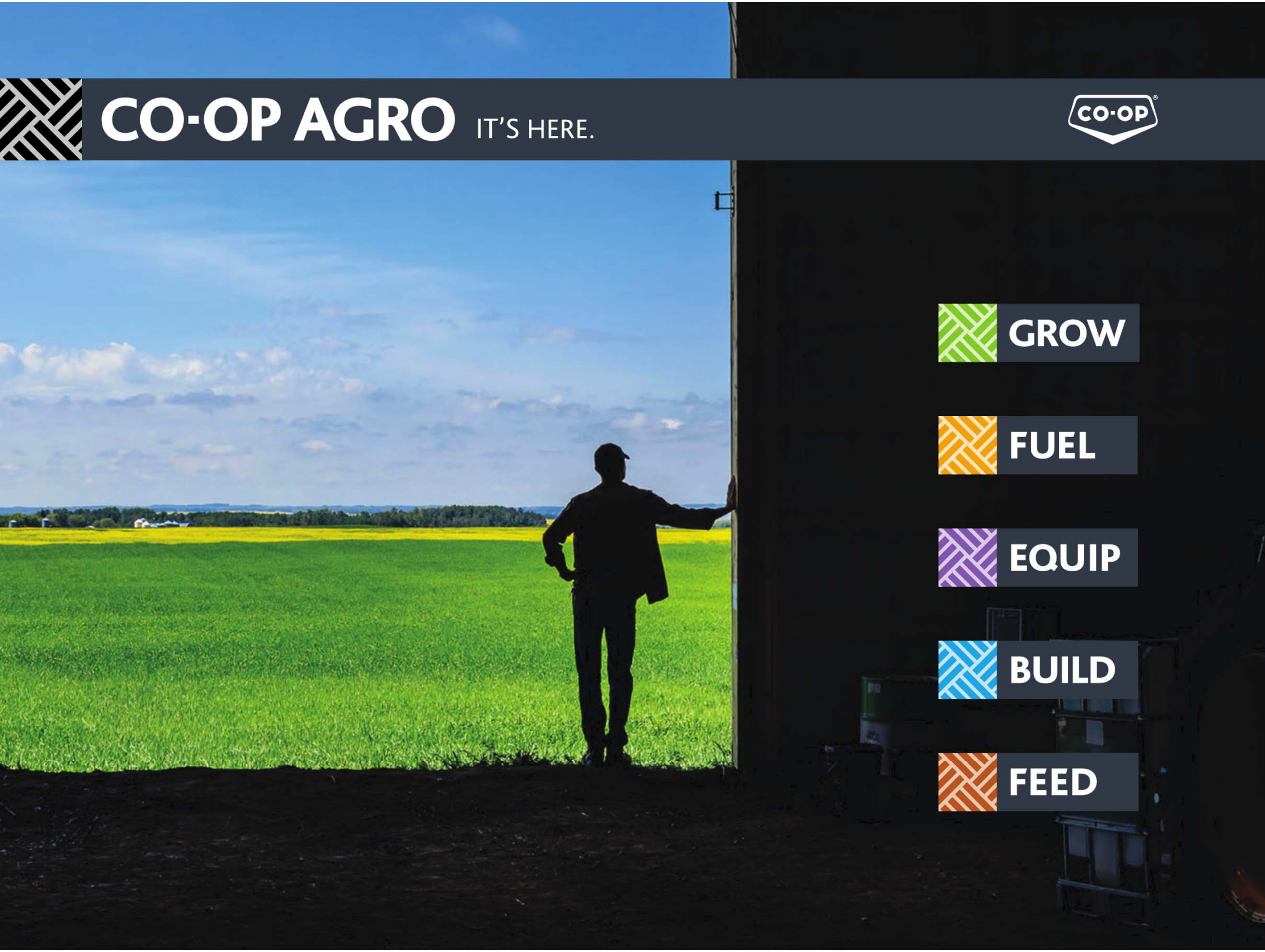
