



The Poultry Practice

POULTRY PRODUCTION PRACTITIONERS

NEWSLETTER

VOLUME 3 • MARCH 2019

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Introduction

Belated good wishes for 2019 to all friends and clients of the Poultry Practice. We think it is going to be a challenging year, but African farmers are tough! Welcome to Ferdi, our newest part time poultry vet.

The layer industry in South Africa is under a certain amount of pressure especially in KwaZulu Natal with flat egg prices and a certain amount of oversupply. Niche markets like free range are still strong though. We have noted that certain supermarket chains are starting to enquire about the use of antibiotics in layer birds and expect that there will be some pressure over the use of antimicrobials in layer birds in the months to come. WHO have identified antimicrobial resistance as one of the biggest issues facing mankind and it is indisputable that irresponsible use of antimicrobials in the poultry industry will contribute to this problem and needs to be addressed.

We seem to have hit the ground running this year. On the disease front, we have had some issues with false layers in the industry and some of this newsletter will be devoted largely to Infectious Bronchitis and discussing the causes of this distressing condition, what to look out for, and what to do about this. We are grateful to Dr Nicky Love for her contribution to

this newsletter, as well as the many hours she has set aside to try and solve the current IBV problem. Zoetis as a company is involved in IBV research and as a service to their clients will sequence IBV on farms on request. You can speak to your veterinarian about this service and if it is necessary on your farm.

We will also be discussing factors to consider in choosing a vaccine. Vaccines are the lifeblood of the poultry industry and many hours go into designing a good effective vaccine programme.

Many of you will have met and used the services of Dr Greg Celliers, he was one of the first members of The Poultry Practice. He is leaving South Africa to work for Hyline International as a Technical Consultant for the European and African region. It is a great vote of confidence in South African vets, many of whom are working in international settings. Well done Greg and we hope you will add your expertise to improving the Hyline bird.

Finally, we wish you all the best in your businesses for 2019 and look forward to partnering with you to provide cost effective and client centred services.

Herman, Deryn, Ferdi & Nadia



Infectious Bronchitis Virus (IBV), why the bar keeps moving...

As many of you are aware IBV has reared its head and is causing quite the stir in the poultry community. Why is the virus such a problem? Can't they just make a vaccine that deals with IBV once and for all? To answer these questions, we will have to look into what IBV is and how it evades all our clever plans to eliminate it.

WHAT IS IBV?

IBV is an RNA coronavirus that causes highly contagious infectious bronchitis disease in chickens. The virus affects chickens of all ages. Depending on the strain, the virus targets the respiratory system, the oviduct and the kidneys. Clinical signs can be vague, and it is not an easy diagnosis to make. Chicks huddle together, adult birds show signs of depression with reduced feed intake and reduced weight gain. Respiratory signs could include coughing, sneezing, tracheal rales (rattling sounds when breathing) and ocular discharge. The virus also predisposes broilers to secondary bacterial infections such as E.coli, resulting in poor performance, condemnations at processing and mortality.

Layers and breeders may show respiratory signs

but a drop in feed intake and a drop in production are all that is usually noted. Hens may be permanently affected with decreased egg production, misshapen eggs with thin shells and watery albumen. Certain field strains lead to oviduct cysts that cause a "penguin stance" (false layers) in layers.

Breeders contracting the disease at a young age can develop severe permanent damage to the oviduct and inability to lay (silent layers) Postmortem lesions include exudate in the respiratory tract with thickening of the airsacs. Secondary bacterial infection could lead to tracheitis, airsacculitis, perihepatitis, and pericarditis. Nephropathogenic strain leads to swollen, pale kidneys or the kidneys may be atrophied. Oviducts are either cystic (penguin stance) or atrophied (false layer).

SO WHY CAN WE NOT JUST VACCINATE FOR THIS VIRUS LIKE WITH ALL THE OTHERS?

As mentioned earlier, IBV is an RNA virus. RNA viruses are able to change at a rapid rate. The proof-reading mechanism that checks the virus when it replicates is very poor, so mistakes are often made. These mistakes are called mutations, mutations are the reason the virus keeps on changing all the time. It is also the reason we cannot keep up as the vaccines do not always offer the cross protection needed with these mutated viruses.

Ideally one would like to identify the field strain and then use the appropriate vaccine for the challenge that is around. Unfortunately, IBV not only mutates rapidly but is also difficult to identify and isolate. The PCR method of testing may not identify the virus if it has mutated in house, as it often does. This means that sometimes the virus will need to be isolated by growing it in eggs which takes a long time and is not always successful.

