

Parasite Prevention Strategies for Bison

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Parasite Control is Paramount for Efficient Animal Production!

- Parasites are a major underlying cause of many problems including slow growth, poor feed conversion, reduced reproduction performance and suppression of the immune system.
- The key to successful management of parasites in a herd is using the right product at the right time.

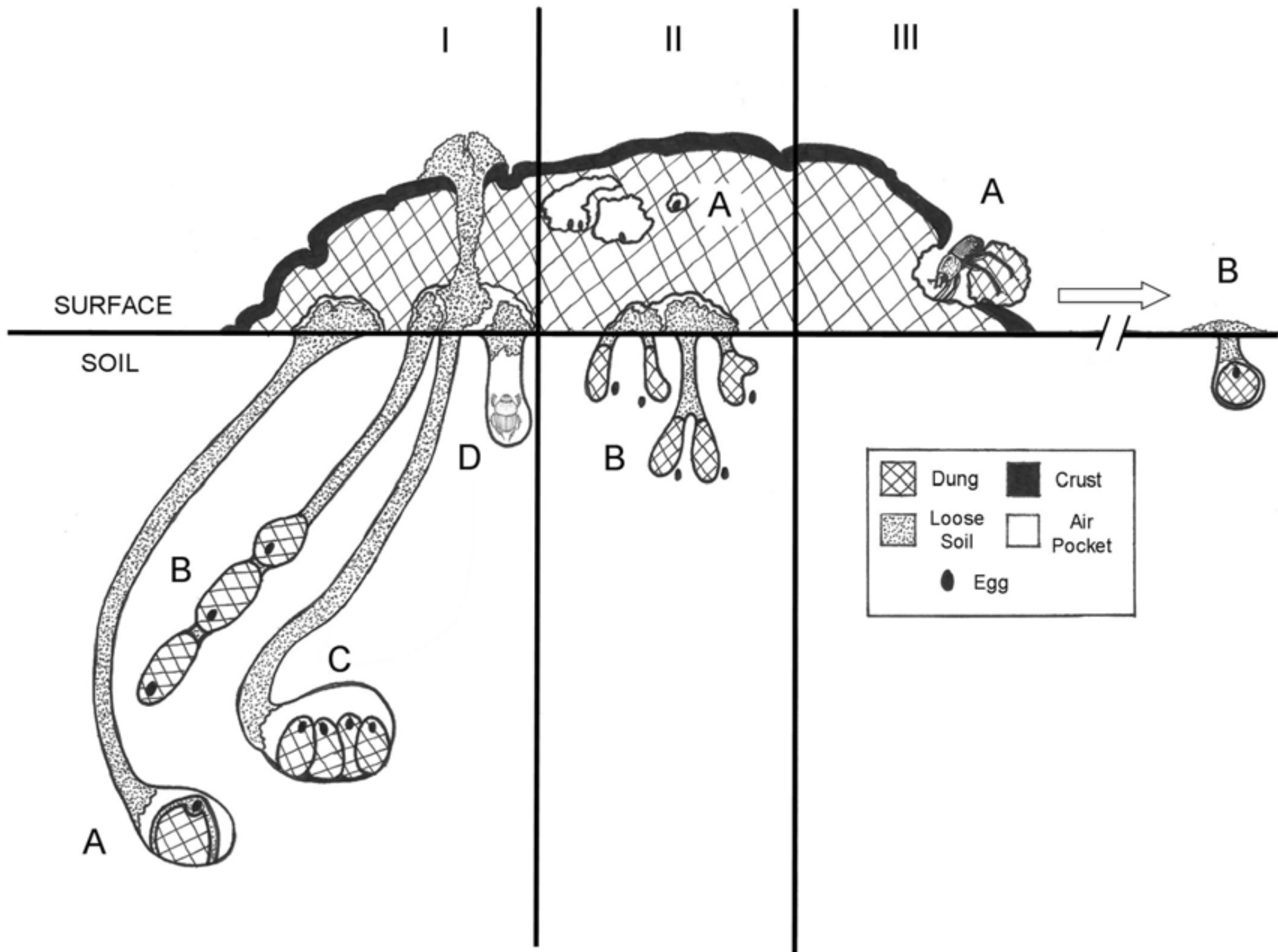
DANGER
BISON
ENCLOSURE
NO HIKING



Protecting nature. Preserving life.

The Best Dewormers in the World Used at the Wrong Time

***Is a Waste of Time and
Money...also May be
Harmful to Your
Pastures!***



Dung beetles are an important part of the pasture ecosystem.

1. Increased pasture yields by incorporation of organic matter into the soil.
2. Reduces of fly and parasite larval populations.
3. Prevents of pasture surface pollution helps soil retain moisture levels.
4. Reduces of animal diseases by removing contaminated feces.
5. Returns nutrients to the soil that would otherwise be tied up in fecal deposits.
6. Increased effective grazing areas of pastures covered by feces.

March, 2003

- 1,200 Cow/calf Operation with 10 years of Ivermectin pour-on use experiencing clinical parasitism.
 - Animals in poor condition, some cow show extreme emaciation, soon cows began to die.
 - 45 cows died altogether.
 - Two cows were necropsied; clinical parasitism was diagnosed as cause of death.
-

Intact Fecal Pats





Unfortunately, the warning signs aren't this obvious.

Parasite resistance is now being documented in cow/calf and stocker operations in the United States.^{1,2} Resistance occurs when a small number of parasites survive a deworming treatment and pass on their genes to the next generation. As repeated treatments kill off susceptible worms, resistant worms eventually come to dominate in the animal's digestive system. Signs of parasite resistance include:

- Lower than expected weight gain
- Diarrhea
- Rough hair coat
- Delayed conception
- Increased incidence of disease

Take steps now to reduce the risk.

- Choose a dewormer with proven effectiveness. A fecal egg count reduction test (FECRT) can be used 14 days post-treatment to determine if resistance is present.
- Use the most potent active ingredient within a chemical family.
- Select the best spectrum of activity for the parasites that need to be controlled.
- Follow label directions to prevent underdosing.
- Use other strategic control measures such as good hygiene and rotation of pastures and animal species to reduce parasite larvae contamination.
- Quarantine and deworm new arrivals.
- Consider periodic rotation of chemical families, i.e., CYDECTIN® (moxidectin) and SYNANTHIC® (oxfendazole).
- Your veterinarian is your best resource for maximizing herd health and performance at every stage.

1. Bill, D.H., W.G. Kvanicka. Failure of Avermectins to Control an Outbreak of Parasitic Gastro-enteritis in a Cow-Calf Herd. Proceedings of the American Association of Veterinary Parasitologists, Philadelphia, PA, Abstract 42, p. 53, 2004.
2. Smith, L.L., L.C. Gasbarre. The Development of Cattle Nematode Parasites Resistant to Multiple Classes of Anthelmintics in a Commercial Cattle Population in the U.S. Proceedings of the American Association of Veterinary Parasitologists, Philadelphia, PA, Abstract 43, p. 54, 2004.

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For more information about parasite resistance and strategic parasite control, contact your Fort Dodge Animal Health representative today.

CYDECTIN

You've got the power.

