Northeast Pasture Consortium
State College, 2014

University of New Hampshire

Effect of Feeding Pasture Supplemented with Ground Flaxseed on Milk Production and Composition in Organic Dairy Cows

André Fonseca de Brito, Veterinarian, Ph.D.

Assistant Professor of Organic Dairy Management

Department of Biological Sciences

University of New Hampshire

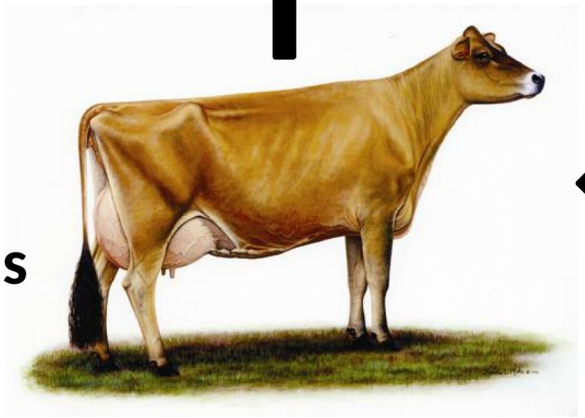
andre.brito@unh.edu

(603) 862-1341

Milk quality
n-3 fatty acids
CLA

Profitability
$

Animal health
Reproduction
Methane emissions



Flaxseed supplementation

University of New Hampshire

Ground Flaxseed Nutrient Composition

DM, % of fresh matter	89.1
CP, % of DM	22.8
NDF, % of DM	25.2
ADF, % of DM	16.3
OM, % of DM	96.5
Crude fat, % of DM	33.6

Effects of Ground Flaxseed on Milk Production and Composition and Methane Emissions in Organic Jersey Cows

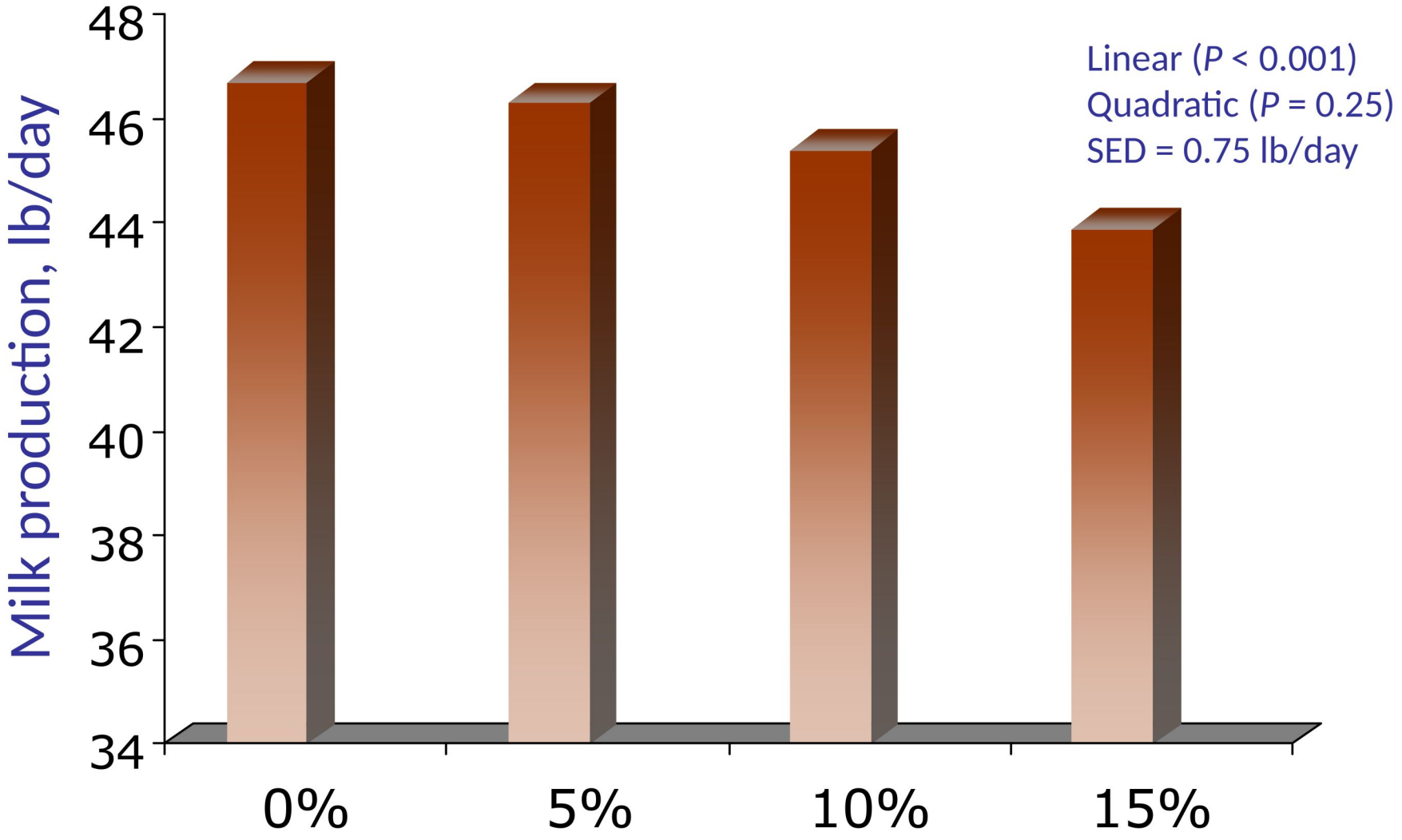
André F. Brito (UNH), Kathy Soder (USDA-ARS), Jana Kraft (UVM), Brianna Isenberg (UNH), es Resende (Federal University of Minas Gerais-Brazil, Diego Oitschach (Federal University of Viçosa Brazil), André Pereira (UNH), Melissa Rubano (USDA-ARS)

- Experiment 1:
  - ✓ Twenty lactating organic Jersey cows received (% of diet DM): 0, 5, 10, or 15% of ground flaxseed during the winter season.

