CHAPTER 3

LAMBS, LAMBING AND LAMB MARKING

Introduction

3.1 Preliminary figures from the Australian Bureau of Statistics for the year ended 31 March 1988 indicate that from 60 144 000 ewes mated in Australia, 48 738 000 lambs, or 81 per cent, were marked. Marking percentages for the States ranged from a low of 64 per cent in Queensland to a high of 88 per cent in Victoria. Overall lamb markings were up three per cent on the previous year.[1]

3.2 Approximately 75 per cent of the Australian sheep flock is Merino, and as the Merino is noted for its lower fecundity than British breeds and crossbreds, it is perhaps unrealistic to expect high marking percentages in the States in which the Merino predominates, namely New South Wales, Queensland, South Australia and Western Australia. These States have large areas of what the Australian Bureau of Arigultural and Resource Economics (ABARE) terms the pastoral zone, which is deemed most suitable for wool-producing (particularly Merino) sheep. In the wheat-sheep zone with 44 per cent of Australian sheep and the high rainfall zone, with 33 per cent, dual-purpose sheep or meat-producing sheep are more common, a fact which is reflected in their marking percentages of 75.9 per cent and 83.9 per cent respectively, compared to 62.4 per cent in the pastoral zone.[2]

3.3 Border Leicester crosses are generally credited with the highest lamb output in Australia, with a maximum production from autumn mating of 160 per cent born.[3]

3.4 While marking percentages do vary significantly according to breed of sheep, many other factors more susceptible to good management practice can also influence the lambing outcome. They include the timing of lambing, the condition of the ewe, her mothering ability, the availability of shelter, the presence of predators or pathological conditions and the frequency of multiple births.

Current lambing practices

Timing

3.5 Lambing generally occurs in late winter to spring, or autumn, with spring favoured by many wool-producing enterprises so that late pregnancy and lactation coincides with improving pasture production, and so that the joining takes place when more ewes are in oestrus in autumn. In meat production enterprises, lambing can be scheduled for a specific market at a specific time. Autumn lambing is sometimes favoured in cold districts, to avoid inclement weather, though of course inclement weather is known to occur in all seasons.

3.6 Of itself, the timing of lambing is not a major welfare issue, provided that appropriate care is exercised in terms of nutrition of the ewes in late pregnancy and during lactation, and that shelter and supervision are provided as necessary.

Place

3.7 In most flocks, lambing occurs in the paddock. In the pastoral zone, this will probably be the paddock in which the ewes were mated. Flock size may be several hundred ewes. In high rainfall areas, ewes may be "drifted" through a series of small paddocks daily, with those ewes which have lambed being left behind with their lambs while the others are moved on. In rare instances, ewes may lamb in sheds.

3.8 Departmental extension services recommend that lambing paddocks contain the following: an adequate quantity of high quality pasture for the duration of lambing; good water so that ewes will not have to walk too far to it; and shelter. They further recommend that they should be free of predators, provide access for supervision and be of a sufficient size to prevent the lamb stealing or mismothering which can occur at high stocking densities.[4]

Timing of lambing in relation to shearing

3.9 Lambing may take place some months after shearing, just after shearing or before shearing. The Committee received evidence supporting the practice of pre-lambing shearing on the grounds that a ewe deprived of her coat will seek shelter in adverse climatic conditions and is thus more likely to lamb in shelter, improving the survival chances of the lamb(s). Further, a shorn ewe is less likely to get cast when she goes down to lamb.[5]

3.10 However, it was pointed out to the Committee that shelter-seeking by the ewe is most pronounced if she is shorn four days before lambing,[6] a practice which would cause certain stress to the ewe and heighten her chances of developing pregnancy toxaemia. Also a flock of ewes generally lambs over a four-to-six week period, so in management terms it would be difficult to organise shearing at an appropriate time for each ewe. The additional nutritional needs of a shorn, pregnant ewe (up to half as much feed again as her woolly sister)[7] may make pre-lambing shearing inadvisable if the required feed is unavailable.

