BVS POULTRY Talk
Best Veterinary Solutions, Inc.
Winter 2021-22
www.bestvetsolutions.com

Winter is Coming. Are You Ready?

Dr. Corissa Robinson, DVM, dACPV
BVS Staff Veterinarian

While walking toward the entry room of a poultry house on a clear December day, I heard distant honking. Earlier in the day, I saw several flocks of Canadian and Snow Geese in grain fields, but I was still not prepared for the sight of thousands of birds flying overhead. The flock seemed to stretch out for miles (Figure 1). The distinct thought of "wow, I can't believe I didn't get pooped on," went through my mind. This was swiftly followed by "oh no…they're here." In this single flight, the massive flock easily flew over hundreds of poultry premises, commercial and backyard flocks alike.

After this encounter, I was curious and looked up: "how frequently do snow geese defecate?" The answer - approximately 6 to15 times per hour when foraging, and just a little less when flying long distances. Multiply this by thousands of birds…Yikes. If this isn't enough to make you invest in a sturdy hat, it should definitely make you think about what you're investing in your biosecurity plan.

I'd like to take the opportunity to highlight how migratory season is one of the largest risks to the poultry industry. To help mitigate this risk, I also have outlined the NPIP's 14 Biosecurity Principles. These can be used to help defend your flock all year long.

What's the big deal about wild geese and their feces? Generally, waterfowl are considered the natural reservoir and the perfect "melting pot" for influenza A viruses. They can carry over

Figure 1. *A large flock of Snow Geese migrating over a poultry producing premise. Graphic showing one of the potential outcomes. December 2021.*

continued on page 2

Inside this issue

www.bestvetsolutions.com

Winter is Coming, *continued from cover*

100 different subtypes with few to no signs of disease. The subtypes are named using a combination of "H" (hemagglutinin), "N" (neuraminidase), and numbers; you may recognize these from past experiences. In waterfowl hosts, the viruses can "swap parts" (viral genes) and create new influenza combinations, potentially leading to Low Pathogenicity Avian Influenza (LPAI) or High Pathogenicity Avian Influenza (HPAI) viruses.

LPAI viruses commonly circulate throughout many avian populations. There are few to no indications of disease, that may include snicking, wheezing, conjunctivitis, mild diarrhea, egg production drops, and lethargy. LPAI H5 and H7 cases are reportable since these subtypes have high potential to become HPAI; LPAI premises must be closely monitored, if kept. LPAI cases are handled by animal health authorities in each state. HPAI, on the other hand, can vary in severity depending on many different factors, including the species infected. In poultry, HPAI can cause fast, high mortality with few other signs. If the birds live long enough you may see hemorrhages, edema, diarrhea, neurologic signs, and/or other signs of multiorgan failure. HPAI is a costly, industry crippling disease. HPAI cases are reportable globally, warrant federal involvement, and can even impact international trade. (***Notify your flock health team IMMEDIATELY if you suspect LPAI or HPAI in your flock, or if you see wild birds near your farm exhibiting unusual behavior.)

Figure 2. *A display at the MSP airport demonstrating the 4 major migratory routes covering North America. August 2021.* ***Left to right:*** *Pacific Flyway (Pink), Central Flyway (Blue), Mississippi Flyway (Yellow), & Atlantic Flyway (Green)*. The Atlantic Flyway covers the landmass where H5N1 was detected in December 2021.*

Influenza A is shed in feces and respiratory secretions; for migratory birds, this can mean transcontinental (Figure 2) and, quite possibly, global distribution of the virus. The shed virus(es) can then infect hosts such as other avian species and some mammals, including humans. Each new host is a new opportunity to mutate into an LPAI or HPAI virus. Even if the virus has not infected a host, it can be carried around on shoes, clothing, equipment, vehicles, and in many other ways. The efficient transmission of this pathogen makes it capable of causing massive outbreaks.

continued on page 2

Winter is Coming, *continued from page 2*

You may recall the devastating HPAI outbreaks when H5N2 and H5N8 tormented the US poultry industry in 2014-2015. Then came the HPAI H7N8 and H7N9 outbreaks in 2016 and 2017, respectively. Most recently in 2020, HPAI H7N3 was quickly controlled in the Carolinas, nonetheless it still caused a huge loss to our industry. Transmission was often blamed on wild birds carrying the viruses, however, spread occurred frequently between commercial premises, too. This should serve as a bleak reminder to assume influenza is always present, and combined surveillance efforts for poultry and wild birds are our best chance of getting ahead of the next outbreak.

In recent years, strains of HPAI H5N1 have been devastating poultry flocks across Asia, Europe, and Africa. A few days before my Snow Goose sighting, the Canadian Food Inspection Agency had confirmed HPAI H5N1 from a case of acute, high mortality in a non-commercial poultry flock in Newfoundland and Labrador. This H5N1 isolate was reported to be very similar to the Eurasian isolates. Around the same time, surveillance of wild birds in the surrounding area showed that they were also carrying H5N1, with 1 known mortality case. Again, we can only assume that the next HPAI outbreak is lurking around the corner. These detections and reports are examples of how global this disease can be. With a confirmed case in a neighboring country, it's not the time to be guessing if your biosecurity plan is "ok." Are you ready for HPAI?

You may be thinking "there are always birds flying over, and we haven't had a problem before…why do anything different?" True, migratory birds have established their paths over many centuries, this isn't new news. Yet, how has our industry been able to keep major catastrophes from happening year after year? Over time, biosecurity knowledge and practices have been developed and improved, and great efforts have been made to make "biosecurity" part of the poultry industry culture.

Even though we're making biosecurity advances, there are always new pressures forcing us to adapt. A major contributor of these pressures is that the poultry industry is getting pushed into more concentrated areas, due to the loss of agricultural lands and higher transportation costs, making the flocks and complexes larger and larger targets for disease outbreaks. Also, with the addition of more production types (i.e., Organic, ABF, etc.) and fewer available treatments, biosecurity is becoming a primary health program. With the annual reminders such as migrating birds, we do tend to think more about influenza, however, there are many other disease threats just waiting for an opportunity to break through your biosecurity shield.

"Biosecurity" is the process of preventing the introduction and spread of infectious diseases to a population. There may be certain times when you need a stronger shield to protect birds when diseases are trying to strike from every angle (i.e., migration seasons in the US), whereas some seasons may grant reprieve with "normal" disease challenges. However, at no point should the biosecurity shield be lowered; weaknesses will show, and disease challenges can destroy the flock. Know your enemies and protect your flocks against them. When there is active involvement by the biosecurity plan participants, it can be specifically tailored against these "enemies." The better the biosecurity plan effectively and efficiently suits your specific needs and disease challenge risks, the easier it is to see the outcomes of your preventative investment.

When starting to write a biosecurity plan, ask yourself two questions – "what does biosecurity mean to me and my operation?", and "how will I communicate, document, and enforce a reasonable program to meet these expectations?". Clear descriptions of your plan and can be accompanied by pictures, maps, diagrams, charts, multiple languages if needed, and anything that will help users understand your biosecurity goals. One way to help compliance is to set different levels of biosecurity for "low" or normal risk, moderate risk, or high-risk scenarios. By having these levels defined ahead of specific disease challenges, the biosecurity program can pivot to meet your needs without missing a beat. There are some great resources available to help you double-check your existing biosecurity plan, and guide updates as needed. Reach out to your poultry health team/network, state animal diagnostic labs, university extension agents, and even national poultry organizations – they are here to help!

The National Poultry Improvement Plan (NPIP) has created the *NPIP Program Standard E – Biosecurity Principles*, which includes 14 key focus points for biosecurity plans. The NPIP points are interpreted below, with several examples, to help you create a plan specific to your operation. Biosecurity is unbiased and should protect any species a plan is created for. Readers are strongly encouraged to reach out to their poultry production/health team if they have questions about developing or reviewing their biosecurity plan. The plan should cover the "who, what, when, where, and how" of your biosecurity program; you already know the "why" – protect the flock from disease.