There are many well-known strains of IBV such as IBV QX, IBV 793B, IBV 4/91, IBV Mass (Massachusetts), IBV H-120 and variant 2. It is impossible to

vaccinate the birds against all the strains. However, vaccination with a Mass strain and a 4/91 strain has been shown to give a fair protection against most IBV strains. There are some exceptions.

WHAT IS THE CURRENT SITUATION IN SOUTH AFRICA?

In a study in 2013, samples were taken around South Africa (mostly Kwazulu-Natal) from 1985 to 2012 and the majority of isolates were Mass-like and QX-like strains.

IBV QX has recently caused problems in layers and broilers in South Africa. Most producers are vaccinating for IBV QX to try to avoid these problems in the future.

Worldwide there is an emergence of a Variant 2. The reason this variant seems to be spreading is that it is highly pathogenic. The other reason for the rapid spread is that it seems as if birds are not protected when they are vaccinated with other IBV vaccines. IBV variant 2 can be co-circulating with another strain like IBV Mass and therefore not be picked up.

Variant 2 has been isolated in South Africa. The good news is there is a commercial vaccine available that offers protection against Variant 2. Speak to your veterinarian regarding this vaccine and if it is necessary and will possibly be useful for your flock.

CONCLUSION

IBV continues to evade us and is an ever-changing disease. The virus is difficult to identify and comes in various strains. The vaccines do not offer good cross protection for all the strains and sometimes a change in vaccine is necessary. With the help of your veterinarian you can identify and adapt your vaccination program to offer the best protection possible for your birds.



WHAT CAUSES FALSE LAYERS?

There have been several flocks of layer birds in this last quarter that have been affected by this very distressing disease. It is often only seen as the young flock comes into lay, and instead of the peak production exceeding 90%, the birds peak at 80% or less. Although the flock looks healthy, and mortality is very low, there is clearly something that is wrong.

WHAT IS A FALSE LAYER?

An examination of birds from cages that are not producing eggs, shows that some of the birds have an upright posture (penguin pose) and this is as the result of the accumulation of fluid in the abdomen which can also be felt. If you cut open the birds the typical picture that one sees is a fluid filled sac that occupies the lower end of the abdomen. This is the cystic oviduct of the left ovary. It is important to note that this is not the same as ascites (fluid in the abdomen) which is often associated with heart failure. In these cases, both the liver and the heart are normal.

WHAT CAUSES FALSE LAYER SYNDROME?

It seems as if some of the Infectious Bronchitis virus (IB) strains are capable of damaging the oviduct in the first 3 weeks of the bird's life. A damaged oviduct will prevent the bird from laying eggs. Apart from

that, there is very little indication that the damage has been done and the pullets are raised and then placed on the laying farm and brought into lay. At this stage they show the damage and as they cannot lay eggs, the farmer will notice that the production of the flock is very low. The more false layers there are, the less the production.



Figure 1 The typical cystic oviduct that is found in false layer syndrome

WHAT CAN BE DONE ABOUT THIS?

Since the infection is an issue in the first 3 weeks of age, it is difficult to protect the day-old bird. Because of this, the biosecurity of the pullet rearing farm is essential to prevent the infection from becoming an issue. House cleaning and access control are the key issues with respect to infection.

Day old vaccination with IB QX or IB Var 206 have been shown to be effective in preventing early infection but attention still needs to be given to the maternal antibodies in the parent flock that produce the eggs from which the day-old chicks are hatched. Dr Love will cover this issue in the next article.

TESTING FOR FALSE LAYERS ON THE PULLET FARM

If there is an issue with false layers, the pullet farm should be taking cloacal and tracheal swabs for IB PCR at 2, 14, 18 weeks. The placements of sentinels on the farm can be helpful. If there is an IB strain that is causing false layers, this may be detected on post mortem if enough post mortems are done. Unfortunately, it is not significant if no signs of oviduct cysts

are detected because the disease is easy to miss at this age. All culled birds should be checked on farms that have a history of this disease.

TESTING FOR FALSE LAYERS ON THE LAYER FARM

This disease becomes a suspicion when the birds do not peak according to the standard. If they come into lay and then fall, this is not a sign of false layers. Once there is a suspicion, it is necessary to find the cages where the birds are laying sub-optimally. This can be done by marking the cages where there are less eggs produced. Remove the birds from those cages and feel the abdomen. The abdomen will feel like a sac full of water. These birds can then be euthanised and cut open. The sac filled with fluid is quite obvious. It is pointless to continue with these birds as they will never lay. They need to be removed from the flock. In serious cases, the whole flock must be culled.