3.11 Other management considerations, such as the presence of grass seeds at certain times of the year, may dictate the timing of shearing. As Mrs Townend pointed out, both pre-lambing and post-lambing shearing have certain welfare risks, which need to be weighed up by the individual producer.[8]

The extent of supervision

3.12 Australian sheep, with the exception of some stud animals, are generally expected to lamb unaided. There is evidence that producers are encouraged in their sheep breeding policies to select for traits which make for "easy care" sheep, such as easy lambing and good mothering skills.

3.13 The question of the desirable degree of supervision was one point on which producers and others were at variance. The former case was put by Mr Alan Bowman, representing the Wool Council of Australia, who considered "sheep do better if they are left alone" with the qualification, "providing that surveillance is sufficient to obviate the obvious cases of dystocia ...".[9]

3.14 However, ANZFAS cited instances of inadequate supervision, resulting in the death of hundreds of in-lamb ewes, and concluded that it was "vital that sheep be more closely inspected and shepherded, especially during the lambing season".[10] Dr Brennan, Technical Adviser to the RSPCA (Australia), pointed out that if sheep were more regularly supervised, the stress problems associated with inspection at lambing would be less likely to occur. He also advocated lambing in smaller spaces, and pointed to the success of the British method of lambing in sheds.[11]

3.15 Many witnesses depicted the plight of sheep in the semi-arid zones, for lack of supervision. Mr Miller, an agricultural consultant, described these sheep as "semi-feral".[12] Mrs Townend wrote:

> one of the most serious and basic flaws ... in the sheep industry, is failure to provide adequate labour input ... many Australian sheep are relegated to huge outback areas where, when they are injured, have troubles lambing, become fly-struck, are mauled by predators, there is no-body on hand to protect

> them from injury or death. Irregular inspections, varying from days to weeks (depending on the intensity of the production), mean that between inspections, sick or injured animals are left to suffer or die.[13]

3.16 The degree of supervision provided sheep at lambing depends at least partly on the size of the property and on the inclinations of the producer. One-third of all sheep-raising properties run less than 500 sheep,[14] while the median flock size in Victoria is 700 head.[15] Such numbers would not be beyond the capabilities of one person to shepherd adequately for the welfare of the sheep.

3.17 On the other hand, two-thirds of Australia's sheep are raised on properties with 2000 or more sheep. While it is virtually impossible to ascertain from the available manpower statistics the numbers of persons involved in tending these animals, it seems likely that in some instances at least, Mrs Townend's estimate of one labourer per 2000 sheep is not inaccurate.[16] More intensive supervision may be available at lambing time, but there is little evidence to suggest that it always is, and particularly not in extensive husbandry situations.

3.18 The RSPCA (Australia) recommended the training and subsidisation by the Commonwealth Employment Service of shepherds to assist producers during periods of peak labour demand, such as lambing time.[17] The Committee is not convinced that this would be a helpful initiative. It is not the responsibility of governments to assist primary producers in matters which are an essential and routine part of the production process. Nor is the Committee convinced that the temporary assistance proffered by raw and perhaps involuntary recruits would be of any real benefit to the sheep.

Lamb losses

The extent of lamb losses

3.19 As indicated in chapter 2, the precise extent of lamb losses from conception to marking is difficult to determine. The figures which are officially available through the Australian Bureau of Statistics are calculated on the basis of producer information supplied on returns to the annual March agricultural census. Lamb deaths are generally inferred by subtracting the figure for the number of lambs marked from the number of ewes mated. This practice fails to allow for the number of barren ewes, and it obscures the number of lamb losses in multiple births. At best, the resultant figures are a rough indication of the level of loss.

3.20 Preliminary figures for the percentage of lambs marked to ewes mated for 1987-88 for all breeds was 81 per cent, up 3 per cent on the previous year. The range was 64 per cent for Queensland to 88 per cent for Victoria.[18]

3.21 In evidence received by the Committee, lamb losses before marking were estimated at 20 per cent;[19] 20 per cent for singles and 40 per cent for twins;[20] 20 per cent,[21] with instances of losses rising to 80 per cent under extreme conditions. Lamb mortality records from research cited by Dr Bell ranged from a low of 10.7 per cent to a high of 58 per cent. Significantly more deaths occurred of twins; at high stocking rates; amongst lambs of maiden ewes; and amongst lambs born earlier in the season.[22]

