

## CHAPTER 5

### OTHER HEALTH AND HANDLING ISSUES

#### Introduction

5.1 In the course of its inquiry, the Committee obtained evidence on a number of sheep welfare issues. Some of these issues inevitably were considered less extensively than others. The presence of a sheep welfare issue in this more general chapter is not, however, an indication of its relative lack of significance as a welfare issue in the eyes of the Committee.

#### Internal parasites

5.2 Internal parasites in sheep include tapeworms, liverfluke and gastro-intestinal nematodes. Their effects are particularly felt by sheep in high rainfall areas, and vary according to breed, the severity and length of infection, the sheep's nutritional status, resistance level and physiological state.<sup>1</sup>

5.3 A sheep infected by internal parasites will be anaemic, will scour excessively and will lose appetite, resulting in weight loss, a reduction in wool quantity and quality, and eventually weakness, dehydration and possibly death. Internal parasites may also be responsible for decreased fertility, lower birth weight and an increased susceptibility to flystrike.<sup>2</sup>

5.4 In a year of high infection risk, an extension officer survey estimated that 3.4 per cent of the sheep flock would die of worm infestations, a slightly higher proportion than would be expected to die of flystrike (3.2 per cent). The cost of internal parasites, derived from prevention and treatment measures and production losses, was estimated at \$3292 (at 1985 figures) per "average" farm of 2200 sheep in a low-risk season to \$6187 in a high-risk season.<sup>3</sup>

5.5 Drenching is the standard treatment for internal parasite infestation, followed by placing the stock on clean pasture.<sup>4</sup> As has been noted previously, however, resistance to chemical treatment develops rapidly, and is accelerated by the frequent use of the same chemical. As worms develop resistance to anthelmintics (worm treatments), sheep need to be mustered and drenched (both minor stressors in themselves) more frequently, and so the cycle continues in ever-shortening time periods. Dr Keith Dash, of the CSIRO Institute of Animal Production and Processing, pointed out that some sheep are dosed seven to eight times a year.<sup>5</sup>

5.6 Dr Brennan, representing the RSPCA (Australia), pointed out that chemical treatments for worm infestations were frequently relied on at the expense of a whole array of husbandry techniques, including rotational grazing and cropping paddocks between using them for grazing.<sup>6</sup>

5.7 The Committee learnt that there was extensive collaboration among the pharmaceutical and grazing industries, the CSIRO and the departments of agriculture on the subject of worm resistance and control. For the foreseeable future, it seems likely that both grazing management and the use of anthelmintic drugs will be required.<sup>7</sup> The latter may be delivered via a controlled-release capsule, which when lodged in the sheep's

rumen, releases the anthelmintic albendazole at a constant rate for 100 days. State departments of agriculture promote worm control programmes based on computer-simulation models of parasite populations, such as the New South Wales WORMKILL and DRENCHPLAN programmes.

5.8 Controlled-release capsules, which are inserted down the animal's throat with a rumen gun, promise to prolong the life to the older, broad-spectrum anthelmintics. Concerns were informally expressed to the Committee that the capsules sometimes failed to reach the rumen, or to stay there despite the plastic wings intended to make them do so. The Committee nevertheless believes they represent a promising approach, when combined with pasture management, to the worm problem, and encourages continued research into their efficacy.

#### Footrot

5.9 Footrot is a bacterial infection which occurs at the skin-horn junction of the hoof and in the soft tissues under the hoof of the sheep. It distresses and debilitates sheep, by causing severe lameness and an associated reduction in condition, wool growth and lambing success. In 1979 figures, each infected sheep was estimated to cost its owners \$4.50 for treatment and \$4.20 in lost production.<sup>8</sup>

5.10 Footrot is a problem of the higher rainfall areas of southern Australia. Outbreaks tend to occur in spring when lush pastures and warm, moist conditions favour the spread of the disease. It is a notifiable disease in the New England districts of New South Wales, where a successful eradication programme has been waged.<sup>9</sup> In Victoria, similar programmes have been attempted in the western districts and East Gippsland, and the Department of Agriculture and Rural Affairs hopes to have eradicated footrot from Victoria by the year 2010.<sup>10</sup>