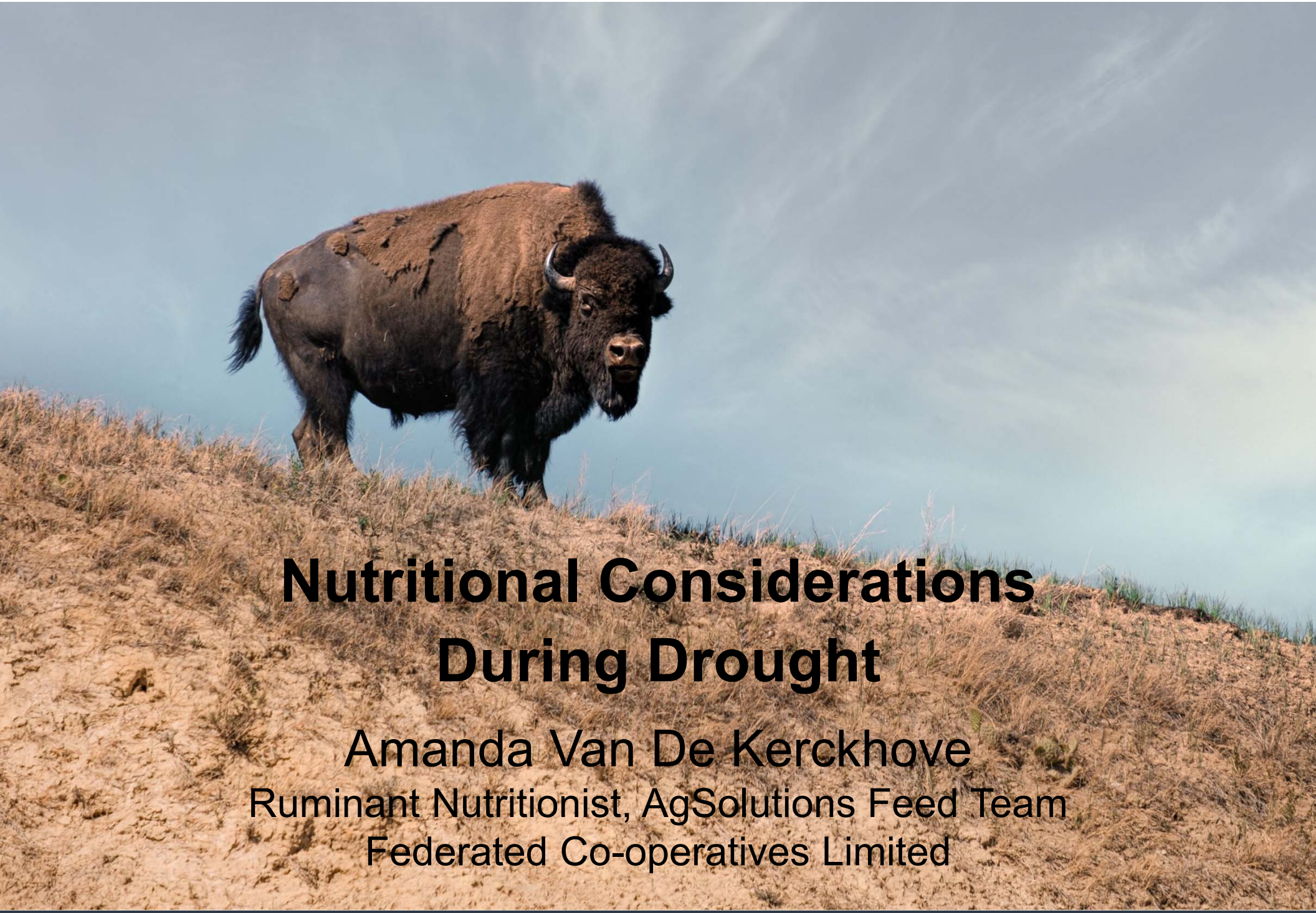

