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## FASTING OF WOOL SHEEP PRIOR TO SHEARING

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### PREAMBLE

We, as an industry, would like to express our appreciation to the Livestock Welfare Coordinating Committee (LWCC) for evaluating this Guideline document and making input to further develop it as fit for purpose.

The LWCC (established in 1978) is an independent entity comprised of multiple stakeholders dedicated to protecting the welfare of livestock. After reviews and revisions, the Guideline document that follows was accepted and endorsed at the 188<sup>th</sup> meeting of the LWCC as a reference from the perspective of both welfare and practical application for farmers, shearers, and their advisors.

The official LWCC support for the document acknowledges the wool industry's commitment to welfare issues that affect the very foundation of the wool value chain. The LWCC also approved the association of their logo with the Guideline document as an indication of this official recognition.

In addition to wide distribution within the industry, to both commercial and communal stakeholders, the guideline will be published on the LWCC website ([lwcc.org.za](http://lwcc.org.za)) together with other approved guidelines and position statements.

As this is a dynamic document it will be completely reviewed at least once every three years. Should peer reviewed research results be published within that time frame necessitating immediate updating this will be done.



### INTRODUCTION

This article was prompted by a request from Izak Klopper of the National Wool Growers Association (NWGA) for a discussion document drawing together current international best practice on this topic, and to provide a better understanding of the complex issues surrounding the shearing of sheep that have been fasted pre-shearing compared to those that have not.

Whatever you may feel about keeping sheep off food and water for a period of time before shearing, there are two critical components of the value chain that will probably thank you if you do.

These two components are firstly the foundational element of the value chain – the sheep<sup>(1)</sup> - and a very close second is the shearer.

The objective of fasting before shearing is to increase the percentage of adequately fasted animals presented for shearing, which has advantages to both sheep and shearer. It seeks to enhance animal welfare, reduce the physical and physiological demand on both sheep and shearer, enhance the performance of the shearer and in this way the quality of the clip. Fasting must also be managed in such a way that it does not impact on the health and production parameters of the sheep.

To open the discussion, we need to concede that shearing is physically and physiologically demanding to both sheep and shearer. If there is something that can be done to mitigate these demands, it needs to be considered. Especially if what is done is also considered to be international good practice and is shown by research to have minimal negative consequences to sheep with the **exception of heavily pregnant ewes**. See Point 5.

At minimum the outcome for the sheep must be an enhancement of their welfare.

When referencing the Sustainable Cape Wool Standard (SCWS), the following is stated: “Sheep gathered and penned in preparation for shearing may be deprived of food and water for a period of between 12 hours and 24 hours, but never for a period exceeding 24 hours (This allows for a more comfortable experience for the animals during shearing, as the rumen does not impair the lung function)”.

Later in this article supporting evidence for this statement is provided. The length of time of fasting for various classes of sheep is also discussed in detail with reference to international standards.

What the SCWS statement does not highlight but is also of significance, is the positive experience of the shearer dealing with a sheep that has been fasted pre-shearing as opposed to one that has not

Over and above the two groups mentioned above there are also positive implications for the farmer.

Each of these groups – sheep, shearer, and farmer - is discussed in more detail further on in this article.

Included, to ensure a balanced article, are concerns the farmer may have regarding negative impacts on productivity and performance of various classes of sheep, as well as potential clinical risks to the animal.

This article should not be seen to serve as a final recommendation, but rather as an opportunity to lay out this issue in a balanced way so as to heighten awareness and stimulate discussion. This will hopefully open lines of communication and allow for considered decision making. A final decision should always be discussed with your flock veterinarian.

Over and above shearing it can also be argued that a fasted sheep is easier to scan. This too should be discussed with your flock veterinarian.

