

CHAPTER 2

THE BASIC NEEDS OF THE SHEEP

Introduction

2.1 A draft model code of practice for the welfare of sheep has been circulated for discussion and comment by the Sub-committee on Animal Welfare of the Animal Health Committee of the Australian Agricultural Council. In its current introduction, it lists the following basic requirements for the welfare of sheep:

- . A level of nutrition adequate to sustain good health and vigour.
- . Access to sufficient water of suitable quality to meet physiological needs.
- . Social contact with other sheep; but with sufficient space to stand, to lie down and stretch their limbs.
- . Protection from predation.
- . Protection from pain, injury and disease.
- . Protection from extremes of climate which may be life threatening.
- . Provision of reasonable precautions against the effects of natural disasters e.g. firebreaks and fodder storage.
- . Handling facilities which under normal usage do not cause injury and which minimise stress to the sheep.¹

The Committee considers the above points broadly cover sheep welfare needs. In this chapter, the Committee will consider in more detail nutritional and water requirements and protection

from predation and climatic extremes. Natural disasters will be considered in chapter 8, while injuries and diseases will be covered in chapters 4 and 5 and handling issues in chapter 6.

Nutrition

2.2 Most witnesses who presented evidence to the Committee stressed how critical the provision of adequate nutrition was to sheep welfare.² In particular, the amount, quality and continuity of feed to maintain health and to meet the specific physiological requirements for growth, pregnancy, lactation and cold stress were highlighted. The need to protect sheep from harmful plants was also pointed out.

2.3 Sheep in Australia normally feed entirely on pasture and pasture products such as hay or silage. Grain is generally only provided during droughts, or in feedlots. Most of the pasture is indigenous, greatly exceeding the 25 million hectares that have been "improved".³ It is susceptible to rainfall variations and depredation by insects and native fauna, and its quality declines as the growing season advances. Most fodder is conserved in the form of hay, and most of this is turned over on an annual basis as supplementary feed, rather than held as a drought reserve.

2.4 Two major welfare issues emerged from the evidence on sheep nutrition received by the Committee. Firstly, there was the question of undernutrition, particularly of certain classes of sheep, when pasture was inadequate in quality or quantity; and secondly, there was the issue of the welfare of sheep in droughts. The latter is considered by the Committee in chapter 8.

2.5 The Dry Sheep Equivalent (DSE) system is an approximate means of comparing the energy requirements of different classes of animals. In the last two months of pregnancy, the average DSE for Merino ewes carrying a single lamb has been estimated at 1.1,

carrying twins 1.3 and for crossbreeds 1.7. Lactating Merinos have an energy requirement 2.4 times that of a dry sheep, while that of lactating crossbreeds is 3.6 DSE.⁴ Weaned lambs weighing 15 kg and gaining 200 grams per day have a DSE of 1.6.⁵

2.6 Inadequate nutrition during late pregnancy results in low birth weight of lambs, a reduced milk supply and hence a lower chance of lamb survival. It may also result in ewe and foetal loss through pregnancy toxæmia or "twin lamb disease". If a ewe cannot take in the additional quality feed she requires to sustain herself and her foetuses which are doubling in weight at this time, she will draw on her own body reserves. Blood glucose levels may fall below those needed to nourish the vital organs and death results. Hypocalcaemia or milk fever caused by a sudden drop in calcium intake can also cause the death of ewes in late pregnancy while an inadequate intake of magnesium can result in grass tetany in lactating ewes.⁶ Good management techniques, such as the provision of supplementary calcium, are essential for the welfare of the sheep.

2.7 The Committee accepts that most sheep producers are well aware of the increased energy and nutrient requirements of their ewes in late pregnancy and during lactation. However, it appears that many producers are not fully aware of the nutritive levels of their pastures, despite the efforts of the State departments of agriculture, the Australian Feeds Information Centre (AFIC) and other bodies.

2.8 The AFIC database, operated by the CSIRO Division of Animal Production in co-ordination with the State departments of agriculture, has been set up to overcome the lack of information on the quality of available feeds. Quality is determined by an assessment of the energy, protein, mineral and amino acid content of the feedstuffs, and mathematical models and simulation programs are being developed to assist in the provision of specific recommendations on the type and quantity of feed supplements required.⁷ This information is then disseminated to farmers and feed manufacturers.

