

Use of Alternative feedstuffs in Cow Calf Operations

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Energy
Dry Matter
Protein

Corn

- \$180 to 205/ton –whole
- Feeders
- CP 9.8%
- TDN 89%
- 1 lb. corn-Spare 2 lbs of alfalfa and 3 grass
- Management
 - 2-week step-up period
 - Whole corn
 - A minimum of 30 inches of linear bunk space per cow
 - Feeding an ionophore
 - Feed cattle at the same time every day

Cost of energy (TDN) for cattle based on hay price, corn price and hay quality.

Ton	Corn \$/Ton of TDN	Low Quality Hay ^a \$/Ton of TDN	Avg Quality Hay ^b \$/Ton of TDN
50	56	109	93
60	66	130	111
70	78	152	130
80	88	174	148
90	100	196	167
100	110	217	185
110	122	239	204

^a46 percent TDN

^b54 percent TDN

When low quality grass hay can be purchased for \$50 per ton, the cost for energy from corn would be approximately equal when corn is priced at \$100 per ton. In the case of the high quality hay example, energy from corn would cost the same at approximately \$85 per ton.

Corn to Spare Hay

Ingredient	Gestation	Early Lactation
	----- Lbs. Per day, as-fed basis -----	
Grass Hay ^a	6	6
Corn Grain	9.0	12
Protein supplement (38-44%)	2.0	3
Limestone ^b	.2	.25

^aHay = 89% dry matter, 5% crude protein and 48% TDN. Quantity of hay fed daily can be gradually reduced to around 4 pounds if whole shelled corn is fed. If processed corn is fed, begin feeding .75% of body weight and gradually reduce to .5%.

^bLimestone is a calcium source and is not required if protein supplement contains at least 2.5% calcium.

Rice Bran

- Brown to white rice- polished
- \$160 to 200/ton
- CP 14%
- TDN 76%
- Phos 1.67%
- Fat 13%
- More than 20% - fiber digestion
- Rancid in warm weather

Rice Bran - Supplement

- Salt to control intake
- 50% to start
- Salt increases water consumption

Almond Hulls

- Depends on what is sent – shell, trigs
- CP - 4.2
- TDN - 54
- \$135-145/ton
- Electric fence and move each day

Canola Meal

- Trans fat and biodiesel
- Canada Unit trains
- Pellets
- Jan 7 price \$368 Portland
- 4-8% dairy rations

