

MAE Farms - Parasite Report from April 29, 2015

History:

MAE Farm Meats is a free-range farrow-to-finish swine operation in Louisburg, NC run by Mike Jones since November 2004. Breeds on the farm include Chester White, Duroc, Hampshire and Berkshire crossbreeds. The 73-acre farm is a closed herd with every boar and sow born on site, including its six breeding boars and twenty-two breeding sows. Jones' pigs are moved within his farm at least three times before they are ready to go to market. Movement includes sows being taken to farrowing huts two weeks before parturition and then being reintroduced to pasture 4-6 weeks after their piglets are born. The sows are allowed to acclimate to the pasture overnight before they are reunited with their offspring. The sows and their piglets remain on this pasture together until the pigs are weaned at 8-10 weeks old. From there, the sows go to breeder pastures and the weaned pigs are moved to a grower pasture. From the grower pastures, pigs are moved to market hog/cull sow pastures, with the timing of this move dependent on pasture conditions. Additional rotations within the farm are "weather-dependent" because fair weather leads to a low-stress environment for hogs, allowing them to reach market weight more quickly. If hogs reach market weight more quickly, there is less wear on the pastures and less rotations are necessary. Hogs are taken to market typically between 6 and 8 months of age, at weights ranging from 250 to over 300 pounds. Although the farm is primarily a swine operation, it also has fifteen cattle, eleven ducks, forty chickens and three guinea hens.

At MAE Farm, no piglet processing (iron injection, penicillin shot, teeth clipping, tail docking, ear notching) occurs--the only processing is castration at around 10 days of age. Jones also does not administer vaccines. When the farm was first opened, he administered a leptospirosis combination vaccine, but that protocol was used for only one year. Jones explained that his herd has never broken with any of the common diseases of swine, including PRRS, pseudorabies, and PEDV, likely due to the low density of hog production, lack of a feral hog population in the area, and adequate nutrition. The hogs' diet consists primarily of corn and soy with oregano, molasses, and a vitamin/mineral mix. Occasionally barley and wheat are added to the feed. The animals also often have access to forage such as clover and hogweed. The finishing ration has less protein than the growers' ration.

Predators of swine in the area include coyotes and bobcats, but Jones' primary concern is with black vultures, which prey on baby pigs and attack sows. He has recently acquired a Great Pyrenees-mix puppy to hopefully alleviate some of these issues. She is only two months old now, but Jones hopes that she will grow into a successful guard dog.

When Jones first started this farm, he had problems with *E.coli* and *Erysipelas*, but he hasn't encountered serious issues with these pathogens since then. He used Ivomec for parasite control until it was taken off of the market 3 years ago, and now uses Safeguard (fenbendazole) and Atgard (dichlorvos) when he sees adult worms in the feces. The last time these treatments were given was during fall of 2013. No treatments were administered the year and a half before that. If Jones notices persistent parasite problems in particular sows, he tries to cull them in

order to reduce the overall number of parasites in his herd and improve his genetics. In recent years, he has had some issues with liver condemnation at slaughter due to “milk spots.” After discussing treatment options with Dr. Hammerburg, Jones treated most of the herd with Pyrantel. Treatment took place at the beginning of April, with continuous Pyrantel in the feed for two weeks. All pigs listed in the results chart were treated expect for the piglets and sows termed “no dewormer”. The farm also has a history of lice. Lice used to be treated with Ivomec, but have not caused significant enough problems to warrant treatment in recent years. Lice problems are worse in the winter because hogs don’t use wallows as much during this time. When the weather warms, the lice problem lessens because the hogs increase their use of wallows. Liver condemnation and some lice aside, Jones has had very few issues with parasites at MAE Farm. He attributes the low numbers of parasites in his herd to a low-stress environment and proper consistent nutrition.

Results:

**Please note: eggs are reported in “eggs per gram” (epg); P2 = pasture 2, P3 = pasture 3, P5 = pasture 5; pasture locations are shown on map provided on final page of this report.*

ID	<i>Trichuris suis</i>	<i>Strongyloides ransomi</i>	<i>Ascaris suum</i>	<i>Oesophagostomum dentatum</i>	Coccidia
Breeder	0	0	0	12.5	0.5
Breeder	0	1	0	21.5	0
Breeder	0	0	0	0	0
Breeder	0	0	0	43.5	0
Breeder	0	0	0	0	0
Piglet (3 weeks)	0	39.5	0.5	22	0
Piglet (4.5 weeks)	0	1	0	0	0
Piglet (6 wks)	0	251.5	0	1	0
Sow (no dewormer)	0	0	1	186.5	0
Sow (no dewormer)	0	6	0	32	0
Sow (no dewormer)	0	0	0	63	0
P2 grower	8.5	2.5	0	2.5	some
P2 grower	0	0	0	3.5	some
P2 grower	0	0	0	0.5	some
P2 grower	0	0	0	0	0
P2 grower	0.5	0	0	0.5	some
P2 grower	0	0	0	2	0
P2 grower	6.5	1.5	0	0	0
P2 grower	0.5	0	0	0	0
P2 grower	1.5	0.5	0	0	0
P2 grower	15.5	0	0	0	0
P2 grower	0	0	0	1.5	0
P2 grower	2.5	0	0	0	0