2.9 Other nutrition-related management issues include the importance of allowing the ewe to remain undisturbed in late pregnancy, so that she can graze without hindrance. Transporting, crutching, shearing or even bad weather can limit the ewe's feed intake at this crucial time⁸ and may cause death.

2.10 The nutritional implications of cold stress are largely determined by the sheep's condition, by its wool cover and by the availability of shelter. Sheep with even a few centimetres of wool are extremely cold tolerant and able to tolerate air temperatures below freezing without elevation of metabolic rate. New-born lambs and newly-shorn sheep, however, find cold far more stressful. The heat loss and cold stress induced by shearing can create an immediate demand for up to 50 per cent more food than pre-shearing.⁹ New-born lambs are extremely susceptible to the cold, particularly if they are of low bodyweight, and need access to a plentiful and rich supply of milk within minutes of birth and at regular intervals thereafter in order to survive in low ambient temperatures, particularly if conditions are also wet and windy. In order to provide that milk, the ewe herself must have access to feed of ample quantity and quality, and within easy reach so that she does not abandon her lamb in the process of finding feed.

2.11 For the sheep producer who raises animals in cold climates, or where cold, wet and windy conditions prevail at a time when pasture growth is reduced in quality or quantity, supplementary feeding will probably be necessary, particularly if there are newly-shorn sheep or new-born lambs. The Committee urges all sheep producers who are uncertain as to the nutritive value of their pastures to have them tested, and to supplement them as necessary.

2.12 Another approach which should be considered in the longer term is pasture improvement. Considerable research effort has gone into improving the productivity of pastures, determining their nutrient status, improving their use by sheep and understanding the principles governing the role of nutrition in wool and meat production, reproduction and lamb survival. Research into clover cultivars, for example, has shown that some have a reduced oestrogen content, contributing to reduced fertility. By developing strains of clover which avoid this problem and which also are more digestible, researchers will make a significant contribution to both animal welfare and production.¹⁰ It is imperative that such research advances be conveyed to the farming community in such a way that they are both meaningful and easy to be acted upon.

2.13 The Committee does not propose to advance specific guidelines on the appropriate nutrition of Australian sheep. Advice on nutrition issues is readily available from the State departments of agriculture and other extension services. The Committee encourages those departments to be more aggressive in publicising their nutritional guidelines, particularly in times of natural disasters. The Committee believes, however, that firm steps should be taken against the few producers who knowingly and wilfully undernourish their animals. This matter is addressed in Chapter 9.

Water

2.14 Sheep require access to water of sufficient quality and quantity.¹¹ The demands sheep make on water vary according to breed, age, salt and water content of pasture, topography and size of paddock and from individual to individual.¹² As a general guideline, however, the draft code of practice suggests that sheep should not be deprived of water for more than 48 hours.¹³

2.15 In temperate regions, sheep can remain healthy on green feed without drinking, although Merinos deprived of water tend to graze at night to benefit from the dew and leaf exudate. It is suggested that individual sheep vary in the efficiency of their water conservation, in their sheltering behaviour and in their ability to select pasture high in water content, since sheep in these regions may travel to water with a frequency varying from one to three days even in the summer.¹⁴

2.16 Water supply becomes an issue of significance to animal welfare particularly in the pastoral or semi-arid zones, where sheep may take in up to 200 g of salt per day by grazing saltbush. To excrete salt, it is estimated that sheep require an intake of 30 ml/g and hence may need to make two trips daily to water. This automatically reduces the distance they can forage away from the water source. In saltbush country, it has been shown that sheep tend to remain within three kilometres of water and overgraze the area around the waterhole. The bodyweight gain of Merino lambs declines as the distance between food and water increases beyond 1.6 km.¹⁵

2.17 The siting of watering points, especially in extensive grazing areas, has obvious implications for sheep welfare. Sheep will lose condition if they are forced to walk too far to water, thus reducing the time available for grazing and curtailing the area available for grazing. In extreme conditions, they will die.

