

# Effects of feeding *Brassica carinata* meal on beef cattle performance



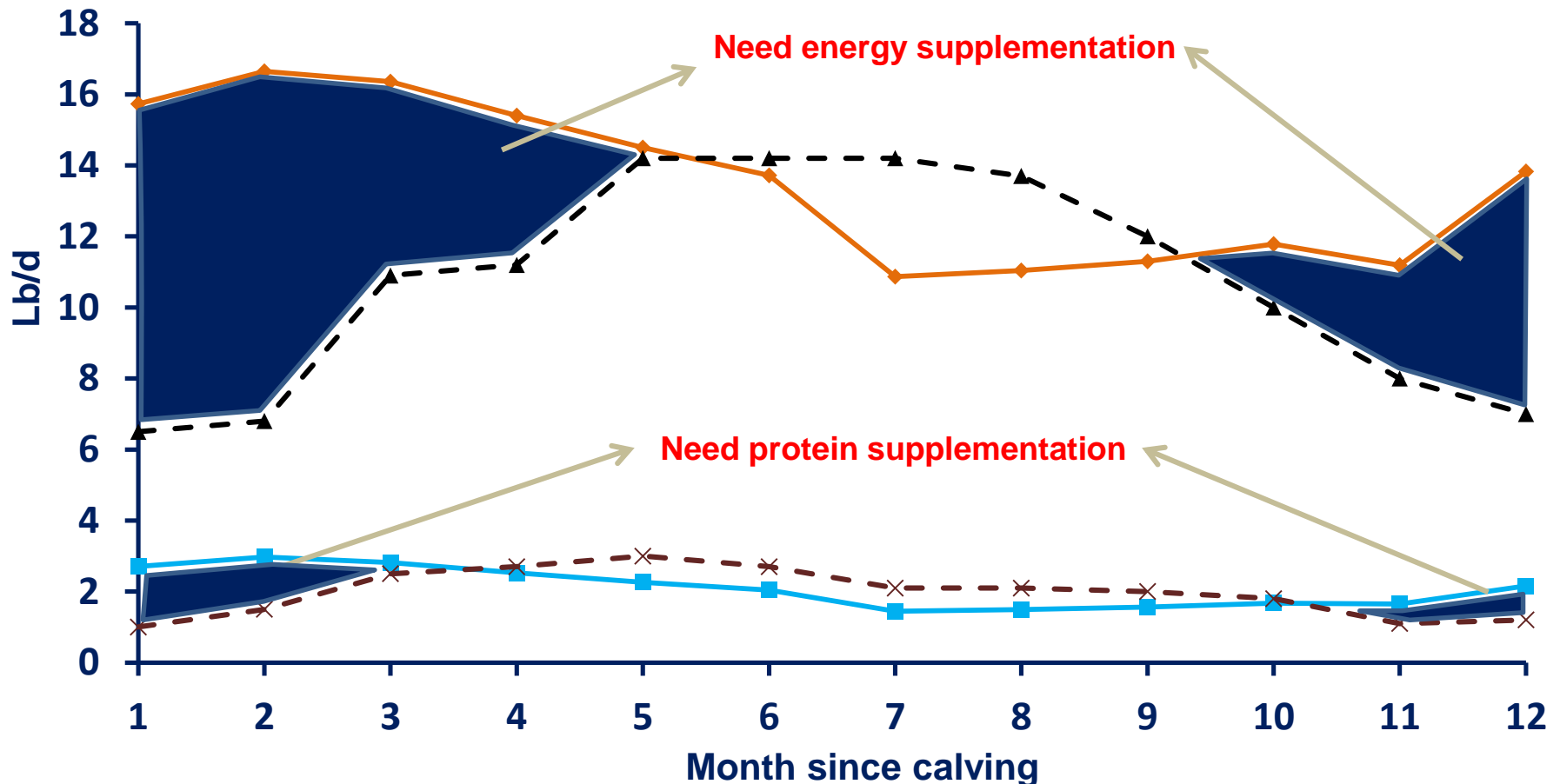
**Nicolas DiLorenzo and Tessa Schulmeister**  
**UF-NFREC**

**UF|IFAS**  
UNIVERSITY of FLORIDA

# Why carinata meal in FL?

1200 lb cow lactating, 20 lb at peak milk prod.

