



COLLEGE OF TROPICAL AGRICULTURE  
AND HUMAN RESOURCES  
UNIVERSITY OF HAWAII AT MĀNOA



## Developing an Effective Mineral Supplementation Program for Your Ranch

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## The Importance of Minerals in the Beef Animal Diet

- Mineral Status in beef herd affects reproduction, growth, milk production and health
- All of these affect profitability
- Cost of improving mineral status is low compared to production returns
- Four Basic Considerations:
  1. Mineral deficiency is at least as common as protein and energy deficiencies.
  2. Mineral is offered “free-choice” and animals may not “choose” to consume adequate amounts –  
**monitoring consumption is important!**
  3. Genetics may affect mineral needs. (i.e. Selecting for increased milk production; Breed differences, etc.)
  4. Mineral deficiency symptoms may be the result of an imbalance. (i.e. sulfur, iron, and molybdenum are antagonistic to copper absorption in the rumen).



## What You Need to Know to Develop or Evaluate Your Mineral Supplementation Program

- **Know your minerals** – Which ones are critical, how they affect animal health, where they come from
- **Know your animals requirements** – vary by age, sex, status, and breed
- **Know your forages** – forage quality varies by pasture, across different seasons, between years; consider antagonists;
- **Know what minerals you need** – Assess mineral program/herd needs; calculate deficiencies
- **Know what to supplemental** – Determine the source/type of minerals and how it will be delivered to the herd
- **Know how, when, and where to supplement** – adequate mineral bunk space, consistency, and placement
- **Know how to monitor consumption and detect deficiencies** – first and last



## What You Need to Know to Develop or Evaluate Your Mineral Supplementation Program



# Know Your Minerals





## Minerals and Their Function in the Body

*Macro Minerals (required in larger amounts)*

Mineral	Most Significant Known Functions	Sources
<b>Macro Minerals (required in larger amounts)</b>		
Calcium	Bone & teeth formation, nerve & muscle function	Forages, legumes, mineral supplement
Phosphorus	Reproduction, health of bones and teeth	Grains, forages, mineral supplement
Magnesium	Growth, reproduction, metabolic functions	Forages, mineral supplement
Potassium	Metabolic functions	Forages, mineral supplement
Sulfur	Metabolic functions, amino acid formation in rumen	Forages, grains, and mineral supplement
Sodium/Chloride	Regulate pH, nervous and muscular system function	Mineral supplement

Source: Nutrient Requirements of Beef Cattle. 2016. Washington, D.C. National Research Council.



## Minerals and Their Function in the Body

*Micro Minerals (required in smaller amounts)*

Mineral	Most Significant Known Functions	Sources
Micro Minerals (required in smaller amounts)		
Chromium	Immune Response, glucose tolerance factor	Forages, cereal grains, TMS
Cobalt	Component of Vitamin B12	Legumes, forages, TMS
Copper	Hemoglobin formation, tissue metabolism	Forages, grains, mineral supplement
Iodine	Production of thyroid hormones, energy metabolism	Forages, TMS
Manganese	Reproduction enzyme formation	Forages, mineral supplement
Molybdenum	Enzyme activity	Forages, mineral supplement
Selenium	Antioxidant, glutathione peroxidase	Grains, forages, mineral supplement
zinc	Enzyme activity	Legumes, forages, mineral supplement



## What You Need to Know to Develop or Evaluate Your Mineral Supplementation Program

# Know Your Animals Requirements





**Mineral Needs:** Macro Mineral needs for growing/finishing animals (605 lbs. steer or heifer with an expected mature weight of 1,200 lbs., gaining 1.88 lb./day) and 1,200 lbs. cows in gestation and early lactation.

Mineral	Requirements			Maximum Tolerable Concentration
	Growing/Finishing	Cows (1,200 lbs)		
		Gestating	Early Lactation	
Calcium (%)	0.36	0.15	0.25	n/a
Magnesium (%)	0.10	0.12	0.20	0.40
Phosphorus (%)	0.19	0.12	0.17	n/a
Potassium (%)	0.60	0.6	0.70	3.00
Sodium (%)	0.06 – 0.08	0.06-0.08	0.10	n/a
Sulfur (%)	0.15	0.15	0.15	0.40

Source: Nutrient Requirements of Beef Cattle. 2016. Washington, D.C. National Research Council.



