

Sustainable Methods for Small Ruminant Parasite Control FNE 03-497 2003 Final Report

1) Karen Taylor

10402 Stuart Neck Rd.
Princess Anne, MD.21853
410-651-4486
tayval@dmv.com

2) Goals

My goal in this project was to investigate if using a combination of multi-species rotational grazing and a forage high in tannin (serecia lespedeza) could control parasites in goat kids.

3) Farm Profile

Our farm operation is basically the same since our project started. We own 78 acres and raise sheep, goats, beef cattle, horses, oats and hay. We have part time off farm jobs and are 4-H volunteers and members of the county Fair Board.

4) Cooperators

Dr. Niki Whitley and her graduate students from the University of Maryland Eastern Shore assisted me in taking fecal counts and weighing the goats. She also gave me advice to determine if the counts were high enough to warrant using a chemical wormer and showed me how to use eyelid color to determine if a goat kid was getting anemic.

5) Project activities

A four acre field of Marshall rye grass where adult ewes had been overwintered was divided in two pieces with a temporary fence. Half was fertilized with commercial nitrogen and half was planted with serecia lespedeza. The rye in the serecia pasture was disked then plowed and then disked again. The lespedeza was planted with a Brillion grass seeder.

Due to a cool wet spring the rye grass continued to grow in the serecia field so a cutting of hay was taken off of it in June.

The goat kids were wormed at thirty days of age with Valbazan and grazed in a separate grass pasture with their mothers. When they were about ten weeks old they were weaned, penned for a few days and put out on the serecia pasture. Fecal counts were taken at this time (we forgot to weigh this time). The grass pasture held six-month-old Hereford heifers. The goats were being supplemented with one half pound per head of grain in addition to the pasture (so they would come up for us to check them and because growing goats need a little more feed than just pasture). They also had access to free choice loose mineral salt and an automatic waterer.

After one month, fecal counts and weights were taken again on the goat kids. The heifers and kids were switched, goats on grass and heifers on serecia lespedeza. Due to a very wet summer wild summer grass was also growing in the serecia pasture so more adult cattle were moved in for a few days to bring it under control.

A month later fecal counts and weights on the goat kids were taken again and the goats were put on the lespedeza and the heifers were put on the grass pasture. Four of the kids had very high egg counts after being on the grass pasture for a month. Their eyelid color was checked for signs of anemia and their fecal egg counts were rechecked after two weeks on the lespedeza (and they had gone down so they did not need de-worming).

A month later after being moved onto the serecia pasture (10/16/03), the goats were weighed and fecal samples were taken for the last time. Due to a frost, the serecia lespedeza was basically gone and the goats were being supplemented with a small amount of grass hay in addition to their grain. All goat kids were moved off of the lespedeza field at this time and put on another grass and clover field where horses had been grazing over the summer.

6) Results

None of the goats on the study were de-wormed with a chemical wormer from the time they were thirty days old until the study ended when they were approximately six months old. The average fecal egg count decreased by 394.72 in the month that they were first on the serecia pasture and increased by an average of 436.01 in the month that they were on the grass pasture. The four animals that had very high counts on the grass that were rechecked after two weeks on the lespedeza all saw a decrease in their egg counts. After the entire last month on the lespedeza the egg counts increased by an average of 469.16, perhaps because there was a frost and the cooler weather was making the lespedeza go dormant.

Average weight gain was very similar between the grass and the lespedeza pasture averaging 2.38 pounds on the lespedeza and 2.23 pounds on the grass.

7) Conditions

This spring was very cool and wet which delayed the establishment of our serecia lespedeza pasture. It was May before the field could be plowed and seeded and the Marshall rye grass continued to grow over the serecia so we had to take a cutting of hay before we could let the goat kids on the pasture. This delayed the start of our project until mid July. The summer was also wet and wild grass took over the lespedeza. Since we have no spray equipment we were unable to kill it. This contamination of grass in our lespedeza may have affected our results. We also had a smaller kid crop than expected when we were planning this study so the stocking rate was lower than we had anticipated.

8) Economics

Last year all of our goat kids were wormed every thirty days and we still had losses due to resistant worms. This year our kids were wormed at one month of age and then not wormed again until they were six months old. We had no losses due to worms. Valbezon, the only wormer that worked for us last year, cost approximately 50 cents per dose for a fifty to sixty pound goat. We were able to skip four doses on thirteen animals. That saved \$26.00 in addition to hours of labor to catch and worm them.

Last year we had three kids die from worms despite having been wormed every thirty days. Some of the remaining kids grew poorly and when sold brought less money. We gained at least another \$300.00 in income since we had no mortalities in our study group.

of goats and additional income since all goats in the group grew well despite being fed very limited grain (less than we would normally feed). Also, taking the fecal egg counts allowed me to identify animals with chronically high (or low) egg counts so that I could choose animals genetically resistant to worms if I wanted to.

9) Assessment

The results from this study make me want to investigate using high tannin forage and multi-species grazing further. I would like to study this again using a purer stand of seresia lespedeza and a larger number of animals to see if I can obtain the same or better results. It would also be interesting to see if the heifers in the rotation had any benefit in grazing the lespedeza as opposed to the grass pasture. My next step would be to oversee the seresia to obtain a purer stand and to see if limited herbicide spraying improves the stand.

10) Adoption

I plan to continue to use multi-species rotational grazing in my goat herd to limit exposure to parasites. The lespedeza that was planted is supposed to be perennial and if we have a good stand next year I plan on continuing to graze the goats on it in rotation with other pastures.

