STRATEGIC DEWORMING

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INTRODUCTION

All cattle are victims of internal nematode (worms) parasitism as long as they are maintained on pasture. The production losses associated with infection varies depending on geographical area, season of the year, environmental conditions, numbers and types of worms, pasture management, and control programs in use. Other factors that affect an animals response to infection include: nutrition, age, concurrent infections, and overall health status. Estimated economic losses can vary from $20 to $200/head/grazing season where control programs are inadequate. Environmental conditions in the southeastern United States are ideal for year around development and survival of these parasites, thus, posing potential problems all the time.

Young growing cattle (nursing calves, stockers, replacement heifers) are affected most by worm infection, and weight gains are slower as infections build up, thus requiring more time to reach acceptable weight for management purposes. At times of the year when availability and quality of forage is poor, it is possible that these animals can even lose weight. Parasitism thrives under these conditions. Most often the producer does not notice any signs of disease, and in his opinion the animals look good. If a comparison could be made with animals maintained on effective parasite control programs, the producer could see the difference and then be aware of the losses occurring.

Mature animals can also be detrimentally affected by infection, however, clinical evidence is rarely observed. A cow has to maintain body condition to provide for normal maintenance and, in addition, the growth and development of the calf during gestation, and nourishment for the calf during lactation. The heavier a cow weighs going into periods of increased stress (metabolic, nutritional, etc.) the more body reserves she has to provide sufficient energy to meet the additional requirements. A cow in poor body condition has a tendency to not cycle normally and, subsequently, may not breed back very quickly or not at all. Thus, reproductive efficiency is affected and this may translate into substantial economic losses. A compromised cow also increases susceptibility to other diseases. When considering sources of contamination leading to infection of young growing animals, the role of adult animals cannot be overlooked.

Historically, nematode parasitism was diagnosed by observing clinical signs (diarrhea, rough haircoat, bottlejaw, etc.) and treating individual animals as necessary. Clinically affected animals usually make up only a small percentage of the herd. Parasitism is a herd problem and should be treated as such for 3 reasons: 1) to save clinically affected animals from dying; 2) to improve production of those not showing clinical signs; and 3) to reduce pasture contamination levels and thus reinfection rates. An animal becomes reinfected within days (depending on the dewormer used) of treatment and will shed worm eggs back into the environment by 3-4 weeks later. If a producer waits for clinical signs to appear, substantial losses have already occurred and production efficiency of the herd is reduced. The real concern of the producer should be potential losses such as missing beef, missing calf, extra days to market, increased time to

breeding, and greater susceptibility to other diseases. Current deworming programs have improved by treating entire management groups (not whole herd) of animals, but are usually based on times convenient for producers to work their animals. These times may or may not coincide with appropriate points in the life cycle of the worms to be most damaging and, thus, potential economic benefits may not be realized. Strategically timed treatments with appropriate products will increase the return for each dollar invested.

LIFE CYCLE AND WORM TYPES

All economically important worms have similar life cycles. Adult worms within the animal shed eggs which pass in the feces (droppings). Under favorable environmental conditions (warm and moist) these eggs hatch within 24-48 hours and develop to infective larvae in a few days. Infective larvae move out onto vegetation when rain or other moisture medium saturates the fecal pat. These larvae use films of moisture (especially morning dew) to move up blades of grass where they can be easily ingested by grazing cattle. Once ingested, development to adult worms occurs and egg production continues the cycle. The time from ingestion of infective larvae to presence of eggs in the feces is about 3 weeks. When conditions are colder, development of the pasture stages is slower and infection rates are reduced.

There are a number of cattle nematode parasites of economic importance. These worms inhabit the lungs, abomasum (true stomach), and small and large intestines. The major worm of economic importance is the brown (medium) stomach worm (*Ostertagia ostertagi*) which thrives during cool wet conditions (generally November through February). This worm has developed a special survival mechanism to withstand the detrimental hotter and drier season which kills the larvae on pasture. In the spring, larvae that are ingested go into a state of arrested development inside the wall of the stomach. They resume development in late summer/early fall with cooler temperatures, thus ensuring maximum chance of survival. Another worm of economic importance is the barber pole worm (*Haemonchus placei*) which thrives during hot wet conditions (generally June through September). This worm feeds on blood and in large numbers will cause anemia, debilitation, and sometimes death. Conditions are warm enough during the rest of the year for continued infection although at a reduced level.

PASTURE CONTAMINATION: KEY TO PARASITE TRANSMISSION

The only source of contamination is eggs in the feces no matter what the age of the animal. Mature animals shed very few eggs, however, they graze 365 days a year continually depositing feces and eggs. Young nursing and/or weaned animals grazing these pastures build up substantial worm infections resulting in much higher deposition of eggs than adult animals. This is because their immune system takes time to develop and become competent to overcome these invading worms.