FORT DODGE

Fort Dodge Animal Health

Endectocides/Macrocyclic Lactones

Avermectins

Ivomec®

Ivomec® Eprinex™

Dectomax®

Generic Ivermectins

Moxidectins

Cydectin®

Injectable Endecticide vs. Pour-On

Doramectin Injectable

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

Doramectin Pour-On

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



- > *Injectable formulation delivered 3X the amount of active ingredient to the blood.*
- > *Standard deviation for the Pour-On was extremely large at +/- 6ng/ml.*



Anthelmintic Comparison

Fenbendazole vs. Endectocides

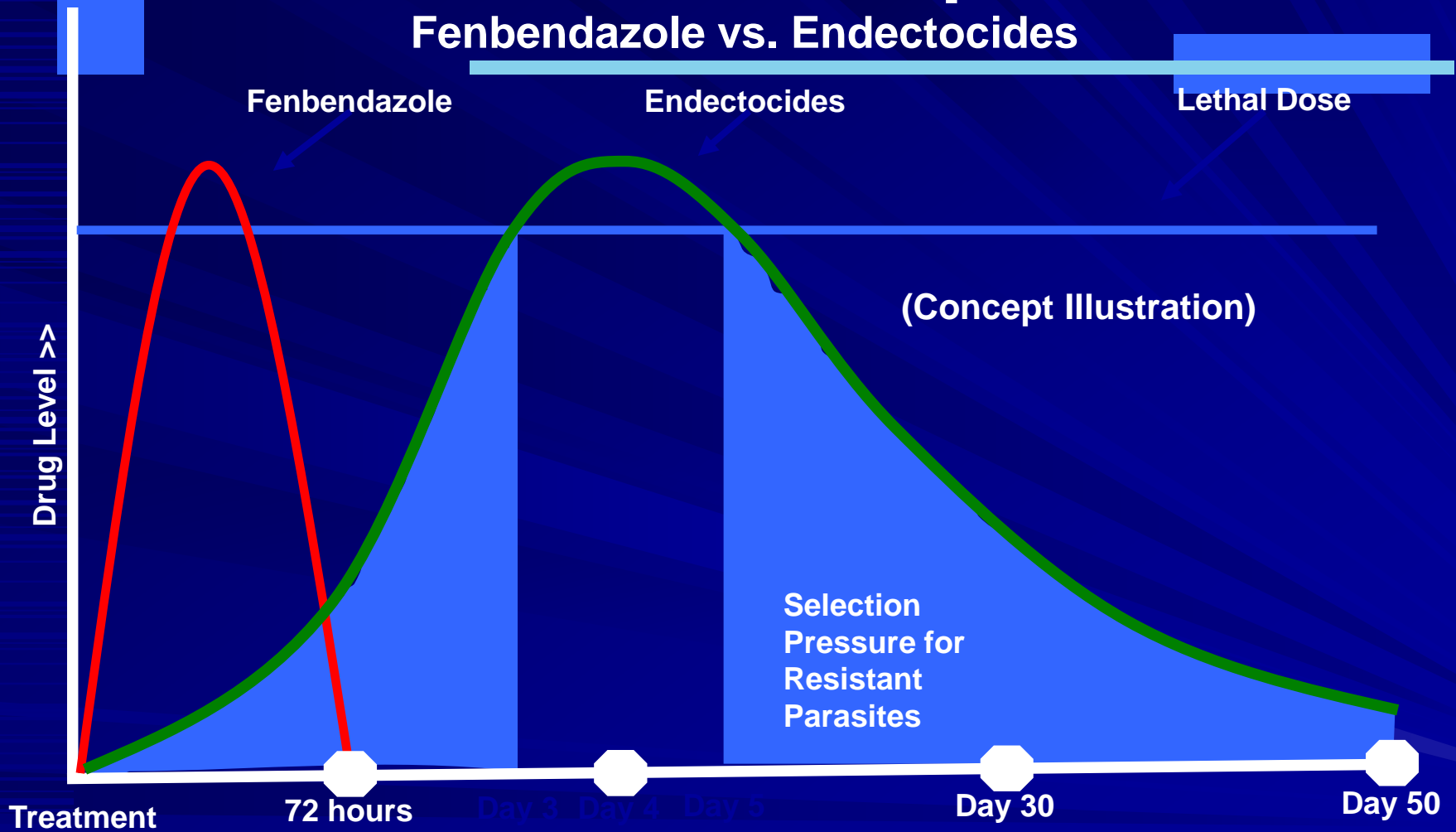


Table 1: Efficacy Summary for Fecal Egg Count Reduction Test Conducted with Macrocyyclic Lactone Endecticide Pour-On Products (2009-2014).

Products	No. of Trials	No. of Samples	Egg Counts/3g*		Percent Efficacy(%)
			Pre-Rx	Post-Rx	
<u>Pour-ons:</u>					
Ivomec® PO	8	313	33.7	26.7	20.8%
Ivermectin PO	29	1,284	67.5	36.6	45.9%
Dectomax® PO	11	474	53.3	18.1	66.0%
Cydectin® PO	12	517	55.4	15.4	72.2%
Eprinex® PO	3	144	49.3	38.0	22.9%

PO Summary	63	2,732	57.6	28.1	51.0%

*All samples taken at Rx and again 14-days post-Rx.

**Updated Jan. 1, 2015

Table 2: Efficacy Summary for Fecal Egg Count Reduction Test Conducted with Injectable Macrocylic Lactone Endecticide Products (2009-2014).

Products	No. of Trials	No. of Samples	Egg Counts/3g*		Percent Efficacy
			Pre-Rx	Post-Rx	
<u>Injections:</u>					
Ivomec® Inj.	16	988	64.9	35.8	44.8%
Ivomec® Plus	10	413	97.4	51.7	46.9%
Dectomax® Inj.	26	1,088	72.7	17.2	76.3%
Cydectin Inj.	7	311	36.0	6.9	83.6%
Ivermectin Inj.	10	506	90.7	55.0	39.4%
Generic Ivo Plus	4	149	92.9	46.7	49.7%

Inj. Summary:	73	3,455	75.8	32.8	56.0%

*All samples taken at Rx and again 14-days post-Rx.

**Updated Jan. 1, 2015

Table 3: Efficacy Summary for Fecal Egg Count Reduction Test Conducted with Various Safe-Guard® & Panacur® Formulations.

Products	No of Trials	No of Samples	Egg Counts/3g*		Percent Efficacy
			Pre-Rx	Post-Rx	
Panacur® Drench	32	1,296	59.3	0.7	98.8%
SG Drench/Paste	71	2,979	65.0	0.8	98.7%
Summary-Drench	103	4,275	63.2	0.8	98.7%

SG Feed	25	1,297	45.6	0.1	99.7%
SG 1.96%	19	803	38.6	0.7	98.1%
SG Mineral	8	306	36.6	1.5	95.9%
Liquid Feed	10	388	42.3	1.4	96.6%
Cubes/blocks/Paste	10	447	33.7	2.0	94.0%

