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# B19

## AVOIDING WEATHER INDUCED DEATHS OF GOATS

### Contents

#### Industry Background

#### Management

#### Nutrition

#### Animal Health

#### Breeding

#### Fibre Production

#### Fibre Marketing

#### Meat Production and Marketing

#### Pasture and Weed Control

#### Economic Analysis

#### Tanning Skins

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### Introduction

Losses of adult shorn sheep and new born lambs in inclement weather are well known in south-eastern and south-western Australia. These losses have led the Bureau of Meteorology to develop Sheep Graziers Warnings to warn graziers of potentially hazardous weather. Since the mid-1970's mohair and cashmere production from goats has expanded in sheep producing regions. Many goat farmers have suffered financial losses, some considerable, given the high value of livestock during the past 20 years. My experience, as reported in this paper, is that goats appear to be more sensitive to certain types of wet conditions than sheep. The chances are that adverse chill factors will occur several times each year. This paper discusses the reasons for the greater risk to goats and the weather conditions that are likely to cause the greatest risk.

### Sheep Graziers Warnings

Sheep Graziers Warnings of wet, windy conditions are issued to enable graziers to take action to reduce losses among animals susceptible to hypothermia. Hypothermia occurs when an animal is unable to produce sufficient body heat to offset heat losses from the body. Low temperatures intensify the cooling caused by wind and rain, however fatal hypothermia is known to have occurred with temperatures of 20°C or higher. The Bureau of Meteorology uses predictions for the forecast period, of the lowest temperature, the highest hourly mean wind speed, and total rainfall taking into account both anticipated severity of weather and preceding weather conditions. Warnings are issued at the forecaster's discretion. Slow moving "cut off lows" in the summer half of the year provide the most serious threat and are difficult to predict.

**Goat producers hearing sheep grazier warnings are advised to include themselves in the target audience**

### Differences in body and fleece characters of farmed goats and sheep

Compared to the most common sheep in Australia, the Merino sheep, Australian Angora and cashmere goats have less thermal insulation and protective features from extreme weather conditions. Compared to sheep, goats have:

- much less grease in their fleece. The grease content of mohair (about 8 to 12%) and cashmere (2 to 4%) is substantially less than that of wool (20 to 30%)
- much lower fibre density. Goats have far less growing fibres per unit area of skin than Merino sheep
- lower thermal insulation of the outer fleece. The insulation properties of the mohair fleece are lower as the mohair fleece hangs from the body, is disturbed by wind gusts and is often parted along the backline allowing easier wetting of the skin and penetration of air
- generally smaller body mass at any given age compared to sheep and lambs. This provides less tolerance to extreme weather
- thinner subcutaneous fat depots along the back
- more lustrous fleeces compared to the dark soiled tip of wool further reduce the relative thermal insulation of goats compared to sheep.

In addition shearing practices also reduce the total amount of insulation found on Angora and cashmere goats compared to sheep. Angora goats are shorn twice each year, usually in autumn and spring and cashmere goats are shorn in mid-winter and some in late summer. As a result of shearing the thermal insulation provided by the fleece of goats during the coldest period of the year is significantly less than that of spring shorn sheep. For example, during mid winter autumn shorn Angora goats may have 1 to 1.5 kg of fleece, winter shorn cashmere goats have less than 0.7 kg of fleece before shearing and less than 0.1 kg after shearing whereas spring shorn sheep have 3 to 3.5 kg of fleece.

Following shearing:

1. sheep are most susceptible to death during the first 14 days
2. while for goats the period extends to 6 weeks.

## Deaths due to cold stress

Death rates of young and adult sheep and goats under extreme conditions are similar. Experience in Victoria, NSW, WA and Tasmania indicates that newly born lambs and kids die very quickly when exposed to extreme cold stress. Heavy losses of newly shorn adult sheep can follow the passage of strong cold fronts with gusty winds.

There are documented cases where death rates of goats have been relatively high even under "mild weather" conditions accompanied by relatively heavy rainfall and no deaths of sheep were observed. It is certain that continuous and heavy rain is a major factor in the deaths of goats from cold stress. Stocking rate and body condition of goats also has had marked effects on

survival of adult goats. Goats grazed at low stocking rates with good body condition can survive in conditions that cause 50% mortality in goats grazed at much higher stocking rates that had lower live weight and lower body condition score.

High wind speeds and unpredicted intense storms can also cause deaths in all live stock. Short duration intense storms have caused death in goats from exposure and suffocation resulting from crushing of the animals against a fence. Even if shelter is provided goats can be caught in open paddocks by unexpected intense storms.

Research in South Africa concluded that Angora goat deaths could occur as soon as minimum temperatures dropped below 10°C with 15 mm rainfall and a simultaneous wind run of 7.5 km per hour. These criteria had a 73% correlation to goat death rates.

## Discussion and conclusions

We all know that variable weather conditions are experienced in southern Australia. Goat farmers should take note of the following factors associated with weather related deaths in goats:

1. Continuous heavy rain (24 hours or longer) can lead to high death rates in susceptible goats irrespective of wind speed.
2. Relative to sheep, goats appear to be more vulnerable to continuous rain at low wind speed and to intense storms. Part of the increased vulnerability of goats is that less rain is required to saturate their fleece compared to sheep (>7 mm of rain is required to saturate sheep).
3. Farmers can influence the risk to and susceptibility of goats to weather stress. The most influential management/animal factors are: stocking rate, shearing time, provision of shelter and body condition.
4. Given the frequency and or timing of shearing and the extended period of susceptibility to cold stress following shearing, it appears advisable for goat breeders to have goats in good body condition and to have access, when needed, to total shelter, in which goats can be protected from heavy continuous rain as well as from cold, high speed winds.

Unfortunately the autumn and spring shearing seasons for Angora goats co-incide with the periods of greatest uncertainty in weather predictions. Then in association with your own information on stock type, shearing and stock management, you must decide if extra shelter etc is required for any of your animals.

If goat farmers hear Sheep Grazier Warnings they should take immediate action. If goat farmers are planning to shear goats during autumn, winter and spring they should obtain up to date weather information for a period of 6 week following shearing. In Australia, warnings are currently issued only at a forecaster's discretion, perhaps the weather is not considered a threat to sheep farmers but may be very threatening to newly shorn goats.

If goats are weakened as a result of long periods of drought then special precautions need to be taken when the weather breaks to avoid death by hypothermia.

Further reading

McGregor, B.A. (1985). Aust. Vet. J. 62: 349-50.

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