

1997

Bent Leg of Rams

Clell V. Bagley

Nyle J. Matthews

Follow this and additional works at: http://digitalcommons.usu.edu/extension_histall

 Part of the [Agriculture Commons](#), and the [Animal Sciences Commons](#)

Warning: The information in this series may be obsolete. It is presented here for historical purposes only. For the most up to date information please visit [The Utah State University Cooperative Extension Office](#)

Recommended Citation

Bagley, Clell V. and Matthews, Nyle J., "Bent Leg of Rams" (1997). *All Archived Publications*. Paper 128.
http://digitalcommons.usu.edu/extension_histall/128

This Article is brought to you for free and open access by the Archived USU Extension Publications at DigitalCommons@USU. It has been accepted for inclusion in All Archived Publications by an authorized administrator of DigitalCommons@USU. For more information, please contact dylan.burns@usu.edu.





**Animal Health
Fact Sheet**



BENT LEG OF RAMS

*Clell V. Bagley, DVM Extension Veterinarian
Nyle J. Matthews, MS Extension Livestock Specialist
Utah State University, Logan UT 84322-5600*

July 1997

AH/Sheep/01

Bent leg is actually a form of rickets and is due to a malfunction of bone metabolism during growth. It occurs during the rapid growth phase of the young animal, usually between 6 and 12 months of age. It usually occurs in rams, primarily because of the feeding and growth patterns, but it can occur in ewes. It is much more common in Rambouillet and related breeds. Similar conditions occur in cattle, horses, dogs, poultry and man.

A nutritional deficiency can affect the epiphyseal line and result in a slight, beginning distortion. Then weight bearing begins to restrict one side while allowing the other side to grow and soon there is a greater deviation. Muscle tension and growth also increase the deviation. If it were detected in these early stages, it could be corrected with casting, splints or surgery. But usually it is not evident until the deviation becomes so severe and the growth process is almost over, so that particular epiphyseal line is permanently damaged. Any extra weight from the animal being over-weight contributes to the problem.

NUTRITIONAL GOALS FOR PREVENTION OF BENT LEG

1. Provide a balanced ration, in all aspects, especially during the rapid growth phase from 6 to 16 months of age.
2. Avoid feeding too much high energy or protein feeds and overconditioning the rapidly growing rams.
3. Provide a calcium to phosphorus ratio of 1.5 to 1. This will probably require the use of a supplement such as monosodium or monoammonium phosphate. These will supply 25-26% phosphorus without giving any additional calcium. If dicalcium phosphate or bonemeal is used, it will provide twice as much calcium as phosphorus and further distort the ratio. This should be supplied as part of the concentrate or mixed into a palatable supplement and top-dressed onto the grain, daily.
4. Supplement the ration with 300 IU of vitamin D, per 100 pounds of bodyweight per day. An oral supplement, on a daily basis is preferred, but if that is not feasible, then an injection could be used. Some potential sources are listed below for use or for comparison with other products.

Form	Name	Company	Content	Dose
Feed	Clovite	Fort Dodge	50,000 U/# (110 U/gm)	1-2 TBS/day
Water	High D 2X	ID Russell	4 million IU/ounce	1 oz/250 gal
Inject	A & D	Duravet	75,000 IU/ml	1-2 ml IM
Inject	Injacom	Roche	10,000 IU/ml	1-2 ml/60 #

(probably need to repeat injections every 2 months)

5. Provide adequate magnesium. Recent research related to human osteoporosis has shown the great importance of magnesium in bone development and strength. Magnesium is involved in calcium metabolism (it regulates active calcium transport). It is also involved in the synthesis of vitamin D, and thus in maintaining bone integrity. Normal blood serum levels should range from 2.2 to 2.8 mg/100 ml. Feed content should range from 0.2 to 0.3%. High levels of sodium, potassium and aluminum reduce the availability of magnesium.
6. Shear wool from the young rams in early winter to allow more skin surface for vitamin D conversion and provide housing that provides good exposure to the sun, during winter.

ELEMENTS FOR BONE GROWTH

In order to allow for growth there is an epiphyseal line or “growth plate” across each long bone, such as those in the legs. This area is composed of cartilage in young animals and growth is the result of this growth plate moving forward while becoming mineralized on the backside.

Eventually the body hormones act on these epiphyseal areas, they fill in entirely with bone in place of the cartilage and bone growth ceases. This area is extremely vulnerable to any problems with mineral metabolism during the rapid growth phase. One of the most rapid growing bones is the metacarpal (cannon) bone and it is a common site of rickets problem in all species.

Proper bone growth is dependent primarily on calcium, phosphorus and vitamin D. The ratio of calcium to phosphorus is as important as is the amount ingested. A major excess of other elements such as iron and sulfur may also affect bone growth. A pronounced copper deficiency does have some effect on bone growth and will cause enlarged epiphyseal lines in the fetlocks of calves. Other elements should be present in appropriate but not excessive amounts but there is little documentation of their actual effect on bone growth.

FEED CONTENTS

Alfalfa is very high in calcium, so when large amounts of alfalfa are fed it may result in a relative phosphorus deficiency. Grains are the reverse and are higher in phosphorus than calcium, but cannot compensate for the imbalance resulting from alfalfa.

Vitamin D is provided by sun-cured alfalfa hay and by action of the sun on vitamin D precursors on the sheep’s skin. But these sources may not be adequate during winter and during the rapid growth phase for rams. Early shearing of the rams and locking them out of sheds so they get some exposure to the sun will help, but even that may not be sufficient.

Magnesium tends to be low in grains and may be marginal in forages.

OTHER FACTORS

Rapid growth and nutritionally “pushing” animals for growth is a factor in all species for increased incidence of rickets. Both high energy and high protein rations appear to have an effect.

Excessive carotene present in green feeds or even alfalfa may tie up vitamin D. Phytates present in grains may tie up a significant portion of the phosphorus so it can't be used. The calcium present in alfalfa tends to be higher in the leaves than in the stems, so if the rams are eating mostly the leaves and wasting the stems, this may increase any disparity in the calcium to phosphorus ratio which would be apparent, based on "book values" for the feeds.

FURTHER DIAGNOSIS

If these things are being done, and cases still occur, then blood samples should be taken immediately after a current case is recognized and analyzed for calcium, phosphorus, magnesium and copper content. The ration should also be evaluated for the same as well as sodium, potassium, aluminum, iron and sulfur content. Check the water for sulfur content.

Utah State University Extension is an affirmative action/equal employment opportunity employer and educational organization. We offer our programs to persons regardless of race, color, national origin, sex, religion, age or disability.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Robert L. Gilliland, Vice-President and Director, Cooperative Extension Service, Utah State University, Logan, Utah. (EP/DF/07-97)