Factors impeding lamb survival

3.22 Perinatal lamb mortality may occur through starvation, mismothering, exposure to adverse climatic conditions, difficult birth, low birth weight, predators, infection or exposure to

other pathological conditions. In its submission to the Committee, ANZFAS cited research which indicated that behavioural and physiological factors accounted for most of the lamb mortality.[23]

3.23 Starvation may come about because the ewe is in poor condition or lacks mothering ability; because the lamb is too small or weak, has become separated from its mother, has suffered a birth injury or lacks suckling drive; or because of extremes of climate which prevent the lamb from suckling, or suckling enough.

3.24 The nutrition of the ewe during pregnancy was singled out by many witnesses as the most important factor affecting lamb survival.[24] Information on the appropriate nutrition of ewes at joining and during pregnancy is readily available from State departments of agriculture and other extension services.[25] If the ewe is not provided with increased feed in the latter stages of pregnancy, the result will be a lamb of low birth weight and a poor maternal milk supply, both of which will endanger the life of the lamb. In the last six weeks before lambing, the ewe needs ample feed to cater for the increased foetal growth and to guard against pregnancy toxaemia and chronic hypoglycaemia.

3.25 Nutrition falls within the sphere of influence of the sheep producer and the Committee is firmly of the view that no ewes should be mated if the producer cannot guarantee adequate nutrition for those animals for the ensuing nine months of pregnancy and lactation. If natural pastures become inadequate, additional feeding must be provided and any failure to do so should be regarded as gross negligence on the part of the producer.

3.26 The mothering ability of ewes is less amenable to improvement by the sheep producer, although there is evidence to suggest that maiden ewes can learn from older sheep if they are allowed to lamb together. Selective breeding programmes can be undertaken to ensure that ewes which consistently manage to rear lambs are retained in the flock.[26]

3.27 The provision of shelter is, after adequate nutrition and selection for mothering skills, one of the most positive and practical steps producers can take to improve lamb survival rates. Research into the value of various types of windbreaks has shown that in the northern tablelands of New South Wales, strips of Phalaris grass positioned at 20 metre intervals improved the survival rate of Merino lambs by up to 32 per cent.[27]

3.28 The timing of lambing is another management issue which should be considered as a factor in improving lamb survival rates. According to Professor Kennedy, avoiding summer lambing in the hot, semi-arid conditions of far western New South Wales was "the most obvious thing to do to improve lamb survival rates".[28] Research in Hamilton, Victoria, showed that in cooler climates, early lambing in September produced greater losses than an October lambing, with 14.7 per cent and 9.2 per cent respectively for single lambs and 40.2 per cent and 19.2 per cent for twins.[29]

Is there an acceptable level of lamb losses?

3.29 In no species is perinatal loss unknown. Determining an acceptable level of such loss for sheep is a difficult issue, however, as so many factors are implicated. Guidelines issued by the New South Wales Agriculture and Fisheries suggest that if more than 20 per cent of maiden ewes or 15 per cent of mature ewes have lost their lambs by marking, then a lamb loss problem exists.[30]

3.30 Under extensive conditions, Professor Kennedy spoke of achieving lamb mortality rates as low as 12 per cent, and doubted whether in semi-arid zones, any improvement on that figure could be achieved as certain factors affecting lamb mortality were out of management's control.[31]

Reduction of lamb losses

3.31 The Committee accepts that most sheep producers are concerned about their lambing rates. However, if New South Wales averages 81 per cent of lambs marked, it is already outside the State departmental guidelines indicated above. The Committee **recommends** that the industry, together with the State departments of agriculture, develop lamb loss parameters for the common breeds in each district as a minimum target at which producers should aim.

3.32 The Committee further **recommends** that research continue into the comparative efficacy of the various forms of shelter on a regional basis and that the results be promptly disseminated through all appropriate media outlets.

