



**University of New Hampshire**  
College of Life Sciences and Agriculture

# Highlights of kelp meal research at UNH

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# Kelp meal studies objectives at UNH

- Investigate the impact of kelp meal supplementation on milk production, nutrient digestibility, animal health, and methane (CH<sub>4</sub>) emissions during the grazing and winter seasons
- Improving the understanding of iodine metabolism in dairy cows fed kelp meal year-round



# Use of kelp meal in organic dairy farms in the Northeast and Midwest US

- 59% of organic dairy farmers feed kelp meal in the Northeast (Antaya et al., 2015)
- 49% of organic dairy farmers feed kelp meal in Wisconsin (Hardie et al., 2014)
- 83% of organic dairy farmers feed kelp meal in Minnesota (Sorge et al., 2016)



# Why organic dairy farmers feed kelp meal in the Northeast?

- It improves body condition and overall animal appearance
- It decreases milk somatic cell count, reproductive problems, and incidence of “pinkeye” (i.e., infectious bovine keratoconjunctivitis)
- It helps with control of nuisance flies during the grazing season

Source: Antaya et al. (2015)

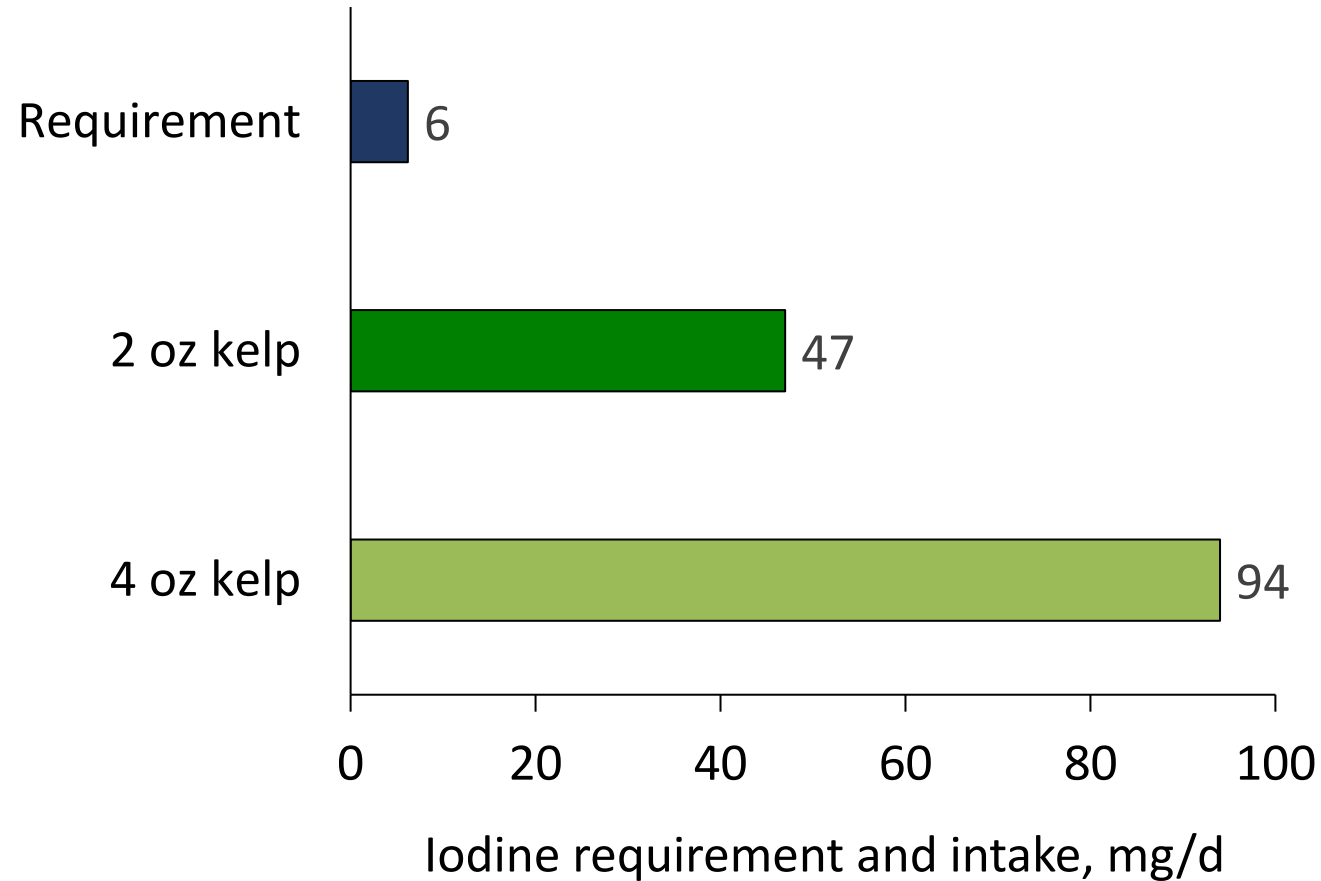


# Pasture vs. kelp meal nutritional composition

Item	Feeds	
	Pasture	Kelp meal
	-----% of dry matter (unless otherwise noted)-----	
Crude protein	19.5	10.2
NDF	51.0	53.9
ADF	31.4	39.9
Ca	0.76	1.31
P	0.36	0.25
Mg	0.28	0.69
K	2.68	3.53
S	0.28	2.84
I, ppm	0.62	820

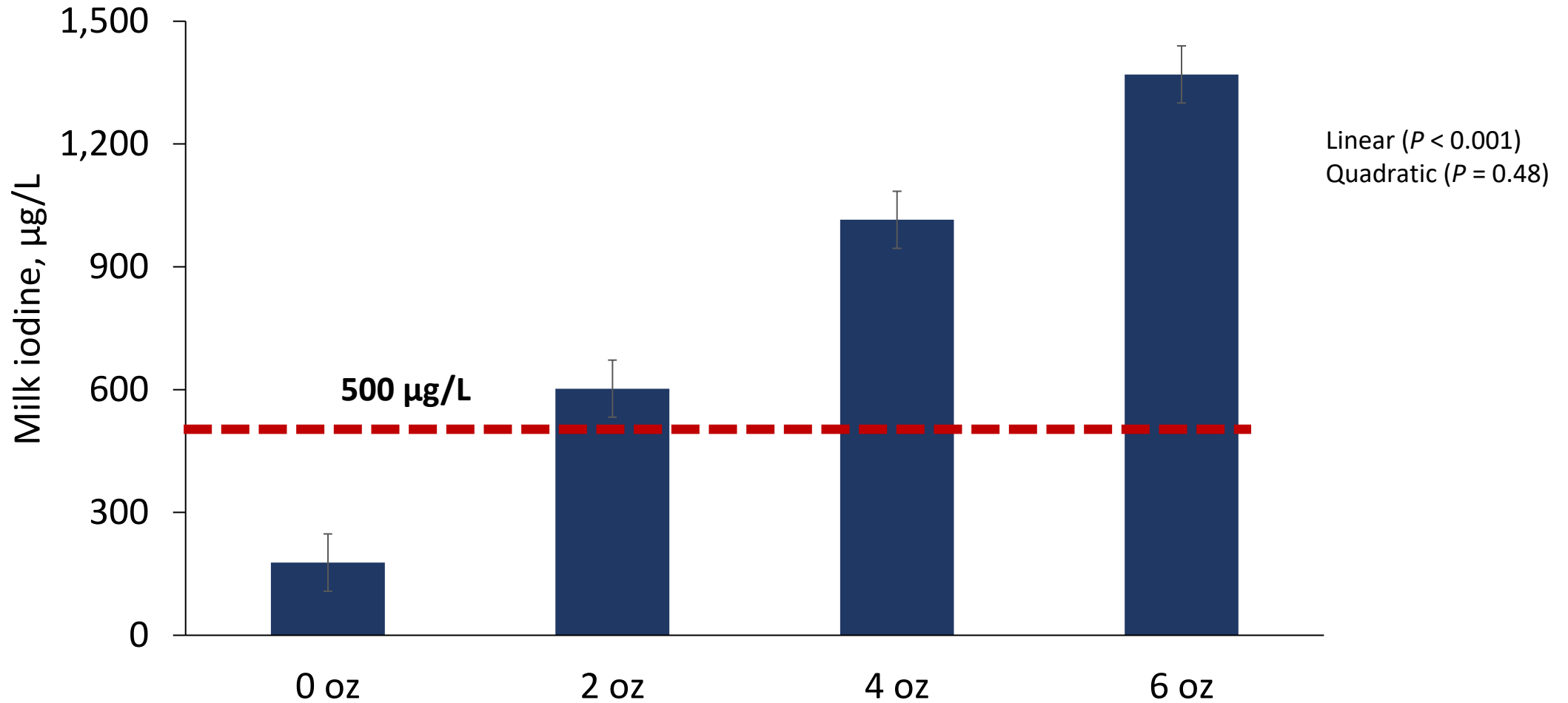
Sources: Antaya et al. 2015; Hafla et al. (2016); Brito et al. (unpublished)