CO-OP AGRO IT'S HERE.
CO-OP
GROW
FUEL
EQUIP
BUILD
FEED



Nutritional Considerations During Drought

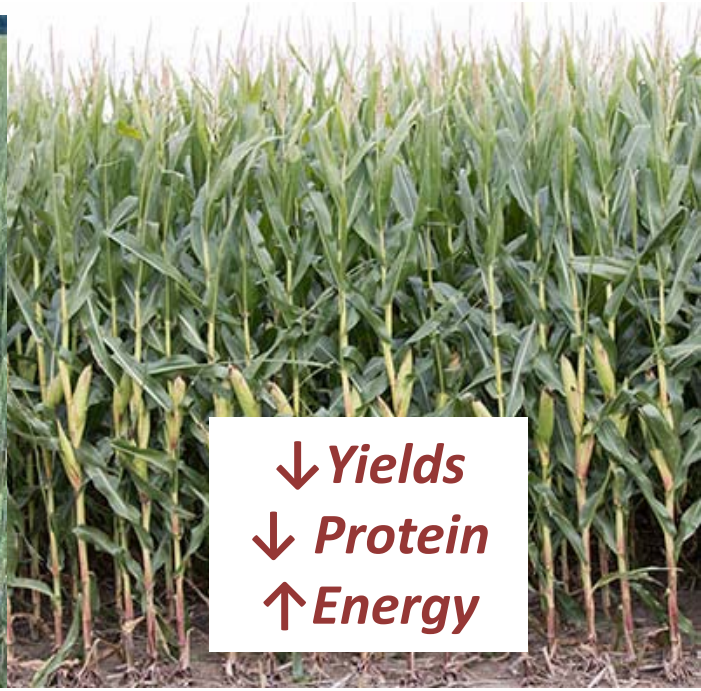
Amanda Van De Kerckhove
Ruminant Nutritionist, AgSolutions Feed Team
Federated Co-operatives Limited

Impacts of Drought – Water

- Reduced quantity
  - No recharge
  - Evaporation
- Reduced quality
  - Concentrated salt & mineral content
  - Contaminates
    - Blue green algae
    - Nitrates
    - Fecal coliforms

Impact of Drought – Plants

- Reduced forage yields
  - Reduced plant growth
  - Insect & weed pressure
- Variable impact on quality – mostly negative