3.33 The survival rate of twin lambs or multiple births is considerably inferior to that of single births.[32] The Committee received anecdotal evidence to the effect that the costs of using ultrasound imaging on pregnant ewes could be easily outweighed by the benefits of being able to distinguish sufficiently early the ewes bearing more than one lamb, and then to draft them off for special nutrition and attention. The Committee **recommends** that more research into the cost-benefits of using ultrasound imaging on ewes in early pregnancy be conducted.

3.34 Considering the level of lamb losses, the Committee was concerned to learn of the development and marketing of fecundity-enhancing products. It fears that these products could be used indescriminately to mask the real level of lamb deaths by increasing overall births, thus obscuring the number of unviable births.

3.35 In defence of the vaccine Fecundin, developed by the CSIRO Division of Animal Production, Dr Scott, then Chief of the Division, pointed out that users of Fecundin were advised of the

additional nutritional and other management requirements of ewes being treated with the vaccine, and further, that the vaccine was primarily intended for use in Border Leicester-Merino crosses which have a superior mothering ability.[33]

3.36 The Committee **recommends** that research be continued into the mothering ability of Merino ewes in particular, so that multiple birth lambs, whether the result of fecundity treatment or not, may enjoy a better chance of survival. The Committee further **recommends** that funding for the development and improvement of existing fecundity vaccines be tied to a requirement also to investigate methods of enhancing lamb survival.

Lamb marking

3.37 The term "lamb marking" comprises the earmarking of lambs for identification of ownership, the removal of part of the tail (also termed "docking"), and the castration of ram lambs. Mulesing is frequently performed at the same time, but for the purposes of this report it will be chiefly discussed in Chapter 4, as a means of flystrike control. An associated procedure is vaccination against a number of diseases, including tetanus, pulpy kidney, blackleg, malignant oedema, scabby mouth and cheesy gland.

3.38 The marking operations are generally carried out at the end of the lambing period, when the lambs are from one to eight weeks of age. The lambs are held by hand or more commonly in cradles for the procedures, which may take place in temporary yards erected for the purpose in the lambing paddock, or in other permanent yards.

Earmarking

3.39 All sheep older than six months, other than registered stud sheep, are required to have an earmark which is registered with the Pastures Protection Board in New South Wales. Other States similarly require unique earmarks as proof of ownership. Earmarks further indicate the sex of the animal, with ewes being marked in the right ear and rams in the left.

3.40 Traditionally, the earmarks have been produced by metal clippers. Sometimes coloured ear tags as indicators of age are attached at the same time. The procedure, while not painless, causes a brief reaction from the lamb but not an acute behavioural response to the pain, according to Dr Alexander.[34]

3.41 Alternatives include tattooing of numbers, letters or symbols on the ear, using needles and tattooing ink. This practice is sometimes demanded of stud sheep by the bre societies. It takes longer than clipping an earmark and is difficult to read, as wax and dirt can build up in the ta but in welfare terms, is not considered to differ significa from ear clipping.[35]

3.42 The electronic identification of sheep is now possible via the implanting of a small device in the sheep's ear. Scanners enable individual sheep to be identified, as well as providing ownership information. The positioning of the electronic implants requires a very minor surgical procedure.[36] The major disadvantages of electronic eartags are their expense, and the fact that they can be easily removed. The implant procedure is unlikely to cause the lamb any more problems than a clip or a tattoo, and has distinct welfare benefits. It can reduce handling, electronic drafting becomes a possibility, and individuals can be recognised.

3.43 Some form of sheep identification is desirable to discourage stock theft and to facilitate breeding and treatment programmes. For the benefits which may accrue from the latter, the Committee believes the temporary inconvenience of all present forms of earmarking is worthwhile.

Tail docking

3.44 Lamb tails, if left intact, promote the collection of faeces, and in the case of the female, urine. Apart from the discomfort this causes the animal, it also increases the likelihood of skin eczema, infections in the genital area and breech strike.[37]

3.45 In the interests of hygiene, therefore, most lambs' tails are shortened at marking time. Exceptions are lambs destined for export to the Middle East. The recommended length is just to cover the tip of the vulva in the ewe lamb, and an equivalent length in the ram lamb. A shorter length is not recommended, as it can result in sunburn or cancer of the vulva.[38]

3.46 Some breeds, such as Dorsets, have their tails docked very short as a requirement of breeding associations. ANZFAS condemned this practice, describing it as "a mutilation done merely to please the aesthetic senses of humans".[39] Mr Binns, President of the Association of Stud Sheep Breeders of Australia and himself a Dorset breeder, agreed that the practice was undesirable.[40] The Committee **recommends** that no sheep have its tail completely removed.

