

FINAL REPORT

Project Title: Verifying new sustainable methods for small ruminant parasite control

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GOALS:

The goals of this project were:

- 1) To see if the results of my last year's project could be replicated. Last year I found a decrease in parasites when my goats were rotated to a pasture containing a legume plant, serecia lespedeza. I was attempting to discover if it was the rotation or the serecia that was causing the decrease in parasite eggs.
- 2) We were also testing two different Clostridium vaccines to determine which was the most effective in goats.
- 3) I also wanted to try using the FAMACHA method of estimating parasite loads in goats, which examines the eyelid color and compares it to a chart to determine if the animal has enough parasites to be causing anemia. A score of 1 is considered optimal, 2 acceptable, 3 borderline, 4 dangerous and 5 fatal. All the scores are based on the color of the lower lid of the animal's eye. A chart is available with the colors illustrated. The chart was developed and copyrighted by the Livestock Health and Production Group of the South African Veterinary Association. Training is required to use the system.

FARM PROFILE

My husband, my daughter and I farm approximately 78 acres in Somerset County Maryland. Our farm borders the Manokin River on one side and Kings Creek on another. Our farm is in the Chesapeake Bay watershed and part is in the critical area. We raise registered Polled Hereford cattle, Montadale sheep, purebred Oberhasli dairy goats and crossbred Boer meat goats.

The majority of our farm is in hay and pasture. All of our grain is purchased from other farmers. We raise our hay and also sell hay.

Due to the fact that we are so close to tidal waters we try to be very careful with all inputs on our farm. All animals are fenced out of areas that are adjacent to the creek and river and we use minimal chemical fertilizer and herbicides.

Since the study started we have encountered some serious weather problems that impacted our study results. Our land is fairly low lying and in very wet weather we can have some serious drainage problems. Winter of 2003 –2004 was very wet followed by a cool dry spring and early summer and then became very wet mid- July and after with record amounts of rainfall.

PARTICIPANTS

- 1) Technical Advisor: Dr. Niki Whitley
Dr. Whitley is both a professor in the animal science department of the University of Maryland Eastern Shore and a Cooperative Extension specialist. She helped me design my study and advised me when weather difficulties were impacting my study. She also helped run the seminar where I was trained to use the FAMACHA eye chart.
- 2) Collaborator: Susan Schoenian
Susan Schoenian is a Maryland Cooperative Extension sheep and goat specialist at the Western Maryland Research and Education Center. Her web site has been my chief resource for information on goat production methods as well as health issues for goats. She also put on the seminar where I was trained to use the FAMACHA chart. Her web site sheepandgoat.com has been also been a very important outreach resource for me.
- 3) General Farm Labor: Harry Taylor
My husband Harry Taylor has been a farmer all of his life. Originally from Iowa where his father and brothers still farm, his main area of expertise is purebred cattle .For this project he has done all of the cultivation, seeding and spraying of my lespedeza pasture in his former heifer field. He also helped with the weighing and fecal testing of the goat kids.

PROJECT ACTIVITIES

This study consisted of two main project activities, the testing of the two different Clostridium vaccines and the rotational grazing serecia study .

For the Clostridium vaccine study all of the goats on our farm were vaccinated twice with either Bar Vac CD&T vaccine or Vision CD&T vaccine. The 20 weaned goat kids that were on the rotational grazing study were divided into two groups randomly and given one of the two vaccines. The adult goats were divided into two groups according to their time of kidding. The early group kidded in February and early March and were given the Bar Vac vaccine. The late group kidded in April and early May and were given the Vision vaccine. They were both watched for signs of scouring and for abscesses.. The goats were vaccinated on April 18, 2004 and revaccinated on May 11, 2004 as per label directions 2 ml subcutaneously.

For the rotational grazing study a group of 20 weaned Boer cross goat kids were used. The original plan called for an initial weighing after weaning and then a move to the Serecia lespedeza pasture. Possibly due to a very wet winter very few of my serecia plants had survived. My husband disked the field and replanted the field with serecia lespedeza seed in early May. The weather turned dry and germination was not ideal. Grassy weeds became a problem as they had last year. We determined that there was lespedeza in the field so we tried spraying with Poast a herbicide label for controlling grass. It was applied with a tank sprayer at the recommended rate of 1.5 pints per acre. We were unable to find a custom sprayer to do such a small field so we purchased a used sprayer and the smallest size container of Poast, 2.5 gallons.