**Mineral Needs:** Micro Mineral needs for growing/finishing animals (605 lbs. steer or heifer with an expected mature weight of 1,200 lbs., gaining 1.88 lb./day) and 1,200 lbs. cows in gestation and early lactation.

Mineral	Requirements			Maximum Tolerable Concentration
	Growing/ Finishing	Cows (1,200 lbs)		
		Gestating	Early Lactation	
Chromium (mg/kg)				1,000.00
Cobalt (mg/kg)	0.10	0.10	0.10	10.00
Copper (mg/kg)	10.00	10.00	10.00	40.00
Iodine (mg/kg)	0.50	0.50	0.50	50.00
Iron (mg/kg)	50.00	50.00	50.00	1,000.00
Manganese (mg/kg)	20.00	40.00	40.00	1,000.00
Molybdenum (mg/kg)				5.00
Nickel (mg/kg)				50.00
Selenium (mg/kg)	0.10	0.10	0.10	2.00
Zinc (mg/kg)	30.00	30.00	30.00	500.00

Source:  
Nutrient  
Requirements  
of Beef  
Cattle. 2016.  
Washington,  
D.C. National  
Research  
Council.



## What You Need to Know to Develop or Evaluate Your Mineral Supplementation Program





## Assessing Your Mineral Program/Herd Mineral Needs



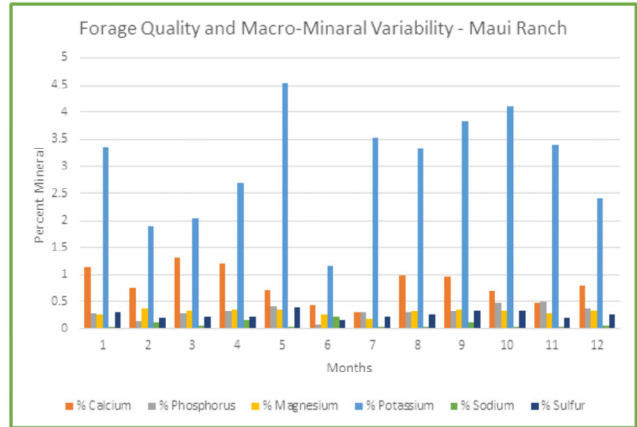
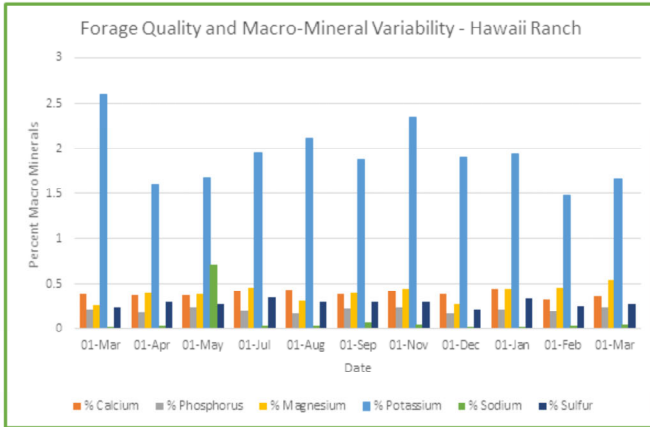
### 1. Collect and analyze forage samples:

- Provides a complete nutritional profile of forage
- Will indicate the presence of deficiencies or imbalances
- Remember your analysis will only be as good as the sample
  - Collect multiple samples that include only what is being consumed
  - Sample at different times of the year and different locations as forage quality and mineral profile can change over the course of a year and across different soils, elevations, or precipitation zones





Forage nutrient content varies by location, time of year, and between years. Samples should be collected from different pastures over a year, and for multiple years.





### Minerals of Concern in Hawaii

• **Calcium and Phosphorus**

- Calcium to Phosphorus ratio should be 1.5 Ca:1 P to 2 Ca:1 P
- Mealani samples ranged from 0.9 – 1.2 – at risk of Ca deficiency

