PREGNANCY DIAGNOSIS IN THE EWE

I. Rectal-Abdominal Palpation

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Detecting pregnancy in farm animals has been a topic of interest for decades. One way to improve reproductive efficiency would be to eliminate nonpregnant females ahead of the lambing season. Early detection of open ewes would allow for rebreeding or possibly reveal any existing breeding problems in males. Improved feed utilization and more efficient use of all facilities could be made. Also, considerable savings in feed could be realized if single-bearing ewes were fed separately from multiple-bearing ewes.

The sharp rise in feed costs during the past few years has increased the need to eliminate non-pregnant females. The feed intake of these "free loader" ewes then can be apportioned to heavier producers. Accurate procedures to differentiate between single-bearing ewes and ewes bearing twins or triplets would result in less pregnancy toxemia in the multiple bearing ewes. Also, overfeeding single-bearing ewes could be reduced and thus less dystocia would occur because their body condition could be more nearly controlled. One other potential benefit of early pregnancy diagnosis would be to eliminate non-pregnant ewe lambs and thereby provide a powerful selection tool to establish high fertility ewe flocks.

The method of rectal palpation has been used extensively in the cow and mare. However, due to the lack of size in the rectum to facilitate this procedure in sheep, other means of pregnancy detection have been developed. Lindahl (1969, 1971) has reported high estimates of accuracy using ultrasonic devices. Hulet (1972) developed the technique of rectal-abdominal palpation for diagnosis of pregnancy in the ewe, and later (1973) studied accuracy of determining fetal numbers by this same method of pregnancy detection.

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The objectives of this study were:

1. To assess the accuracy of pregnancy detection by rectal abdominal palpation.
2. To evaluate the stage of pregnancy and size of ewe on the accuracy of the pregnancy detection and fetal number evaluation.
3. To determine the feasibility of separating ewes into feeding groups based on the prediction of fetal numbers they were carrying.

Materials and Methods

Rectal-abdominal palpations were conducted under field conditions and involved evaluation of 459 ewes, which varied from 60-120 days post-mating. Small groups of approximately 6-10 ewes were isolated from the main group and each received 5 mg of tranquilizer (Acepromazine) intramuscularly. Following a short waiting period, the ewes were individually palpated. Each ewe was placed on her back in a horizontal position and strapped to a modified laparotomy cradle. The cradle supported the ewe along the loin area with no attempt made to prevent lateral distension of the intestines. Approximately 10 ml. of a warm soapy solution was deposited intrarectally for lubrication purposes. The

actual palpation was completed using a hollow plastic rod 1.5 cm O.D. x 50 cm in length with a rounded tip at one end. The rounded tip end of the rod was dipped in a sterile lubricant (K-Y jelly) and inserted into the rectum to a depth of approximately 35-40 cm.

The abdominal cavity, which normally contains the uterus, was explored by drawing the palpation rod across the dorsal surface from one side of the uterus to the other while applying firm pressure against the uterus with the rod and on the lower abdomen with the operator's free hand. The palpation rod was firmly pressed against the uterine complex at short spatial intervals from left to right with a slight rocking motion. The purpose of the operator's free hand on lower abdomen was to detect the presence of solid palpable masses and serve as a guide for movement of the palpation rod. The stage of pregnancy, number of fetuses and ewe weights were recorded to study their effect on diagnostic accuracy.

Results and Discussion

The primary objective of this study was to determine the accuracy of pregnancy diagnosis in ewes by manually probing the lower abdominal contents. The method employed was a rectal-abdominal palpation technique described by Hulet (1972, 1973). The principal observation was the detection of a gravid or non-gravid state of the uterus. Weight of the ewe and stage of pregnancy as calculated from actual lambing data were ascertained to determine their individual effects on diagnostic accuracy.

The diagnostic accuracy attained based on the occurrence of relatively solid palpable masses was 88.5 per cent (Table 1). Of 459 ewes examined, 406 were correctly diagnosed. These results are similar to those of Hulet (1972) who reported more than 90 per cent of the ewes examined were correctly diagnosed.

