High Concentrate Rations for

SHEEP

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Recent trials at Davis with high concentrate rations for sheep indicate that it does not pay to grind, roll or cook barley—if it can be fed whole to sheep. Results also indicate that these rations should be no higher than 60% concentrate.

A CERTAIN PORTION of the spring lambs raised in the North Coast area of California are not finished for the slaughter market directly from the range and, as a result, are sold as feeders. The fattening of these lambs by the individual owners could be an economical practice, especially with a high concentrate ration.

Recent use of high concentrate rations for beef cattle has proven successful under certain conditions. These high concentrate rations need to be supplemented to meet the deficiencies of a grain ration. This supplement consists of 57% cottonseed meal (41% protein), 20% alfalfa meal, 10% cane molasses, 7% calcium carbonate or oystershell flower, 6% trace-mineralized salt and 3500 International Units of vitamin A per pound of supplement. This supplement had 31.6% crude protein and 12.2% crude fiber.

Sheep have been fattened at Davis essentially on an all-concentrate ration. These trials consisted of only a few lambs and careful management was employed. Experience at the Hopland Field Station has not proven satisfactory on this type of ration. This work was, therefore, repeated at Davis in trials reported here and the form of barley fed was also investigated.

During the fall of 1962, 67 feeder lambs were obtained and allotted at random; seven to each of eight treatments with an additional lot of eleven lambs sacrificed as an initial slaughter group. The eight treatments used were either a 60% barley ration or a 95% barley ration and each was fed as: (1) whole barley, (2) ground barley, (3) rolled barley, and (4) cooked barley. The 60% barley ration contained 20% ground alfalfa hay, 10% ground oat hay, 10% dried beet pulp, and 60% barley processed as previously stated. The 95% barley ration consisted of 95% barley processed as above, plus 0.15 lb per head per day of the above mentioned supplement. The barley was steam cooked in the stack above the roller for 15 minutes prior to rolling at an average temperature of 103°C or 217.4°F.

All sheep weights were taken after a 12-hour stand without feed and water. The animals were started on feed by giving 0.2 lb per head per day of barley or the milled ration, plus alfalfa hay. The test ration was increased by 0.2 lb per head per day at the expense of the alfalfa hay until all animals were on full feed.

The production data presented in the table show death losses occurring on the 95% ration. Scours and stiffness of joints in some lambs were noted. Little trouble was experienced, however, on the 60% ration. The one death loss was from pneumonia and was not directly attributable to the ration fed.

Significant differences were found in the average daily gain and corrected carcass weight. From these data, it was concluded that a 60% barley ration was superior to the higher level. It appeared that lambs fed whole barley performed as well or better than lambs fed ground or rolled barley. Whole barley also seemed to be as palatable, compared to other forms, as shown by food intake. Cooking barley did not improve lamb performance.

All animals were in acceptable slaughter condition at the end of the 94-day feeding period. The feed-per-lb-of-gain figures also appear to show whole barley is most economical for sheep and that cooking the barley does not help its utilization. The most inexpensive form of barley (whole) is most suitable for sheep—the reason being that they chew their rations satisfactorily.

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RESPONSE OF LAMBS ON 94-DAY TRIAL TO DIFFERENT LEVELS AND FORMS OF BARLEY RATIONS

Ration	60% barley				95% barley			
Form of barley fed	Whole	Ground	Rolled	Cooked	Whole	Ground	Rolled	Cooked
No. of animals	7	6	7	7	5	5	6	5
Av. daily gain, lb.	0.38[a]	0.36[ab]	0.32[ac]	0.31[abc]	0.38[a]	0.24[c]	0.29[bc]	0.23[c]
Final live wt., lb.	100	96	94	91	103	89	93	85
Daily dry matter intake, lb.	2.7	2.7	2.4	2.3	2.3	1.9	2.1	2.0
Feed/lb. gain, lb.	7.1	7.5	7.5	7.4	6.1	7.9	7.2	8.7
Carcass data:								
Carcass weight, lb.	54.4	51.9	49.7	48.5	57.8	48.4	50.7	46.5
Fat %	31.5	30.3	29.6	29.0	32.7	29.8	32.7	28.4
Corrected carcass wt., lb.*	74.1[ab]	68.2[bc]	61.7[c]	61.1[c]	79.8[a]	62.8[c]	69.2[bc]	58.6[c]
Chemical analysis of ration:								
Crude protein, %	11.6	11.7	11.4	11.4	10.5	9.8	9.9	9.7
Crude fiber, %	13.5	13.4	13.1	12.9	5.3	5.9	5.4	4.8

* Corrected to a carcass weight equivalent to one containing 1,297 kilo-calories per lb., 17.3% protein and 20% fat.

[abc] Values with same letter superscript are not significantly different. Values with different superscripts are significantly different ($P = 0.05$). Significance based on an analysis of covariance to initial body weight.