

# Experiences grazing birdsfoot trefoil at Northland Sheep Dairy



# 2 Acre Field Birdsfoot Trefoil

## Marathon, NY

### Cortland County

- Soil Type: Volusia
- Soil pH: 5.3
- Buffer pH: 5.2
- P: 2 lbs/acre
- K: 147 lbs/acre
- Ca: 1,372 lbs/acre
- Mg: 148 lbs/acre
- % OM: 6.8

# Soil Preparation and Planting

- **Plowed in 2012 with horses**
- **Disked in 2014 with horse teams**
- **Cultipacked with horses**
- **On May 20<sup>th</sup>, 2014 BFT (17 lb. per acre) planted along with millet nurse crop (20 lb. per acre) using handheld broadcast spinner.**

**Cultipacked again after seeding**

# Disked with horse team



# Cultipacked with horse team



Bruce variety of BFT broadcast at ~17 lbs/acre and Japanese millet at 20 lbs/acre



# Cultipacked again after planting



Millet harvested for hay on Aug 11th





Millet/trefoil regrowth on 9/25/2014,  
millet will winter die



Prior to pulling millet and other plants for counting on 9/25/14



Post "weeding"



Prior to pulling millet and  
other plants while counting  
on 9/25/14



Post "weeding"



# Birdsfoot Trefoil Stand measurements on 9/25/2014 in 1 ft. sq.

# of Plants of :	Birdsfoot Trefoil	Broadleaf Weeds <sup>1</sup>	Grass Weeds	Forage Legumes <sup>2</sup>	Forage Grasses <sup>3</sup>
Sample #					
1	25	5	0	0	31
2	36	1	0	1	118
3	51	5	1	1	85
4	31	17	2	3	79
5	67	6	1	0	64
6	27	5	0	1	76

<sup>1</sup>Broadleaf weeds very small except in Sample #5 where they were noticeable bracken ferns

<sup>2</sup>Forage legumes were all clovers <sup>3</sup>Vast majority of forage grasses were millet

The farm was leasing the field and made a conscious decision not to invest in liming or manure despite low pH and P. The BFT was seeded on 1/3<sup>rd</sup> of the field lengthwise over a 9 acre swatch. The other 2/3<sup>rd</sup> of this swatch and the remainder of the field were left unimproved and served as the control forage



# Lamb management

- Lambs were born Apr 9<sup>th</sup> - 30<sup>th</sup> and raised on their dairy ewe dams.
- They were given 2 g Copper Oxide Wire Particles (COWP) orally on May 23<sup>rd</sup> as part of the farm's plan for the year before the farm checked with researchers and realized this could impact the study because COWP can kill barber pole worms (*Haemonchus contortus*)
- This dosage is more than Cornell studies indicate is needed when COWP works, especially if you think you may want to repeat it over the grazing season. Instead we recommend giving no more than 0.5 g or 1g of COWP maximum at one time. Some Northeast farms have had lambs die of copper toxicity when given dosage of 2 grams. Please check with your veterinarian.
- Lambs were weaned on June 1<sup>st</sup> and put out to conventional pastures with maiden yearling ewes
- Fecal samples on a subset of lambs about 3 weeks before the study started indicated that the lamb feces had about 100 to 3200 strongyle worm eggs per gram with about 0 to 9 % of the worm eggs being barber pole worm. Thus, the COWP may have been effective at reducing barber pole worm infection.
- Grazing trial started July 15<sup>th</sup> (1 ½ months after weaning)



# Treatments

- 8 lambs and 2 maiden yearling ewes were on the Birdsfoot Trefoil Treatment. Birdsfoot Trefoil (BFT) group got 12' \* 164 ' of BFT pasture per day, i.e. 1968 sq. ft. of BFT daily or **196.8 sq. ft. per animal per day.**
- Eight lambs and 2 maiden yearling ewes in the Control group on unimproved pasture in the same field were also tracked. The entire control group consisted of 62 lambs and 4 maiden Yearling ewes. The Control group got 120' \* 150 ft. of unimproved pasture per day, i.e. 18000 sq. ft. daily or **272.7 sq. ft. per animal per day.**
- Fences were moved daily. However, animals could backtrack for up to 3 days.

