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Managing Internal Parasites: Success Stories

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In this publication, three sheep and goat producers explain in their own words how they manage internal parasites using combinations of animal selection and pasture management. The producers share strategies for maintaining a healthy herd. Further resources are provided.

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Photo: Linda Coffey, NCAT

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Introduction

People who raise sheep or goats may be very discouraged about internal parasite management. Dewormer resistance is rampant, and internal parasites can devastate a sheep flock or goat herd. How to raise small ruminants in the face of this challenge?

Following are the stories of three producers who are doing it. The first two were written for the Timely Topics section of the website for the American Consortium for Small Ruminant Parasite Control (www.acsrpc.org or wormx.info) and are written by two Consortium affiliates who raise sheep. The third features Dr. An Peischel, Small Ruminant Specialist in Tennessee and Kiko goat producer.

Each of these stories details management measures that can be taken to battle the internal parasites. Resources for learning more are provided after the stories.

The "Silver Bullet" of Worm Control in Small Ruminants

By Paul Casey
Heifer Project International
Perryville, Arkansas

…or at least what I think is the closest thing. It is not administered orally, intramuscularly or subcutaneously. It is not reconstituted or refrigerated. In fact, the sheep don't even need to [be] put in the corral. Interested? Then read on. But beware; it may be nothing more than the ramblings of a sheep grazier.

I manage a 60-ewe sheep flock at Heifer Project International's Ranch in Perryville, Arkansas. About 10 years ago, we started looking at alternative methods of controlling gastrointestinal parasites in sheep. We tried garlic juice, papaya seeds, pumpkin seeds, an herbal dewormer, grazing chicory, grazing sunn hemp, and intensive rotational grazing. In the end, rotational grazing was the only practice we kept. Using 120V and/or battery powered chargers, poly posts, poly wire, and temporary waterers, sheep were moved to fresh forage every two to four days, each April through November.

We implemented stringent culling and rotational grazing at the same time and within a few years

Photos: Courtesy of Heifer International

Photo: Courtesy of Heifer International

parasite problems in the ewes were nearly nonexistent. Some years, we did not have to deworm a single ewe. With the exception of the chicory and sun hemp trials, nearly all grazing was on permanent pasture. Cool season forages were predominantly fescue, ryegrass, clover, and vetch. Summer forages were dallisgrass, bahiagrass, foxtail millet, and crabgrass.

While we had minimal problems with the ewes, obtaining consistently good lamb weight gains, especially after weaning (at 4 to 6 months old) was very difficult. Had we not pushed the lambs so hard by only deworming at FAMACHA© 4 and 5, they might have performed better. We had only one effective dewormer left, and my goal was to use it as little as possible. Grazing more summer annuals and speeding up the rotation may have helped improve the weight gains.

While I know that our strict ewe culling and ewe lamb selection helped reduce our worm problems, I believe the grazing is what made it successful. By controlling what the sheep eat, when they eat it, and how long they are on a given section of pasture, the manager controls forage intake, forage quality, plant regrowth, and relative ingestion of parasite larvae. Grazing management is the most powerful tool we have for maintaining animal health and performance. While many people use FAMACHA scores as an indicator of parasite load, I use it as an indicator of my management (pasture and breeding).

Keeping sheep behind an electric fence is not likely as hard as you have heard it is. A good strong charger, poly posts, poly wire, and persistence, on your part, is all that is needed. I have rarely used more than three strands of poly wire and frequently used two strands. If sheep have enough quality forage to eat and the fence is kept consistently hot, rotationally grazing sheep is easy.

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Managing Internal Parasites in Sheep and Goats

Sheep: Sustainable and Organic Production

Small Ruminant Sustainability Checksheet

Tips for Managing Internal Parasites

Tips for Preventing Internal Parasites

Tips for Treating Internal Parasites

Tools for Managing Internal Parasites in Small Ruminants: Animal Selection

Tools for Managing Internal Parasites in Small Ruminants: Pasture Management

Was this what you expected for a silver bullet? I hope so. We need to look at anthelmintics, not as a tool in our tool box, but as a band aid to fix a management problem.

Silver Bullet, Seconded

By Dave Scott
NCAT and Montana Highland Lamb
Whitehall, Montana

Can the right grazing strategy control parasites? I must add an enthusiastic "second" to Paul Casey's comments.

We have a 200-ewe operation in southwest Montana that is pasture-based. Now, you may be thinking that Montana and the dry ol' West can never have as many parasite problems as the Southeast and Northeast. However, under the right conditions, we certainly can—and do.

The conditions are irrigated pasture and lots of sheep. If you think about it, when your pastures are sprinkle-irrigated with 0.70 inches of moisture twice a week, the micro-environment way down there in that jungle of stems and leaves, manure, and soil is quite similar to a Louisiana paddock in June. Just add the sheep and goats, and presto, you have *Haemonchus*!

Within five years of that startup, we were deworming our ewes and lambs three to four times a summer and once in the fall.

We did not know anything about FAMACHA back then, so the shotgun blast was the order of the day. When the white wormers lost their effectiveness, Ivomec® was the only dewormer that we had left. Uh oh!