The contribution of all animals on a pasture ensures some level of contamination and, thus, completion of the life cycle. Because infection is by consumption, herbage provides the means for transmission from animal to animal and also protection of the larvae from unfavorable environmental conditions. Generally speaking, as the temperature increases during the spring the time to complete the life cycle is shorter, contamination increases, and reinfection is quicker. This, along with the inhibited worm population over the summer, ensures a high level of larvae on pasture for the following fall when young weaned calves are starting to graze heavily. Two of the most important ways such contamination patterns can be interrupted are by removing livestock from pastures for

extended periods of time (at least 6 months, preferably longer) or by dewormings scheduled at strategic times. Effective control is achieved by prevention and not by treatment after clinical signs appear and pastures are already contaminated.

PREVENTIVE STRATEGY

Strategic deworming programs should be developed for individual operations with the following considerations: 1) time of year when grazing season(s) begin, 2) age and category of the animals (i.e. stocker/replacement heifer, cow/calf), 3) type of operation (improved or native pastures, winter or summer pastures, rotational grazing system, etc.), and 4) grazing history of pastures.

In the southeastern U.S. all pastures that have had cattle grazing within the previous year have to be classified as potentially infective. The longer a pasture has remained free of cattle the safer the pasture is. Most cattle operations can't afford to manage pastures without grazing, so worms are always present. Strategically timing treatments can help keep pasture as safe as possible within economic constraints.

Timing treatments to seasonal grazing pattern with dewormers effective against all stages of worms living in the animal will reduce egg shedding and also pasture contamination. For example, if seasonal grazing begins in the spring (no winter pasture) or late fall for winter pasture, then concentrating 3 treatments 3 weeks apart early (time of turn out to pasture) will decrease the initial burden of worms and parasite-safe grazing conditions later in the season. The objective is to kill worms before egg deposition and delay reinfection. This strategic deworming interrupts the worms' life cycle before pastures become heavily contaminated. Probably the most beneficial seasonal treatment (in this area) is summer. Treatment sometime from the middle of June to the middle of August will eliminate adult worm burdens and the very important inhibited larvae. This will greatly reduce the potential pasture contamination from emerging larvae developing to adults in the late summer. All approved dewormers are effective against the important adult worms. The products approved that have a claim against inhibited larvae are: Panacur at double dose (fenbendazole), Ivomec (ivermectin), Valbazen (albendazole), and Synanthic (oxfendazole).

SAMPLE PROGRAMS

Spring calving - permanent pasture only 1) Deworm cows and calves greater than 200 pounds in the spring (March/April) every year, this is timed to first extended permanent pasture growth; 2) Deworm cows and calves in the summer (mid-June to mid-August) every year, this is timed to eliminate summer loving adult worms and inhibited larvae; 3) Deworm stockers and replacement heifers in late fall (November/December), this timed to eliminate any adult worms from fall contamination and infection; 4) Deworm stockers and replacement heifers in the spring (March/April) 3 times at 3 week intervals, this is timed to first extended permanent pasture growth; 5) Deworm stockers and replacement heifers in the summer (mid-June to mid-August), this is timed to eliminate summer loving adult worms and inhibited larvae; 6) If heifers are bred to calve next spring, start again with 1); and 7) If heifers are not bred and will calve as 3 year olds, another late fall and summer treatment would be in order before starting again with 1).

Spring calving - permanent and winter pasture 1) and 2) above every year; 3) Deworm stockers and replacement heifers 3 times 3 weeks apart and cows once when put on winter pasture; 4) Deworm stockers and replacement heifers once in the spring (March/April); 5) Deworm stockers (if still around) and replacement heifers as 5) to 7) above.

Year round calving Deworm all animals at least 3 times a year in the spring, summer, and late fall for the timing reasons given above.

LIVER FLUKES

Seasonal treatments for control of liver flukes should be considered in the spring (March/April) and fall (October to December). Fluke transmission is highest during the spring when the snail intermediate host is actively reproducing. There is a high number of immature flukes in the animal at this time compared to adult flukes. When snail activity decreases during the summer so does transmission. Therefore, the majority of flukes in the animal in the fall and winter are adults. Spring treatment should be with a product effective against both immature and adult flukes. Fall treatment should be with a product effective against adult flukes. Curatrem (clorsalon) is highly effective against both, but it is only effective against flukes. Valbazen is effective primarily against adult flukes with limited activity against immature flukes, but very effective against major worm parasites.
Ivomec F (Ivomec + Curatrem) is effective against adult flukes and all major worm parasites.

DEWORMING TIDBITS

1) Use products effective against inhibited larvae for summer treatments, any product is acceptable for other treatments; 2) A summer treatment is considered to be highly effective in reducing overall pasture contamination by eliminating inhibited larvae which is the major source of contamination in the fall; 3) There are products available that can be administered effectively at times of the year when working animals is inconvenient (i.e. blocks, salt mineral mix, top dress, cubes, etc.); 4) It is a good idea to treat all animals incoming to the herd; and 5) Animals treated with fenbendazole or oxfendazole (not ivermectin) can be returned to pasture 8-12 hours after treatment without danger of adding to pasture contamination and infectivity because any eggs shed do not develop to infective larvae. Ivermectin does not affect development, so return to pasture prior to 48 hours after treatment will add to pasture contamination and infectivity.