Both groups got free choice minerals -  
Fertrell Nutrient Balancer, Kelp and Redmond Salt



Control group was on unimproved pasture in same highly acidic field as the BFT group



**Some spots of the control sections had very unpalatable weeds**



A photograph of a flock of sheep grazing in a lush green field. The sheep are scattered across the middle ground, facing various directions. The field is filled with tall, vibrant green grass. In the background, a dense line of trees with green foliage forms a natural wall. The sky is bright and clear. The text "Most were better but still unimproved" is overlaid in white, bold font in the center of the image.

**Most were better but still unimproved**



**Birdsfoot Trefoil Paddocks**

**7/15/2015 = 72% BFT**

**7/29/2015 = 78% BFT**

**8/12/2015 = 86% BFT**

Animals were sampled approximately every two weeks



Sampling included FAMACHA scoring by same person each time





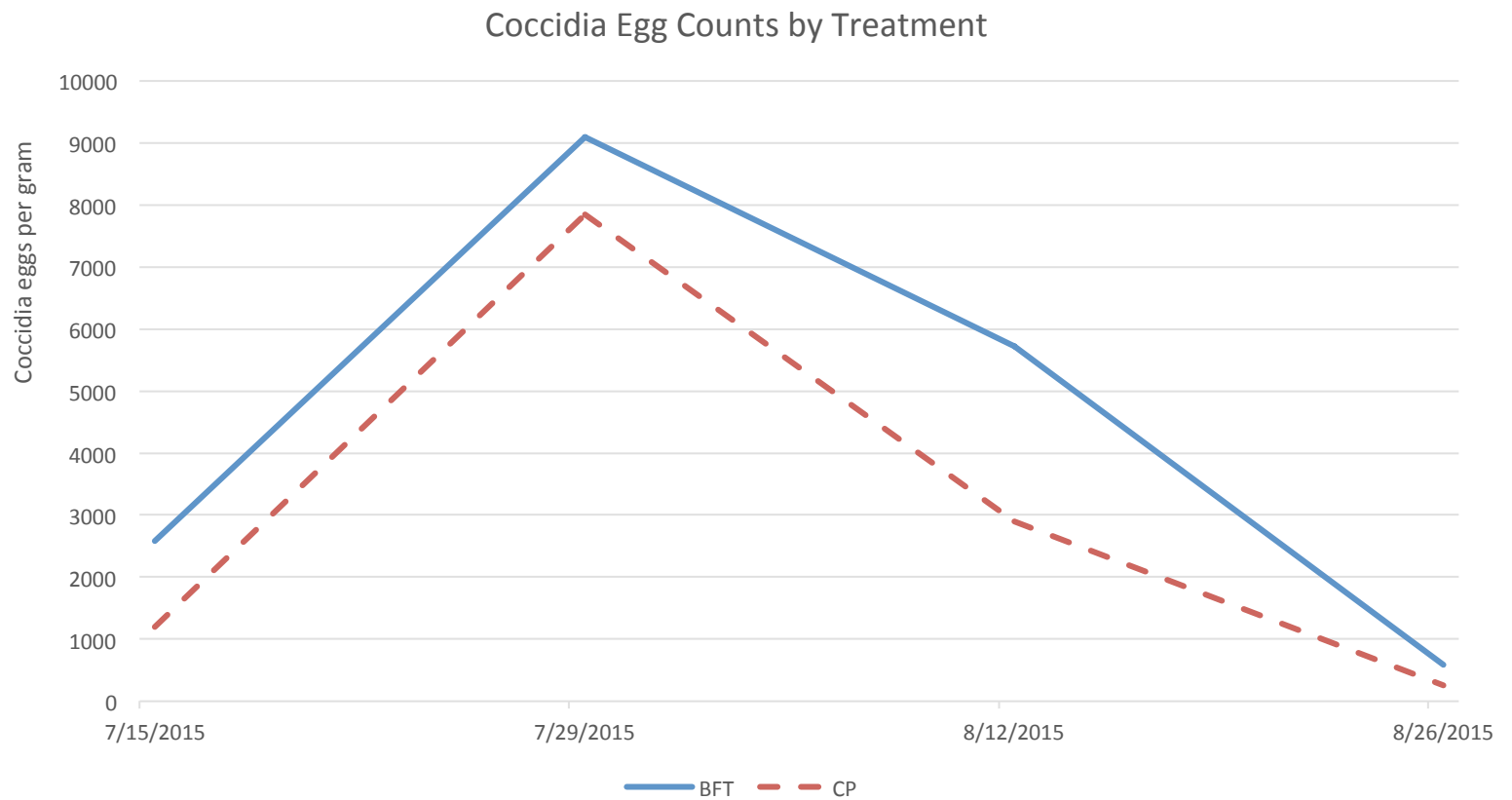


**AND Fecal Sampling!**

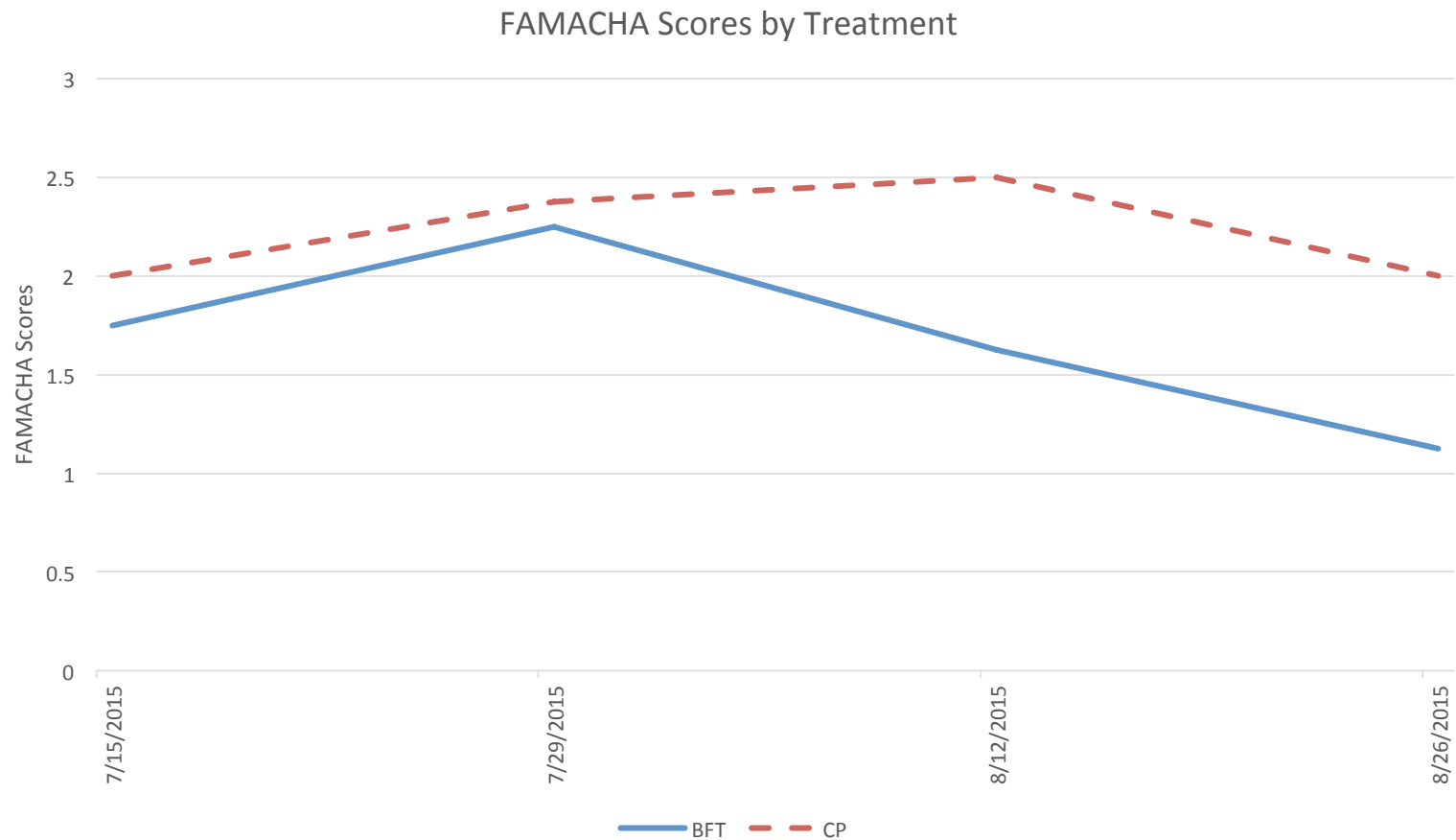
Lambs were weighed at the beginning and end of the 40 day grazing trial.