Figure 3. *NPIP Logo.*

The 14 NPIP Biosecurity Principles

(adapted from the Official Training on the NPIP Program Standards Biosecurity Principles, http://www.poultryimprovement.org/documents/Biosecurity-Principles-and-Audit-Guidelines-2017-2020.pdf):

1. **Biosecurity Responsibility:** The "Biosecurity Boss," if you will. The plan should clearly state who oversees developing, enforcing, evaluating, and updating the biosecurity plan. This responsibility belongs to a designated individual that can communicate the plan efficiently and effectively.

2. **Training:** Anybody that has contact with birds covered by the biosecurity plan, should be familiar with and understand the biosecurity plan. Training materials help give participants a physical reference of biosecurity expectations and details. Training should be done annually at a minimum, with immediate training upon hire, and for any major updates or changes. Keep records of who was trained and when.

continued on page 5

Animal Science Products® Incorporated

Hydr-Ate™ Organic

HYDRATING NUTRITION FOR YOUNG POULTRY

Organic

- GREEN COLOR ATTRACTS BIRDS TO FEED
- WATER- SUPPLY THE MOST CRITICAL NUTRIENT FIRST
- MIX WITH WATER TO CONVENIENTLY PLACE SOLID GEL IN CHICK BOXES OR FEED PANS

INDICATIONS

Delivers an ideal solution of hydrating nutrition to sustain young poultry during transport and stress. Green color attracts birds to feed.

ADVANTAGES OF HYDR-ATE ORGANIC

- Cool-water gelling formula mixes easily to hydrate chicks during transport or stress
- Soft gel is easy to consume and digest
- Jump-starts body metabolism and clears incubation waste for a quick start
- Energetic carbohydrates promote water uptake by intestinal cells
- Ideal first delivery for probiotics or other fortifiers
- Powdered gelling concentrate
- Natural Superabsorbent hydrogel
- All components are FDA approved GRAS
- No preservatives or refrigeration required

Made in the USA

Animal Science Products, Inc.
PO Drawer 631408, Nacogdoches, TX 75963-1408
asp-inc.com • Phone: 936.560.0003 •Fax: 936.560.0157

Winter is Coming, *continued from page 3*

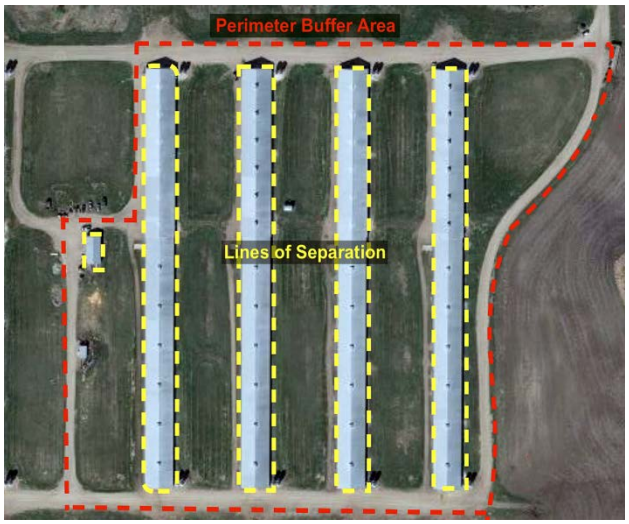


Figure 4. *Line of Separation compared to the Perimeter Buffer Area*

3. Line of Separation (LOS): This is the physical boundary between the flock and everything outside of the flock-containing, "clean" space. The LOS is often created by walls, fences, or enclosure perimeters. The LOS should be outlined on an aerial view of the premise, either by a diagram or photo (Figure 4). Everything contained by the LOS is considered "clean," where everything outside of the LOS is considered "dirty." However, if the flock is infected/diseased, the LOS contains the "dirty" area and you want to keep the pathogens from spreading off the farm. In short, the goal of the LOS should block flow of pathogens in and out of the flock. The LOS can be protected by locks or keycode pads. Clearly stated procedures for crossing the LOS, should be defined. Crossing the LOS can include changing into barn specific personal protective equipment (PPE), hand washing/hand sanitizers, canned disinfectant spray, boot cleaning/foot pans, a Danish entry system, or even shower-in/out facilities. This concept was well described in Dr. Owen's "Are you Red or Green?" article (also found in this edition of Poultry Talk). Obvious signage should be placed at entries/exits for this biosecure area. Everyone entering the LOS and into the bird-containing area must adhere to the LOS biosecurity procedures.

4. Perimeter Buffer Area (PBA): The PBA is the immediate area around the barns, but outside of the LOS, separating poultry producing areas from non-poultry producing areas. The PBA typically includes the entire premise, including the outbuildings, equipment sheds, feed bins, and farm-specific driveways. Vegetative buffers are an excellent addition to the PBA and can help separate the premise from non-farm traffic and diseases carried by the wind. The PBA can be outlined on the same map as the LOS (Figure 4). As with the LOS, specific procedures should be outlined to cross the PBA boundary, such as spraying tires with disinfectant and a visitor sign-in log box. If there are regional disease challenges, are there extra levels of protection between the PBA and the surrounding area? Clear signage should be placed at entries/exits for this biosecure area. Everyone entering the premise must adhere to the PBA biosecurity procedures.

5. Personnel: Who gets to be on the premise, and what do they need to do to be there? This part of the plan should detail specific PPE requirements for each part of the premise and can cover caretakers, delivery drivers, service personnel, and visitors/non-farm guests. If personnel have had contact with other birds or poultry, downtime and other procedures should be clearly outlined. Everyone on the premise should be aware of your biosecurity procedures and should receive training as needed. A communication tree developed for personnel to notify others about biosecurity and/or disease concerns can be included here. Biosecurity is only as strong as the people practice it.

Figure 5. *Biosecurity sign example.*

Figure 6. *Wild Snow Geese in a freshly cut corn field in a poultry dense area.*

6. Wild Birds, Rodents, & Insects: As mentioned at the beginning of this article, wild birds can cause major disease challenges in poultry flocks as they fly between premises (Figure 6). Preventing contact between off-premise birds (wild, pet, or other poultry) and birds protected within the PBA/LOS is paramount. This includes avoidance and awareness of feces/feathers left behind from unwelcomed guests. Rodents and insects are also major carriers/reservoirs for infectious agents. Complete elimination of pests should be the goal but is often impractical to reach. Appropriate measures should be taken to reduce pest populations to acceptable levels on poultry premises, based on the production system and known risks. Monitoring and control programs for rodents, insects, and other pests should be detailed, documented, and routinely reviewed for efficacy. Physical barriers, rodenticides, insecticides, traps, and patching holes or routine barn maintenance are all ways to keep vermin at bay. Methods of minimizing pest habitat (standing water, overgrown weeds/vegetation, etc.) near the poultry premises can also be included. Producers with outdoor-access flocks may need to consider seasonal and/or regional risks and adjust plans as necessary, to keep their flocks safe.

7. Equipment & Vehicles: Ideally, equipment and vehicles are farm specific, but if that's not possible, other guidelines should cover equipment sharing and vehicles traveling between poultry houses. Cleaning, disinfection, and restrictions on shared equipment should be detailed. Vehicles including service trucks, feed trucks, chick trucks, live haul trucks, and really anything with wheels from of the farm

continued on page 6

should be considered here. Tire spray stations, hand-held or installed sprayers (Figure 7), and total car washes (including the undercarriage), all help keep hitch-hiking pathogens out of the premise. Ensure that the cleaning and disinfectant agents are targeting the pathogens you're trying to keep off your premise. Once the machines are cleaned, they should follow a farm traffic pattern. The acceptable routes can be written or drawn on map of the premise.

8. Mortality Disposal: It should go without saying – mortality must be collected and removed from the flock area daily. After collection, the dead should be disposed of in a way that prevents access by other poultry on the premise, wild birds, rodents, insects, and other predators/pests. On-site disposal is ideal – i.e., proper composting or incinerating. If the mortality disposal is off-site, the plan must describe how birds are stored until they are picked up – i.e.,

Figure 7. *Installed tire sprayers.*

locking freezers or dumpsters, how frequent are collections, and how cross-contamination is minimized from other "dead pickup" location. The mortality collection vehicle should follow all guidelines for cleanliness and traffic flow. In case of high mortality events or depopulation, plans must be made to handle a large volume of carcasses; work with your flock health team to be prepared for depopulation scenarios.