—◆— Lb/d of TDN required    —■— Lb/d of CP required  
-▲- Pasture Production TDN    -×- Pasture Production CP



# *B. carinata* meal

## *Nutrient profile*

	Lot 1 (low gluc)	Lot 2 (high gluc)
Moisture	11.7%	9%
Glucosinolates (umol/g)	28.65	100
Ash	7%	7%
Carbohydrates	41%	42%
Protein	37%	40%
Oil	2.5%	3%
Crude Fat	nd	0.95%
Acid Detergent Fiber	Nd	12%
Neutral Detergent Fiber	nd	16%
Residual Hexane	23 ppm	Nd

# *Economics of cattle supplementation in FL*

- FL cow herd = 1,062,275 (cows and heifers that had calved)
- 30% replaced annually = 318,683 heifers to develop/year
  - ✓ **Heifer development: \$402-463 million per year market**
  - ✓ Need high protein supplements
- Typical FL pastures produce abundant quantity but low quality (Crude protein ~ 5-9%)
  - ✓ Supplementation is needed in winter
  - ✓ Typically used sources: DDGS, CSM, urea

# Experiment 1

**Objective: to determine the effects of feeding *B. carinata* meal on ruminal metabolism**

- 8 cannulated steers housed in the NFREC-FEF
- Ad libitum bahiagrass hay – intake recorded by GrowSafe
- Four treatments on an isonitrogenous basis:
  - *Brassica carinata* meal: 2.8 lb DM/steer/d (0.3% of BW)
  - Soybean meal (SBM)
  - Dry distillers grains plus solubles (DDGS)
  - Cottonseed meal (CSM)
- Supplemental amounts based on total N provided by 2.8 lb DM/hd/day of *B. carinata* meal

