

# How Are Wisconsin Beef Producers Using Anthelmintics?

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As the weather cools and the leaves begin to change color, beef producers' thoughts here in Wisconsin are turning to those tasks which are typically accomplished in the fall; for example, weaning and backgrounding calves, and pregnancy checking cows and heifers. This is also the time of year when vaccination protocols and year end deworming products are administered.

Calves and young cattle are sensitive to gastrointestinal parasitism by helminths (*Ostertagia*, *Cooperia*, and *Haemonchus* for example) and there is much peer reviewed research to support anthelmintic (de-wormer) treatment to control them. Helminth resistance to the most commonly used bovine anthelmintics continues to increase (Gasbarre, 2014 and Bliss et al., 2013). An internal conversation with University of Wisconsin-Extension (UW-Extension) colleagues and knowledge about the complexity of helminth resistance to anthelmintics resulted in curriculum development to increase producers' knowledge about helminth resistance management.

To determine beef producers' baseline knowledge of helminth management, survey data was collected to help shape future educational programming. UW-Extension agriculture agents Sandy Stuttgen, DVM, Taylor County and Bill Halfman, Monroe County, and Sarah Mills-Lloyd, DVM, Oconto County, and Dr. Dan Schaefer, Professor, Department of Animal Science, UW-Madison conducted this project

## Methods

Agriculture agents Sandy Stuttgen and Sarah Mills-Lloyd assembled and presented information on helminth management and anthelmintic resistance at the UW-Extension Cow Calf Workshops held in eight Wisconsin locations (Elkhorn, Lancaster, Grand Marsh, Blair, Spring Valley, Pulaski, Athens and Wilton) from August - October, 2015. Baseline information about Wisconsin beef producers' use of anthelmintics was collected at all workshops and results were compiled by agriculture agent Bill Halfman. Attendees were asked to complete a ten question survey addressing current internal parasite management of their beef cattle.

## Survey Results

Approximately 305 producers attended the workshops, and 142 completed surveys were returned. We estimate that we have responses from 90 percent of the farms represented because many farms had multiple people attend the workshops.

Key observations from the survey results are:

- 89% (n=127) deworm cattle

- A lack of handling facilities and perceived lack of economic return are the top two reasons why producers indicated they do not deworm their cattle.
- 77% (n=110) use a routine schedule that was recommended by media, nutritionist, extension or veterinarian to determine when to treat for internal parasites
- Calves, heifers and cows are the top three groups dewormed on any operation.
- Deworming calves at weaning and cows in the fall was the most common practice, but there was an extremely wide range in responses as to when anthelmintics were administered.
- The appearance of cattle is the primary method used to assess deworming effectiveness.
- It was determined there was an increase in the usage in the past year of the following products compared to the prior one to two years:
  - 59% increase of benzimidazoles
  - 62% increase of macrocyclic lactone
  - 48% increase of broad spectrum anthelmintics
- Thirty-seven percent of respondents who indicated they de-worm, indicated that some classes of livestock on their farm were intentionally not treated with anthelmintics.
- Forty-two percent (20 out of 47) of respondents who indicated they were switching active ingredient classes were actually incorrect based on the products they indicated they used over the past three years.

### **Discussion**

Calves at weaning and cows in the fall was the deworming strategy most frequently cited; however, as to which and when cattle are treated, there is a wide arrangement of options practiced on farms. Deworming strategies vary from farm to farm just as individual management does.

Due to improved husbandry and nutritional applications, clinical parasitism in the United States is not as apparent as it was in previous decades. The major impact is due to subclinical losses, which go unrecognized when the producer does not measure calf performance (weight gain and body condition score) and parasite burden using fecal egg counts (FEC). Calves and young cattle are sensitive to parasitism and there is much economic evidence to support anthelmintic treatment of them. Efficacy of the most commonly used class of anthelmintics (macrocyclic lactone) now stands at 59% (unpublished data, Merck Animal Health FECRT database update, results through 12/1/2014). To combat the development of resistance, producers are advised to annually switch between active ingredient classes (Stuttgen and Mills-Lloyd, 2015).