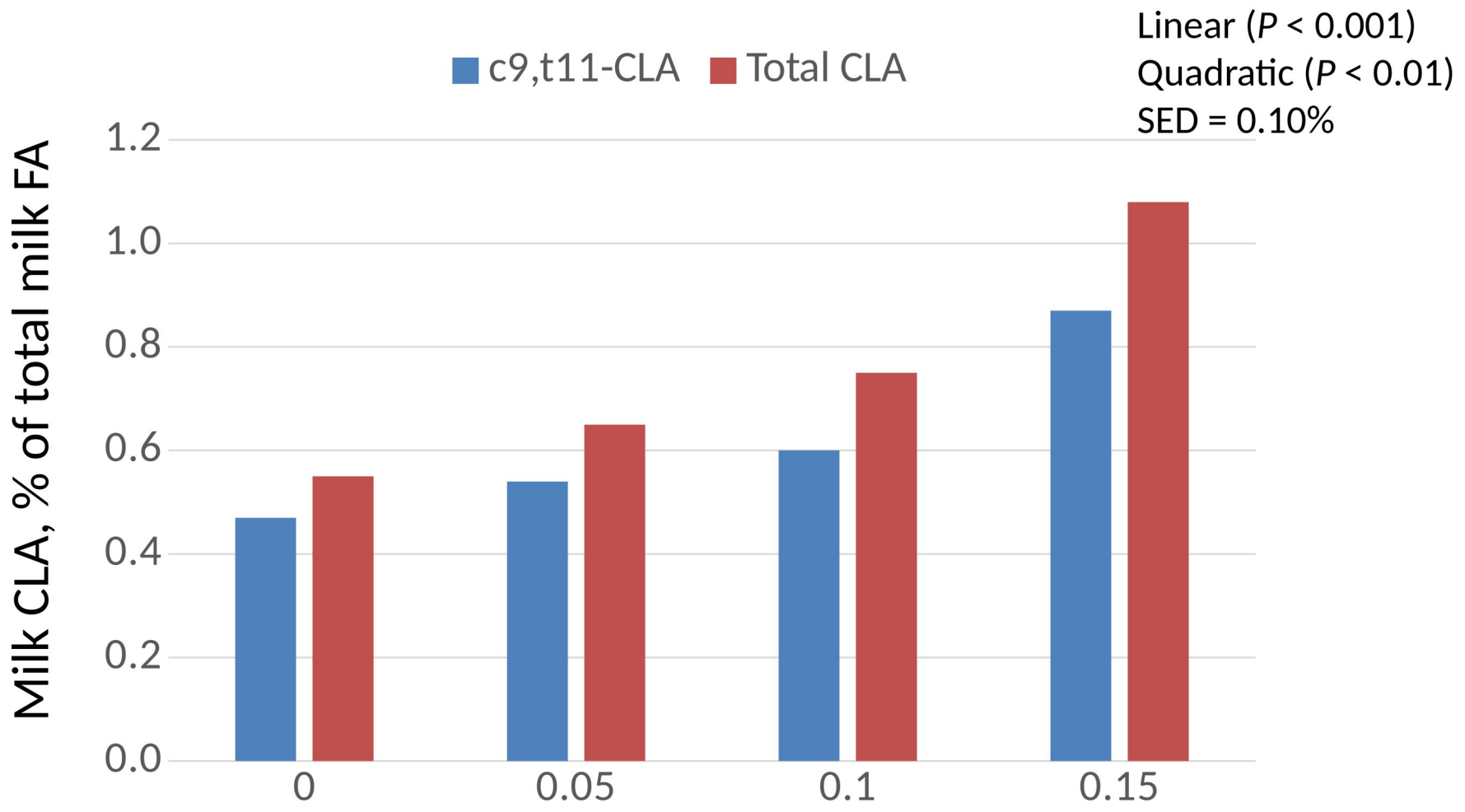
- Experiment 2:
  - ✓ Twenty lactating organic Jersey cows received (% of diet DM): 0 or 10% of flaxseed during the grazing season.

University of New Hampshire

Milk Production Reduced Linearly in Organic Dairy Cows Fed Incremental Levels of Ground Flaxseed During the Winter Season

