

# An Update on Wheat Straw as a Feed for Confined Ewes

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North Dakota is a major wheat producing state. Straw is a by product of wheat production, and straw that is not incorporated in the tillage system used by farm operators is harvested for bedding and also as a salvage feedstuff for ruminant animals, primarily the beef cow. Very little research to evaluate straw as a feedstuff for ewes has been reported. This study was intended to evaluate the effect of rations containing portions of wheat straw as a feedstuff on productivity of the confined ewe.

Two hundred and four yearling grade Columbia crossbred ewes were allotted into four treatment groups. Each treatment group was subdivided into three groups and placed in 12' x 24' pens on July 7, 1982. Treatment groups were as follows:

1. 100 percent ground alfalfa
2. 80 percent ground alfalfa + 20 percent ground straw
3. 60 percent ground alfalfa + 40 percent ground straw
4. 40 percent ground alfalfa + 60 percent ground straw

The ground roughage was mixed with water to alleviate dust and was fed with a mixer-feeder wagon three times weekly according to appetite. A salt mineral mixture was self fed.

All ewes were scored for body condition when the project was initiated and at intervals during the production year. Body scores were 5 = fat, 4 = good, 3 = medium, 2 = thin, and 1 = emaciated. All ewes were fed common rations during the flushing, breeding, pre-lambing and lactation period. Straw rations are fed from April 15 to late July. Ewes are then fed a flushing rations for two to three weeks. Breeding takes place from August 20 to September 20. Ewes were returned to straw rations from September 20 to late November. All ewes are then fed the same pre-lambing and lactation ration. The number of days on the straw ration as varied from year to year averaging from 160-180 days.

## Results and Discussion

Initial weights (July 84) were all very similar among treatments (table 1). Weights taken mid-gestation

(November 84) indicated a very slight gain in the 60 percent straw group (.6 pounds) and minor losses in the other groups (-2.1, -.3, -2 pounds, respectively). All groups showed slight weight gains from mid-gestation to weaning (1.7, 3.8, 3.7, and 5.4 pounds) with the 100 percent alfalfa fed group being greatest.

Ewes were in generally satisfactory condition throughout the year. The number of thin ewes in the 60 percent straw, 40 percent alfalfa fed group exceeded the other groups (30, 33, 26, and 20 percent, respectively).

Varied parameters used to measure treatment effect indicated no pattern related to treatments imposed. Conception based on lambing data improved in all lots except for the ewes fed the 60 percent straw and 40 percent alfalfa rations during maintenance periods.

A summary of four years performance data is presented in table 2. Death loss is higher than expected. A summary indicating cause of death is not available at this time although it appears that a number of losses are due to pneumonia related conditions.

As ewes have increased in age there has been an increase in the number of multiple births and decrease in number of single lambs. Ewes fed the 60 percent straw/40 percent alfalfa ration have better performance than ewes fed other rations.

Performance of ewes on a yearly basis is presented in table 3. Percent ewes lambing had decreased in 1983 and 1984 and then increased slightly in 1985. Although the number of multiple births has increased, the percent lambing rate per ewe exposed has also decreased. This decrease in performance may be related to some long term effect of this type of feeding regime, or it may be related to interference of normal light patterns related to breeding indoors.

## Conclusions

The purpose of the study was to evaluate the effect of various levels of wheat straw in self-fed alfalfa rations on productivity of confined ewes. Rations containing up to 60 percent wheat straw with the balance alfalfa did not adversely effect production when fed during maintenance. The low productivity of all groups may have reduced the effect of the higher straw rations. Ewes that are more

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**Table 1. Ewe Weight and Production 1984-85.**

	100% Alfalfa	80% Alfalfa 20% Straw	60% Alfalfa 40% Straw	40% Alfalfa 60% Straw
Pre-breeding wt. (7-05-84)	160.2	165.0	160.4	157.4
Post-breeding st. (11-20-84)	158.2	164.7	158.3	158.0
Weaning wt. (4-05-85)	163.6	167.4	162.1	160.3
<b>Fleece Weight</b>	<b>10.4</b>	<b>11.3</b>	<b>9.8</b>	<b>10.0</b>
<b>Ewe Scores</b>				
Pre-breeding Score (7-05-84)	3.00	3.22	3.07	2.73
Post breeding Score (11-20-84)	3.17	3.21	2.76	2.83
Weaning Score (4-19-85)	2.95	3.03	2.70	2.69
Number of ewes	42	43	48	43
% Ewes lambing	79	67	71	74
% Lambing rate	164	155	182	150
% Lambing rate/ewe exposed	129	105	129	112
% Single births	45	55	32	50
% Twins	45	34	50	50
% Triplets or more	10	11	18	0
% Death loss	13	11	13	15
Lbs. of lamb/ewe exposed	64	40	57	61