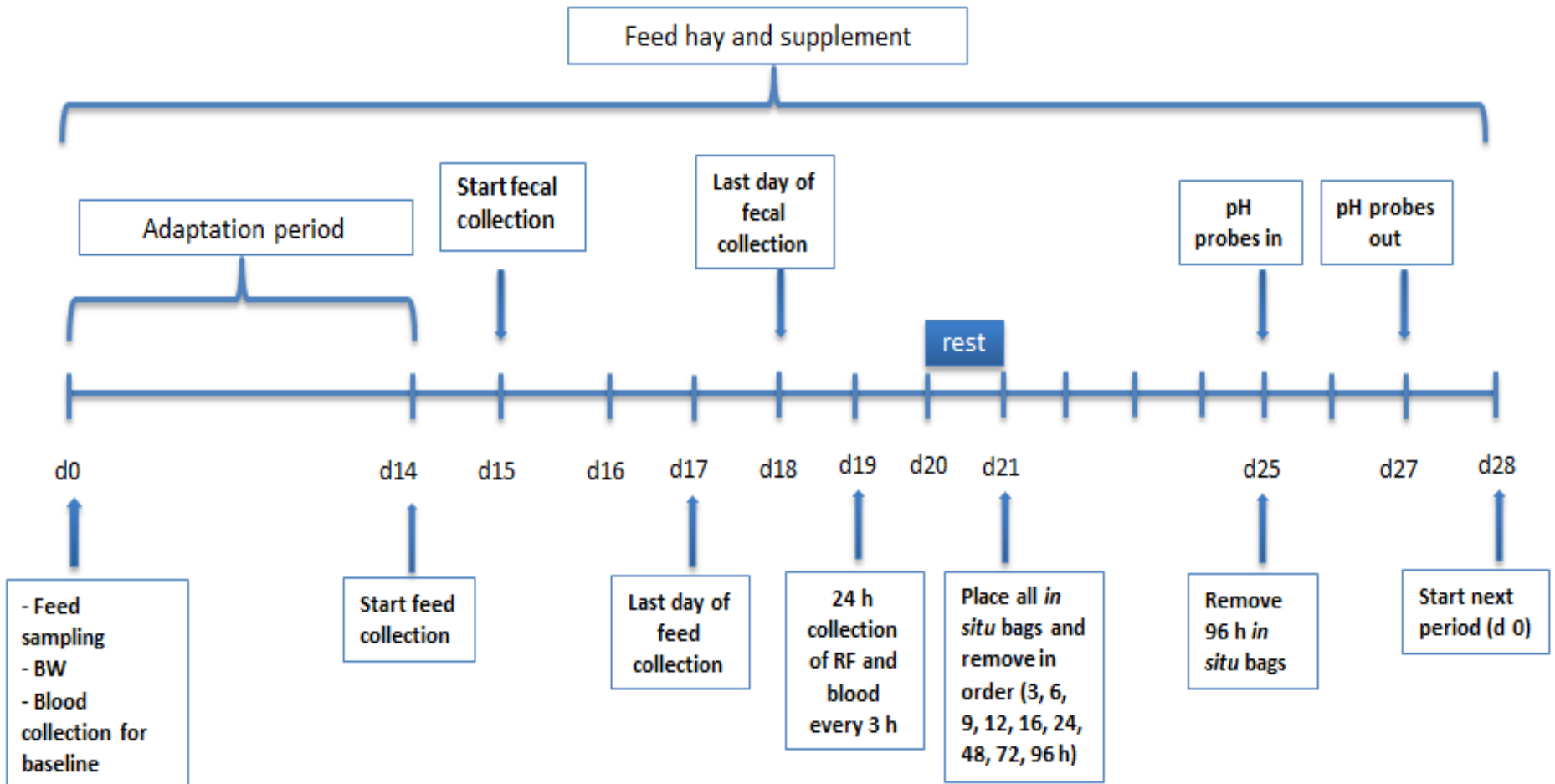


# Cattle and facilities



# Experiment 1

Objective: to determine the effects of feeding *B. carinata* meal on ruminal metabolism





