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Up With
Research
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December 1982

Wheat in Lamb Rations

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Wheat is by far the most important crop grown in northwestern Kansas. Traditionally, the vast majority of wheat produced in this area is sold for human consumption. However, when the market price for wheat is low, growers may want to consider other outlets for their crop. Two feeding trials have been conducted at the Colby Experiment Station to evaluate the use of wheat in rations for growing-finishing lambs.

Trial I was designed to evaluate the substitution of wheat for grain sorghum in lamb rations. Wheat was tested at 100, 75, 50, and 25 percent of the grain portion of the rations. All rations were ground and mixed in a hammermill-mixer and were fed in self-feeders. Table 1 shows the composition of those rations.

Growth and efficiency data are presented in Tables 2 and 3. Preweaning data showed no significant differences among treatments. Average daily gains (ADG) ranged from .514 for the no wheat group to .542 for the group with wheat as 75% of the grain portion of the ration. The control ration was also the least efficient in producing preweaning gains, requiring 1.49 pounds of feed per pound of gain. The most efficient ration was that with wheat as 75% of the grain, requiring 1.35 pounds of feed per pound of gain.

Postweaning average daily gains (Table 3) ranged from .595 for the group with wheat as 25% of the

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Table 1. Ration Composition %, Trial I.

Ingredients %	% wheat in grain portion of ration				
	0	25	50	75	100
Alfalfa	30	30	30	30	30
Grain sorghum	58	44	30	14.5	0
Wheat	0	15	30	47.5	62
SBM	9	8	7	5	5
Limestone	2	2	2	2	2
Salt	1	1	1	1	1

Added to all rations: Vit. A (1000 IU)/1 lb. of feed, Vit. D (400 IU)/1 lb. of feed and Terramycin .10 mg/1 lb. of feed.

Table 2. Preweaning Performance Data, Trial I.

	% wheat in grain portion of ration				
	0	25	50	75	100
No. lambs	77	80	78	80	78
Birth wt. (lb)	11.0	11.3	11.0	10.9	10.8
Weaning wt. (lb)	37.2	37.7	38.5	38.6	38.1
ADG (lb)	0.514	0.516	0.539	0.542	0.537
Age at weaning (days)	51.1	51.1	50.8	51.1	50.8
Feed/lb. gain (lb)	1.49	1.42	1.40	1.35	1.41

Table 3. Postweaning Performance Data, Trial I.

	% wheat in grain portion ration				
	0	25	50	75	100
No. lambs	74	78	78	73	75
Weaning wt. (lb)	37.6	37.8	38.5	39.3	38.5
Final wt. (lb)	98.2	96.5	102.6	101.7	101.1
ADG (lb)	0.607	0.595	0.632	0.641	0.626
Days of feed	104.7	105.3	106.0	103.1	105.3
Feed/lb. gain (lb)	5.12	4.92	4.85	5.00	4.56

Table 4. Ration Composition (%), Trial II.

Ingredients %	Control	Roughage levels (%)			
		10	25	35	50
Alfalfa	30	10	25	35	50
Wheat	0	82	68	60	48
Grain sorghum	58	0	0	0	0
SBM	9	5	4	2	0
Limestone	2	2	2	2	1
Salt	1	1	1	1	1

Added to all rations: Vit. A (1000 IU) lb. of feed, Vit. D (400) IU/1 lb. of feed and Terramycin .10 mg/1 lb. of feed.

Table 5. Prewaning Performance Data, Trial II.

	Control	10	Roughage Levels (%)		
			25	35	50
No. lambs	68	67	66	66	66
Birth wt. (lb)	10.9	11.4	11.2	11.0	11.3
Weaning wt. (lb)	37.2	39.3	37.8	37.4	36.2
ADG (lb)	0.521	0.563	0.534	0.535	0.504
Age at weaning (days)	50.6	49.5	49.6	49.4	49.4
Feed/lb of gain	1.11	1.47	1.64	1.69	1.28

Table 6. Postweaning Performance Data, Trial II.

