Mineral Formulas for Goats

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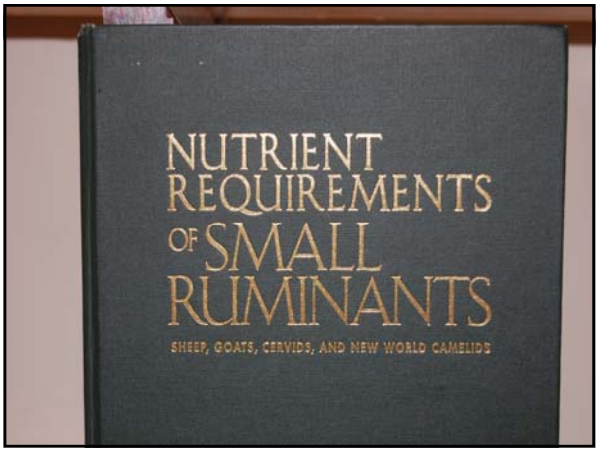


Formulas developed for:

- 45 kg doe, late pregnant w/twins
- 45 kg doe, peak milk 4 lbs
- 45 kg doe, peak milk 8 lbs
- 35 kg kid, ADG = .5 lbs

Formulas refined

- Winter formula:
  - Late gestation w/.5 oz intake daily
- Pasture formula:
  - Lactating doe that is grazing with supplemental feed and growing kid, 1 ounce of intake assumed

DMI determined from Prairie View A&M computer program. We used the greatest Ca and P requirements whether from PV program or NRC.

Feeds Assumed for Use

- Fescue based pasture
- Good grass hay, 55% TDN, 10% CP
- SBH & CGF, 50:50 mixture

Essential Minerals for Goats

- Macro-Minerals
  - Ca, P, Na, Cl, K, Mg, S
- Micro-Minerals
  - Co, Cu, I, Fe, Mn, Se, Zn

Minerals

- Forages can be good sources of:
  - Ca, P, Mg, K, Fe
- Forages are deficient in:
  - Na and most trace minerals
- Legumes are better sources of minerals than grasses

Minerals

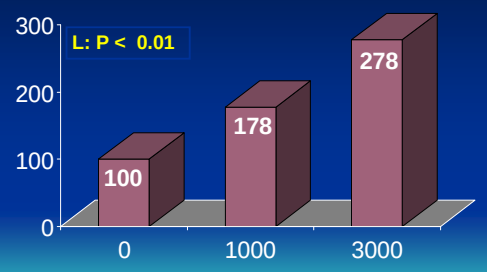
- Goats are very sensitive to selenium deficiency
- Commonly deficient in copper although copper toxicity does occur
- True toxicity level for goats is unknown

Tolerance of Goats to Copper

- Research at N. Carolina State for the last 3 years on copper supplementation of goats
- Treatments were 0, 10 or 30 ppm added dietary copper in year 1 and 0, 1000 and 3000 ppm mineral supplement copper in year 2 and 3
- Source was copper sulfate

Liver Copper, mg/kg DM

Kids at Market – Study 2



MILK FEVER - HYPOCALCEMIA

- PREVENTION
  - Limit calcium intake from legumes or minerals 3 weeks prior to kidding
    - ✓Forces animal to start mechanism to mobilize body stores
- Balance lactation ration

URINARY CALCULI

- Obstruction of urinary tract
  - ✓Due to excessive grain in diet
  - ✓Mainly in young males and show bucks

URINARY CALCULI

- ✓Ca : P ration = 2 : 1 to 4 : 1
- ✓Keep diet P <0.35%
  - ✓don't feed too much high phosphorus feeds
- ✓Urinary acidifiers
  - 10 g ammonium chloride per head per day
  - Ammonium chloride at 2% of concentrate ration
  - Ammonium sulfate at .6% to .7% of the total ration

Late Gestation Mineral

Calcium, min	17 %
Calcium, max	20 %
Phosphorus	10 %
Salt, min	16 %
Salt, max	18 %
Magnesium	1 %
Zinc	2700 ppm
Manganese	2500 ppm

Late Gestation Mineral, continued

Copper, min	1,400 ppm
Copper, max	1,600 ppm
Iodine	140 ppm
Cobalt	20 ppm
Selenium	50 ppm
Vitamin A	300,000 IU/lb
Vitamin D	----------
Vitamin E	300 IU/lb

Pasture Mineral

Calcium, min	15 %
Calcium, max	17 %
Phosphorus	6 %
Salt, min	16 %
Salt, max	18 %
Magnesium	2.5 %
Zinc	1350 ppm
Manganese	1250 ppm

Pasture Mineral, continued

Copper, min	750 ppm
Copper, max	850 ppm
Iodine	70 ppm
Cobalt	10 ppm
Selenium	25 ppm
Vitamin A	150,000 IU/lb
Vitamin D	----------
Vitamin E	150 IU/lb

Next Steps

- Develop the formulas and field test for intake
- Monitor blood mineral levels and reproductive activity
- Monitor kid health and growth