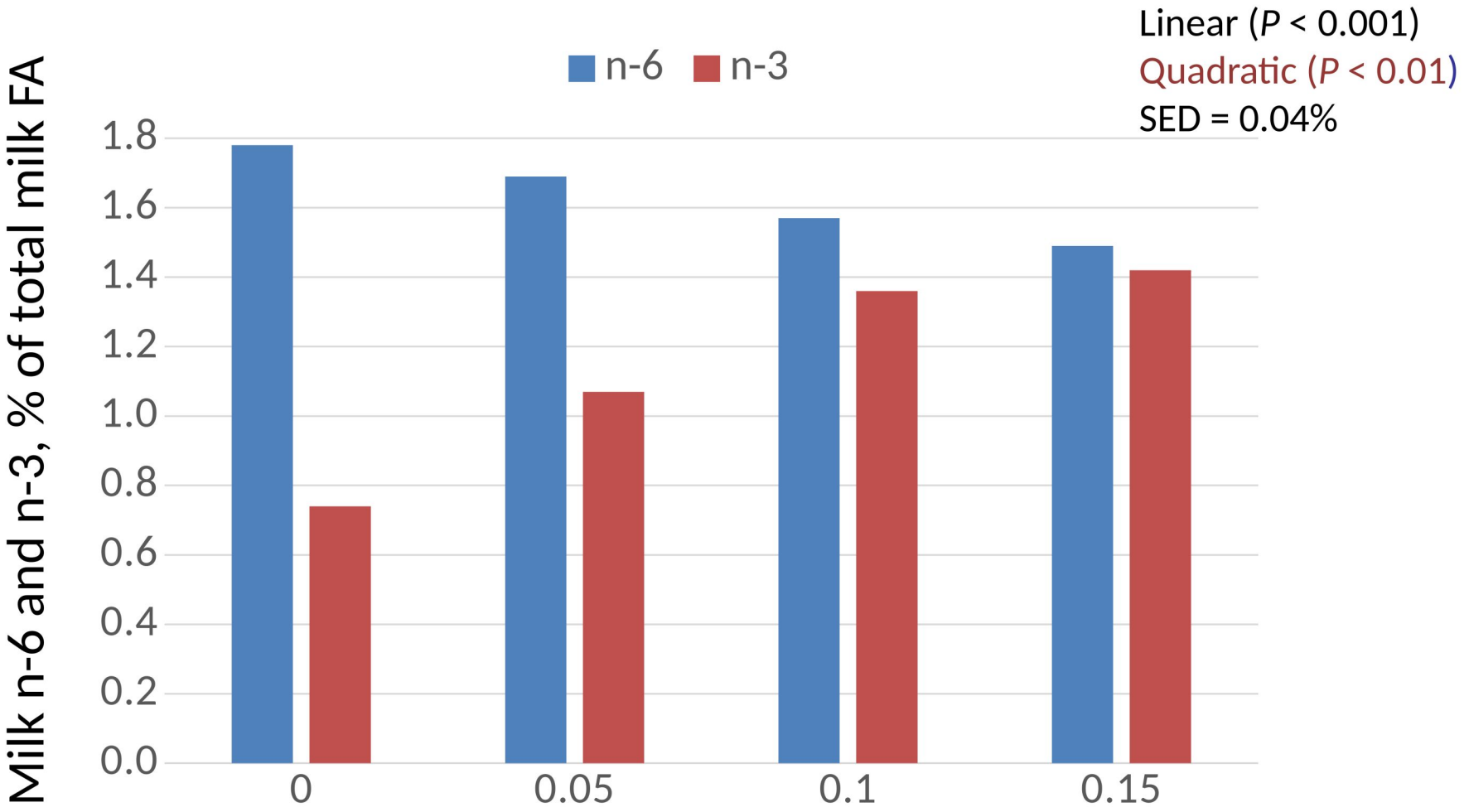


Milk CLA Increased Linearly in Organic Dairy Cows Fed Incremental Levels of Ground Flaxseed During the Winter Season