There are currently five anthelmintic classes available for bovine use. The anthelmintic brands most frequently used in the United States today represent three active ingredient anthelmintic classes (benzimidazole, imidazothiazole and macrocyclic lactone). Fifty-six percent of respondents indicated they have not rotated between active ingredient classes with the deworming products used over the past three years and 42% said they have rotated classes. In our survey, we provided a chart listing product examples and their corresponding active ingredient class, and even though they thought they were rotating classes, 2% indicated that they were not switching classes after looking at the chart. Comparing responses to which products producers indicated they have used during the past 3 years, 20 of the 46 respondents who indicated they were rotating active ingredient classes were incorrect. We conclude from this

snapshot view, that much confusion exists between brand names and active ingredient classes and how to rotate active ingredient classes in order to prevent the development of anthelmintic resistance. The concept of using combination therapy is also new to many producers.

Several products of the same active ingredient class have different routes of administration. We asked producers if they were rotating between routes of product administration over the past three years. The majority of the respondents indicated they were not. Thirty-two percent of the respondents were rotating route of administration, perhaps believing their practice is changing the active ingredient class. These results suggest there is an educational opportunity for Extension agents and veterinarians to explain anthelmintic options and how to best incorporate treatments into management of helminths.

Diagnosing bovine helminth infection requires laboratory diagnostics (for example, fecal egg counts (FEC) or polymerase chain reaction (PCR) testing). Our results indicate that producers' treatment decisions are based upon the recommendations of others' and not based upon laboratory diagnosis. Producers also base their treatment decision on symptoms which may be attributable to other diseases, management or nutritional causes. Indiscriminate use of anthelmintics increases the rate of helminth resistance to them.

The majority of the producers completing our survey also do not determine treatment efficacy by laboratory diagnosis (fecal egg count reduction tests (FECRT) and PCR to identify resistant species. Using judgement, rather than FECRT results, is a significant threat to cattle performance, and producer profitability since it fosters continued expansion of anthelmintic resistance. Additional educational efforts are needed to help beef producers understand helminth diagnostics and developing treatment protocols based upon diagnostic measures. The concept of refugia has been described and recommended for small ruminants but not often discussed in the context of cattle helminth control. We sought to describe the practice for our producer audiences, and our survey results indicate that 37% of our producers intentionally did not deworm various cattle groups on their farms. Whether this result reflects a strategic awareness of the refugia concept or mere cost saving is not clear. Our survey question was not stated clearly enough to provide an accurate indication of producers' intent for leaving bovine refugia on their farms. Additional research should be conducted to determine bovine performance and producer financial outcomes when refugia is intentionally practiced.

### **Take Home Messages**

It is important for producers to carefully re-consider their recognition of parasitism in cattle and their anthelmintic investment. Understanding and adopting integrated parasite management strategies will, in the long run, impact their farms' profitability. Veterinarians should also be encouraged to expand their understanding of current helminth control measures. An economic opportunity exists for bovine veterinarians to offer comprehensive helminth diagnosis, treatment and management strategies to their clients. Additional educational efforts to help beef producers understand the complexities of gastrointestinal parasitism are warranted.

### **Literature Cited**

- Bliss, D.H., R.D. Moore, and W.G. Kvasnicka. 2013. Summary of fecal worm egg count reduction trials. [www.midamericaagresearch.net/.../National%20Data%20Base%20Summary%20on%20](http://www.midamericaagresearch.net/.../National%20Data%20Base%20Summary%20on%20). (Accessed 23 April 2015).
- Gasbarre, L. C. 2014. Anthelmintic resistance in cattle nematodes in the US. *J. Veterinary Parasitology* 204:3-11. doi:10.1016/j.vetpar.2014.03.017
- Stuttgen, S.M. and S. Mills-Lloyd. 2016. Series on understanding and managing the relationship between gastrointestinal parasites and cattle in Wisconsin. Unpublished fact sheets soon to be available at University of Wisconsin Extension Beef Information Center, <http://fyi.uwex.edu/wbic/>