SUMMARY

Although all IB strains can potentially cause false layers, some strains like QX and Var206 have a predilection for the oviduct cells and cause damage. Factors like well designed pullet rearing facilities that operate on an all in all out basis and are cleaned properly with every cycle, maternal immunity, early protection with effective vaccines can limit this devastating disease.

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SOME THOUGHTS ON PROTECTING PULLETS AGAINST QX

As discussed in previous articles, the QX IB strain has the ability to affect the respiratory tract, kidneys and reproductive tract.

Should the QX like IB strain infect the reproductive tract of birds in lay, this will result in a decrease in egg production and egg quality problems. However, more devastating effects are seen in future layers which are infected with a QX like strain in the first few days of life. If infected in the first few days of life, the QX IB strain may cause damage to the oviduct and thus induce false layers, with the full effects of this only being seen when the birds come into lay.

Vaccinating day-old chicks with a QX IB strain vaccine is quite common practice and is aimed at protecting birds from respiratory disease, renal disease and reduced flock performance later in life. As with most vaccines, once applied, the chick needs time to develop immunity. If birds get infected before the onset of immunity with a QX strain, they may become false layers later on in life, despite being vaccinated with a QX vaccine. Following the large investments made during the rearing period of these birds, this will result in large financial losses.

If there is a concern that chicks are being infected with a QX IB strain in the first few days of life, they will need to depend on maternally derived antibodies to protect them, until their own immunity kicks in. Therefore, in these cases, maternally derived antibodies are necessary to prevent infection against strains able to produce false layers. It is of vital importance that a large focus be placed on ensuring the parent stock are vaccinated with the correct IB strains at the correct time, to ensure protection of the chicks during the first few days of life.

REFERENCES:

1. De Witt JJ, Nieuwenhuisen-van Wilgen J, Hoogkamer A et al. Induction of cystic oviducts and protection against early challenge with infectious bronchitis virus serotype D388 (genotype QX) by maternally derived antibodies and by early vaccination. *Avian Pathology*, 40:5, 463-471

Dr Nicky Love is the Technical specialist for Poultry. Zoetis South Africa (Pty) Ltd. Zoetis is a global standalone Animal Health company. Zoetis discovers, develops, manufactures and markets medicines, vaccines and diagnostic products, which are complemented by biodevices, genetic tests and a range of services. Zoetis serves veterinarians, livestock producers and people who raise and care for farm and companion animals in more than 100 countries.



HOW TO CHOOSE A VACCINE

Vaccination is one of the most powerful techniques available to control infectious disease, and without them it would almost be impossible to farm with poultry on a commercial scale.

The choice of vaccines is important, as it will not only determine the survival of birds when challenged with a disease, but also the performance.

The different types of vaccines e.g. live and inactivated, are well described in the literature, and will not be repeated here.

What are the criteria that should be applied when a vaccine is selected?

1. EFFICACY.

This is by far the overriding factor when choosing a vaccine, as it would not make sense to select a vaccine that is not effective. One could argue that all vaccines should be effective according to their registration documents, but field experience often show that some vaccines are more effective than others. One must keep in mind that efficacy studies are often done under laboratory conditions and with SPF birds, and these conditions do not represent field conditions with much harsher requirements.

2. EASE OF APPLICATION

Vaccines that are applied en masse as a spray or through the water, would always be preferred against a method where it must be injected or individually applied by another method. There is a cost to handling birds or eggs, and there is always the risk of physical damage and infection of injection sites during this process.

3. ONSET AND DURATION OF IMMUNITY

With broilers, where birds are placed on a farm and the risk of early infection is high, one would like the onset of immunity to be as short as possible. The duration of immunity is not so important as the birds will be processed before it declines. In the case of commercial layers and broiler breeders the situation is often the reverse, there is time for immunity to develop during rearing, but the duration of the immunity should be long enough to last until the end of the production cycle.

4. PROTECTOTYPES

There are several diseases where the serotype in the vaccine need to match the strain present on the farm, this is particularly true of Infectious bronchitis, *Avibacterium paragallinarum* (*Haemophilus paragallinarum*) and *Pasteurella multocida*.