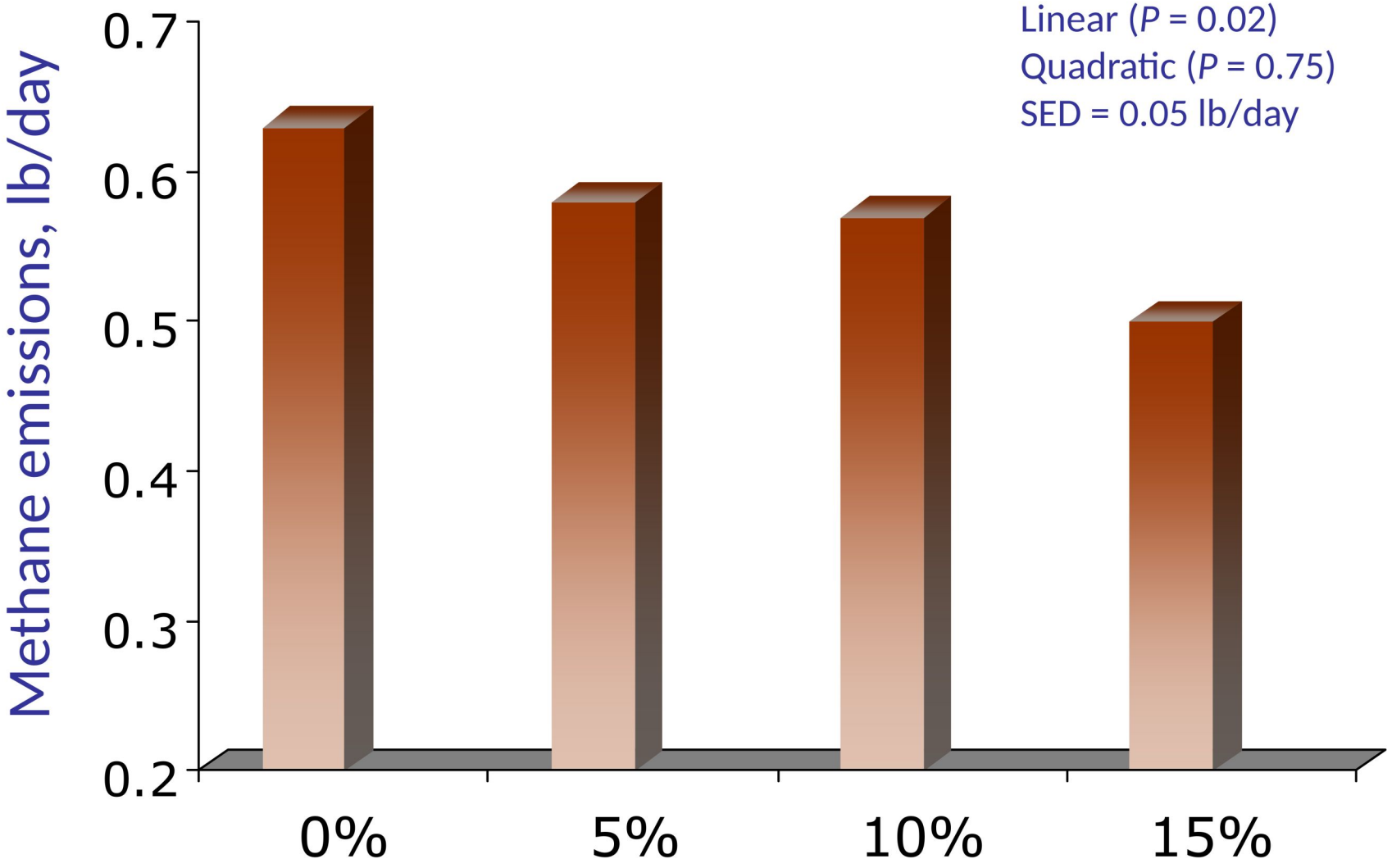
University of New Hampshire

Milk n-6 Decreased and Milk n-3 Fatty Acids Increased Linearly with Incremental Levels of Ground Flaxseed During the Winter Season



University of New Hampshire

Methane Emissions Reduced Linearly in Organic Dairy Cows Fed Incremental Dietary Levels of Ground Flaxseed During the Winter Season



University of New Hampshire

Diets Ingredient Composition: Grazing Season

	Ground Flaxseed	
Item	**0**	**10%**
	------% of diet DM------	
Pasture	40	40
TMR		
Baleage	25	25
Liquid molasses	1.9	1.0
Ground flaxseed	0	10
Organic grain meal	33.1	23.1