# Iodine intake with feeding 2 oz or 4 oz of kelp meal relative to iodine requirement of lactating dairy cows



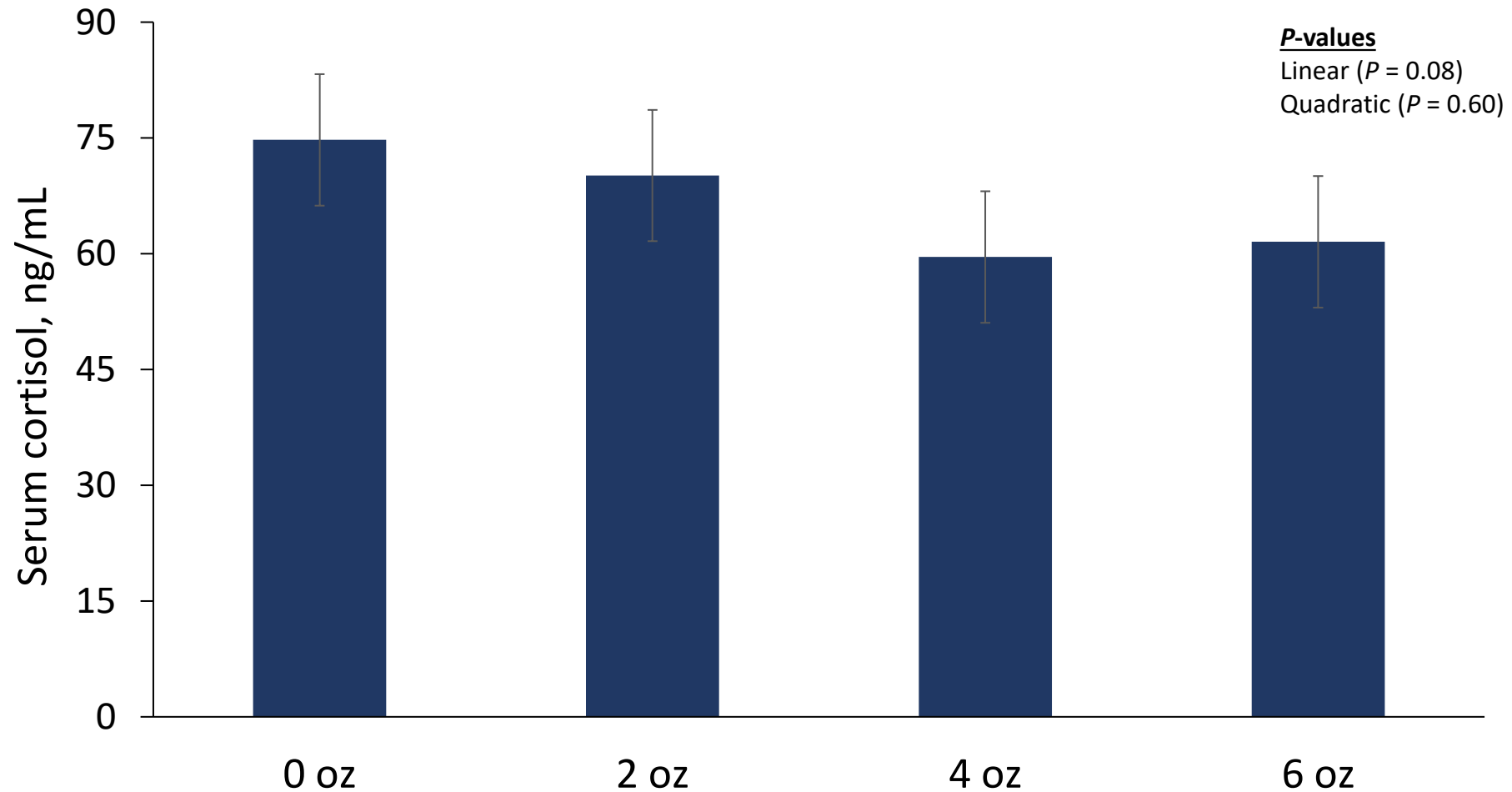
Sources: NRC (2001); Antaya et al. 2015