5. EFFECT ON PRODUCTION

Vaccines are not always without side effects, and these can vary between vaccines. Vaccines can decrease growth rate and increase mortality. One should do a careful long-term analysis of the effect of vaccines on production, this is of importance in broilers where optimal growth should be the aim. With the early slaughter age of broilers, one should question the use of virulent strains of IBD vaccines, as well as La Sota type NCD vaccines.

6. STORAGE AND TRANSPORT REQUIREMENTS.

Certain vaccines have specialized storage and transport conditions e.g. liquid nitrogen or dry ice, and this could be a challenge in certain countries or remote areas where this is not readily available. One of the worst outbreaks of Marek's disease that was seen, was due to unavailability of liquid nitrogen that led to incorrect storage temperatures of the vaccine.

7. REVERSION TO VIRULENCE

Modern vaccines are stable, and it is unlikely that they will revert to virulence, however some vaccines e.g. ILT and Salmonella gallinarum can revert. The widespread use of variant IB vaccines should be reason for concern, RNA viruses are unstable, and it is theoretically possible that new variants can be formed.

8. SPREAD TO OTHER POULTRY

Some vaccines can spread to neighboring flocks and have undesirable consequences in those birds. A good example is the F strain of Mycoplasma gallisepticum that can spread to turkeys and cause clinical symptoms. ILT vaccines, particularly embryo derived can spread to non-vaccinated flocks and cause severe reactions.

9. COST

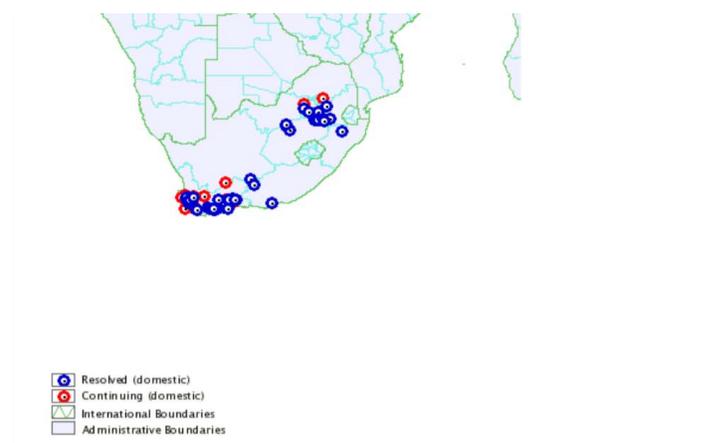
Although this factor is mentioned last, it is an important consideration when a vaccine is selected. The total cost of a vaccination program should always be calculated and compared with the total cost of production. The cost of the vaccine must also be weighed up against the probability that a disease will occur and the impact that it will have when it does occur. Coccidiosis in breeders is a good example, it will most likely occur and the financial impact when the disease does occur warrants a more expensive vaccine.

AVIAN INFLUENZA WATCH

There has been an outbreak of HPAI (highly pathogenic avian influenza) in Naminus (formerly Luderitz) in penguins with over 200 dead (reported Feb 2019). The strain is H5N8. The significance for the poultry industry is limited as it is an isolated area, but it is significant in that it shows that the virus is still in the Southern African wild bird population. This highlights the importance of maintaining good biosecurity. One of the most important things to do is to keep birds out of the poultry houses.

There are regular detections of Avian influenza in ostriches most recently in the Free State (south of Bloemfontein) (h7) but again the significance of this for infection in chickens is not really clear. Ostriches in the main are exposed to the avian influenza virus through their contact with wild birds but they seem to clear the infections quite quickly if there are no other factors at play. What we detect is serological evidence that they were infected, although attempts to isolate the virus itself are seldom successful.

The map below appears in the final report submitted by the DAFF to the OIE about the H5N8 South African outbreak (submitted Jan19). I think that it shows very clearly where the danger areas in our country are. Vigilance in these areas needs to remain high.



There have been new outbreaks in 2019 in Iran (H5N8), India (H5N1) and Denmark (H5N6) (OIE website).



Africa's Biggest Poultry Producers

It's always interesting to keep an eye on what's going on in the rest of the continent, especially as investment opportunities open up.

According to the Poultry International magazine Africa's top producers are:

1. RCL (260 million slaughtered per annum)
2. Astral (228 million per annum)
3. Cairo Poultry (75 million per annum)
4. Country Bird Holdings (74 million per annum)
5. Sovereign Foods (65 million per annum)
6. Arab Poultry Breeders (58 million pa.)
7. Daybreak Farms (52 million pa.)
8. Quantum Foods 39.4 million pa.)