## 1. THE SHEEP

- If not fasted pre-shearing a ewe’s gut content can make up over 20% of the body weight <sup>(2),(3),(4)</sup>.
- If sheep are shorn later in pregnancy, add an additional approximate 10kg for the foetus, placenta, and associated fluids <sup>(5)</sup>.
- Both of these represent “space occupying masses” in the abdominal cavity of the animal.
- When placed in the shearing position, the anatomical shape of the abdominal cavity is altered as is the longitudinal orientation from horizontal to vertical. Due to this the position of these “masses” shifts.
- Gravity will pull the “masses” down which in itself will be uncomfortable for the sheep, but of greater importance is the upward displacement.
- When displaced upwards, due to the alteration in shape of the abdominal cavity, these “masses” have to go “somewhere”, and this “somewhere” is toward the thoracic cavity of the animal. Between the abdominal and thoracic cavity is a flexible muscle sheet - the diaphragm. The upward displacement therefore puts pressure on the diaphragm which stretches upwards in a dome shape into the thoracic cavity. This has the following consequence:
  - (a) It reduces the ability of the diaphragm to contract. Under normal circumstances diaphragmatic contraction flattens the diaphragm toward the abdominal cavity which increases the volume of the thoracic cavity. This increased volume creates a negative pressure in the thoracic cavity which allows expansion of the lungs - part of the process enabling inhalation (breathing in).
  - (b) Decreased space for the diaphragm to contract therefore has a negative effect on the ease and efficiency of respiration, as specifically mentioned in the SCWS.
- The consequence of these two displacements is an uncomfortable sheep, which expresses its discomfort by increased restlessness, making it much more difficult for the shearer to handle the animal.

- A restless animal is also more likely to get injured in the shearing process through no fault of the shearer.
- The animals will also take longer to shear, increasing the demands on both sheep and shearer.

All of the above translate into a non-ideal animal welfare scenario.

- If the sheep is not fasted pre-shearing it also has a much higher rate of urination and defecation which has the following disadvantages:
  - (a) The shearing surface is more contaminated, resulting in a greater likelihood of the sheep slipping and being injured.
  - (b) The increased contamination disadvantages the shearer from both a safety and a health point of view.
  - (c) It is disadvantageous to the farmer as the work and management load in the shearing shed is increased.
  - (d) The likelihood of fleece stain and contamination is higher.

## 2. THE SHEARER

Australian research has shown that sheep shearing puts more physical and physiological demand on the body than any other job<sup>(6)</sup>. So, any modification of the shearing process that reduces this demand will not only benefit the shearer but also the sheep and the quality of the shearing process because the shearer is not as fatigued.

- A sheep fasted pre-shearing represents a reduced weight to be physically handled which, cumulatively over a day's work, means considerable energy saving and reduced fatigue.
- A sheep that is far more restful in the shearing position and therefore moves around less, reduces the physical effort of the shearer and the time needed to shear the animal. This too translates into less physical demand on the shearer.
- Therefore, a shearer able to do a better and faster job throughout the day.
- A shearer is less likely to cause injury to the animal.
- A shearer is less likely to sustain injury.
- A much less hazardous working environment for the shearer due to the reduced soiling of the shearing floor area.
- The reduction in soiling reduces the likelihood of transmission of zoonotic diseases (diseases that are spread from animal to man) to the shearers and other workers, such as Leptospirosis<sup>(7)</sup> and Campylobacteriosis (Vibriosis).

## 3. THE FARMER

It is a demanding task to facilitate and manage all the moving parts of the shearing process. As in the case of shearers, any modification of the shearing process that eases this burden needs to be considered.

When fasted sheep are presented for shearing:

- There is less likelihood of fleece stain and soiling of the clip<sup>(8)</sup>.
- The sheep are more efficiently shorn from both a time as well as a clip quality perspective for reasons related both to animal and shearer.
- Less likelihood of injury to the sheep so fewer medical issues to manage during and post shearing.

- A more comfortable experience for the sheep with less likelihood of a negative impact on productivity.
- Less effort required to manage the shearing process generally.