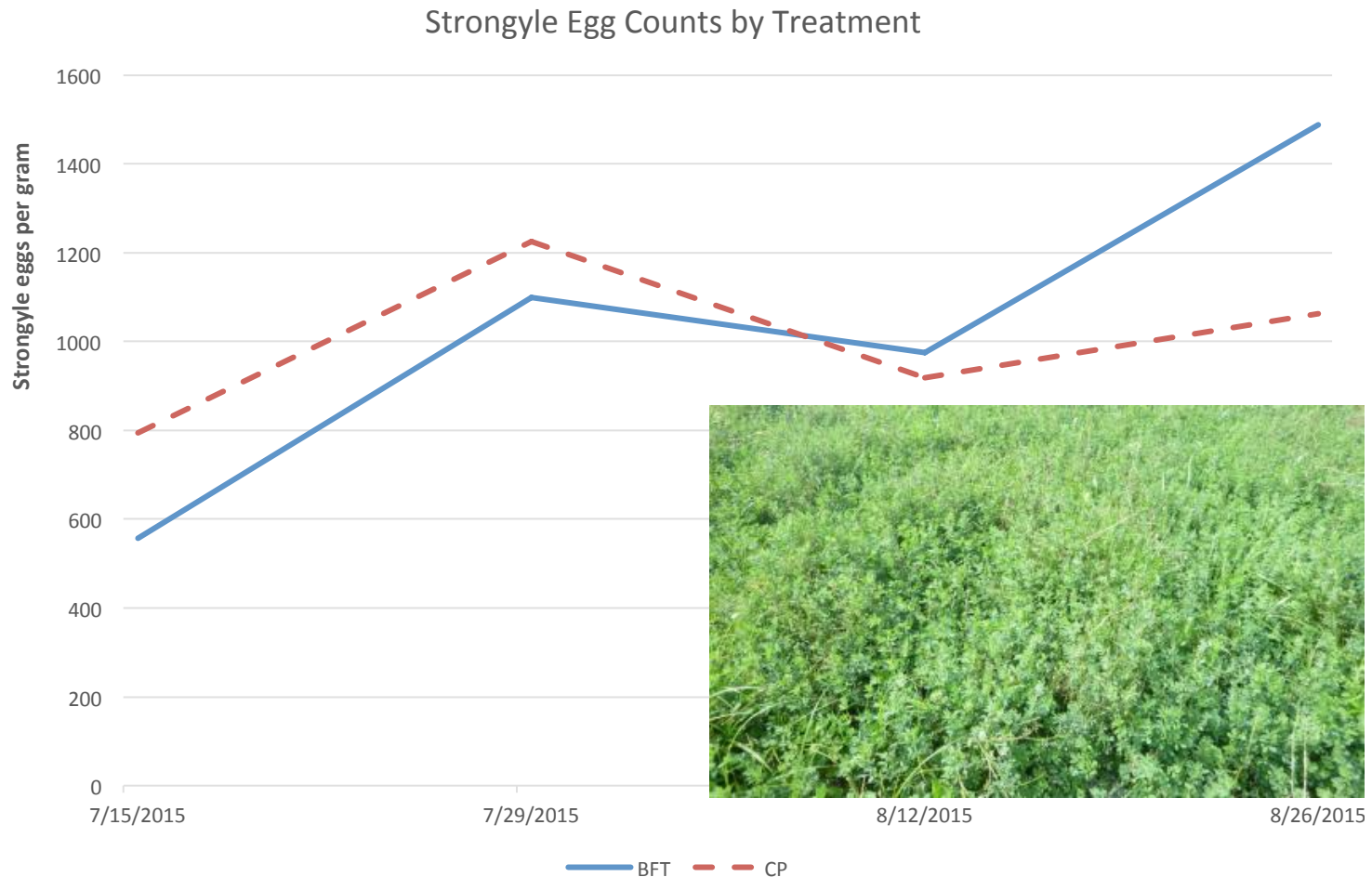
Animals seemed to undergo some stress first 2 weeks – or at least coccidia count went up and then back down



On average, the Birdsfoot trefoil group had better FAMACHA scores (lower is better) on wk. 4 & 6 – almost one whole point better. The difference between forage treatments was statistically significant ( $P = 0.039$  for fixed effect of forage,  $P=0.053$  for fixed effect of forage\*day).

