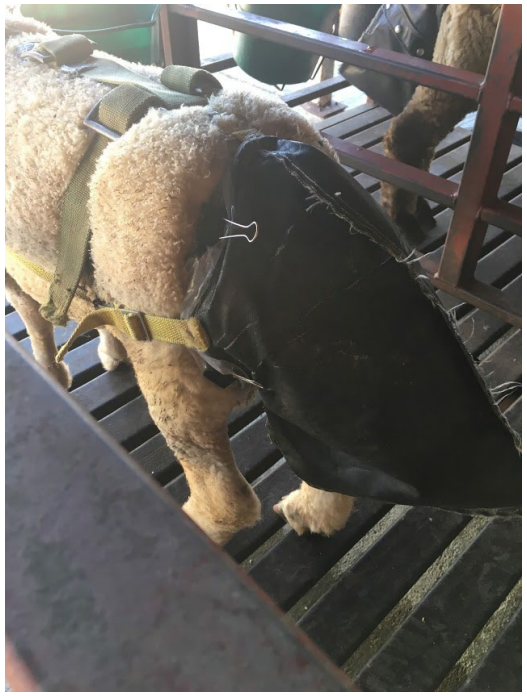
Development of New Alfalfa Products in Combination with Almond Hulls for emerging Domestic and International Markets

KATHERINE SWANSON, MAIA ZACK, ED DEPETERS, AND DAN PUTNAM

UNIVERSITY OF CALIFORNIA, DAVIS

Objective: To measure the forage quality characteristics and digestibility of various combinations of alfalfa-almond hull mixtures in cubes utilizing laboratory techniques and sheep studies to develop innovative products centered upon alfalfa.

Mixes of 4 qualities of alfalfa with 0, 25, 50, 75, or 100% almond hulls



In vitro results

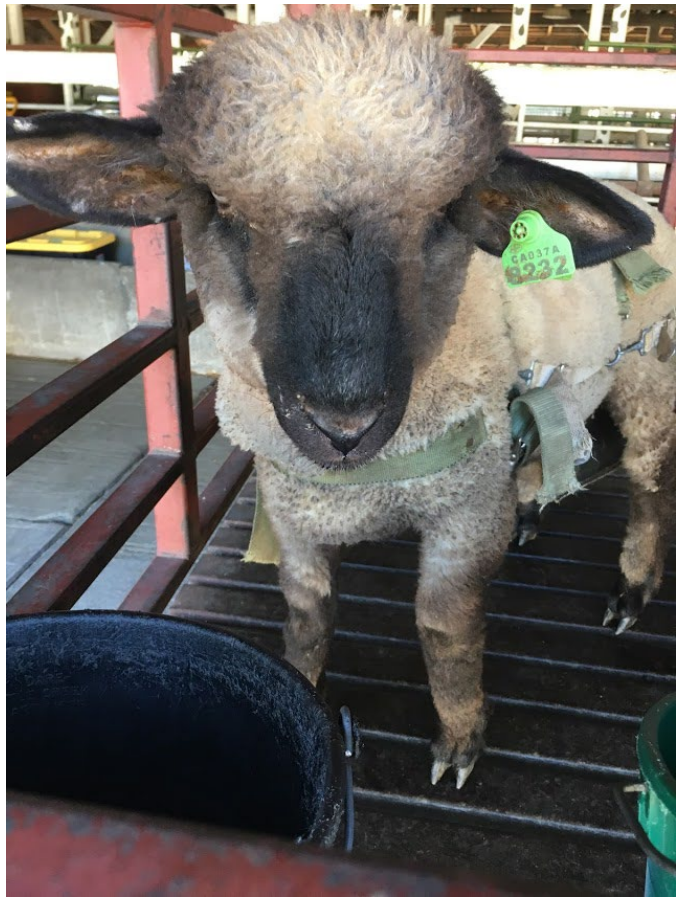
Alfalfa Quality	AH %	24hr ml/g gas	ME (MJ/kg)	Daisy DMD 24hr	Daisy NDFD 24hr
None	100	294.8	10.5	67.0	26.8
High	75	277.3	10.4	62.4	32.5
	50	271.9	10.6	57.0	29.8
	25	262.5	10.8	56.5	37.7
	0	240.5	10.5	56.4	37.4
Medium	75	283.8	10.5	60.6	27.3
	50	268.2	10.2	54.1	25.6
	25	243.7	9.9	51.6	28.7
	0	231.8	9.8	49.1	32.6
Low/ Medium	75	280.0	10.3	64.4	31.0
	50	266.2	10.3	56.2	23.1
	25	240.0	9.7	53.6	32.4
	0	224.4	9.6	52.1	29.4
Low	75	268.8	9.9	61.2	22.3
	50	246.9	9.4	52.9	15.2
	25	225.5	9.0	49.6	25.0
	0	195.9	8.3	44.4	26.9

Sheep Study Results

	0% AH	10% AH	20% AH	40% AH	SE
% Digestibility					
DM	59.5^{a}	62.9^{b}	61.7^{b}	61.3^{b}	0.65
OM	60.9^{a}	64.1^{b}	62.3^{a}	61.5^{a}	0.66
CP	70.8^{a}	72.1^{a}	67.6^{b}	55.6^{c}	0.83
ADFom	45.8^{a}	43.0^{a}	39.1^{b}	34.8^{c}	1.13
NDFom	44.7^{a}	42.8^{a}	38.9^{b}	36.6^{b}	1.38

$^{a\text{-}c}$ Different lettered superscripts denote significant differences in averages ($p<0.05$) for each nutritional component.

Overall this research suggests that mixing low amounts of almond hulls with low to medium (e.g. 38-48% NDF) quality alfalfa hay could be beneficial by increasing the overall dry matter and crude protein digestibility with only slight decreases in fiber digestibility.



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