

Evaluation of Sheep Welfare using Animal-Based Indicators

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Description

Maternal behaviour in sheep, like in many ungulates, is characterized by the rapid development of exclusive bonding to the neonate. Sensory regulation plays a major role in the onset and maintenance of ewe-lamb bond. Mothers can identify their young through the use of different sensory modalities, but the sensory basis for proximal regulation of lambs differs from that mediating distal recognition.

Olfactory discrimination by the mother appears limited to a very short range (less than 0.25 m), and at a longer distance, recognition appears to depend on either visual or acoustic cues. Additionally, Hart (1985) indicated that some of the major senses are used relatively infrequently, but vision is involved to some extent in the perception of most stimuli and has been shown to be the dominant sense in many situations. The visual appearance of a ewe, if altered enough, can confuse a lamb in the recognition of its mother. Farmers know that sometimes if a ewe is sheared, her lamb may have difficulty recognizing her. On the other side, blindfolding of ewe significantly affects her behaviour towards her lamb (Vince et al., 1987 and Abdel-Moneim, 2009). Moreover, changing the visual appearance of lambs interferes with the mothers' ability to identify their own lambs and they reject them. Alexander and Shillito (1978b) found that ewes showed marked abnormalities of maternal behaviour such as vigorous avoidance of the approaching lamb which had been coloured by brushing pigments into the coat. The purpose of the present review is to cast light on the importance of visual cue in ewe-lamb bond.

Importance of Bond between Ewe-Lamb

The survival of the offspring is one of the critical elements for the reproductive fitness of the parents. In species in which parental investment is necessary for the survival and development of the progeny, recognition of the litter is beneficial since it allows parental care to be directed preferentially towards the own progeny (Poindron et al., 2003). The bonding process allows the mother to discriminate her own young, fosters stable ewe-lamb pairs within a herd, and ensures lamb survival (Pfister et al., 2006). Furthermore, Dwyer (2014) reported that lamb survival is dependent on the coordinated expression of behaviours of both ewe and lamb. The author showed that the ewe-lamb bond leads to improving the

welfare of the lamb and the profitability of the farm. This bond is established within hours of parturition (Sharafeldin and Kandeel, 1971 a,b; Nowak and Lindsay, 1990; Nowak, 1991; Romeyer, et al., 1993; Asante, et al., 1999; Terrazas et al., 1999; Ferreira, et al., 2000; Hernandez, et al., 2001; Keller, et al., 2003; Okabe, et al., 2012; Hinch and Brien, 2013 and Ungerfeld, et al., 2021; Freitas-deMelo, et al, 2022). The authors showed that, in ungulates, the main feature of mother-young relationship is the development of an exclusive bond (exclusive acceptance of their own young at the udder) with the newborn. Thus, at parturition, mothers are attracted to any newborn lamb (i.e. maternal responsiveness), but within the first few hours after parturition a female learns to recognize some features of her offspring and they generally show exclusive acceptance of their own young at the udder, with the advantage of restricting the access of maternal milk to their own litter (Hernandez et al., 2001) and providing necessary resources and actively rejecting any alien young that attempt to suck (i.e. maternal selectivity) (Keller et al., 2003). The neonatal role in the recognition process was investigated by Shillito and Alexander (1975), Nowak (1991), and Asante et al. (1999). Nowak (1991) reported that the process of recognition of the mother by her offspring has received much less attention than the process of recognition of the young by its dam because the dynamics of individual discrimination are more rapid in the adult female than in the neonate. Shillito and Alexander (1975) reported that the mothers take the most active part in.

Critical Time for Establishing Ewe-Lamb Bond

Nowak and Lindsay (1990) stated that ewe will feed her own lamb excluding other individuals after 30 to 120 min of contact, whereas a period of contact of only 5 min between the mother and her young is apparently sufficient to establish a maternal bond. Furthermore, Poindron et al. (2003) reported that, in sheep, the maternal bond is established within the first two hours. Meanwhile, Pfister et al. (2006) demonstrated that maternal-infant bonding must occur within 12h of birth. Moreover, Mora-Medina et al (2016) reported that mother-young bonding in sheep is established during the sensitive period of the first 4 hours after birth. On the other hand, Alexander (1977), Vince et al. (1987), Asante et al. (1999), and Pfister et al. (2006) found that the initiation and maintenance of

maternal responsiveness following parturition and the survival of a lamb during the critical few days after parturition are partially dependent upon neonate activity, sensory information from the young and its ability to rapidly distinguish between its mother and other ewes. Several researchers indicated that the young is capable of rapidly developing a preferential relationship with its dam. Nowak et al. (1987) showed that some lambs could show a preference for their mothers as early as 12 h after birth. Shillito and Alexander (1975), Nowak and Lindsay (1990), and Nowak (1991) reported that the young of sheep and goats can discriminate their own from alien dams within 2 days of birth.

Whereas Asante et al. (1999) found that Merino lambs can discriminate between their dams and an alien ewe at about 24 h of age. Moreover, Shillito and Alexander (1975) reported that a large proportion of lambs can recognize a ewe as an alien on the first day of life. Additional support concerning the importance of visual cue comes from the studies of some authors. Gonyou (1984) pointed out that ewes recognized older lambs primarily by sight, then hearing and finally by smell. However, the author showed that audition with vision was important in identifying a lamb over a short distance.