

Minka Farm Parasitology Report 2016

History

Minka Farms is a grass-fed by Animal Welfare Approved beef operation that Dr. Kimberly Harry and her husband founded in 2007. They own a mixed breed cow-calf herd and raise their calves on grass to finishing. In addition to cattle, they own ducks, heritage breed chickens, goats, horses, donkeys, and hogs. Previously the farm had been used for dairy for 40 years and the prior owners liberally used Ivermectin on their cattle. Furthermore, the pastures were overgrazed and deficient in phosphorus and potassium. The Harry's fertilized their land and seeded it with fescue, clover, and mixed forages that form the basis for their grazing operation.

Currently there are 94 animals in their herd – they own 44 cows, 34 steers, 14 calves, and 2 bulls. The two bulls are kept separate from the other 92 cattle, except during breeding season. The Harry's break their herd into three groups during their breeding season, which runs May – July. Therefore they expect calves to drop February – April. They work their cattle twice a year; in the spring, the animals are vaccinated for blackleg and respiratory diseases and are subsequently vaccinated for blackleg in the fall. The Harry's selectively deworm with Valbazen once a year; in fact, the last time that they dewormed the entire herd was in October 2012.

Dr. Harry's parasite control program relies on pasture rotation to minimize the risk of infection in her cattle. She rotates her herd of 92 onto fresh pasture roughly every 24-36 hours depending on how quickly the animals graze down the grass. Dr. Harry aims to keep the grazed sections at least three inches tall because the nematode larvae generally do not climb more than three inches up the stalks of grass. After the herd is moved off of their section, the pasture is rested at least a month. Resting for this period of time achieves two goals, one from a parasite perspective and the other from a nutritional outlook. Whatever eggs the cattle do shed should hatch within a week and the larvae should die quickly if not consumed upon hatching. Furthermore, resting the grass for 30 days allows the forage to regrow enough to maintain a beef cattle grazing operation.

Our primary interest at this farm is to quantify the strongyle-type eggs in the fecal matter that correlate to infection with *Ostertagia* and *Cooperia* species. We are also qualifying, but not quantifying, the presence of coccidia, tapeworms, *Capillaria*, and *Strongyloides* in their herd. Older cows generate immunity to nematodal infection whereas the animals a year of age and under are more susceptible. Therefore we are mainly interested in sampling the yearlings to gauge the impact of strongyles on this herd and thereby assess the effectiveness of the Harry's rotational grazing schedule.

Besides the cattle, we are also interested in sampling the heritage chicken flock to assess for fecal ova. The Harry's have 45 free-range chickens that have pasture access during the day and roost in the evening. Whereas we are concerned about strongyle infections in the cattle, chickens shed more ascarid ova which are stable in their environment longer than a strongyle ovum. Therefore the poultry pastures require longer resting periods to clear away the infective ova. Our goal is to assess the chickens' risk of re-infection based on the species we find in the fecal samples.

Results

Cow ID	Age in Years	Strongyle Type (epg)	Coccidia	Strongyloides	Capillaria
V8	8	1	+		
W6	7	3			
X2	6	0			
Y8	5	0	+		
Y10	5	0	+		
Z4	4	1			
Z20	4	1		+	
Z42	4	1			
Z46	4	1	+		
B17	2	5	++		
B53	2	1	+		
B69	2	6			
B81	2	0	+		
B81A	2	0	+		
B81B	2	0	+		
B87	2	2	+	+	
B87B	2	0	+		
B91	2	1	++		
B92	2	2			
C1	1	4	+	+	
C2	1	4			
C6	1	0			
C9	1	9	++		+
C21	1	6			+
C23	1	2	+		+
C26	1	33	+	+	
D4	<1	1			

Table 1: Summary of detected ova in fecal samples across various age groups in the herd. No Monezia species were found.

Poultry: Ascarid and Capillaria ova were found in low numbers in the poultry fecal samples.

Discussion

All of the cattle appeared outwardly healthy with a good haircoat, healthy BCS, and normal fecal matter. Furthermore, no evidence of scours was noticed that could indicate parasitic infection. As predicted, the yearling C cattle have the highest strongyle egg counts, but they are still well below levels recommended for deworming. The highest fecal egg count this year was 33 epg, which is less than half of the highest count from last year (68 epg). The older groups of cows have very low levels of ova and probably not responsible for seeding the pastures with the next round of infectious larvae. The

anomalous cows and older calves with *Strongyloides* ova were probably infected via skin penetration. Lastly, the low numbers of *Coccidia* indicate that they are present in the environment but are not numerous enough to cause any pathology. Overall, the rotational grazing strategy that the Harry's use is itself an effective parasite control measure because their cattle are not able to re-infect themselves even after shedding ova. We recommend that they maintain their protocol regarding grass height, rotational frequency, and resting periods because it is working at least as well as traditional deworming methods. At this point, we do not recommend deworming any of the animals that were sampled. In the future, we advise the Harry's to selectively deworm only the highest shedders to prevent drug resistance while maintaining an internal refugia population.

The chickens also appeared outwardly healthy. We did not detect any coughing or dirty animals that would suggest dense crowding or parasitic infection. The Ascarid ova in the chickens' fecal samples give us the most concern simply because they are so stable in the environment. Ascarid ova can persist for several months to a year depending on the weather patterns because they have a thick outer shell that protects the larvae inside. Therefore our recommendation regarding the chicken flock is to rest their "pasture space" for 6 months before re-using it.