University of New Hampshire

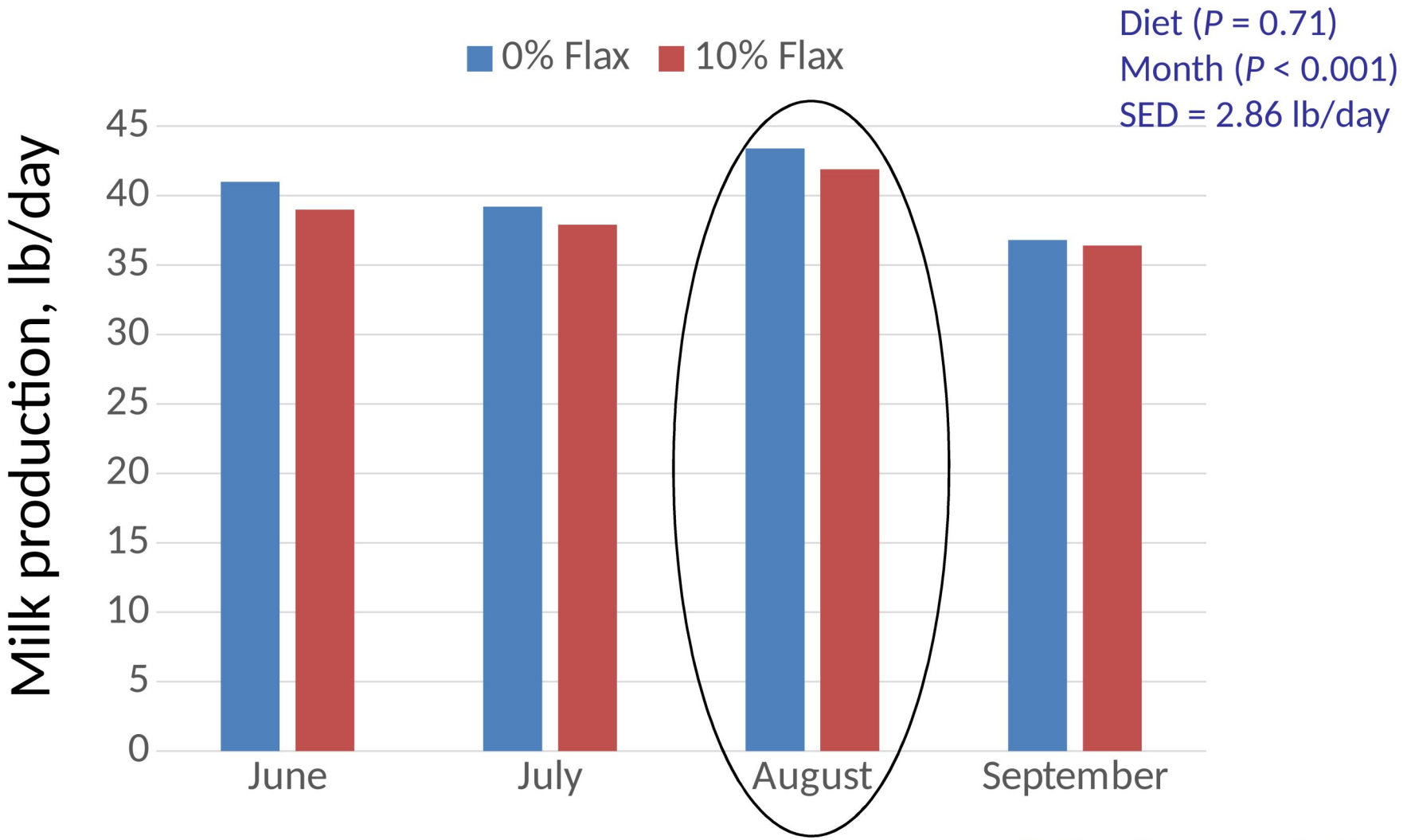
Sampling Procedures

University of New Hampshire

Sampling Procedures

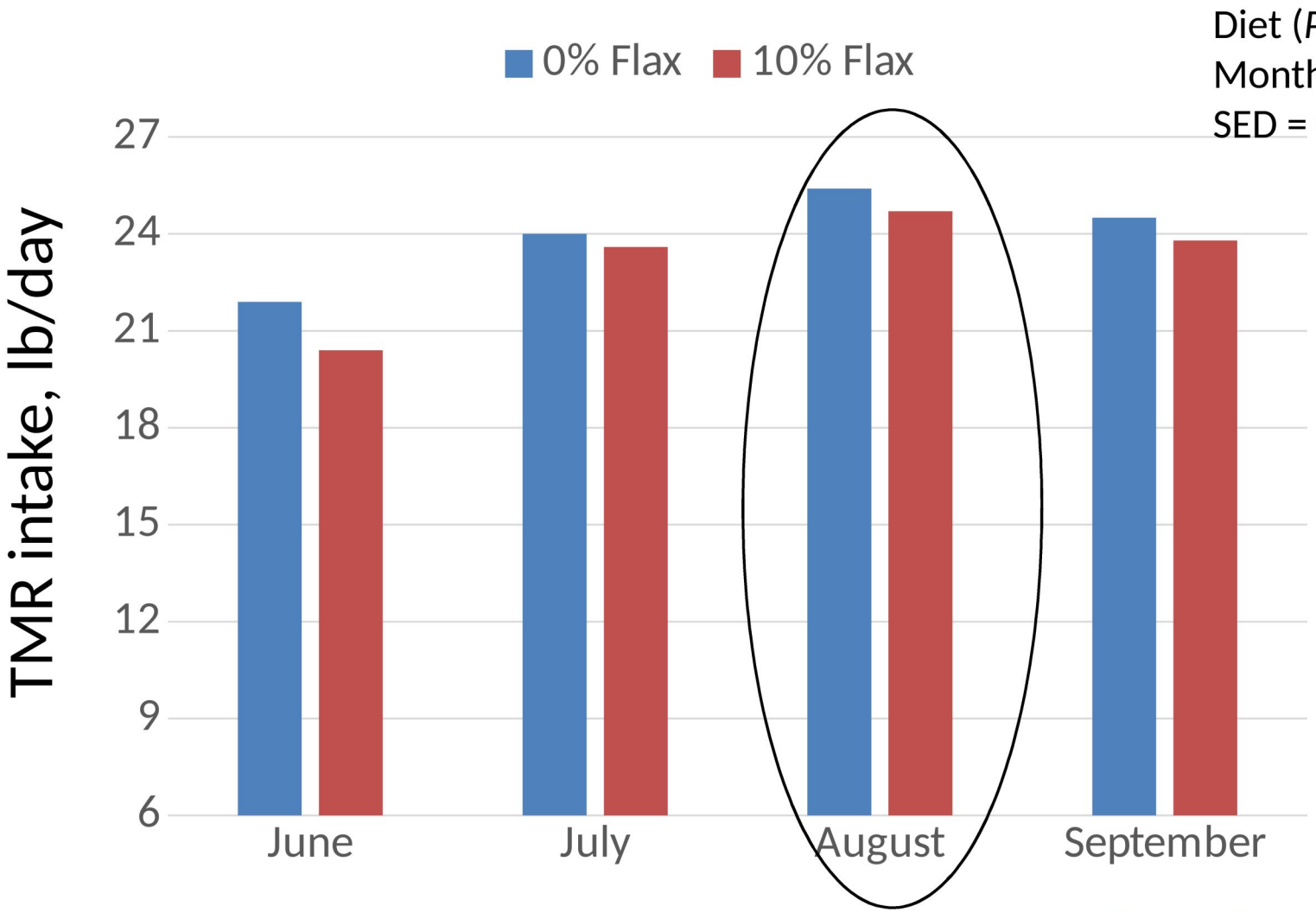
Calan Gates: Individual Intake

Milk Production Reduced Numerically in Organic Dairy Cows Fed Ground Flaxseed and Was Affected by Month During the Grazing Season



University of New Hampshire

TMR Intake Reduced in Organic Dairy Cows Fed Ground Flaxseed and It Was Affected by Month During the Grazing Season