Overall Summary**	175	7,516	53.9	0.7	98.7%

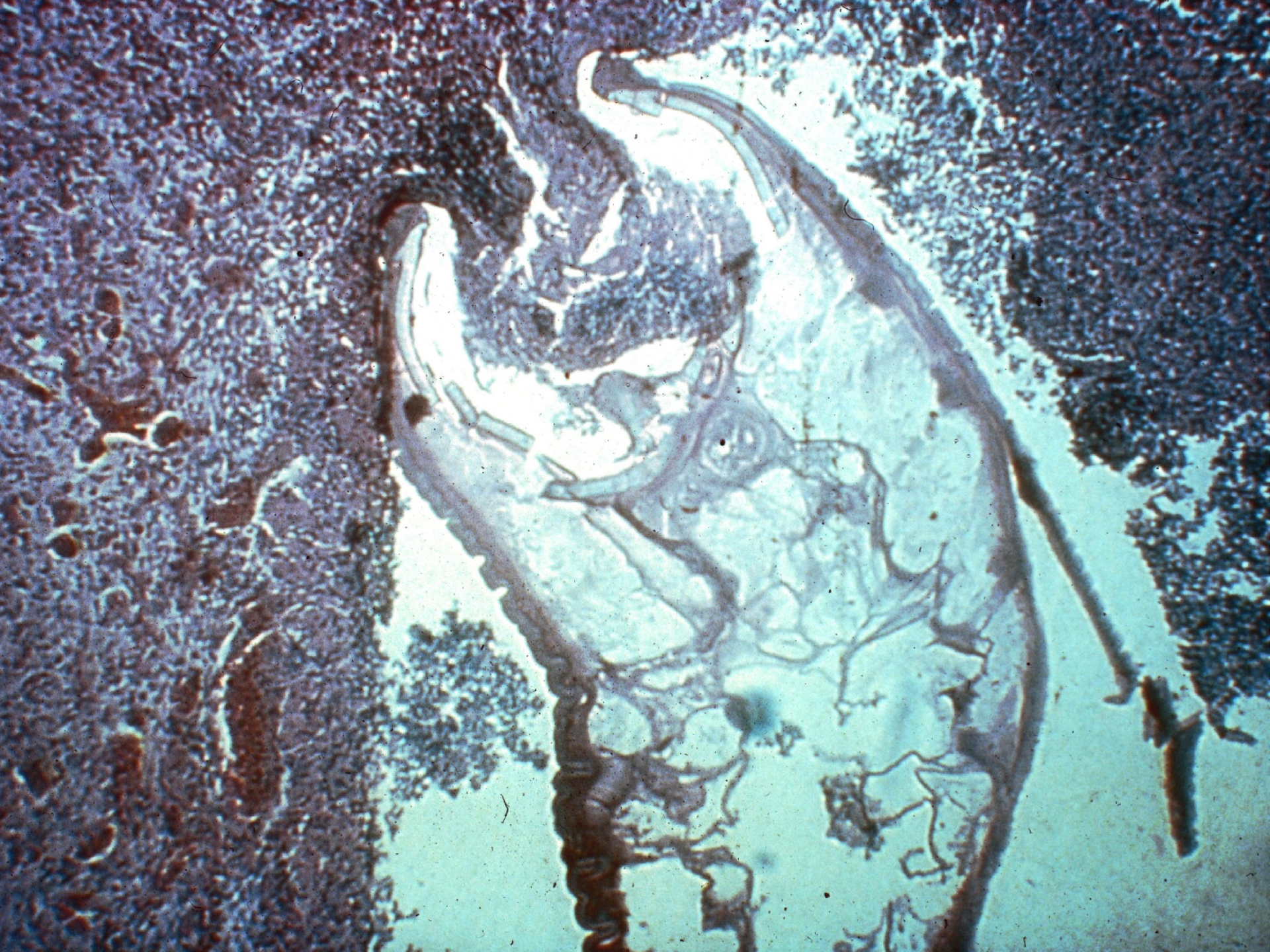
* All samples taken at Rx and again 14-days post-Rx – Updated Jan. 1, 2015.

** Note: Coccidia prevalence was reduced by 56.5%.

Table 4: Efficacy Summary for Fecal Egg Count Reduction Test Conducted with Safe-Guard®/ Panacur® in Combination with Various Endecticide Formulations.

Combination Product	No of Trial	No of Samples	Egg Counts/3g		Percent Efficacy
			Pre-Rx	Post-Rx	
Safe-Guard® or Panacur® plus:					
Ivomec® Inj./plus/PO	21	805	79.4	0.4	99.4%
Ivermectin PO/Inj.	34	1,424	81.3	1.1	98.6%
Dectomax® Inj./PO	7	223	83.4	0.1	99.8%
Cydectin PO	1	41	134.0	0.1	99.9%
Combination Summary	63	2,533	78.6	0.7	99.1%

Note: Coccidia prevalence was reduced by 76.9% *Updated Jan. 1, 2015





Color Atlas of Cattle Worm Eggs



Ostertagia
(brown stomach worm)



Cooperia



Moniezia
(tapeworm)



Bunostomum
(hookworm)



Haemonchus
(barberpole worm)



Nematodirus
(threadneck worm)



Trichostrongylus



Oesophagostomum
(nodular worm)



Trichuris
(whipworm)



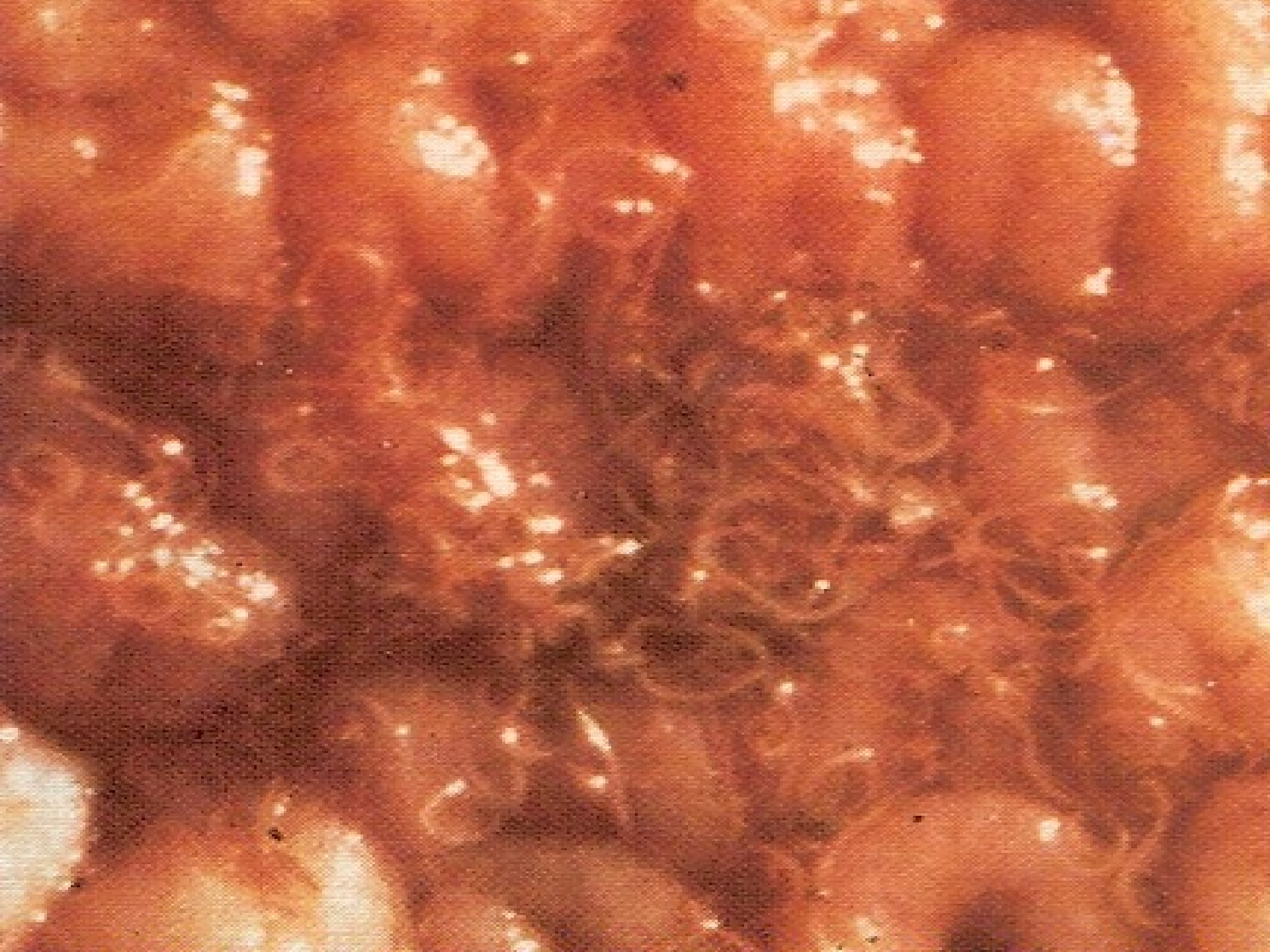
Strongyloides
(threadworm)

