

# Managing supplemental feed costs



**Dr. Nicolas DiLorenzo**

**University of Florida-NFREC**



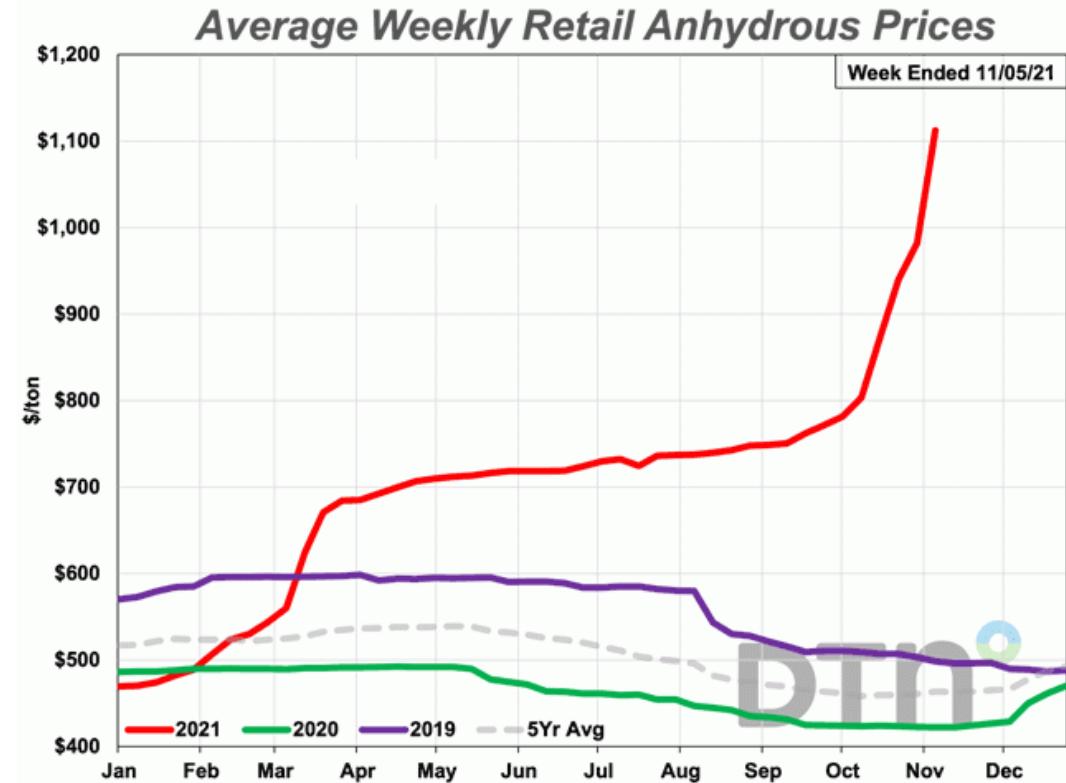
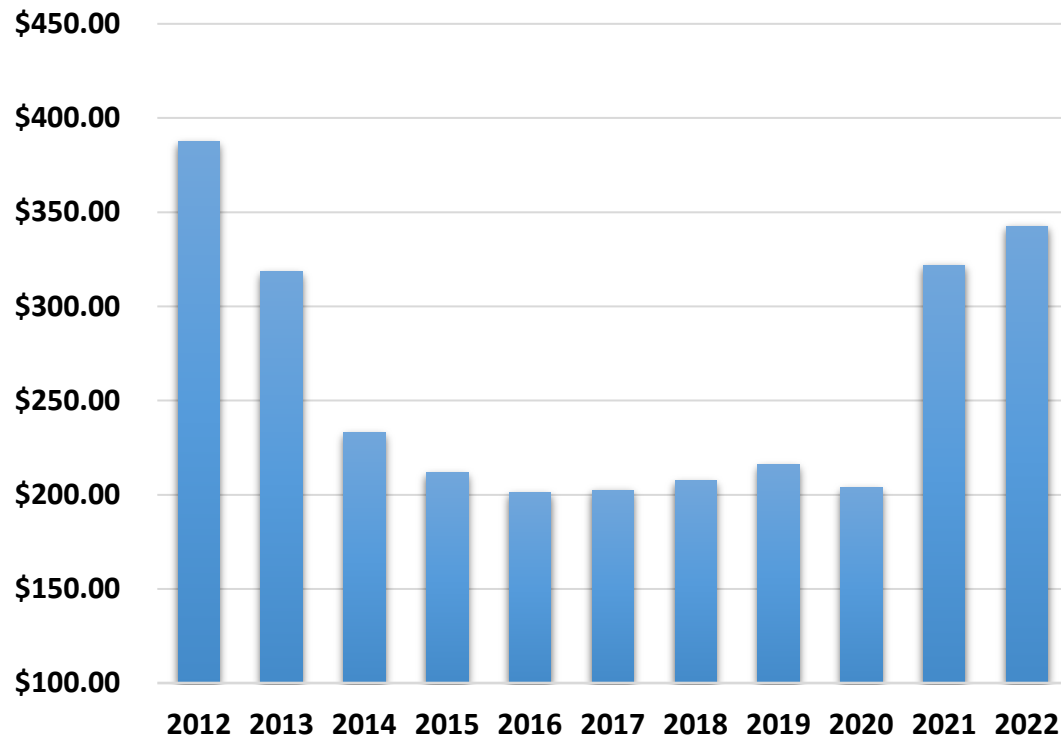
# The most important message today: T.A.N.S.T.A.A.F.L.





