Food Systems Resiliency Spotlight Series Webinar #10

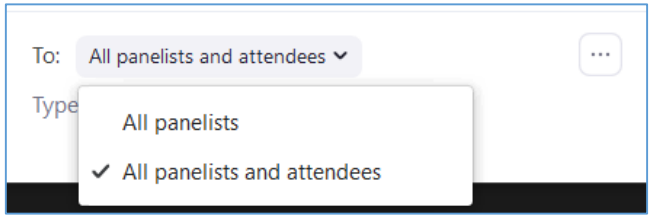
Please review the details about how everything will work today until we begin at 10:00 AM.

- ❑ This event will be recorded for educational or promotional use by the University of California.
- ❑ You will be muted throughout to prevent background noise.
- ❑ **Use the "Chat" for non-question conversations or comments.** Be sure to change the "To" if needed to ensure your Chat is sent to those who you want to send it to.

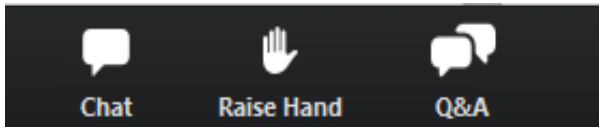
  Options:

  "*All Panelists*" if want to send a Chat only to the speakers

  "*All Panelists and Attendees*" for everyone to see your Chat message



- ❑ **Please post your questions** in the "**Q&A.**" Questions will be addressed at the end of the program.



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Food Systems Resiliency Webinar Series

UC ANR Strategic Initiatives joint effort to **reimagine** our food system

Processing

Production

Accessibility

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Food Systems Resiliency Series objectives:

Tour different parts of the Food System to:

- ❑ Improve knowledge and understanding
- ❑ Identify and share available existing electronic information (resource kits)
- ❑ Identify information gaps

Jennifer Heguy

Dairy Advisor in Stanislaus, San Joaquin and Merced Counties

Ed DePeters

Professor, Animal Science Dept., UC Davis

Josh Davy

Livestock and Natural Resources Advisor, Tehama County

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California Cattle – Sustainability in Action!

Jennifer Heguy – UC Cooperative Extension Farm Advisor
Merced, Stanislaus & San Joaquin Counties
County Director, Stanislaus

Food Systems Resiliency Spotlight Webinar Series , November 24, 2020, ***Virtual***

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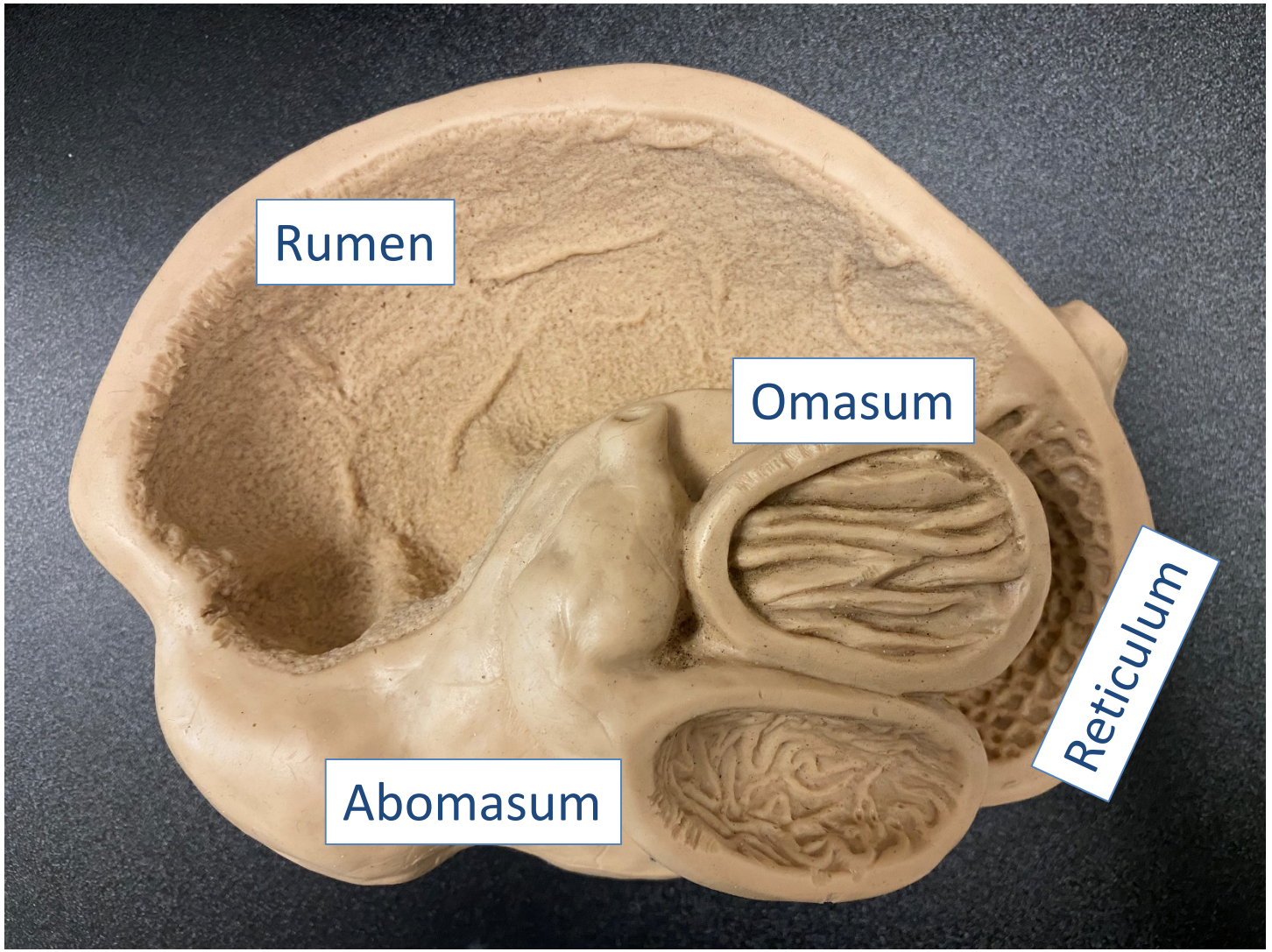
Ruminants