As stated in the American Sheep Industry's Code of Practice for the Preparation of Wool Clips: "A year is spent growing the product and only a few minutes are required to harvest it. It is in this brief period that quality is often adversely affected".

#### 4. PRIOR TO FASTING AND FASTING PRE-SHEARING

**Prior to fasting:** Correct management at this stage will further leverage the advantages of the fasting process itself while reducing potential risk factors.

1. Do not drench sheep within 48 hours prior to fasting.
2. Eliminate the consumption of dry grains for 48 hours prior to fasting.
3. Vaccinations should not be administered within 48 hours prior to fasting.
4. Sheep should have free access to grazing and water prior to fasting.
5. Any sheep that need to be driven a long distance will need to be rested, watered, and be allowed to graze before being fasted.

**Fasting:** How long should fasting pre-shearing last?

There are three important aspects to the length of time:

1. It has to be long enough to reach the objective of reducing a sufficient amount of the gut content to achieve the advantages mentioned.
2. Cannot be of such duration that it negatively impacts on the health and welfare of the animal especially early pregnant ewes, hoggets, and pre-weaned lambs.
3. Should allow for a rapid recovery after fasting and shearing thereby having minimal negative impact on the production parameters of the animal.

**Research by Boyne et al. has recorded that 75% of gut content is emptied in the first 12 hours of fasting<sup>(4)</sup>.**

This is an extremely important contribution to this debate as it dovetails neatly into the SCWS and is used to inform the overwhelming body of international research and opinion.

In all international articles consulted, for all classes of sheep - weaned lambs, adult sheep, ewes -non-pregnant and early pregnant - hoggets etc., the recommended **minimum** fasting period **starts** at 12 hours. The exception to this is pre-weaned lambs where 6 hours is listed as a **minimum** period. Please note the above emphasis placed on the **minimum** period.

The **maximum** fasting period recommended internationally for food goes up to 32 hours (New Zealand and the UK) and 48 hours (Australia). For water up to 24 hours (New Zealand and the UK) and 48 hours (Australia). The only exception to this is pre-weaned lambs with a **maximum** food withdrawal of 24 hours and water of 20 hours. This recommendation is the same for New Zealand, the UK, and Australia.

Even for sheep affected by drought and undernourished - with a body condition score of 2 or less - Australian recommendations are too fast for no less than 12 hours and no more than 30 hours.

Therefore, the SCWS for South Africa for fasting (food and water), for a **minimum of 12 hours with a maximum of 24 hours**, is very much in line with international standards. This also fits into the results quoted by Boyne et al. to allow sufficient time for 75% of the gut content to reduce. With, as mentioned previously, the exception of pre-weaned lambs where a minimum 6-hour fasting period applies with a maximum food withdrawal of 24 hours and water of 20 hours.

The above also dovetails into the management of the shearing process where if sheep are penned overnight and shearing starts first thing in the morning, there should be sufficient time to reach the

desired reduction of rumen content. Even should the last sheep only be sheared later that day it still falls within the accepted maximum time frame of 24 hours.

It is worth noting that under Australian climatic conditions which may, in many instances, be comparable to South African conditions the maximum fasting period is, for most classes of sheep, 48 hours. This is double the maximum recommended in the SCWS. UK and New Zealand standards are more closely related to the SCWS.

Both the American Sheep Industry's (ASI) *Code of Practice for the Preparation of Wool Clips* and the ASI's *Sheep Production Handbook* call for sheep to be penned for anywhere between 4-12 hours before shearing and both recommend keeping sheep off food and water whilst penned. However, neither go into detail about why fasting is important.

Of considerable interest is the statement made in the Australian Animal Welfare Standards and Guidelines for Sheep, Edition One, Version One, endorsed January 2016.