3.47 There are three commonly used methods of tail docking - rubber rings, a knife or searing with a hot (generally gas heated) knife. Each causes pain, as measured by cortisol levels and observed from behavioural indices, and results in a temporary setback in growth rate.[41] Each has its own particular drawback.

3.48 Elastrator rings result in a wound which is slower to heal, with one study showing a mean healing time of 36 days, compared with 21.5 for the knife.[42] Some lambs remain unhealed 43 days after the procedure.[43] Because of the slower healing process, the wound is more likely to attract flies for a longer period.[44] The initial response of lambs to rubber rings was described by Shutt et al. as "characterised by very agitated behaviour indicative of considerable distress for a period of up to one hour".[45]

3.49 The hot knife, by cauterising the blood vessels of the tail, reduces the shock caused by blood loss and lambs appear to suffer less pain.[46] The moist wound, however, is slower to heal than a knife wound and is susceptible to fly strike unless an insecticide is used. When marking is combined with mulesing, the hot knife has an advantage for both lamb and operator in reducing the blood flow.

3.50 Tail docking with a knife causes bleeding which can be severe in older lambs.[47] The comparison of tail docking methods by Shutt and colleagues showed that lambs tail docked with a knife were initially somewhat subdued but their behaviour returned to normal after they were re-united with their mothers. Plasma cortisol levels were raised significantly higher than in those lambs docked with the rings after 15 minutes and remained so after 24 hours.[48]

3.51 On the day following the operation, Shutt and colleagues observed that all lambs, regardless of the method of tail docking which had been performed on them, were behaving normally and showed no awkwardness of gait or stance. Previous research by Wohlt and colleagues found no sustained effects in terms of bodyweight gain between lambs docked by rings or the knife.[49]

3.52 The Committee concluded that on the basis of the evidence presented to it, tail docking is a helpful management procedure and that there may be a case for concluding that docking with a knife causes less distress than with rubber rings. However, all of the above methods of docking are acceptable, provided the equipment is sterile, the operators skilled, and the lambs are not separated from their mothers for too lengthy a period.

Castration

3.53 Castration is the removal of the testicles of the male animal. It is performed on most ram lambs as part of the marking process for a variety of reasons, some of them welfare-related. Rams run together are notorious for their fighting and sodomising, and weaker or smaller animals run the risk of being deprived of feed, water or shelter, whereas castrated males (wethers) are easier to manage and create fewer welfare problems amongst themselves.[50] Another reason advanced for castrating ram lambs, particularly in an extensive environment, is that some reach sexual maturity as young as four months of age and can then cause unwanted, untimely and even dangerous pregnancies in their mothers and sisters. A third argument in favour of castration is that there is buyer resistance to the supposed "taint" of ram meat. Under the Federal Pastoral Industry Award, the cost of shearing doubles for rams,[51] and there are other labour disincentives for leaving the males entire, such as differential slaughter fees.[52]

3.54 The early castration of ram lambs stops the development of secondary sexual characteristics, including horn growth. Fighting and injury from horns are therefore reduced in wethers.

3.55 The two common methods of castrating ram lambs are by using a knife or rubber rings. A third method, crushing the testicles with a Burdizzo emasculator, is less reliable and is now infrequently used.[53] Special marking knives enable the

operator to slit or remove the bottom portion of the scrotum then hook or clamp the testicles in turn and pull them out. Elastrator rings, on the other hand, are slipped over the scrotum using special pliers. The ring restricts the flow of blood to the testicles and scrotum, causing the tissue below the ring to die and drop off in about three weeks.[54]

3.56 Castration is obviously a stressful procedure for the lamb, particularly when combined with other marking procedures. ANZFAS even considered it should only be performed under anaesthetic.[55] A recent study by Mellor and Murray, comparing tail docking alone with tail docking plus castration (in both instances using rubber rings) showed that 30 minutes after the procedure, lambs which had undergone both tail docking and castration had mean plasma cortisol levels of 42.7 ng/ml compared with 17.3 ng/ml for those which had only been tail docked. A return to pre-treatment values took three and two hours, respectively.