Rumen
Omasum
Reticulum
Abomasum

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By-Products

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Nutrition Facts

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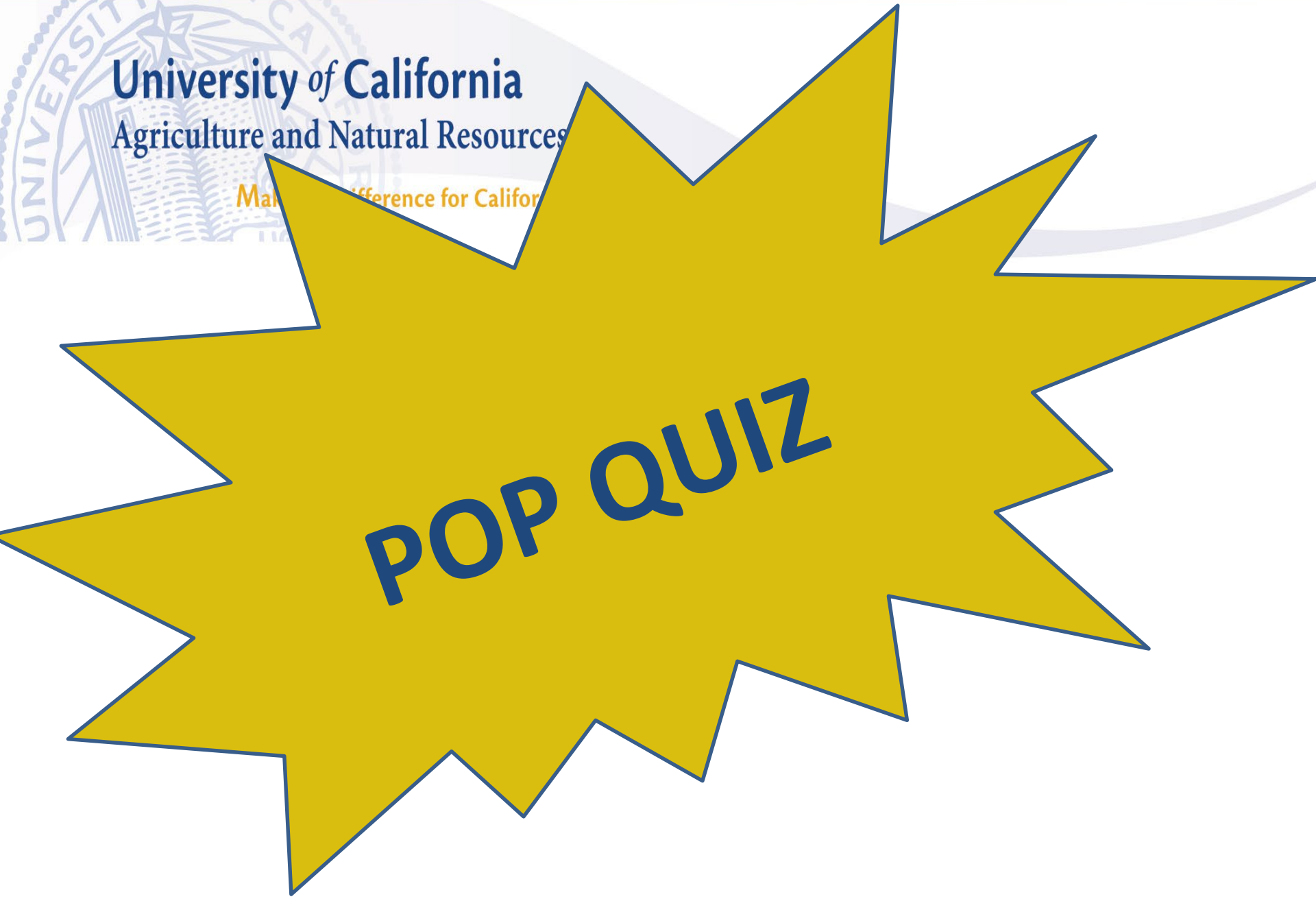
Mak ifference for Califor



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What Am I?

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What Am I?

Dried Distiller's Grains

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What Am I?

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What Am I?

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What Am I?

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Thank You!

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UC CE University of California Cooperative Extension

Food Systems Resiliency Spotlight Webinar Series , November 24, 2020, ***Virtual***

