REDUCING ANTIBIOTIC USE IN COMMERCIAL POULTRY PRODUCTION

Derek Detzler *Hucon Inc.*

Commercial food animal production has long since relied on the sub therapeutic use of antibiotics to promote health, thus aiding in efficient, profitable production. However, actions like the EU ban on sub therapeutic antibiotics and the 2013 FDA announcement of a proposed withdrawal of antibiotic growth promoters have the potential to significantly change the landscape we've grown accustomed to over the past 30+ years.

In 2004, Hucon Poultry Inc. started to use coccidiosis vaccines to try and reestablish sensitivity to some of the anticoccidials that had lost efficacy. Continuous vaccination, along with effective, more natural alternatives led to total withdrawal of all in feed and water medications in 2010. Success of this program was accomplished through changes in nutrition and management.

In the following article, I would like to outline:

1) Why we changed our business
2) Risks associated
3) Experiences
4) Benefits derived from RWA production

WHY WE CHANGED OUR BUSINESS

With the attitude of the Canadian consumer, increasing resistance issues (both real and perceived), and no known drugs in development, we realized that we needed to change our production model. Deviating from the constant antibiotic regime and including such products as vaccines and non antibiotic alternatives allowed us to rest, relieve and reseed our facilities. If successful, this would allow us to reduce our dependence on antibiotics as well as extending the life span of such products used in our feeding program.

Long term survival of supply management in Canada is questioned almost daily. Following past and current talks regarding GATT can leave one with the feeling of riding a roller coaster. If tariff rate quotas were to be adjusted negatively, would we be able to ascertain long term viability for our company in a more aggressive market by becoming a low cost, low return commodity chicken producer?

World prices for bulk, undifferentiated commodities will be under downward pressure for years to come. It is expected that consumers will expect more from farmers. They are one to two generations removed from any practical farming knowledge. Terms such as "humanely raised" or "no antibiotics" will resonate with affluent consumers who will pay a premium for these types of products.

ON FARM RISKS

Was antibiotic reduction or antibiotic free a reasonable goal? We were aware of small flock successes, but on the other hand, we new of sizeable negative impacts on performance and health when tried on a larger, commercial scale. Primarily, this was related to the general well being of the animal, with respect to increased disease prevalence. With the insult of challenges normally kept in check by antibiotics, performance and financials could suffer. It was entirely possible that we would end up using more antibiotics to treat than to prevent.

Another point we considered was early success. It was probable that due to low disease challenge in our facilities, we would be successful initially. However, it was conceivable that we could allow disease pressure to build over consecutive flocks. If the point of clinical disease was reached while producing antibiotic free in our facilities, would we be able to restore the environment back to the original micro flora, which we knew was favorable for bird health.

INDUSTRY RISK

If we were to trend world wide chicken production and apply it to the Canadian model, one of the major issues that we will face is the legislation of antibiotics to be used in food animal production. Europe's 2006 ban on growth promoting antibiotics could expand to the ionophore class of anticoccidials. The United Kingdom's poultry sector has stated they are keen to eliminate the use of nicarbazin, even though it is not a food safety issue, nor a risk to human health. The recent withdrawal of 3-nitro, along with proposed legislation in the USA will no doubt have rippling effects in Canada. There is a strong trend to reduce antibiotic use in commercial animal production. Canada will not be immune to this.

EXPERIENCES

In the spring of 2004, we rotated from the current regime of anticoccidials to a cocci vaccine for three consecutive flocks. Some management and nutritional changes were to be implemented so as to have the optimum chance for success. The first flock achieved fair performance. There was a slight gain of 4 points in average feed conversion (which was partially attributed to heat stress - marketing June 1- July 20). During the 2 following growouts, no negative impacts on performance or health were noted (when compared to the previous year's in feed anticoccidial). Our conclusions were that a hatchery administered day of age cocci vaccine was a viable alternative to ionophores or chemicals to control coccidiosis on our farms. Upon returning to a chemical in feed anticoccidial, we observed a performance decrease. Previous commercial experience in the USA had shown the ability to reseed the poultry house with sensitive strains of coccidiosis after three flocks. Consequently, in our regulated "clean" environment, we were not able to reestablish sensitivity in the same time frame. Essentially, we were eradicating all we were trying to seed after the flock had been shipped. We removed litter, we cleaned, as well as washed and disinfected.

