

MAE Farm Meats

May 1, 2012

Objective: Survey different production stages for parasites in order to obtain a representative picture of the parasite burden for the farm's swine population. The Fecal Centrifugation technique was paired with clinical observation to help make treatment and management recommendations appropriate for each production stage.

History:

MAE Farm Meats is a 73-acre, predominantly swine-producing farm (26 sows, 6 boars) established in 2004, with a mixture of Chester, Duroc, and Berkshire hogs. Meat was previously sold to Whole Foods Market, but with increasing corn prices is now sold directly to restaurants and consumers at the Raleigh Farmer's Market (four hogs per week). The farm is functioning at capacity, but is looking to increase efficiency.

MAE Farm also raises organically fed, free-range broiler chickens (100), and is looking to increase its organic egg production. Cattle are raised free-range, grass-fed, and corn-finished.

Management and Health Concerns:

During late gestation and early lactation, sows are kept in farrowing huts with piglets up to two weeks of age, at which time the sows are moved into a paddock, the piglets are removed to be processed and then returned to the paddock with the sows. Sows and pigs are kept in the paddock with a boar for approximately eight weeks, at which time pigs are weaned and moved to a second pasture for finishing. Farm-owned boars naturally service sows. Upwards of four sows are kept with a boar post-weaning.

Ivomec was previously administered to swine in the feed (corn and roasted soybean) with the aim of controlling ectoparasites, but became unavailable as of six months ago. Atgard is occasionally used to prevent ascarid infections. Fenbendazole has been used once previously on the swine herd.

MAE Farm implements rotational grazing, designating pastures for cattle, swine, gardening, and rest/recovery.

Piglet mortality is highest within the first 24 hours of life, but is less than 1% after two weeks. The farm's sows average 12 piglets born alive and 9.2 weaned. Occasionally there is insufficient sow milk production.

Analysis & Findings:

Fecal samples were collected from each age group and were analyzed using fecal centrifugation technique and light microscopy. Urine samples were collected when available, and analyzed by light microscopy of urine sediment. Ectoparasites were collected and identified from lactating sows in huts.

The most concerning health issue in the farrowing huts was the ectoparasite load of the sows.

All sows in huts were affected by *Hematopinus suis*, the hog louse. Multiple lice were observed on the sows, especially around the neck and dorsum of the animals. Louse eggs were especially prominent on hair shafts in the neck region, caudal to the ears.

Many of the sows had skin lesions consistent with sarcoptic mange infection. Skin on top of the head, over the spine, and dorsal trunk was thickened, dried-out, crusty, and scaling off. Skin scrapes were not collected to look for mites, but infection is suspected.

Aside from the ectoparasites, the farrowing sows were not found to have any significant internal parasite load. Rare coccidia oocysts and ascarid ova were each found in a separate sow, but otherwise no other parasites were observed in samples collected from the huts.

Amblyoma (Lone Star Tick) organisms were also observed on one of the sows, and it is likely they are present on the other sows as well.

The most frequently observed ova in the ten 7-8-week-old pig samples were *Trichuris suum* (40% of samples), followed by coccidia oocysts (30%), *Ascaris suis* ova (20%), *Oesophagostomum* (strongyle-type) ova (20%), and *Strongyloides* larvated ova (10%). One sample had a relatively high coccidial infection, but all other samples had low numbers of parasites observed.

Relatively low infection levels were present in the sows in the 7-8-week-old pig pasture – coccidia was found in two (of six) samples, and *Ascaris* in one sample. From afar, the skin of these sows (and piglets) seemed to be in good condition, implicating that they are not affected by lice and mange mites to the same degree as the sows in farrowing huts. Two urine samples were collected from sows in this paddock, and no parasites were observed.

Ascaris suis and *Strongyloides spp.* ova were noted in a fresh fecal sample from the boar in this paddock.

The finisher/market pigs generally appeared to be in good health. One case each of lameness and nasal discharge were noted. The biggest concern with the 6-month-old market pigs was coccidia. Coccidia oocysts were observed in 8 of 11 (73%) fresh fecal samples collected from this pen, though none were at a level that would present a problem. Two samples contained both *Ascaris* and *Trichuris* ova. One sample was positive for *Oesophagostomum* ova. In positive samples, the nematode egg counts were still relatively low, not necessitating treatment at this time.

No parasites were observed in the eight chicken samples collected.

One canine sample was collected and contained many *Ancylostoma* (hookworm) ova.