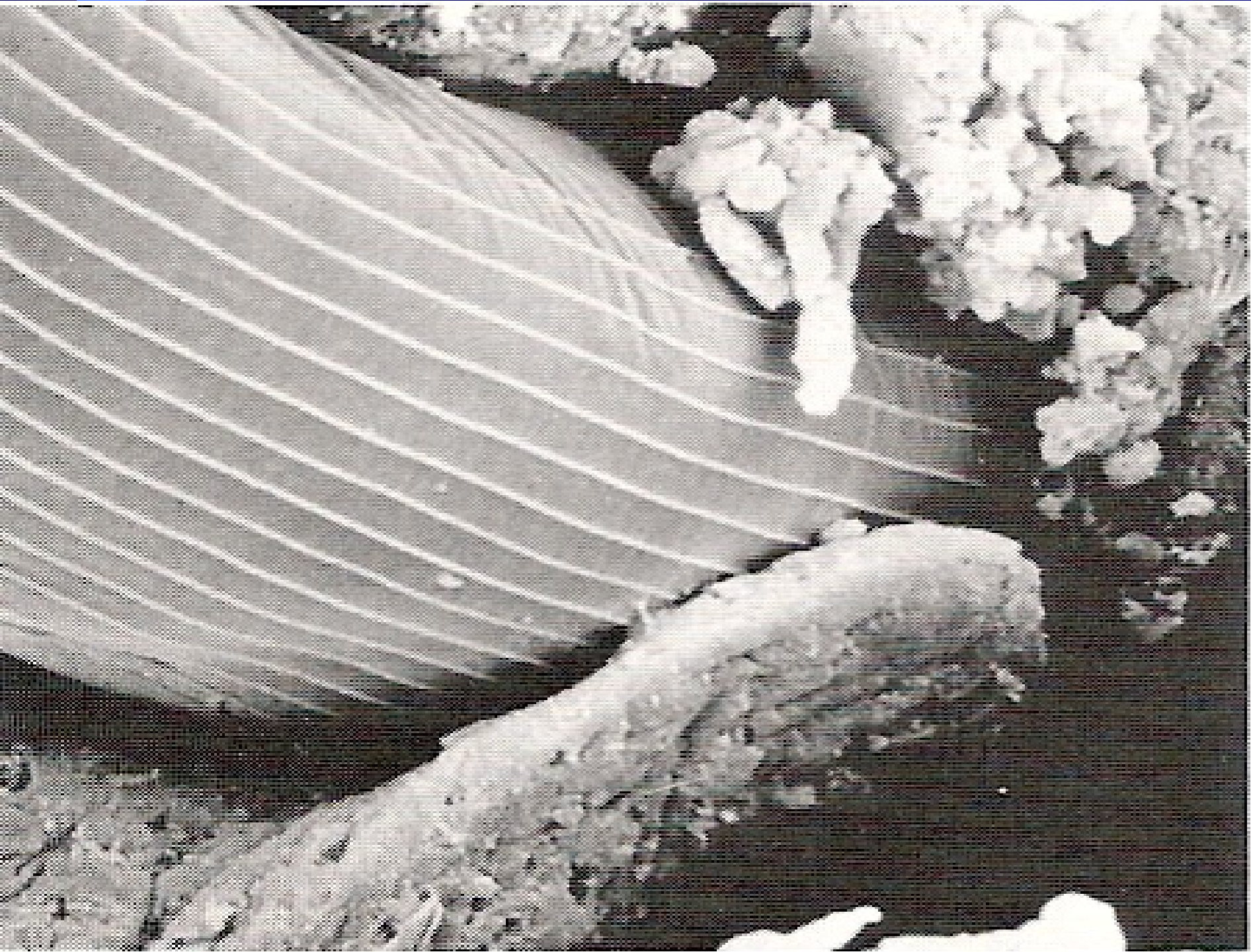


Capillaria



Dictyocaulus
(lungworm)





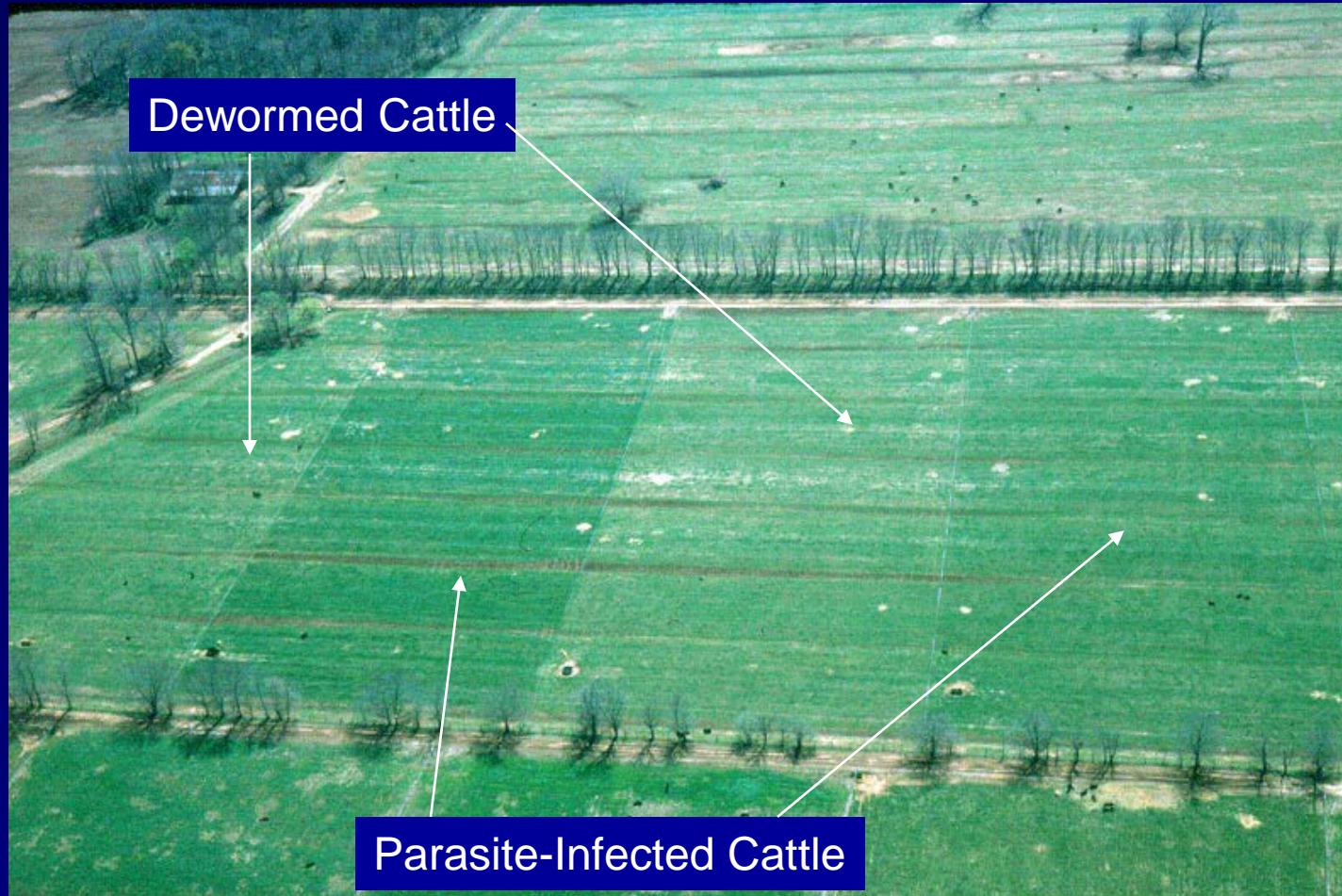


Tapeworm: *Moniezia*

- In Small Intestine.
- Adults cause local inflammation of lining where they attach.
- Block absorption, disruptive to intestine,
- Depressed growth.

