

MidAmerica Ag Research

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"Got Milk"



Strategic Deworming for Maximum Cattle Performance

- The importance of parasite management
- Economic costs of parasitism
- Field studies comparing pour-ons, injectables and oral dewormers
- Lack of efficacy with endectocide pour-ons

Proper deworming strategy adds to production efficiency.

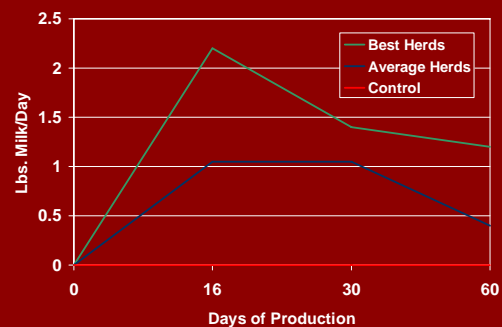
- Producers understand importance of internal parasite control for production efficiency.
- Clinical parasitism is mostly disappeared.
- Deworming is now standard practice on beef and dairy farms.
- Must have correct product at the correct time.

Reasons For Economic Losses

- Producer Unaware of worm damage
- Timing & Frequency of treatments
- Choice of dewormer
- Parasites have greatest impact on high producing animals.



Milk Production Treated vs Controls



Level of Parasitism Related To

- Age of animals
- Pasture contamination level
- Stocking rate of animals
- Grazing environment & Weather
- Immune status of animals

Parasites in Cattle at End of Three Separate Grazing Seasons

	1981	1982	1983
Stomach Worms	32,230	9,582	24,142
Intestinal Worms	51,829	9,051	48,158
Total Worms	84,059	18,633	72,300

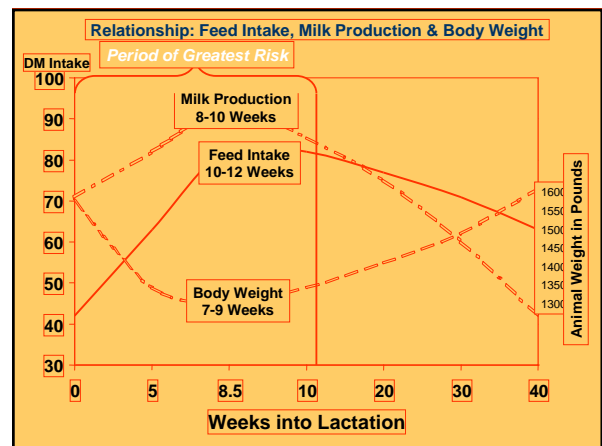
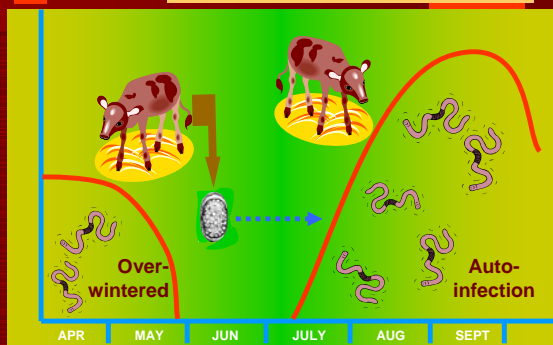
What is Bovine Parasitism?

- It is a herd disease
- It is a production disease
- It develops during grazing
- 99% of all pastures contaminated

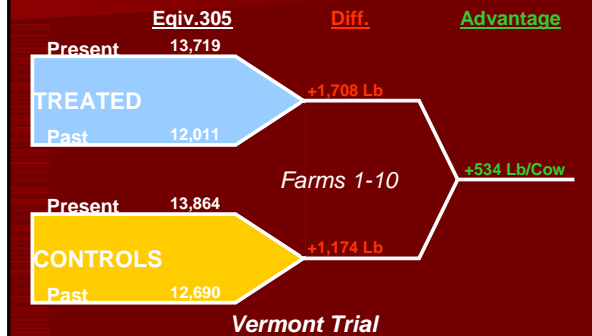
Research Links Parasitism to Decreased Milk Production!



