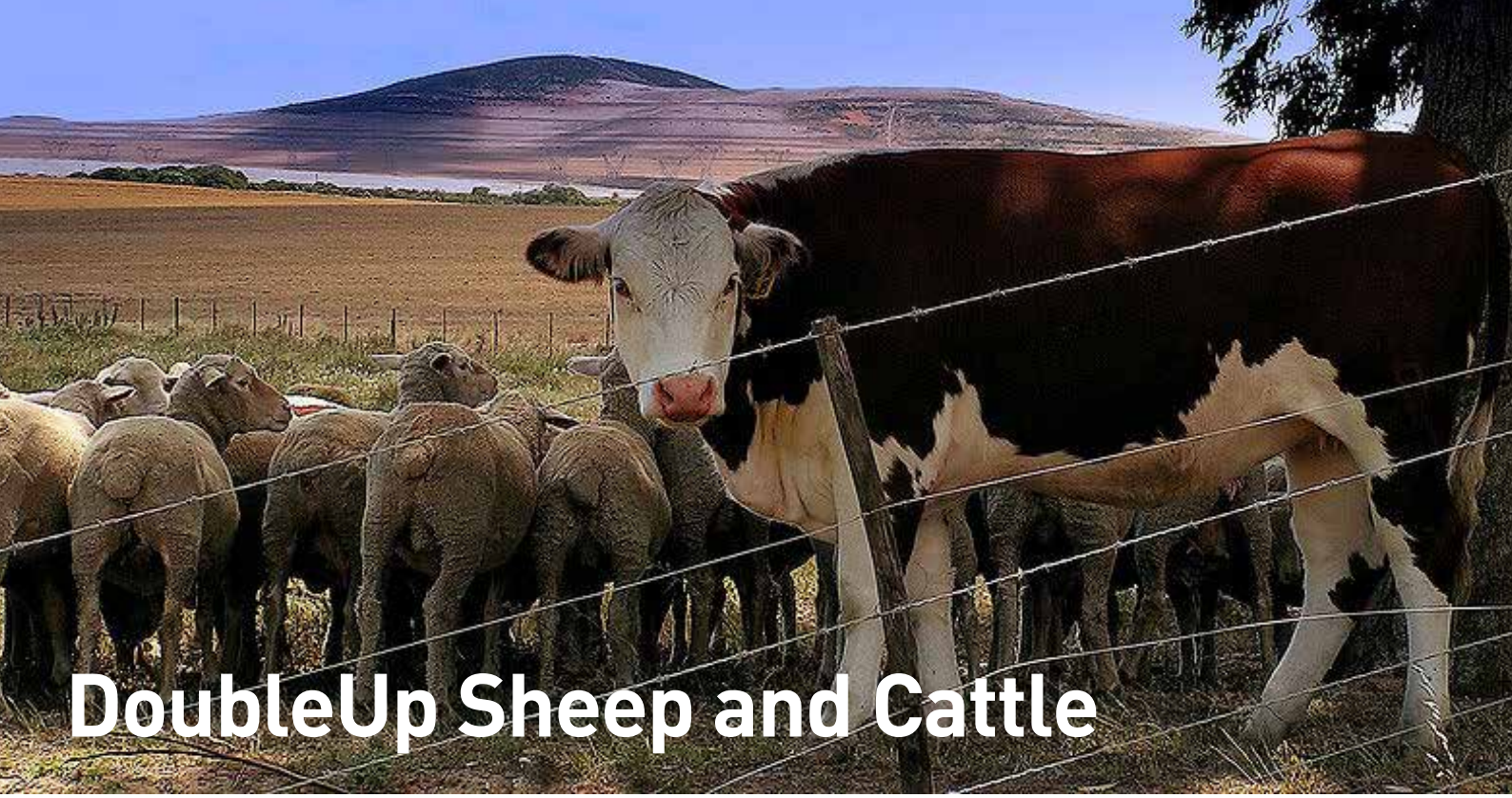

DoubleUp Sheep and Cattle

Nutrient requirements for sheep and cattle are usually presented on a “dry matter intake” (DMI) basis. So the more they eat the more they need. This makes sense; bigger animals and high requirement animals eat more and need more than weaners or dry females.

A table of vitamin and mineral requirements for cattle and sheep will look similar when compared on a %DM or mg/kgDM. So designing a supplement that suits both is possible. Sheep however, have a tendency to be intolerant of copper, especially when they are grazing copper rich pasture plants, or have a compromised liver.

Copper and its relations

We mine copper (Cu) as a metal it has many useful properties. Copper becomes water pipe, electrical cable, it also has anti-bacterial properties as an example it is useful for door handles in train stations. It is corrosion resistant and easy to work. It forms strong partnerships with zinc (brass) and tin, manganese, aluminum and nickel (bronze).