Impacts of Drought – Livestock

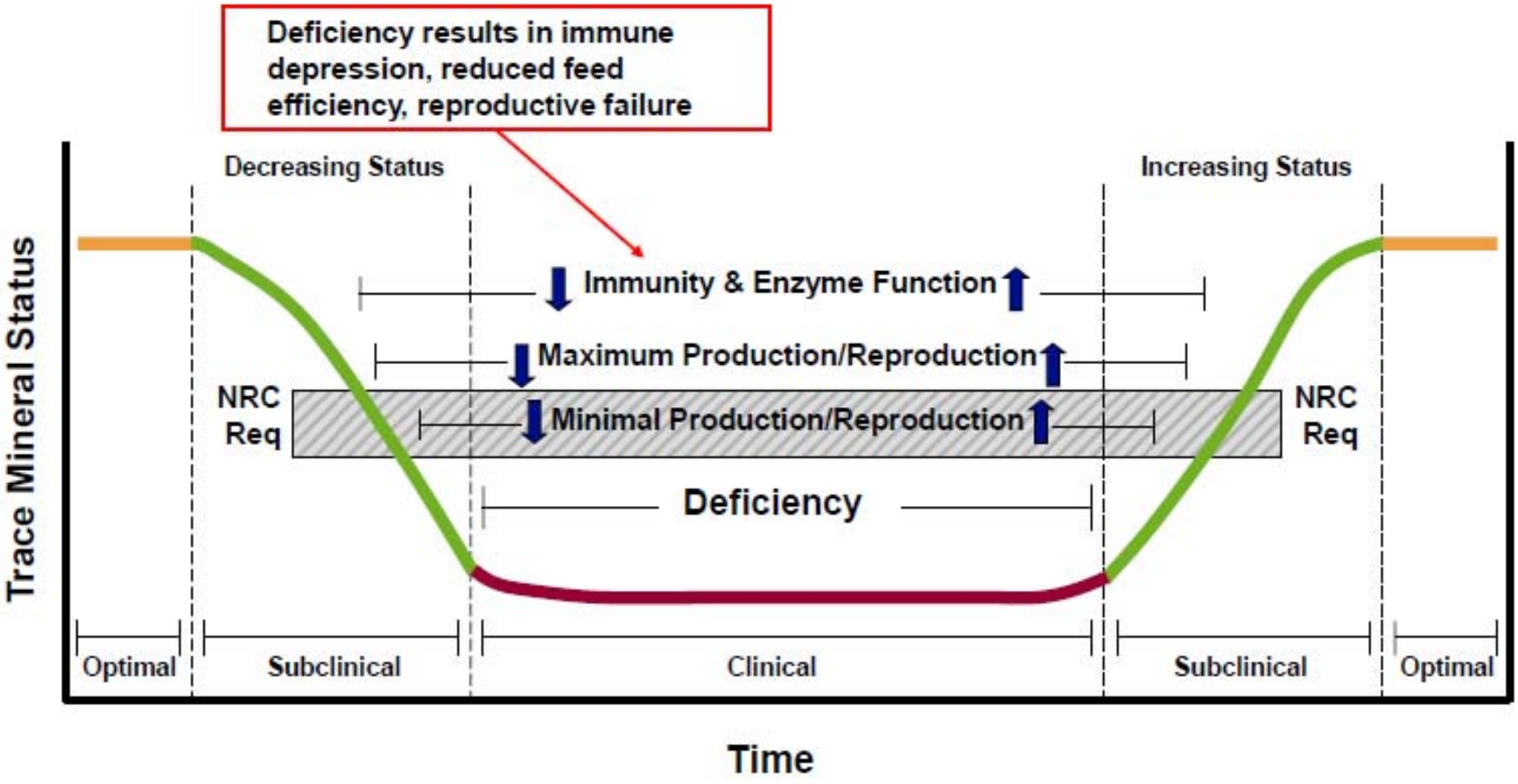
Western College of Veterinary Medicine

Beef cow research results after 2001-2002 drought

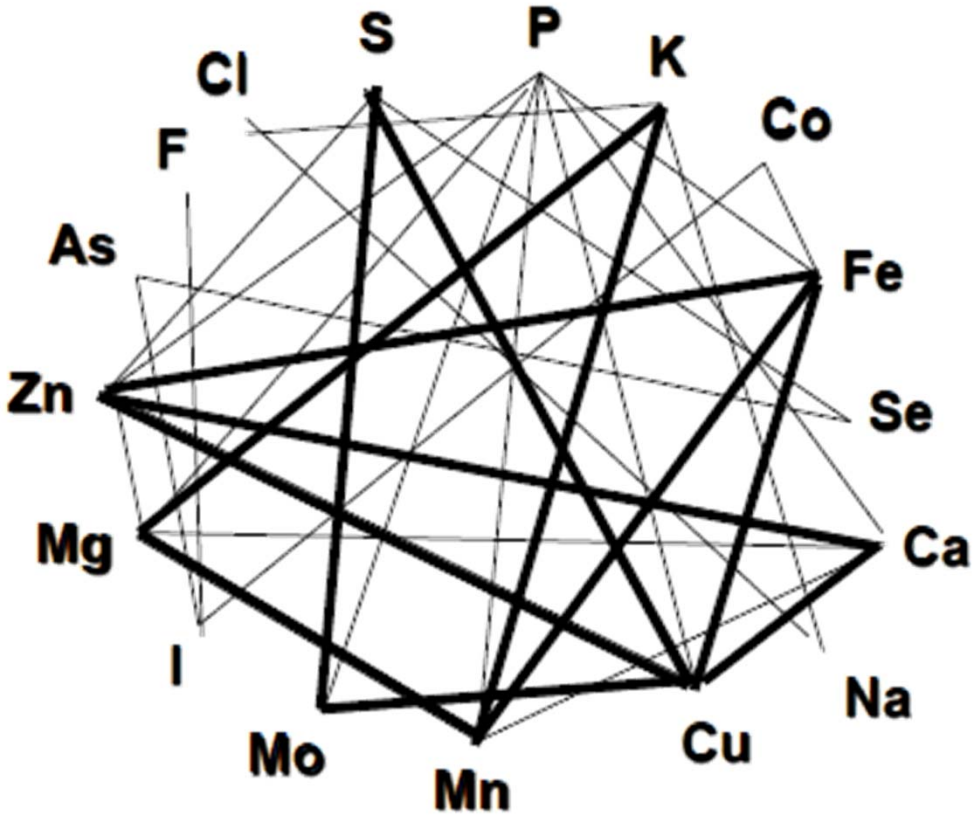
Impact	Risk
Abortion	• risk 1.6X greater if cow BCS <3
Stillbirth	• increased in regions with <8” rain during the previous growing season
Pre-weaning Mortality	• ~3X in calves deficient in vitamin A
Pre-weaning Morbidity	• ~2X in calves deficient in vitamin E