9. Manure & Litter Management: After the flock is gone, the decision must be made for the waste left in the barn. The goal, as always, is to prevent the spread of disease. Who is responsible for the manure and used litter? If the used litter can be reused, how will it be managed to control disease in the next flock? If the manure and litter is removed from the farm or premise, how will it be managed/stored, where will it be stored, how long will it be stored, it is protected from vermin, are other poultry at risk of disease when the manure is spread, what must be done with litter from sick flocks? It is important to be familiar with the regulations regarding manure handling in your local area, and don't forget to include any permits in your plan. A clear plan for your downtime/layout period and how to use that time to your biosecurity advantage (dry clean, full C&D, etc.) can be included here.

10. Replacement Poultry: Although "replacement poultry" in NPIP terms refers to birds intended for future breeding stock, this point applies to any premise expecting the introduction of new animals. Your next flock should be coming from health-monitored breeding flocks (ie/ NPIP), and delivered to the premise in clean transportation vehicles and equipment, by personnel who follow strict biosecurity practices.

11. Water Supply: Water used for drinking, evaporative cooling, wash down or other farm uses should be coming from a contained, clean, and/or treated source. There are many past Poultry Talk articles detailing how pathogens survive in water, and what can be done to help eliminate them. Knowing the primary and back-up water sources are critical since different sources carry varying levels of risk. Well and municipal water sources are preferable and should be routinely monitored for pathogens and treated when needed. If possible, avoid using surface water for cleaning and drinking purposes. If using surface water is unavoidable, you must consider water monitoring and treatments to eliminate a high pathogen burden.

12. Feed & Replacement Litter: Keeping any inputs for your flocks should be kept as clean as possible. Feed should be delivered, stored, and fed in a contained, clean system. If feed spills happen within the premise (Figure 8), not only is money wasted, but wild birds, rodents, and insects see a "free buffet" sign flashing next to the barns. Feed is expensive, and it is ONLY for the flock. Plans should outline proper feed management and what to do with spills. New bedding should be treated with the same care. Bedding material should be from a clean storage area with pest control (i.e. no feces, carcasses, or other wildlife remnants). Vermin will ALWAYS take advantage of an open opportunity; they see poorly stored bedding materials as a "vacancy" sign and will burrow in until the litter is spread in the houses. Other inputs, such as treatments, supplements, and enrichments, should be kept in biosecure storage until used.

13. Reporting Morbidity & Mortality: As you know, it's important to keep track of flock mortality and culls. Know the normal mortality limits and what needs to be done if mortality exceeds these limits. In addition to writing

Figure 8. *Feed bin spill "buffet."*

continued on page 7

the dead numbers, describing the sick and dying birds is critical, especially if you see any abnormalities. Who needs to know about increased mortality and what needs to be done to investigate the mortality event? Emergency contact information for your poultry health team should be bolded, underlined, highlighted in this section.

14. Auditing: Inspect what you Expect. Auditing your biosecurity program keeps users accountable and can show where improvements can be made in the future. For NPIP purposes, this is based on flock size, and should occur at least once every two years.

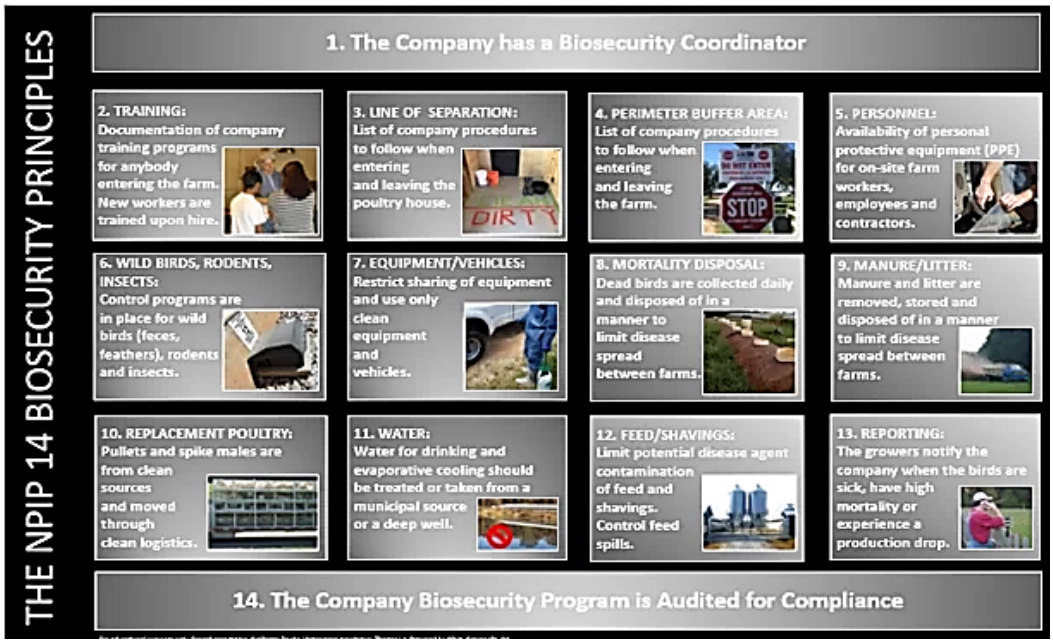


Figure 9. *The Georgia Poultry Lab Network has developed a poster highlighting the 14 Biosecurity Principles. Poster available for purchase at: https://www.gapoultrylab.org/product/poster-bio-security-principles/*

Your written comprehensive biosecurity plan may pass a "paper audit" with flying colors...but, is the plan *actually* being practiced? Is it a part of the culture surrounding the flock? When push comes to shove, and HPAI is knocking on the door, will the flock be protected? ***Are you ready?*

There you have it, the 14 Biosecurity Principles. Each of these aspects is important to remember when preparing a plan, but it may seem overwhelming to try and plan everything at once. The key is to just focus on one at a time and think about what will make a practical program for your operation to keep your flocks healthy. Benjamin Franklin said it best, "By failing to prepare, you are preparing to fail," which seems like a great motto for biosecurity. Preparing biosecurity plans only costs time, and most of the physical biosecurity items cost pennies compared to losing a flock to diseases like HPAI.

By understanding, practicing, revising, and frequently communicating your biosecurity plan, you are ensuring your operation has invaluable insurance. If you need help finding ways to support your biosecurity program, the BVS team is here to help! As the winter sets in, the migratory birds will continue to fly overhead, or even take up seasonal residence nearby. We can only hope that disease surveillance will keep us apprised of the avian influenza situation before there is an industry incident. Until then, make sure your biosecurity program is what you want it to be, and keep your flock from being HPAI "patient 0" in 2022.

Resources:

- Owen, Robert L. *A Practical Guide for Managing Risk in Poultry Production*. 2nd ed., American Association of Avian Pathologists, Inc., 2017.
- Swayne, David E., et. al. "Influenza." *Diseases of Poultry*, edited by David E. Swayne, 14th ed., Wiley Blackwell, Hoboken, NJ, 2020, pp. 210–256.
- USDA APHIS. "U.S. Poultry Industry Stakeholder Update: H5 HPAI in North America." Avian Influenza Series. 7 Jan. 2022, Webinar.
- https://www.hww.ca/en/wildlife/birds/greater-snow-goose.html
- https://www.allaboutbirds.org/guide/Snow_Goose/overview
- https://www.wattagnet.com/topics/171-avian-influenza
- https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/avian/defend-the-flock-program/defend-the-flock-program
- http://www.poultryimprovement.org/documents/ProgramStandardsA-E.pdf
- http://www.poultryimprovement.org/documents/Biosecurity-Principles-and-Audit-Guidelines-2017-2020.pdf
- https://www.bah.state.mn.us/biosecurity/
- https://extension.umn.edu/poultry/national-poultry-improvement-plan
- https://www.cdc.gov/flu/avianflu/index.htm

WHATEVER THE NEED

Technical Services
Vaccine
Hatchery
Veterinary
Water Sanitation

Manufacturing
Custom
Blending

Distribution
Field Support
Onsite Delivery
Complete Animal Health Product Line

YOU WIN WITH US

BVS
Best Veterinary Solutions

"We take an educational approach on customer service to ensure the end-user understands the technology behind our products & how proper use has valuable impact on their bottom line."