	Control	10	Roughage Levels (%)		
			25	35	50
No. lambs	67	66	63	64	66
Weaning wt. (lb)	37.7	38.9	37.9	37.5	36.2
Final wt. (lb)	106.4 ^a	109.7 ^a	107.3 ^a	104.4 ^a	92.8 ^b
ADG (lb)	0.707 ^a	0.755 ^a	0.727 ^a	0.701 ^a	0.537 ^b
Days on feed	101.0	95.3	97.9	98.3	107.4
Feed/lb gain (lb)	4.92	5.11	5.36	5.18	5.54

ab = Means in the same row with different superscripts differ significantly ($p < .01$).

grain to .641 for the group with wheat at 75% of the grain portion of the ration. The control ration was least efficient in producing postweaning gains, requiring 5.12 pounds of feed per pound of gain. The most efficient ration was the one in which all of the grain was wheat, requiring 4.56 pounds of feed per pound of gain. Postweaning treatment differences were not significant.

Trial I was conducted over a 2-year period, using years (lamb crops) as replications. A total of 393 lambs completed the preweaning portion of the trial and 378 lambs remained in the test from birth to market.

Data from Trial I indicate that wheat can be substituted for all the grain sorghum in preweaning and postweaning lamb rations with no real effect on lamb gain or feed efficiency.

Trial II tested wheat as the only grain in rations containing 10, 25, 35, and 50 percent roughage (4th cutting alfalfa). A grain sorghum ration was included as a control. Trial II was also conducted over 2 years with 333 lambs completing the preweaning stage and 326 lambs completing the entire trial. The rations (Table 4) were ground and mixed in a hammermill-mixer and fed in self-feeders. Trial II performance data are presented in Tables 5 and 6.

Prewaning differences among treatments were

not significant (Table 5). Preweaning average daily gains ranged from .504 lb. for the 50% alfalfa group to .563 lb. for lambs on the 10% alfalfa ration. The 35% alfalfa ration was the least efficient in producing preweaning gains, requiring 1.69 pounds of feed per pound of gain. The most efficient ration was the control (grain sorghum) where 1.11 pounds of feed produced a pound of gain.

Trial II data indicate that wheat rations containing from 10% to 50% alfalfa produce satisfactory preweaning gains compared with a grain sorghum (control) ration containing 30% alfalfa.

Postweaning data show that performances of lambs on the 50% alfalfa ration dropped off sharply after weaning (50 ± 3 days). Differences between the 50% ration and others were significant ($P < .01$) for final weight and average daily gain. Final weights ranged from only 92.8 pounds for the 50% group to 109.7 pounds for lambs on the 10% ration. Average daily gains of .537 and .755 were made by lambs on those two rations, respectively. Lambs fed the 10% alfalfa ration required an average of only 95.3 days after weaning to reach market weight (105 lb) compared with 107.4 days for lambs on the 50% ration.

The 50% ration was also the least efficient in producing postweaning gains, as lambs needed to consume 5.54 pounds of feed to produce one pound of gain. The control ration was the most efficient, requiring 4.92 pounds of feed per pound of gain.

Trial II postweaning data indicate that wheat rations containing up to 35% alfalfa produced satisfactory gains in growing-finishing lambs compared with a grain sorghum ration containing 30% alfalfa. The fastest growth rate and heaviest final weight were attained by lambs on a ration containing 10% alfalfa and 82% wheat.

No problems generally associated with ground wheat were noted. A $\frac{1}{2}$ inch screen was used, so many kernels were only cracked and some remained whole, apparently minimizing the flouring effect. However, lambs showed no signs of feed sorting.

Data from the two feeding trials conducted at Colby demonstrate that wheat can be utilized successfully in rations for growing-finishing lambs. Satisfactory to good gains are attained when wheat is used in combination (75-82 %) with grain sorghum or as the only grain in a ration. In addition, wheat has a higher protein level than grain sorghum, so less protein supplement is needed in wheat rations. That could be an important factor in times of high prices for soybean meal or other supplements.

Contribution 82-632-S, Colby Branch Experiment Station.

Agricultural Experiment Station, Manhattan 66506



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12-82-3M