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P2 grower	0	1	0	3.5	0
P3 grower	0	0	0	0	0
P3 grower	0	0	0	0	some
P3 grower	19	0	0	0	some
P3 grower	0	0	0	0	0
P3 grower	0	0	0	0	some
P3 grower	0	1	0	0	some
P3 grower	0	0	0	0	0
P3 grower	69	0	0	1	0
P3 grower	0	0	0	0	0
P3 grower	0	0	0	0	0
P3 grower	0	0	0	0	0
P3 grower	13	0	0	0	some
P3 grower	0	0	0	0	some
P3 grower	0	0	0	0	some
P3 grower	0	0	0	0	some
P5 market	0	0	0	2.5	0
P5 market	0	0	0	1.5	0
P5 market	0	0	0	60.5	0
P5 market	0	0	0	8	0
P5 market	0	0	0	4	0
P5 market	0	0	0	25	0
P5 market	0	0	0	1	0
P5 market	0	0	0	7	0
P5 market	0	0	0	1.5	0
P5 market	0	0	0	51	1
P5 market	0	0	0	0.5	0
P5 market	0	0	0	53.5	1
P5 market	0	9	0	0	0

Discussion and Recommendations:

This farm has had problems with liver condemnation in the past due to “milk spots” on the liver. These spots are due to an inflammatory reaction that the liver does in response to infection with Ascarid larvae. The larva in ova are ingested from the soil and other surfaces, hatch from the ova in the small intestine, and then migrate into the liver. After living in the liver for a period of time, the body begins to attack these larvae, which creates the white “milk spots”. The larvae will then migrate into the bloodstream and travel to the lung, where they are eventually coughed up and swallowed. After traveling through the stomach and into the intestines, the larvae grow into adults, shed new eggs, which are then released into the feces. Once out of the pig, it takes these eggs about 2 weeks to become infective again. In an attempt to get rid of the “milk spots”, Mr. Jones treated most of his herd with Pyrantel. While this product can kill some adult worms, its main action is to inhibit shedding of the parasite eggs within the intestine. Since the herd was treated with this product about 2 weeks before our sampling, the decrease we noted in Ascarids seen in the feces could have been false due to recent deworming. Ideally the pigs should be resampled in 3-4 months, after which the adult worms that were not killed by the product have time to shed more eggs. It should also be noted that while effective treatment with Pyrantel will kill larvae hatching in the intestine and thereby decrease the amount of “milk spots” seen forming during treatment, when treatment stops new incoming larvae will promote the development of new “milk spots”, thus there will still be scarring in the liver from the migration tracts of the larva. Ideally this scarring will go away after a period of 3-4 months, so we will be interested to hear about whether livers from these treated hogs are condemned at slaughter due to this scarring. In order to significantly reduce the Ascarid population on this farm, it would be necessary to top-dress the feed with a Pyrantel product continuously throughout the growing period of these hogs. If continuous treating isn't desirable, or is not monetarily feasible, it may be helpful to begin continuous treatment with Pyrantel at least 3-4 months before expected slaughter in order to lessen liver condemnation. It is not expected that the level of adult Ascarid infection in the growers, judging from the ova counts done last year, is sufficient to have a major impact on weight gain.

Oesophagostomum dentatum was found in low levels across many of the pastures. The adult parasite is generally not a concern and is common in the soil of pasture raised pigs. There is some concern when the larvae of *Oesophagostomum* form caseous cysts in the intestinal submucosa of the host, leading to colitis and diarrhea with a characteristic “red-stripping” in the feces. Treatment is generally only recommended when levels are very high; the data from Jones' farm do not indicate treatment at this time for *Oesophagostomum dentatum*. If levels do rise, Fenbendazole, Ivermectin, Levamisole, or Thiabendazole would be indicated to be administered on a regular basis. Also, while *Strongyloides ransomi* and *Coccidia* were seen in a few samples, their levels were also not significant to warrant concern at this time.

We did, unfortunately, uncover a new parasite with some prevalence at this farm. *Trichuris suis* was found in the growers in Pasture 3. This parasite was only seen in low numbers in an individual pig last year, but this year it was found at low/moderate levels in a majority of the growers from Pasture 3. When at high levels, this parasite can manifest clinically as bloody diarrhea seen in animals about 3-4 weeks after they have moved into the infected pasture. While the levels seen this year were not significantly high, we suggest that Jones remain watchful of the animals on Pasture 3, and to treat animals on an individual basis when clinical signs are observed with a drug from the Benzimidazole or Avermectin drug class. Many animals can develop resistance to *Trichuris suis* which could explain the lack of clinical signs, but we suggest Jones monitor these animals as some may become susceptible. Blanket deworming treatment will be ineffective in this case, as *Trichuris* is a fairly resistant parasite and would require a highly intensive deworming regimen to actually have an impact on the contaminated environment. As this is not feasible, we recommend treatment to be used for individuals showing clinical signs. We also suggest to be cautious when rotating these growers to other pastures due to pasture contamination. More mature animals on this farm probably have already developed some resistance to this parasite, but younger animals and some individual mature animals may be susceptible, so we recommend to be aware of where the Pasture 3 grower herd rotates on this farm. Pasture 3 will most likely continue to stay contaminated with *Trichuris suis* due to its high stability in the environment. Unless a major flood or hurricane comes through the area, it will take multiple years without reinfection to clear a pasture of *Trichuris suis*. This should be kept in mind when rotating a new group of animals in to this pasture in the future.