★ Locations ★

Ellsworth, IA | Columbus, GA | Franklinville, NC | Mechanicsburg, PA | Millsboro, DE | Washington, IN | Willmar, MN

www.bestvetsolutions.com • Corporate Location: (515) 836-4001

Best Veterinary Solutions, Inc.

Willmar, MN
325 Lakeland Dr. NE • P.O. Box 266
Willmar, MN 56201
320-235-8611 or 1-800-533-1899
Fax 320-235-8629

Ellsworth, IA
1716 Detroit
Ellsworth, IA 50075
888-378-4045
Fax 515-836-4464

Washington, IN
1854 Waller Drive
Washington, IN 47501
877-254-3410
Fax 812-254-2337

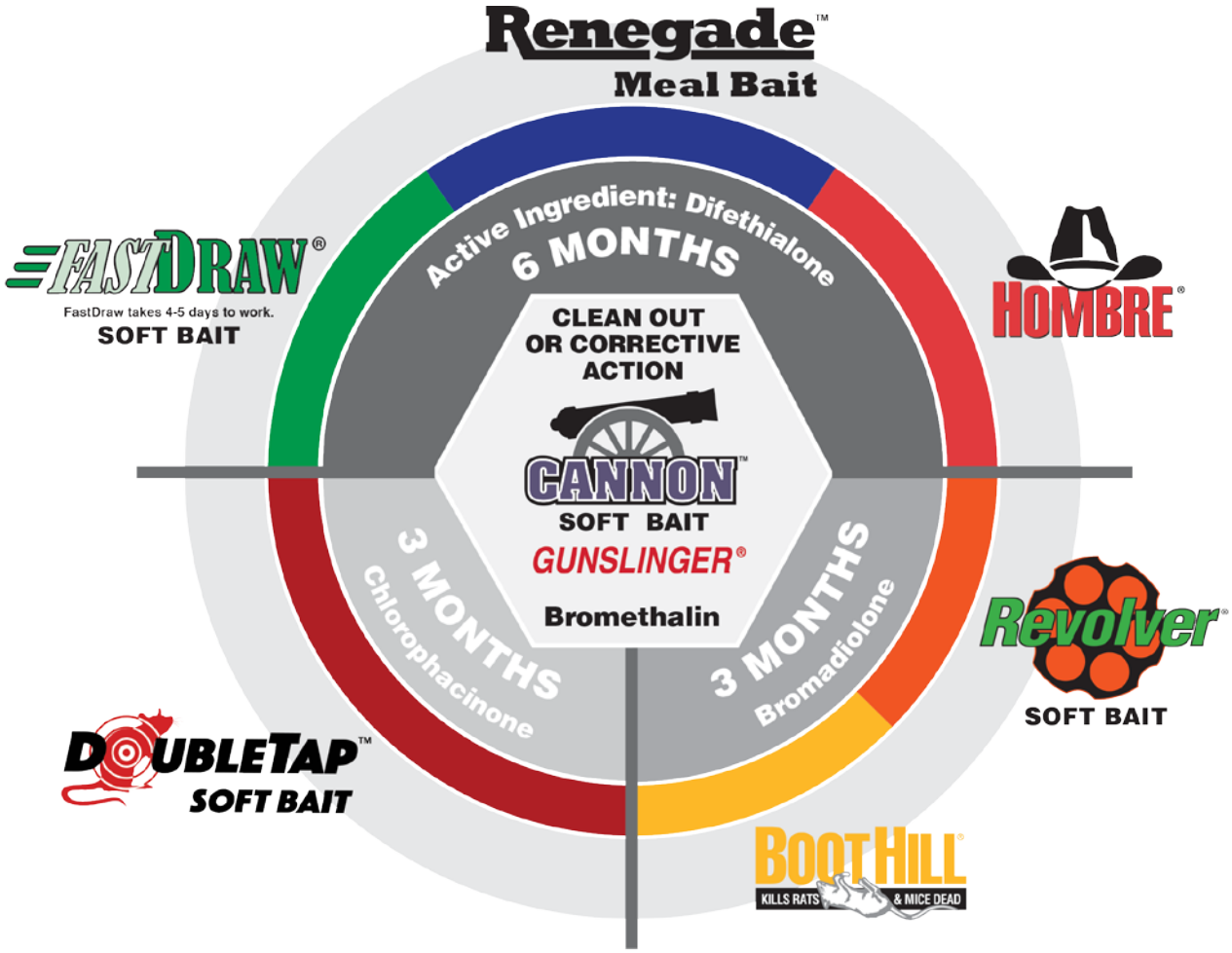
Mechanicsburg, PA
1 Brenneman Circle
Mechanicsburg PA 17050
844-561-4918
Fax 717-620-8493

Millsboro, DE
381 Northern Ave.
Millsboro, DE 19966
877-732-3894
Fax 302-732-3896

Franklinville, NC
616 Andrew Hunter Rd.
Franklinville, NC 27248
336-737-4245

Your rotation for year-round control & everyday maintenance

Knock rodent populations down with Liphatech rodenticides, farm-tested solutions that work.



Jason Price
Technical Support Manager
Liphatech, Inc.

Do you need help with a stubborn rodent infestation or technical employee training?
Contact Liphatech today!

LIPHATECH®
www.liphatech.com
(800) 351-1476

EDIE™

Electric Dual Injector - Enclosed

Chlorine Dioxide Generation and Injection System

Bio-Cide International's new Electric Dual Injector - Enclosed system provides a convenient and reliable way to inject chlorine dioxide in water streams.

Chlorine dioxide has long been recognized as a safe and effective sanitizer for food processing, water treatment and animal health applications. It's high antimicrobial efficacy and low toxicity, coupled with affordable economics, make it the ideal choice to meet the challenges of the sanitation industry. Unlike chlorine based sanitizers, chlorine dioxide does not chlorinate organic materials and therefore does not raise any carcinogenic concerns. It has very high oxidative capacity when compared with other common sanitizers such as chlorine or peracetic acid.

Bio-Cide International, Inc. is a single source for chlorine dioxide products and equipment that meets institutional needs. To meet the needs of most common sanitation requirements, Bio-Cide developed its advanced, compact, simple to use EDIE system.

System Features:

- Simple to operate
- Fully automated to deliver set concentration
- Digital menu screen
- Maintenance identifying pumps
- Precursor level sensors
- Easy interface with ultrasonic flow meters
- Wall mountable design
- Durable and easy to maintain

Compatible, Ultrasonic Flow Meter available – simply clamps on to the pipe and does not require any cutting or refitting for insertion into the stream.

Concentration Output (ppm)	1 – 100*
Operating Water Flow Range (GPM)	1 - 300
Operating Pressure Range (PSI)	10 - 150
Power Requirements	(2) 110V, 15 Amp
Dimensions (Inches)	24 W x 30 H x 13 D

**Max concentration will decrease as the flow rate increases above 300 GPM*

Bio-Cide INTERNATIONAL

www.bio-cide.com • 2650 Venture Drive, Norman, OK 73069
405.329.5556 • 800.323.1398

Bio-Cide International is ISO 9001:2015 certified

Environmentally Friendly Products!

BVS BEST VETERINARY SOLUTIONS, INC.

Distributed by:
Best Veterinary Solutions, Inc.
515-836-4001 888-378-4045
www.bestvetsolutions.com

innovad®
CREATE TRUST

www.innovad-global.com



Strengthen your bird's respiratory system – Naturally

Aflorin® P L

The ultimate aid to reduce respiratory stress

To know more
SCAN ME!