	Growth /Finish	Gestation	Lactation
CA	0.36	0.15	0.25
P	0.19	0.12	0.17

#### Hawaii

Date	% Crude Protein	% TDN	% Calcium	% Phosphorus	Ca/P
1-Mar	12.3	52	0.39	0.21	1.86
1-Apr	15	53	0.37	0.18	2.06
1-May	12.5	47	0.37	0.24	1.54
1-Jul	15.3	52	0.42	0.2	2.10
1-Aug	15.4	53	0.43	0.16	2.69
1-Sep	16.5	49	0.38	0.23	1.65
1-Nov	14.8	48	0.42	0.24	1.75
1-Dec	9.9	53	0.38	0.16	2.38
1-Jan	17.2	53	0.45	0.21	2.14
1-Feb	13.5	49	0.32	0.19	1.68
1-Mar	17.1	47	0.36	0.24	1.50

#### Maui

	% Crude Protein	% TDN	% Calcium	% Phosphorus	Ca/P
1	17.4	56	1.14	0.28	4.07
2	11.3	50	0.77	0.14	5.50
3	12.2	55	1.31	0.27	4.85
4	17	52	1.21	0.31	3.90
5	22.9	52	0.72	0.41	1.76
6	7.2	49	0.43	0.07	6.14
7	12.4	52	0.29	0.3	0.97
8	19.2	53	0.99	0.29	3.41
9	22	58	0.97	0.31	3.13
10	19.8	48	0.7	0.47	1.49
11	18	53	0.48	0.5	0.96
12	17.1	51	0.8	0.37	2.16



## Mineral Deficiencies

### Calcium (Ca) –

- Deficiency in young, growing cattle prevents normal bone development resulting in rickets (deficiency in Ca, P, or Vitamin D).
  - Signs include: Swollen, tender joints, soft bones, enlargement of the ends of bones, arched back, stiffness in the legs.
  - Osteomalacia – demineralization of the bones (Ca and P in dynamic state, high demand as in during lactation, etc. can result in Osteomalacia.)

### Phosphorus (P) –

- Phosphorus deficiency results in:
  - Decreased growth and feed efficiency
  - Decreased appetite
  - Impaired reproduction
  - Decreased milk production
  - Weak fragile bones



## Minerals of Concern in Hawaii

Magnesium (Mg), Calcium (Ca), and Potassium (K)

Grass Tetany Risk Ratio:  $(K/(Ca+Mg))$  greater than 2.2

	Growth /Finish	Gestation	Lactation
CA	0.36	0.15	0.25
Mg	0.10	0.12	0.20
K	0.6	0.6	0.7

### Hawaii

Date	% Crude Protein	% TDN	% Calcium	% Magnesium	% Potassium	K/(Ca+Mg)
1-Mar	12.3	52	0.39	0.26	2.6	1.6
1-Apr	15	53	0.37	0.4	1.6	0.8
1-May	12.5	47	0.37	0.39	1.67	0.8
1-Jul	15.3	52	0.42	0.46	1.95	0.8
1-Aug	15.4	53	0.43	0.31	2.11	1.1
1-Sep	16.5	49	0.38	0.4	1.88	0.9
1-Nov	14.8	48	0.42	0.44	2.34	1.0
1-Dec	9.9	53	0.38	0.27	1.9	1.2
1-Jan	17.2	53	0.45	0.44	1.94	0.8
1-Feb	13.5	49	0.32	0.46	1.47	0.7
1-Mar	17.1	47	0.36	0.54	1.66	0.7

### Maui

	% Crude Protein	% TDN	% Calcium	% Magnesium	% Potassium	K/(Ca+Mg)
1	17.4	56	1.14	0.26	3.37	1.1
2	11.3	50	0.77	0.38	1.9	0.7
3	12.2	55	1.31	0.34	2.04	0.6
4	17	52	1.21	0.35	2.69	0.8
5	22.9	52	0.72	0.35	4.55	1.8
6	7.2	49	0.43	0.25	1.17	0.7
7	12.4	52	0.29	0.18	3.53	3.1
8	19.2	53	0.99	0.32	3.34	1.1
9	22	58	0.97	0.36	3.83	1.3
10	19.8	48	0.7	0.34	4.11	1.7
11	18	53	0.48	0.28	3.41	1.9
12	17.1	51	0.8	0.33	2.4	0.9



## Mineral Deficiencies

### **Magnesium (Mg) –**

- Deficiency in calves results in excitability, anorexia, hyperemia, convulsions, frothing at the mouth, profuse salivation and calcification of soft tissue.
- Grass Tetany is characterized by low Mg concentrations in plasma cerebrospinal fluid.
  - nervousness,
  - decreased feed intake,
  - muscular twitching, lack of coordination and walk with a stiff gait.
  - In later stages cows go down with head back and convulse.
  - Death occurs without treatment with a Mg-salt solution.
- Grass Tetany typically occurs in older cows (more than three lactations) that lack the ability to mobilize Mg for bones when moving onto lush, early growth pastures or fed harvested forages low in Mg
- Fertilizing pastures with N and K has been associated with increased incidence of grass tetany (in fresh or fertilized pasture insufficient availability of Mg more likely than low Mg).