The following year, we implemented the same 3 cycle program. We observed a small decrease in days to market and feed conversion with each successive flock of vaccination. If we were to continue to vaccinate, would performance persist in moving in a positive direction? We questioned the ability to vaccinate through the winter flocks due to the reduced amount of ventilation during this period. A decision was made to continue vaccinating, for cocci, but would be monitored on a flock by flock basis.

No problems with respect to disease or performance were observed. The performance continued to marginally increase, cresting around 1 year of consecutive vaccination.

We then focused our efforts on the chick's first 7 days of life. Research has shown that early post hatch management and nutrition is essential to having a robust bird through to market. We looked at bird migration in the barn, the needs of supplemental feed and water, lighting and temperatures. As well, the nutritional components of our starter phase were grossly underestimated. We formulated a prestarter to emulate the swine industry's experience in the benefits of enriched early wean feeding. Early gut development was crucial. The importance of having a solid feed stimulus (birds consuming feed as early as possible), was correlated to villus growth, villus length, enterocyte differentiation, and pancreatic enzyme secretion (Baranyiova *et al, Maiorka et al).*

To find out where we were exactly, we needed to establish a baseline of performance. Automatic weigh scales were installed on every floor. The data was graphed and compared to the daily growth potential published by the bird's genetic company. Within a few flocks we were able to make adjustments based on certain "stalls" that were seen in growth. These stalls could be correlated to the absence of proper management. With changes in place, our day 7 weight increased significantly, with some flocks attaining more than a 5X gain from placement weight. The early gain achieved was linearly translated into end weight. Our weights were now encroaching on genetic potential, which led us to believe we had a healthy bird. At this point, we were confident in our bird's ability to be more vigorous in defending against insults related to viral and bacterial challenges.

In 2008, we started to measure and count coccidial oocysts in our facilities. Results allowed us to establish a defined target for cocci cycling (by species), and through specific management techniques, we were able to produce a more uniform, predictable response to cocci vaccination. With cocci in check, we started to look for opportunities to reduce the use of the necrotic prevention drug from our feed ration. Non antibiotic alternatives were tested and placed into the ration at specific times where it was felt the gram positive targeting necrotic prevention drug was not as important. With the most efficacious alternative, we were able to remove the necrotic prevention drug in the starter and finisher rations without sacrificing performance. The only antibiotic used in our rations was in the grower feeds.

Experience and constant benchmarking has allowed us to refine our management and nutrition, taking us further into development of an antibiotic free regime. We found natural ways to treat necrotic enteritis breaks, which allows us to market 100% of our birds as such. Performance to date is acceptable, with an expectation of 1- 2% in increased mortality and 2 – 6 points higher feed conversion.

BENEFITS

To satisfy this emerging market, consistent supply is one of the most important factors for retailers to successfully market RWA. Our current production system is allowing us to supply 100% of our chicken into differentiated, premium markets that were unavailable to us previously.

The absence of proper management is well documented in our early trials. As different or enhanced management techniques were applied, success rates for RWA flocks increased. This resulted in two positives. Improved rearing techniques (stockmanship), and the ability to provide a consistent weekly supply of RWA chicken to the retailer. As we continue to establish confidence within the supply chain, our RWA poultry sales continue to grow.

Removing our production from commodity shelves has put us in a niche market that is less likely to receive pressure on price reduction. Consumers who chose to purchase RWA chicken do so because of moral choice they've already made, and prices for these products generally have a higher rate of return than commodity varieties.