BIFEN I/T

Insecticide/Termiticide

- Control darkling (litter) beetles in broiler houses.
- Controls other pests of poultry and livestock facilities, including biting flies, filth-breeding flies, fleas, hide beetles, bed bugs, mites and ticks.
- Tank mix compatible with insect growth regulators (IGR's) such as Tekko 10 and other insecticides.

Control Solutions Inc. Insecticides
Now available at BVS

CSIPoultry.com
281-892-2500

PIVOT™ 10

Insect Growth Regulator Concentrate

- Control darkling (litter) beetle, fleas, stored product pests, listed roaches, and flying insects.
- Can be used indoors, outdoors, and food areas.
- Disrupts the life cycle of listed insects, preventing them from developing into adults.

Control Solutions Inc. Insecticides
Now available at BVS

CSIPoultry.com
281-892-2500

Tekko® 10 Insect Growth Regulator

for House Fly Control in Turkey Houses

Doug Ross, Technical Service Manager
Control Solutions, Inc.

House flies are a serious pest in live turkey production. Left uncontrolled, they are a threat to the farm's biosecurity program and can have a significant economic impact on operations.

House flies:

- Annoy birds and workers
- Carry and transmit disease organisms such as *Salmonella, Pasteurella, Campylobacter* and *E. coli*
- Create a public nuisance issue with farm "neighbors," potentially leading to litigation

Insecticide application is one practical and effective part of an integrated fly management program also including sanitation, fly exclusion and fly traps.

Tekko® 10 Insect Growth Regulator Concentrate (Active Ingredient: Novaluron 9.3%)

TEKKO 10 is an insect growth regulator (IGR) for house fly control in live turkey production. Novaluron, the active ingredient in Tekko 10, prevents the flies' immature stages (the larvae or maggots) found in litter from developing into adult flies, breaking their life cycle.

Use Sites

Tekko 10 can be applied to poultry litter, manure areas and other insect breeding sites in and around: poultry houses, refuse storage areas and as an outdoor perimeter treatment.

House Fly Control Field Trial

In the Fall of 2020, a field trial was conducted on a 16-house turkey farm to demonstrate Tekko 10 efficacy against house flies. Following any clean-out, litter

continued on page 15

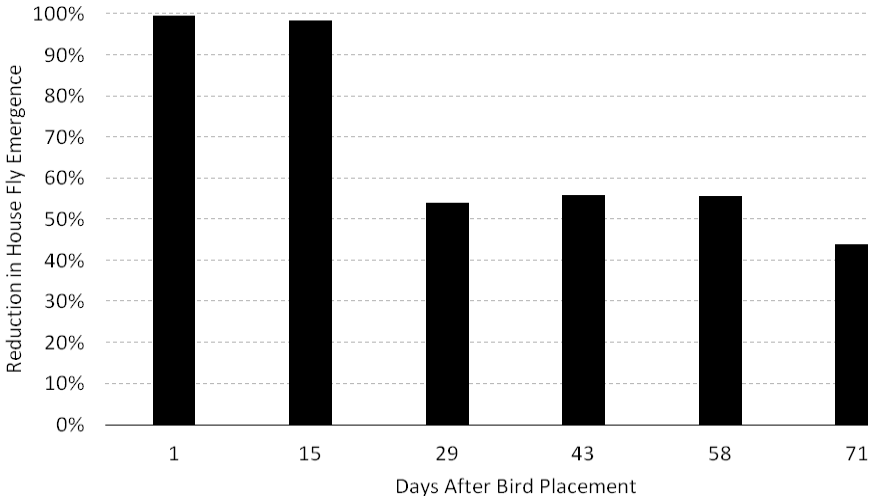
wind-rowing, and refreshing and spreading the litter across the floor area, insecticides were applied prior to bird placement. Eight houses received the integrator's standard insecticide treatments; the other eight received the standard treatments **PLUS Tekko 10** (applied at 3 fluid ounces/1,000 square feet in ≈4 gallons of water/1,000 square feet).

Litter samples were collected from the houses underneath 4 rows of feed pans/waterers at 1, 15, 29, 43, 58 and 71 days after bird placement and returned to the laboratory. Four of the houses in each group of eight (1, 3, 5 and 7 or 2, 4, 6 and 8) were alternately sampled on each collection date.

House fly bioassays were conducted using the field-collected litter samples. For each assay replicate (3 replicates/house/date) ≈150 grams of the litter were mixed with 150 grams of fly rearing media and placed into a plastic cup. (**NOTE: Making a 50:50 blend of litter + fly media cut the Tekko 10 label rate by 50% in the material used for bioassays!**)

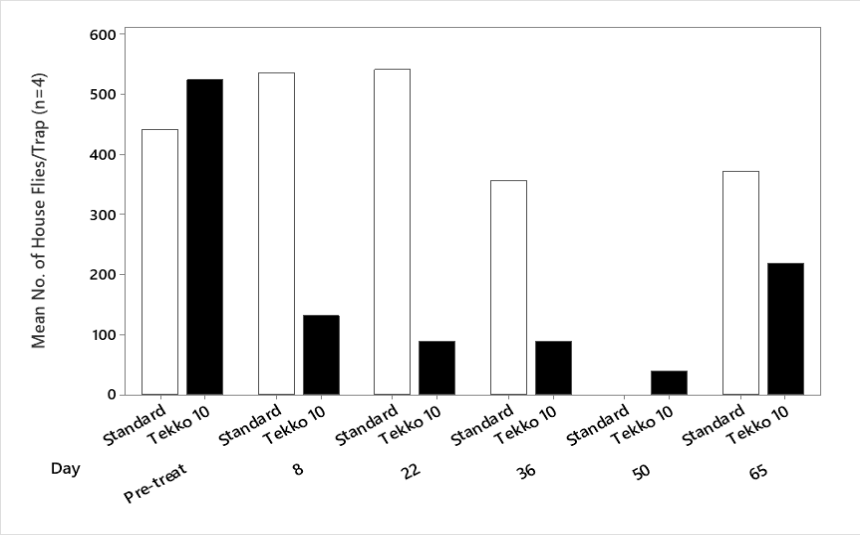
Approximately 50 <24-hour old house fly eggs[1] were added to the litter + fly media mix in each cup, and cups were placed into an environmental chamber (≈80°F; 50-85% RH; and a 16:8 D:N light cycle). Two days later the material in each cup was covered with ≈1 inch of rice hulls and placed back into the chamber to allow house flies to develop. The bioassays were scored 3-4 weeks later by counting emerged adult house flies.

These bioassays measured the residual activity of Tekko 10 in the litter collected from the houses. Through 15 days, Tekko 10 was virtually 100% effective in preventing house fly emergence. This dropped to 54% on day 29, but remained above or close to 50% through day 71. **Remember that the novaluron concentration in the bioassay (50:50 mix of litter and fly media) was only 50% of what was actually applied to litter in the houses.**