Almond Hulls Composition & Feeding Amounts

Ed DePeters

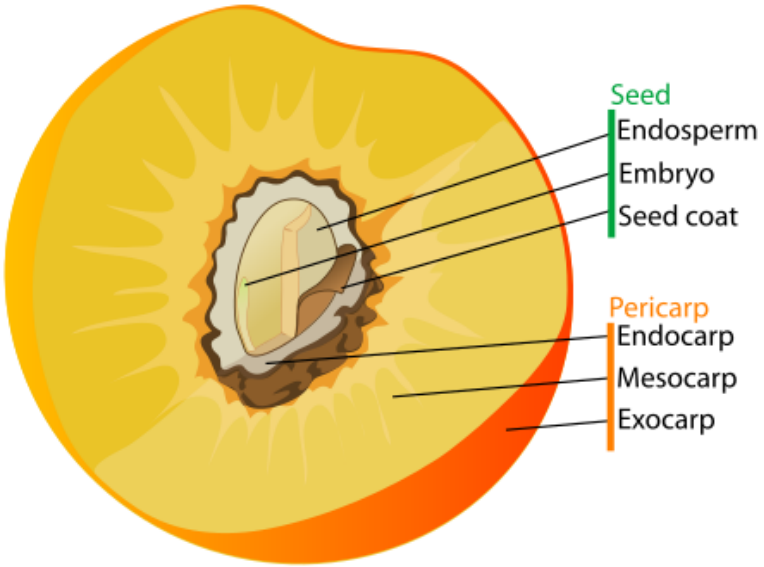
Animal Science Department

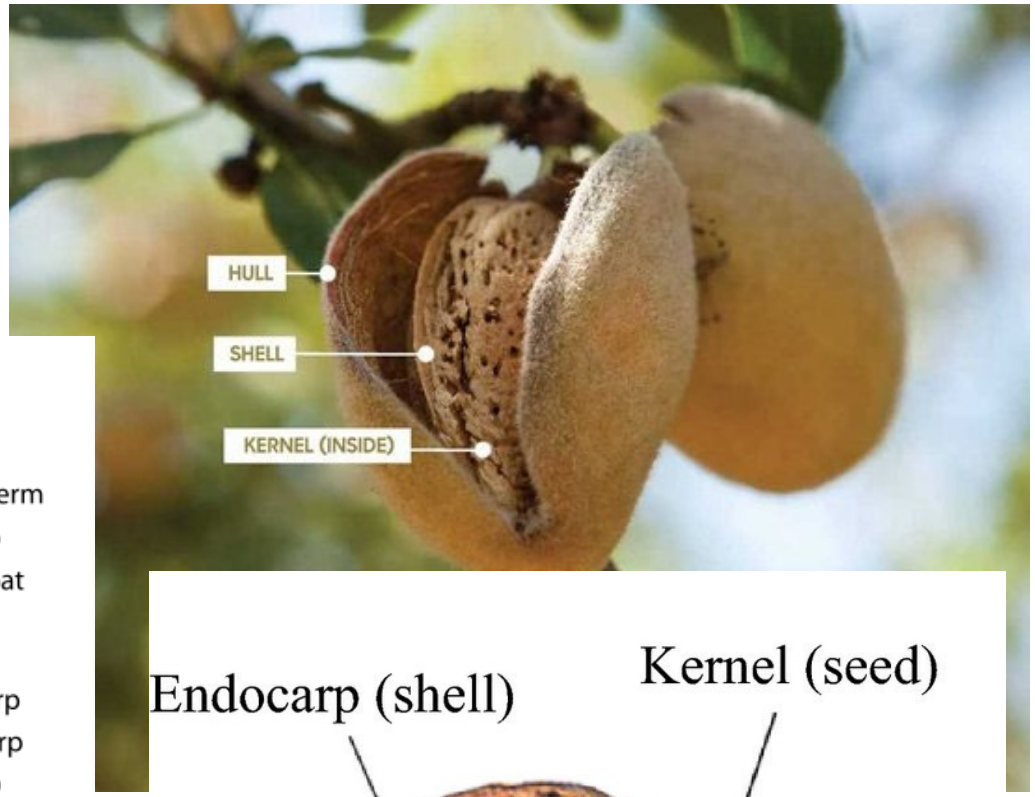
University of California at Davis

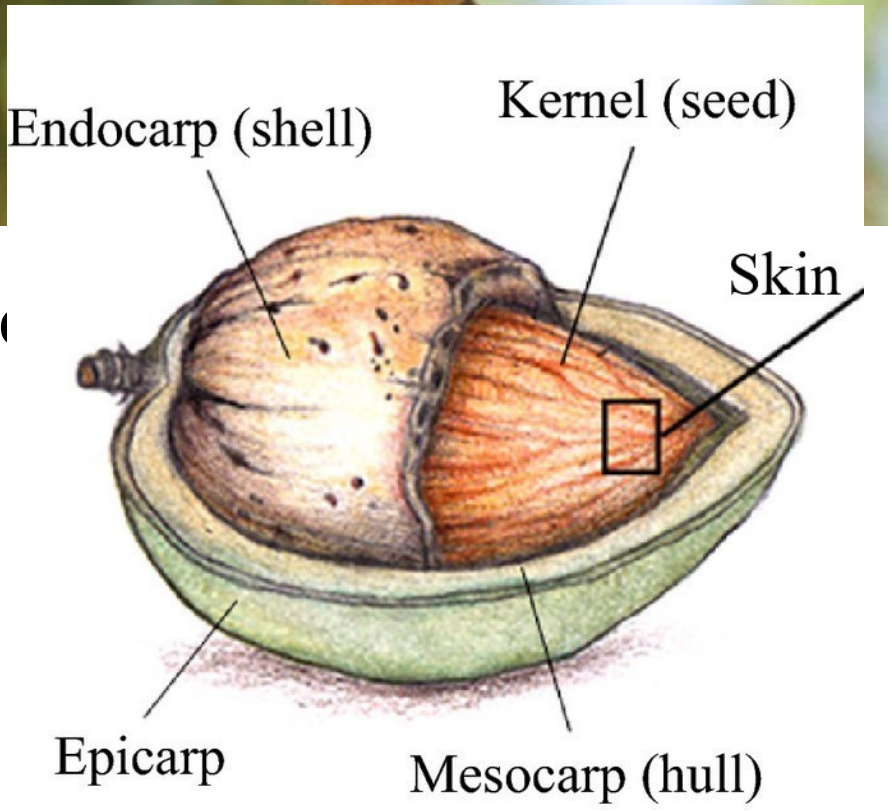
Team Effort

- Almond Board CA, BioMass
  (Mr. Guangwei Huang & Dr. Karen Lapsley)
- Jed Asmus, January Innovations (ARPAS)
- Jennifer Heguy, UC Cooperative Extension (ARPAS)
- UC Davis
  - Hannah Bill (technician)
  - Katie Swanson (postdoctoral)
  - Staff at Dairy Facility & Feed Mill
  - Student Interns

Almond Hulls (AH)