Adapted from BCRC Blog https://www.beefresearch.ca/blog/cut-costs-carefully-after-drought/

Vitamin & Mineral Deficiencies



Mineral Interactions



Key Interactions

Zn ⟷ Cu

Fe ⟶ Zn, Cu, Mn

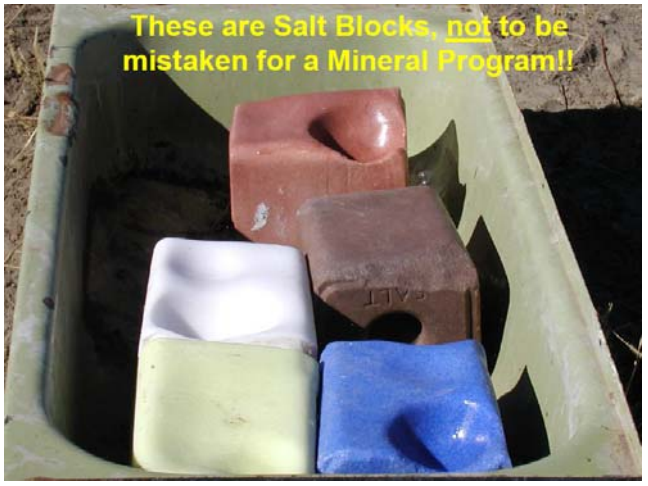
Mo, S ⟶ Cu

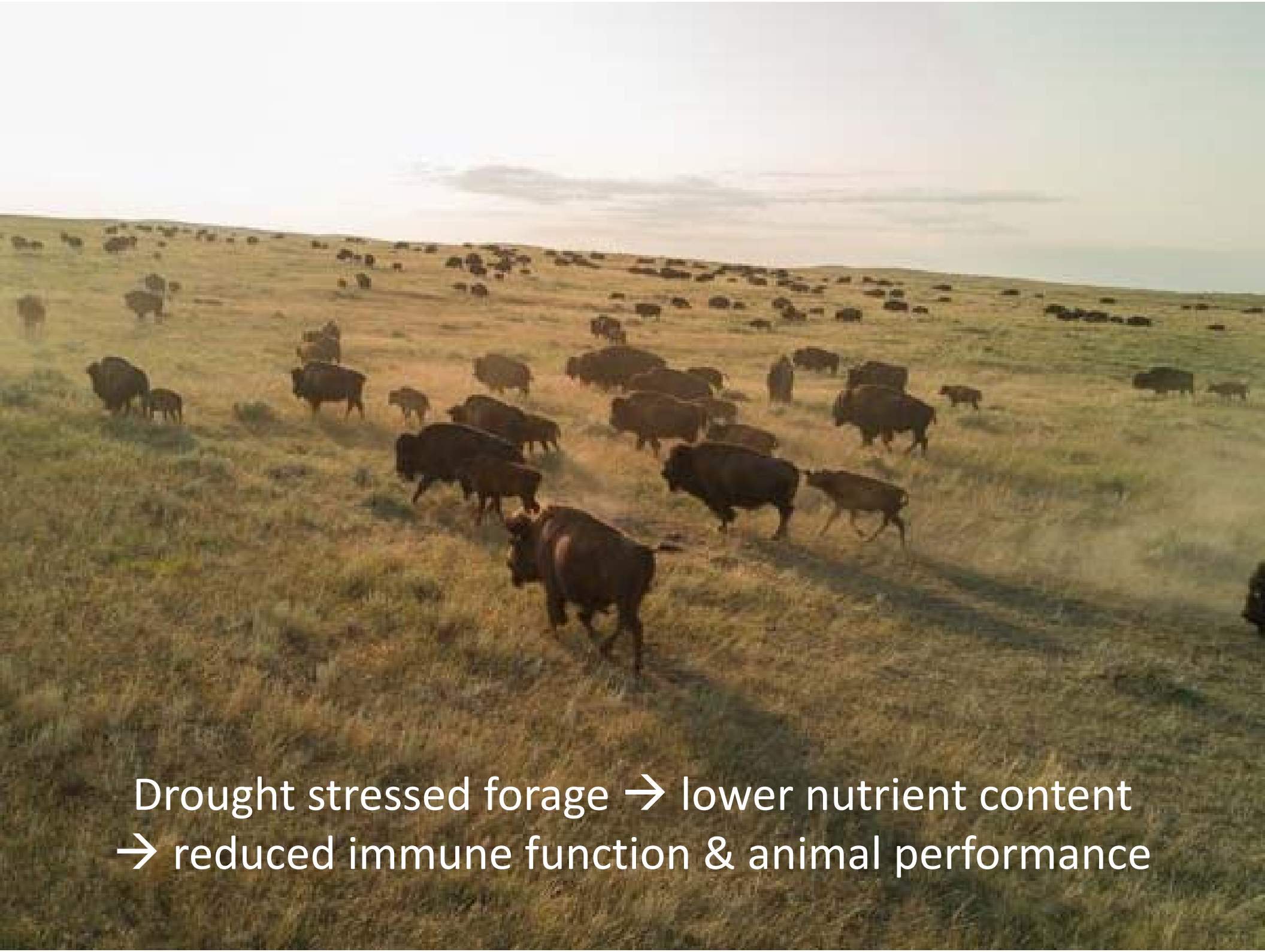
Ca ⟷ Zn, Cu, Se

K, Mg ⟷ Mn

