

## Research Roundup: Almond Hull Usage on California Dairies

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We surveyed members of the California chapter of the American Registry of Professional Animal Scientists (ARPAS) to better understand almond hull usage in dairy rations.

**Why almond hulls?** Almond production in California for 2018 is estimated to be 2.3 billion pounds of kernels (nuts). On average, crop yield is made up of 27% nuts, 19% shells, and 54% hulls. For the 2018 crop that will translate into 4.6 billion pounds of almond hulls, much of which will be fed to dairy cattle. The acreage of almond orchards is increasing so the future is, more and more almond hulls. Anatomically, if you think of a peach, the flesh part of the peach that is eaten is the hull of the almond. Almond hulls are low in crude protein, but they are high in sugar, which makes them an excellent source of energy for lactating dairy cattle. We are working with the California Almond Board to evaluate the quality of almond hulls produced in California as well as how much almond hulls can be fed in lactating cow diets.

An electronic survey was emailed to the entire California ARPAS membership list. Forty-two surveys were returned by 40 nutritionists and two feed suppliers. Total number of potential returned surveys is hard to gauge, as an unknown percentage of ARPAS members do not formulate rations. Selected results are presented below.

Table 1. Amount of almond hulls fed in lactating cow rations.

	Avg. lbs/day/cow	Maximum lbs/day/cow	Maximum % a. hull in diet
Minimum	1	2	0.8
Maximum	10	18	30.0
Average	5.1	10.2	15.3
STD	1.6	2.9	5.8

The majority of respondents considered almond hulls both a forage and concentrate (n=30), as compared with solely a forage (n=12) or concentrate (n=0). How almond hulls were viewed in the ration did not change when asked about different breeds (Holstein vs. Jersey). When formulating growing rations, almond hulls were treated as both a forage and concentrate (n=26), compared with solely a forage (n=12) or a concentrate (n=4), and responses were similar for dry cow rations (both = 26, forage = 13, concentrate = 3). Most respondents (62%) said that changes in almond hull price affected how the hulls were used in the ration formulations.

Sixty-seven percent of respondents expressed concerns when feeding almond hulls to lactating cows; the most commonly expressed concerns were quality related to the amount of stick and shell contamination. This contamination contributed to concerns about consistency of the hull product. Only 20% of respondents did not test almond hulls, while frequency of testing for the remaining 80% varied from every load, to once a year, to only when problems arise.

You will hear more about our almond projects in future issues of the California Dairy Newsletter.