Seasonal Parasite Development On Pasture



Milk Production by Cows Dewormed at Freshening and Again 60-90 Days Later



Designing a Program in a Dairy Operation

First determine the approximate level of parasitic contamination



1. High Parasite Contamination Level

- Cows grazing pasture during lactation
- When rotational grazing is practiced



2. Moderate Parasite Contamination Level

- Cows grazing pasture only during dry period
- Cows with access to an exercise lot only (with some grass)



3. Low Parasite Contamination Level

- Cows with access to dirt dry lot



4. Extremely Low Parasite Contamination Level

- Cows in total confinement
- Cows on a concrete dry lot



Summary of Deworming Programs for Individual Lactating Dairy Cows

Parasite Contamination Level	Dry Period	Freshening *	Six Weeks Into Lactation
High	Wait	Deworm	Deworm
Moderate	Wait	Deworm	Deworm
Low	Wait	Deworm	Wait
Extremely Low	Monitor Annually		

* If bred heifers were exposed to parasites during gestation period deworm prior to freshening

Summary of Seasonal Deworming Programs for Dairy Herds

	Late Fall	Six Weeks After Turnout*
High	Deworm	Deworm
Moderate	Deworm	Deworm
Low	Deworm	Wait
Extremely Low	Monitor Annually	

* Or 6 weeks after start of spring grazing season

Summary Strategy For Lactating Dairy Cows

- Parasites have been shown to decrease milk production in early lactation
- Identify parasite contamination levels in each dairy operation
- Design deworming program based on individuals or herd treatment relative to contamination levels

The Best Dewormer in the World Used at the Wrong Time

Is a waste of time and money!



Parasite Resistance to Pour-ons now Common Occurrence!

- Georgia herd treated with Ivomec PO only for number of years.
- 45 cows died due to Ostertagiasis
- Despite Treatment with Ivomec Pour-on, Ivomec Plus, Ivomec Eprinex, and Dectomax injection.
- Cattle remain in poor condition and all fecals remain positive.

Injectable Endecticide vs Pour-On

Ivermectin Injectable

- Dose 200 mcg/kg
- Plasma concentration
Max=32 ng/ml plasma

Ivermectin Pour-On

- Dose 500 mcg/kg
- Plasma concentration
Max=12 ng/ml plasma



> Blood levels determine the amount of product reaching parasitic infections.

> Standard deviation for the Pour-On was extremely large at +/- 6ng/ml

> Some animals only receive 6ng/ml



Dectomax Pour-On Formulation - Product Monograph produced by Pfizer, Inc., 1999

Endectocide pour-ons:

poor efficacy against internal parasites, promotes resistance.

FEARS:

- Experience production losses due to failure of pour-ons to remove internal worm burden
- Continued egg shedding on pastures and, therefore, continued contamination
- Worms left following treatment by pour-ons will become resistance to avermectins.

Avermectins

- ❖ Ivomec®
- ❖ Ivomec® Epinex™
- ❖ Dectomax®
- ❖ Cydectin®
- ❖ Generic Ivermectins

Pour-Ons - Oil vs Alcohol Base

- ❖ Alcohol base pour-ons have 49-day withdrawal with residue levels in fat for 35 days.
- ❖ Oil base pour-ons have no withdrawal and disappear before eggs hatch 10-21 days post Rx.
- ❖ Alcohol base pour-on provide season long coverage.

March 1-15, 2003

- 1,200 Cow/calf Operation in Southeastern USA Experiencing Parasite Problems.
- Ivomec Pour-on Given to all cows first week in March.
- Animals remain in poor condition, cows began to die.

March 16-31, 2003

- Cattle remain in poor condition and continue to die.
- Two Cows necropsied.
- Diagnosed with Parasitic gastro-enteritis due to severe Ostertagiasis.

April 1-30, 2003

- Cattle retreated with Ivomec Pour-on first week in April.
- Cattle in two pastures retreated with Ivomec on April 23.
- All cattle retreated with Ivomec Injection on April 30.

May, 2003

- Cattle stopped dying, 45 cows died altogether.
- Cattle remain in poor condition.
- Merial suggested Ranch to switch to Ivomec Eprinex and to retreat in July

July 2003

All cattle treated with Ivomec Eprinex

Cattle remain in poor condition!

November, 2003

Cattle remain in poor condition

All cattle treated with Dectomax injection

December , 2003

- All cattle retreated with Ivomec Plus on Dec, 2-4.
- Manufacture sends Veterinary Consultant to the ranch fecals samples taken to parasite check and found cattle with high counts

January, 2004

- Cattle herd treated January, 14-16 with Safe-Guard® .125% Medicated Cubes.
- Fecal samples taken 16-days post-treatment.
- Samples split and sent to two laboratories.
- Results: Samples 98% free of parasite eggs & Body condition of the cattle dramatically improved

February, 2004

- Cattle herd retreated February 27-29, 2004 with Safe-Guard® .125% Medicated Cubes.
- Fecal samples collected 16-days post treatment.
- Samples 100% negative for worm eggs.

April, 2004

- Manufacturer provided Eprinex® Pour-on at no cost.
- All cattle treated with Eprinex the first week in April.
- Fecal samples taken 15-days post treatment.
- 73% of the samples positive for worm eggs.
- Counts ranged as high as 74 eggs per 3 gram.
- Avg. egg count of 8.2 (1,230 eggs/pound of manure).