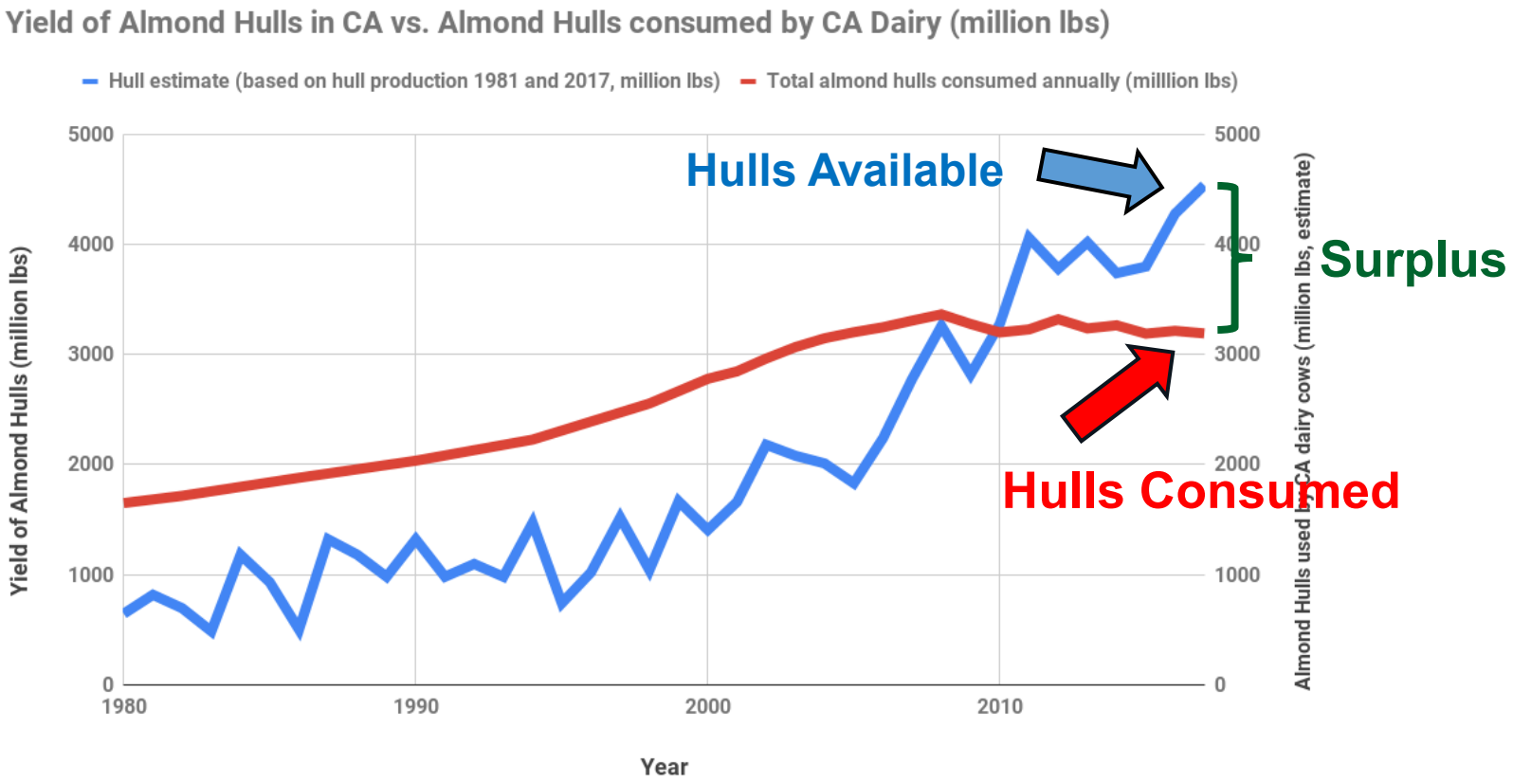




Rosaceae that is related to peaches & cherries.

- Hull is anatomically similar the peach we eat.

Projected AH Quantity & Dairy Cow Consumption



Milk cows in CA fed 5 lb As Fed almond hulls
2017: 2.44 million Tons of hulls!!

Objectives

- (1) Evaluate feeding **high amounts** of almond hulls (AH) to lactating cows.
- (2) Determine the impact of foreign debris, **shells and sticks**, on quality (chemical composition & digestibility). *"Variability"*

Lactation Study

- 12 lactating Holstein cows
- Treatments: 0, 4, 8, or 12 lb AH/cow daily
- Production performance:

milk yield

milk composition

feed intake & digestibility

AVG = 5 lb AH/cow

Composition of Almond Hulls

High Sugar
High Fiber
Low Protein

Item	Mean	SD	Minimum	Maximum
% Sugars (H_2O)	34.7	2.24	31.8	37.2
% Sugars (EtOH)	32.0	2.16	29.7	34.1
% Fiber (CF)	14.9	1.77	13.8	17.5
% Fiber (NDF)	23.8	2.04	22.2	26.6
% Protein	4.5	0.24	4.2	4.7

Almond hulls:

- excellent source of digestible carbohydrate (sugars) – energy for cow
- good source of fiber – rumen function & energy
- poor source of protein

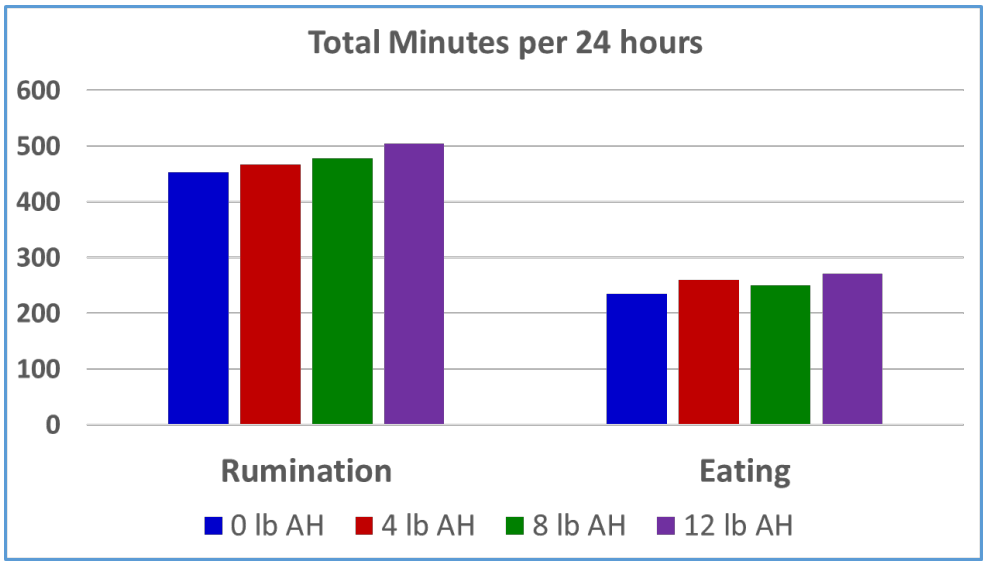
Variation

CF As Is basis = 12.78%

N = 4 samples

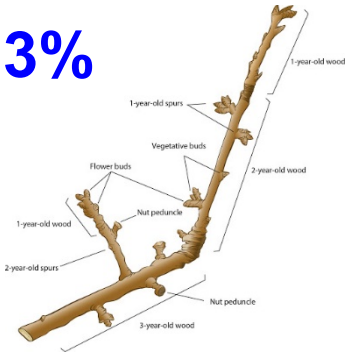
Summary Production

Item (lb/d)	0 lb AH	4 lb AH	8 lb AH	12 lb AH
Feed Intake, lb/d	58.0	60.1	58.1	58.6
Milk, lb/d	85.4	86.5	81.2	82.9
Fat, %	3.81[a]	3.78[a]	3.95[b]	3.97[b]
Protein, %	3.46[a]	3.43[a]	3.35[b]	3.33[b]