Here's what we did. We divided up our 30 acres of winter-hardy Regar Meadow Bromegrass pasture into 36 paddocks with temporary fencing (electric nets), increasing our pasture rest from 22 days to 35 days. Next, we moved the sheep to a new paddock every day. Lastly, we made every effort to exit a paddock leaving six to eight inches of grass behind. Then we ratcheted our deworming down, down, until, after three years, we were not deworming any lambs or ewes at all.

Photo: Dave Scott, NCAT

It worked. In 2013, we ran 180 ewes and 280 lambs on the 30 acres from May 1 until August 31. We dewormed no lambs and no ewes. We did not FAMACHA that year, but the lambs looked good and 74 out of 82 ewe lambs conceived that fall. Not too bad. By 2014, we had learned how to FAMACHA and we found 16 out of 330 lambs with a score of 4 or 5. The rest were scored 1, 2, or 3 and were not dewormed.

For a more complete description of our grazing strategy and how it has helped us, check out the ATTRA video *Intensive Grazing: One Farm's Setup*, available at https://attra.ncat.org/video/index.php.

I must agree with Paul. There also may be a "stocking density tipping point" where the parasites overwhelm even the best strategy. Just the same, while "silver bullets" are not often found on street corners, or in this case, farm pastures, smart grazing has the hue. Try it!

Photo: Dave Scott, NCAT

Twenty Years and Counting

By Dr. An Peischel
Small Ruminant Specialist and Goats Unlimited
Tennessee

Editor's Note: Dr. An Peischel, Small Ruminant Specialist in Tennessee, has been raising goats since 1985. She has not dewormed a goat since 1994—20 years, and counting. Read on to learn how she has done it.

I started out in Hawaii—managing someone else's 700 Spanish meat goats. Hawaii is a tough environment for raising goats, with 64 inches of rain a year, near the ocean—there is no dead time for parasites, and the tropical grasses are low in nutrition. This was not a healthy herd: they had internal parasites, footrot, and also Caprine Arthritis Encephalitis (CAE) and caseous lymphadenitis (CL). I got very tired of burying goats.

That's where I started. I took some measures to bring the herd out of this and into health.

1. I sorted off the goats that were not quite so bad, and culled the ones that had the most problems.
2. I moved those "not quite so bad" to brush, the highest I could find. The higher the head, the lower the (parasite) load.
3. I rotated them frequently to fresh brush. That's where portable solar-powered electric fencing came in.

At the same time I was changing grazing management, I was also monitoring. I took fecal egg counts (FEC) several times a week (which was overly cautious, but I really wanted to know what was going on). As things improved, I took FEC once a week, and also figured out what worms we were dealing with. At that time, *Haemonchus contortus*, *Trichostrongyloides*, *Strongyloides*, and *Cooperia* were present. I checked some individual goats; if levels were about 500 eggs per gram (epg), we were doing okay, and I just kept monitoring FEC once a week, random samples.

Photo: Courtesy of An Peischel

I also drew blood to look for packed cell volume (PCV). I didn't have equipment, so I just let the tubes sit until the serum separated from the red blood cells. Then I looked at the proportions: if I saw half serum and half red blood cells, then we had a problem. I needed to see more red blood cells.

An easier way to assess anemia is to look at eyes (FAMACHA—though we didn't know the FAMACHA system then—see Further Resources section of this publication) and gums. Pale mucous membranes indicate anemia; we wanted to see a healthy, bright pink color.

If a goat was in bad shape (based on anemia), I put them in a portable pen in the morning and left them on gravel with plenty of fresh water, but no feed. That night I dewormed them, dosing for the heaviest goats in the pen. I did have some actual weights, but not on every animal. I left them in the pen and for the next five days I would give them good local hay and fresh water. I also ear-tagged them; most of the herd did not have identification at that time. After the five days I turned them out with the group. If a goat got sick again—I would know because it already had an ear tag—it was sold as meat. Gradually, the weaker animals left the herd, and that was good: I didn't have time for all this!

Another thing we did was put the goats on a quality mineral mix, especially high in zinc and copper to boost the immune system. I fed kelp meal, too. The PCV's started coming up when I improved the mineral supplementation.

We also moved them to fresh brush whenever they started looking down at the ground for food; they did not stay anywhere more than a week. That kept them from taking in so many parasites, and the stronger immune systems helped them deal with the ones they had. By 1991, things were pretty good.

About 1990, we switched to Kiko bucks, because the breed was known for better mothering ability and resistance to internal parasitism. We got high-quality colostrum and increased milk production and, therefore, stronger, healthier kids. The overall health of the herd improved immensely.

That's part of the answer to being able to run large numbers of animals: a healthier herd.

Now I could spot-check, pull out problem animals when they switched to a new pasture. I moved them just BEFORE they ran out of high-quality feed. I had a portable pen available if needed for

animals that need TLC—or to be sorted off and sold for meat.

The whole demeanor of the group started to change as they got healthier. By the early '90s, I thought, "This is the life!" I stopped deworming in 1994.