### Minerals of Concern in Hawaii

**Sodium (Na)** – Deficiencies in Na are non-specific and include pica and decreased feed intake, growth, and milk production.

	Growth /Finish	Gestation	Lactation
Na	0.08	0.08	0.10

#### Hawaii

Date	% Crude Protein	% TDN	% Sodium
1-Mar	12.3	52	0.022
1-Apr	15	53	0.033
1-May	12.5	47	0.713
1-Jul	15.3	52	0.029
1-Aug	15.4	53	0.025
1-Sep	16.5	49	0.066
1-Nov	14.8	48	0.044
1-Dec	9.9	53	0.021
1-Jan	17.2	53	0.024
1-Feb	13.5	49	0.034
1-Mar	17.1	47	0.037

#### Maui

	% Crude Protein	% TDN	% Sodium
1	17.4	56	0.036
2	11.3	50	0.106
3	12.2	55	0.048
4	17	52	0.16
5	22.9	52	0.031
6	7.2	49	0.223
7	12.4	52	0.033
8	19.2	53	0.028
9	22	58	0.108
10	19.8	48	0.032
11	18	53	0.035
12	17.1	51	0.05



## Minerals of Concern in Hawaii

Iron (Fe) 50-200 ppm ideal; >200 antagonistic to Cu; > 400 toxic  
 Molybdenum (Mo) < 1 ppm ideal; > 1 antagonistic to Cu; 5 toxic  
 Sulfur (S) > 0.20% antagonistic to Cu; 0.40% toxic  
 Copper (Cu) Cu:Mo of 6:1 ideal; 2:1 or lower result in Mo toxicity  
 Manganese (Mn), Zinc (Zn)

	Growth /Finish	Gestation	Lactation
Fe	50	50	50
Zn	30	30	30
Cu	10	10	10
Mn	20	40	40
Mo	<1	<1	<1
S %	0.15	0.15	0.15

### Hawaii

Date	PPM Iron	PPM Zinc	PPM Copper	PPM Mn	PPM Mo	% Sulfur	Cu:Mo
1-Mar	130	35	12	57	0.5	0.24	24.0
1-Apr	146	30	13	80	0.6	0.3	21.7
1-May	279	69	18	156	0.4	0.27	45.0
1-Jul	241	33	11	119	0.3	0.35	36.7
1-Aug	159	30	10	93	0.4	0.3	25.0
1-Sep	146	26	12	79	0.2	0.3	60.0
1-Nov	223	44	10	94	0.5	0.3	20.0
1-Dec	162	29	6	91	1	0.21	6.0
1-Jan	727	36	12	109	0.1	0.33	120.0
1-Feb	156	43	11	103	0.4	0.25	27.5
1-Mar	335	69	13	119	0.7	0.28	18.6

### Maui

	PPM Iron	PPM Zinc	PPM Copper	PPM Mn	PPM Mo	% Sulfur	Cu:Mo
1	147	42	7	18	1.1	0.3	6.4
2	249	65	5	19	1.1	0.19	4.5
3	152	41	5	28	0.9	0.22	5.6
4	247	45	9	22	1.4	0.21	6.4
5	260	54	8	12	5	0.4	1.6
6	436	29	3	12	0.5	0.16	6.0
7	230	49	7	37	1	0.22	7.0
8	290	34	7	33	1.4	0.25	5.0
9	342	46	10	22	2.1	0.34	4.8
10	175	52	11	20	4.2	0.33	2.6
11	109	32	10	14	2.5	0.2	4.0
12	149	35	10	27	2.9	0.25	3.4





## Mineral Deficiencies

**Manganese – (Mn)** has a direct relationship with fertility, deficiencies result in poor conception rates and prolonged calving intervals.

**Copper (Cu)** – Copper deficiency is the most common trace mineral deficiency in grazing cattle. Can be a primary deficiency due to low forage Cu concentration; or secondary through high levels of Fe, Mo, and S.