5.11 Traditional methods of treatment involved paring the affected area of the foot by hand, and foot bathing. Vaccines were developed in 1971, but failed and were subsequently withdrawn from sale because they were not effective against all the different strains of *Bacteroides nodosus*, the footrot bacterium. Second generation vaccines, when correctly used, offer protection rates of 80 per cent or better for 12 to 14 weeks, and will assist the healing process for those sheep already with footrot. However, they sometimes cause irritations at the injection site.

5.12 The development of a third generation of vaccines, using recombinant DNA technology, is being actively supported by the Australian Wool Corporation.<sup>11</sup> The Committee supports continued research into improved footrot vaccines, with the ultimate aim of eradicating the footrot organism.

### Dehorning

5.13 The Committee was informed that dehorning was not a common industry practice.<sup>12</sup> Tipping of horns, or taking the last five to seven centimetres off the end of the horn, is done, particularly on Merino rams, to prevent them from harming one another or getting caught in fences. The practice of keeping horn tips blunt was, according to Mr Thirkell-Johnston, President of the Tasmanian Fine Merino Breeders Association, a regular management practice but one which caused the sheep little distress because the cut never went down to the quick.<sup>13</sup>

5.14 Horn tipping is performed with clippers or a hacksaw if necessary, followed by emery paper to make the horn smooth. It is a practice condoned by the model code of practice for the welfare of sheep, which recommends, however, that the amount of horn removed should be limited to avoid damage to soft horn tissue and to limit associated bleeding.<sup>14</sup>

5.15 As Mr Beggs pointed out, there are occasions when a horn has to be removed, for example when it is damaged or when it grows into the jawbone of the animal, preventing it from eating.<sup>15</sup> Surgical wire is then used. The procedure is not one that the AVA recommends as a routine measure, and the Committee agrees. Horn removal in the situations outlined is acceptable, and horn tipping is also, provided it is carefully done. As poll sheep of all breeds are readily available, there seems little justification for breeding the horned varieties, only to cause them distress by tipping or removing the horns.

#### Teeth grinding

5.16 The natural abrasive action of pastures in sandy or granite country tends to keep the sheep's teeth in good condition for many years, rendering dental treatment of any kind unnecessary.<sup>16</sup> In wetter areas with softer pasture, the sheep's teeth may eventually grow longer than desirable and become unstable, leading to the condition known as "broken mouth". The sheep can no longer feed properly and loses condition. Sheep with wobbly or missing incisor teeth are generally doomed anyway, as it has been observed that most Australian sheep farmers cull their mature sheep on the basis of the condition of their incisors.<sup>17</sup>

5.17 Many attempts have been made over the years to prevent or correct faulty dentition in sheep. Even dentures have been used, without conspicuous success.<sup>18</sup> Hence clipping, trimming or grinding the teeth have been tried in an effort to prolong the productive life of the sheep.

5.18 Clipping is performed with side-cutters or pliers and involves evening the length of the incisor crowns on an individual sheep basis, to salvage an animal that would otherwise be culled. In teeth trimming, the crowns of the incisors are cut off with the edge of an angle grinder disc to create a level bite.<sup>19</sup> The procedure takes less than ten seconds per sheep.