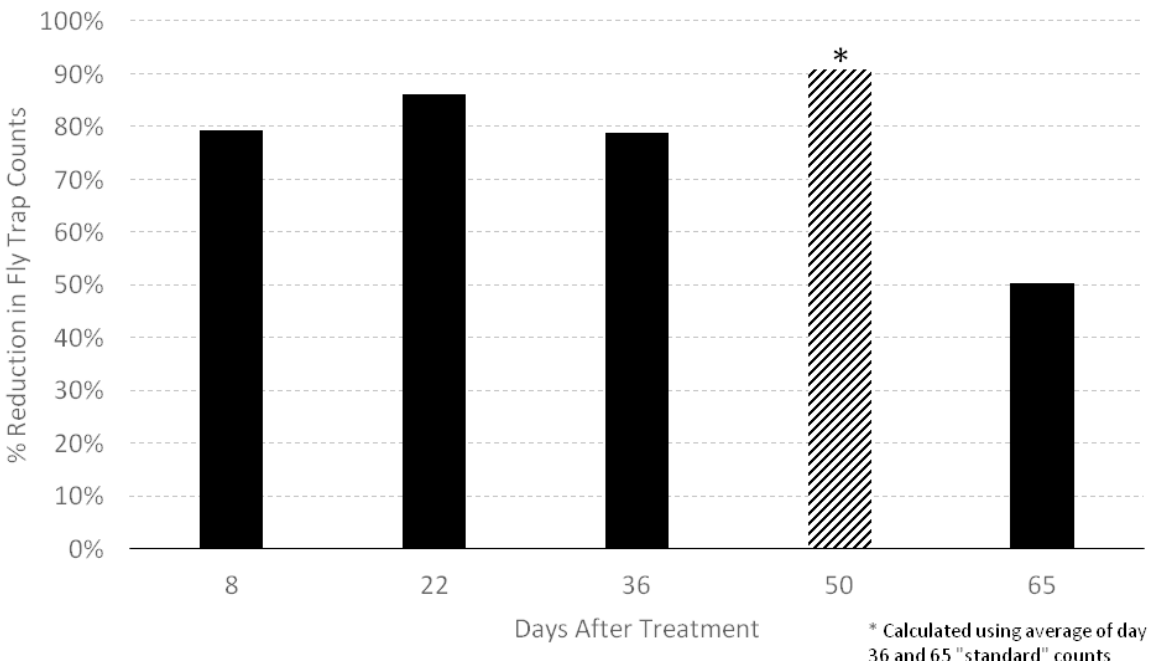
Sticky traps (fly sticks) were used to monitor adult flies in the turkey houses. One trap was placed on the front wall of each house and left there between litter sampling dates. (No trap data were available for the "standard" houses on day 50.) There was a large, significant reduction in adult house flies in houses treated with Tekko 10 eight days after bird placement, and trap catches in these houses continued to fall through day 50.

[1] Prior to the trial, flies from the study farm were collected and colonized and used as the source of eggs for the bioassays. So, the flies used in these tests had the same resistance characteristics as those actually on the farm. This provided more realistic results than if a naïve, insecticide susceptible laboratory strain of flies had been used.



Although trap counts rose after this, on day 65 Tekko 10 still provided a 50% reduction in fly counts.

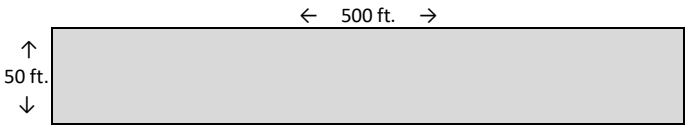
continued on page 16



TEKKO 10 Application for House Fly Control in Turkey Houses

Use Tekko 10 at the rate of 3 fluid ounces/1,000 square feet of floor area to be treated. Mix the appropriate amount of Tekko 10 with 3 – 4 gallons water/1,000 square feet of floor area to be treated. Apply diluted Tekko 10 with suitable spray equipment. Applications should be made between flocks, after the litter in each house has been prepared for placement of the next flock (i.e., following any clean-out, litter windrowing, and refreshing and spreading the litter across the floor area).

Tekko 10 Turkey House Treatment



Calculations (example)

- House dimensions:
  - Length = 500 ft.
  - Width = 50 ft.
  - **Floor Area** = 500 ft. X 50 ft. = **25,000 square feet**
- **Tekko 10 Needed**: 25,000 square feet X 3 fluid ounces/1,000 square feet = **75 fluid ounces**
- **Water Needed:** 25,000 square feet X 4 gallons/1,000 ft.^{2} = **100 gallons** [redacted]

BVS Personal Protection


Poly-Pro Ez Tie 4 & 6 mil


Elastic Top Boots 3 & 6 mil


Treader Boots XL & Jumbo


Shoe Cover 4 mil Clear

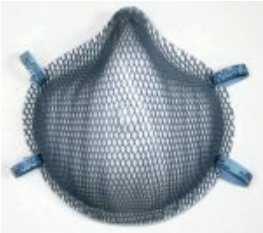

Shoe Cover 6 mil Blue

Latex Powdered Gloves

Latex Powder Free Gloves

Nitrile Powder Free Gloves


Yellow Rubber Boot Cover LG & XL


Moldex 1200N95 Mask


Moldex 2400N95 Mask


Moldex 2200N95 Mask


Nuisance Mask


Moldex Mask 7000 Series


Moldex Cartridges Multi-Gas

Moldex P100 Filter Disk


Moldex Piggyback Adapter


Navy Polypropylene Coveralls


White Micromax Coveralls


White Coveralls with Hood and Boot

Willmar, MN
325 Lakeland Dr. NE • P.O. Box 266
Willmar, MN 56201
320-235-8611 or 1-800-533-1899
Fax 320-235-8629

Ellsworth, IA
1716 Detroit
Ellsworth, IA 50075
888-378-4045
Fax 515-836-4464

Washington, IN
1854 Waller Drive
Washington, IN 47501
877-254-3410
Fax 812-254-2337

Mechanicsburg, PA
1 Brenneman Circle
Mechanicsburg, PA 17050
844-561-4918
Fax 717-620-8493

Millsboro, DE
381 Northern Ave.
Millsboro, DE 19966
877-732-3894
Fax 302-732-3896

Franklinville, NC
616 Andrew Hunter Rd.
Franklinville, NC 27248
336-737-4245

Solutions for Organic Production

Acidifiers:
BVS Citric Acid
BVS Liquid Citric Acid
BVS Acidified Copper Sulfate
BVS Dry Cider Vinegar
Apple Cider Vinegar
LPH 100 (ClO2 Activator)

Essential Oils:
Biosupreme® L
Biosupreme® Organic Feed Grade
EnviroSupreme Green
Orego-Stim Liquid and Dry
ProsperEO Liquid and Dry

Cleaners/Disinfectants:
Keno™ X5
Keno™san
Pro Oxine®
Gil-O-Fact II

Supportive Care:
AviCare™
BVD3
XPC™ Green
AniPrin LQ-PM (Aspirin)
Organic Manage
Aflorin PL
BVS Vitamin D3 Liquid
BVS Poult Start
BVS Vitamin EKA + D3
BVS Sol-U-K
BVS Solulytes Natural
Celmanax Feed Grade
Celmanax Water Soluble

Insecticides:
Essentria™ All Purpose Consentrate
Elector PSP
Yellow Jacket
Poultry Shield FG

Probiotics:
Gut Pro - O
Gut Restore - O

Litter Ammendments:
Stalosan F
Activated Barn Fresh
Stall Dry
Enviro Green

BVS BEST VETERINARY SOLUTIONS, INC.
QUALITY ANIMAL HEALTH & HYGIENE

1716 Detriot St.
Ellsworth, IA 50075
(888) 378-4045

325 Lakeland Dr NE
Willmar, MN 56201
(800) 533-1899

1854 East Waller Dr
Washington, IN 47501
(877) 254-3410

1 Brenneman Circle
Mechanicsburg, PA 17050
(844) 561-4918

1381 Northern Ave
Millsboro, DE 19966
(877) 732-3894

616 Andrew Hunter Road
Franklinville, NC 27248
(336) 737-4245

www.bestvetsolutions.com

*Not all products mentioned above are OMRI Listed. Approval for use in organic production is subject to approval from company's/grower's organic certifier.

#ScienceHearted

AMMONIA STINKS. BREATHE EASIER WITH ENVIRO.

That strong, pungent smell means you're losing valuable nutrients from your manure—and your birds could be experiencing all kinds of ammonia-related health problems. ENVIRO can help. Now you can harness the *Bacillus* strains that work to impact gram-negative bacteria in poultry litter and avoid the formation and volatilization of ammonia.

#ScienceHearted

Powered By
Microbial Terroir™

To learn more about ENVIRO contact your BVS representative.

#ScienceHearted

OUR GUT SAYS YOU'LL WANT IN ON THIS.

We're high-quality birds. Our gut instincts are rarely ever wrong. That's why we're here to share the news. You can get ahead of health challenges and maintain average daily gain with GUT PRO. Then, with GUT RESTORE, promote a healthier microbiota to help reestablish gut homeostasis in your birds.