2.18 In most States, financial assistance for water supply work is available, although the terms and conditions vary. In Queensland, for example, farm water supply loans for stock purposes are available from the Water Resources Commission at 13.5 per cent interest, while in New South Wales for farmers of moderate means and dependent on farm income, loans are available from the Water Resources Commission at an interest rate of 4.5 per cent.

2.19 The Committee believes that, following a good season, sheep producers should be encouraged to take advantage of the financial assistance available to upgrade farm water supplies, not only for the future benefit to stock but also as a soil conservation measure.

2.20 Sheep welfare is affected not only by the provision of adequate quantities of water, appropriately located, but by the quality of that water. Water quality is determined by such factors as salinity, mineral content, cleanliness and temperature. Water containing total soluble salts above 15 000 parts per million is considered generally unsuitable for all stock¹⁶ although one witness indicated to the Committee that 17 000 parts per million was an acceptable concentration.¹⁷ Algae-infested water can be lethal to sheep, while muddy water or water polluted by animal manure, pasture residues or miscellaneous objects blown or washed into it is often disliked, especially by weaners, some of whom may refuse to drink it.¹⁸

2.21 The Committee was interested to learn of one device which is being developed to overcome the problem of water quality in troughs. The "Autotrough" skims off the hot and dirty surface water, separates the pollutants and removes them, and puts the clean water back into the storage tank. Trough water remains at a temperature of approximately 16 degrees. Preliminary research on the effects of using the "Autotrough" has indicated a productivity increase of around ten per cent.¹⁹ It therefore has the potential to serve both welfare and productivity ends. Mr Tony Miller, the inventor of the "Autotrough", pointed to additional possibilities of his device as a means of administering mineral supplements or medications.²⁰

2.22 The Committee was encouraged to see that such innovations, which show evidence of both welfare and production benefits, are being developed in the industry. The Committee believes that a positive industry stance towards encouraging and publicising new and improved production methods, techniques and products would assist in defusing the criticisms of some sections of the public.

Protection from predators

2.23 The chief predators of sheep and lambs in Australia are ravens, eagles, dingoes, feral and domesticated dogs, foxes and feral pigs. Losses due to predation are thought to be generally small, however individual flocks in susceptible environments such as urban fringes may experience heavy losses.²¹ Dr Crossing, then Director of the Bureau of Animal Welfare in the Victorian Department of Agriculture and Rural Affairs, indicated that in his State, "significant numbers" of sheep were killed annually on hobby farms in outer metropolitan areas.²²

2.24 In the semi-arid zone, the extent of predation of the sheep flock can generally only be guessed at. One study in New South Wales showed that lamb marking percentages were reduced by 40 per cent because of predation by feral pigs.²³ Over 600 lambs, including healthy lambs up to one week old, were killed and eaten by the pigs.²⁴

2.25 The New South Wales Agriculture and Fisheries in one of its advice sheets for farmers recommends that in areas where predation is known to be a problem, producers should all lamb at roughly the same time.²⁵

2.26 The traditional method of wild or feral predator prevention has been the electric fence, particularly for lambing paddocks. Attempts at predator control have been via shooting or trapping.²⁶ As the Committee has yet not sought evidence on the subject of the control of wild or feral animals, it will defer making recommendations until it has obtained such evidence.

2.27 Similarly, on the question of the depredations by companion animals, the Committee has not yet actively sought evidence on appropriate methods of control. The Committee deplores the suffering caused to sheep by domestic dogs. The Committee believes, however, that the solution must come as part of the broader issue of dog control.

Protection from climatic extremes

Heat

2.28 It has been asserted that Merino sheep, which constitute 75 per cent of the Australian flock, are well adapted to the heat and can tolerate most extremes likely in sheep-raising districts by normal physiological adaptation.²⁷ Sheep exposed to heat usually react by seeking shade, but when shade is unavailable or when the sheep have to walk to water, they increase their heat loss by increased blood flow to the skin and by enhanced evaporation by sweating and panting.²⁸

2.29 It is likely that sheep are more affected by poor feed quality than by the heat itself, though sheep which are unacclimatised may reduce their feed intake, as will others when the high temperatures come unexpectedly. Reproductive performance of rams is lower in the heat, as is the fertility of ewes.²⁹

2.30 New-born lambs in temperatures above 37° have been shown to have a high mortality rate. Shade-seeking by the ewe helps facilitate lamb survival, and shade-seeking is practised by most sheep in hot weather, though some individuals do not seek shade, even when it is available.³⁰ It may be that these are the more submissive sheep, which elect not to share the shade with others of higher ranking. It seems likely, however, that heat does not unduly stress grown sheep in wool.