	TDN	NE-L	CP	Fat	ADF
Canola Meal	75	0.77	39	3.9	19

Roughages

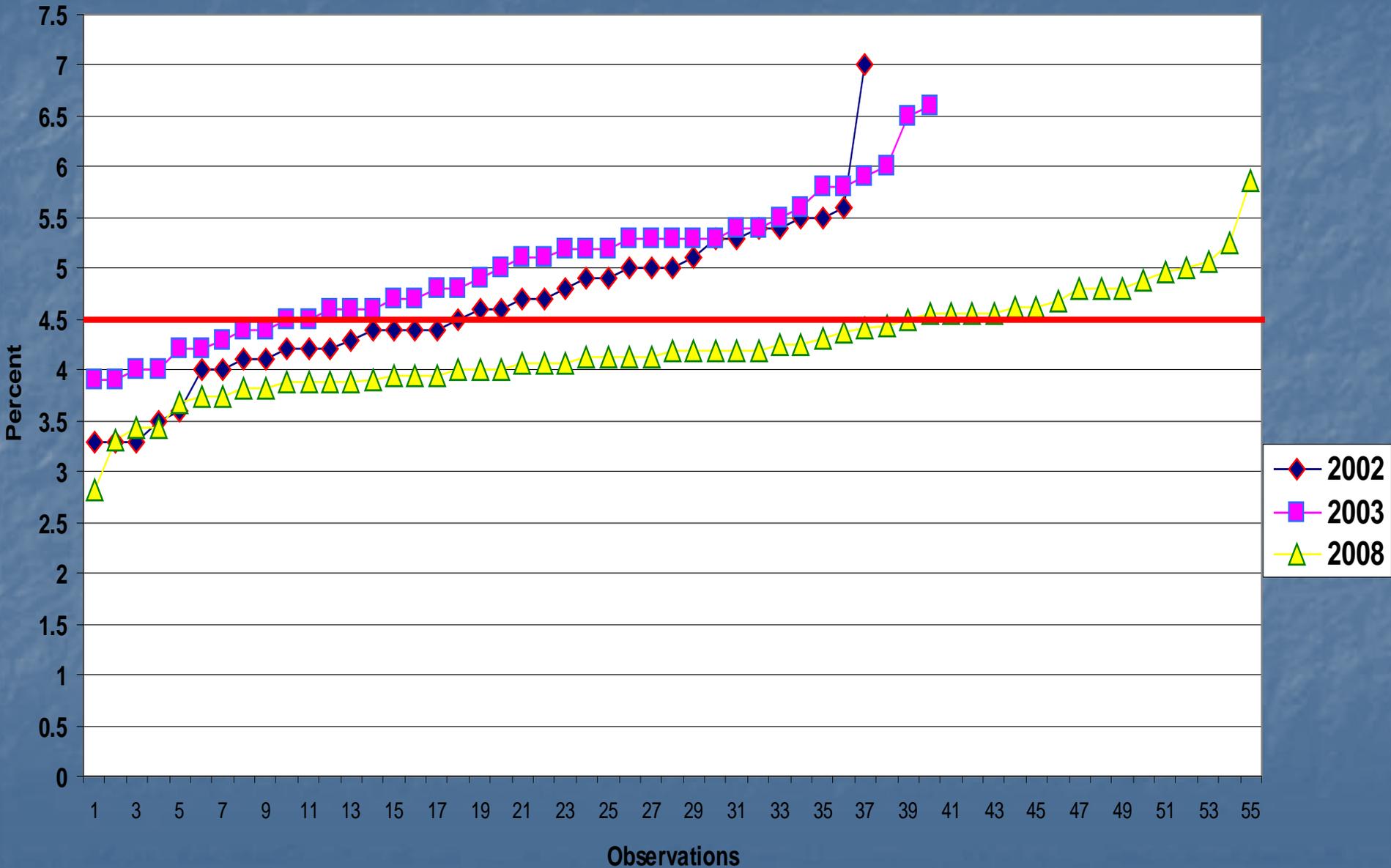
Cull Fruits and Vegetables

- High moisture - limit nutrient content
- Seasonal supply
- Summer squash
- Ag bag