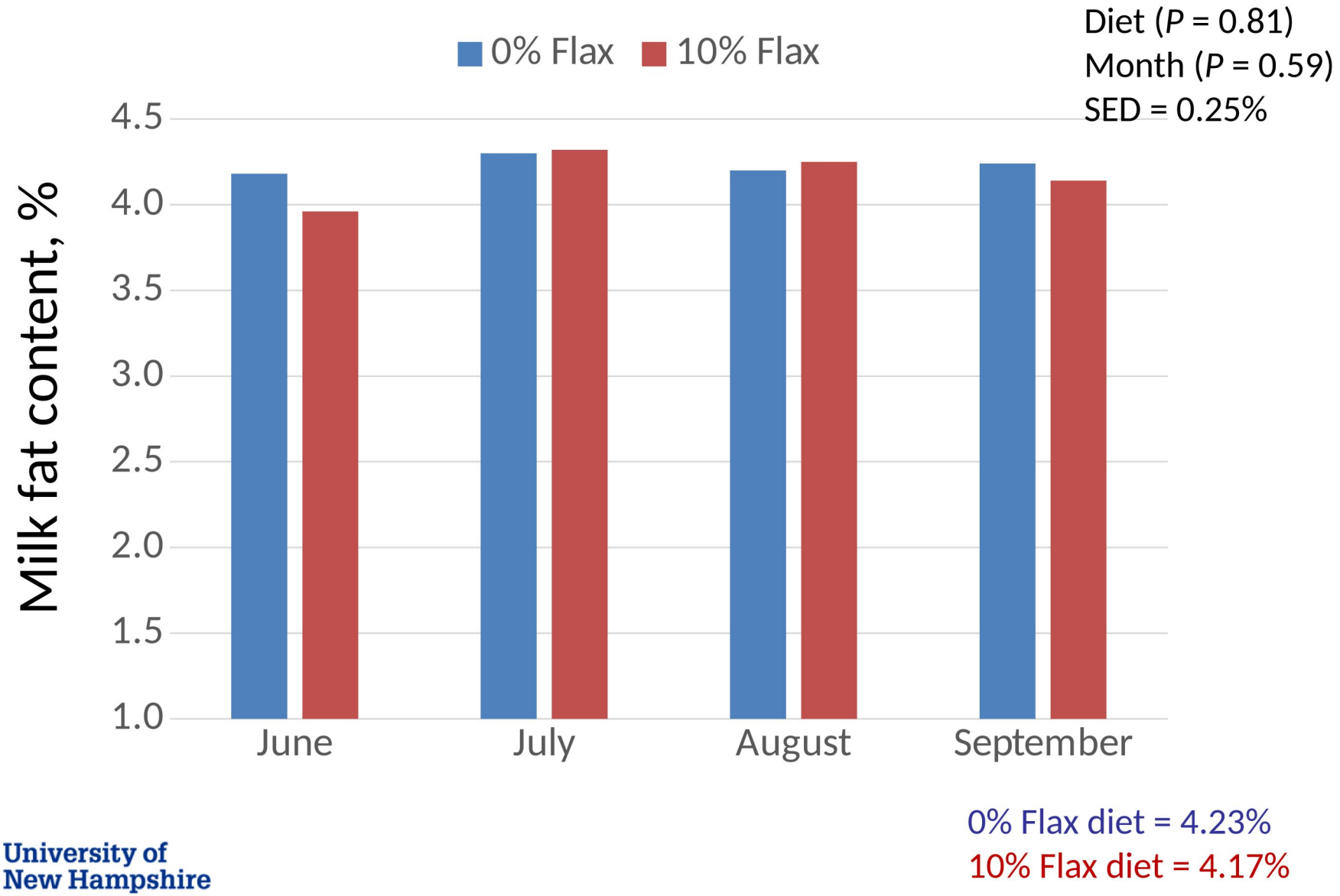


0% Flax diet = 23.9 lb/day

10% Flax diet = 23.1 lb/day

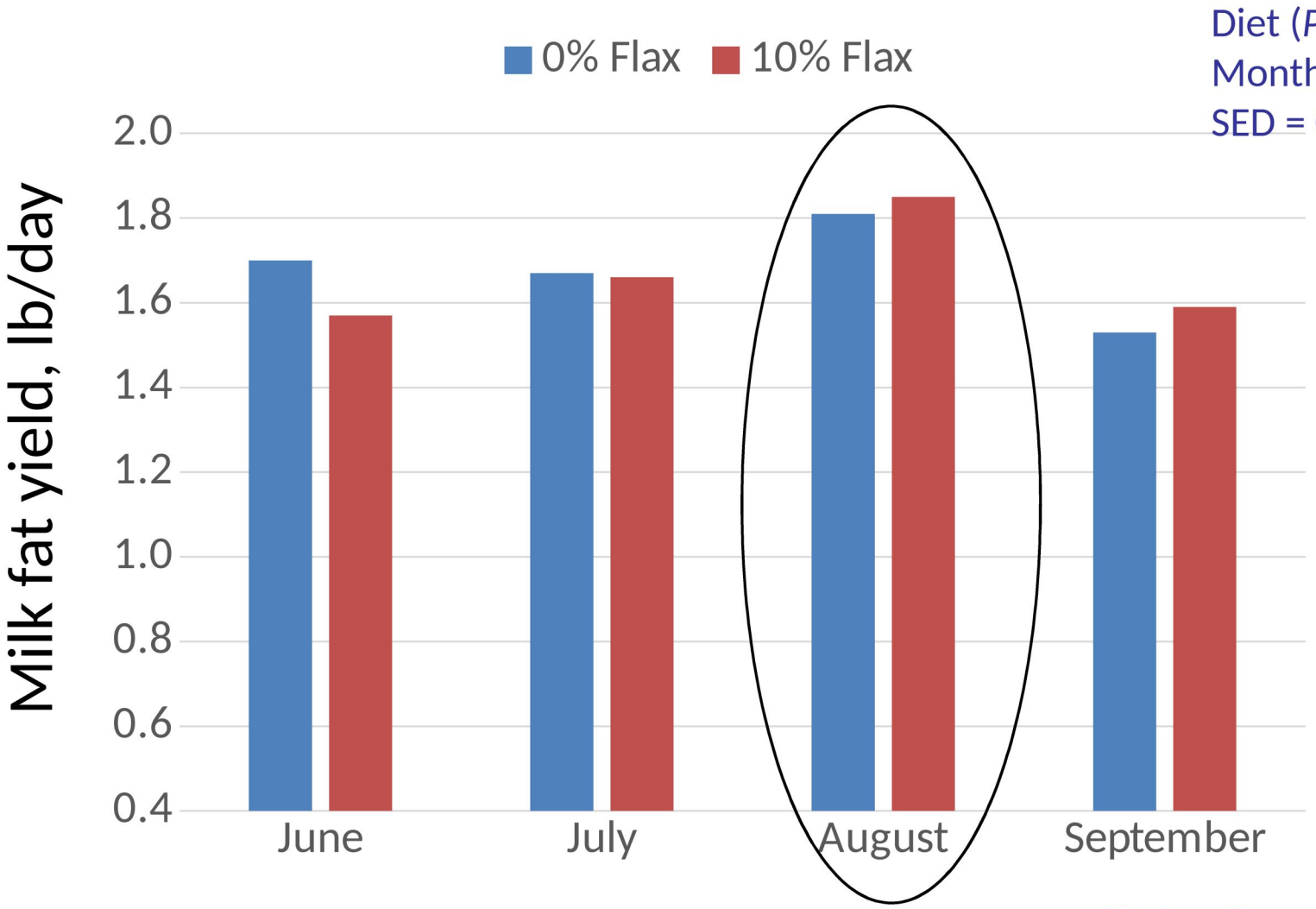
University of New Hampshire

Milk Fat Content Was Similar in Organic Dairy Cows Fed Diets With or Without Ground Flaxseed During the Grazing Season



University of New Hampshire

