Deworming Broiler Breeders

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Introduction

Industry has made immense progress in nutrition/housing/genetics...

Long standing problem: i.e. Ascarids.

Parasite eggs are extremely resistant.
- Require live steam to kill

Breeders exposed to worm challenge.
Parasite Control

Seldom see clinical parasitic disease.

Sub-clinical disease
- major effect not from competition for nutrients but from:
  - host tissue damage
  - alteration of physiological function
  - host reaction to the parasite
    - slows down life cycle
    - reduces egg shedding
  - adverse immune reactions
  - suppression of the host's immune response
Immune Suppression

- Increased susceptibility to other parasites
  - increased susceptibility to bacterial and viral diseases
  - response to vaccines
Hairworms
(Capillaria spp.)
Hairworms (Capillaria)

- Worldwide distribution
- Intermediate host - none or earthworm
- Adult – thin Hair like
  - intestine - 6- 25mm long
  - crop & esophagus - 12-80mm
- Difficult to see on gross examination
  - gut contents washed through fine mesh sieve
Hairworms

Fig 187c. *Capillaria* spp (x780)
Hairworms — Life cycle - direct

- Eggs passed in feces, become infective
- Eggs ingested by birds
- Maturation in gut, no migration
- Prepatent period – 3 weeks
Capillaria annulata

Fig 187a. *Capillaria* spp
Prepatent period = 1-2 months
Hairworms - Clinical Signs

- Inflammation, thickening or hemorrhage of gut wall
- Clinical signs – emaciation, weakness, bloody diarrhea (Extreme)
- Decreased egg production possible
Hairworms - Diagnosis

- Necropsy- dead bird or sacrifice
- Fecal float – for presence of eggs
Cecal worms
(Heterakis gallinarum)
Cecal Worm

- Worldwide distribution
- Adults – 7 – 15mm long
- Eggs - ovoid, smooth shell
- Infest cecal pouches
Cecal worm - life cycle

- Eggs passed in feces – become infective
- Birds ingest eggs directly
- Larvae hatch in the intestine mature in Ceca
- Prepatent period – 1 month
Fig 186a. *Heterakis gallinarum* Prepantent period = 24-36 days
Cecal worm — Pathogenesis/clinical signs

- Thickening of cecal mucosa (lining)
- Hemorrhages – only in heavy infections
- Black head in turkeys as carrier of Histomonis meleagridis (protozoan)
Histomonas gallinae
(cecal and liver lesions)

Histomonas gallinae
(liver lesions)
Round worms
(Ascaridia spp.)
Roundworm – Ascaridia spp.

- Worldwide distribution
- Adults – 16 – 120mm long
- Eggs - oval, smooth shell
- Infest Lumen and walls of the intestine.
Fig 185c. Ascaridia galli (x300)

Large Roundworms
Roundworm - life cycle

- Adults live in the intestine for approximately 6 months
- Eggs can survive in contaminated environments for 2 - 7 years
- Eggs are resistant to disinfectants, they are killed by steam
Roundworm - life cycle

- Eggs passed in feces
- Develop into infective eggs – 10 days
- Infective eggs ingested by bird - contaminated food, water, litter
- Larvae hatch to gut lumen and migrate to mucosa (Lining)
- Mature to adult stage
- Prepatent period 5-8 weeks
**Fig 185a.** *Ascaridia galli*

Prepatent period = 29-50 days
Life Cycle-roundworm

- Female >1000 fertile eggs/day/small intestine.
- Eggs passed in the litter in droppings
- Optimal conditions eggs become in infective. 12 days summer: 20 days winter.
Life cycle of roundworm cont’d

Pyramid population: Visual 10% in intestine: 30% L4, 60% in L3
Roundworm – Pathogenesis/Clinical signs

- Most serious in birds 1 – 3 months but throughout production as well
- Mucosa damage from migrating Larvae – Hemorrhage & enteritis
- Clinical – diarrhea, unthriftness, emaciation, weakness, decreased egg production
- Adult worms may migrate up oviduct and be present in egg
Roundworm - diagnosis

- Adult Worms at necropsy, post Piperazine
- Eggs in feces – fecal floatation
Roundworm - economic losses

**Production**

- competition for nutrients
  - reduced growth rate and feed conversion add
    5% to 13% to the cost of production
  - Egg numbers
Hygromix –B (Hygormycin)

- No longer available in Canada
- Continuous feeding for 8 weeks
- Adults only – Roundworms, Hairworms
- Fairly narrow safety margin
- Cautions in handling in feed mill
Piprazine dewormer

- Piprazine: Approved dewormer.
- Piprazine targets adult Roundworm only!
- Piprazine stuns adult worms. Expelled live.
- Piprazine must be consumed in 5-6 hours.
- Mistakes; administration over 24 hours or same dosage for different weights.
- Can be administered via water or feed.
- Not effective against other worms
Safe-Guard (Fenbendazole)

- Multi-species dewormer:
  - Equine
  - Bovine
  - Porcine
  - Canine
  - Avian – exceptions (Canada requires Vet. Script)

- First registered in 1971, registered in Canada in 1989

- Safe at 200X therapeutic dose
Safe-Guard

Only Class II dewormer in the MIB

- Ascarids
  - $L_2$ stage
  - $L_3$ stage
  - $L_4$ stage
  - Late $L_4$ stage and early and mature adult
Safe-Guard

Also Effective against –

- Hairworms (Capillaria) – 60ppm
- Caecal Worms (Heterakis)
Ovacidal and larvacidal activity has been shown against relevant parasite species

- egg shedding stops shortly after treatment
- larvae are non-viable shortly after deworming
Safe-Guard

- **Treatment choices**
  - can be fed over a 3 to 12 day period

- **Formulations** (fenbendazole is tasteless)
  - palatable and readily consumed:
    - 20% fenbendazole pre-mix

- **No fasting/water starvation prior to treatment**

- **Zero withdrawal in other species** (Upon Vet Script - cgFARAD – 24 days recognized by CFIA)
Safe-Guard

**Benefits and Advantages**

- complete worm control vs. other dewormers
  - controls all economically significant worms
  - controls the L3 stage of the ascarid worm; gut mucosa will not be damaged
  - shuts down egg shedding within 36 hrs
Safe-Guard

Benefits and Advantages
– Withdrawal not concern on shipping (timing)
– no residue in the manure
– non-toxic
Safe-Guard

Benefits and Advantages
- deworm in the feed with non-handling forms
Safe-Guard dewormer.

- Broad spectrum. All stages.
- Non toxic.
- 30ppm concentration for 5 feedings.
- Cleared for other species.
- Vet script required.
The 5-Step Approach to Internal Parasite Control

- **Step 1 - Diagnosis and assessment**
- **Step 2 - Design a control program**
  - including treatment, sanitation, litter management
- **Step 3 - Treatment**
- **Step 4 - Monitor/Follow-up**
- **Step 5 - Adjusting programs**
Parasite - Diagnosis/Monitoring

- Fecal samples
  - composite of stool samples 2 x per year
  i.e. pullets, post peak
THE END, finally!