# The situation today

Corn \$/ton





# Will cover 3 main supplementation scenarios:

1. Dry/lactating cow
2. Replacement heifer
3. Backgrounding steer
  - Why?
  - Opportunity in North FL?





Key word in this presentation is supplemental feed costs

How much are we providing in the basal diet?



Testing,  
testing,  
testing

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**Upcoming Events**

- Northwest Florida Beef Conference & Trade Show – February 14
- Southwest Alabama Crop Production Meetings – February 15 or 16, 27 or 28
- Fruit & Vegetable Grower Food Safety Training – February 16
- Panhandle Fruit & Vegetable Conference – February 19 & 20
- AgSaveS Workshop to be held in Okaloosa County – February 21
- Application of Advanced Genetic Technology in Beef Cattle Conference – February 22-23
- Escambia County Beef Cattle & Forage Bootcamp – February 24
- Panhandle Satsuma Workshop – February 27
- 2018 Panhandle Row Crop Short Course – March 1
- Mandatory Dicamba Resistant Crop Training – March 16

07/17/2018



# Tools to help develop supplemental programs

## The UF Hay Balancer

	A	B	C	D	E	F	G	H	I	J	K	
1	<b>UF IFAS</b>											
2	UNIVERSITY of FLORIDA											
3	<b>UF Hay Balancer</b>											
4	<b>Summary of diet balance and costs</b>											
5												
6	Shortage/surplus of TDN from hay (lbs/hd/d) =		-1.86		Feed # lookup							
7	Shortage/surplus of CP from hay (lbs/hd/d) =		0.20		Feed number =		2					
8					Feed name =		Corn gluten feed, pellets					
9	Feed number	Feed name	Lb/cow/day to feed (as fed)	TDN supplied (lb/cow/d)	CP supplied (lb/cow/d)	Daily cost (\$/hd/d)	Total feed needed (lbs)					
10	0	Free choice hay intake	22.67	11.22	2.04	1.13						
11	2	Corn gluten feed, pellets	0.00	0.00	0.00	0	0					
12	3	Soybean hulls, pellets	3.00	1.61	0.31	0.3	270					
13												
14												
15												
16												
17												
18												
19	Total supplemental feed =		3.00	lb/cow/d								
20												
21	Shortage/surplus of TDN in balanced diet (lbs/hd/d) =		-0.25		Need more TDN							
22	Shortage/surplus of CP in balanced diet (lbs/hd/d) =		0.51		✓							
23												
24	Total daily feed cost (supplement only) =		0.30		\$ per cow/day							
25												
26	Total daily feed cost (hay plus supplement) =		1.43		\$ per cow/day							
27												
28	Disclaimer: Balancing calculations do not take into account any changes in hay intake as a result of supplementation.											
29	Questions or feedback: <a href="mailto:ndilorenzo@ufl.edu">ndilorenzo@ufl.edu</a>											
30												
31	<a href="#">Go to Home Screen</a>											
32												
33												
34	<a href="#">Print this page</a>											
35												

More info:

<https://nfrec.ifas.ufl.edu/beef-and-forage/>

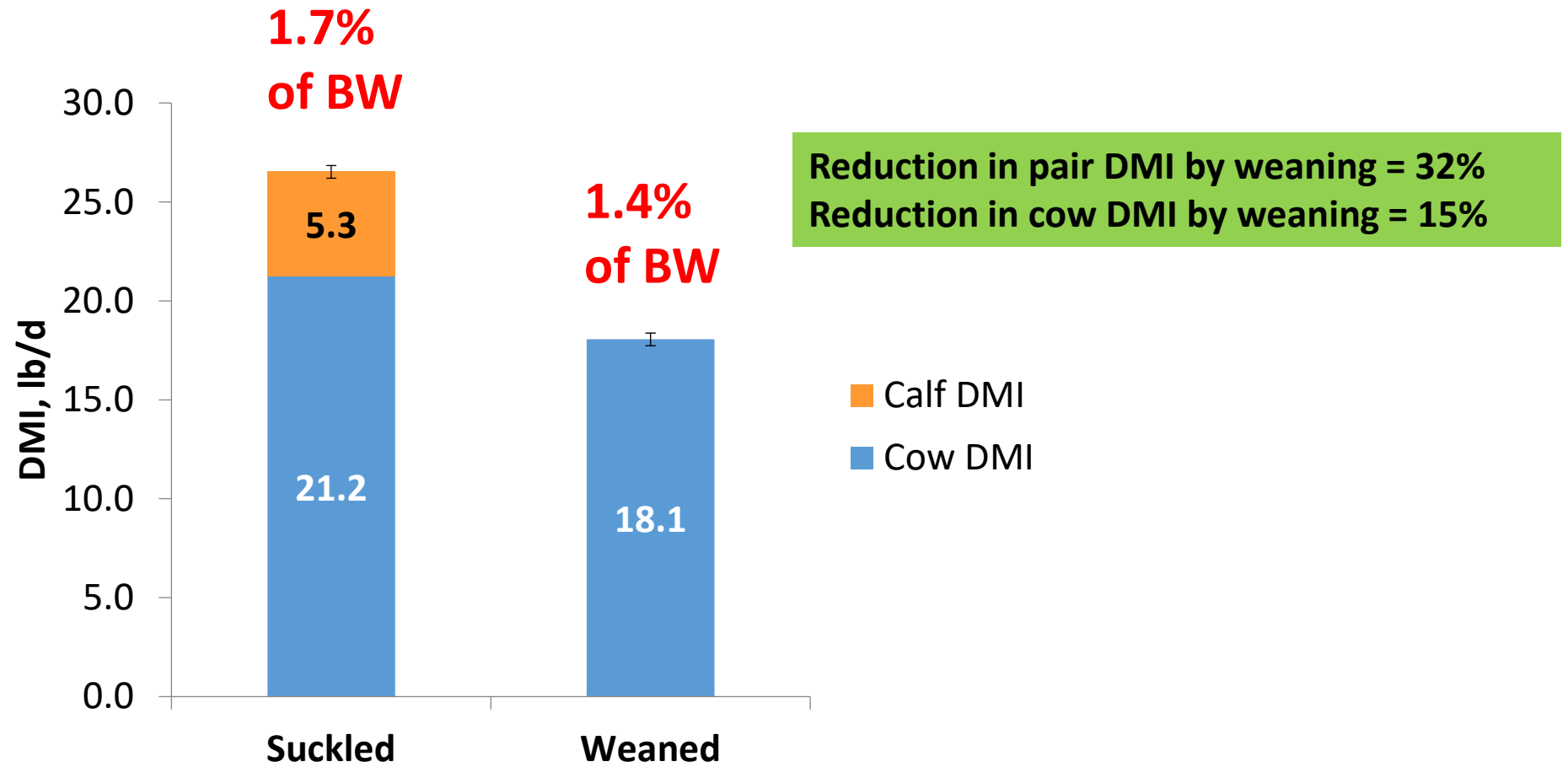
Download the UF Hay balancer here:

[https://nfrec.ifas.ufl.edu/media/nfrecifasufledu/docs/excel/The-UF-Hay-Balancer\\_v1.1.xlsm](https://nfrec.ifas.ufl.edu/media/nfrecifasufledu/docs/excel/The-UF-Hay-Balancer_v1.1.xlsm)



# How much hay does a cow eat?

T85 bermudagrass hay fed over 56 d at the NFREC-FEF



# What regulates intake in cattle?



**Vs.**



**Gut fill vs. energy concentration**



# The importance of roughage in supplementation



**Gut fill and minimal supplementation: only way to manage high costs without sacrificing productivity**





# What are the options for roughage?



← Baled gin trash

← Loose gin trash



Mullenix, Koebernick, and Jacobs. 2021.  
Alabama Cooperative Extension System

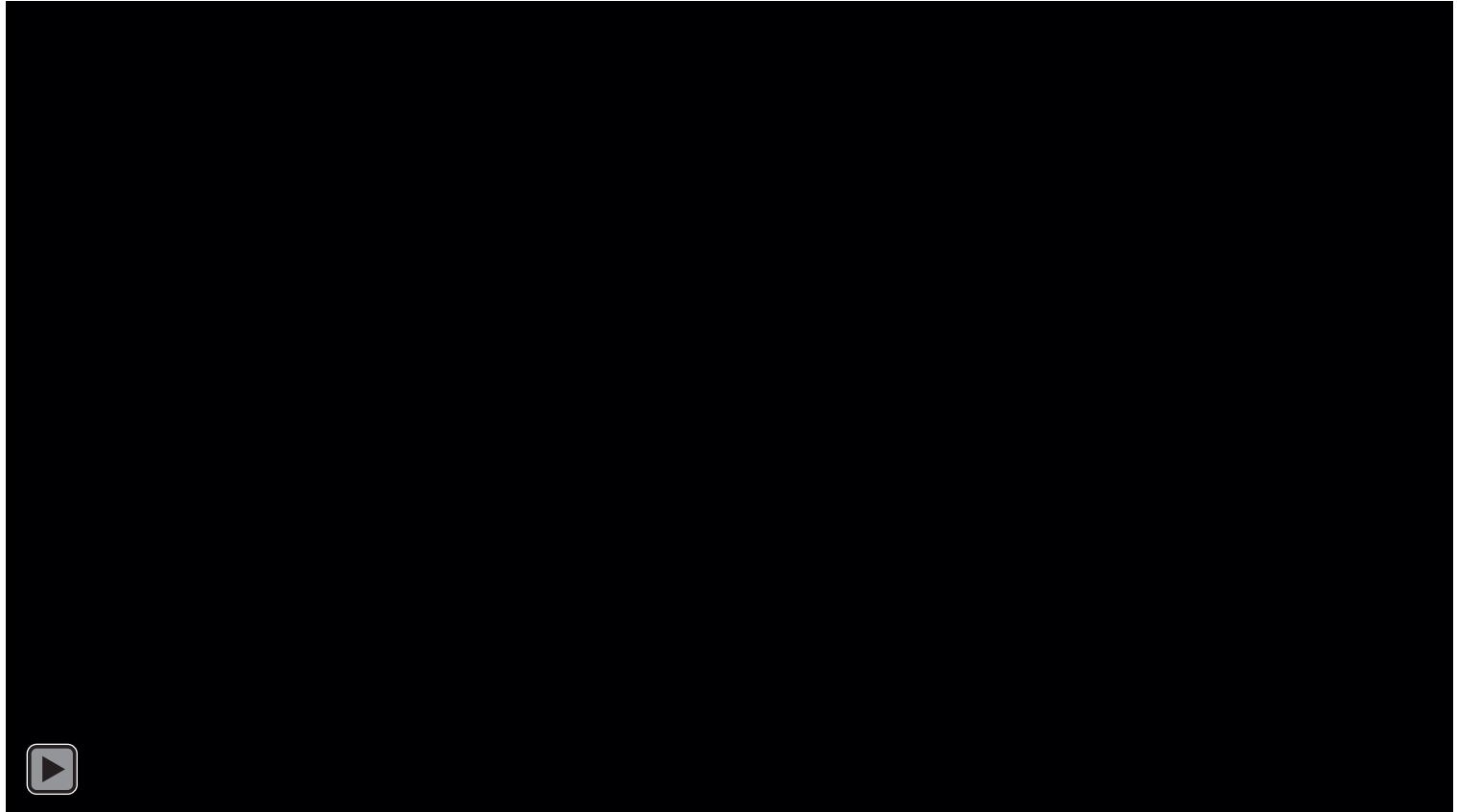
<https://www.aces.edu/blog/topics/beef/cotton-byproduct-beef-feeding-recommendations-have-they-changed/>