### Signs of Copper Deficiency

- Anemia
- Decreased growth
- Depigmentation and changes in the growth and appearance of hair (usually first clinical sign)
- Cardiac failure
- Fragile bones
- Diarrhea
- Low reproduction





## What You Need to Know to Develop or Evaluate Your Mineral Supplementation Program



# Know What Minerals You Need



## Assessing Your Mineral Program/Herd Mineral Needs

### Evaluate herd condition:

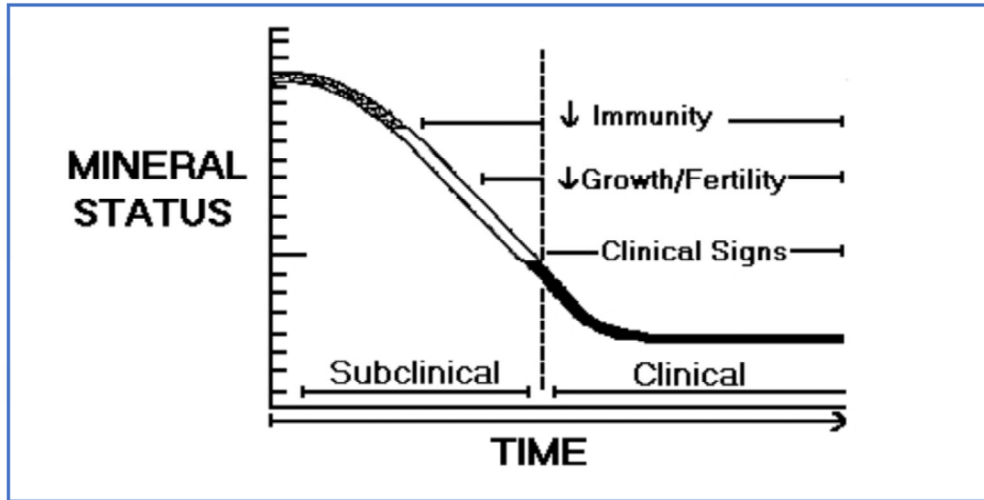
Look for signs of mineral deficiencies and or imbalances:

- rough, discolored hair coats (cows and calves slow to shed winter hair coats),
- decreased breeding efficiency (slow breeders, depressed heat cycles),
- bone and hoof problems
- depressed immune system function (less resistance to diseases and parasites).





### EFFECTS OF MINERAL DEFICIENCIES ON IMMUNE FUNCTION IN COWS AND CALVES



Source: Wikse, 1992, TAMV Beef Cattle Short Course



## Assessing Your Mineral Program/Herd Mineral Needs

- Evaluation of the herd:
- Key indicators = **GOLD**
  - calf **G**rowth
  - **O**pen cows
  - **L**ength of calving season
  - calf **D**eath loss
- If any of these indicators are **below industry standard** nutrition is not adequate – nutrient (protein and/or mineral) or energy supplementation may be necessary.







## Assessing Your Mineral Program/Herd Mineral Needs

**3. Evaluate mineral supplement label:** With the information from the forage analysis at hand, evaluate whether the mix of minerals and their concentrations are sufficient to make up for deficiencies or imbalances in the forage.

### Example Calculations:

Assumptions: 1,200 lbs. cow w/calf consuming 2.6% of BW in DM daily (31.2# DM).

Forage Cu analysis = 10 ppm (10 mg/kg DM); assume 50% bioavailability (account for interactions with Fe, Mo, and S)

Mineral supplement Cu = 2000 ppm/lb. recommended consumption 2 oz/head/day

#### 1. Convert Intake to metric units

Forage:  $31.2\# \text{ DM/day} \div 2.2 \text{ lbs./kg} = 14.18 \text{ kg DM/day}$

Mineral:  $2 \text{ oz./day} \times 28.38 \text{ g/oz} = 56.76 \text{ g} \div 1,000 \text{ g/kg} = 0.057 \text{ kg/day}$

#### 2. Calculate Cu intake

Forage:  $14.18 \text{ kg DM/day} \times (10 \text{ mg/kg} \times 0.5) = 70.9 \text{ mg}$