Copper will also form an insoluble compound with sulphur and molybdenum, it is also reactive with iron. This is where cattle and sheep must beware.

Dietary copper for ruminants

Cattle and sheep require about 8 – 12 mg of copper per kg of dry matter. Most good pastures will provide this, however, some soil and pasture types also provide unreasonable amounts of sulphur and molybdenum.

Cattle and sheep are pretty bad at absorbing copper anyway, so any extra negative effects can be obvious. Antagonistic mineral interaction make copper unavailable to the animal and can induce a copper deficiency.

Dietary iron (Fe) above 800 mg/kg DM will severely depress copper absorption. Molybdenum (Mo) is high in acidic soils and in some pasture types. Legumes are higher in Molybdenum (Mo) than grasses. Soils high inorganic matter can have high sulphur (S) and Molybdenum (Mo) concentrations.

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Molybdenum (Mo), sulphur (S) and iron (Fe) can also serve as a saviour, as they prevent over consumption of copper, and thus stall toxicity issues.

Copper Deficiency

Copper deficiency causes loss of hair pigment; Keratin (hair and wool) production is impaired causing rough hair on the backline in cattle or “steely wool” in sheep. Copper is important for many chemical reactions in the animal. Deficiency is seen in reduced fertility, neonate disorders, anemia and bone and cartilage problems.

Copper toxicity in sheep

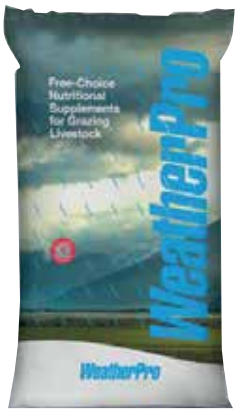
Sheep are more susceptible to Chronic Copper poisoning (CCP) than cattle. Some breeds (Texel; North Ronaldsay) are particularly affected, even when grazing. Sheep grazing pastures of normal copper and low Molybdenum (Mo) (0.1 – 0.2 mg Mo / kg DM) or eating copper accumulating plants (Patterson’s Curse) cause CCP from affecting liver tissue. Lupinosis (phomopsin toxin) also precludes Chronic Copper poisoning (CCP).

Chronic Copper poisoning (CCP) occurs in 2 phases; Initially liver Copper (Cu) levels rise, over weeks or months, to about 1000 – 1500 mg/kg DM of liver tissue. This starts a chain of biochemical events that lead to phase 2; haemolytic crisis. This is as bad as it sounds; death usually results.

Protected copper is safe

DoubleUp uses a Copper HMTBa chelate that is immune to antagonism from Molybdenum (Mo), sulphur (S) and iron (Fe). It also has an absorption pathway that will not cause accumulation in the liver. Copper HMTBa chelate is a safe source of copper for sheep grazing pastures with mineral antagonism. It will also reduce the risk of CCP for sheep with damaged livers.

Copper HMTBa chelate is also a great supplement for cattle as it is more efficiently absorbed.



WeatherPro DoubleUp

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Guaranteed Analysis (As-Fed)		
Calcium (Ca)	%	17.50
Phosphorus (P), min.	%	0.30
Salt (NaCl), min.	%	30.00
Salt (NaCl), max.	%	35.00
Sulphur (S), min.	%	1.00
Magnesium (Mg), min.	%	5.00
Copper (Cu), min. HMTBa	mg/kg	60.0
Cobalt (Co), min.	mg/kg	35.0
Selenium (Se), min.	mg/kg	24.0
Iodine (I), min.	mg/kg	100.0
Zinc (Zn), min.	mg/kg	2800.0
Manganese (Mn), min.	mg/kg	2800.0
Vitamin E	ppm	400.0
Vitamin A	I.U.	110,000
Vitamin D3	I.U.	11,000

FibrePro DoubleUp 60

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Protected Animal Performance

Guaranteed Analysis (As-Fed)		
Crude Protein, min.	%	60.00
Equivalent Crude protein, min.	%	60.00
Biuret (as poly-urea), max.	%	24.00
Calcium (Ca), min.	%	1500
Phosphorus (P), min.	%	1.00
Salt (NaCl), min.	%	15.00
Salt (NaCl), max.	%	17.00
Sulphur (S), min.	%	0.70
Magnesium (Mg), min.	%	5.00
Copper (Cu), [illegible]	mg/kg	60.00
Cobalt (Co), min.	mg/kg	30.00
Selenium (Se), min.	mg/kg	20.00
Iodine (I), min.	mg/kg	80.00
Zinc (Zn), min.	mg/kg	2300.0
Manganese (Mn), min.	mg/kg	2300.0
Vitamin A	IU/kg	91,500.00
Vitamin D3	IU / kg	9,150.00
Vitamin E	mg/kg	330.00