

Almond Hulls as Feed

lamb fattening trials reveal that soft shell variety is best for livestock when fed with barley and alfalfa

William C. Weir

Almond hulls of the IXL variety—soft shell—are of better feed value and have produced better gains than hulls of the Mission or Texas—hard shell—variety.

Almond hulls are a by-product of the almond industry. The hull of the almond is comparable to the fleshy portion of a peach. As the almond ripens on the tree the hull usually cracks and opens. After the almonds are harvested, the nuts with the attached hull are processed through a machine which removes the hull.

Until recently most of California's annual almond hull production—35,000 to 40,000 pounds—was burned or used for livestock bedding.

Chemical analyses show that these hulls contain 10% to 30% moisture, 10% to 17% fiber, 4% to 7% ash, 1% to 4% fat, 2% to 5% protein, and 50% to 60% nitrogen-free extract. This high percentage of nitrogen-free extract includes sugars and other readily available carbohydrates. The total sugars range from 18.3% to 30.56%; some 41% to 45% of the finely ground hulls are soluble in cold water, 50% to 55% in hot water.

Feeding Trial

A feeding trial compared dried hulls of the IXL and Mission or Texas varieties with barley as a feed for fattening lambs.

Hulls obtained from a ranch near Winters were dried in the sun and coarsely ground in a hammer mill.

The feeder lambs were given the following rations:

Lot	head	Mix
I	10	Rolled barley and alfalfa hay
II	10	Rolled barley 50%, ground IXL almond hulls 50%, and alfalfa hay
III	10	Rolled barley 50%, ground Mission almond hulls 50%, and alfalfa hay

The lambs were fed these rations for 62 days. Both lots of lambs on the almond hull-barley mixture ate their grain readily. The lambs fed rolled barley as the only concentrate ate slightly less grain per day than did those on the almond hull-barley mixture.

When placed on feed the lambs averaged about 77 pounds. The lot II lambs, fed the IXL hulls and barley, made the best gains, netting 14.2 pounds per head; the poorest gains were made by lot III

on the barley and Mission hulls—an average gain of 12.4 pounds per head.

When slaughtered, the lot II lambs gave the highest dressed yield—55%—followed by lot I—54%. Lot III was slightly lower—53%. The carcass grades of lots I and II were the same, the lambs from lot III lower.

This feeding trial confirms that IXL almond hulls can satisfactorily be substituted for half the barley in a lamb fattening concentrate mixture. The less fleshy almond hulls of the Mission almonds were of less value than the thicker hulls from the IXL variety.

Digestion Trial

Additional evidence as to the feeding value of the two types of almond hulls was obtained by conducting digestion trials with lambs. With three lambs, the digestibility of the alfalfa was determined and then in two succeeding tests, the animals were fed rations containing 50% alfalfa and 50% of each type of almond hulls. The digestibility of the almond hulls was obtained by difference.

The nitrogen-free extract portion of the hulls was very digestible. Based on 90% dry matter content, the total digesti-

ble nutrients for IXL hulls was about 72%. This is comparable to the value of 78.7% for Pacific Coast barley. The digestible protein content of the hulls was negligible.

The feeding trial finding of a lower value for the Mission hulls was confirmed by the digestion tests. The total digestible nutrients were only about 53%. Thus the Mission almond hulls only furnish slightly more energy than alfalfa hay, which has a total digestible nutrient value of 50.3%. The digestible protein was again negligible.

These trials indicate that almond hulls are a satisfactory feed for ruminants when fed in combination with such feeds as barley and alfalfa hay. The hulls should be properly dried and fed in combination with feeds that will compensate for the lack of protein in the hulls.

Results from the two varieties used in the trials indicate that there may be considerable difference in feed value among almond hulls. The thick, fleshy type of hull is preferable for livestock feeding.

William C. Weir is Assistant Professor of Animal Husbandry, University of California College of Agriculture, Davis.

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Hulls covering almonds before being removed by a special machine.