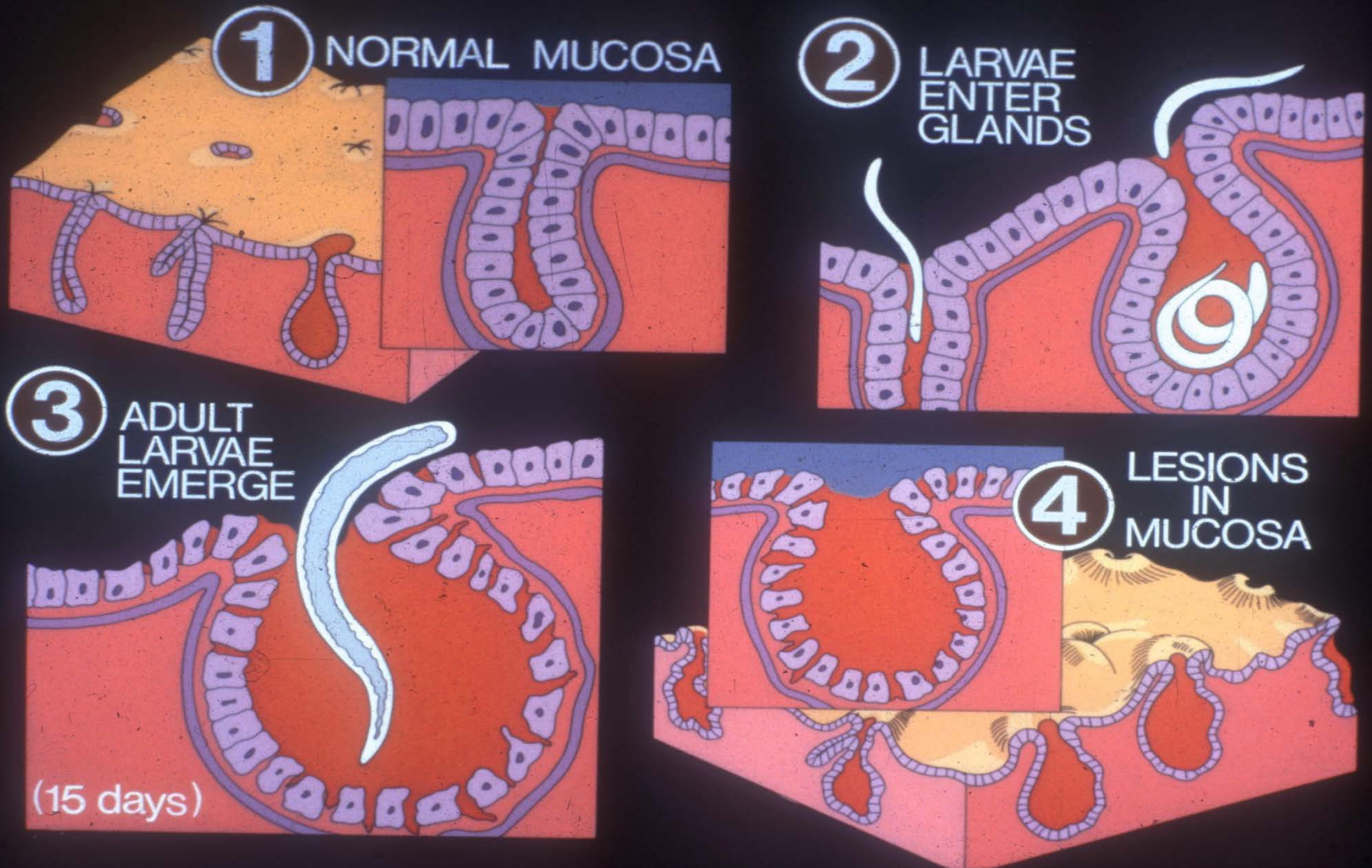


Parasites Derail Growth & Suppress Appetite



Appetite Suppression

Parasites Interfere with Efficient Production!



Effects of Parasites on the Immune System

- Parasites Suppress the Immune System!
- The level of immunosuppression is directly related to the parasite burden.
- Fast-acting dewormer is important in heavily infected animals if dewormed at vaccination time.

Results of Pathogen-Immune System Interaction

- **Suppression of Specific Immune Responses - TH1 (intercellular response) vs. TH2 (extracellular response).**
- **Worm Burdens Promote TH2 Production which suppress TH1 Production.**
- **Example: Seldom observe coccidiosis in worm-free cattle. Also, observed increase “pink eye” problems in cattle heavily parasitized cattle.**

Feedlot Health Data

Pasture↔	Control		FBZ	
Feedlot→	Control	FBZ	Control	FBZ
No. dead	4	0	1	0
No treated	22	13	6	4
Percent of total	4%	29%	13%	9%
No treatments	34	13	6	4
Percent of total	60%	23%	10%	7%

Combined Grazing-Finishing Gain (239 Days)

Pasture →	Control		FBZ	
Feedlot →	Control	FBZ	Control	FBZ
No. pens	20	20	20	20
No steers	155	160	159	160
Total gain	584	652	663	686
Daily gain	3.63	4.15	3.86	4.03
Advantage	--	68 lbs	78 lbs	103 lbs

Timing is Everything!

- Strategic deworming is key to parasite control on pasture.
- Mid-Spring dewormings break the cycle on pasture.
- Yearling cattle need more aggressive deworming schedule than brood cows.



Prevention is the Best Strategy



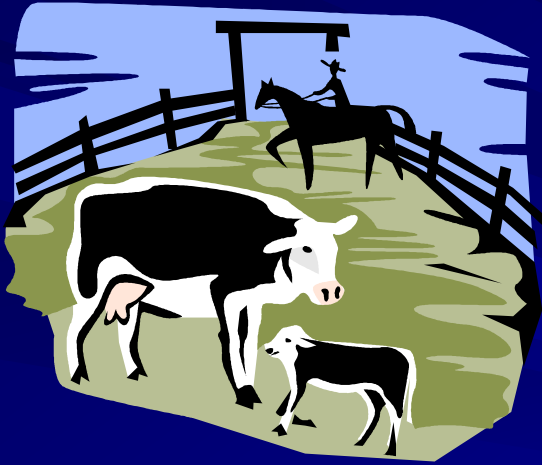


Strategic Deworming



- A management tool
- Treats both cattle & pastures
- Creates parasite-safe grazing season
- Cost effective results
- Improves health & production
- Increases profitability

Where Are The Parasites?