3.57 Shutt and colleagues from New South Wales Agriculture and Fisheries compared the stress responses of three-to-six weeks old lambs to docking and castration by the knife or by rubber rings. When both procedures were performed using rings, the lambs exhibited abnormal behaviour for an hour, including "bleating, looking around, stamping, shaking hind limbs and tail, and running back and forth in an increasingly frantic fashion ... rolling about ... straining their heads towards their hindquarters and emitting deep-pitched bleats". Their plasma cortisol levels were slightly raised, reaching 128 nmol/l after 15 minutes but dropping back to 99 nmol/l after 24 hours; and in comparison with control lambs, no significant increases in plasma immunoreactive beta-endorphins were measured. The lambs on which both procedures were performed surgically huddled together and some lay down briefly, and after an hour their behaviour was quite normal, although "movement was slightly restricted". Significant increases occurred in both plasma immunoreactive

beta-endorphin and cortisol concentrations, which the researchers attributed to the tissue damage from the surgery and the loss of blood. Cortisol levels reached 171 nmol/l after 15 minutes and remained at 165 nmol/l after 24 hours; while beta-endorphin levels reached 276 pg/ml after 15 minutes compared with 64 pg/ml for the control lambs.[56] It was suggested that the release of endorphins post-surgery may afford a degree of analgesia and reduce pain for a short time after the operation. This would be consistent with the lack of immediate behavioural response from the surgically-treated lambs and was consistent with the behaviour of the lambs viewed by Committee members after marking and mulesing at "Euroka".

3.58 A key finding of Shutt and colleagues was that on the day after the operations, normal behaviour was observed in all lambs. The research also detected no long-term effect on bodyweight, a finding consistent with previous work.[57]

3.59 The consensus of opinion seems to be pointing to surgical marking, rather than the use of rings. The Committee is not convinced that the difference in stress levels between the two methods is of such magnitude that one method should be preferred to the other. The Committee noted the comments by Dr Barton, President of the Australian Veterinary Association, that inexperienced operators should be encouraged to use rings, as they are easier to manage.[58] Realistically, most marking will continue to be performed by owner/operators and the method of marking with which they feel most competent is also likely to be the one which is best for their sheep.

3.60 The Committee concludes that, although obviously unpleasant for the lamb, tail docking is a necessary procedure and one which should take place on lambs early so as to minimise the suffering and to facilitate swift healing. Castration, on the other hand, was viewed by the Committee as more a management tool than an operation primarily for the welfare of the sheep. On

balance, the Committee conceded that the removal of the aggressive and reproductive tendencies of male sheep was desirable in many instances and, at present, that involves castration.

3.61 The Committee was less convinced, however, that castration needs to be performed as often as it is. Ram lambs reared for the meat trade grow faster and leaner if left entire and there is little difference in palatability between them and wethers until they reach at least 12 months of age.[59] It was suggested to the Committee that frequently, castrated lambs are then injected with the male hormone, testosterone, to ensure they grow more like rams.[60] The irony of such a practice was noted by the Committee. It accepts that it is difficult to ensure that ram lambs reach a marketable weight and that a market can be found for them before they reach sexual maturity and become behaviour problems. However, it does not accept that the answer is always castration. Far more could and should be done to break down the prejudices and financial disincentives against ram lambs in the saleyards.

3.62 A promising development which may lessen the stress associated with castration is the vaccine being investigated by CSIRO Division of Animal Production. It is designed to make male animals temporarily sterile by immunising them against one of their own hormones, and has the effect of moderating their aggression while still allowing them to grow large and lean.[61] Immunocastration received a cautious response from witnesses who appeared before the Committee, however. Dr Denholm, of the Victorian Department of Agriculture and Rural Affairs, applauded the concept of a single injection replacing surgery, but pointed out that problems such as the potential to produce auto-immune diseases can be associated with immunocastration.[62] Professor Egan of Melbourne University considered that the vaccine as yet was not completely reliable and that work remained to be done on the injection sequence to ensure that the right animal got the right dose at the right time.[63]

3.63 The Committee recommends continued research into immunocastration. If the vaccine can be shown to be 100 per cent effective and without side-effects, it should be widely promoted on welfare grounds.