The 20 goat kids were weighed, FAMACHA scored and fecal tested on June 1, 2004. They were left on the grass pasture where they had been with their dams who were moved to another pasture.

On July 2, 2004 the kids were again weighed, FAMACHA scored and fecal tested. The weather was still dry but the lespedeza pasture had some growth so the goat kids were moved.

On August 5, 2004 the 20 goat kids were again weighed, FAMACHA scored and fecal tested. The weather had turned extremely wet in mid July and there was standing water in many of our fields including the lespedeza pasture. The goats were moved back to the grass pasture which sloped to the river and had better drainage. The grassy weeds had again taken over the serecia lespedeza but we could not spray again with standing water and continuing rain.

The goat kids were beginning to show signs of parasite infection by early September and on September 1 were FAMACHA scored and were all wormed with either Cydectin or Valbezol depending on the apparent severity of their parasite problem. The kids with the worst FAMACHA scores were wormed with Cydectin and the ones they were not quite as bad were wormed with Valbezol. I decided on this based on a study done at the University of Maryland Eastern Shore showing that the goats in our area had less of a problem with worm resistance to Cydectin.

At this point there was very little serecia left in our pasture. It seems that serecia lespedeza like alfalfa cannot tolerate continuous wet conditions. The rotational grazing study was called off.

RESULTS

The results of the vaccine study can be seen in Chart 1. 9.75% of the goats kids vaccinated with the Bar Vac CD&T vaccine had problems with scouring as opposed to the Vision CD&T vaccine with 7.31%. The adult goats did not have a problem with scouring with either vaccine. Goats receiving the Bar Vac vaccine had a 0% incidence of injection site abscesses while the Vision vaccine had an abscess rate of 19.51%. This was an unexpected result and caused some problems for us in that it was my daughters Oberhasli show goats who had the worst rate of abscesses (100%) and she could not show them until the abscesses had been drained

and had healed. Only one goat kid died with classic symptoms of clostridial disease. He died on a Friday evening in warm weather so we did not wait and take him to the animal health lab on Monday for a definite cause of death. He had been vaccinated with the Vision vaccine.

CHART 1

Goat ID	Vision vaccine	Bar Vac vaccine	scour	abcess
46		x	x	
47		x		
51	x			
52		x		
53	x			x
54	x			x
55	x			x
56		x	x	
57	x	x		
58		x		
59	x			
60		x		
61	x			
62	x		x	x
63		x		
64		x	x	
66		x	x	
67	x			
68	x		x	
75		x		
Saffire		x		
Sophia		x		
Irish Crème		x		
O8		x		
Emerald		x		
O7		x		
O6		x		
Comet		x		
Sky		x		
Caramel		x		
O5		x		
Bambi	x			x
33	x			

Brenna	x		x
34	x		
35	x		
41	x		
36	x		
Erin	x		
Blair	x		x
Brie	x		x

I could not verify my results from last year's rotational grazing study where the high tannin serecia lespedeza pasture seemed to reduce the parasite load in our goat kids. Due to adverse weather conditions the serecia lespedeza could not be adequately established. This year probably due to the onset of very wet conditions after a very dry early summer the fecal egg counts actually increased after the goat kids were put out on the pasture where the serecia lespedeza had been planted. The FAMACHA eye color chart score decreased slightly on the serecia pasture. The FAMACHA eye chart turned out to be a very useful tool to estimate the level of anemia in our goats but I could not find any real correlation between the FAMACHA score and the fecal egg count in individual goats. The weight gains were very similar on the two pastures.

Chart 2 shows the results of our weight FAMACHA scores and fecal egg count for the three times that they were done.