# How about conserved forages?

Ryegrass silage

Stockpiled  
or ensiled  
limpograss



# Take Home Message # 1 – Cow/calf

Without sufficient roughage for gut fill, supplementation can turn into a very expensive enterprise.

**Plan ahead!**





# Heifer development

- **Expectations of a heifer**
  - Ideally, in most production systems, become pregnant in time to calve at 2 years of age
  - Calve without assistance
  - Rebreed as a first calf heifer
- **Lifetime production** (Lesmeister et al., 1973; Byerly et al., 1987)
  - Become pregnant early in first breeding season
  - Continue to do so over lifetime
  - Maximize lifetime production of cow
- **Limiting factor: attainment of puberty**



# Ideal rate of gain for heifers...

Too much or too little?





# What is an optimal gain for heifer development?

Feeding strategy

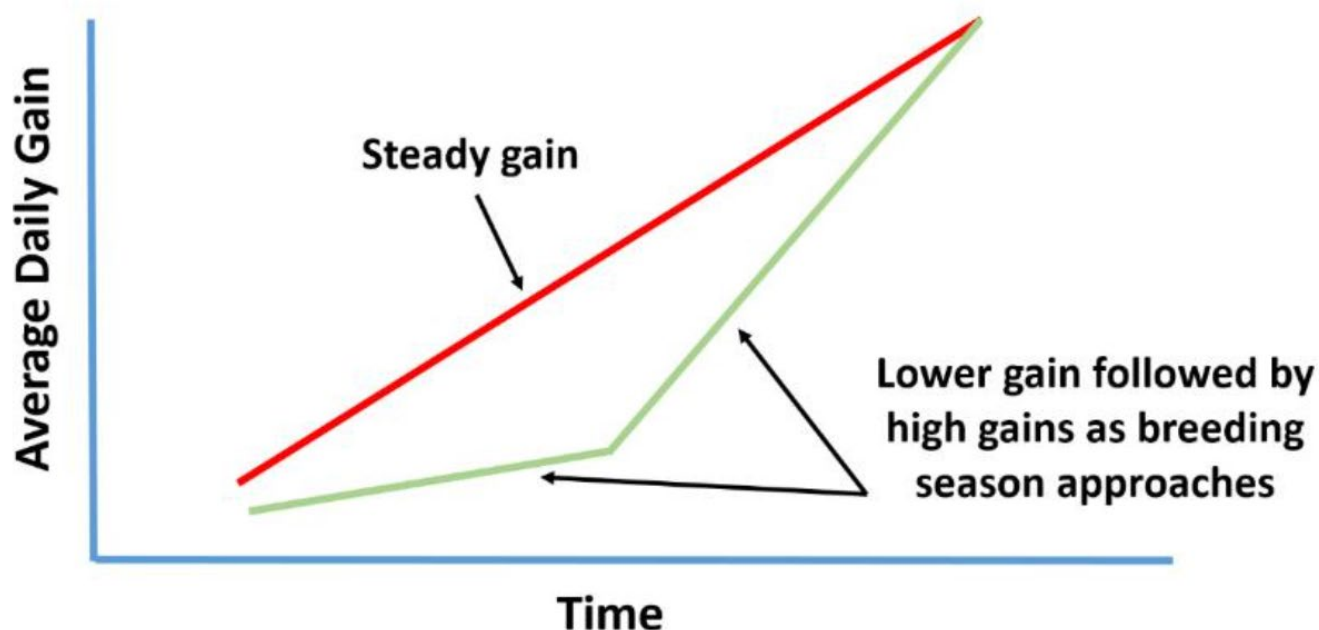
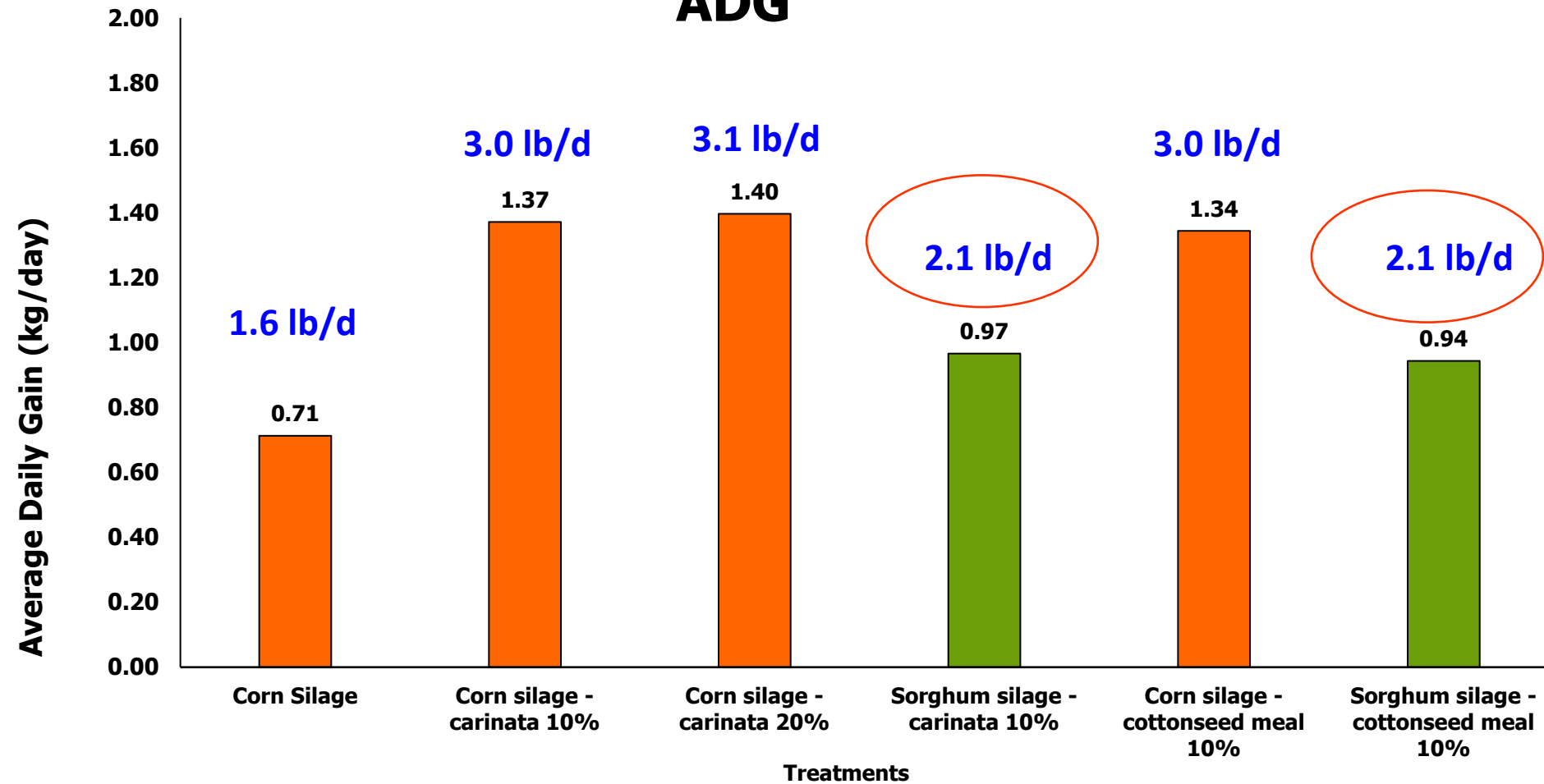