Fecal Centrifugation Results:

Fecal (Urine) Sample	Coccidia	<i>Ascaris suis</i>	<i>Trichuris suum</i>	<i>Oesophagostomum spp.</i>	<i>Strongyloides</i>	<i>Hematopinus suis</i>	<i>Amblyoma</i>
Sows in Farrow Crates							
Hut 1	+	-	-	-	-	+	
Hut 2	-	-	-	-	-	+	
	Urine – negative						
Hut 3	-	-	-	+	-	+	
Hut 4	-	-	-	-	-	+	+
	Urine - negative						
Hut 5	n/a	n/a	n/a	n/a	n/a	+	
Hut 6	-	+	-	-	-	+	
7-8 Wk Pig Paddock							
Pig 1	+	-	-	+	-		
Pig 2	-	-	-	-	-		
Pig 3	-	-	-	-	-		
Pig 4	-	-	+	-	-		
Pig 5	-	-	+	-	-		
Pig 6	-	-	+	-	-		
Pig 7	+	-	-	+	+		
Pig 8	-	+	+	-	-		
Pig 9	++	-	-	-	-		
Pig 10	-	+	-	-	-		
Sow 1	+	-	-	-	-		
Sow 2	-	-	-	-	-		
Sow 3	+	-	-	-	-		
Sow 4	-	+	-	-	-		
Sow 5	-	-	-	-	-		
Sow 6	Urine - negative						
Sow 7	Urine - negative						
Boar	-	+	-	-	+		
Market Pigs (6 months)							
MPig 1	+	-	-	-	-		
MPig 2	+	-	-	+	-		
MPig 3	-	-	-	-	-		
MPig 4	-	-	-	-	-		
MPig 5	+	-	-	-	-		
MPig 6	+	-	-	-	-		
MPig 7	+	-	-	-	-		
MPig 8	-	+	+	-	-		
MPig 9	+	-	-	-	-		
MPig 10	+	+	+	-	-		
MPig 11	+	-	-	-	-		
Chickens – 8 samples; all negative							
Dog – 1 sample; many <i>Ancylostoma</i> ova							

Recommendations:

The sows in the farrowing crates contained greater numbers of ectoparasites versus the other production stages. *Haematopinus suis*, a sucking louse, is often spread via direct contact or via ova attached to hair shafts shed into bedding. These ova continue to hatch in warm environments for up to three weeks. It is recommended to disinfect huts between infected and uninfected sows to avoid infection of naïve sows. To treat the infected sows and to prevent spread to piglets, ivermectin can be supplied in the feed or other solutions may be poured on or misted over the sow. Since the Ivomec pre-mix product is not currently available, other options to look into for louse and mange mite control are acaricide spray (0.1% amitraz) or oil mixtures (applied topically smother the mites, will not necessarily help with lice).

Coccidial infection in gestating/lactating sows does not seem to be causing a clinical problem. Treatment is not warranted at the present time.

Of the fecal specimens collected, the vast majority of positive samples had very few nematode ova observed (*Ascaris*, *Trichuris*, *Oesophagostomum*). There is no indication at this time for routine deworming of any of the age groups. However, bi-annual survey sampling and fecal egg counts (FEC) are recommended for the market pigs in order to gauge current parasite load.

Though few were noted in the samples, *Ascaris suum* typically presents the greatest challenge in dirt-reared swine production. Ascarid eggs will mature in the environment and become infective within two to four weeks, but can survive for up to 15 years under the right conditions outside of the host. *Ascaris suum* has a direct life cycle, and one female adult worm is capable of producing close to two million eggs per day. This reproductive capacity coupled with the longevity of infective ova makes it very difficult to rid an infected pasture of ascarids. Ascariasis can occur in all age groups of swine, but younger growing pigs are typically the most affected. Clinical signs indicative of an ascarid infection are chronic coughing, failure to thrive, low growth rate, pot-bellied appearance, and rough hair coat. While low levels of infection can stimulate immunity to the worms, caution must be practiced when placing naïve pigs in previously affected pastures.

Piglets are not currently given injections of iron, but with the concern of neonatal deaths, it may be worth looking into since a sow's milk is iron-deficient. (Conventionally-raised piglets are given 200mg iron via intramuscular injection at 4-10 days of age.) In order to survive, newborn piglets are dependent on proper nutrition, proper environmental temperature (above 85 degrees Fahrenheit in the first week), and passive transfer of immunity via the sow's colostrum, a good reason to vaccinate sows before farrowing.

It was also mentioned that sow milk production is occasionally insufficient, which can be problematic for nursing piglets if they are not supplemented adequately. One cause of reduced milk production in sows include postpartum dysgalactia syndrome, which incorporates a variety of issues. According to current research, the following are factors in decreased milk production in sows at farrowing: abrupt transfer of sows to farrowing crates, amount of feed given to sows during late gestation and feed during early lactation (Papadopoulos et. al, 2010). Washing the sows and farrowing crates before farrowing has been shown to decrease pre-weaning piglet deaths.

Possible causes of death in day-old pigs include enterotoxigenic *Escherichia coli* (colibacillosis), TGE (Transmissible Gastroenteritis, a coronavirus), Rotavirus, *Clostridium perfringens* Types A and C, and *Clostridium difficile*.

Sources:

Merck Veterinary Manual Online

Papadopoulos, Georgios A., et.al. **Risk factors associated with postpartum dysgalactia in sows**. The Veterinary Journal. 184 (2010), online.

Iowa State University. Roundworm Infection (Ascariasis).

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