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Vitamin/Mineral Deficiencies in Feedlot Cattle: Effects, Evaluation, and Financial Costs

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Deficiencies Directly from Ranches

- Copper Deficiency (50 to 65+%)
- Selenium Deficiency (<5% to 70+%**)
- Vitamin A and E Deficiencies
  - Drought years
- Rarer
  - Zinc*** (2 to 12+%)
  - Manganese (< 1%)

Deficiencies From Stocker Sources

- Copper Deficiency (40 to 55%)
- Selenium Deficiency (<5% to 70+%**)
- Vitamin A and E Deficiencies
  - Pasture vs. dry lot
  - Green vegetation vs. brown forages
- Rarer
  - Zinc*** (2 to 12+%)
  - Manganese (< 1%)

Systems Effected by Deficiencies

- *Reproduction*
  - *Poor Cycling (repeat breeding)*
  - *Poor conception*
- *Immune system*
  - *Poor ability to fight off disease*
  - *Poor vaccine responses*
  - *Poor colostrum quality*
  - *Increased disease*
    - *Poorer growth rates and increased Deaths*

Beef-Vitamin/Mineral Deficiencies

- *Why do we see more now than 30 yrs. ago???*
  - *2008 - 2011 – Cost cutting*
  - *More common testing*
  - *Increased production output*
  - *Altered nature – calving dates*
  - *Increases from drought areas*

How to Deal with Deficiencies

- *Are minerals used year-round??*
- *Check mineral intake*
- *Check concentrations and chemical forms*
- *Make sure to include ALL mineral supplements in the evaluation*
- *Have tags evaluated*
- *Remember: Concentrations, Chemical Forms, Intake and Interferences*

How to Deal with Deficiencies (cont.)

- *Remember dietary minerals have regulated, limiting uptake*
  - *Example: Copper – 6-8% relative absorption efficiency for inorganic minerals*
  - *Can take 30-45 days to correct deficiency with dietary only*
- *Most of the feedlot effects are related to disease incidence early in the feeding period*
- *Consider using an injectable source*

Economic Losses - Reproduction

- *Reproduction – Cow/calf Ranches*
  - *Financial losses from selling young open cows*
  - *Repeat breeders cause non-uniform groups to sell (lost value of 3-7 cents/pound)*

Economic Losses - Disease

- *Trace minerals are essential for immune system function (vaccine efficacy)*
- *Deficiencies result in increased incidence of infectious disease*
  - *Pneumonia, summer pneumonia*
  - *Diarrhea*
  - *Pink eye*
  - *Etc.*
- *Treatment costs, labor, and death losses*

Economic Losses - Weights

- *POORER WEANING WEIGHTS*
  - Minor deficiencies – 20 to 35 pounds per calf
  - Major deficiencies – 50++ pounds per calf
- Backgrounders
  - 0.1 to 0.15 lbs./day decrease in ADG
  - That equates to 10-15 pounds in a 100-day period
- Feedlots
  - Decreased ADG related to increased disease
  - More days on feed to finish

Feedlot Economic Losses - Overall

- Minor deficiencies
  - 5-8% increased incidence of disease
    - Increased medicine, veterinary, and labor costs
    - Costs about $150/animal
    - Or $750 to $1200 per 100 animals
  - 2-3% increased incidence of deaths
    - Costs about $2500+/animal
    - Or $5000 to $7500 per 100 animals
  - 5-8% require 10-20 days additional feeding time
    - Costs about $5/day or $50 to $100/animal
    - Or $250 to $800 per 100 head
- Total: $6000 to $9500 per 100 head

Feedlot Economic Losses - Overall

- Major deficiencies
  - 10-20+% increased incidence of disease
    - Increased medicine, veterinary, and labor costs
    - Costs about $150/animal
    - Costs about $1500 to $3000 per 100 animals
  - 5-15+% increased incidence of deaths
    - Costs about $2500+/animal
    - Or $25000 to $37500+ per 100 animals
  - 10-20% require 15-30 additional days to finish
    - Costs about $5/day or about $75 to $150 per animal
    - Or $750 to $3000 per 100 head
- Total: $27250 to $43500 per 100 head

How Do I Know????

- THE ONLY WAY TO KNOW WHERE THE CATTLE ARE IS TO TEST!!

Example

- Large Feedlot – “high risk calves”
  - High incidence of pulls (35-58%)
  - High incidence of deaths (16-21%)
- Severe!! mineral deficiencies
  - Copper and selenium
- Management change
  - 50% organic minerals at 150% for 1 month
  - Injectable trace minerals at first processing
- Dropped pulls to 14-25% and deaths 7%

What about later in the feeding??

- Most testing finds normal trace mineral concentrations
- What about Zinc?
  - Interesting recent findings
    - –Increases later in feeding period may increase gain/efficiency
    - –Increases during “heat stress events” may decrease adverse effects

Mineral Deficiencies Questions

- Does mineral deficiencies play a role in “late feeding period heart failures”??
  - Neonatal/juvenile selenium deficiencies?????
  - Case Example

Questions???

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