3.64 Cryptorchidism was suggested to the Committee as an alternative to castration. This is induced by pushing the ram lamb's testes back into the body cavity and applying a rubber ring to cause the scrotum to atrophy. However, according to New South Wales Agriculture and Fisheries, some testes grow subcutaneously and remain fertile, so the practice is not necessarily efficient.[64]

General marking welfare issues

3.65 The age at which lambs are marked was of concern to the Committee. If mating is spread over a two-month period and lambs are all mustered and marked together, some will be marked at a very tender age while others will be old enough to suffer excessively from bleeding and their wounds will take longer to heal. Where for manpower reasons, mustering for marking can only take place once, the joining period should be restricted to six weeks so that the disparity in the ages of the lambs is not too great. Alternatively, ram harnesses should be used at mating so that the ewes can be separated into groups according to when they are due to lamb and marking can take place more often in smaller groups when the lambs are of an appropriate age, preferably six weeks or younger.

3.66 The Committee does not accept that multiple marking periods are only feasible on small, intensively managed properties, as Dr Osborne of the Australian Veterinary Association suggested.[65] In extensive environments, the producer is under the same obligations to care for his animals, hence should reduce his joining period or create smaller lambing paddocks so that lambs can be marked at a suitable time for them.

3.67 It was suggested to the Committee that, should marking be delayed beyond the age of 12 weeks, the procedure should not be attempted without the use of an anaesthetic.[66] ANZFAS, however, argued that "putting precise ages on when an operation does or does not require an anaesthetic seems very arbitrary" and based on custom and/or convenience rather than welfare grounds. It suggested, as a preferred principle, that operations "should always be performed at the earliest time physiologically possible".[67]

3.68 The Committee concludes that lamb marking should take place at as young an age as possible. The Committee further concludes that marking of older animals be avoided if at all possible, and where it becomes necessary, it should be performed under anaesthetic by a veterinarian.

3.69 It seems unlikely that the pain induced in young lambs by marking is sufficiently acute or prolonged to warrant the use of analgesic drugs for pain control. Consideration should perhaps be given to using analgesics in situations where the presumption of considerable post-operative pain exists, for example following the marking of an older animal. Practical knowledge of appropriate analgesic drugs for sheep, dose levels, routes of administration and frequency of administration in sheep is almost non-existent, however.[68] While accepting that analgesics can have disadvantages, such as the propensity to mask early indicators of post-operative complications, the Committee believes the potential of analgesics to benefit sheep has not been explored. The Committee therefore concludes that research into the post-operative use of analgesics in sheep would be desirable.

Lamb losses after marking

3.70 Lamb losses during or after marking appear not to be a problem of similar proportions to losses between birth and

marking, but they do occur. Mr Boultbee of the Pastoralists and Graziers Association of Western Australia stressed that most stockmen pride themselves on getting their lamb marking done with few to no mortalities.[69]

3.71 Starvation from mismothering can occur, particularly in lambs less than a week old. Management techniques recommended to reduce the incidence of this include marking in temporary yards in the paddock so that the lambs do not have to travel far; avoiding marking in bad weather; avoiding a prolonged marking period; and shepherding for a sufficient time afterwards to ensure that lambs mother up before nightfall.

3.72 Poor marking can result in lamb losses from shock or haemorrhage, while infection from dirty yards or unsterile instruments may also cause losses. All ewes should be vaccinated with a multi-purpose vaccine before lambing to ensure 6 weeks' protection for their lambs against tetanus and other wound infections. Marking should be timed so that marking wounds are healed before there is any danger of their becoming flystruck.

3.73 The New South Wales Agriculture and Fisheries has stated that "losses after marking greater than 3 per cent are unacceptable".[70] The Committee considers that this is a minimum standard and that every effort should be made to ensure that no losses occur after marking.