Oregon State University Extension Service

Understanding Sheep Reproduction Helps Ranch Productivity

Understanding reproduction in sheep helps us be good ranch managers, have highly productive flocks, and use resources wisely. One of the most important points to understand is that the number of lambs produced by the ewe flock differs depending on when you breed your sheep. Consider the following information in your flock management practices.

The main determinant of sheep reproduction is season of year. Sheep are seasonal breeders, with the majority being short-day breeders that cycle in the fall and lamb in the spring of the year. However, some breeds of sheep will cycle in the spring and have lambs in the fall. Through the eye of the sheep, its brain perceives day length and sends appropriate signals (hormones) to the reproductive system to begin the breeding season. The non-breeding time for these ewes is called seasonal anestrus.

As ewes come out of seasonal anestrus, they are in a transitional phase. During this phase some ewes begin to express estrus and ovulate before others in the flock. In mid-breeding season all the ewes should be cycling. As the season comes to an end, a smaller percentage of the flock will be active. A similar situation is true for the number of ovulations (eggs shed) per estrus.

That is, the number of ovulations per cycle starts off low, maximizes during middle of the breeding season, and then decreases at the end. In order for the estrus to be fertile, ovulation must accompany estrus. Early in the breeding season some ewes may express estrus without an ovulation (infertile estrus) and some ovulations occur without estrus (silent estrus). What all this means is that maximum fertility occurs mid-season.

Since early, mid, and late seasonal differences occur for number of ewes in estrus, number of ewes ovulating, and number of ovulations per estrus, decisions on breeding seasons need to take into account these differences so that ewe pregnancy rates and lambing rates (number of lambs per ewe) are maximized for the system. Usually the more lambs that can be born into a flock, the more profitable the operation is. This is because the overhead of maintaining ewes can be supported by the sale of many lambs. However, some marketing schemes may be profitable with lower reproductive rates because of the advantages of timing sales and specialty markets.

Genetics (across and within breed) also play a part in the seasonality of the estrous cycle. Some breeds are capable of out of season breeding (for example, the Dorset breed). And, some animals within a breed are more able to express those characteristics than others. Choose a breed of sheep that matches your season of choice and then monitor your own flock for the animals that best represent that breed. Keep and use ranch records to pick replacement ewes and rams that help meet your objectives.

Interestingly, ranch location also influences the percentage of ewes in estrus and ovulating and the ovulation rate. Since seasonality is driven by day length, longitude or location in relation to the earth’s equator influences the strength of this effect on the ewe. Here in the Pacific NW we are

further north compared to Texas, and so our ewes are more seasonal in their breeding than the same ewes would be there (See Table 1). Use caution when choosing replacements from other locations.