Powered By Microbial Terroir™

To learn more about GUT PRO and GUT RESTORE contact your BVS representative.

BVS BEST VETERINARY SOLUTIONS, INC.
QUALITY ANIMAL HEALTH & HYGIENE

Packaged and Distributed by:
Best Veterinary Solutions, Inc.
325 Lakeland Drive NE
Willmar, MN 56201
(800) 533-1899

BioProteXion by CID LINES

COMPLETE SANITATION PROGRAM FOR FIELD AND HATCHERIES

BIOGEL

- The strongest cleaner
- Gel clings on longer than classical foam = superior cleaning result

KENOSAN

- Deeply penetrating alkaline foam for farms, incubators, trucks, …
- Apply at 1 to 1 ½ oz / gal only with a foam wand.
- Non corrosive in dilution.

VIROCID®

- EPA approved "broad spec trum disinfectant"
- QAC/glutaraldehyde based, dil 1/3 oz – ½ oz/gal
- Non corrosive
- Apply by spray, foam or (thermo) fog
- Maintains pad cooling systems

KENO™ X5

- EPA approved "broad spec trum disinfectant"
- Per Acetic Acid based, dil ½ oz/gal
- 100% biodegradable

CID 2000 PRO

- H2O2 removes heavy soils
- Acid removes scale / mineral build up
- Equipment friendly

CID CLEAN PRO

- 50% Stabilized Hydrogen Peroxide
- H2O2 removes heavy soils
- Equipment friendly
- NO heavy metals

Ellsworth, IA 888-378-4045
Willmar, MN 800-533-1899
Washington,IN 877-254-3410
Millsboro, DE 877-732-3894
Mechanicsburg,PA 844-561-4918

BVS BEST VETERINARY SOLUTIONS, INC. QUALITY ANIMAL HEALTH & HYGIENE

www.bestvetsolutions.com

CID LINES innovative hygiene solutions

www.cidlines.com

BEST VETERINARY SOLUTIONS, INC.
QUALITY ANIMAL HEALTH & HYGIENE

Virocid®

Dilution Rate: 1:256 Dilution Rate: 1:400

Synergize is EPA registered as a Cleaner - Disinfectant. Virocid is EPA registered as a Broad - Spectrum Disinfectant.

Total amount of active ingredients and how those ingredients work together does matter.

Based on EPA registration and usage claims, Synergize has a general label usage rate of 1:256 and Virocid has a general label usage rate of 1:400. So, *two gallons of Synergize will treat 512 gallons* of water. *One jug of Virocid, which is 1.32 gallons (5 Liters), will treat 528 gallons* of water.

2 JUGS OF SYNERGIZE = 1 JUG OF VIROCID

When comparing total cost of any EPA registered Disinfectant take this into consideration.

Less inventory, less storage space, more savings! The choice is clear!

CID LINES
innovative hygiene solutions

The world's leading disinfectant Virocid has become even more powerful.

Thanks to the extraordinary cleaning power of **Kenosan**, the world's most powerful disinfectant **Virocid** is able to penetrate deeper and disinfect even more thoroughly than you were used to.

Kenosan combines ultra-strong adhesion power and deep penetrating cleaning action at very low dilutions! The high-level formulation guarantees a unique cleaning result in the most heavy-duty circumstances in the pig, poultry and dairy houses. Even the most thick and dried up dirt (manure, litter, etc.) like in farrowing crates, fattening pens, turkey or broiler rearing houses, milking parlours etc. stands no chance against the penetrating and dissolving power of Kenosan. The cleaning action also gets amplified by extended contact time due to the sticky foam that remains attached upon all types of surface.

CID LINES
innovative hygiene solutions

www.cidlines.com

BVS BEST VETERINARY SOLUTIONS, INC.

QUALITY ANIMAL HEALTH & HYGIENE

MANAGE®
MANAGE® Organic
OMEGAMUNE-PLUS
ACID SOL
pH SAFE LIQUID
BVS Liquid Citric Acid

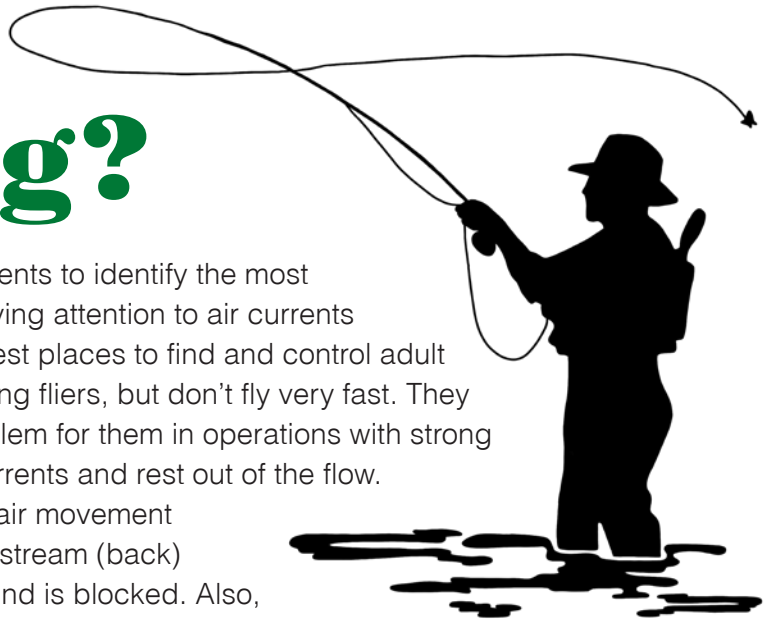
BVS is making a SPLASH when it comes to water acidification and nutritional products

GET INTO THE ZONE

Best Veterinary Solutions, Inc. - 325 Lakeland Dr. NE - Willmar, MN 56201

www.bestvetsolutions.com PH: 800-533-1899

Housefly Fishing?



Fly Fishing requires reading the water currents to identify the most productive spots to fish. In similar fashion, paying attention to air currents inside poultry/swine facilities can reveal the best places to find and control adult houseflies where they rest. Houseflies are strong fliers, but don't fly very fast. They max out at about 5-10 mph. This is a real problem for them in operations with strong ventilation fans, so they avoid these strong currents and rest out of the flow.

Flies often congregate in areas where the air movement is minimal such as in corners, or on the down-stream (back) sides of posts, fan housings, conduit where wind is blocked. Also, consider support wires, water tubes, and fixtures mounted to walls or ceilings where they can rest outside of the airflow. These are the areas that flies will seek out.

Now that we have identified where flies are most likely to rest, all that remains is selecting a treatment for these locations. Non-repellent residual insecticides or some baits are good options.

Did you know that houseflies taste the surfaces that they land on? They have chemoreceptors that taste food on various parts of their bodies, most notably on their feet. Tiny hair-like sensilla on the end leg segment (tarsi), act as taste buds. If the fly gets a signal from its feet that this surface tastes good, it will take a lick; otherwise it will move on.

Scientists refer to this as the "tarsal taste and proboscis extension reflex," and use it to test flavor preferences among flies. Yeah, fancy jargon, but bear with me. If a fly tastes sugar with its foot, its brain instantly signals a reflex to extend its proboscis and eat. By the way, proboscis is a technical term that describes a fly's feeding structure, which when not feeding is retracted/tucked into its head. Saliva along with digestive enzymes from a fly's crop (stomach) are regurgitated onto solid food (through the extended proboscis) to convert it into a digestible liquid (slurry). The puddle of slurry gets slurped up through the fly's labella, (a pair of tongue like structures at the end portion of the proboscis).

The sugary matrix and the active ingredient (dinotefuran) in **PT® Alpine®** Pressurized Fly Bait triggers this feeding reflex, and quickly dissolves into this slurry, and gets absorbed in the gut (and the tarsal pads it stands on). And, in a matter of seconds…dead fly.

So, think about the air flow in your facility to determine where flies are most likely to rest, and get the most out of your targeted treatments.

Always read and follow label directions

Brian Mann is a Board Certified Entomologist and Strategic Account Manager for BASF.

