NEWSLETTER

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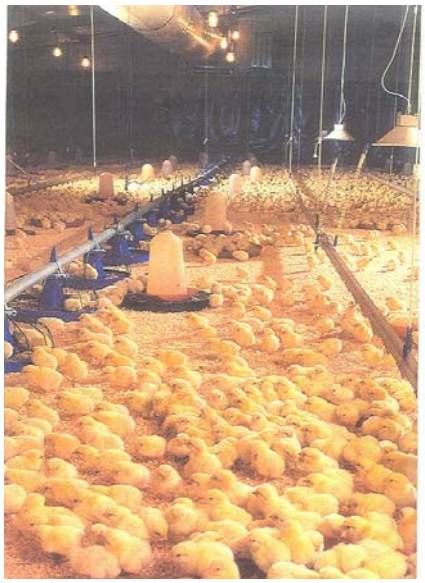

Our Aim is Healthy Livestock for ultimate Productivity

PRACTICAL TIP

Clean Water Helps!

Maintaining a clean supply of drinking water is invaluable in maximizing livestock performance.

Last month we considered the necessary steps for the terminal cleaning and disinfection of drinking systems, now we consider how to maintain that situation.

There are a number of ways in which drinking water systems can become contaminated during a crop. These can range from contamination of the water source or the header tank to the direst contamination of bell drinkers. Sometimes preventing these potential contaminations can be difficult. However, if contamination is suspected, steps can be taken.

Viru-Gard is completely safe to use as a drinking water sanitiser at dilutions of 1:1000 to 1:2000 in the presence of livestock. This can be done on either an occasional or a continual basis. If using Viru-Gard as a sanitiser, it should be excluded from the system for 24 hours prior to and after administering live vaccines via the drinking water.

.EDITORIAL

In this issue we include an article on Aspergillosis and the second of three parts of a paper on Chemical Disinfectants for the Livestock Industry and how they Work.

Our featured product this month is **Ultra-Gard;** a versatile and cost effective heavy duty disinfectant used mainly in the poultry industry and particularly suited for the treatment of difficult surfaces

It is vital to remember that healthy livestock means productive livestock. Effective and complete biosecurity systems are essential in maintaining livestock health in all intensive and semi-intensive livestock production. It is also essential that these systems are in place from the very beginning to the end of the production chain.

Our primary aim as a company is to promote this concept and support it by providing high standard, cost effective products backed by first class technical information.

One of our technical back-up services to customers is to advise on tailor made programs to suit individual circumstances and ever changing actual or perceived disease threats. To avail yourself of this service contact us direct or via your national distributor.

We always welcome comment regarding the content of our newsletter and any requests for particular technical content will be considered.

We are always available to answer customer's questions on these or any other topics. Contact us at info@farmcaregb.com.

All of the company's current range of 11 products are now available from stock.

ASPERGILLOSIS

Introduction

This is a fungal infectious disease, caused by *Aspergillus fumigatus*, in which the typical sign is gasping for breath, especially in young chicks. Sometimes the same organism causes eye lesions or chronic lesions in older birds. The fungus can infect plant material and many species of animals including birds and man. Occasionally similar lesions are produced by other species of *Aspergillus* or even other fungi such as *Penicillium*, *Absidia* etc.

It affects chickens, turkeys, ducks, penguins, game birds, waterfowl, etc, worldwide. The infection has an incubation period of 2-5 days. Morbidity is usually low, but may be as high as 12%. Mortality among young affected birds is 5-50%. Transmission is by inhalation exposure to an environment with a high spore count; there is usually little bird-to-bird transmission. Spores are highly resistant to disinfectants.

Signs

- ***Acute form:***
  - Inappetance.
  - Weakness.
  - Silent gasping.
  - Rapid breathing.
  - Thirst.
  - Drowsiness.
  - Nervous signs (rare).
- ***Chronic Forms:***
  - Ocular discharge (ocular form only).
  - Wasting.

Post-mortem lesions

- Yellow to grey nodules or plaques in lungs, air sacs, trachea, plaques in peritoneal cavity, may have greenish surface.
- Conjunctivitis/keratitis.
- Brain lesions may be seen in some birds with nervous signs.

Diagnosis

This is usually based on the signs and lesions and microscopic examination for the fungus, preferably after digestion in 10% potassium hydroxide. It may be confirmed by isolation of the fungus, typically by putting small pieces of affected tissue on Sabouraud agar. Growth occurs in 24-48 hours and colonies are powdery green/blue in appearance. Differentiate from excessive exposure to formalin or vaccinal reactions in day olds and from heat stress in older birds.