# Experiment 1

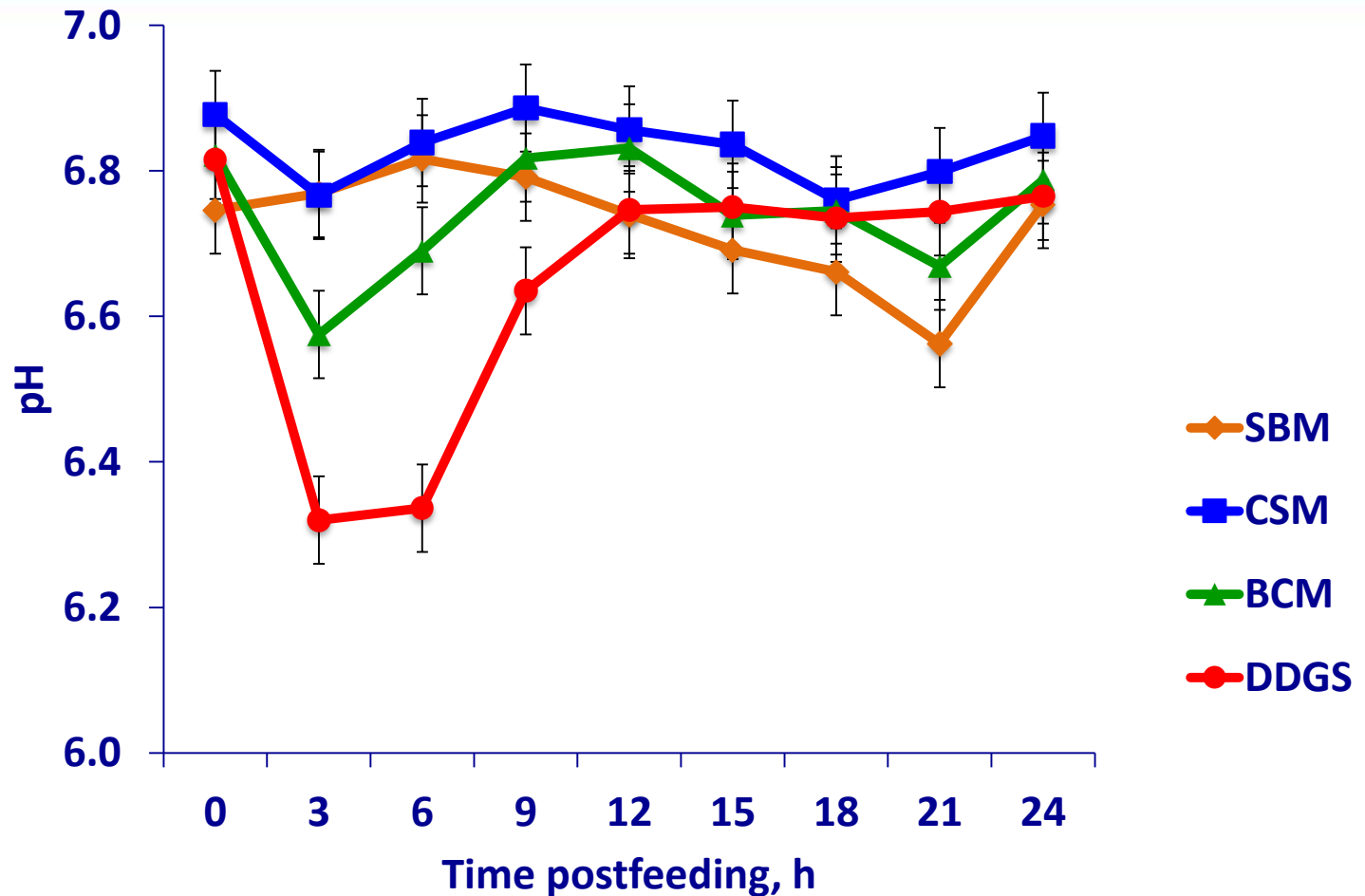
## Completed





# Exp. 1 Results

## Ruminal pH



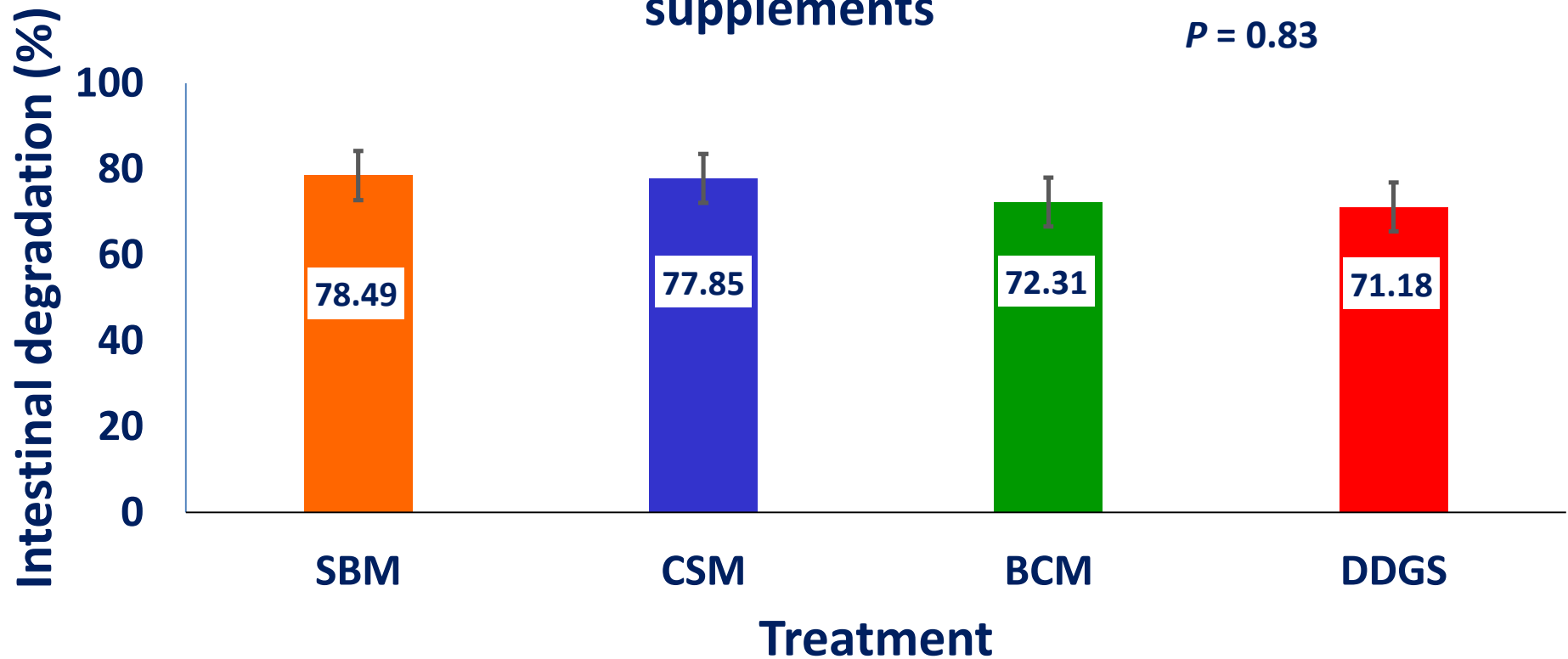
Treatment x time interaction,  $P = 0.001$

# Exp. 1 Results

## Intestinal degradation (Three-step)

In vitro post-ruminal degradation of protein supplements

$P = 0.83$



# Experiment 2

**Objective: to determine the effects of *B. carinata* meal on beef cattle performance**

- 30 growing heifers in 10 pens of 3 heifers each, (n=5/treatment) in 2 consecutive years (~ 600 lb)
- Fed ad libitum amounts of bahiagrass hay
- Supplemented daily with *Brassica carinata* meal at:
  - 0.0% of their body weight (BW) (hay only)
  - 0.30% of their BW
- Body weight and blood samples collected weekly for 70 d – ADG using weights from 2 consecutive days
- Assessment of animal performance, attainment of puberty, and blood profile (ceruloplasmin, haptoglobin and blood urea nitrogen)