Importance of Vitamins & Minerals

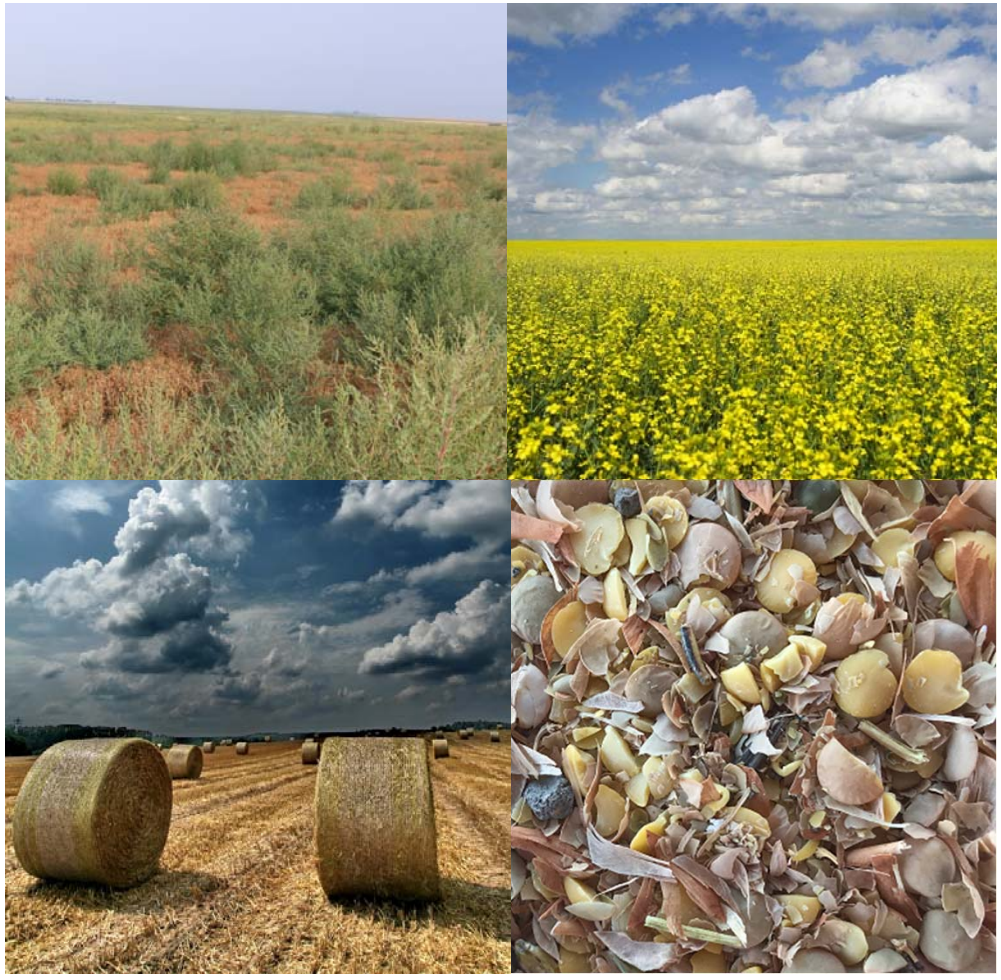
- Vitamins & minerals are required for maintenance, growth, reproduction, gestation, & lactation
- Forages & grains alone will not provide adequate levels of necessary vitamins & minerals
- Minerals supplementation is required