2.31 The provision of shade is probably not in itself a crucial sheep welfare issue, but as the provision of shade normally also means the provision of shelter, it has to be of benefit to the sheep, as well as possibly assisting in soil and pasture conservation. The Committee therefore concludes that adequate shade should be provided for sheep in hot weather.

Cold

2.32 Sheep with even a few centimetres of wool are extremely cold-tolerant. However, newly-shorn sheep and new-born lambs do not have the advantage of this insulation and hence suffer from hypothermia when their body cannot produce heat at the same rate at which it is lost. Cold, windy and wet conditions, particularly when they are prolonged or unseasonal, can then cause excessive losses of sheep in the first two to three weeks after shearing.

2.33 The extent of losses of mature newly-shorn sheep from hypothermia was outlined to the Committee by numerous witnesses. ANZFAS described the loss of more than 30,000 such sheep in the western districts of Victoria in November 1987, following severe gales, rain and low temperatures.³¹

2.34 The Australian Bureau of Statistics (ABS) indicated that for the year 1986-87, there was a total of 2,265,925 sheep and lambs lost in New South Wales, out of a total of 52 million sheep and lambs shorn, while in Queensland for the same year, there were 913,861 sheep and lamb losses.³² These losses are not restricted to sheep which died of cold exposure but include animals which died of illness or were taken by predators.

2.35 Figures for sheep losses occasioned directly or indirectly as a result of cold stress are difficult to obtain. The ABS collects even its non-specific loss statistics only from two States, New South Wales and Queensland. The other States do not bother with such figures in the annual Agricultural Census conducted in March. It may be that they consider such sheep mortality figures unreliable, as does Dr Alexander, President of the Australian Federation for the Welfare of Animals (AFWA), who

pointed out the impossibility of obtaining an accurate assessment of the numbers of sheep which died, particularly on extensive properties. He also suspected that some farmers' returns might be based on tax minimisation motives.³³

2.36 The contribution of cold exposure losses to overall sheep and lamb losses is generally thought to be considerable.³⁴ Mrs Townend cited New South Wales Department of Agriculture research which pointed to inclement weather being the principal reason for one million sheep losses annually in the 30 days following shearing.³⁵

2.37 Lamb deaths are estimated from the number of ewes mated minus the number of lambs marked. This fails to allow for the number of barren ewes, and is at best a rough estimate of lamb mortality, which is very generally put at an average of 25 per cent for Merinos throughout Australia. Preliminary figures for the percentage of lambs marked to ewes mated for 1988 for all breeds was 81 per cent, ranging from a low of 64 per cent in Queensland to a high of 88 per cent in Victoria.³⁶ Cold exposure is a major factor in starvation, which has been estimated to account for 58 per cent of lamb losses.³⁷

2.38 Much research has been conducted into the efficacy of the various means of reducing sheep and lamb losses from hypothermia. The provision of shelter is generally considered the most important preventative measure, with sheds which provide complete protection being the most effective in eliminating mortality in sheep.³⁸ Stands of trees, planted mixed windbreaks or shelter belts of tall, unpalatable grasses have all proved useful, if appropriately positioned.