*"Sheep should have access to feed and water daily, except where reasonable management practices, such as **shearing**, (my emphasis) preparation for sale, transport, slaughter, and drenching, result in a longer period of water deprivation, to a maximum of 48 hours. **Feed and water deprivation exceeding 48 hours should be avoided**".*

## 5. PRODUCTION/PERFORMANCE/HEALTH RISKS FOR SHEEP

Farmers have an understandable concern as to whether fasting would affect performance parameters be they growth, pregnancy etc. as well as health risk factors for the sheep.

### Production Performance Aspects

One trial<sup>(9)</sup> showed that lactating ewes could come back from severe underfeeding (50% of maintenance needs) over 72 hours with no effect on lamb growth rates and weaning weights. This is obviously vastly more prolonged than anything considered here.

A further trial at Massey University, New Zealand, where mid pregnancy ewes were fasted for 24-30 hours prior to shearing, showed no adverse effects on ewe performance, lamb birth weight and new born lamb survival.

Research on the effect of fasting weaned lambs showed that, although 12 to 24 hours off food caused a large reduction in gut fill, it did not affect growth rates or carcass weight. It was, however, determined that a period of greater than 24 hours did cause carcass weight loss.

It must be borne in mind that pregnant hoggets are more prone to non-infectious spontaneous abortion than mature ewes, being especially vulnerable during early pregnancy. It is therefore advisable, especially with this group, that additional physical and physiological demand should be minimized prior to and during shearing as a general management principle. The question is whether fasting is more or less demanding on the hogget than the consequences of not fasting.

To address this question, information from New Zealand, even taking the above vulnerability into account, is still too fast pregnant and lactating hoggets for a minimum of 12 hours and a maximum of 24 hours prior to shearing.

Hoggets, as a class, could also be managed in such a way that their fast is closer to the minimum 12-hour period recommended rather than the 24-hour period. This will further tend to enhance the benefit of fasting whilst mitigating the risk.

### Health Aspects

There are some very important points to be made here:

Due to the risk factors discussed below it is **unacceptable** for heavily pregnant ewes **to ever** be fasted pre-shearing. The risk factors simply outweigh any advantages.

The risk factors include metabolic diseases the most important of which is pregnancy toxaemia also known as domsiekte, ketosis or twin lamb disease. This is the inability of the heavily pregnant ewe, especially if carrying twins, to maintain sufficient glucose in the blood to meet the energy demands of both the fetus/fetuses and ewe. It is usually associated with an interruption of feed intake with some other predisposing factor such as shearing, transport, storms, other disease conditions etc.

Of similar significance is a Calcium – Magnesium imbalance that can also occur especially in late pregnant ewes and is also precipitated by increased physiological pressure. This condition can be induced just by moving the sheep, and of course in this instance there is the additional physiological pressure of shearing. Heavily pregnant ewes are also more susceptible if their feed has been supplemented with grain. This condition is also referred to as “milk fever”. During lactation the Calcium -Magnesium imbalance causes a similar syndrome hence the term “milk fever”. These heavily pregnant ewes are of course not yet lactating but are equally susceptible and syndrome is equally severe.

It is also essential that all sheep must be adequately vaccinated against enterotoxaemia (pulpy kidney) before they are fasted.

Additionally, it has been reported that an adverse clinical reaction can occur if animals are vaccinated against Salmonella and Campylobacter (Vibrio) at the time of fasting and shearing. Whether this is predisposed to by shearing or fasting or a combination of the two is not clear. Concurrent vaccination should in any case not be done when an animal is additionally placed under pressure, both physical and physiological, such as at shearing time and within 48 hours thereof as already mentioned.

As a final comment it should be noted that any additional physical or physiological demand placed on an animal can cause a reduction in an animal’s immune status. This is dependent on both duration and severity of the demand. International experience points to the recommended South African fasting periods having minimal impact on the physiology of the animal. The reduction of physical and physiological demand the-fasted sheep experiences during shearing, coupled with a more efficient shearing process, would additionally mitigate this.