# Diet

## Nutrient profile

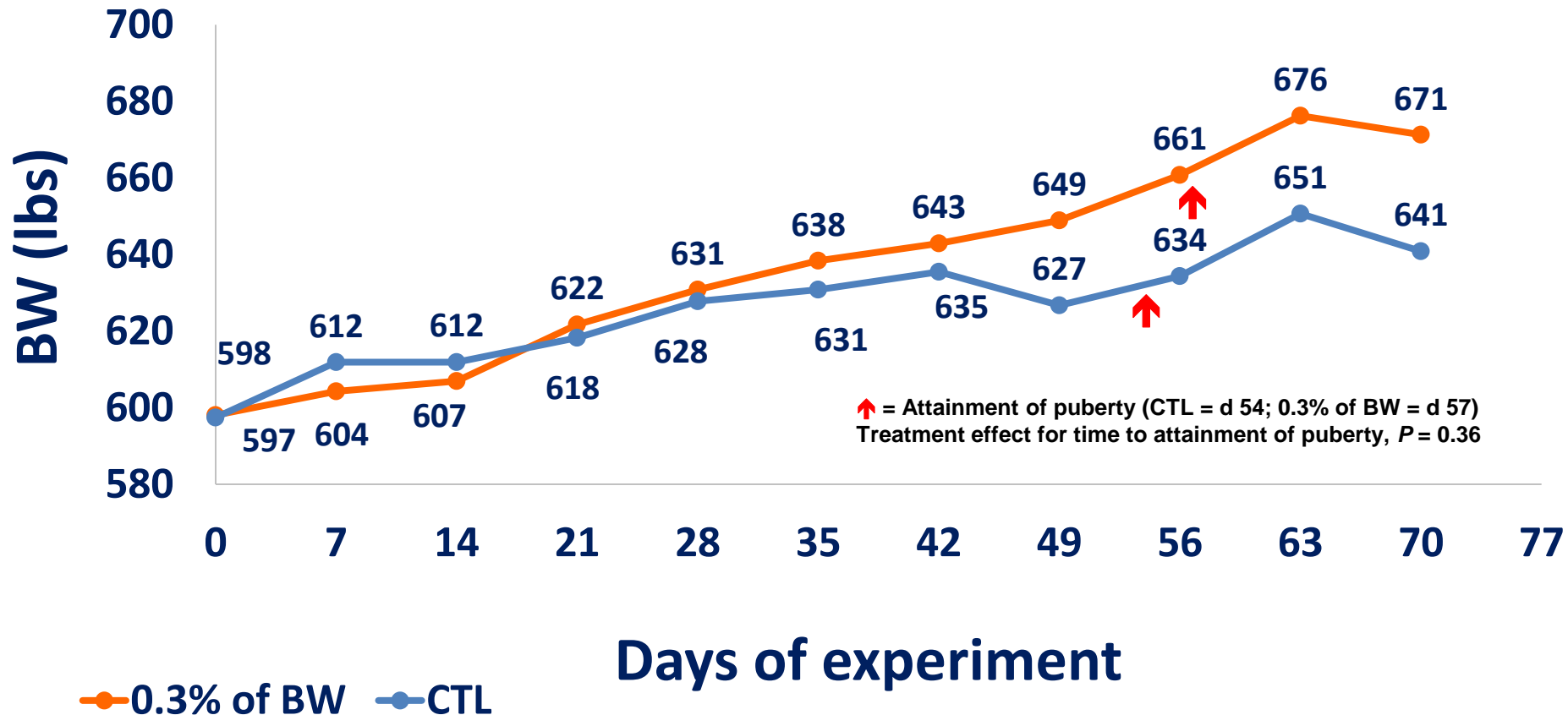
	B. carinata meal	Bahiagrass hay
DM, %	89.8	94.0
CP, % DM	43.3	7.2
ADF, % DM	12.8	41.8
NDF, % DM	23.5	71.4
TDN, % DM	80.0	56.0
S, %	1.75	0.35