11) Outreach

I have already presented the results of this study at a meeting of the Lower Shore Goat Producers and Susan Schoenian has published the results in the Maryland Sheep and Goat Newsletter. Dr. Whitley and Susan Schoenian are preparing a MD NE SARE Farmer/Grower report website and brochure, and they will also report our results that way.

Karen Taylor
11/29/03

Fecal egg counts

| Tag | 7/11 begin | 8/15 after serecia | 9/16 after grass | 10/16 after serecia |
|-----|------------|--------------------|------------------|---------------------|
| 29 | 66 | 396 | 297 | 528 |
| 31 | 1232 | 132 | 330 | 536 |
| 32 | 134 | | 1056 | 4489 |
| 33 | 330 | 198 | 495 | 1100 |
| 34 | 990 | 231 | 231 | 660 |
| 35 | 134 | 346 | 66 | 429 |
| 36 | 352 | 231 | 264 | 330 |
| 37 | 2412 | 462 | 495 | 231 |
| 38 | | 176 | 1072 | 603 |
| 39 | 665 | 308 | 396 | 220 |
| 40 | 67 | | 2024 | 1100 |
| 41 | 399 | 132 | 1848 | 2992 |
| 43 | 841 | 33 | 220 | 1675 |

635.1667 240.4545 676.4615 1145.615

Goat Weights

| Tag | 8/15 after serecia | 9/16 after grass | 10/16 after serecia |
|-----|--------------------|------------------|---------------------|
| 29 | 49 | 52 | 55 |
| 31 | 46 | 49 | 50 |
| 32 | 48 | 45 | 49 |
| 33 | 61 | 62 | 70 |
| 34 | 62 | 64 | 64 |
| 35 | 49 | 56 | 59 |
| 36 | 55 | 61 | 65 |
| 37 | 66 | 65 | 69 |
| 38 | 58 | 60 | 64 |
| 39 | 65 | 69 | 67 |
| 40 | 59 | 61 | 60 |
| 41 | 56 | 58 | 61 |
| 43 | 64 | 67 | 65 |

56.76923 59.15385 61.38462

| Gain grass | Gain serecia |
|------------|--------------|
| 3 | 3 |
| 3 | 1 |
| -3 | 4 |
| 1 | 8 |
| 2 | 0 |
| 7 | 3 |
| 6 | 4 |
| -1 | 4 |
| 2 | 4 |
| 4 | -2 |
| 2 | -1 |
| 2 | 3 |
| 3 | -2 |

2.384615 2.230769

More kids saved=more money

This year was a better year for goat parasites than for goats. However, with Northeast Sustainable Agriculture Research and Education (NE SARE) grant for an on-farm study, Harry and Karen Taylor de-wormed less and saved more growing kids this year.

The Taylors' grant was focused on alternatives to deworming in goats. They lost 5 of 20 or so kids to worms that were being continuously grazed even though they dewormed every 4 weeks or so last year. This is a big problem for many goat producers. So this year, they wanted to try something different to help themselves and other producers.

They applied for, and were awarded a NE SARE on-farm research grant that provided money to plant serecia lespedeza, a warm season perennial legume (like alfalfa) that is high in tannin and to set up their farm pastures for rotational grazing.

The tannin in serecia lespedeza has been shown to reduce the fertility of adult worms to decrease the worm loads on the pasture and thus in the animals. For example, Langston University in Oklahoma found that goats grazing grass pastures had high worm loads and when transferred to serecia for 2 weeks, the worm loads went down. When transferred back to the grass pastures for 2-3 weeks, worm counts went back up in.

Multi-species rotational grazing (different species grazing "behind" each other) is also known to decrease worms counts. For example, grazing cattle or horses in a pasture before goats and sheep will decrease the goat/sheep worms (the cows eat the worm larva and the goat/sheep worms can not grow in a cow, so it decreases worms on the pasture that the goats/sheep could eat). This works the other way too – goats grazing with horses can keep them from getting worms or decrease how often they need de-worming.

So, the Taylors combined multi-species rotational grazing (since they raise super-nice registered Polled Hereford show cattle) and serecia lespedeza. Goats were dewormed at weaning and allowed to graze on grass pasture until they had fecal egg counts over 500 eggs per gram average while heifers grazed serecia. Then, the heifers and goats switched pastures (goats on serecia, heifers on grass) and a month after grazing the serecia, goat fecal egg counts had gone down to around 300 eggs per gram.

So, with the low egg counts caused by the serecia, goats were moved back to grass (and heifers to serecia). A month after grazing grass, the goats had high fecal egg counts again, so they were moved back to the serecia (and heifers to grass). A few goats had fecal egg counts caused by the grass pasture so high that they were checked again after 2 weeks after grazing the serecia and they were low again.

No deworming was ever necessary and every time the goats had been grazing the grass, worm counts went up and when they had been grazing serecia, it went back down. Therefore, the Taylors believe that the serecia is beneficial for decreasing worm counts in goats, but because this was their first year rotating pastures, they also felt that the rotational grazing could have been helpful too. Based on this study, the Taylors are

planning to submit another NE SARE Farmer Grower grant application this year that will also incorporate the FAMACHA eye color system and “symptom checks” (do they “look” wormy) compared to fecal egg counts for determining when to de-worm.

This year, the Taylors did not lose any animals to worms and they basically did not deworm at all. The only deworming done was once at weaning (to make sure all goats started at the “same” fecal egg counts) and again after the study so they could be moved to a clean pasture and not contaminate it). Overall, results from this farm study seem to indicate that sericea lespedeza could be beneficial to goat producers, decreasing chemical de-wormer use and increasing profits.