Field Weight Yields

13%



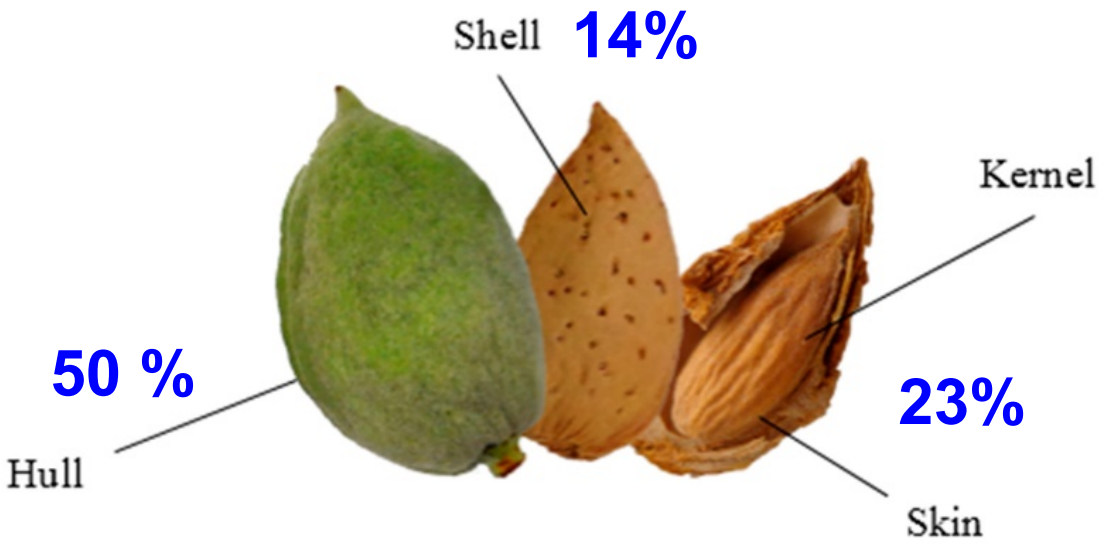


Figure is from Environmental Protection Agency. Food & Agricultural Industry 2017

Commercial almonds hulls contain hulls, sticks & shells

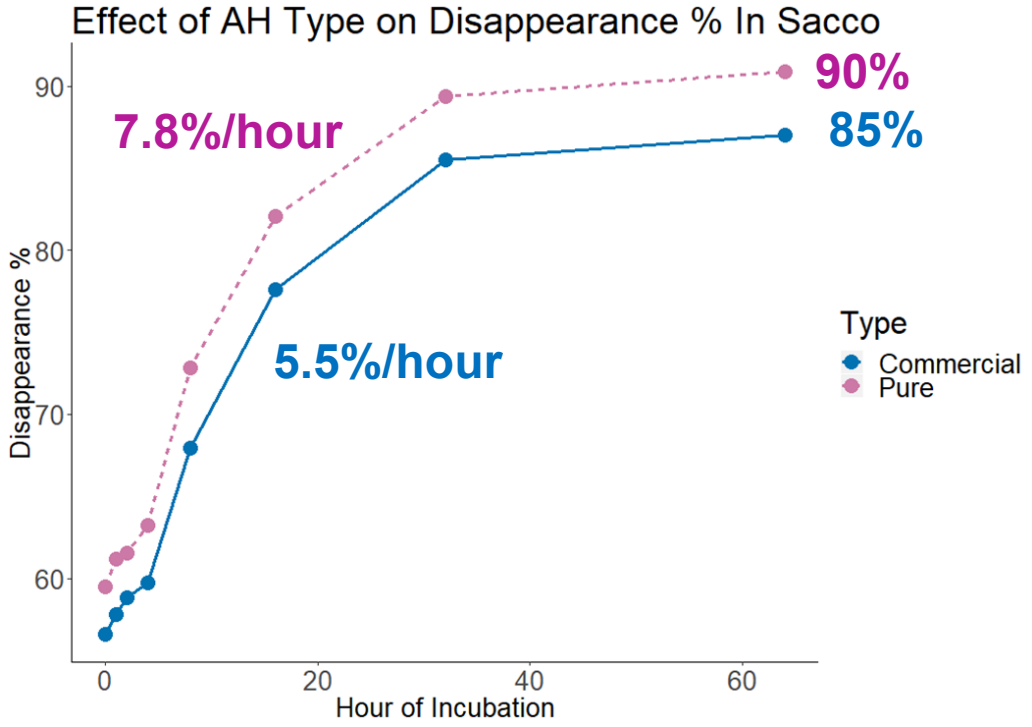
Total Debris (Hulled) = Sticks + Shells

Composition of Total (Commercial) & Pure AH

	Nonpareil		Pollinators	
Item	**Total**	**Pure**	**Total**	**Pure**
% Sugars	32.6	33.6	28.0	29.5
% Fiber (CF AS Is)	12.7	11.0	15.9*	13.2
% Fiber (NDF)	21.4	19.3	25.5	22.1
% Protein	5.1	5.1	5.0	4.9
% Lignin	8.6	7.6	9.7	8.7

Approaches

- **Total AH versus Pure AH**
  - *In sacco* "disappearance" ruminally fistulated cows
  - *0, 1, 2, 4, 8, 16, 32, 64 h*
  - *Rate & Extent of disappearance*



Pure hulls (no sticks & shells) are more digestible – provide more energy to the cow for milk production.