## CONCLUSION

As mentioned earlier in the article shearing is demanding to both sheep and shearer alike. Therefore, it stands to reason that anything that can be done to manage this demand without having a negative impact should at minimum be critically considered.

## GLOSSARY OF TERMS

“Fasting” – In terms of this article refers to withholding both food and water.

“Fasting pre-shearing” – Withholding food and water for a sufficient period of time prior to shearing to reduce the contents of the rumen by about 75%. This period will also create the situation where such a sheep will reduce the contents of its bladder and gastrointestinal tract and therefore be less likely to urinate and defecate while being shorn.

“Fasted sheep” – A sheep that has been managed in the above way.

“Hogget” - A sheep between 7 and 15 months of age.

## BIBLIOGRAPHY

- (1) Meat and Wool Innovation. (MWI) Had a gut full? Sheep need to be empty (pre-fasted) at shearing – but just how empty. *Meat and wool Innovation, Summer 2002: 25-26.*

- (2) Kirton, A.H. 1964. Assessment of body composition in the live animal. *Proceedings of the NZ Society of Animal Production* 24: 77-78.
- (3) Hungate, R.E.; Phillips, G.D.; McGregor, A.; Hungate, D.P.; Buechner, H.K. 1959. Microbial fermentation in certain mammals. *Science USA* 130: 1192-1194.
- (4) Boyle, A.W.; Campbell, R.M.; Davidson, J.; Cuthbertson, D.P. 1956. Changes in composition of ingesta along the alimentary tract of sheep. *British journal of Nutrition* 10: 325-333.
- (5) The New Zealand Sheep Council. 1999. *A guide to feed planning for sheep farmers. Second Edition: 48.*
- (6) Rachel, R. and Stuart, D. (2000). *The World Today Archive – Study shows shearing is the toughest job.* Available at <https://www.abc.net.au>.
- (7) Worksafe New Zealand. *Leptospirosis: working with sheep.* Last updated 2017.
- (8) Regnault, W.R.; Elwin, M.; Wickham, G.A. 1992 Discoloration, and fast fade. *Wool* 4: 2-4.
- (9) Coop, I.E.; Clark, V.R.; Claro, D. 1972. Nutrition of the ewe in early lactation. 1. *Lamb growth rate. NZ Journal of Agricultural Research* 15: 203-208.

#### **Publications Referenced:**

New Zealand Government, Worksafe New Zealand: *Fasting of sheep prior to shearing: Guide.*  
Endorsed by the New Zealand SPCA; The New Zealand Veterinary Association Inc.; Federated Farmers of New Zealand's Meat and Fiber Producers Council; The NZ Shearing Contractors Association and the Agricultural Health and Safety Council amongst others.

Animal Health Australia. *Australian Animal Welfare Standards and Guidelines for Sheep. Edition One, Version one, Endorsed January 2016.*

*Northern Territory of Australia Animal Welfare Act (1999)* as in force on 12 April 2017.

Shearquantity.com. Australia. *Fasting Policy for Sheep.* 09 April 2020.

*A Study for the National Sheep Association Samuel Wharry Memorial Award for the Next Generation.*  
Marie Prebble. *Practical Considerations for Best Practice during Shearing in the UK.*

Ohio State University Sheep Team. *Fasting Sheep Before Shearing.* Previously published in the Sheep Industry News: February 2022 based on the New Zealand Worksafe publication.

American Sheep Industry's (ASI) *Code of Practice for the Preparation of Wool Clips and Sheep Production Handbook.*

#### **Disclaimer:**

This article is prepared based on various research materials and publications that are done prior and proper care was taken using the source.

It is intended to educate and inform people about the current situation with reference to fasting sheep prior to shearing and to stimulate discussion.

It should not be seen as a final recommendation by the author or by any organisation or publication mentioned.

A final decision rests, at all times, with the producer/farmer and it is recommended that any decision should be taken in consultation with the flock veterinarian and other role players.

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