

## Interpretation of Fecal Worm Egg Counts in Cattle Using "The Modified Wisconsin Sugar Flotation Technique"

Understanding the meaning of worm egg counts will provide veterinarians and producers the necessary insight needed to help build a seasonal deworming strategy for a particular dairy, beef or feedlot operation. Factors that affect fecal worm egg shedding are numerous so a number of these factors need to be considered every time an analysis is made and a fair assessment of the worm egg counts generated. The age of the animal, the season of the year, the amount of exposure to pasture, the condition of the pasture and the stocking rate of the animals on a particular pasture all affect worm egg counts. The amount of rainfall or moisture and the number of degree days with temperatures sufficient to promote parasite develop for a particular operation are also very important to egg count interpretation. Other factors to be considered are the health of the animals, the stage of gestation, stage of lactation, and the numbers and type of parasites present at each examination.

The problem with a simple guide (listed below) is that due to an innate immune response, non-treated adult brood cows often have their highest counts in the spring when worm burdens are the lowest and the lowest counts in the fall when the worm burdens are at their highest level. For calves and yearling cattle, the opposite is true such that worm egg counts increase as the season progresses. In calves and yearling cattle, however, the type of parasite present may more important than the overall count. Most importantly, worm egg counts determine future contamination of the pasture. One egg/3gram equals 150 eggs/lb. of manure. A worm egg count of 10 means 1,500 egg/lb. of manure or 75,000 eggs (in 50 lbs. of manure) excreted daily per cow back into their environment.

**A). Simple Worm Egg Count Guide:** Simple guide assessing whether the overall average worm egg counts are low, moderate or high are as follows:

Category:	Low	Moderate	High	
Cows	5 or less	6 to 20	Greater than 20	
Yearlings	1 or 10	11 to 30	Greater than 30	
Calves	1 to 20	21 to 50	Greater than 50	

**B). Worm Egg Count Guide for parasites in calves and yearling cattle:** Parasites in calves or yearling cattle often differ from adult animals depending upon how the

youngstock are raised. A number of the parasites commonly found in young cattle are sufficiently pathogenic such that the animals develop a strong immunity against the parasites later in life and, therefore, some parasites common in young cattle are rarely found once the animals mature. This state of immunity has been given the term known as "age immunity."

*Nematodirus* (threadneck worm) is probably the most well-known cattle parasite that is routine found in yearling cattle but almost never found in mature adult cows. *Nematodirus* is very pathogenic in young animals, and therefore, the infected cattle appear to develop a very strong immunity against re-infection later in life. Several other parasites commonly found in very young calves (even nursing calves on pasture) are: whipworms (*Trichuris*) and Threadworms (*Strongyloides*). Therefore, based on immune status and presence of barnyard infections in younger cattle, the interpretation of worm egg count in young cattle will be different than adult cattle and are as follows:

1). Assessing differential fecal worm egg counts in calves and yearling cattle as to whether they are low, moderate or high based on parasite or parasite category:

Categories	Parasite Name	Low	Moderate	High
Stomach Worms	(HOT Complex)*	10 or less	10 to 50	> 50
Nematodirus	Threadneck	1 to 3	4 to 10	> 10
Trichuris	Whipworm	1 to 3	4 to 10	> 10
Bunostomum	Hookworm	1 to 5	6 to 10	> 10
Strongyloides	Threadworm	5 or less	5 to 25	> 25
Oesophagostomum	Nodular Worm	5 or less	5 to 25	> 25
Moniezia	Tapeworm	1-10 (+)	11 to 50 (++)	>50 (+++)

<sup>\*</sup> Haemonchus, Ostertagia and Trichostrongylus <sup>\*\*</sup> Tapeworm eggs are released from proglottids, so specific counts are not conducted.

- **C). Worm Egg Count Guide for Dairy Cattle:** Interpretations and Treatment Recommendations with Dairy Cattle Based on Fecal Exams are as follows:
  - 1. All lactating dairy cows with <u>positive worm egg counts</u> during the first trimester of lactation should be dewormed. The idea goal for lactating dairy cows is to be worm free during the first 100 days following calving when nutritional demands required by production are the greatest.
  - 2. Dry cows with <u>positive worm egg counts</u> should be dewormed at the time of or just prior to freshening. Deworming can be given during the final stages of transition as long as reinfection doesn't occur prior to calving.
  - 3. Dairy cows held in total confinement or given access to dirt yards or dry lots with <u>positive worm egg counts</u> should be dewormed once a year either in late fall or prior to freshening, otherwise no deworming is necessary in confined dairy cows.
  - 4. Calves and yearling animals held in confinement, on the other hand, can harbor significant "barnyard infections." Barnyard infections are usually made up of whipworms, threadworms, tapeworms, Nematodirus and hookworms. These

animals may require frequent treatment (sometimes monthly) to prevent production loss.

5. Worm egg counts found in late lactation seem to have little economic impact on these animals. Deworming cows in late lactation should only be done when deworming the entire herd going into winter housing conditions to make sure all cows are worm-free during winter.

## **D**). Worm Egg Count Guide for Brood Cows and Calves:

- 1. Worm egg counts are not as important in grazing beef cattle as it is in dairy cattle for determining whether to deworm or not since these animals are all on pasture and exposed to parasitism seasonally. Where fecal worm egg counts often prove advantageous for the veterinarian is with producers that doubt whether parasitism is present in their herds. A <u>positive fecal</u> demonstrates the presence of parasites and the need for strategic timed deworming is recommended. <u>Cows should always be negative during the winter months</u> when maintance costs are the highest.
- 2. Fecal worm egg counts in beef cattle should be conducted to make sure the dewormers used are working. Strategic deworming guideline for deworming beef cattle indicate key deworming times are in late fall after the end of the summer grazing season and again once or twice six weeks apart (depending upon location) in mid-spring soon after the beginning of spring grazing to reduce parasite challenge on pasture.
- 3. Fecal worm egg counts taken in the winter or a minimum of two weeks following the fall deworming will determine whether the dewormer used is working.

## E). Worm Egg Count Guide for Confined Feedlot Beef Cattle:

- 1. Cattle with <u>positive fecal worm egg counts</u> should be dewormed upon arrival as long as the positive counts average more that 5 eggs/3 gm and over 70% of the cattle tested showing positive counts. Deworming 800 lb steers with an average worm egg count of 8 eggs/3gm demonstrated an extra 25 lb gain for the feeding period<sup>\*</sup>.
- 2. For best results a minimum of 20 samples should be analyzed for this interpretation especially where cattle from different sources are mixed together.
- 3. Cattle <u>showing positive worm egg counts</u> after arrival into a feedyard should be dewormed or re-dewormed when average counts are greater than 10 eggs/3gm due to endecticide resistance or product failure. Either a change in dewormer or concomitant use of two different classes of dewormer is usually necessary to solve this problem.

## F). References;

\*Smith, R.A., Rogers, K.C., Husae, S., Wray, M.I., Brandt, R.T., Hutcheson, J.P., Nichols, W.T., Taylor, F.T., Raines, J.R., McCauley, C.T., 2000. Pasture deworming and (or) subsequent feedlot performance with fenbendazole. I. Effects on grazing performance, feedlot performance and carcass traits in yearling steers. The Bovine Practitioner. 34, 104-114.