

ANIMAL MICRO NUTRIENT DEFICIENCIES

NUTRIENT	FUNCTIONS	DEFICIENCY SYMPTOMS
Cobalt (Co)	Used in the synthesis of Vitamin B12 and required for the growth of rumen bacteria.	<ul style="list-style-type: none"> § Loss of appetite, reduced growth, loss in body weight, followed by emaciation, anaemia and death § A depraved appetite may be observed § When associated with copper deficiency is known as “Salt Stick” § May be known as: Denmark Disease, Coast Disease, Enzootic Marasmus, Bush Sickness, Wasting Disease, Nakuritis and Pining Disease.
Copper (Cu)	Essential for haemoglobin formation, enzyme systems, hair and bone development, pigmentation, reproduction and lactation.	<ul style="list-style-type: none"> § Fading hair coat, light, straight wool growth (“steely wool”) § Nervous systems: lameness, swelling of joints, fragility of bones and anaemia (“salt stick”).
Iodine (I)	Essential for the production of thyroxin (a hormone which controls the rate of metabolism / heat production) in the thyroid gland.	<ul style="list-style-type: none"> § Goiter in calves, lambs and kids § Stillbirths, weak young, hairless pigs and wool less lambs at birth § Known as cretinism in young animals, myxedema in adults.
Iron (Fe)	A constituent of haemoglobin – the iron containing molecule that transports oxygen in the blood and other enzymes involved with oxygen transfer.	<ul style="list-style-type: none"> § Anaemia – fewer red blood cells and lower haemoglobin levels.
Manganese (Mn)	Essential for normal bone formation, growth and reproduction. Activator of enzyme systems involved in oxidative phosphorylation, amino acid metabolism, fatty acid synthesis and cholesterol.	<ul style="list-style-type: none"> § Poor growth, lameness, shortening and bowing of the legs, enlarged joints, knuckling over in calves, testicular degeneration in males and impaired ovulation in females § Slipped tendons in poultry.
Molybdenum (Mo)	Is a constituent of the enzyme xanthine oxidase – important in poultry for the production of uric acid. Stimulates action of rumen organisms.	
Selenium (Se)	Involved in Vitamin E absorption and retention. Prevents degeneration and fibrosis of the pancreas in chicks.	<ul style="list-style-type: none"> § Nutritional muscular dystrophy in lambs and calves § Liver necrosis in pigs § Exudative diathesis.
Silicon (Si)	Involved in the mineralisation of bones.	
Zinc (Zn)	Important for bone and feather development. Is a component of several enzyme systems e.g. carbonic anhydrase and is required for protein synthesis and metabolism.	<ul style="list-style-type: none"> § Loss of appetite and stunted growth § Poor hair or feather development § Rough, thick in swine (parakeratosis).