Figure 3. Conceptual model of two different heifer development programs.  
Credit: Freetly, Ferrell, and Jenkins (2001)

# Silage-based diets for heifer development at NFREC

## ADG





# THE POTENTIAL OF SILAGES IN BACKGROUNDING DIETS

Growth performance in heifers (743 lb of initial BW) fed for 56 days

<https://www.dilorenzonutritionlab.com/>

	Sorghum silage + 10% cottonseed meal	Sorghum silage + 10% <u>carinata</u> meal	Corn silage + 10% cottonseed meal	Corn silage + 10% <u>carinata</u> meal	Corn silage only
ADG, <u>lb/d</u>	2.07	2.13	2.97	3.02	1.57
FTG, <u>lb of DM /lb of BW</u>	10.2	8.6	7.2	6.8	11.3
DMI, % of BW	2.58%	2.27%	2.50%	2.44%	2.24%
Total diet cost <sup>1</sup> , \$/ton of DM	\$141	\$139	\$152	\$150	\$120
<b>FCOG<sup>2</sup>, \$/lb</b>	<b>\$0.72</b>	<b>\$0.60</b>	<b>\$0.55</b>	<b>\$0.51</b>	<b>\$0.68</b>
Diet <sup>3</sup> <u>NEm</u> , Mcal/lb of DM	0.68	0.75	0.81	0.83	0.67
Diet <sup>3</sup> <u>NEg</u> , Mcal/lb of DM	0.40	0.47	0.53	0.54	0.40

<sup>1</sup> Calculated using the following prices (all in \$/ton as fed, using 35% DM for silages): corn silage = \$42/ton, sorghum silage = \$38/ton, cottonseed meal = \$320/ton, carinata meal = \$300/ton

<sup>2</sup> FCOG = Feed cost of gain. Represents the feed cost for every lb of body weight gained.

<sup>3</sup> Calculated from performance.