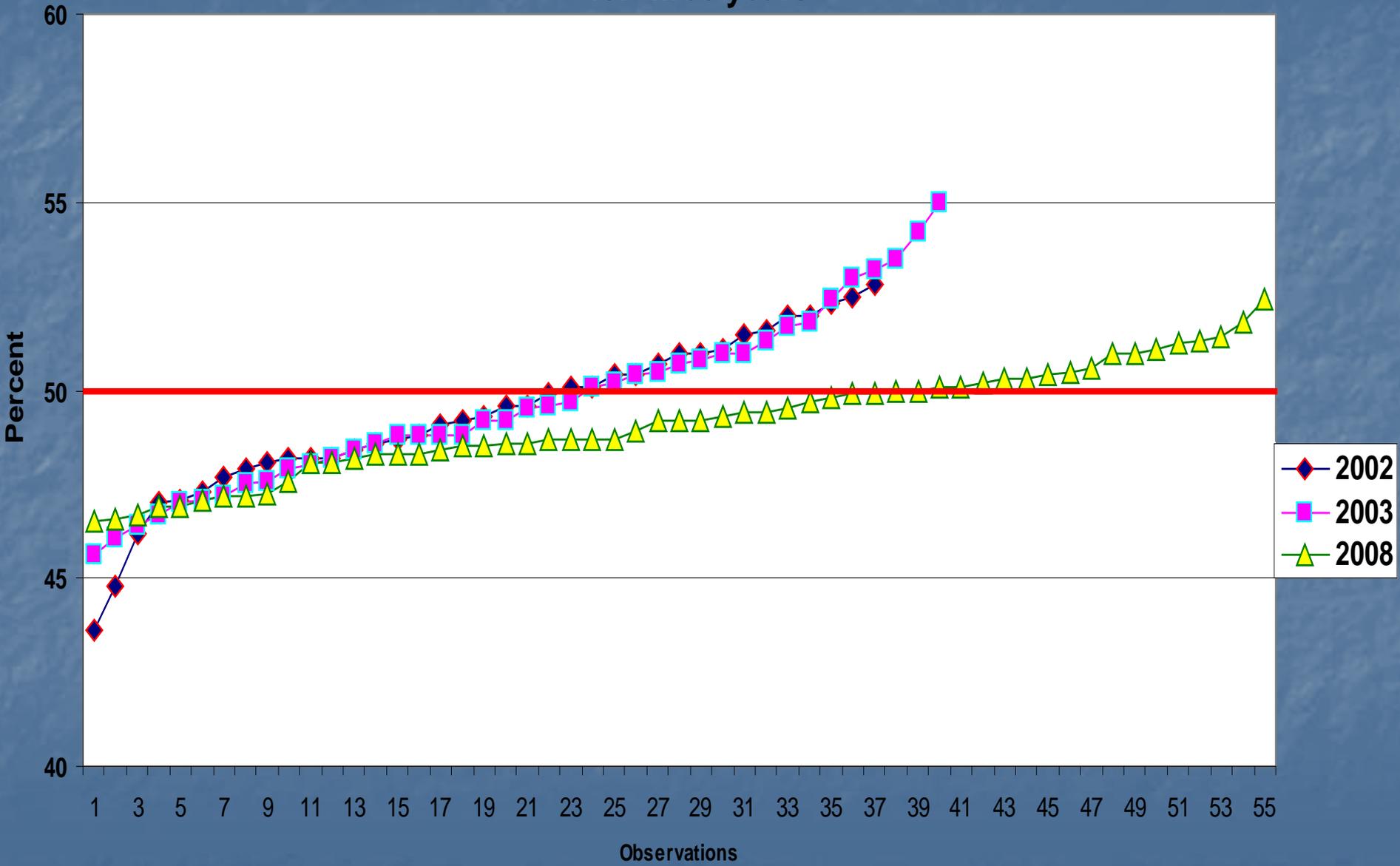
Rice Straw

- Lab testing
- Minimum criteria
 - ADF – 50 or lower
 - CP 4.5 or higher
 - 10- 13% moisture (Not Dairy)
 - Only **31.4** percent of samples met these guidelines
- <http://www.ricestrawmarket.org/>

Crude Protein of Rice Straw for three years



ADF of Rice Straw for three years





Feeding Rice Straw to Cattle

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Feed is the largest single cost of producing beef. Producers who have access to alternative feeds often have economic advantages due to the lower costs of production. However, alternative feeds can present challenges due to variable consistency, variable supply, potential toxicants, and unusual composition. Rice straw, a by-product of the rice grain industry in Northern California, is a potential alternative feed for cow and calf producers. Increasing regulations and restrictions on burning rice straw has stimulated interest in using it for other purposes, including cattle feed.

Because rice straw has limited nutritive value (low crude protein and digestibility), it should be used only as a replacement for part of the forage in a ration. It should not be used as a complete ration. Studies of feeding rice straw have shown mixed results, depending on the quality of the straw and how it was used in the ration (see Garret 1978; Garrett and Dunbar 1992; Hull et al. 1972; Nader 1999, 2000; Nader et al. 1998). Poorer animal performance has usually occurred when rice straw was the only feed.

KEYS TO MAKING RICE STRAW WORK IN YOUR CATTLE FEEDING OPERATION

- Make sure the rice straw was baled within 10 days of harvest.
- Test the rice straw for crude protein and ADE preferably before purchase.
- Determine what other feeds or supplements will have to be provided to meet the nutritional needs of animals.
- Compare costs of feeding options or alternatives.



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Management by rice growers to produce higher-quality rice straw permits cattle producers to use rice straw as a feed. In this way, straw, a by-product for the rice grower, does not become an air-quality hazard when burned and is converted instead into high-quality human food.



- UC Peer Reviewed
- 18 pages
- Online <http://anrcatalog.ucdavis.edu/pdf/8079.pdf>

Rice straw

- Order in July

Corn Stover

- Limited corn production this year
- Feeders
- Varies in value
 - CP – (3.7 to 5.2)
 - TDN - (49 to 54)
- Dirt
- Nitrates



Equipment that compresses cobs, husks and leaves into bales, such as this Challenger system from AGCO, are the newest option for biomass harvest.

Corn Stover or Stocks

NO3-N ->1500 to 4500= Caution

Corn Stover Analysis Results

	DM	CP	TDN	NO3-N
1	85.8	3.7	53.4	
2	82.1	4.5	52.5	1270
3	84.6	5.1	54.3	1560
4	77.8	5.2	49.8	750
5	84.8	3.9	55.2	705
Average	83.02	4.48	53.04	1071

all results are reported on a Dry Matter basis

Almond Shell

- Low digestibility
- Impaction problems
 - Green grass
 - Prune pumice

Bean Straws

- Higher protein (6-10%)
- Baled dry – sticks and power
- Cows adapt to eating it
- Some on drip beds – soil compaction

Comparison

	<u>Crude Protein</u>	<u>ADF</u>	<u>Ash</u>
Corn Stover	5.9	46	5.8
Rice Straw	4.5	48	16.6
Lima Bean Straw	7.6	39	9.3
Wheat Straw	3.6	52	7.2
Kidney Bean Str	9.9	43	10.4