# Milk iodine increased linearly in organic dairy cows fed kelp meal during the winter season



Source: Antaya et al. 2015

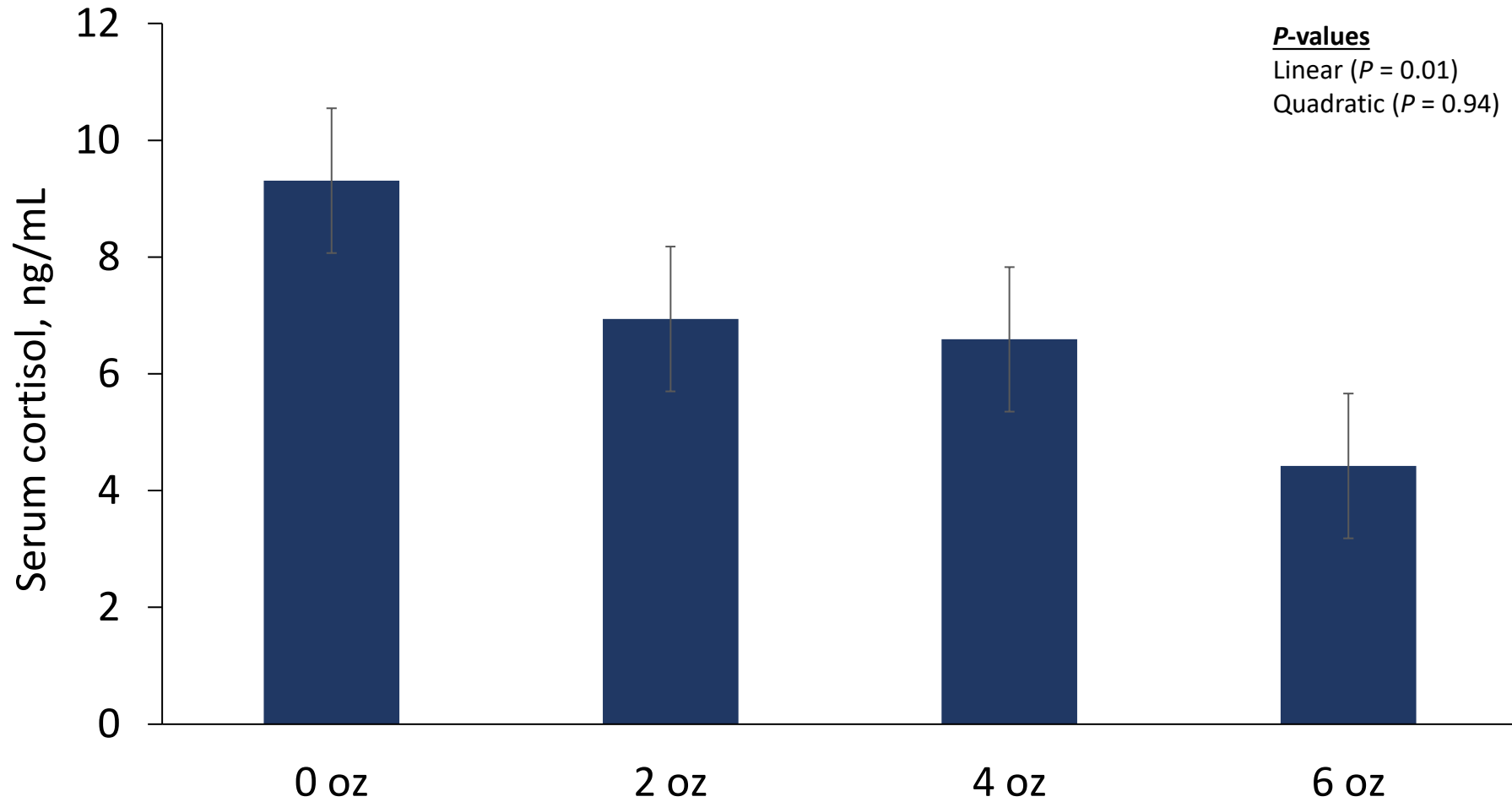
# Serum cortisol in dairy cows fed kelp meal during the winter



