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Assessment and Treatment of Worm Burdens in Grazing Dairy Heifers

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Gastrointestinal nematodes, or worms, live on grass and, thus, can infect grazing cattle. Worm burdens in cattle—even at low levels—can affect growth, reproduction, and milk production. Due to a developing immune system and little previous exposure to worms, grazing dairy heifers are among the most susceptible classes of cattle to infections by worms on pasture.¹ The heifer raising phase is critical in the development of a productive adult cow, and any missteps can affect lifetime performance.

Milk production and reproduction are positively correlated with body weight.² Worm infections during the first two years of life have been shown to negatively impact milk production due to decreased body weight gain, and decreased body weight gain can also increase the time to breeding and subsequent initiation of milk production.³ Therefore, an effectively-timed and efficacious deworming program is important when developing replacement dairy heifers on grass.

As soon as cattle are exposed to green grass, they are at risk of consuming parasitic larvae. Critically, cattle should be dewormed prior to grass green-up in the spring if they were not already dewormed the previous fall after grass dormancy began. A follow-up deworming is recommended in heifers 4-6 weeks after turnout to grass. Likewise, mature cows require their follow-up deworming 6-8 weeks after turnout to green grass. In areas with extended grazing seasons, another deworming may be necessary for heifers again 4-6 weeks after the prior deworming. Once grass goes dormant or cattle are removed from pasture, the final deworming of the season can take place. At this point cattle should remain worm-free until they are again exposed to green grass the following spring. In summary, a strategically-designed deworming program for heifers consists of:

- Deworming at spring grass green-up if cattle grazed green grass the prior grazing season and were not subsequently dewormed
- Deworming 4-6 weeks after turnout to green grass
- Additional deworming 4-6 weeks later
- Final deworming after heifers are removed from green grass or after grass goes dormant

If the fall deworming occurs after cattle are removed from grass or after grass goes dormant, deworming again at spring turnout is not necessary as those cattle should not have been exposed to larvae. The deworming program can then begin with the first deworming 4-6 weeks after pasture turnout or grass green-up.

To ensure efficacy of deworming, and to determine if cattle are shedding worm eggs at these critical deworming times, a fecal egg count (FEC) test can be used to determine if a group of animals is infected with worms. These tests are simple and can provide results in a matter of days. The guidelines for the fecal sample collection are as follows: 20 fresh, random fecal samples should be collected from a pasture or dry lot. The individual animal source of the sample does not have to be identified as the FEC test is an assessment of whole-herd infection rather than individual animal infection. Samples should be approximately the size of a golf ball, and each sample should be placed in an individual, sealable plastic bag (such as a Ziploc® bag). Samples should be collected within cohort groups: calves, heifers, cows, etc. If heifers are on multiple pastures, it is best to collect 20 samples from each pasture. The recommendation for 20 samples is consistent regardless of the number of cattle in a group. If fewer than 20 heifers are on a pasture, then one should try to collect samples from as many animals in the pasture as possible.

Once 20 random samples are collected, they should be cooled (not frozen) in a refrigerator or cooler. Samples can be shipped with cooler packs to a testing laboratory for FEC quantification. A Modified Wisconsin Flootation technique is preferred for FEC due to its high sensitivity. Results from the test can then be used to determine if deworming treatment is necessary.

Merck Animal Health provides fecal testing kits that include all the materials needed to collect and ship fecal samples for FEC testing. The kits include 20 individual sample bags, ice packs, a sealable cooler, pre-paid address labels to testing labs, and a form for filling out needed information for testing. The kits and testing are free. Turnaround on results is typically 2-4 days after shipping. Kits can be obtained through contacting your Agri-Basics, Inc. nutritionist. A video demonstration of a proper FEC test can be found at <https://www.merck-animal-health-usa.com/safe-guard/cattle/conduct-a-fecrt>.

If the FEC test results show a positive FEC, then it is time for treatment. While many options for deworming exist, Safe-Guard (fenbendazole) is the only option available in a feed-grade form. This means that cattle can be dewormed on pasture and do not have to be gathered for processing through a chute. In addition to convenience, Safe-Guard is also highly effective at killing worms. An effective deworming will result in reductions of fecal egg counts of 90% or greater. Whereas pour-on and injectable dewormers are only 40-60% effective at reducing FEC, Safe-Guard is over 95% effective. The two types of dewormers work differently: fenbendazole, the active molecule in Safe-Guard, binds the structural protein tubulin in worms. This causes paralysis in worms and quickly leads to their death. Pour-ons and injectables, which are part of the macrocyclic lactone class of dewormers, block transmission of neuron signals, eventually leading to starvation of the parasite. The increased efficacy with Safe-Guard is related to its speed of action: worms are killed within one day of treatment, whereas pour-on and injectable dewormers may take multiple days to show their effects.

Regarding dosing, you can be assured your cattle are receiving a sufficient amount of Safe-Guard because of the cumulative dose effect. Fenbendazole works by accumulating in the fat tissue of parasites. Even cattle that ingest small amounts of Safe-Guard over the course of a few feedings will quickly build up a dose that is lethal to internal parasites. To make dosing easier, Safe-Guard is available in many feed formulations, including blocks, mineral, cubes, crumbles, and flakes that can be added to feed supplements. Proof of the efficacy of Safe-Guard can be determined through a follow-up FEC test two weeks after deworming.

Proper deworming can lay the foundation for the future success of a dairy replacement heifer. Through proper diagnosis and selection of dewormer, grazing dairy heifers can grow faster, breed sooner, and ultimately make more milk through their productive life.

References

¹ Scott et al. 2019. Canadian Veterinary Journal. 60(12):1342-1348.

² Mourits et al. 1997. Journal of Dairy Science. 80:1406-1415.

³ Charlier et al. 2009. Veterinary Parasitology. 164:70-79.

⁴ Merck Animal Health Fecal Egg Count Database

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(fenbendazole)

BENZIMIDAZOLE CLASS

(look for the "-zole")

Work as a purge wormer in the gut, killing the parasites in the animal at the time of deworming.

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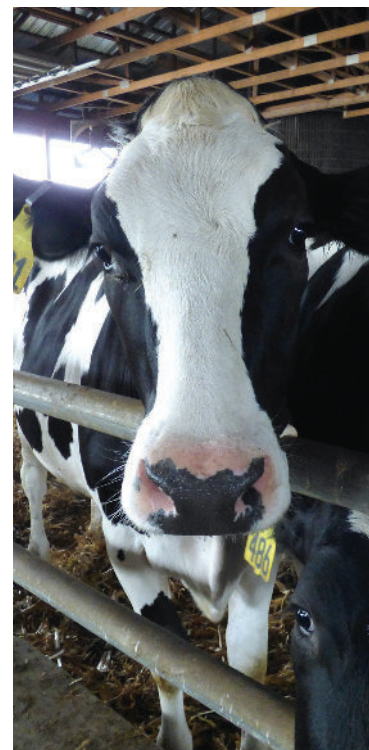
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