Chart 2

6/5/04 INITIAL

kid ID#	FAMACHA	weight	fecal egg count
#56	2	54.6	462
#57	1	59	0
#68	1	48.5	88
#66	1	50.7	220
#63	2	33.1	297
#75	1	49.5	440
#52	2	45.1	871
#46	2	54.5	396
#65	2	41.7	134
#59	1	58.6	231
#62	1	48.4	165

#55	2	50.9	176
#51	2	57.3	0
#60	2	69.3	198
#47	1	54.8	484
#53	2	52.1	603
#58	2	57.8	0
#64	3	40.9	495
#54	1	51.2	264
#61	2	60.5	871
AVERAGE	1.65	51.42	320

7/2/04 on grass

kid ID#	FAMACHA	weight	fecal egg count
#61	2	61.4	536
#51	2	60.5	201
#57	2	60.8	201
#59	1	62.7	440
#62	1	53.9	469
#47	2	61.9	not available
#55	2	59.6	308
#53	2	58.5	220
#54	1	57.2	495
#58	3	59.0	not available
#75	2	50.9	0
#63	3	36.0	536
#65	2	46.5	165
#66	2	51.0	66
#68	3	47.2	396
#60	2	65.3	363
#56	3	55.1	264
#52	2	52.0	201
#46	3	58.0	0
#64	2	49.2	88
AVERAGE	2.1	55.34	274.94

8/5/04 on serecia

kid ID	FAMACHA	weight	fecal egg count
#59	1	62.2	469

#57	2	66.3	66
#60	1	74.6	335
#55	1	65.3	132
#68	1	45.2	0
#75	1	55.9	99
#51	2	66.7	440
#52	2	54.9	33
#62	2	58.4	2508
#53	2	64.1	363
#46	2	67.8	268
#64	1	54.1	968
#65	1	49.9	335
#47	2	64.8	88
#61	2	62.1	603
#56	3	62.6	528
#54	2	61.3	297
#63	2	41.7	440
#66	1	59.0	165
#58	2	66.6	264
AVERAGE	1.65	60.18	420

CONDITIONS

This year a wet winter followed by a dry spring and early summer delayed the establishment of my serecia lespedeza pasture. Record rainfall in July and August caused much of the lespedeza that had come up to drown out. Wet warm weather can also cause an increase in parasites infecting goats so that may have been the cause of the increase in parasites that I saw in my goat kids after the weather turned wet.

ECONOMICS

The attempt to establish the serecia lespedeza pasture on our farm last summer had a negative effect on our profitability. We had to repurchase seed after the serecia did not overwinter, buy a sprayer to attempt to kill the wild grasses that had infected the pasture and buy a very expensive herbicide of which we only used a very small amount. Since we are located in the Critical Area of the Chesapeake Bay watershed we usually do not spray any chemicals or herbicides so the leftover herbicide and the sprayer probably will not be used again.

We spent more on wormers than we did the previous year and missed an opportunity to sell our goat kids at the highest price because we needed them to

complete the study. The cost of the two vaccines were similar but we still lost one kid to clostridium so we did not see an economic benefit from the vaccine study.

ADOPTION

Last year's study convinced us that while the grazing of high tannin forages seems to have benefit for goats we are not able to grow sercia lespedeza here under wet weather conditions. We are still using multispecies rotational grazing to minimize parasites and using the FAMACHA eye chart as a quick way to see if a particular goat or sheep needs to be wormed. The vaccine study did not give me the results that I hoped for but the unexpected incidence of abscesses in the goats vaccinated with the Vision vaccine has convinced me not to use that vaccine on any animals that we plan on entering in a show.

OUTREACH

The results of this study have been reported at a meeting of the Lower Shore Sheep and Goat Association.

SUMMARY

The goal of this project was to see if the results of my last project that showed a decrease in parasites in goat kids could be replicated, to test two clostridium vaccines and to use the FAMACHA eye chart to assess the level of parasites in goat kids. Due to adverse weather conditions my previous study results could not be verified but I did learn some valuable lessons on the cultural requirement of sercia lespedeza. It needs warmth and moisture to germinate but cannot tolerate saturated soil during the dormant or growing season.

My vaccine study showed some unexpected results. The Vision vaccine had a much higher incidence of injection site abscesses that would be unacceptable to producers who are raising animals for show.

The FAMACHA eye chart proved to be a valuable tool to quickly make a decision on whether or not a particular animal needs to be wormed preventing a producer from worming an animal needlessly and causing unnecessary expense and perhaps increasing the likelihood of the parasites to become resistant to the wormer.

Karen Taylor
5/12/05