

VET 406: Macrominerals

Macromineral	Sources	Absorption	Function	Deficiency
Calcium	<p>Good: Forages, Bone meal Beet pulp Poor: Grains, Meat</p>	<p>Paracellularly- [Ca²⁺] dependent</p> <p>Transcellularly- Vit. D dependent</p>	<p>Bone and teeth</p> <p>Required for muscle contractions and nerve excitation.</p> <p>Regulator of enzyme activities</p> <p>Signs of calcium metabolism disorders</p> <ul style="list-style-type: none"> -Muscle weakness/listless -muscle twitching -anorexia, rumen stasis -Circulatory failure -Drowsiness, staring -Dilated pupils -Sternal recumbency 	<p>Milk fever</p> <ul style="list-style-type: none"> -occurs at the initiation of lactation <p>Transport tetany</p> <ul style="list-style-type: none"> -Transport of weaned animals <p>Hypocalcemia in ewes</p> <ul style="list-style-type: none"> -Late pregnancy <p>Eclampsia-dogs and cats</p> <p>Loss or damage to parathyroid tissue</p> <ul style="list-style-type: none"> -Thyroid sx <p>Chronic Metabolism disorders:</p> <ul style="list-style-type: none"> Rickets-Growing animals Osteomalacia-Adult animals
Phosphorus	<p>Good: Meat, bone meal, grains</p> <p>Poor: Some forages</p>	<p>Ideal Ca:P ratio 2:1</p> <p>*Actual amounts of Ca & P are more important than the absolute ratio</p>	<p>Bone and teeth</p> <p>Component of nuclei acids</p>	<p>Decreased bone mineralization</p> <p>Possibly decreased bone P levels</p>

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			<p>Component of phospholipids</p> <p>Energy</p> <p>Cellular recognition -Phosphorylation or dephosphorylation of enzymes</p>	<p>Anorexia and Pica (cattle)</p>
<p>Vitamin D</p> <p>Cholecalciferol = D₃</p> <p>Ergocalciferol = D₂</p>		<p>Ileum and jejunum</p> <p>Bile and dietary fats are needed for absorption Transported to the liver via chylomicrons</p> <p>Vit. D metabolites are excreted from the gut</p>	<p>Increase blood calcium and phosphorus levels</p> <p>Bone formation</p> <p>Receptors for 1,25(OH)₂D are found in many tissues</p>	<p>Low bone mineralization</p> <p>Bone abnormalities</p> <p>Rickets: Enlarged epiphyses and persistent hypertrophic cartilage</p> <p>Enlarged joints</p> <p>Deformed long bones, fractures, beaded ribs</p>