Source - By-Products and Unusual Feedstuffs in Livestock Rations Western Regional Extension Publication, No. 39

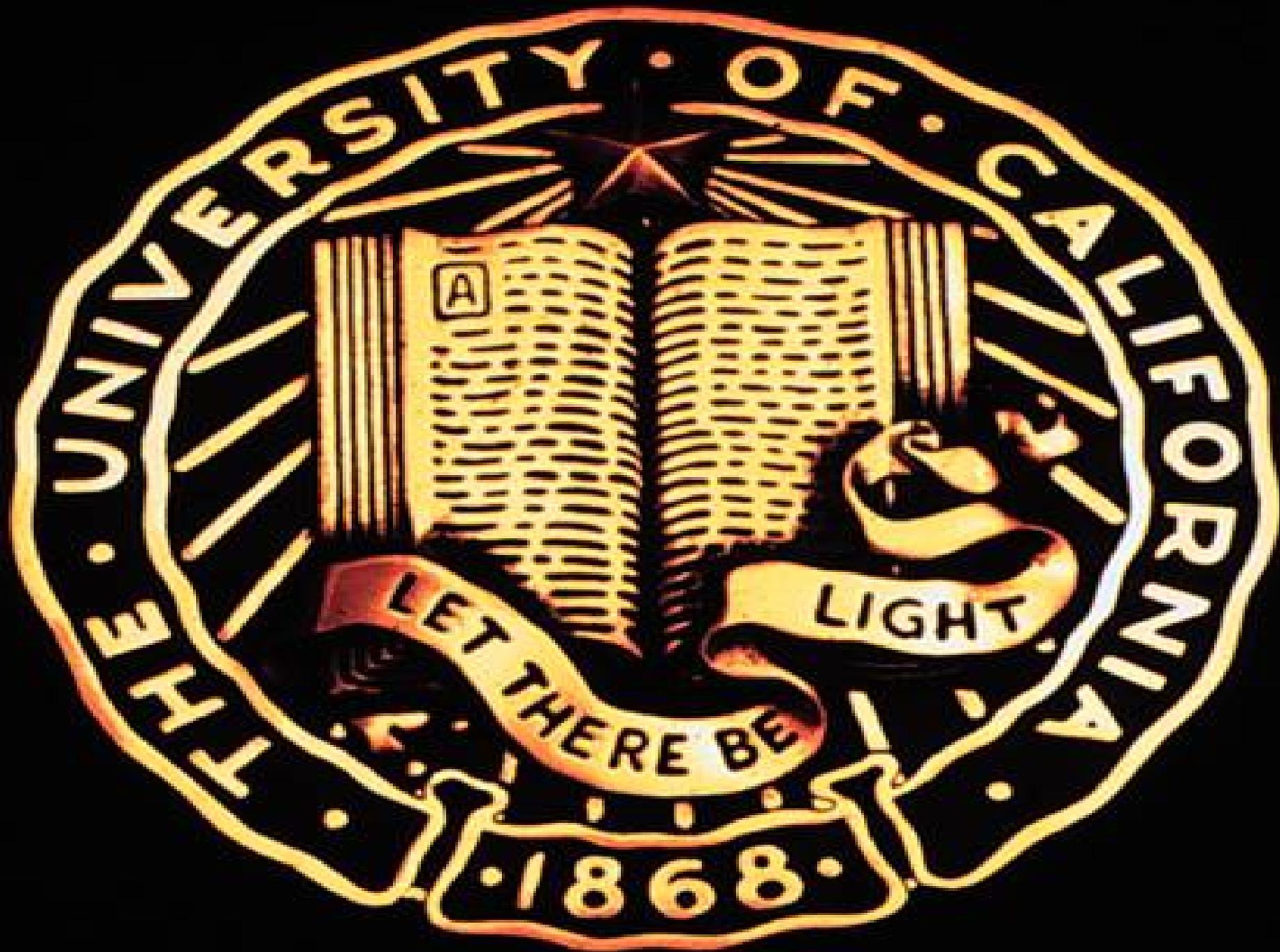
Alfalfa

- Perfect protein supplement
- Feed every other day
 - Maintain constant rumen protein levels
- Price against supplement
 - Labor

Rice Straw Haylage

- 50-60% moisture bale
- Snow peas

*By-Products and Unusual
Feedstuffs in Livestock Rations.
Western Regional Extension
Publication No. 39, October 1980.
22 pages*



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