CONTROLLING E. COLI IN THE WEANED PIG

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ABSTRACT

Cold Springs Farm's first significant encounter with post weaning E. coli K88 infection dates back to October 1997. Outbreaks have resulted in substantial mortality and reductions in growth rates. Since 1997, Cold Springs Farm has undergone many changes in order to resolve the E. coli problem. Although the frequency of outbreaks and the severity of E. coli have been reduced substantially, it continues to be an issue within some of the production systems within Cold Springs Farm.

The E. coli problem appears to be multifactorial. All areas of production including environment, management, cleanliness, disinfections, pig flow, medications and diet appear to be contributors.

INTRODUCTION

At Cold Springs Farm, piglets are weaned between 17 and 20 days of age and moved to isolated nurseries. Most nurseries have been built in the last 7 years and hold about 2000 pigs in four rooms with 20 pens of 25 pigs per room. In each nursery unit, pigs are sourced from two or three sow herds and are mixed when entering the facility. Piglets are fed pelleted feed from large commercial feed mills according to a four phase feeding program. At arrival, the poorest pigs are kept separately in the first 2 pens in each room; diets are changed more slowly for these pigs. Rooms, but not the entire nursery are run on an all in - all out basis.

At Cold Springs Farm post weaning E. coli infection was first encountered in October 1997. Signs of E. coli infection include watery diarrhea, dehydration, sunken eyes, lethargy and death. Diagnostic testing confirmed the presence of the E. coli strain K88. Typically, signs of E. coli were showing up between 10 to 14 days post weaning. During this initial period there were times Cold Springs experienced mortality of up to 6%, and a reduction in average daily gain of over 25 grams. Since that time a number of preventative and treatment strategies have been implemented.

PREVENTION

Room Preparation

In order to control any nursery health challenge, it is necessary to get the pigs off to a good start, and this begins before their arrival. The rooms must be properly washed and disinfected, ensuring that all manure and organic matter is removed. It is also important to make sure the loading chutes and non-pig areas are cleaned and disinfected, as well as boots and coveralls. It is useful to utilize a pre-detergent before the final disinfectant, which helps in the cleaning process. In addition, it is beneficial to allow for adequate drying time prior to disinfecting, as well as rotating between different kinds of disinfectants. Applying disinfectants with a fogger ensures that the harder to reach places are disinfected. At this time, it is useful to sanitize and flush the waterlines as well as check the water nipples and flow rates.

Reducing Environmental Stress

Reducing environmental stresses helps to diminish the stress on the pigs. It is important to have the rooms pre-warmed and dry upon arrival. During the setup, ensure that the inlets are set evenly and that the fans and heaters are in good working condition. It is important to observe the behavior of the pigs to ensure that they are comfortable. Check the room controller for current temperature and record high and low temperatures on a daily basis. Minimizing temperature fluctuations is as important as ensuring the right temperature. In addition, it is important to keep the rooms draft free and with a humidity level of less then 60%. Electronic devices such as hobos that record fluctuations in temperature and humidity several times throughout the day are excellent tools to ensure rooms are set appropriately.

Feeding

Ensuring healthy nutritional intake early on helps to minimize problems later. For the first few days, it is beneficial to have additional feed mats or bowls (especially in the pens with smaller pigs). Keeping feeders adjusted properly and having fresh feed available at all times is vital. To prevent later problems, it is important to identify pigs that are not off to a good start as quickly as possible and move them to a recovery pen and feed them a gruel feed to get them back onto feed.

It is important to know the requirements of your pigs. To aid in this process we have found it beneficial to track feed intakes on a daily basis. This helps you to determine the proper energy and protein levels of the feed and to know when it is best to switch to the next phase of the diet. Switching from one ration to the next sometimes is enough to trigger an E. coli problem; therefore tracking intakes especially during these times can be of benefit. Cold Springs utilizes the following additional methods to control E. coli:

- Increasing the level of zinc to 3000 ppm during periods of known outbreaks has been effective in controlling E. coli. Since zinc can be only fed up to 3 weeks, it is important to have a step down program in place, allowing the gut to transition to a

lower level. If it is too difficult to add another stage of feed, we have found that blending between two rations for up to 5-6 days helps in the transition.

- Starting at the time of arrival acidifying the drinking water to a pH of 4.0-5.0 at the drinking source has been effective. Due to different pH levels of well water each one of our facilities requires a different stock solution, and it is important to be checking and adjusting on a regular basis to make sure the drinking water for the pigs is at the appropriate level of pH. Having an acidifier in the feed also helps.
- Increasing the copper sulfate level reportedly helps to tighten the lower gut in cases of enteritis.
- Cold Springs have tried both soluble plasma and dietary egg-yolk products in the past. In addition, we previously tried vaccinating our sow herds with an autogenous vaccine in order to build up immunity. We found that these strategies did not help in our particular situation but they have been known to work for others.

TREATMENT

Treating individual pigs with an injectable medication is most effective. Removing sick pigs from its pen mates and into a recovery pen helps to reduce the spread of scour. It also helps to have an electrolyte solution available to aid in the recovery from dehydration. In cases where there are a significant number of sick pigs within a pen, we have found that treating all the pigs in that pen reduces the number of new cases.

Cold Springs has not had any significant improvement through using feed medication, and thus, we are currently not using these medications to control E. coli. We find that water medications generally are more effective and can be timed better. For example, either Neomycin or Apralan has given us the greatest success. One must check sensitivities received from the lab to know which medication will work best. We have found that in a few cases we have had lab results come back with E. coli being resistant to virtually everything. If it is not caught in the initial stages, it is much harder to control and water treatments are less effective. On occasion, we will pulse medication just prior to and throughout the typical period of the outbreak if we have had an outbreak in a number of rooms.

Since concurrent infections such as PRRS and Swine Flu exacerbate the E. coli problem, it is important to have proper vaccinations and treatments for such diseases. Cold Springs is currently exploring alternative ways of treating/preventing E. coli including the use of oral vaccines in the nursery and adding a high source fiber to the feed. In addition, Cold Springs will continue to assess pathogens and other health issues through routine blood work and post mortems.

CONCLUSIONS

Based on Cold Springs' experience with E. coli, we have found that focusing on prevention, by following best management practices, has led to the reduction in the number of cases and

the severity. Collaboration with your veterinarian and nutritionist, as well as other producers, is imperative.

REFERENCES

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