5.19 The method which has generated most controversy is the "Caldow technique", named for Australian sheep farmer Howard Caldow, who used an electric grinder running at 11 000 rpm to cut the incisors level with the lower dental pad with a side-to-side motion.<sup>20</sup> This procedure takes longer than teeth trimming, and generates considerable heat. Pulp exposure occurs in most cases, but is rapidly repaired. A gag is inserted in the mouth of the sheep while the grinding is performed, to protect the lips and depress the tongue. The sheep is normally held against the side of a race for the procedure.<sup>21</sup>

5.20 The Farm Animal Welfare Council in the United Kingdom recommended a ban on the practice of tooth grinding in June 1986 and the British government agreed, later in the same year.<sup>22</sup>

5.21 Currently the practices of teeth trimming and teeth grinding enjoy only modest support in this country. One estimate suggested that the procedure is applied to approximately one million sheep annually.<sup>23</sup> Dr Meischke condemned its application on a whole-flock basis, as obviously only a certain number of the sheep concerned would be suffering from poor dentition. He considered teeth grinding "ought to be relegated to a procedure that is done on an individual animal basis".<sup>24</sup>

5.22 The 1989 policy statement of the Australian Veterinary Association on sheep dentition declared:

The Australian Veterinary Association believes that, with the present state of knowledge, tooth clipping, tooth grinding and tooth trimming are procedures that cannot be justified or recommended because of the lack of demonstrated benefits to individual sheep and/or to flock productivity.

The Association recommends that the procedures not be done unless research establishes that benefits exist for the welfare, health and production of the sheep.<sup>25</sup>

The Association pointed out that objective studies had indicated that the pain experienced by sheep exposed to teeth trimming or teeth grinding was of low intensity and short duration, and that healing was rapid.

5.23 Dr Denholm, one of the Victorian Department of Agriculture and Rural Affairs researchers engaged in a teeth-grinding project, outlined the results of preliminary work to the Committee. He found "the procedure is painful but that the level of pain is no greater and is probably substantially less than that associated with a range of other routine husbandry practices".<sup>26</sup> Plasma total cortisol values returned to normal levels in 90 minutes after teeth trimming, and the sheep ate as much thereafter and gained weight at the same rate as their non-treated peers.<sup>27</sup> However, Dr Denholm also stated that sheep show no immediate benefit from the procedure.<sup>28</sup>

5.24 Periodontal problems are of genuine welfare concern to the Australian sheep industry, in the opinion of the Committee, and every effort should be made on an individual basis to ensure that mature ewes who may be excellent mothers are not culled before their time because of faulty dentition, if that dentition can be effectively repaired without undue pain to the sheep. The Committee considers that the practice of teeth grinding as a preventative measure for entire flocks should be discouraged until research shows demonstrable productivity gains for the treated sheep.

#### **Electro-immobilisation**

5.25 Electro-immobilisation refers to the use of a pulsed low-voltage electric current to an animal to produce a state of immobility. The current causes skeletal muscles to contract so that the animal becomes rigid. Electrodes are attached to each end of the animal and electric pulses of about one millisecond are passed at a rate of 50 per second.<sup>29</sup>

5.26 Such immobilisers have been available since the 1970s and have been used to restrain animals, particularly cattle, to facilitate routine husbandry procedures. Only minor use of immobilisers occurs in sheep husbandry, with the notable exception of the automated shearing system under development in Adelaide by the private company, Merino Wool Harvesting Pty Ltd (MWH).

5.27 Committee members viewed the electro-immobiliser in action in Adelaide and heard the rationale for its use there. Mr Baxter, Technical Director of MWH, considered electro-immobilisation provided a safer method of restraint for automated shearing than leg restraint. He also asserted that there was behavioural evidence that electro-immobilisation produced pain suppression and some subsequent short-lived analgesia or calming effects.<sup>30</sup> The passage of a current of twice the level needed to immobilise a large sheep was considered by the human researchers to be "strange" or "unpleasant" but not painful, though Dr Kuchel noted that the variety of descriptions of the sensation bore testimony to the problems of studying anything so subjective as pain.<sup>31</sup> Dr Kuchel further indicated that, although large changes in cardiovascular and biochemical functions occur during electro-immobilisation, they are not life-threatening and the sheep recover within 30 minutes, on average.<sup>32</sup>

5.28 Much research evidence exists, and Dr Kuchel himself acknowledges, that electro-immobilisation is a procedure which sheep find aversive.<sup>33</sup>