Treatment

Usually none but environmental spraying with an effective antifungal antiseptic may help reduce challenge. Amphotericin B and Nystatin have been used in high-value birds.

Prevention

Dry, good quality litter and feed, **hygiene**, Thiabendazole or Nystatin have been used in feed.

Post-mortem showing lesions of Aspergillosis in a duck

PRODUCT PROFILE – Farm-Gard

General properties

Ultra-Gard is a 100% active synergistic blend of organic acids, organic biocides and surfactants for broad-spectrum pathogen control. Ultra-Gard is active against a wide range of viruses, bacteria and fungi. Ultra-Gard is cost effective and provides heavy-duty disinfection in the presence of organic challenge and hard water. It is oil soluble giving it properties suitable for extended protection on difficult surfaces.

Instructions for use

Immediate protection – Terminal disinfection before stocking: Use via a pressure washer with a fan nozzle set at 500-1000 psi at a dilution of 1:250, thoroughly wetting all surfaces. This will require 250-300 ml of solution per m². Allow drying before re-stocking.

Wheel and Foot Dips: Use a dilution of 1:100. Clean and replenish dips weekly

For Terminal disinfection of difficult surfaces (Earth Floors or Porous surfaces), thoroughly mix one part of Ultra-Gard with 5 parts of Diesel oil. Add to 94 parts of water, agitating well to form an emulsion. Use via a pressure washer with a fan nozzle set at 500-1000 psi, thoroughly wetting all surfaces. Allow to dry before re-stocking.

Available in 4 x 5L and 20L packs.

Chemical Disinfectants for the Livestock Industry and how they Work –Part 2

John Woodger, B.Vet.Med., MRCVS,
FarmCare GB Ltd

Iodine Compounds

Free Iodine

Iodine has been shown to be an efficient microbiocidal agent with rapid effects against bacteria and their spores, moulds, yeasts and viruses. It is normally used in aqueous or alcoholic solutions. It is only sparingly soluble in cold water, but solutions can be made in aqueous potassium iodide solution.

Iodine is less reactive chemically than chlorine and is less affected by the presence of organic material at high concentrations but is markedly affected at low concentrations. The activity is greater at acid than at alkaline pH.

Iodophors

Iodine can be solubilised by some surface-active agents to form compounds known as iodophors, which retain the germicidal action but not the undesirable properties of iodine.

In most preparations the carrier is a non-ionic surfactant in which the iodine is present as micelellar aggregates. When diluted with water, dispersion occurs and the iodine is slowly released.

As with aqueous or alcoholic solutions of iodine, the concentration of free iodine in iodophors is responsible for the microbicidal activity. Iodophores remain active in the presence of organic material provided the pH remains below 4. Activity reduces markedly if solutions are diluted with water with a high alkaline hardness.

Iodophor disinfectants used in the livestock industry are normally formulated with phosphoric acid to provide a pH around 3 for maximum activity.

Toxicity

Free Iodine solutions stain fabrics and tend to be toxic. Solutions may produce skin sensitisation.

Surfactants

Surface active agents have two regions in their molecular structure, one being a hydrocarbon water-repellant (hydrophobic) group and the other a water attracting (hydrophilic or polar) group. Depending on the basis of the charge or absence of ionisation of the hydrophilic group, surface-active agents are classified into anionic, cationic, non-ionic and amphoteric compounds.

Cationic Bactericides

Quaternary Ammonium Compounds (QACs)

Cationic surfactants poses strong bactericidal but weak detergent properties. There are a large number of QACs with antimicrobial activity. QACs are organically substituted ammonium compounds with a small anion.

The QACs are primarily active against Gram positive bacteria at very low concentrations. Higher concentrations are lethal to Gram-negative organisms. QACs are typanocidal but not mycobactericidal. Viruses are more resistant to QACs where they are more active against lipid enveloped viruses. They possess antifungal properties but these tend to be more fungistatic than fungicidal.

The QACs are incompatible with a wide range of chemical agents, including non-ionic and anionic surfactants and phospholipids. Their antimicrobial activity is affected greatly by organic matter including milk, serum, blood and faeces. They are more effective at alkaline than at acid pH.

Toxicity

QACs are highly toxic if taken by mouth and depression of the central nervous system with convulsions, hypotension and coma may occur. It is advisable that concentrated and diluted disinfectant solutions be handled with care.

