



General Features of Deficiencies of Trace Mineral Elements

Deficiencies of various trace elements are frequently related to particular soil types. By the use of proper diagnostic methods it is possible to prove the existence of a deficiency. *It is always preferable to have a thorough investigation made before applying minerals.*

← Steely appearance and complete loss of crimp characteristic of the wool of half-bred and Merino sheep run on copper deficient country.

injections, which are also useful for trials.

Copperised licks have the disadvantage common to all licks that not all stock take them.

Copper poisoning can readily be caused by excessive concentrations of topdressing or licks.

SELENIUM

Many farmers will be aware that in recent research the mineral **selenium** has given most promising results in the prevention of white muscle disease in lambs and has also caused an increased growth rate in lambs on some properties where trials have been conducted.

White muscle disease has shown up in several forms in a number of districts in the South Island. The condition was first recognised in hoggets when they were driven to grass after being wintered for several months on turnips; those affected became stiff and "stilty", went down, and died within a few days. Experience has shown that the condition rarely occurs if hoggets can be allowed to wander quietly on to an adjacent crop of green feed for a few days before being driven any distance.

However, the heaviest losses from white muscle disease have occurred in lambs. Some of these losses occur within one or two days of birth and frequently immediately after birth or within an hour or two. In these lambs the heart muscle is affected and before death breathing is rapid and difficult. There is frequently excess fluid in the body cavities.

In older lambs, 3 to 12 weeks of age or more, deaths may occur suddenly due to white muscle heart lesions or several days after the lambs have shown stiffness and become "stilty" and unable to walk. Affected muscle, whether in the heart or in the body or limbs, is white like fish flesh or has white areas in it.

White muscle disease in lambs occurs most frequently on light land which has been developed rapidly. Usually it is seen on paddocks in which lush clover is dominant.

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alternative is spraying pastures with a cobalt solution.

IODINE

Iodine deficiency causes goitre in sheep, cattle, and pigs. It is relatively common, particularly in river valleys.

The deficiency effect most commonly seen is **congenital goitre in young lambs, a percentage of lambs being born dead or dying within a few days of birth.**

In severe cases the dead lambs may not be properly covered with wool. Thyroid glands are generally enlarged, shown by swelling about the throat.

Goitre may occur in two ways; it may be due to soil deficiency of iodine or by feeding ewes during pregnancy on crops such as brassicas which interfere with the use of iodine by the animal. Both types of goitre are readily prevented by giving iodine to pregnant ewes. If this is done by licks, they should contain potassium iodate, which does not deteriorate when put out. Licks containing potassium iodide must be renewed every week or so.

The best method of supplying iodine is to drench the ewes with potassium iodide two months before lambing and again one month later. When this is done all ewes get sufficient iodine.

COPPER AND MOLYBDENUM

Copper deficiency also occurs on particular soil types. Peaty and sandy soils are always suspect; some river

and marine silts may also cause trouble. On other soils a slight copper deficiency may be accentuated by a high level of molybdenum in the pasture, which causes further loss of the already low copper supply in the animal.

Some lambs from copper deficient ewes show brittleness of bones and swayback, a type of paralysis of the hindquarters. Merino and half-bred sheep run on copper deficient country show **steely wool**, which has a characteristic appearance with all crimp lost.

Copper deficiency in calves causes unthriftiness, brittleness of bones, and loss of coat colour. Copper deficiency associated with excess molybdenum causes unthriftiness in dairy cattle, severe scouring, and loss of coat colour.

The scouring occurs with the flush of spring grass.

This type of copper deficiency frequently does not show in such a spectacular manner with sheep. There may be a few cases of swayback in lambs or merely unthriftiness.

Diagnosis of copper deficiency may be confirmed by chemical analysis of livers or by a copper dosing trial carried out in a similar way to the cobalt trial.

Copper deficiencies are best corrected by topdressing with bluestone (copper sulphate) at 5 lb per acre or copperised superphosphate. Another satisfactory method is by the use of copper cerate