## Ideas to cut on feeding labor costs...





# Self-feeding system

Replacement heifers consuming corn silage by self-feeding at the NFREC



- A protein supplement should be offered separately
- It reduces labor and machinery use

Photo: Nicolas DiLorenzo





Source: <https://www.comprerural.com/conheca-o-sistema-de-autoconsumo-para-gado-de-corte/>



# The effect of protein supplementation on hay-based diets

Summary of trials at NFREC using growing cattle fed bahiagrass hay free choice and supplemented or not with protein





# Materials and Methods

- 64 *Bos taurus* and *Bos indicus* influenced growing animals
  - 56 heifers -  $249 \pm 26$  kg of BW
  - 8 steers -  $249 \pm 20$  kg of BW
- 16 dormant bahiagrass pastures (1.34 ha each)
- 2 locations at the UF-NFREC Beef Unit:



R-pens ( $n = 8$ )



South Circle ( $n = 8$ )



# Two experiments: one with and one without protein supplementation (hay only)

## Without protein supplementation

### Experiment 1: Animals and design

- 96 *Bos taurus* and *Bos indicus* growing cattle
- 59 heifers -  $551 \pm 64$  lb of BW
- 37 steers -  $564 \pm 99$  lb of BW
- Stratified by sex, breed, and BW
- Blocked by initial BW
- 24 dormant bahiagrass pastures (3.3 acres each; 4 animals/pasture)

## With protein supplementation

### Experiment 2: Animals and design

- 64 *Bos taurus* and *Bos indicus* growing cattle
- 56 heifers -  $549 \pm 57$  lb of BW
- 8 steers -  $549 \pm 44$  lb of BW
- Stratified by sex, breed, and BW
- Blocked by initial BW
- 16 dormant bahiagrass pastures (3.3 acres each; 4 animals/pasture)

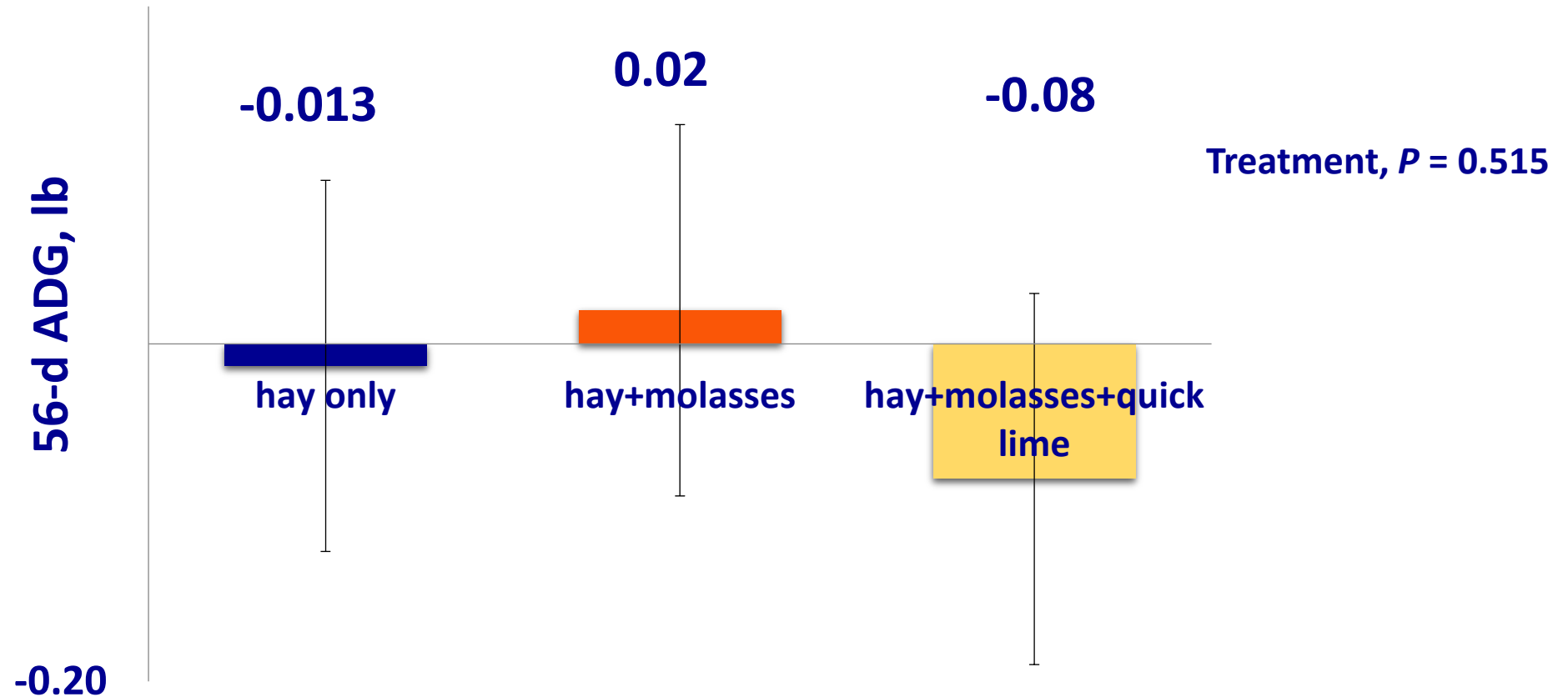


# Materials and Methods Exp. 1 (hay only)





# Results Exp. 1: ADG with hay without protein suppl.



## Exp. 2: including cottonseed meal

- Pastures were stratified by location and randomly assigned to 1 of 2 treatments:

**MOL**

Bahiagrass hay treated with 10% molasses (DM basis) + water (to 35% DM)