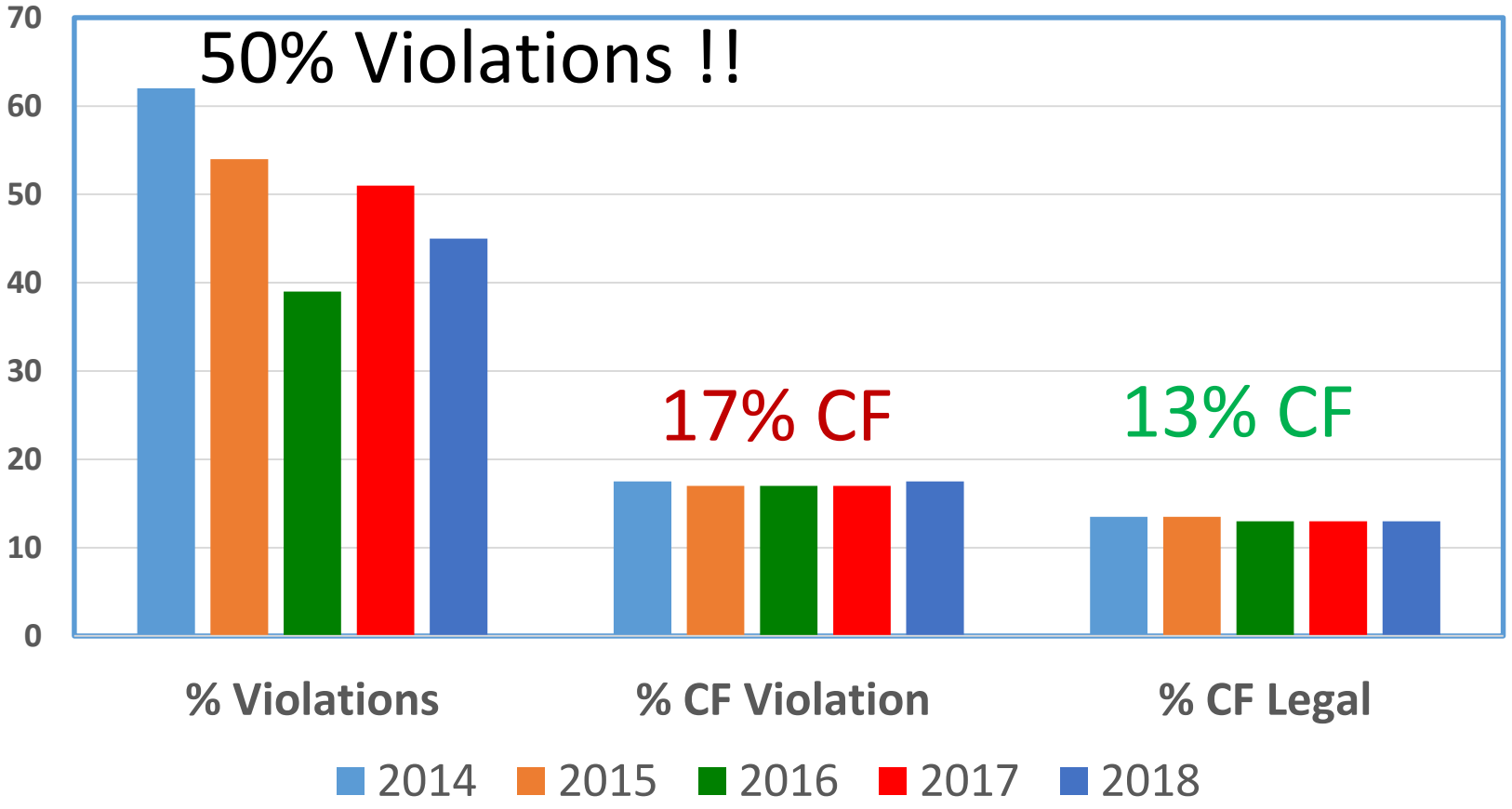
Don’t Guess - Test

Dairy X

Dairy UCD

Violations for Almond Hulls

Almond Hulls are ≤ 15% CF As Is basis



Take Home Messages

1. AH (high quality) can be fed at high levels to lactating dairy cows.
2. Composition – Varies Greatly!!
3. Test the composition of your AH

   "Don't Guess - Test"

4. AH are a byproduct feedstuff. Dairy cows convert the sugar and digestible fiber to milk for humans. Positive relationship between the almond growers and dairy farmers for the benefit of our environment.

THE END !!

Increasing the feeding value of rice straw

Josh Davy - UC Livestock and Range Advisor

Dan Macon

Betsy Karle

Morgan Doran

UC CE | University of California
Agriculture and Natural Resources | Cooperative Extension

The culmination of 3 years

Challenge of the champions

- Wet straw – 50%+ moisture
  - In the past these treatments had increased intake
  - Based on the theory that quality declines as it dries
- Chopping
  - Processing low moisture straw with a flail mower does the work for the cattle
- Ammoniated and chopped straw