Source: Antaya et al (2015)

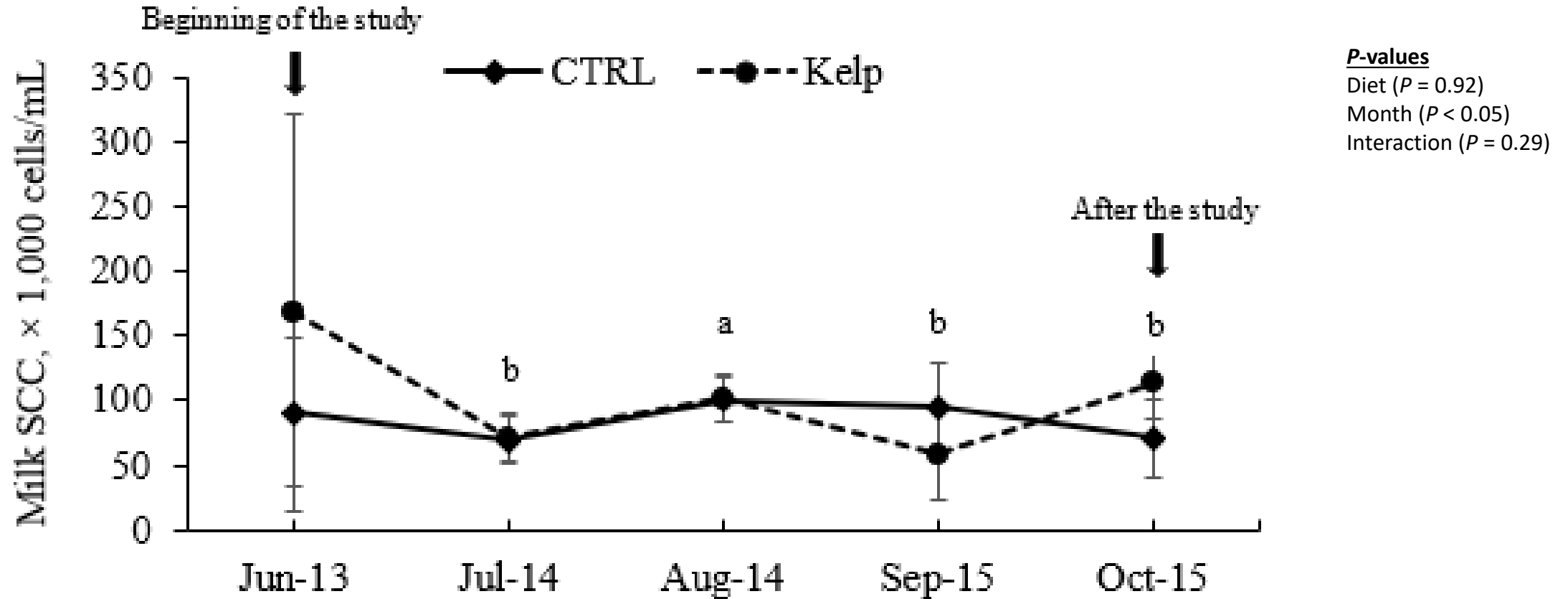


# Serum cortisol in conventional dairy cows