Mineral:  $0.057 \text{ kg} \times 2000 \text{ mg/kg} = 114 \text{ mg}$

Total intake:  $70.9 \text{ mg} + 114 \text{ mg} = 184.9 \text{ mg}$

$(14.18 \text{ kg DM forage} + 0.057 \text{ mineral} = 14.237 \text{ kg}; 184.9 \text{ mg}/14.237 \text{ kg DM} = 12.98 \text{ mg/kg DM})$

Upper limit of Cu intake = 50-300 mg/kg DM (Suttle 2010)



## Assessing Your Mineral Program/Herd Mineral Needs

**4. Monitor herd mineral consumption** – most mineral mixes are formulated to be consumed at 2 oz./head/day and are offered “free-choice”. However, this does not mean that the animals will choose to consume it appropriately.

**5. Serum samples:** As a preliminary screen of the trace mineral status in animals, serum samples may be used. The reliability of serum analysis, to estimate the trace mineral status of animals, is limited for some elements such as copper.

**6. Liver biopsy:** In herds where trace minerals appear to be deficient as indicated by herd history or blood levels, several animals can be selected for liver biopsy based upon their clinical signs, stage of production, reproductive history, pasture location, or previous blood work. A random assortment of animals should be chosen to represent the herd as an average.





## What You Need to Know to Develop or Evaluate Your Mineral Supplementation Program



# Know what to Supplement



## Choosing a Mineral Program for Your Herd

1. Consider your Options:
  - Commercial mix
  - Custom mix
  - Individual Free-choice fed  
“cafeteria-style”
2. Important to have a firm knowledge of your herds mineral supplement needs
3. Consider the cost of supplementation in relation to the herds needs
4. Work with Cooperative Extension, Mineral Dealer, others with knowledge and experience





## Commercial Mineral Mix

- Widely used
- Benefits:
  - Convenient -easy to use
  - Formulated with a correct ratio of minerals
  - Different formulations/additives to correct of mineral deficiencies
  - Many companies can customize mix for your environment
- Drawbacks:
  - “One-size fits all” approach - may not be suited to your operation at all times of year
  - Expensive – custom formulations/additives increase costs

**NB HAWAII CATTLE MIN W/ AVAILA 4 (50#)**

This product is designed to be fed as a mineral / vitamin supplement for beef cattle.  
With Availa-4, 14% Salt, Vitamin A, D, and E.

GUARANTEED ANALYSIS PER POUND	
Calcium (Ca)	min 16.50 %
Calcium (Ca)	max 17.50 %
Phosphorus (P)	min 5.00 %
Sodium Chloride (NaCl)	min 13.50 %
Sodium Chloride (NaCl)	max 14.50 %
Sodium (Na)	max 6.00 %
Copper (Cu)	min 2000.00 ppm
Manganese (Mn)	min 4800.00 ppm
Zinc (Zn)	min 6500.00 ppm
Selenium (Se)	max 59.00 ppm
Selenium (Se)	max 60.00 ppm
Vitamin A	min 110,000.0 IU
Vitamin D3	min 11,000.0 IU
Vitamin E	min 110.0 IU

**INGREDIENTS**  
Calcium Carbonate, Monocalcium Phosphate, Salt, Distillers Dried Grains, Vegetable Oil (maximum 3.0%), Molasses, Potassium Chloride, Magnesium Oxide, Zinc Sulfate, Manganese Sulfate, Iron Oxide, Cobalt Gluconate, Copper Amino Acid Complex, Manganese Amino Acid Complex, Zinc Amino Acid Complex, Sodium Selenate, Copper Sulfate,  $\alpha$ -Alpha Tocopherol Acetate, Vitamin A Acetate, Ethylenediamine Dithiodiolide, Vitamin D3 Supplement

**DIRECTIONS FOR USE:** To be fed at the rate of 1.75 ounces per head daily. Provide plenty of fresh, clean water at all times. Consumption should be carefully controlled until animals become adjusted to the feed. Additional care should be exercised with starved, stressed, or debilitated animals.