Only 1% are in
the cattle



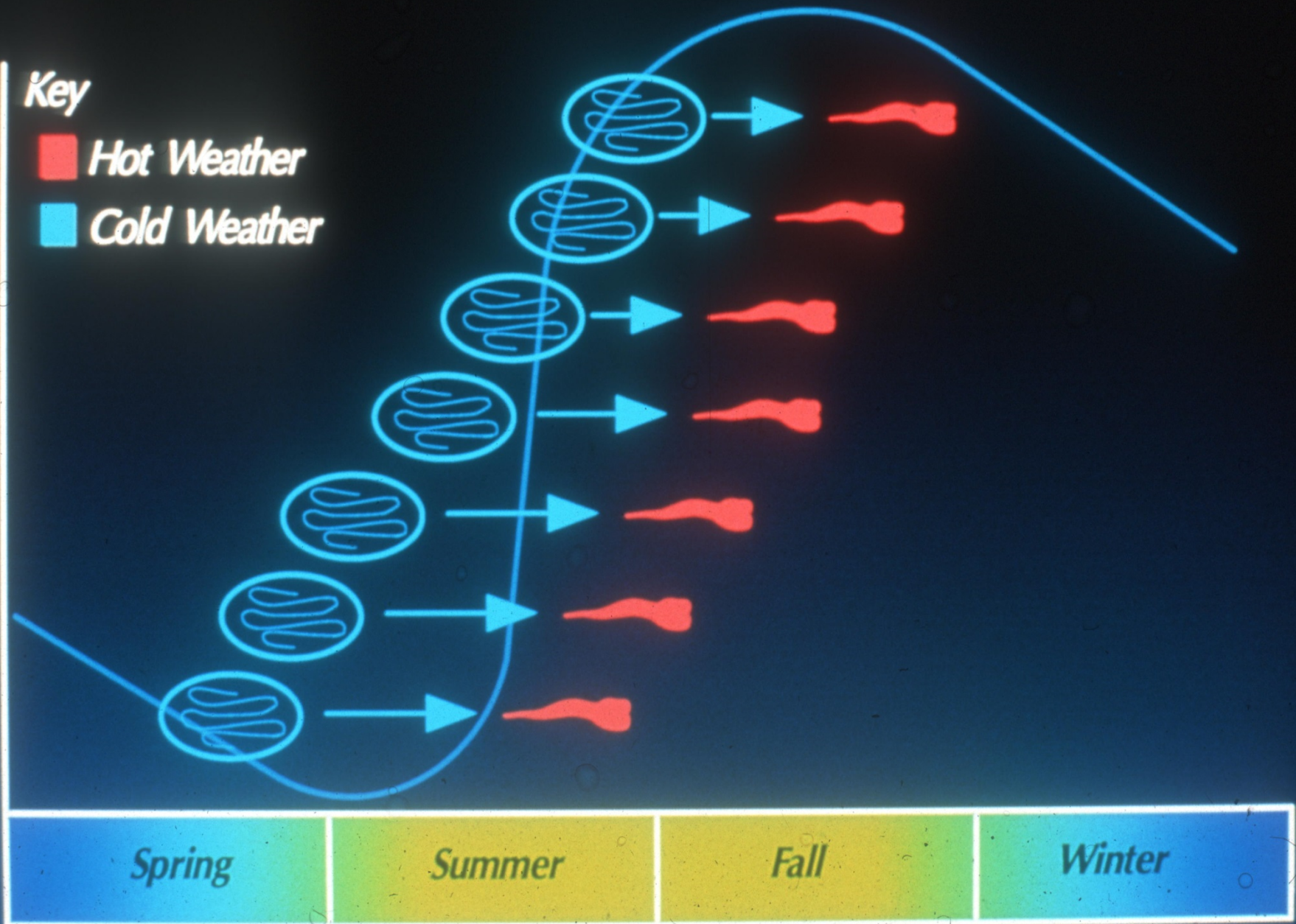
**While 99% are on
the pasture**



Pasture Contamination

Key

- Hot Weather
- Cold Weather





How Does Strategic Parasite Control Work?

GOAL is to prevent pasture contamination during the first 90 days of the grazing season.

Chart 2: Epidemiological Patterns of Worm Egg and Pasture Larval Counts:

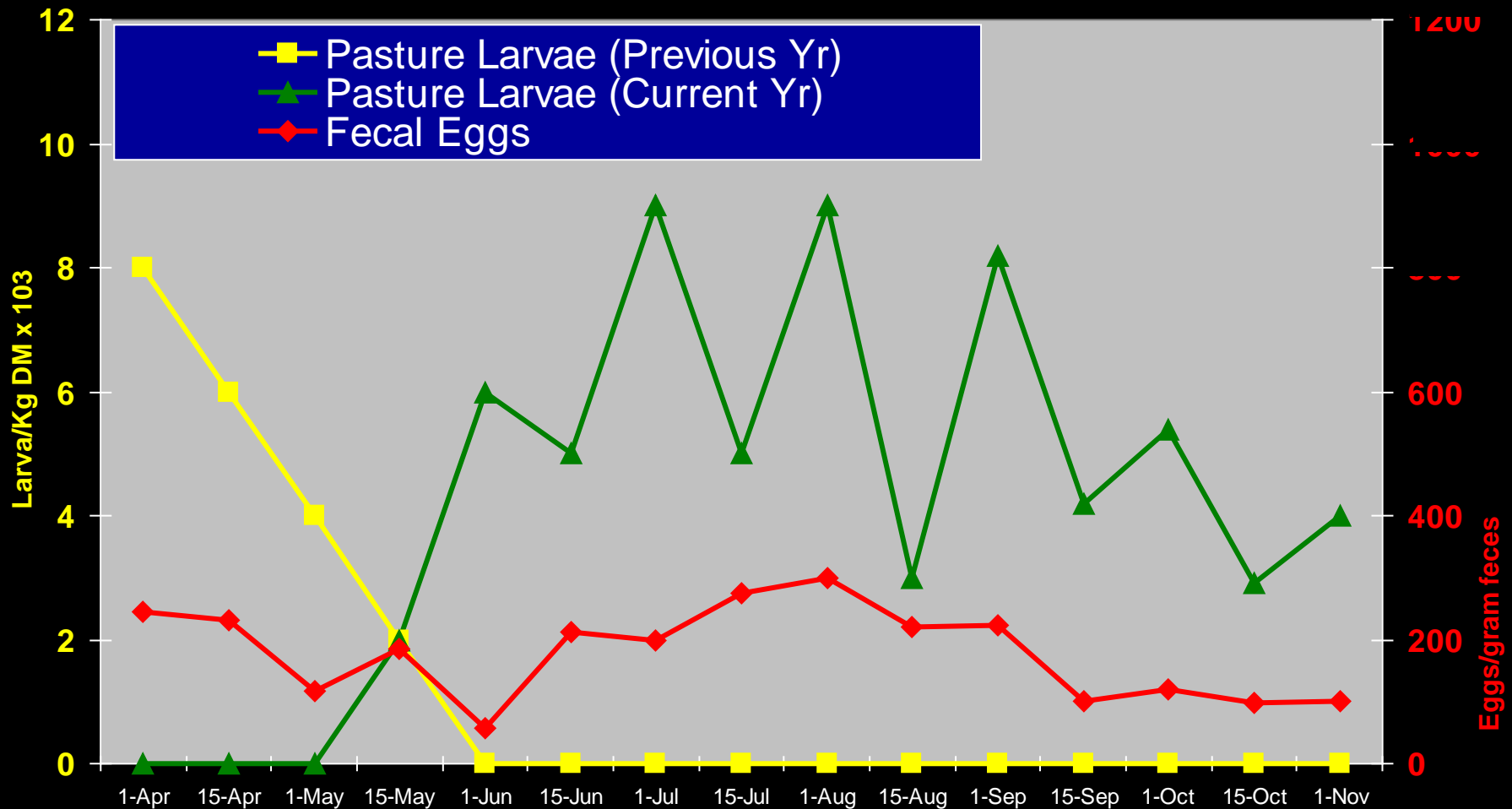


Chart 3: Epidemiological Patterns of Worm Egg and Pasture Larval Counts:

