

FEEDING THE 'WHITE GOLD' FACTORY:



A life-phase approach

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The profit of any factory will be affected by its working parts (machinery) and steady structure. If a factory has a weak foundation, the structure that it is supposed to support will be doomed. Similarly, with defective machinery, no product will be produced. The same is true for sheep, the ‘white gold’ factories grazing on the farm; without a strong foundation and good working parts, they will have a reduced ability to produce. This is where a life-phase approach can be extremely valuable.

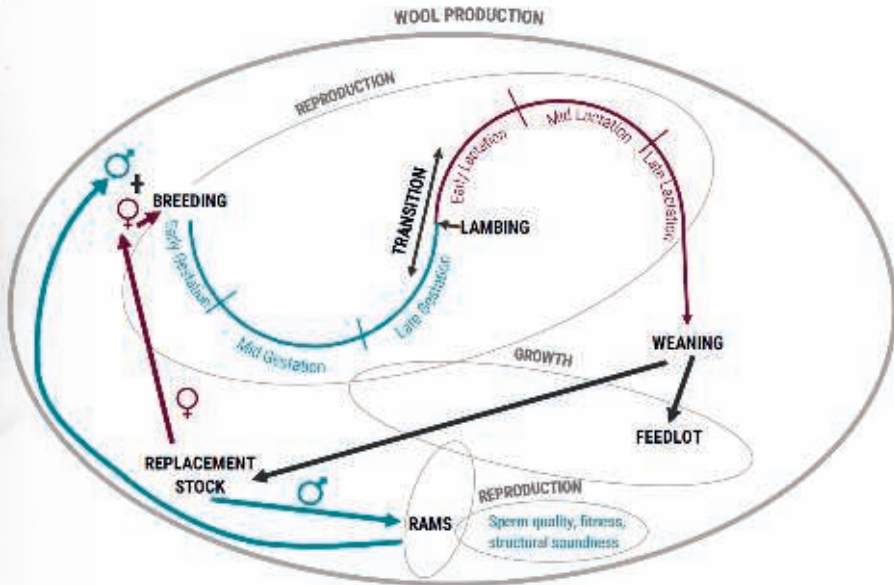
The different phases of a sheep's life are interlinked and each have their own unique challenges that necessitate correct management. The manifestation of nutritional deficiencies (including trace mineral deficiencies), health disorders, or environmental challenges in any of the life phases of a sheep can have a profound impact on the farm's performance and profitability. In all phases, it is important to maintain balance, as both over- and under-feeding have negative effects on production.

► ► Breeding

Lambs directly drive the income generated on-farm; the more there are, the better. Nutrition is a key component that will be reflected in the ewe's ability to ovulate, with trace minerals such as zinc, manganese, copper, and selenium playing great roles in fertility. At breeding, ewes should cycle and produce viable eggs that can be fertilised. It is also important that breeding ewes should not struggle to conceive, as this leads to extended lambing periods that may disadvantage lambs born to these ewes since they are born later in the lambing

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Figure 1: The life-phase approach of a sheep flock



This is how the different white-gold factories on your farm operate.

season. Given that weaning takes place simultaneously on-farm, these lambs will enter the feedlot at lower body weights and, if used as replacement stock, will experience poor growth rates causing a delayed onset of puberty. Both situations will reduce income and productivity realised on and off the farm.

► ► Gestation

The foundation of several bodily systems, which will influence a sheep's lifetime performance, is developed during gestation. This development does not cease at birth, but rather continues through other life phases.

Implantation occurs during early gestation, and this is where most embryonic losses transpire. Poor nutrition and stress during this period will adversely affect

embryo survivability. Without an embryo, no lamb(s) will be produced. Feeding a balanced diet to ewes during this phase maintains body condition, which contributes to embryo survivability. Likewise, ewes should not be moved or handled in the few weeks post-breeding, as this also leads to embryo losses. Placental development is rapid during early- and mid-gestation. Placental development is essential, as it will influence foetal growth and development during late gestation. Nutritional mismanagement during these stages of gestation will result in a reduced placental size, which may lead to the birth of smaller or underdeveloped lambs.

Late gestation is important for foetal growth and development, as the foetus gains approximately 85% of its body weight here. Inadequate nutrition during this

phase results in poor muscle development, which will negatively impact the lamb's growth if it enters the feedlot or will lead to reduced future performance if it is used as replacement stock. Trace minerals essential in foetal development include zinc, manganese, iron, copper, selenium, and iodine.

► ► Transition phase

This is the most undervalued phase in the ewe's reproduction cycle. During the transition phase, there are great demands on the ewe's reserves, and in the last part of gestation, there is less abdominal space for the rumen due to the presence of the lamb(s). Therefore, it is essential to feed a high-quality and highly digestible diet to meet the ewe's and lamb's nutritional demands.