# Experiment 2

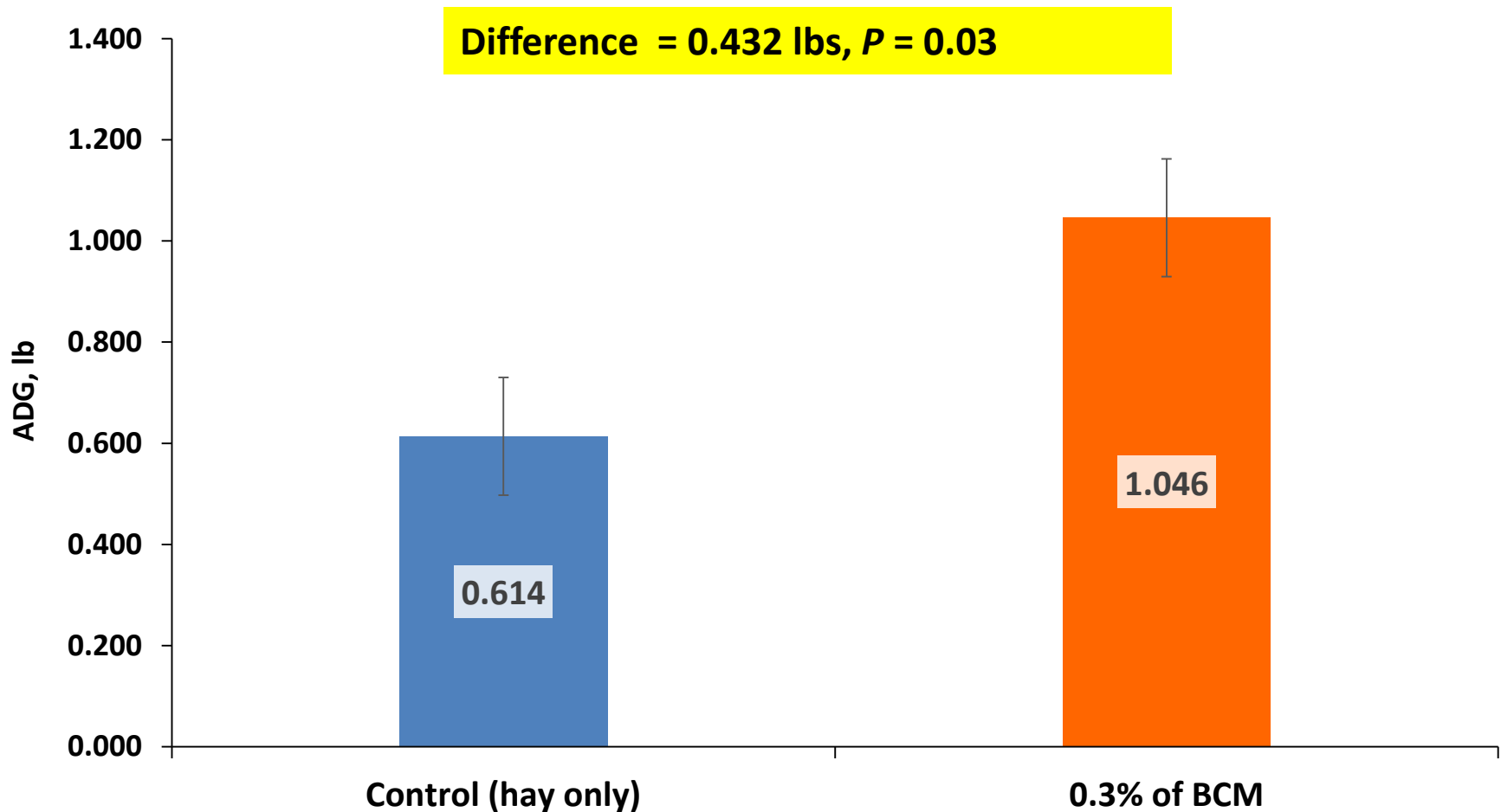
## Results

### Heifer body weight over 70 days



# Experiment 2

## Average daily weight gain (in lbs) – Yr 1



# Experiment 2

## Results

- No significant difference ( $P = 0.36$ ) in time to attainment of puberty between treatments



# Experiment 2

## Conclusion

- Based on preliminary results, there appears to be an improvement in animal performance in final weight and ADG, however a second year of study is necessary to complete the experiment
- Time to attainment of puberty, as evidenced by progesterone concentrations, was not affected by treatment



# What does this mean in \$ terms?

- **A difference of 0.432 lbs over 70 d means:**
  - 30 extra lb of beef to sell
  - Today beef prices = \$2.15/lb
  - Thus, an extra \$64.5 for only 70-d feeding
- **1.8 lb/d x 70 d = 126 lbs**
- **Assuming a \$280/ton (canola meal pelleted 38% CP)**
  - \$0.14/lb x 126 = \$17.6 in feed costs
  - Net return = \$46.9/head over 70 days feeding

**Can we afford to feed BCM?**