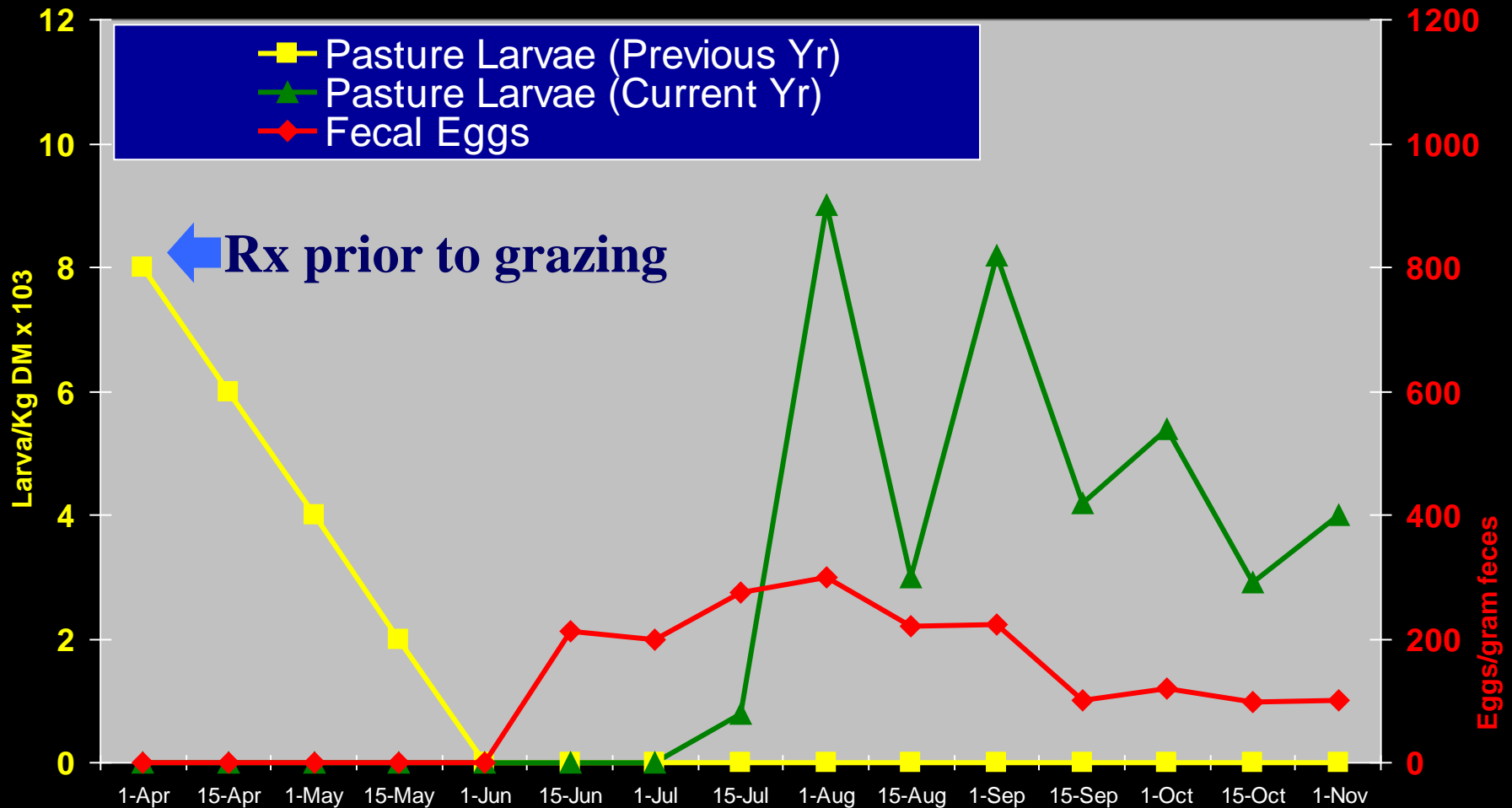
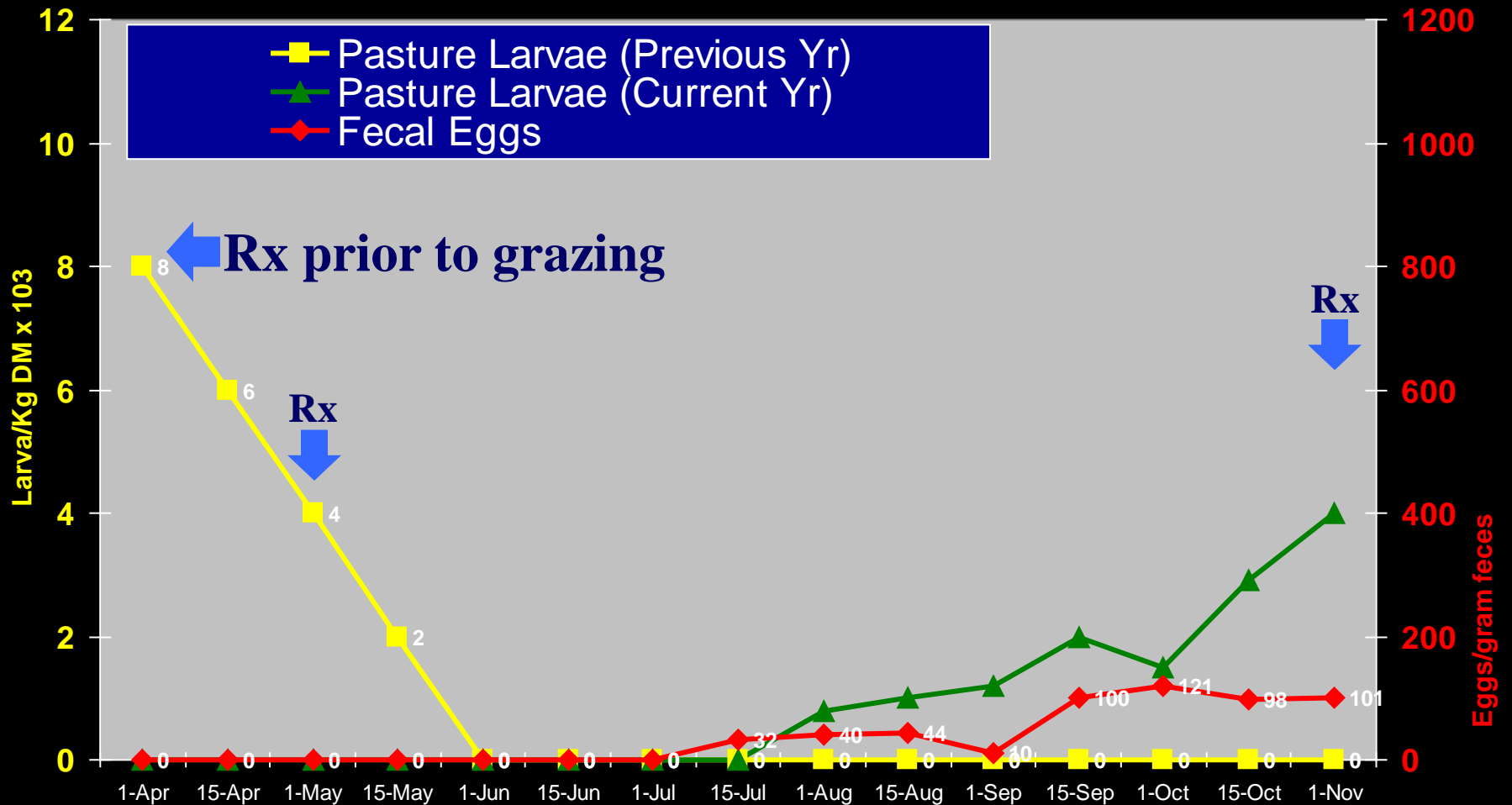
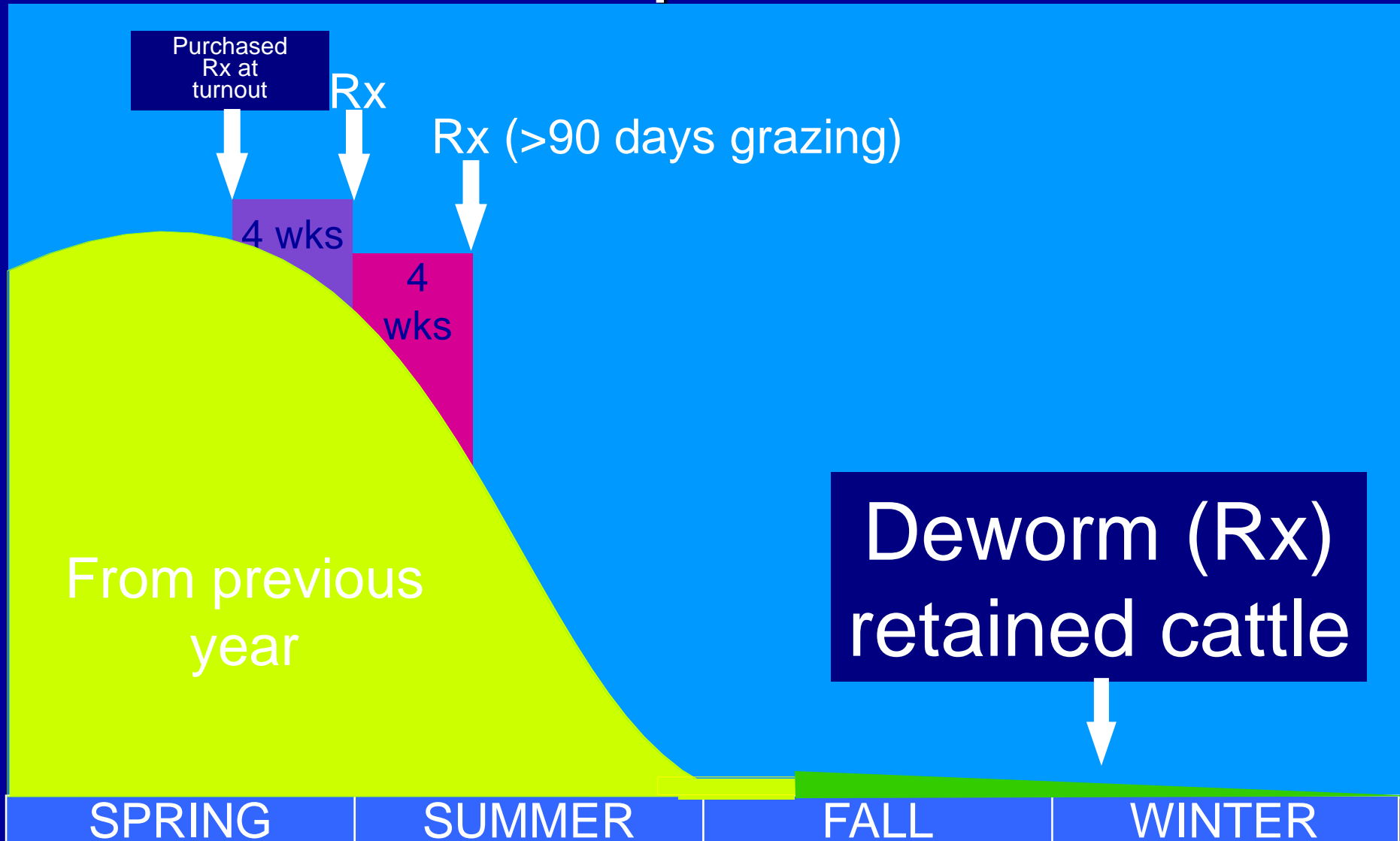