Milk Fat Yield Was Similar Between Diets but It Was Affected by Month During the Grazing Season

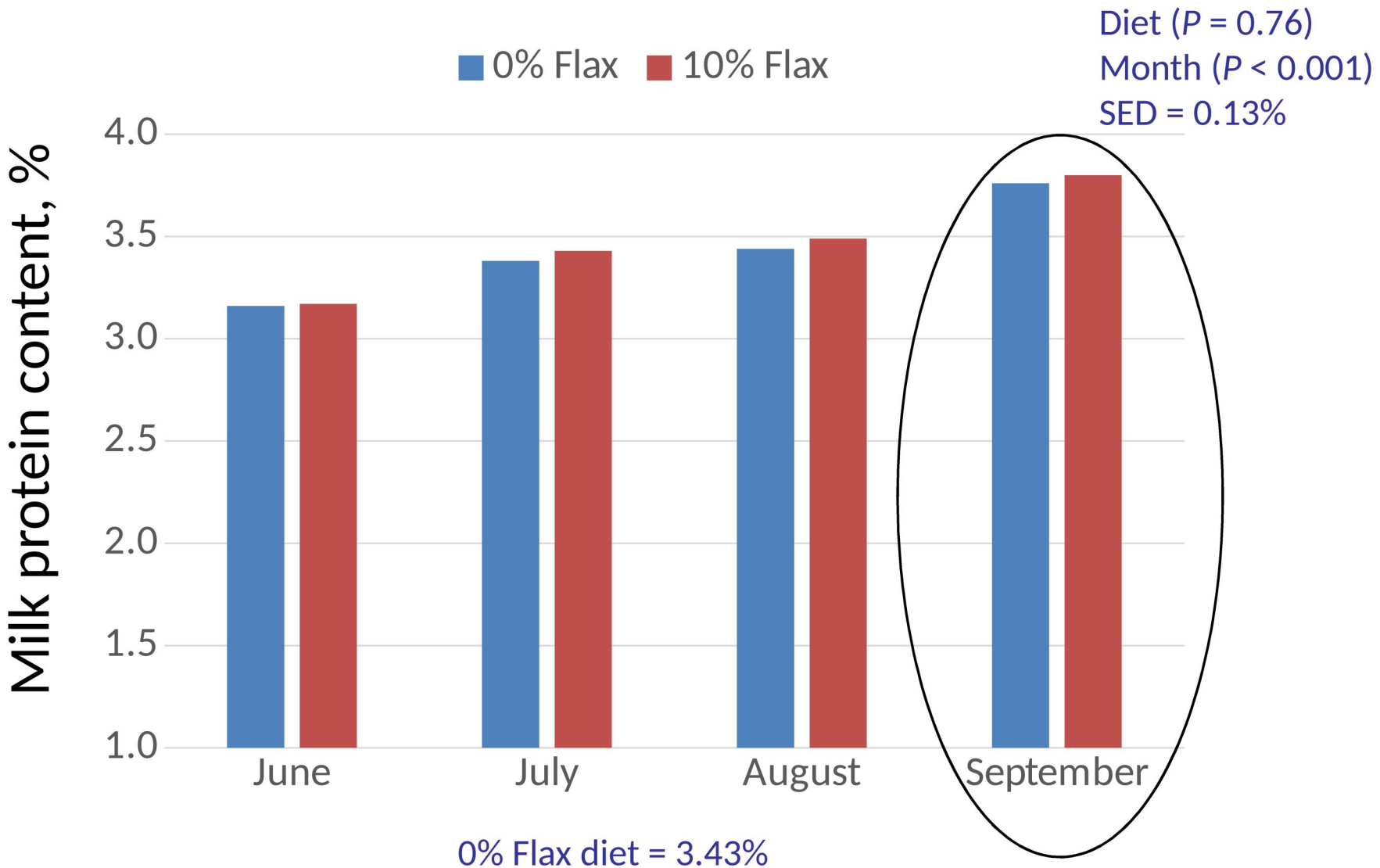


Diet ($P = 0.79$)
Month ($P < 0.01$)
SED = 0.11 lb/day

0% Flax diet = 1.68 lb/day
10% Flax diet = 1.65 lb/day

University of New Hampshire

Milk Protein Content Was Similar Between Diets but It Was Affected by Month During the Grazing Season

