Parasites of Dairy Cattle

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Introduction
Parasites of dairy cattle are widespread in the industry and include nematodes, coccidia, lice, mange mites and grubs. In the management of dairy cattle, many parasite infections may be classified as subclinical yet they can be economically important. The term subclinical refers to a degree of parasitism which interferes with production but is not evident by physical and visual examination.

Treatment programs for dairy cattle should be developed based on the age of the animals. Adult milking animals will have a different program than the replacement heifers. In addition to age, the epidemiology of parasite infections, especially the occurrence of Ostertagia ostertagi, and timing of inhibition should be considered.

Dairy replacement heifers are an important factor in determining profitability for the dairy producer. In an overall management program, parasite control plays an important part in optimizing feed efficiency and growth in order to achieve the goal of breeding heifers at 15 months of age so they can calve at 24 months. DHIA records show that 28 months is the average calving age.

Intestinal Parasites
Roundworms
All cattle are susceptible to infection from roundworms (nematodes) but young animals are the most susceptible, especially during the first grazing season. Clinical signs may occur in this group of animals when they are on pasture that is heavily contaminated with parasites. As animals become older, two factors affect their susceptibility to parasites. The first is an age resistance and the second is an immune response which develops because of repeated exposure to parasites. There is not, however, an absolute immunity, so adult cows may still be infected with nematodes and can serve as a source of pasture contamination and infection for other cattle.

The major nematodes of dairy cattle include those found in the following areas of the intestinal tract:

Major Nematodes of Dairy Cattle
Coccidiosis
Coccidiosis is a major parasitic disease problem in the dairy industry. It is caused by a protozoan parasite. It has been estimated that there are at least 12 different species found in cattle, but only two are believed to cause disease. They are *Eimeria bovis* and *Eimeria zuernii*. The disease mainly causes problems in young animals, but it has also been diagnosed in growing replacement heifers, pregnant heifers and in heifers following parturition.

Coccidiosis is frequently associated with stress factors, such as weaning, change in feed, crowding or other disease problems. In young animals, which are the most susceptible, it can be diagnosed as young as 18-21 days of age. The reason this disease often develops early in life is that the young dairy calves are confined in previously contaminated areas, i.e. hutches, calf stalls, etc., or they are housed in overcrowded conditions. Once a facility has become contaminated, it has the potential for a recurring problem.

Animals that develop coccidiosis may show only minor signs, such as rough hair coat, low grade diarrhea and unthriftiness. In more severe cases, animals can have bloody diarrhea, dehydration, depression and may even die. Whether the disease is mild or severe, the infected animal will be depressed in its growth rate, have reduced feed consumption and decreased feed efficiency.(5) This leads to an inability of the animal to reach its full growth potential, which can result in economic losses for the producer.

External Parasites
External parasites that can cause economic losses to the dairy industry include lice, grubs and mange mites. Losses can occur from these parasites due to irritation, blood loss, depressed appetite and decreased rate of gain. This can be especially important in young growing calves.

The species of lice which can infest dairy cattle include the biting louse (*Damalinia bovis*) and three species of sucking lice (*Haematopinus eurysternus*, *Linognathus vituli*, and *Solenopotes capillatus*). Transmission is usually from animal to animal contact; environmental spread is of minor importance. The disease is manifested by pruritis (itching) and skin irritation which results in scratching, rubbing and biting of the infested areas. In dairy herds, the young stock, dry cows and bulls may suffer the most because of delayed detection. The disease is most prevalent during the winter months, especially in the north.

Grubs are the larval stages of either *Hypoderma lineatum*, found throughout
the United States, or *H. bovis*, which is found mainly in the northern part of the United States. The larval stages of *H. lineatum* migrate through the esophageal area eventually reaching the subcutaneous tissues of the back while *H. bovis* migrates through the spinal area to get to the subcutaneous tissues of the back. Both species will eventually emerge from the back and fall to the ground where they will pupate and continue the life cycle.

Mange can also be a problem in the dairy industry and endemic infestations may occur in some herds. The genera of mange which may infest dairy cattle include *Sarcoptes*, *Psoroptes*, and *Chorioptes*, which is called "Tail Mange" and is the most common mange mite found on cattle.

**Treatment Programs**

In strategic parasite control programs using most IVOMEC® Brand Products, replacement heifers are treated three weeks and eight weeks after placement onto pasture; in cases of heavy stocking or nutritional stress, a third treatment five weeks later may be required. When removed from pasture in the fall, the heifers should again be treated to remove parasite infection before the stressful winter. If the heifers are raised on grass from weaning until breeding, four or five strategic treatments with ivermectin may be necessary for optimal parasite control. The initial treatment in the program removes adult worms as well as immature stages. This results in decreased egg production and reduces pasture contamination. Subsequent treatments remove additional parasites acquired while on the pasture. The three-and eight-week treatments are designed to kill parasites before egg laying can begin.