**Table 2. Four Year Summary - Ewe Production.**

Production Items	Ration							
	100% Alfalfa 0% Straw		80% Alfalfa 20% Straw		60% Alfalfa 40% Straw		40% Alfalfa 60% Straw	
	3 Yr. Aver.	1985	3 Yr. Aver.	1985	3 Yr. Aver.	1985	3 Yr. Aver.	1985
% Ewe Lambing	( 81)	79	( 83)	67	( 78)	71	( 87)	74
% Lambing rate	(150)	164	(154)	155	(150)	182	(157)	150
% Lambing rate per ewe exposed	(120)	129	(128)	105	(116)	129	(134)	112
% Death loss (lambs)	( 21)	13	( 28)	11	( 23)	13	( 18)	15
Lbs. lamb per ewe exposed @ 90 days	( 56)	64	( 52)	40	( 52)	57	( 65)	61
% Single births	( 34)	45	( 52)	40	( 36)	32	( 33)	50
% Twin births	( 63)	45	( 70)	34	( 62)	50	( 60)	50
% Triplets births	( 02)	10	( 00)	11	( 02)	18	( 07)	00

highly productive may or may not be stressed more because the effect of diet during the maintenance period. Percent ewes lambing and the percent lambing rate per ewe exposed has decreased each year except 1985.

Previous work (1977-1979) at the Hettinger Research Extension Center indicated that feed costs were reduced when ewes were self-fed rations containing various levels (20-60 percent) of straw during maintenance. Previous work was conducted on similar sized ewes confined in an outside environment. Climatic conditions were a significant factor influencing the performance of ewes fed various levels (20-60 percent) of straw in the outside environment.

**Table 3. Average Yearly Ewe Performance.**

	1982	1983	1984	1985
% Ewe Lambing	93	85	69	73
% Lambing Rate	144	151	164	163
% Lambing Rate per Ewe Exposed	132	129	112	119
% Death Loss (Lambs)	30	17	20	13
Lbs. of Lamb per Ewe Exposed	52	63	54	56
% Single Births	41	35	23	46
% Twins Births	55	62	74	44
% Triplets Births	3	2	3	10

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**Table 4. Light weight Hereford Steers.**

	Bovatec	Control	Rumensin
No. head	6	6	6
Days fed	109	109	109
Initial wt., lbs.	477.5	484.2	483.3
Final wt., lbs.	784.6	783.8	788.8
Gain, lbs.	307.1	299.6	305.4
ADG, lbs.	2.82	2.75	2.80
<b>Feed Summary</b>			
Feed/lb of gain	7.40	7.91	7.49
Feed savings, %	6.4	0	5.3
<b>Feeding Economics</b>			
Feed cost/lb., \$	.0438	.0428	.0431
Feed cost/steer, \$	99.49	101.40	98.55
Feed cost/cwt. gain, \$	32.40	33.85	32.27
Steer value/hd., \$	384.61	382.19	388.14
Advantage over control, \$	2.42	0	5.95

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**Table 5. Compudose growth implant comparison among backgrounded steer calves.**

	Compudose	Control
No. head	27	27
Days fed	109	109
Initial wt., lbs.	523.0	508.1
Final wt., lbs.	851.6	785.6
Gain, lbs.	328.6	277.5
ADG, lbs.	3.01	2.55
<b>Implant Economics</b>		
Steer value/hd., \$	525.42	484.74
Purchase value of steer, \$	339.92	330.30
Return/steer, \$	185.50	154.44
Value of Compudose implant, \$	31.05	
Cost of implant, \$	2.40	
Less estimate of greater feed consumption for Compudose implanted steers, \$	6.23	
Net return/steer from implanting, \$	22.42	

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Low reproductive rates for all groups may be related to influence of light on ewes bred in confinement. Self feeding ground rations did significantly reduce the labor associated with feeding the ewe when confined.

Niether trial indicated a severe reduction in ewe performance when straw was added to the maintenance period ration. Nutrient analysis indicated a wide range of quality of both straw and alfalfa among years. Extreme caution

should be used when formulating rations utilizing straw for ewes without sufficient nutrient analysis to verify that minimal energy and protein requirements are met.

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