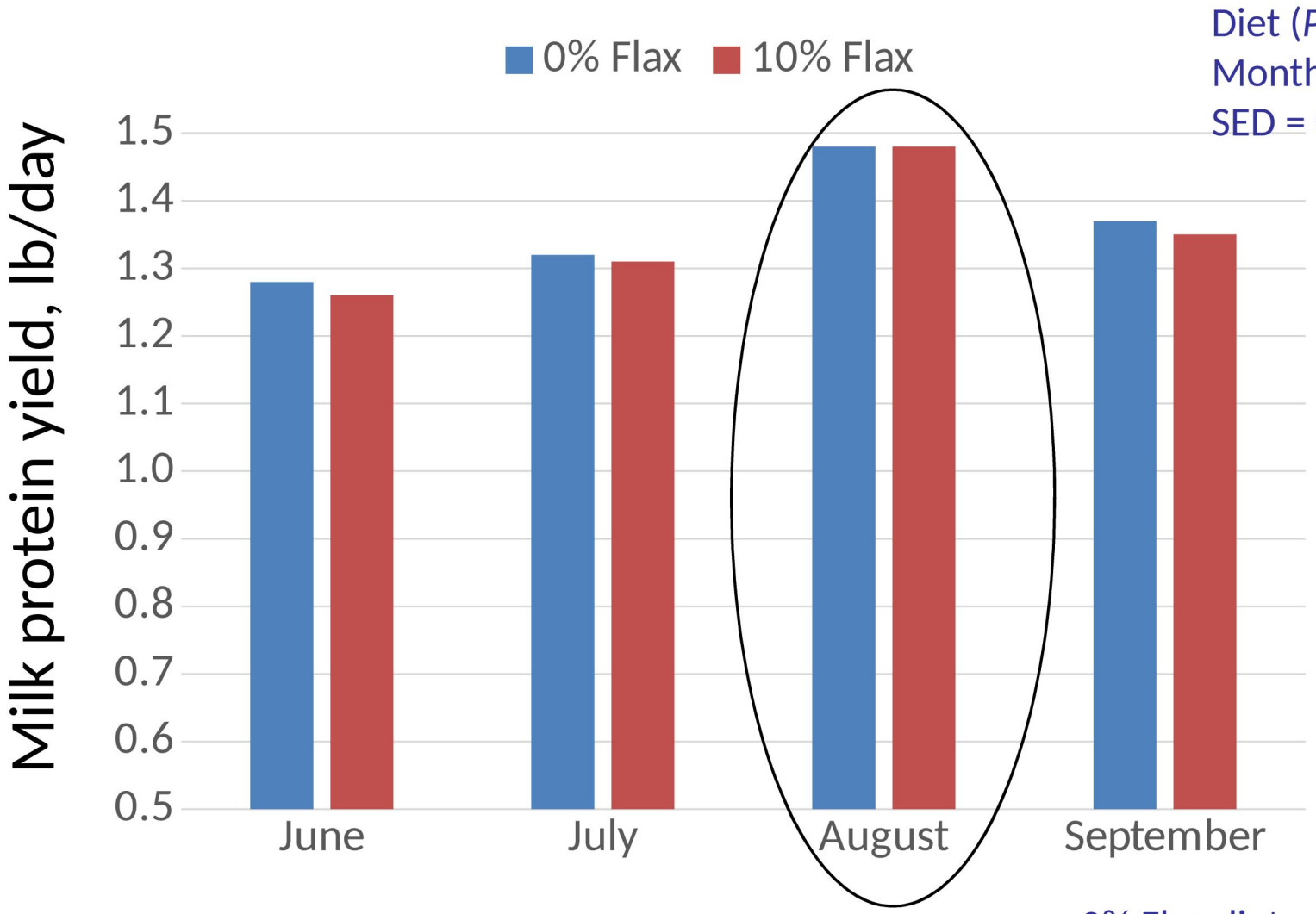


0% Flax diet = 3.43%

10% Flax diet = 3.47%

University of New Hampshire

Milk Protein Yield Was Similar Between Diets but It Was Affected by Month During the Grazing Season



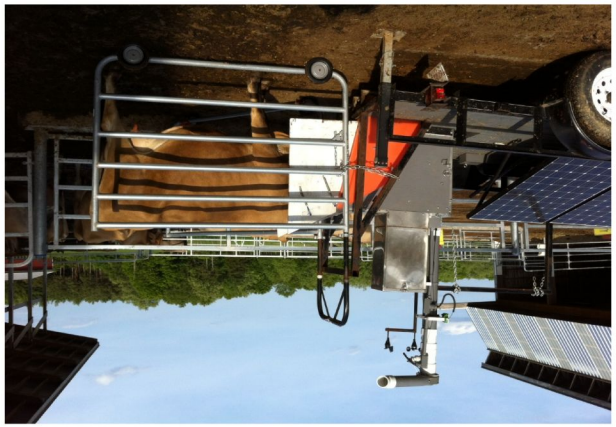
University of New Hampshire

The GreenFeed System

University of New Hampshire

Methane and Carbon Dioxide (CO_2) Emissions During the Grazing Season in Cows Supplemented or not with Ground Flaxseed

	Ground Flaxseed	
Item	**0**	**10%**
Methane, lb/day	0.66 ± 0.08	0.65 ± 0.10
CO_2, lb/day	18.3 ± 2.2	19.2 ± 2.7
Number of visits	4,468 ± 2.3	4,341 ± 2.8



University of New Hampshire

Take home message…

- Increasing ground flaxseed (i.e., from 0 to 15% of diet DM) reduced milk production and yields and contents of milk fat and milk protein during the winter season

- However, more dietary flaxseed improved milk fatty acid profile (i.e., more n-3 and CLA) and reduced methane emissions during the winter season

- In general, supplementing pasture with ground flaxseed (i.e., 10% of diet DM) did not negatively affected milk yield and composition but did not mitigate methane emissions

Acknowledgements

Organic Dairy
College of Life Sciences & Agriculture

Brito's Lab

Jana Kraft (UVM)

Kathy Soder (ARS)

USDA United States Department of Agriculture
National Institute of Food and Agriculture