Insight into sheep memory bolsters husbandry standards

October 3 2011

Prof Graeme Martin believes that farmers will benefit from understanding and applying this newly acquired knowledge because it can be used to improve farming practises in order to increase on-farm lamb survival rates. Image: flickr Helen Flamme

UWA Institute of Agriculture has discovered that sheep, despite having a cultural reputation for being unintelligent, have excellent memories.

Head of School for Animal Biology Winthrop Professor Graeme Martin says sheep are able to memorise the faces of up to 50 sheep and recognise them two years later.

Sheep use this capacity for long-term face recognition to distinguish between flocks and learn which sheep in their own flock are friendly and which are aggressive—this helps sheep position themselves within their

flock's dominance hierarchy.

More so than humans the olfactory memory of sheep—particularly in ewes—is extremely developed and is the primary mechanism used by ewes to recognise their young.

Ewes identify their young through a odour which is produced within the placenta and contained in the amniotic fluid in which the newborn is drenched.

The odour of the amniotic fluid is highly attractive to ewes only for the first two hours after birth and it is within this timeframe that ewes memorise their offspring's scent and are thus able to identify which lambs they allow to drink milk from their udders.

The lambs themselves remember their mothers because the colostrum they drink causes their stomach to fill with milk and stretch—this bodily sensation intensified by the warmth of the udder is stored in the lamb's memory. Colostrum is yellow and thicker than normal ewe milk is produced 48 hours immediately after the birth of a lamb. A new-born lamb must receive colostrum within 18 hours of birth, otherwise it has only a 50:50 chance of survival.

The colostrum along with the chemicals released from the ewe's teat become associated with the smell of their mother and the lamb remembers that particular ewe as the one from which food is provided.

Prof Graeme Martin believes that farmers will benefit from understanding and applying this newly acquired knowledge because it can be used to improve farming practises in order to increase on-farm lamb survival rates.

If ewes are given ample water, feed, and shelter while being kept

undisturbed with their young—particularly in the crucial first two hours following birth—the two will develop a stronger bond which is vital for their health.

Ewes which do not develop a bond with their young abandon their offspring and this decreases their chance of survival which ultimately results in a decrease in profits for farmers.

Sheep left undisturbed and monitored from a distance during these crucial hours have the greatest chance of survival.

Prof Graeme Martin believes that farmers should adjust their farming practices according to this memory and behavioural research because the newly understood and already natural process is “cheap, easy, and profitable” to carry out.

Provided by UWA Institute of Agriculture