**CAO**

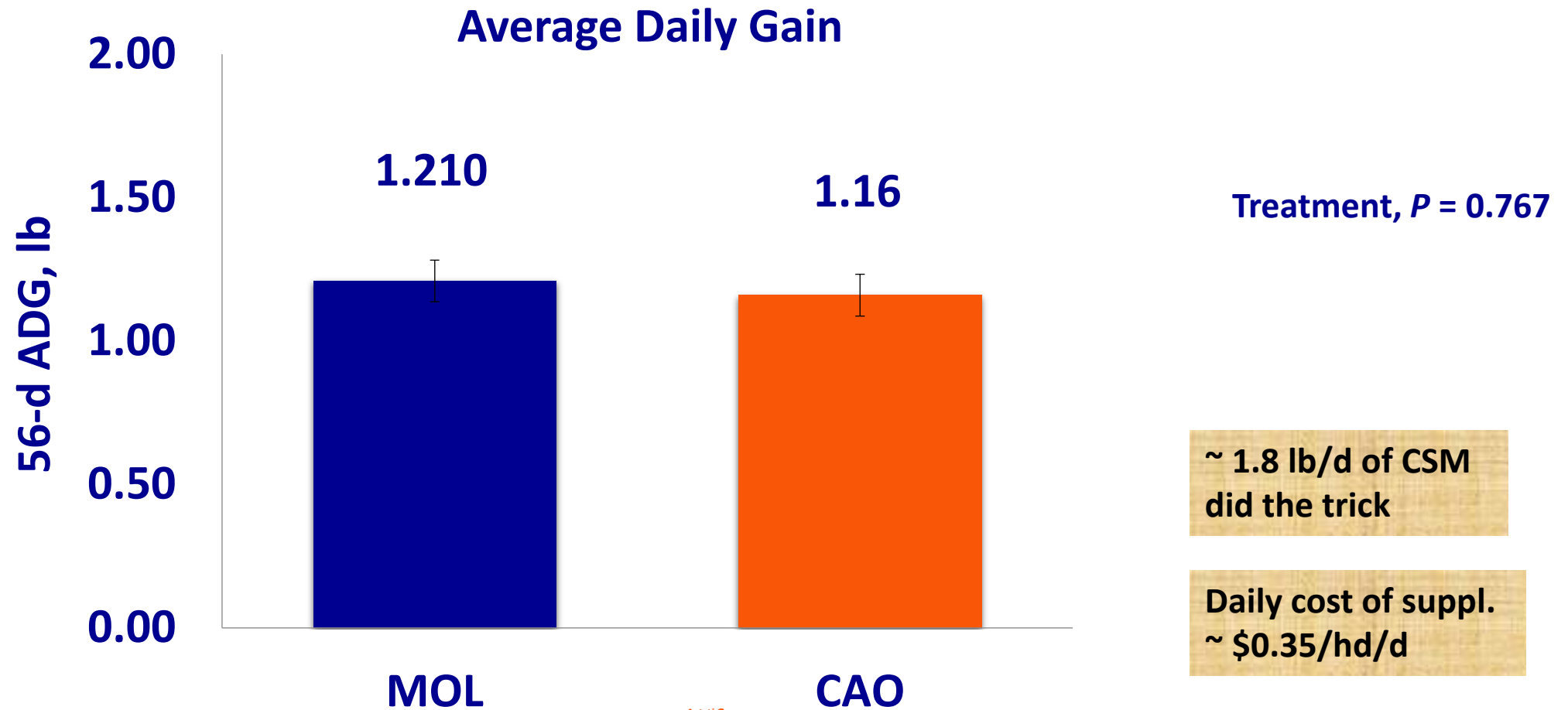
Bahiagrass hay treated with 5% CaO (DM basis) + 10% molasses (DM basis) + water (to 35% DM)