Drought stressed forage → lower nutrient content
→ reduced immune function & animal performance

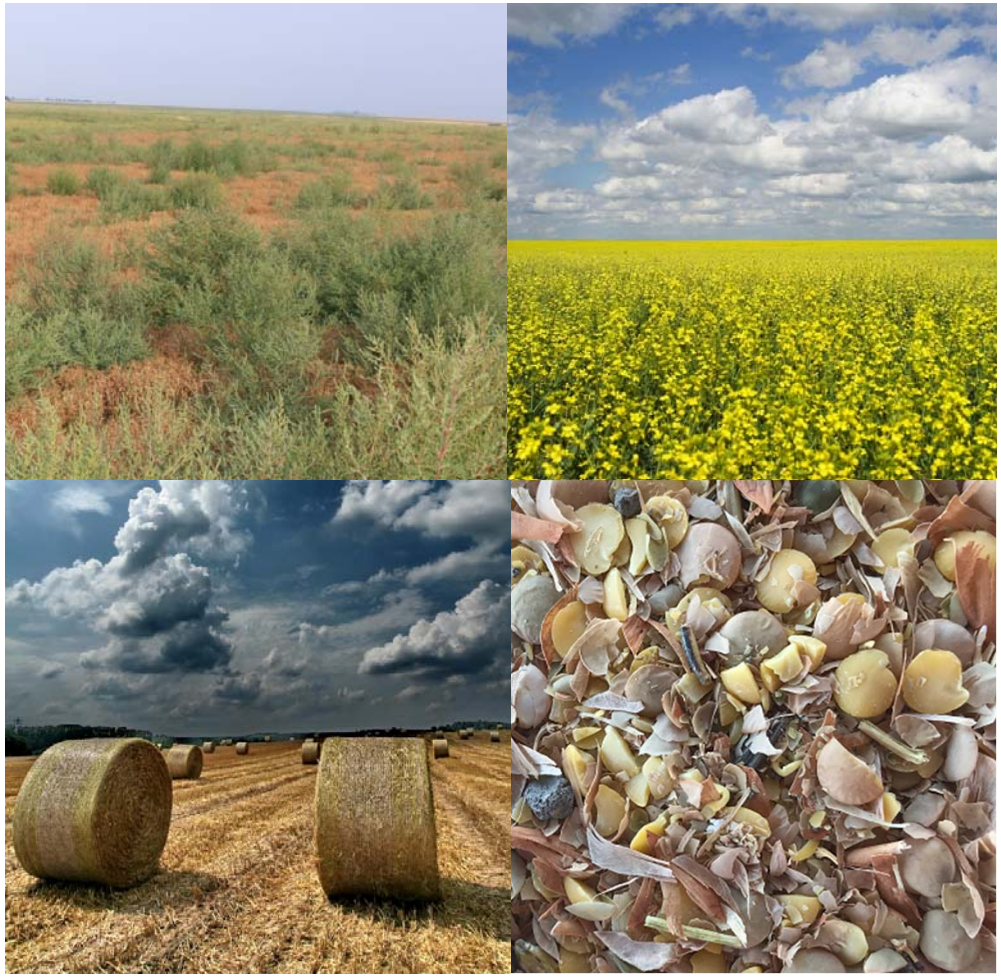
Alternative Forages

- Kochia
- Canola
- Salvage crops
- Straw
- Crop byproducts



Alternative Forages

- Considerations
  - Nitrates
  - Sulfur
  - Mineral imbalances
  - Toxicity risks
  - Intake restriction/ Impaction risk
  - Moulds/Mycotoxins



Nitrates

- Normal process in the rumen:
  - Nitrates → nitrites → ammonia → urea
    → nitrites in blood
    reduced O2 carrying capacity
- Symptoms

Acute	Chronic
Comatose or dead cattle	Listlessness
Weakness or incoordination	Rapid breathing with exertion
Difficult breathing, blueish membranes	Small calf birthweight or abortions

Nitrates

- Maximum Safe Levels

Animal Type	Nitrate (NO_3) %[2]	Nitrate (NO_3) ppm	Nitrate-Nitrogen (NO_3-N) %	Nitrate-Nitrogen (NO_3-N) ppm[3]
Feedlot Ruminants	0.74	7400	0.17	1682
Pregnant Cows	0.49	4900	0.11	1114
Young Calves	0.49	4900	0.11	1114
Pregnant Horses	0.92	9200	0.21	2091
Horses	1.23	12300	0.28	2795
Pregnant Sheep	0.49	4900	0.11	1114
Sheep	0.74	7400	0.17	1682
Dairy	0.15	1500	0.03	341

[1]Total diet dry matter levels from Norwest Labs

[2]Central Testing Labs & Fraser Analytical report nitrates as % nitrate (NO_3).

[3]A&L reports nitrates as ppm nitrate-nitrogen (NO_3-N). A&L recommends 1000 ppm NO_3-N as generally safe (2020)

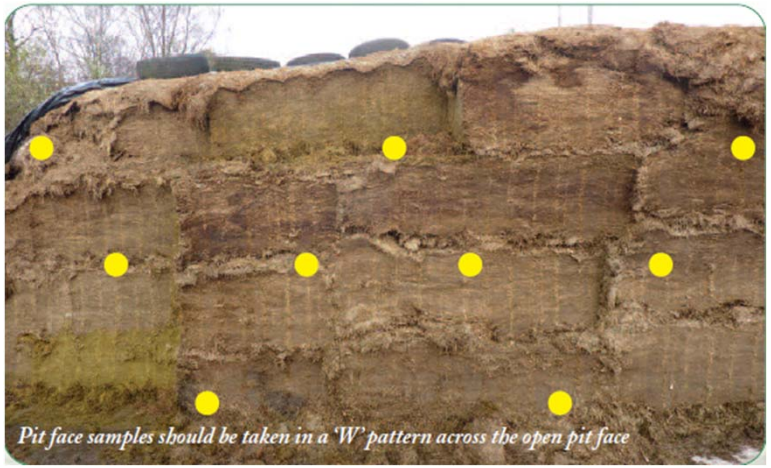
Forage Quality

- Drought ≠ normal – test your forages

Forage Quality	Forage Intake (1100 lb bison cow)	Total Digestible Nutrients
High	20 – 24 lbs	62%
Medium	16 – 20 lbs	55%
Poor	13 – 17 lbs	48%

Forage Testing

- What you see is not always what you get
  - *test your forages*
  - determine feeding strategy
  - identify supplementation requirements



Pit face samples should be taken in a 'W' pattern across the open pit face

Summary

- Drought negatively impacts feed & water quality
- Feed test to balance most economic rations
- Understand key considerations for non-traditional forages
- Mineral supplementation is critical

Questions?

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