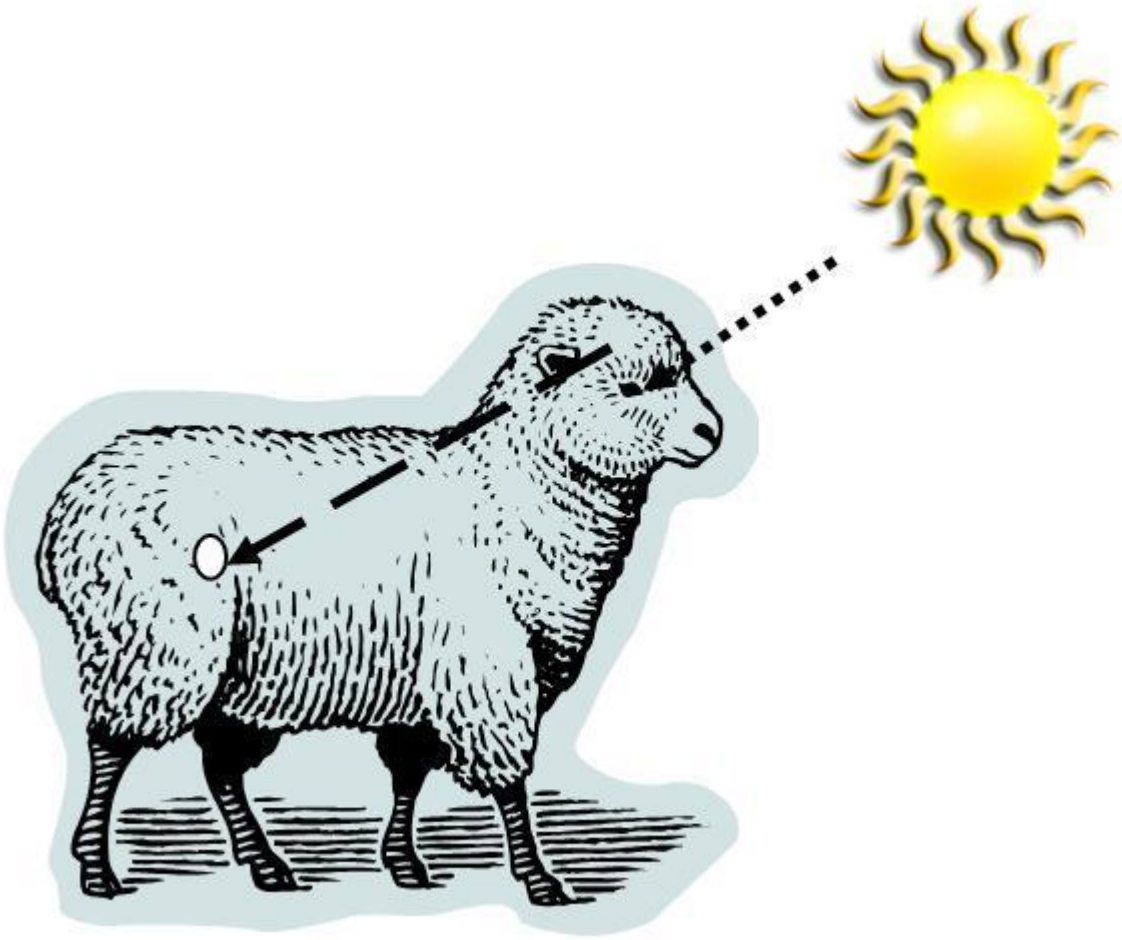
And, I wouldn't be a good nutritionist if I did not mention that nutritional status affects whether or not a ewe will cycle once the seasonal indicators (day length) are right. Flushing (improving plane of nutrition) and body condition score (fatness or body energy reserves) both influence the reproductive system. Temperature, ewe age, and presence of ram also influence reproduction.

Table 1. Estrus, Ovulation, and Ovulation Rate in Rambouillet Ewes in Idaho and Texas 1 (#footnote1_m98m3fs)

	Ewes in Estrus (%)		Ewes Ovulating (%)		Ovulation Rate	
	Idaho	Texas	Idaho	Texas	Idaho	Texas
January	100	100	100	100	1.89	1.48
February	100	100	100	94	1.57	1.14
March	89	40	94	52	1.50	1.12
April	26	38	32	32	1.37	1.16
May	02	31	02	31	1.00	1.00
June	07	44	07	75	1.00	1.24
July	06	94	06	94	1.00	1.73
August	12	86	41	100	1.75	1.48
September	88	94	100	94	1.72	1.66
October	100	94	94	100	1.80	1.25
November	100	97	94	100	1.86	1.44
December	100	100	100	100	1.88	1.44

You can find more information on reproduction, nutrition, and genetics of sheep on the OSU website. Good luck with your breeding plans this season and the following ones. I would be glad to discuss any of this information with you and help develop flock management plans.

- 1. (#footnoteref1_m98m3fs) Adapted from Hulet et al. 1074 (from ASIA Sheep Production Handbook. 2002 Edition, Vol. 7)



(https://extension.oregonstate.edu/sites/default/files/styles/full/public/images/2018-08/sheep-sun_0.JPG?itok=hRImOBeE)

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