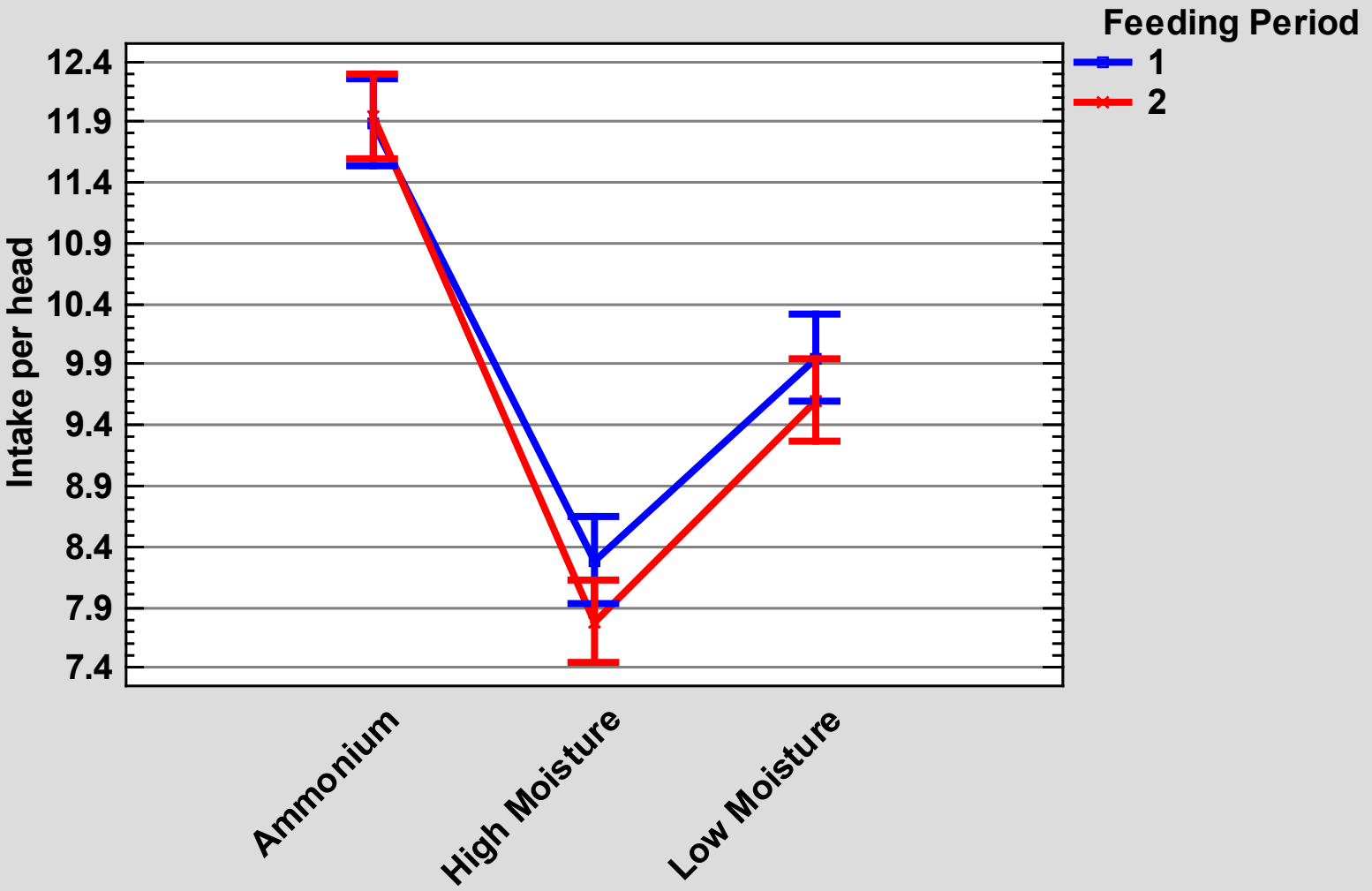
Treatments wrapped

Ammonia – 2% by wt

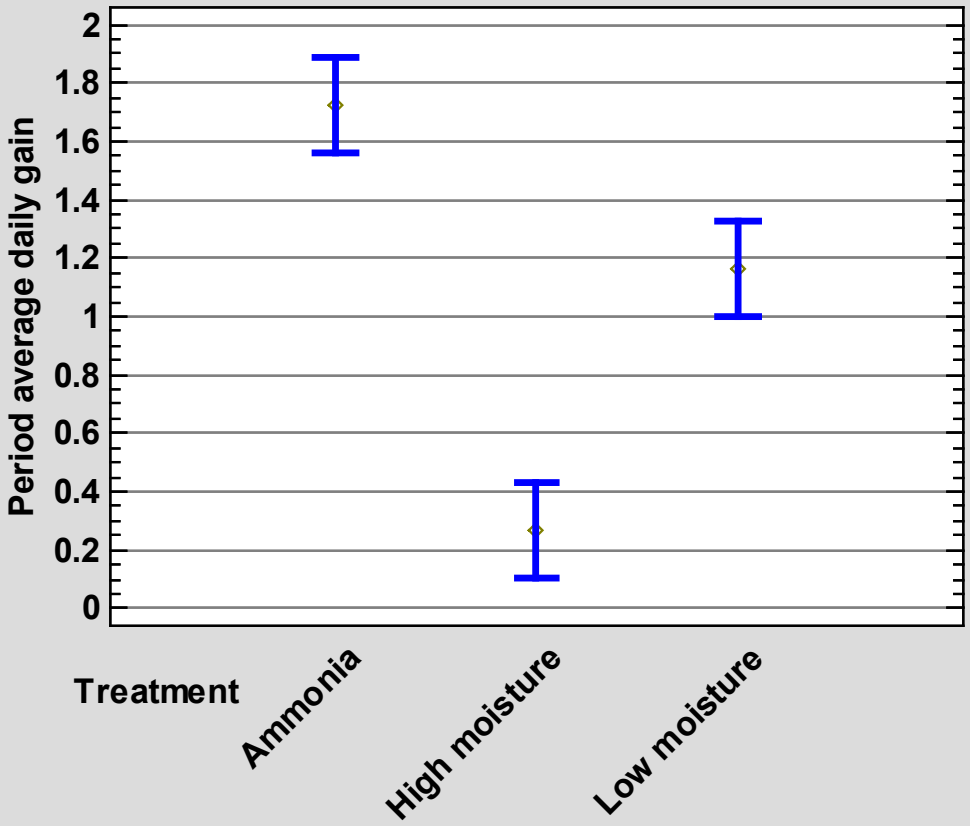
Feeding trial

Height, width, weight

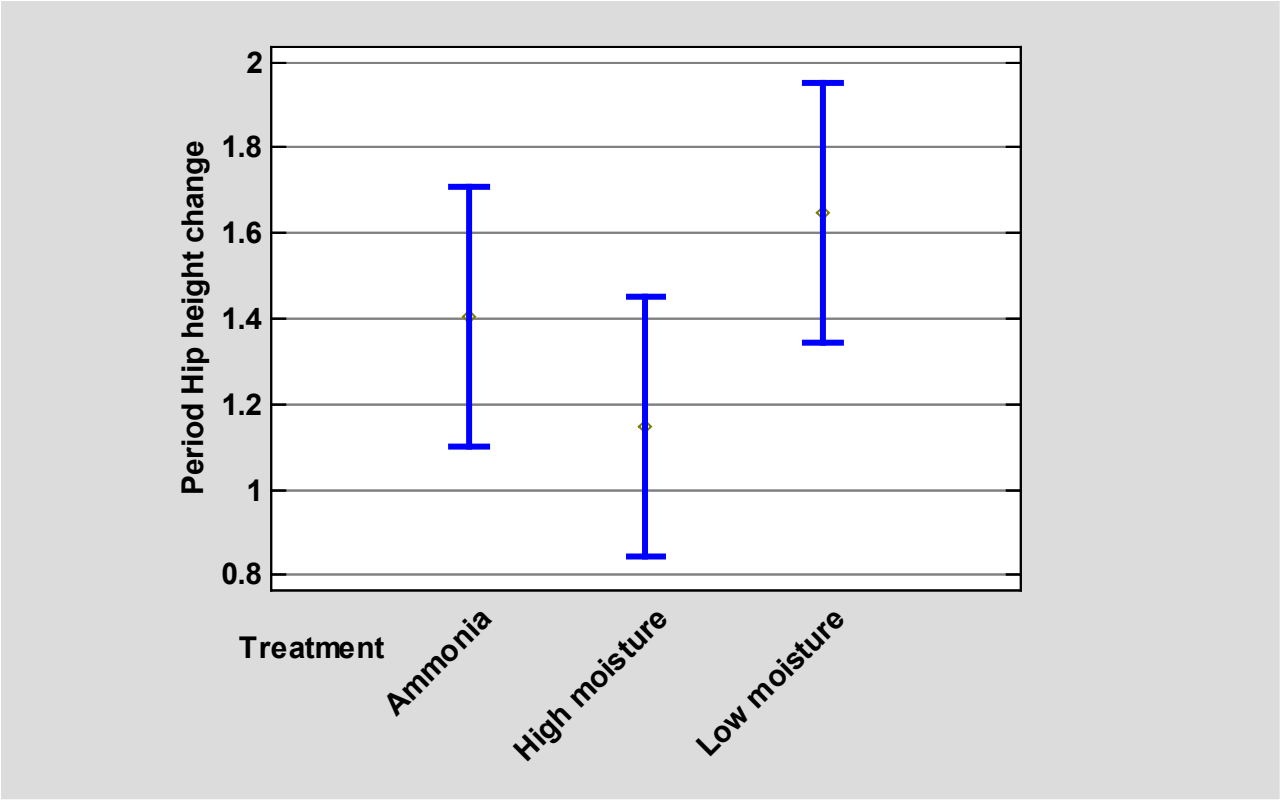
60 day consumption by feeding



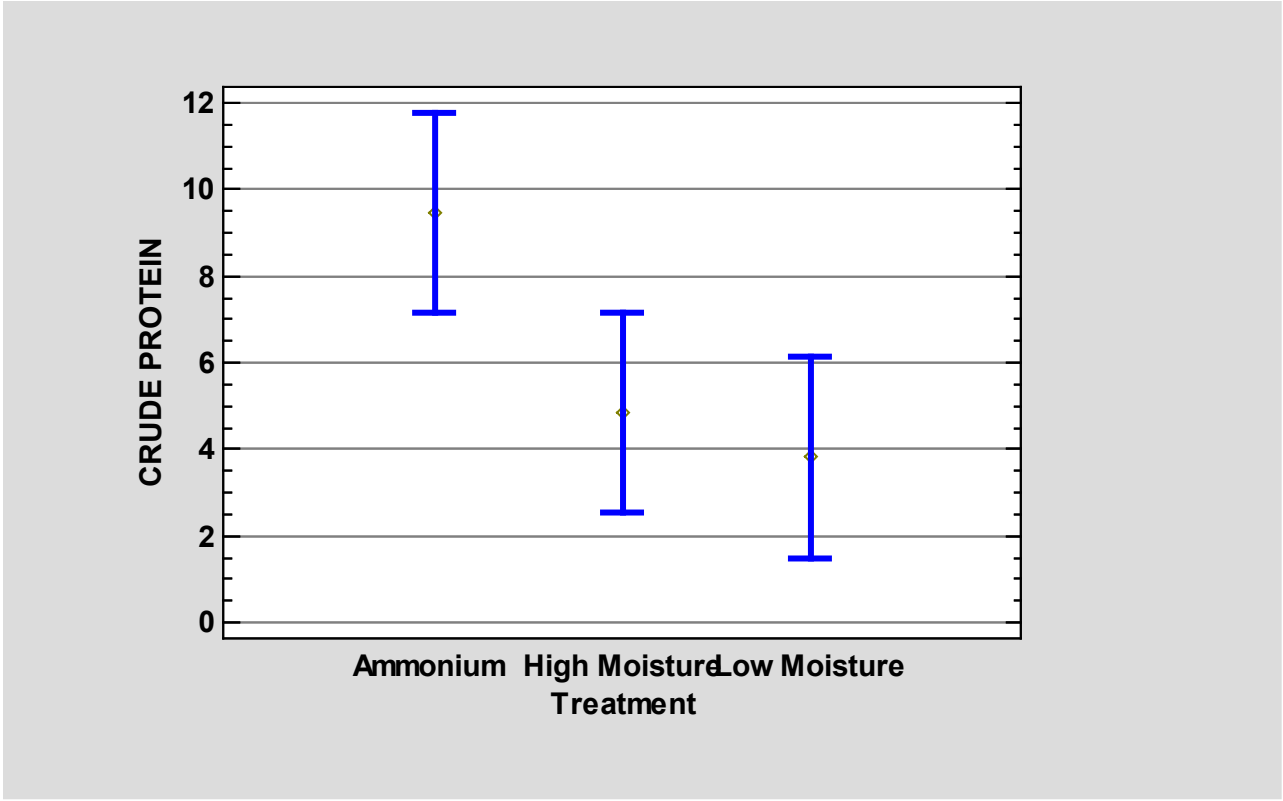
Average daily gain



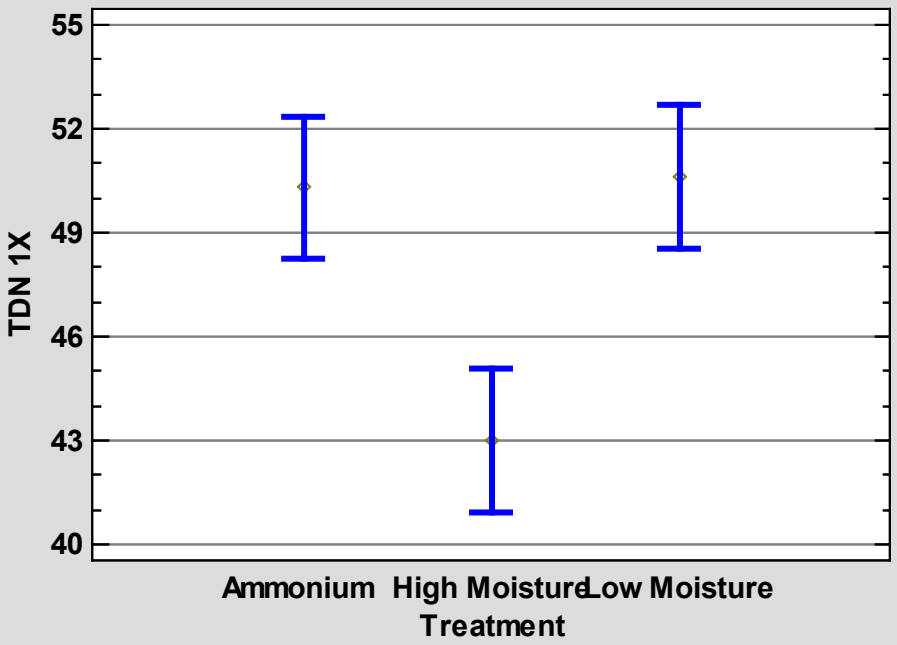
Hip height


Period Hip height change
2
1.8
1.6
1.4
1.2
1
0.8
Treatment
Ammonia
High moisture
Low moisture

Crude protein



TDN


55
52
49
46
43
40
TDN 1X
Ammonium
High Moisture
Low Moisture
Treatment

Unexpected outcome!

Synopsis

- High moisture straw may be more than can be handled…
- Ammonia treatments significantly work after multiple years of testing
  - Move the probe or leave the wrapping loose
- Chopping also seems to help
- Other methods may not amount to a lot of benefit

Open Q & A

Polling question

Did the information provided improve your knowledge and understanding of how ruminants help keep our food costs reduced?

Yes definitely, somewhat, not much, does not apply

Polling question

Were the electronic resources new to you?

Yes definitely, somewhat, not much, does not apply

Polling question

Will you use information from today's webinar with your clientele?

Yes definitely, somewhat, not much, does not apply

With gratitude and appreciation to all who have presented and participated in this series