fed kelp meal during the summer



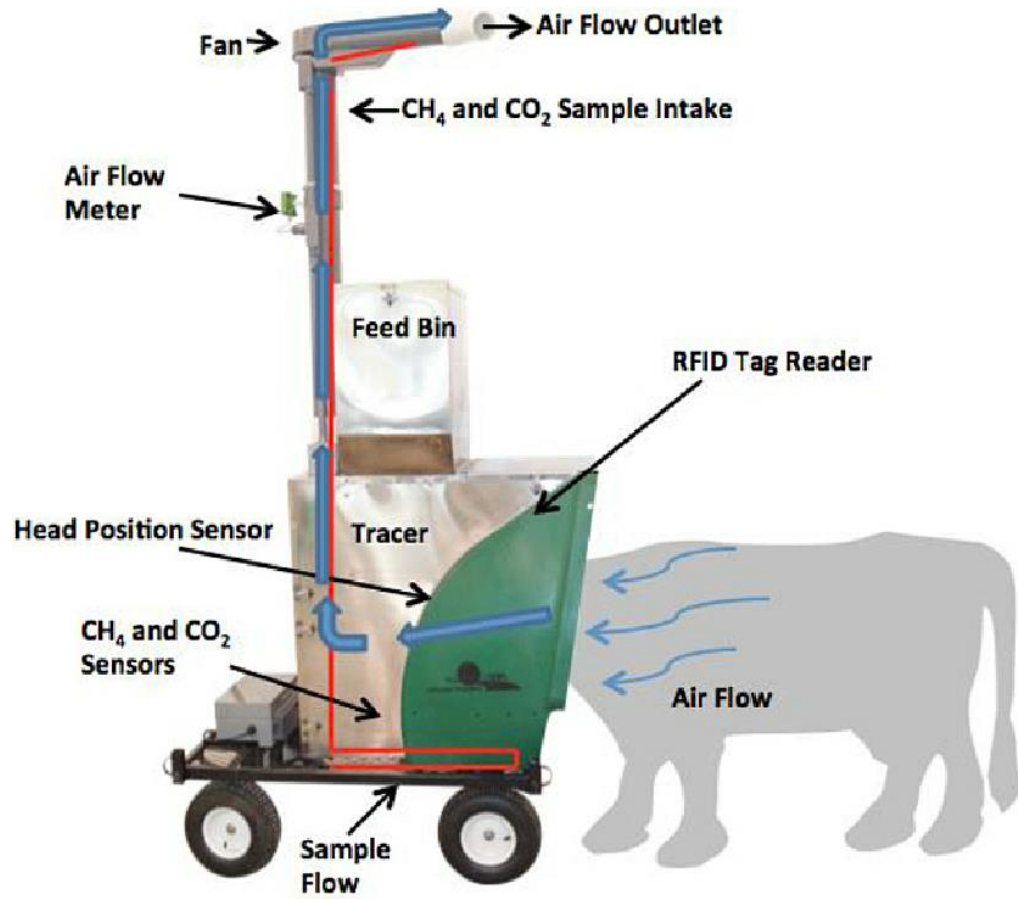
Source: Brito et al. (unpublished)