Table 1. Accuracy of pregnancy diagnosis by rectal-abdominal palpation

Gravid state	No. of ewes	Diagnosis correct	Diagnosis incorrect
Open	144	108	36
Bred	315	298	17
	459	406	53
accuracy 88.5 per cent			

Ewe weight was not found to significantly affect palpation accuracy until the ewes weighed more than 200 pounds (Table 2). Since few ewes reached this weight, it contributed little to reduced diagnostic accuracy. Smaller ewes were observed to offer less abdominal resistance, but accuracy was not significantly different in these ewes than from other weight groups. Heavier ewes were more difficult to place in the palpation crate.

Table 2. The effect of ewe weight on prediction accuracy

Weight range lbs.	No. of ewes	Diagnosis correct	Diagnosis incorrect	Per cent accuracy
50-99	11	10	1	90.9
100-149	120	102	18	85.0
150-199	224	204	20	91.1
200-249	93	82	11	88.2
250+	11	8	3	72.7

Overall accuracy as time post-mating increased is presented in Table 3. All ewes palpated 105 days post-breeding were classified with extremely high accuracy due to greater fetal development. Differences in diagnostic accuracy between 60 and 120 days of pregnancy were small, indicating that pregnancy determinations during this period could be accomplished at the convenience of the producer.

Table 3. Effect of day post mating on diagnosing pregnancy

Days post breeding	Diagnosis correct	Diagnosis incorrect	Per cent accuracy
60-74	45	7	86.5
75-89	160	22	87.9
90-104	118	17	87.4
105-119	61	6	91.0
120+	17	0	100.0

The accuracy of pregnancy diagnosis increases as the interval from conception to palpation increases; however, major modification of diagnostic accuracy does not occur until after 120 days. Earlier diagnostic accuracy might be attained by a more careful and lengthier intrarectal examination. The value of such examinations may be largely negated by the increased opportunity for uterine injuries and fetal deaths and a possible increase of stillborn lambs.

The accurate separation of ewes into either single or multiple lambing categories would facilitate the feeding of ewes according to their level of production. Therefore an attempt was made to predict fetal numbers per pregnancy based on the number of palpable masses found in the lower abdomen of the ewe. Separation into single, twin or triplet lambing groups was unsuccessful. Categorization of ewes into single or multiple groups produced prediction accuracies comparable to that reported by Hulet and Shupe (1973). One hundred thirteen ewes were predicted to be carrying multiple lambs, but 82 actually produced twins for a 62.1 per cent accuracy. Too many twin lambs are missed by

this procedure, thus considerable pregnancy toxemia could occur if rectal abdominal palpation with this degree of accuracy were used to separate ewes for feeding purposes. This technique, however, does provide a simple and reasonably accurate means for the sheepman to separate pregnant from open ewes to reduce feed costs and facilitate the use of equipment and labor.

Summary

Pregnancy diagnosis and fetal number detection were attempted in 459 ewes by means of rectal-abdominal palpation. Pregnancy diagnosis was based on the location of palpable masses brought near the abdominal surface by the palpation rod. Fetal numbers were predicted by counting each palpated mass. Ewes ranging from 50 to 250 pounds were palpated 60 to 120 days following mating. Effects of gestation interval and ewe weight on prediction accuracy were evaluated. Overall prediction accuracy reached 88.5 per cent. Heavier ewes were diagnosed with less accuracy, probably due to greater abdominal resistance. Ewes weighing over 250 pounds were diagnosed with relatively low accuracy. However, since only a few ewes were in this category, little overall effect on accuracy was noted. Even though ewes palpated later in gestation were more accurately diagnosed, relatively high accuracy was attained throughout the 60 to 120 days post-mating period. Fetal number determination using rectal-abdominal palpation yielded poor results. An overall accuracy of 62.1 per cent was attained when ewes were categorized as multiple lamb bearing or single lamb-bearing.

Conclusion

Based upon actual field testing, rectal-abdominal palpation offers an acceptable means of diagnosing pregnancy in ewes. The technique is simple and can be quickly performed. A fairly high degree of accuracy can be attained in separating open and pregnant ewes. Weight and stage of gestation have little effect upon prediction accuracy. However, lighter ewes may be palpated with less abdominal resistance. Fetal number prediction based on rectal-abdominal palpation was not found to be accurate enough to separate ewes into groups according to type of pregnancy.

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