Chart 4: Epidemiological Patterns of Worm Egg and Pasture Larval Counts in Brood Cows:



Pasture Contamination

Stockers & Replacement heifers



First make sure animals are parasite-free at the beginning of the season.

How? Deworm in late fall or early winter with a combination of Safe-Guard and a pour-on (for lice control) or Safe-Guard before spring grass growth.

Second: Treat Bison strategically with Safe-Guard in Spring after grazing but before new worms begin shedding.

How? Use Safe-Guard in a formulation that works for your operation, i.e., in the feed, cubes or drench.

Don't use an ivermectin type product (macrocylic lactone) in the spring (after the first of March) because of the dung beetle!

Strategic Deworming:

- Keeps animals worm-free during the winter with the late fall treatment plus animals are not shedding eggs at the start of spring grazing.
- Allows the animals to pick overwintered larvae in the spring but kills them before they lay eggs on the spring pastures reducing parasite build-up on the summer pastures by 80-85%.
- With yearling cattle, two 30-day treatments are necessary for complete parasite control for summer season.

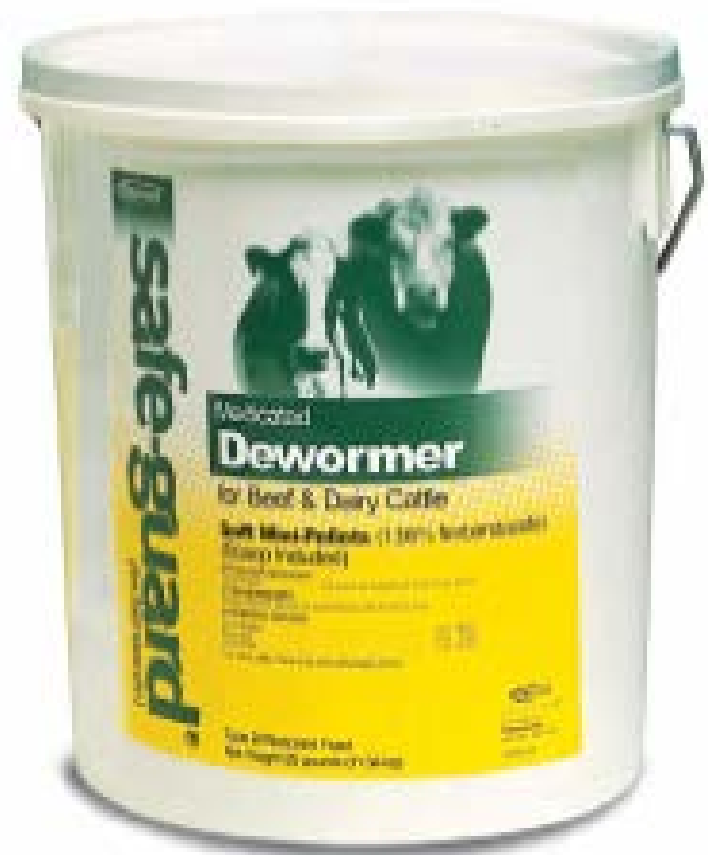
Let Science Dictate Your Deworming Programs!

- All grazing bison need annual dewormings.
- Build your program specifically for the seasonal parasite control.
- Not all dewormers work due to “parasite resistance.”
- Fecal worm exams are the only way to determine if deworming is successful.

Advantages of Fenbendazole Non-Handling Formulations



- Cumulative dose properties
- Flexible feeding period
 - 3-6 days mineral
 - 3-10 days blocks
 - 1 day pellets, cubes, crumbles
- Palatability (no taste/smell)
- Safe in varied consumption situations
- Labor free administration
- Highly effective against major cattle worms





Second: Treat cattle strategically with Safe-Guard in Spring after grazing but before new worms begin shedding.

How? Use Safe-Guard in a formulation that works for your operation, i.e., (0.5% Crumbles) in the feed or (20% Premix) in a weeks worth of mineral.

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