se
- Nervous system**
Mg, P, Cu
- Milk production**
Ca, P, Mg, Zn
- Fetal development**
Cu, Zn, Mn, Se
- Skin & hoof health**
Zn, Cu and Mn
- Disease resistance**
Cu, Zn, Mn, Se
- Hair coat**
Cu, Zn, Se

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Selecting a Mineral Supplement

In selecting a mineral/vitamin supplement:

- Consider the cows – what is your genetic base
- What is your cow size?
- Are you having any particular problems?
- What is your forage base? Pastures, Hay, Haylage, Silage
- How do you supplement other nutrients (protein/energy)?
- Aside from nutrient delivery what else are you trying to accomplish?
 - ✓ Fly control (IGRs, garlic products)
 - ✓ Stress management (yeast, DFMs)
 - ✓ Improve gain performance (ionophores, enzymes)
 - ✓ Improve Repro/Health (nutrient profile, sources)
 - ✓ Deliver medications (CTC)



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Beef Cattle Mineral Requirements

Mineral	Unit	Cow	Calf
Calcium	%	.4 to .55	.45 to .6
Phosphorus	%	.32 to .38	.35 to .45
Potassium	%	.6 to .7	.75 to .9
Magnesium	%	.15 to .25	.1 to .2
Sulfur	%	.15 to .18	.15 to .18
Sodium	%	.08 to .1	.08 to .1
Cobalt	ppm	.50	.50
Copper	ppm	15	18
Iodine	ppm	.75	.75
Iron	ppm	120	140
Manganese	ppm	45	50
Selenium	ppm	.30	.30
Zinc	ppm	55	65



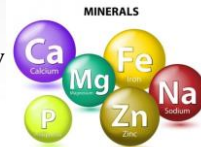
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Custom Laboratory Inc.			
Marty Dade • customlab@kenet.net 170 New Rd. • Box 1 • Stone Sutton, MA 01468-9888 • 417.537.8337			
Sample Date + No	08/24/08-63	08/24/08-64	08/24/08-65
Sample I.D.	GRASS HAY UNCH	GRASS HAY UNCH	GRASS HAY UNCH
	As Is	Dry	As Is
Moisture	8.268	8.499	8.499
Dry Matter	91.732	100.000	91.501
Crude Protein	8.218	8.267	8.763
Crude Fiber	44.151	48.120	42.383
A. D. Fiber	49.790	54.266	50.966
N. D. Fiber	49.790	54.266	50.966
Light	49.790	54.266	50.966
HE Acid	49.790	54.266	50.966
HE Base	49.790	54.266	50.966
Digest	49.790	54.266	50.966
Crude Fat	49.790	54.266	50.966
PH	49.790	54.266	50.966
Calcium	1.170	1.191	1.183
Phosphorus	1.115	1.133	1.122
Iron	1.108	1.125	1.115
Magnesium	1.179	1.195	1.182
Sulfur	1.166	1.170	1.119
Potassium	1.155	1.161	1.124
Sodium	1.155	1.161	1.124
Copper	1.155	1.161	1.124
Zinc	1.155	1.161	1.124
Manganese	1.155	1.161	1.124
Selenium	1.155	1.161	1.124
Chlorine	1.155	1.161	1.124
Fluorine	1.155	1.161	1.124
Antimony	1.155	1.161	1.124
RFV/Qual. Score	1.155	1.161	1.124

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Why are mineral/vitamin supplements so expensive?

- A typical, well-designed mineral and vitamin supplement includes a fairly large number of relatively expensive ingredients.
- The one, single nutrient that generally contributes the most cost is Phosphorus. Depending on the P level in the final product, the P sources can make up 50 to 60% of the total ingredient cost.
- The least expensive ingredients include calcium, salt and often the carrier.
- Ingredients like the trace mineral sources which may be chelates or other complexes, are typically the most expensive per lb but are included at low levels.
- Vitamins are also quite expensive.



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Characteristics of a Well-designed Mineral Supplement?

- Reasonable price
- Consistent intake
- Good feeder performance
- Performance improvements, maintenance
- Improved breeding/conceptions
- Healthier calves, less dystocia
- Better calf growth
- Healthier calves/cows
- More responsive to vaccines and antibiotics (improved immune response)
- Less foot/hof issues, less pinkeye
- Lower heat or environmental stress
- Better haircoats (less dull, less red on black cows)



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So, what is too expensive?

This is very relative. If you are having health or reproduction issues the better quality or more nutrient dense mineral supplement looks pretty inexpensive. Also, just because a mineral is expensive does not make it better!

Consider this cost comparison:

Mineral cost	\$25.00/bag	\$35.00/bag
Average intake	.25 lbs/h/d	.25 lbs/h/d
Cost/head/day	\$.125	\$.175
Cost/head/month	\$3.75	\$5.25
Annual Cost	\$45.00	\$63.00
Annual Cost/50 hd	\$2,250.00	\$3,150.00 (+\$900.00)

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So, what is too expensive?

Typical results from feeding a better quality or more nutrient dense mineral supplement (correctly balanced):

- Better breeding rates – What is the value of just one more calf?
- Better health
 - ❖ What does a vet call cost?
 - ❖ How much is a bottle of typical antibiotic?
 - ❖ How much does it cost to treat foot rot or pinkeye?
- Labor costs?
- What is the value of heavier calves?
- What is the value of retaining cows in the herd an extra year or two?



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Strategic Additives can Improve Animal Health

- A variety of additives are available to improve health, reproduction and performance:
 - ❖ Yeasts
 - ❖ DFMs
 - ❖ Enzymes
 - ❖ Plant Extracts
- Fly control products – IGRs, garlic products
- Medications – CTC, Bloat control
- Ionophores – Rumensin®, Bovatec®



Can be delivered (fed) through any of the supplement types.

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Reducing Stress is a Key to Supporting Herd Health

Numerous stressors affect the cow herd

- Stress is well known to depress immune response at a variety of levels.
 - ❖ Environmental Stress – heat, cold, wet, mud, drought.
 - ❖ Nutritional Stress – Nutritional needs not met, poor quality forages, limited forage availability.
 - ❖ Internal/External Parasite Stress
 - ❖ Handling Stress – poor quality facilities, too much “cowboying,” dogs, horses contribute to the problem.
 - ❖ Transportation
- Continual, repeated stress, combinations of stress is especially problematic.
- Stress reduction is a matter of planning and management.

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Work with your Vet to Develop a Sound Herd Health Plan and Vaccination Program

A sound herd health plan will offset many potential health issues

- Spring and fall workings
- This should include, at minimum:
 - ❖ Vaccinations for critical diseases – clostridium, respiratory, reproductive vaccines. Consult with your vet to determine which products are best for your operation, location, herd conditions.
 - ❖ Deworm – alternate dewormers to minimize development of resistance. Oral, injectable, pour-on.
 - ❖ Treat for external parasites – flies, grubs, lice, etc. Alternate fly tags, other products.
 - ❖ Supplemental treatments – injectable trace minerals, vitamins, oral



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Wrapping it up

- New FDA regulations will make OTC antibiotics no longer available except with a veterinarian's prescription.
- The implications can be reduced by improving your herd health program.
- A major part of this is building a sound nutritional program for the entire herd.
 - ❖ Understanding herd nutritional requirements
 - ❖ Forage testing
 - ❖ Balanced supplementation program
 - ❖ Sound mineral program
 - ❖ Use of strategic additives
- Planning and management can help reduce stress.
- Work with your veterinarian to develop your herd health, working program.



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Thank you! It's been a pleasure!

Questions?

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