We moved in 1996 to California, taking 350 of those does (now mostly Kikos) to do forestry work. We got paid to do land enhancement, brush clearing, fire prevention, stream bank restoration, and invasive weed mitigation, running two mobs with 750 wethers/mob and keeping 350 does for breeding. The older wethers went for meat, and we also sold breeding stock. *[Editor's note: Dr. Peischel teaches Browsing Academy in California, Tennessee, Canada, and other places based on her experience, and she contributed to the Targeted Grazing handbook, explaining more about the land-enhancement business. See www.webpages.uidaho.edu/rx-grazing/handbook.htm.]*

In 2004, I moved to Tennessee, and currently run 210 Kiko does. I don't deworm. I am careful about health care; I vaccinate three weeks before breeding for leptospirosis, and three weeks before kidding do *Clostridium perfringens* type C and D and tetanus (CDT) vaccination. I also test periodically for CAE, CL, and Johne's; culling any problem animals for meat. It's probably not necessary to test anymore, because I run a closed herd, but still it's peace of mind and a selling point for those buying breeding stock.

My current farm is 200 acres. In addition to grazing and browsing my land, I work in the neighborhood, using the goats to clean out hedgerows and get weeds out of hayfields. Edging hedges keeps the hedgerows in check; otherwise they move out further and further into the pasture. The landowners are pleased, and it's good, clean feed for my goats. We only do the hayfields once a year.

My farm includes 30 paddocks that grow lots of great weeds: ironweed, multiflora rose, giant ragweed, lambsquarters, Queen Anne's lace, river cane, buck brush, honeysuckle, goldenrod, and more. That's what I flush my does on; high-quality feed that is tall. Remember, the higher the head, the lower the load. For weaned kids, I use the woods, and I am careful not to overuse the woods. For late-pregnant does (third trimester), I supplement with a high-quality mix of orchard grass and legume hay, put up early enough to be high quality. Paying attention to nutrition helps the goats. Sericea lespedeza hay is fed one week per month in the winter, as it is a natural dewormer.

Photo: Courtesy of An Peischel

As I have mentioned, one key to running a large number of animals is to have a healthy herd. Here are my tips for producers:

- First, don't buy auction goats. Find someone using the same management as you who has a healthy herd, and buy from them. This will prevent a lot of problems.
- Pasture management is key. Keep them moving! I move every three to four days; many producers can't do that; therefore, they use the weekends to set fence and move once a week.
- Monitor. Look at
  - eyes (FAMACHA) (look for healthy, bright pink color)
  - rumens (left side of the body; it should look full at the end of the grazing day)
  - body condition score (look for moderate to good condition)
  - behavior (should look lively and alert)
- Cull the problem animals for meat.
- Provide a good mineral mix and feed kelp. Pay attention to quality of the vegetation.
- Keep stress low. Work animals calmly.

I don't have to cull anymore for internal parasites. It took a lot of time and attention, but it is worth it to have a herd that is low-maintenance and enjoyable to manage.

Summary

What can we learn from these three operations? They employ multiple strategies that are useful for all of us.

- Controlling grazing
  - Limiting grazing period to three to four days or fewer
  - Leaving behind enough residual to avoid parasite larval ingestion—at least four inches if possible
  - Permitting sufficient recovery time to allow some die-off of parasite larvae
- Supporting health with good nutrition and alternative forage sources
  - Summer annuals
  - Browse and woods
  - Weeds and other diverse forage species
  - High-tannin plants
  - Good mineral mix, including copper and zinc and kelp meal
- Monitoring animal infection
  - FAMACHA
  - Fecal Egg Counts (FEC)
  - Body Condition Score
  - General observation
  - Stringent culling
  - Strategic deworming

Following these practices will help your farm be a success story, too. In addition to using these strategies, producers need to be aware that sanitation is necessary to preventing internal parasite infection. Clean water tanks and feed troughs, and be mindful of common-use areas, which can be dangerous for animals. In some areas, corrals will be dry-lots. That is good. If corrals grow some vegetation, however, animals will tend to graze it even if it is too short, and they can pick up internal parasite larvae in this way. Prevent this by limiting access during parasite season, or using gravel areas when strategically deworming, as An Peischel did, or perhaps disking the area when needed. Be alert to problem areas on your own farm.

Further Resources

American Consortium for Small Ruminant Parasite Control
www.acsrpc.org

- FAMACHA© www.acsrpc.org/#!famacha/c9i
- Dewormer use www.acsrpc.org/#!dewormers/chvu

Langston University
www2.luresext.edu/goats/index.htm

- Internal and External Parasite
  www2.luresext.edu/goats/training/parasites.html
- Body Condition Scoring
  www2.luresext.edu/goats/research/bcshowto.html

National Center for Appropriate Technology ATTRA Sustainable Agriculture Program
www.attra.ncat.org

- Tools for Managing Internal Parasites in Small Ruminants: Pasture Management
  https://attra.ncat.org/attra-pub/summaries/summary.php?pub=415
- Tools for Managing Internal Parasites in Small Ruminants: Animal Selection
  https://attra.ncat.org/attra-pub/summaries/summary.php?pub=398

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