**CAUTION:** Follow label directions. Feeding added selenium at levels in excess of 0.3 ppm in the total diet is prohibited. Intake of selenium should not exceed 3 mg per head per day. Contains high levels of copper. DO NOT FEED TO SHEEP

Manufactured for:  
CARGILL ANIMAL NUTRITION  
GENERAL OFFICE  
MINNEAPOLIS, MN 55440  
www.cargillanimalnutrition.com

**- 441860 -**

FOR USE IN ANIMAL FEED ONLY  
NET WEIGHT 50 Lbs. (22.7 Kg)

Production Code: 3256

(001)



## Individual Free-Choice Mineral Supplementation

- Individual Free-Choice Mineral Supplementation around since 1950's, but not widely adopted
- Possible Benefits:
  - Decreased cost of supplementation
  - Increased animal performance
  - Increased efficiency – animals allowed to select according to their need reducing wastage while increasing productivity
- Drawbacks:
  - Maintenance of several individual mineral components
  - Increased labor (handling several components instead of one)
  - Increase in bunks space/boxes to hold individual components





- Hawaii Individual Free-Choice Mineral Model
  - Monosodium Phosphate ( $\text{NaH}_2\text{PO}_4$ )
  - Magnesium Sulfate ( $\text{MgSO}_4$ )
  - Copper Sulfate ( $\text{CuSO}_4$ )
  - Fish Bone Meal/Dolomite (Ca source)
  - Trace Mineral Salt (NaCl, Zinc, Manganese, Iron, Copper, Iodine, Cobalt)





Mineral supplementation components, feed rates, and associated costs for XIT Ranch with 450 head of breeding cows. Note the cost per cow differential between the Commercial Mineral Mix (\$34.66) vs. the sum of the individual free-choice minerals (\$12.30).

Product	Key Mineral Supp.	Percent of comm. Mineral Mix	Amount per animal/day (oz.) <sup>1</sup>	Annual per Cow (lbs)	Price per unit (50 lbs) <sup>2</sup>	Price per lbs.	Price per Cow/yr (\$)	Total Ranch need (lbs) <sup>3</sup>	Estimated Annual herd Cost (\$) <sup>4</sup>
<b>Commercial Mineral Mix</b>	All	100	2	45.6	37.93	0.76	<b>34.66</b>	20,531	15,597
NaH <sub>2</sub> PO <sub>4</sub>	P	0.05	0.1	2.28	116.00	2.32	5.29	1,027	2,380
MgSO <sub>4</sub>	Mg	0.02	0.04	0.91	24.50	0.49	0.46	411	207
CuSO <sub>4</sub>	Cu	0.003	0.006	0.137	152.00	3.04	0.42	62	189
Dolomite	Ca	0.155	0.31	7.07	9.60	0.19	1.34	3,182	604
TM Salt	All Trace		1	22.81	10.60	0.21	4.79	10,266	2,155
<b>Total annual cost of individual mineral supplement program per cow<sup>4</sup></b>							<b>12.30</b>		<b>5,535</b>

<sup>1</sup>Recommended daily intake of commercial pre-mix mineral supplement is 2 oz. cow; estimated daily intake rate of individual supplements as a percent of supplement in the commercial Mineral Mix. Individual free-choice mineral shown totals 1.46 oz. per head per day, remaining consumption, 0.54 oz head per day is comprised of sodium (not shown) from TM salt.

<sup>2</sup>Most recent quoted amounts for locally available commercial mix and individual mineral components. Note that mineral prices regularly fluctuate.

<sup>3</sup>Based on 450 head of breeding cows.

<sup>4</sup>Based on 450 x mineral cost per cow per year.



## What You Need to Know to Develop or Evaluate Your Mineral Supplementation Program

**Know how,  
when, and  
where to  
supplement**







### Suppling Mineral– Where, When and How

1. Mineral Bunks should be covered to protect mineral – wet minerals harden reducing intake.
2. Ideally mineral bunks should be placed away from water and not all in the same location
3. You should have one bunk for every 50-100 head of cattle (assure access to mineral for all animals)
4. Bunks should be low enough to allow for calves to access mineral
5. Mineral should be consistently supplied - inconsistent mineral supplementation leads to deficiencies which leads to reduced animal productivity
6. Monitor mineral consumption rates, animal/herd performance (GOLD), and evaluate animal/herd condition



## Summary

- Mineral supplementation is important for beef cattle operations to prevent deficiencies that commonly occur because of the variable mineral concentration of forages
- Developing an economical sustainable mineral supplementation program requires knowledge about:
  - mineral requirements of the different animals in the herd
  - mineral profile of the forages on your operation
  - health and condition of the herd and ability to assess mineral needs
  - what mineral supplement options will work best for your operation
  - where, when, and how to provide mineral supplements



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