Chlorhexidine

Chlorhexidine is not a typical cationic bactericide, and is in fact a member of the biguanide group of compounds. It is bactericidal to Gram-negative and Gram-positive bacteria and is antifungal, but not virucidal or sporicidal. It is more active at alkaline than at acid pH. Its efficiency is greatly reduced in the presence of organic matter.

Chlorhexidine's main veterinary function is as a post milking teat dip and as an antiseptic wound dressing.

Other Surfactants

Anionic Surfactants

Anionic surface-active agents are compounds, which in aqueous solution, dissociate into a large complex anion, responsible for the surface activity, and a smaller cation. Examples are the alkali-metal and metallic soaps, amine soaps, lauryl ether sulphates and sulphated fatty alcohols.

They usually have strong detergent but weak antimicrobial properties, except in high concentrations when they induce lysis of gram negative bacteria. Fatty acids are active against Gram-positive but not Gram-negative bacteria.

A marked improvement of activity against Gram-positive and Gram-negative bacteria occurs at low pH values with a rapid kill at pH 2. The most suitable acid for achieving this effect is phosphoric acid. Such acid-wetting agents have good detergent properties but do not kill bacterial spores and mould spores may be resistant. Antibacterial activity is rapidly lost if the pH rises above 3.

Aldehydes

Two members of the aldehyde group of chemicals are important in livestock disinfection.

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FORTHCOMING EVENTS

In Association with **Dairy Focus Asia 2008**

FarmCare GB is proud to be associated with the above events and we are providing a speaker (Dr John Woodger) for both the Poultry and Dairy events. John will be presenting a paper entitled "Effective breeder/hatchery biosecurity" on day three of the Poultry conference and one entitled "Dairy Farm Biosecurity" to Dairy Conference.

We hope that as many of our distributors and key customers as possible will make plans to attend one or more of these events. March 2008 may seem a long time off, but I think we all know how time flies. Of additional interest to some will be the fact that these conferences precede the Victam Asia Exhibition at a convenient location close to the conference centre.

We hope to be able to arrange a dinner on the evening of Wednesday 5th March 2008 for all distributors and their Key customers attending the event.

Programs for Poultry Focus Asia 2008 and Pig Focus Asia 2008 are available. Anyone who would like a copy, please contact john@farmcaregb.com.

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Chemical Disinfectants for the Livestock Industry and how they Work –Part 2 (Continued from page 3)

Gluteraldehyde

Gluteraldehyde is a saturated 5-carbon dialdehyde with an empirical formula of $C_2H_8O_2$. Apart from its monemeric form, gluteraldehyde exists as a dimer, trimer and polymer. The monomer is the active form. The activity efficiency of gluteraldehyde depends on pH, being much more at alkaline than at acid pH. Unfortunately the stability of gluteraldehyde decreases as the pH rises due to polymer formation. Above pH 9 there is an extensive loss of aldehyde groups. Basic gluteraldehyde is normally a 2% acid solution that is activated to alkaline before use from which time it will remain stable for 7 – 14 days depending on temperature. Other formulations of gluteraldehyde have been developed with longer shelf lives. Gluteraldehyde is lethal to bacteria and their spores, mycelial and spore forming fungi and various types of viruses. It is a highly reactive molecule, reacting with various enzymes and proteins, this interaction increasing with pH. The activity of gluteraldehyde is not badly affected by the presence of organic material but is significantly reduced at lower temperatures.

Formaldehyde

Formaldehyde, $H\text{-}CHO_2$, is used as a disinfectant in either liquid or vapour forms It exists as an aqueous solution containing 34 – 38% w/w. Methanol is added to delay polymerisation. Formaldehyde is lethal to bacteria and their spores, fungi and many viruses, but its sporicidal activity is slower than that of gluteraldehyde. Formaldehyde combines readily with proteins and its efficiency is somewhat reduced in the presence of organic matter. The liquid form, correctly diluted, can be used as a disinfectant for poultry houses and incubators. Formaldehyde vapour inactivates viruses, fungi and spore- and non-spore forming bacteria. It is less active in the presence of organic material and at low temperatures. Activity increases markedly with increased humidity up to a relative humidity of 50%. In this form it is extensively used as a fumigant for livestock housing, hatcheries and eggs.

Formaldehyde vapour can be produced in a number of ways:

1. Evaporation of commercial formaldehyde solution.
2. Addition of formalin solution to potassium permanganate
3. Volatilisation of paraformalehyde under controlled conditions of temperature. Paraformaldehyde is a polymer of formaldehyde with the formula $HO(CH_2O)_nH$, where n is 8 – 100. When heated it breaks down to formaldehyde.

To be concluded next month