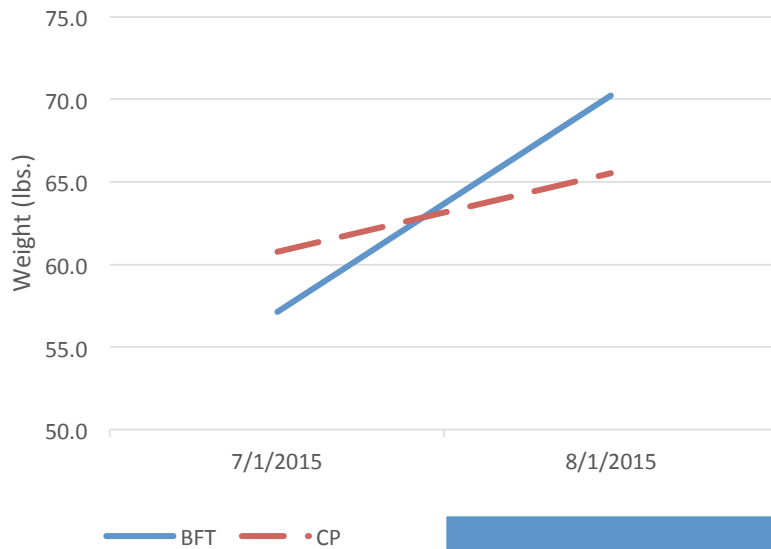


Fecal egg counts were similar between the two groups until week 6 when the average egg count for the BFT group increased (very few of the strongyle worms were barber pole worms, most were nodular worm) . The difference between forage treatments was not statistically significant.



# Birdsfoot trefoil group gained significantly more (P=0.000)

Weight Gain Over 40 Day Grazing Trial



	Birdsfoot Trefoil Lambs	Unimproved Pasture Lambs
<b>7/15/2015</b>	57.1	60.8
<b>8/24/2015</b>	70.3	65.5
<b>Gain (lb)</b>	13.1	4.8
<b>Days</b>	40	40
<b>DailyGain (lb)</b>	0.33	0.12
	1/3 lb	< 1/8 lb

Dry Matter Yield/Acre, percent crude protein (CP) and percent total digestible nutrients (TDN) for the Birdsfoot Trefoil (BFT) and Unimproved Pasture sections of the field, and the Percent and Amount of Birdsfoot Trefoil in the BFT section. Sampling included very mature grasses (30 – 36 ” height) and unpalatable broadleaf weeds as well as good forage.

	BFT Pasture					Unimproved Pasture		
Date	DM Yield lbs./acre	BFT Yield lbs./acre	%BFT	%CP	%TDN	DM Yield (lbs./acre)	%CP	%TDN
7/29/15	4239	929	78.1	14.5	64	2866	8.7	62
8/12/15	3600	502	86%	15.1	64	4048	9.1	61

# Summary

- FAMACHA scores and weights, but not strongyle worm eggs per gram of feces, were significantly better for the lambs grazing Birdsfoot Trefoil (BFT) than for the lambs grazing Unimproved Pasture on the same field.
- Seeding BFT greatly improved the quality of the pasture even without the addition of lime or fertilizer.
- It is hard to determine whether improved FAMACHA scores in BFT lambs were due to specific biological compounds or increased bypass protein (due to binding of proteins with condensed tannins) in BFT or simply because of the better nutrition (as evidenced by better gains and forage analysis) in BFT pasture versus unimproved pasture.



**Birdsfoot trefoil regrowth 8/24/2014**



**Examples of unimproved pasture regrowth (8/24/2014)**



# Status of BFT field on June 26<sup>th</sup>, 2017

- Percentage of BFT in the field still >25%. Six samples averaged 46% BFT and 37% BFT in fresh and dry matter biomass, respectively. Much of the remainder of the forage was mature grasses.