2.39 Sheep do not automatically use available shelter, particularly if they are in wool,³⁹ and indeed may move away from it, travelling with the wind until stopped by fences. Nevertheless, the provision of shelter brings about proven benefits in survival terms. In one five-year study at Armidale, New South Wales, involving the use of Phalaris grass windbreaks positioned at 20 metre intervals, the survival rate of single fine-woolled Merino lambs was improved by 10 per cent and of multiple births by 32 per cent.⁴⁰

2.40 Dr Foot, a research scientist with the Victorian Department of Agriculture and Rural Affairs, pointed out that the shelter needs of sheep are quite variable and for complete protection, they need to be under something as well as protected from the wind.⁴¹ However, for new-born lambs, winds of ten km/h or more seem to be implicated as a major killer⁴² and hence anything which reduces the wind speed will increase the length of time the lamb has to drink, and thus its survival chances will be enhanced.⁴³

2.41 To maintain a good ecological balance between cleared and timbered land, as well as to meet the shade and shelter needs of stock and to minimise soil erosion, a minimum of five per cent of tree cover has been recommended.⁴⁴

2.42 Industry representatives acknowledged that "Providing adequate shelter is good management"⁴⁵ and asserted that "Shelter generally is adequate".⁴⁶ The Committee is not convinced that this is the case.

2.43 Committee members were heartened by the attitude of Mr Robert Campbell, whose property "Euroka" at Tarago they visited. Since purchasing the property in 1977, Mr Campbell has embarked on an ambitious tree-planting programme, with 10,000 trees, both pines and native species, planted in 1987-88 alone. The results include total sheep and lamb losses of no more than three per per annum.

2.44 Encouragement and financial assistance at all levels is currently being provided to encourage the planting of trees. Since 1982, the National Tree Program (NTP) has established a national infrastructure linking government agencies in all States and Territories and a wide range of non-government organisations, particularly under the auspices of Greening Australia, to promote and undertake tree projects.

2.45 One example of the kind of activity undertaken has been the support to the Victorian Farmers Federation for the employment of a Farm Trees Executive Officer to promote activities in the rural sector. This led to the increase in the numbers of self-help Farm Tree Groups from four to 35 in three years and with it, an expansion of the numbers of effective tree projects.⁴⁷

2.46 In New South Wales, again under the aegis of the NTP, the Riverina Trees on Farms Project is a joint project among the Department of Agriculture, the Forestry Commission, the Soil Conservation Service, community groups and landholders. Over half a million trees are being planted in a five-year period on ten demonstration farms.⁴⁸

2.47 In the Midlands region of Tasmania, where rural tree decline has had a major impact on farm productivity, a Community Employment Program (CEP) project to collect seed from a wide range of local native tree species has been sponsored.⁴⁹

2.48 Encouragement and support for the establishment and care of farm trees is readily available in all parts of the country. The Committee encourages all sheep producers to take advantage of this assistance to ensure that in the coming years, adequate shelter for stock will be provided. The Committee further encourages sheep producers to consider the possible benefits of agroforestry. Evidence from New Zealand points to welfare gains, livestock productivity increases of 20 per cent and increased carrying capacity from the use of permeable perimeter shelter belts and paddock-centre wood lots.⁵⁰

2.49 Shelter sheds, if constructed of new materials, can be a more expensive option than trees or other forms of shelter. However, even the relatively simple two-sided and roofed structures of wood and galvanised iron as are seen on the Monaro offer useful protection and certainly save the lives of many new-born lambs and newly-shorn sheep. The Committee is of the opinion that such shelters should be more widely available than they are in districts subject to extreme cold and wind, and where good tree growth cannot be easily established. For sheep weather alerts broadcast by the Bureau of Meteorology to be of any value to sheep producers, they must have sufficient available shelter for their stock.

2.50 The use of sheep coats as protection against cold and wind is considered by the Committee in Chapter 6. The Committee strongly advocates the use of sheep coats on all sheep after shearing in cold climate sheep producing areas.

2.51 The Committee believes that sheep producers must take all reasonable precautions to ensure that their sheep do not suffer from climatic extremes. Depending on the location of their properties, this may mean the provision of stands of trees, windbreaks, grass shelter belts, sheep coats or sheds. Failure to make such provision will inevitably result in animal suffering and loss. Producers who are not swayed by welfare considerations should at least be won over by the proven productivity gains from the provision of appropriate shelter. The Committee does not believe specific inducements, other than those already available, should be offered to farmers to provide shelter. It hopes that a growing awareness of the value of shelter provision will be sufficient to ensure the necessary action. Should this not be the case, and should sheep continue to suffer and die from the lack of adequate shelter, then sheep producers who permit this to happen ought to be prosecuted under the relevant State prevention of cruelty to animals legislation.