Colostrum synthesis also occurs during this phase, which will influence the lamb's lifetime performance. If inadequate quantities of colostrum are produced, the quality is poor, or if the lamb consumes insufficient quantities, this will adversely affect its ability to combat diseases, directly affecting production. Trace mineral supplementation can enhance colostrum quality, subsequently improving lamb survivability and producibility in the flock.

► ► Lactation

The ewe's ability to produce milk and the quantity thereof, will influence her lamb's

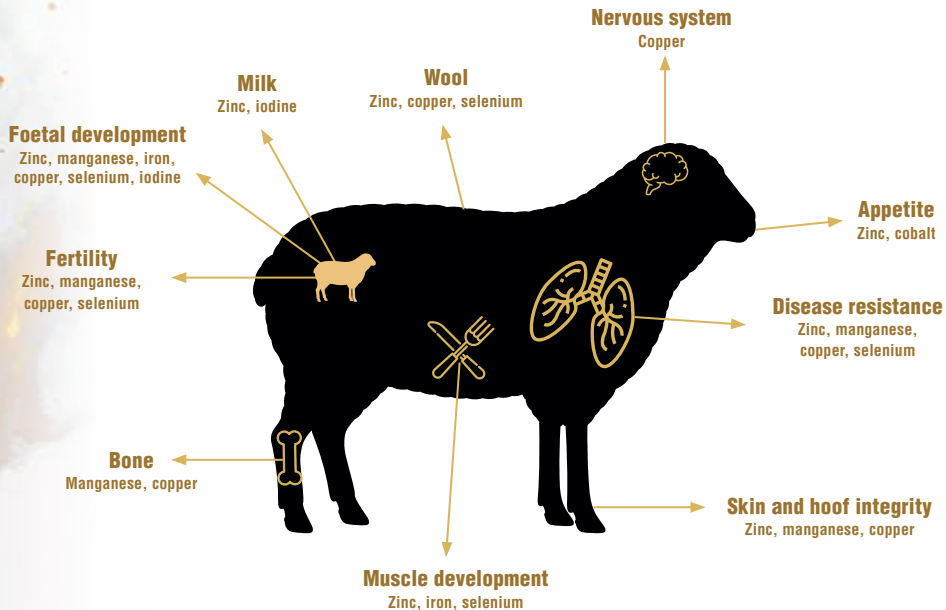
future growth and performance. During early lactation, the ewe's body reserves are drained; she tries to compensate with an increased feed intake, but this is just not enough, and the ewe mobilises some of her body reserves to meet her body and lactation requirements. This drain on the ewe's reserves starts to dwindle as mid-lactation ensues, milk production starts to fall, and feed intake stabilises. At the commencement of late lactation, the ewe's feed intake starts to increase, and she can rebuild the reserves she lost during early lactation. Therefore, nutrition is crucial during lactation; trace minerals (namely, zinc and iodine) are the most important in milk production.

Lactation is also a vital phase for lambs. At the start of lactation, the digestive tract of a lamb resembles that of a monogastric animal, and its diet is mainly milk-based. However, as lactation continues, the lamb's rumen and inhabitant microbial population develops as it consumes more forage and concentrates. Without adequate development of the gut, including the rumen, during this phase, lambs may be predisposed to disease and exhibit poor performance post-weaning. For example, a lamb with inadequate ruminal development entering the feedlot post-weaning will struggle to adapt to a new diet, predisposing it to ruminal damage and compromising its productive performance.



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Figure 2: Trace minerals and their importance within the sheep



► ► The ram in the cycle

Males should fulfil their function on-farm – to reproduce. Without adequate sperm production and mating behaviour, rams will be of no use. Trace minerals, such as, zinc play a large part in testicular development and sperm quality, especially under heat- or mud-stressed conditions. Nutritional requirements for sperm production are very low; however, rams expend a lot of energy in pursuit of ewes and, therefore, need to be fit and in proper condition prior to the breeding season.

► ► The weaned lambs

Replacement ewes that are in an unfavourable body condition will not reach puberty promptly, thus preventing ovulation and breeding. This will affect their lifetime performance and economic contribution to the flock. Providing replacement ewes with the correct diet will not only ensure that they cycle but will allow them to recover well after their first breeding season.

► ► The white gold

Lastly, a significant contributor to farm income by all wool sheep is wool production. Wool fibres with high tensile strength and a thinner micron value attain higher prices at auction. If sheep consume adequate quantities of trace minerals such as zinc, selenium, and copper, a major benefit in terms of wool production can be achieved.

Conclusion

Given that each farm faces its own unique challenges, the overall aim of any farming enterprise should be to achieve the best possible production of its flock across all life phases. Invest in your flock by implementing proper nutritional and management practices, bringing about the best performance! 