- $n = 8$  pastures/treatment
- 56 d period
- Cottonseed meal: 0.3% BW/d

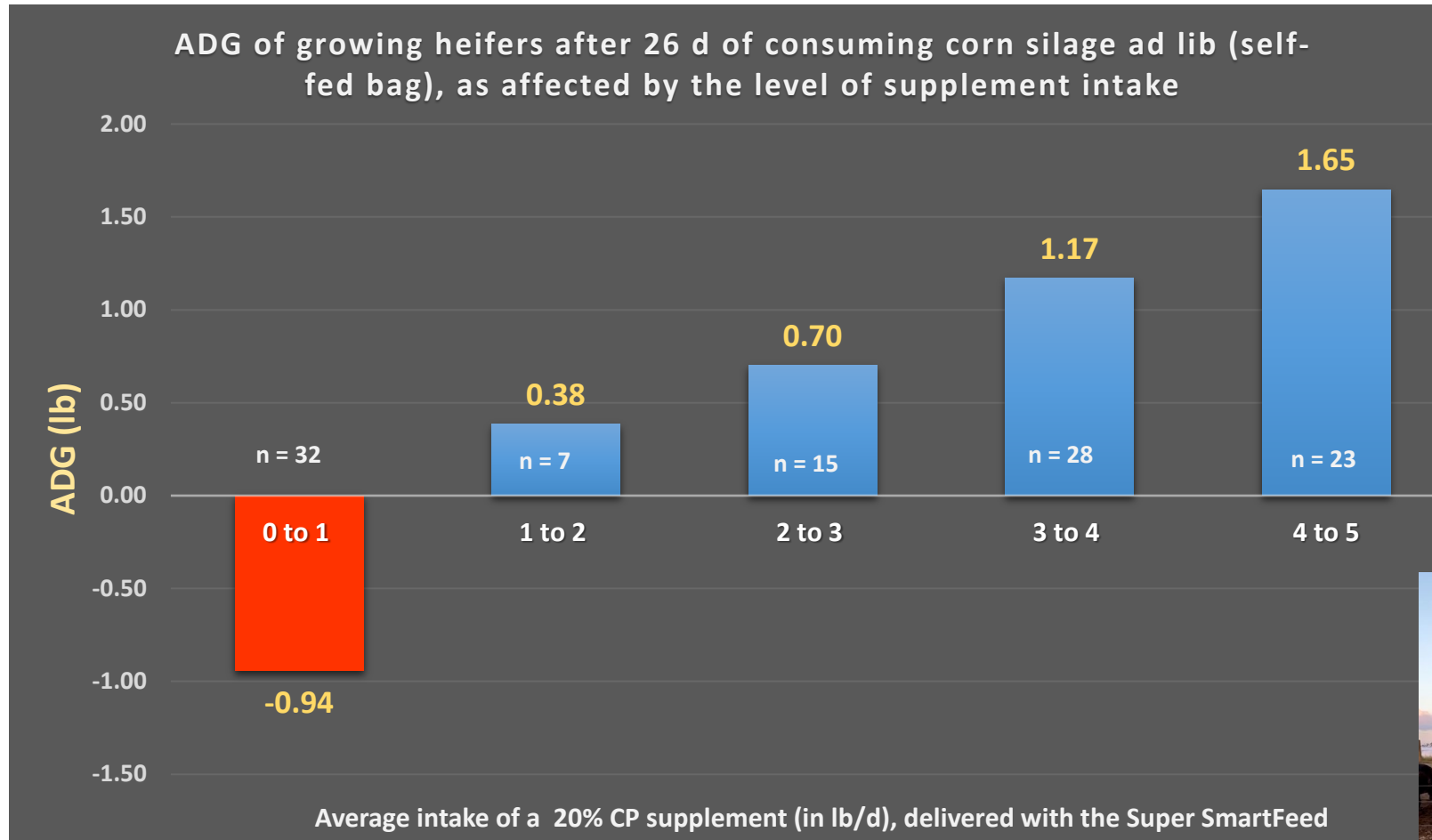




## Results Exp. 2: with cottonseed meal at 0.3% of BW



# Effect of protein supplementation in growing heifers





# Take Home Message # 2 – Heifer development

**In terms of supplementation, protein in growing cattle really matters. Not a good idea to cut corners, particularly when developing heifers.**

**As little as 2 lb/hd/d of cottonseed meal can do the trick!**

# Feedstuffs to consider in this region

- Corn and soybeans byproducts
- Silage (corn, sorghum, cool and warm season grasses)
- Liquid feeds with added urea
- Citrus pulp pellets
- Cotton byproducts
- DDGS
- Locally available commercial pellets, bakery waste, etc.





# Some local examples of formulated diets

## Backgrounding (NFREC)

- **Backgrounding diet of 90% sorghum silage and 10% DDGS (DM basis) fed to 720 lb heifers**
  - Free choice (20 lb of DMI)  $\Rightarrow$  ADG = 1.5 lb/d
- **Backgrounding diet of 63% citrus pulp, 21% gin trash, 10% DDGS, 6% suppl. fed to 720 lb heifers**
  - Free choice (23 lb of DMI)  $\Rightarrow$  ADG = 2.6 lb/d
- **Backgrounding diet of 42% corn gluten feed, 35% cottonseed hulls, 12% cracked corn, 5% bermudagrass hay, 6% suppl. Fed to 740 lb heifers**
  - Free choice (30 lb of DMI)  $\Rightarrow$  **ADG = 3.2 lb/d**

# Some local examples of formulated diets

## Backgrounding (NFREC) continued

- **Heifer development diet (2021): 90% sorghum silage, 10% cottonseed meal, 743 lb iBW**
  - Free choice (21 lb of DMI)  $\Rightarrow$  ADG = 2.1 lb/d
- **Heifer development diet (2021): 90% corn silage, 10% cottonseed meal, 743 lb iBW**
  - Free choice (21 lb of DMI)  $\Rightarrow$  ADG = 2.97 lb/d
- **Heifer development diet (thermotolerance): 35% corn gluten feed, 35% cottonseed hulls, 15% soy hulls, 10% bermudagrass hay, 5% supplement, Brangus heifers, 697 lb iBW**
  - Free choice (29 lb of DMI)  $\Rightarrow$  ADG = 2.31 lb/d
- **It is all about energy intake!!**



# Take Home Message # 3 - Backgrounding

**Opportunities for backgrounding/stocking may exist to add value to FL calves.**  
**The key variable to watch for is Feed Cost of Gain (FCOG) in \$/lb of weight gained**



# Conclusions

- **Except at the NW Beef Conference...**
  - ✓ There Is No Such Thing as Free Lunch
  - ✓ Not an excuse to cut corners
- **Always provide enough roughage before developing the supplemental program >>> gut fill is a must**
- **Shortening supplemental protein will impact ADG**
  - ✓ Cattle prices are also climbing
- **Opportunity to add values to calves in North Florida**
  - ✓ Backgrounding with byproducts and grazing cover crops

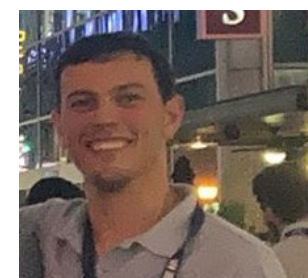




# Thanks!



<https://www.dilorenzonutritionlab.com/>



Troy Windham  
Chad Stephens  
Olivia Hill

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