5.29 Choice tests by American animal handling authority Dr Temple Grandin showed that ewes overwhelmingly preferred restraint by squeeze-tilt table to electro-immobiliser. After once experiencing the latter, 56 per cent never chose it again, whereas 94 per cent of sheep volunteered again for the squeeze-tilt table.<sup>34</sup>



5.30 Researchers from the University of Melbourne studied the effects of electro-immobilisation at the request of the Australian Wool Corporation, and with its financial assistance. Rushen compared the aversive properties of physical restraint with electro-immobilisation, on the basis of the amount of time the sheep took to run, or be pushed, through a race to the testing site on a subsequent occasion. Both forms of restraint increased the time required to run through the race, though after four trials, the sheep which had had the experience of immobilisation had a greater average transit time. However, the difference was not apparent after only one exposure. The aversiveness was more dependent on the intensity of the current used than on its duration.<sup>35</sup>

5.31 Another study by the Melbourne team offered sheep a choice between electro-immobilisation and shearing, which is among the the more physiologically stressful of the routine treatments that sheep undergo. Results indicated a slight preference towards shearing, with the mean proportion of choices for shearing being .625.<sup>36</sup>

5.32 When the effects of electro-immobilisation and shearing on plasma concentrations of beta-endorphin/beta lipotrophin and cortisol were compared, the responses to the two procedures were not significantly different in terms of beta-endorphin levels though one group of electro-immobilised animals which were also sham-shorn showed significantly higher plasma cortisol concentrations than did sheep which were only sham-shorn.<sup>37</sup>

5.33 Plasma cortisol levels in electro-immobilised sheep have been shown to increase as the intensity of the current increases, though current duration does not significantly affect cortisol response. The researchers concluded that 30 mA would appear to be the optimum current level.<sup>38</sup>

5.34 In the light of the research outlined above, many witnesses to the Committee reacted cautiously. ANZFAS considered insufficient research had been done on electro-immobilisation to warrant a definitive comment.<sup>39</sup> Dr Auty suspected electro-immobilisation had the convenience of the operator more in mind than the welfare of the sheep.<sup>40</sup> The AVA's attitude was one of suspicion, but it was willing to review its attitude when and if concrete evidence on the pain and analgesia questions was provided.<sup>41</sup> Dr Lindsay's concern was that painful procedures might be performed on the immobilised animal without adequate anaesthesia.<sup>42</sup> Professor Egan of the University of Melbourne pointed out that repeated electro-immobilisations brought about a reduction in the aversiveness of the procedure.<sup>43</sup>

5.35 In reviewing the research into the effects of electro-immobilisation, and the evidence presented on the topic, the Committee concluded that the procedure is clearly aversive to sheep but that the level of aversion is of a similar order of magnitude to that felt towards other routine husbandry procedures. It is still unclear whether any analgesia results from electro-immobilisation, and if it does, it may or may not compensate for the associated stress. The Committee therefore considers that research should be continued into the possible analgesic effects of electro-immobilisation.

5.36 The Committee remains unconvinced that electro-immobilisation is the least stressful means of restraining sheep, and encourages research into innovative, less stressful alternatives. In the meantime, the Committee considers that the technique should be applied with caution until further research clarifies the stress parameters associated with its use.

## Handling techniques and facilities

5.37 Many of the sheds, yards and races in use on sheep properties today were erected before research into sheep behaviour outlined more desirable alternatives. While wholesale rebuilding or altering of existing facilities may not be feasible, there is scope for enhanced sheep welfare with the use of facilities designed to accommodate the sheep's behavioural preferences.