On the egg side:

1. Wadi Group (10 million layers -Egypt)
2. Quantum Foods (3.1 million layers- South Africa)
3. Sedima (1 Million layers -Senegal)
4. Zambeef Products (0.2 million layers- Zambia)
5. Alema Farms (Ethiopia)

It would seem on the face of it that the broiler industry is more organised in Africa and dominated by South African players and the egg industry is more diverse dominated by smaller players, situated throughout Africa.

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Our New Member

Ferdi Greyling was born in Lichtenburg 1980 and matriculated there. He started with a BSc (Animal Science) at Stellenbosch and then did Veterinary Science at Pretoria University. After graduation he started at Kuiper's group as an agricultural manager/veterinarian. In 2017 he was appointed technical manager and veterinarian for the Eagles pride hatchery with responsibility for breeders, broilers and hatchery. In 2017 he left Eagles to take up a position in the W Cape in a mixed practice. He is married to Louise and they have two children, Francois and Carmen. Ferdi will be working for The Poultry Practice on an ad hoc basis. Recruiting part time poultry veterinarians in different parts of the country to work alongside the full-time poultry vets is part of The Poultry Practice strategy to provide cost effective services in far reaching areas of the country.

I have worked with Ferdi when I was still a State Veterinarian in Gauteng and have much respect for his experience, his willingness to assist at all times and his ethic of hard work. I look forward to working with him as a colleague in The Poultry Practice.





Egg Logistics: From developmental physiology to production

A three-day event covering a range of current topics focusing on egg physiology, egg composition and egg production of layers and breeders. Mechanisms for controlling egg weight and shell quality with emphasis on nutrition and feed management as well as such factors as lighting and managing bird weight. Concluding sessions cover the main factors to be considered in developing feeding programs for commercial pullets and layers and juvenile and adult breeders.

This course is limited to 50 delegates.

Registration fee is \$850 USD with payment due before August 1 and \$1050 USD for any later registration. Registration details available at www.spesfeed.co.za

A conference hotel will be designated in Sandton, Johannesburg with easy rail access from the OR Tambo International Airport. Complimentary daily transport from this hotel to the conference venue will be available.

Delegates will be provided with copies of two Excel models developed by Dr. Leeson, providing prediction and monitoring of feed and nutrient intake of commercial egg layers and broiler breeders.

Delegates will also receive electronic copies of four books authored by Dr. Leeson: Commercial Poultry Nutrition, Nutrition of the Chicken, Broiler Breeder Production, Poultry Metabolic Disorders and Mycotoxins.

Further and evolving details of this 2019 Master Class can be found at www.spesfeed.co.za



Egg Logistics: From developmental physiology to production

**Presented & Hosted by
Steve Leeson and Rick Kleyn**

September 9th-11th, 2019

the Country Club, Woodmead
Johannesburg, South Africa

Monday, September 9th

12:00 pm	 Lunch & Registration
1:00 pm	1 Session 1: Current issues and challenges in the commercial and breeder egg businesses (RK)
2:00 pm	2 Session 2: Egg formation: physiology, ovulation, oviposition, clutch length and lighting (SL)
3:00 pm	 Coffee
3:30 pm	3 Session 3: The egg: composition and internal quality (SL)
4:30 pm	4 Session 4: Nutrition and egg size (RK)
5:30 pm	Interactive discussion
6:00 pm	 Cocktails & Hors D'oeuvres at Woodmead

Tuesday, September 10th

8:30 am	5 Session 5: Value-added eggs (SL)
9:00 am	6 Session 6: Nutrition and eggshell quality (RK)
10:00 am	 Coffee
10:30 am	7 Session 7: Metabolic disorders: the liver, kidney, ovary and skeleton (SL)
11:30 am	8 Session 8: Nutrition and feathering in layers and breeders (SL)
12:15 pm	 Lunch
1:30 pm	8 Session 9: Nutrition of layer pullets (RK)
2:30 pm	 Coffee
3:00 pm	10 Session 10: Nutrition of breeder pullets (SL)
4:00 pm	 Cocktails & Interactive discussion
6:00 pm	 Dinner at Woodmead

Wednesday, September 11th

8:30 am	11 Session 11: Nutrition of layers (RK)
10:00 am	 Coffee
10:30 am	12 Session 12: Nutrition of broiler breeder hens (SL)
12:00 am	13 Session 13: Nutrition of broiler breeder males (SL)
12:30 pm	Interactive discussion
1:00 pm	 Lunch & Departure