May, 2004

- Ivomec® Eprinex® Pour-on failed.
- Ranch retreats with Safe-Guard® .125% Medicated Cubes.
- Samples collected 15-days post treatment.
- 98% free of parasite eggs.

Pastures with intact fecal pats



Implication

- Dung beetle activity conceivably impaired by all-inclusive use of avermectins.
- Research shows that dung beetles help destroy parasitic larvae in fecal pat.
- High numbers of intact fecal pats indicate high larval challenge on pasture.
- High parasite challenge and resistance to avermectins caused morbidity and excessive mortality due to gastro-intestinal parasitism.

Overall Summary

- Avermectin resistant parasites removed with fenbendazole medicated cubes given to all cattle.
- Fecal samples taken 14-days later were 98% to 100% free of worm eggs.

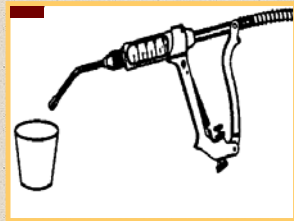


Modified Wisconsin Sugar Flotation Method

- | Technique | Materials |
|---|--|
| <ul style="list-style-type: none"> ■ Samples can be stored if refrigerated ■ Sugar solution <ul style="list-style-type: none"> – One pound of sugar. – Add to 12 oz(355cc) of hot water. ■ Slides can be refrigerated for reading later | <ul style="list-style-type: none"> ■ Sugar solution & dispensing syringe ■ Tea strainer ■ 3/5 oz dixie cups ■ Tongue depressors ■ Taper bottom 15cc tubes ■ Test tube rack ■ Microscope slides & 22x22 mm cover slips |

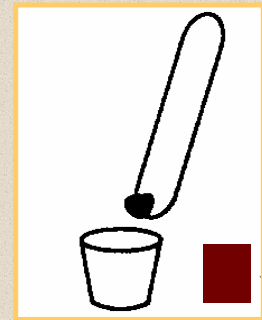
Modified Wisconsin Sugar Flotation Method

Add 15 - 17 cc sugar solution to sample



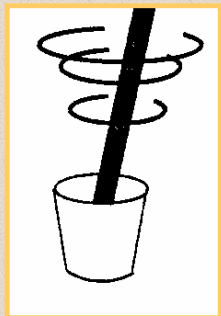
Modified Wisconsin Sugar Flotation Method

Place 3 - 5 grams of fecal material into a 3 oz paper cup
(About a thimble full)



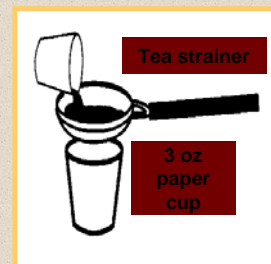
Modified Wisconsin Sugar Flotation Method

Stir solution & fecal sample to an even consistency



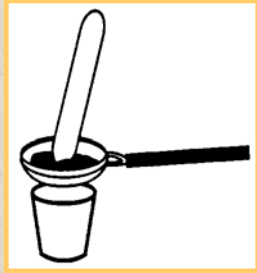
Modified Wisconsin Sugar Flotation Method

Pour mixture into a tea strainer over a 3 oz paper cup



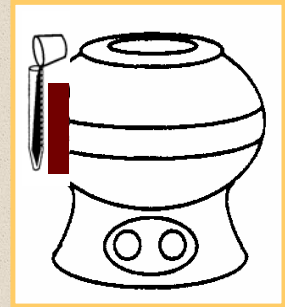
Modified Wisconsin Sugar Flotation Method

Use a tongue depressor, press as much material through strainer as possible



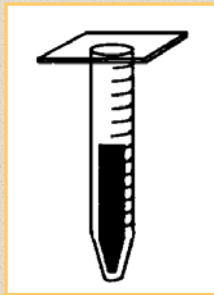
Modified Wisconsin Sugar Flotation Method

1. Pour into 15cc taper bottom centrifuge tube.
2. Centrifuge in swinging arm centrifuge at 900 rpm for 5 - 7 minutes.



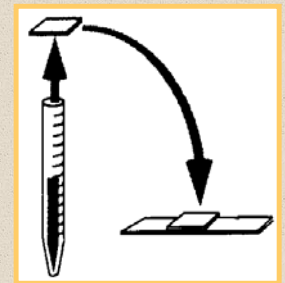
Modified Wisconsin Sugar Flotation Method

1. Place tube in rack and top off with sugar solution to form a meniscus.
2. Place 22x22 mm cover slip on tube and leave in place for 2 - 4 minutes.



Modified Wisconsin Sugar Flotation Method

Lift cover slip upward & place on slide



Modified Wisconsin Sugar Flotation Method

Use microscope to scan entire cover slip for egg count