5.38 Reviews of sheep behaviour in yards have shown that sheep are more co-operative when they are allowed to use fixed routes with wide laneways, and when they are kept with their own flock and not harrassed.<sup>44</sup> Characteristics of sheep which have implications for handling facilities are their excellent wide-angled vision and their depth perception. Unobstructed views of where they are meant to move are desirable for ease of sheep movement, as are floors without shadows, grates or longitudinal slats.<sup>45</sup>

5.39 Handling stress in sheep has been tested to show the relative aversiveness of different situations. The most aversive was found to be involuntary rotation in isolation from other sheep (as occurs in shearing, for example). Isolation was more aversive than restraint in the presence of other sheep, while the presence of humans was least aversive.<sup>46</sup> Manual restraint of individual sheep in a well-designed race for a simple procedure, such as a vaccination, should not normally be considered a significant stressor. Little work has been done on the comparative aversiveness of the many mechanical restraints available, though some information will emerge on this issue from the automated shearing research.

5.40 Agricultural extension services have been active in disseminating specific information about yard design and handling techniques.<sup>47</sup> The Committee therefore will not consider these

issues in detail, as their implications for sheep welfare seem to be uncontroversial and are recognised and accepted by all parties.

5.41 An integral part of the handling process is the interaction between humans and sheep. Where yards are well designed, the yarding process flows smoothly and both operators and sheep become less stressed. Where treatment generally is gentle and thoughtful, the sheep respond positively with better reproduction rates et cetera. Behavioural research at the University of Melbourne showed that aversions can even be extinguished if sheep are offered rewards (food that they liked) after the procedure.<sup>48</sup>

5.42 The Committee recognises that any handling of sheep, no matter how carefully and gently it is done, may be associated with a modest level of stress. Good sense would therefore dictate that if husbandry operations can be combined, they should be, to minimise the number of mustering, yarding and handling occasions.

5.43 The Committee supports the suggestion of Professor Egan, who called for more training in behaviour-based skills in animal handling both for the benefit of the animal, which would run less risk of stress and injury, and of the operator, who would find his work easier and more productive.<sup>49</sup>

## **Marketing**

5.44 The welfare aspects of the selling of sheep were addressed by only a few witnesses as the principal thrust of this inquiry was on-farm sheep welfare. Issues relating to the transport of stock will be addressed in a separate inquiry. The Committee was impressed, however, with what it learnt about computer-aided marketing systems. One such system is CALM, an acronym for Computer Aided Livestock Marketing. It is a private

company established by the Australian Meat and Livestock Corporation. In CALM, stock remain on the property until they are sold. Physical descriptions of the animals, prepared by accredited assessors according to recognised standard measurements, are made available electronically to prospective purchasers one day in advance of the sale, at which bidders can log in from all over the country.<sup>50</sup>

5.45 Such a marketing system has to be preferable for the welfare of the animals concerned, as they do not have to be mustered, loaded, transported and held in yards, enduring sometimes adverse weather, for the duration of the sale.

5.46 CALM achieved a market penetration of one per cent of all sheep sales in 1987-88, its first year of operation. (ibid) In 1988-89, 945 000 sheep or two per cent of all sales were listed with CALM. According to the Minister for Primary Industries and Energy, the Hon. John Kerin, MP, CALM is expected to be commercially viable by the early 1990s.<sup>51</sup>

5.47 The Committee supports the development of computer-aided sheep marketing on welfare grounds.

### **Intensive husbandry**

5.48 The Committee will consider the welfare implications of the intensive raising of sheep in the inquiry into intensive livestock production which it is currently undertaking.

### **Slaughter**

5.49 From time to time, sheep will need to be killed on the farm, either to release them from further suffering following an injury, or to provide meat. A quick and painless death can be

achieved by the use of a firearm (a .22 calibre rifle or .32 calibre humane killer pistol) to the head of the sheep or by stunning to the front of the skull with a captive bolt stunner, followed by immediate bleeding out.

5.50 The time-honoured practice of bleeding-out of sheep using a sharp knife, followed by dislocation of the neck, without pre-stunning, is considered a humane alternative method of slaughter by draft three of the model code of practice for the welfare of sheep, provided that the task is performed by a skilled person. Research is continuing into appropriate forms of humane slaughter.

5.51 The Committee encourages all centres which train persons in agricultural skills to ensure that its students acquire the necessary ability to despatch animals humanely.