

## Selenium Deficiency in Sheep and Cattle

Selenium is a trace element, physiologically linked with Vitamin E, that is essential for optimal growth, fertility and immune function in a wide range of animals. It can also remediate the health impacts associated with excessive intake of minerals such as Cobalt and Cadmium.

Selenium deficiencies in ruminants generally result from low levels of Selenium in the soil and pasture. Rapidly growing pastures and pastures dominated by clovers are likely to have poor Selenium levels. Areas with sandy soils and high rainfall are particularly prone to the deficiency because of leaching. Pasture supplements such as superphosphate can reduce the Selenium uptake of plants so that the deficiency occurs in animals even where Selenium levels in the soil are within the acceptable range. Mineral deficiencies (e.g. Copper deficiency) and other stresses such as severe weather events or mustering predispose animals to the effects of Selenium deficiency. The deficiency has been identified in all states in Australia as well as many other countries including New Zealand.

Selenium deficiency can play a role in a range of health problems in both sheep and cattle. The most widely recognised is white muscle disease, a muscle wasting disease characterised by pale discolouration and necrotic lesions on the muscles. New born animals may die soon after birth as a result of damage to the heart muscle that occurs while in the womb. Older animals may also suffer from heart damage, but more frequently they suffer from damage to their skeletal muscles, becoming weak, stiff and lame before death.

Other conditions associated with Selenium deficiency include ill thrift and poor growth, particularly amongst young stock to 18 months of age. This condition, known as Selenium responsive unthriftiness, often manifests at a subclinical level and production gains of over 5% can be achieved by supplementing deficient stock even where there is no clear sign of the disease.

Selenium deficiency can also have a major impact on the reproductive efficiency of animals. Females and males alike will suffer from reduced fertility. Early embryonic deaths (abortions) and stillbirths may rise in incidence and post-birth complications such as retained placenta may increase in Selenium deficient females.

The immune function of livestock can also be compromised by Selenium deficiency. Animals are more likely to become infected with disease-causing organisms and are less likely to mount a protective immune response when deficient in Selenium. For instance, there is clear evidence that the incidence and severity of mastitis in dairy herds are higher where cows are deficient in Selenium. Supplementation with Selenium can restore, and even increase, an animal's immune function.

**Information line 1800 001 973**



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Selenium deficiency is best prevented and treated by providing a Selenium supplement direct to the animal. In areas with severe Selenium deficiency, breeders should be supplemented before joining and before giving birth. Young stock should be treated at marking and weaning.

Care should be taken not to overdose animals with Selenium because it is toxic when supplied in excess and the margin between deficiency and toxicity is quite narrow. Selenium should not be supplemented using multiple methods (e.g. with drenches, with vaccines, as feed supplements, as injections or as pasture dressing) at the same time. Toxicity is more likely to occur where animal's have liver damage resulting from grazing on plants containing pyrrolizidine alkaloids (e.g. Paterson's Curse/Salvation Jane, Fireweed/Variable Groundsel or Blue and Common Heliotropes).