A labor-saving alternative to multiple-treatment, strategic parasite control programs is the IVOMEC® (ivermectin) SR Bolus. A single administration of this novel, sustained drug delivery product provides continuous treatment of existing internal and external parasites and also prevents the establishment of reinfection for approximately 135 days with less labor and less management than is required for traditional, strategic parasite control programs. Dairy heifers that received the IVOMEC SR Bolus for parasite control gained 32 pounds more than untreated heifers and had an Average Daily Gain of 1.6 pounds. The results of these studies suggest that heifers treated for parasites with the IVOMEC SR Bolus could potentially reach breeding weight about 20 days earlier than untreated controls; however, as of yet this effect has not been studied directly. IVOMEC Brand Products for cattle, other than IVOMEC EPRINEX® (eprinomectin) Pour-On, have a meat withdrawal period and cannot be used in lactating dairy cattle because a milk withdrawal period has not been established. The product label and withdrawal information should be read before use.

In the southern United States, *Ostertagia ostertagi* becomes inhibited (dormant) in the abomasal glands during the hot summer months. A treatment with IVOMEC EPRINEX Pour-On in late June or early July will remove this inhibited stage. In the north, the inhibited stage occurs in the winter months. The treatment given to cattle in the fall controls this stage of
Ostertagia ostertagi in the north.

Large, well-controlled studies have demonstrated significantly beneficial effects of pre-calving parasite control on milk production in cows exposed to infection by grazing.\(^{(7,8)}\) The broad-spectrum activity of IVOMEC EPRINEX Pour-On, and its zero milk withholding, are well-suited to controlling internal parasites in lactating dairy cows; however, as of yet the effect of IVOMEC EPRINEX Pour-On on milk production has not been studied directly. IVOMEC EPRINEX Pour-On can be used on both dairy and beef cattle and it also has a zero meat withholding period.

IVOMEC EPRINEX Pour-On is highly effective against four species of lice that affect cattle in the United States. It can be used in young animals over eight weeks of age, bulls and also in lactating dairy cows. IVOMEC EPRINEX Pour-On is also highly effective against grubs and should be given early in the season to control the migrating stage.

IVOMEC EPRINEX Pour-On is highly effective against both Sarcoptes and Chorioptes mites. IVOMEC Plus (ivermectin/clorsulon) Injection for Cattle is effective in treating Sarcoptes and Psoroptes mites. The latter can be used in calves and bulls, but not in lactating dairy cattle of breeding age, because a milk withdrawal period has not been established. IVOMEC Plus also treats and controls adult liver fluke which can cause clinical disease and subsequent economic loss.

Subclinical coccidiosis presents an economic problem to cattlemen and the use of coccidiostats to prevent disease is cost-effective.\(^{(5)}\) A program for calves with CORID® (amprolium) for prevention can keep the disease from occurring. In a prevention program, CORID may either be put in the feed or added to the drinking water for 21 days. For very young calves, CORID can be put in the milk replacer starting at approximately 7 days of age and continuing for 21 days. If conditions are wet and favorable for coccidiosis, the 21 day program may be repeated.

If the disease has already developed, a treatment level of CORID should be given for five days either in the feed or in the water. If an entire group of animals is being treated, treatment can be continued at the prevention dose, following the initial five-day program, for another 21 days to prevent recurrence of clinical disease. All animals in a group should be treated if coccidiosis has been diagnosed, because the disease can eventually spread through all of the animals. The treatment and prevention program can stop clinical disease from developing in those animals which may not be showing signs initially.

The label for CORID should be consulted for exact amounts to use in the treatment and prevention programs.

**Summary**

A sound management program, including parasite control, will aid the
producer in achieving his or her goals for breeding heifers at 15 months, by allowing the animals to gain weight to their full genetic potential. Treatment with IVOMEC brand products in a comprehensive program for replacement heifers will not only control nematodes, including inhibited Ostertagia, but also will control lice, mange and grubs. IVOMEC EPRINEX Pour-On, the only IVOMEC brand product with zero milk and zero meat withholding periods, provides great flexibility and broad-spectrum activity in a weatherproof formulation, and can be used in comprehensive parasite control programs for all dairy cattle. As individual product indications for parasites controlled vary, the package insert should always be consulted prior to treatment.

CORID is an aid in both treatment and prevention of coccidiosis. Where coccidiosis is known to be an ongoing problem in a herd, a good prevention program can be developed whereby clinical coccidiosis can be controlled.

References