# Milk somatic cell count (SCC) in grazing cows fed kelp meal



Source: Brito et al. (unpublished)

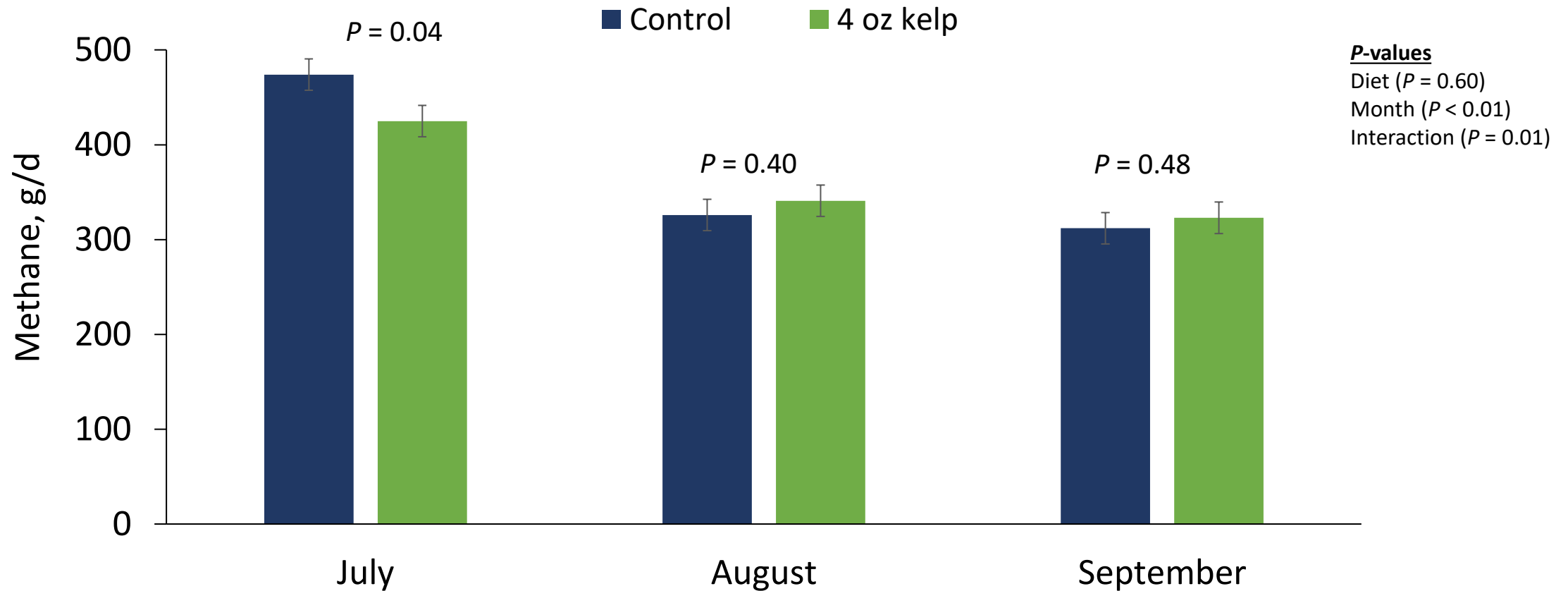
# Methane emission measurements



# The portable GreenFeed gas emission monitoring system



# Methane emissions in grazing dairy cows fed kelp meal



Source: Brito et al. (unpublished)

# Final considerations

- Kelp meal supplementation may provide farmers with opportunities to improve animal health, but further research is needed
- Kelp meal is a high cost supplement (\$50-60 per 50-lb bag)
- There is a critical need for developing a comprehensive evaluation of iodine concentration of retail organic milk



# Acknowledgments



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