CONSISTENCY MATTERS

THE RIGHT PRODUCT, RIGHT WHEN YOU NEED IT.

WATER SOLUBLES

HUVEPHARMA®

- Consistent & Dependable Supply
- Convenient
- QC Assurance

Amprol®
(amprolium)

Di-Methox®
(sulfadimethoxine)

Lincomycin Spectinomycin
(lincomycin/spectinomycin)

Lincomycin
(lincomycin hcl)

Neo-Sol® 50
(neomycin sulfate)

Oxytet®
(oxytetracycline hcl)

Prohibit®
(levamisole hydrochloride)

R-Pen®
(penicillin g potassium)

*NEW! **Sul-Q-Nox®**
(sulfaquinoxaline)

Sulmet®
(sodium sulfamethazine)

Tylovet® Soluble
(tylosin tartrate)

CONTACT YOUR DISTRIBUTOR TODAY!

HUVEPHARMA®

Peachtree City, GA • 1.770.486.7212 • customerservice@huvepharma.us

WS.01.20.002

® are registered trademarks of Huvepharma, Inc.

Federal Law restricts these products to use under the prescription of a licensed Veterinarian only.

ARE YOU RED OR GREEN?

Robert L. Owen, V.M.D., Ph.D., DACPV
Director of Technical Services

According to the experts, the US poultry industry is about to embark on the biggest game of Russian roulette that we have ever seen. A smaller version played out this spring and we all saw how successful we were then. Fortunately, everyone has heeded the advice of experts and has spent the summer preparing for what may be coming. NOT!!!! As I have spent the summer talking to producer groups the two most common feedbacks I have gotten are "Hopefully it won't happen to me because I can't stop it" or "It doesn't matter if it happens because the Government will pay me for my birds". If that is your attitude – Shame on you!!! Experience has shown that if we change our mindset and start practicing the highest standard of biosecurity we can protect our farms and our animals. And since when did the poultry industry start looking to the government for hand-outs. This industry was founded by entrepreneurs who rolled the dice and did not count on the government for any help. Have we become so complacent and lazy that we are unwilling to be responsible for our own fate.

So let's play the newest game to come to animal agriculture – Are you red or green? The game is easy – everything outside the poultry house is red and everything inside the house is green. The objective of the game is to keep the inside of the house green. Rules of the game are as follows:

- Red is the dominant color and trumps Green. In other words if anything red touches anything green the green turns red.
- The only way to turn something green is to disinfect it in the absence of organic material or cover it in the form of clean boots or coveralls.
- Insurance can be purchased in the form of clean well maintained foot pans placed at the proper locations.

Red or Green, *continued from page 32*

Remember everything outside the poultry house is red and if green is touched by red it turns red.

The other thing we need to talk about is levels of redness in people entering the poultry house. The level of biosecurity depends on the amount of risk posed to green areas.

- Level 1 – This level is reserved for the grower and his/her family when they stay on the farm. At this level the hands and feet of the people are red but the rest of the person is green (in other words coveralls are not required)
- Level 2 – This is for all visitors to the farm and the grower if he/she ventures off the farm around other people and/or animals or if HPAI has been diagnosed in the area. For this level the entire outside of the person is red meaning coveralls or change of clothing is required before entering the poultry house.
- Level 3 – This is for someone who has potentially been exposed to infected animals. For this level the entire person is red and is breathing fire. No one at this level should be allowed to enter a green building.

Figure 1 is a drawing of the most common biosecurity procedure practiced in the US today. The red line has been drawn at the sill of the door. This type of program can certainly be made to work but remember that what is needed is a complete change in thinking about how we handle biosecurity because the threat is much more virulent than we have seen before and is expected to last for years in all kinds of weather. So as you are trying to stand on one foot in an icy doorway in the middle of winter and accidently put your foot down in the red area then step into the green area what happens to the green area…..it turns red. And if HPAI has been diagnosed in the area and you are supposed to be putting coveralls on before you enter a green area how are you going to accomplish that. In order to have 100% compliance the procedure has to be easy and simple.

continued on page 34

Figure 1: Typical US biosecurity system

Red or Green, *continued from page 33*

Figure 2 is a drawing of what has come to be called the "Danish Entry System". In this system a physical barrier is constructed in the mechanical room of the poultry house. This can be as simple or elaborate as you want to make it but it must be a barrier so that people entering the house are aware of the line of separation between the red outside the house and in the entry way and the green for the rest of the house. The barrier can be as simple as 6 concrete blocks on each side of the doorway and a board or bench at the front of the entry. That way people entering the house can sit on the bench, slip their red shoes off as they swing their feet over to the green side, and slip on a pair of green boots that are kept in the house. The alternative is to sit on the bench and slip on a pair of green shoe covers or plastic boots as they swing their feet into the green side. Green on green then is no problem. As added insurance to maintain "greenness", foot pans can be located beside the bench and at the entry to the bird space and visitors encouraged to use them frequently. If coveralls are required they can be donned on the green side after shoes are changed.

The Danish entry system has obviously been used successfully in Denmark for many years and recently has been adopted by the US swine industry to successfully control a viral disease challenging pigs. The system works and is inexpensive and simple to maintain. Materials are less than $50.00 a house and are cheap insurance if they prevent HPAI from affecting your poultry. Figure 3 (on back page) shows this entry system actually in practice. Using concrete blocks and a board the entry can be configured in any way to make it practical to enter into a red zone and change boots to maintain green.

Last but not least don't forget your hands. Remember even at Level 1 of our game your hands are red and notice in the picture that there is a box of gloves on the bench. In the HPAI outbreak Spring of 2015 some of the highest virus levels in infected houses were recorded on door knobs and other equipment frequently touched. Hand sanitizers or gloves are effective tools in trying to maintain a green poultry house.

One question that gets asked frequently is equipment shared between houses. Especially in the turkey industry tillers are commonly moved between houses. Moving equipment between houses is a red behavior and should be treated as such. Ask yourself if it is possible to use our tools to change something

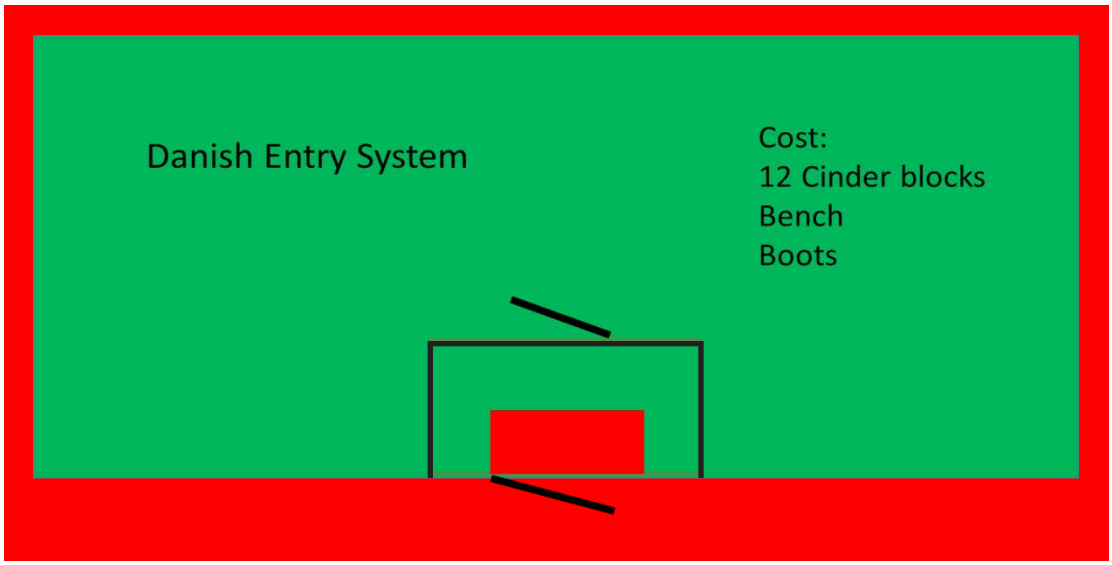


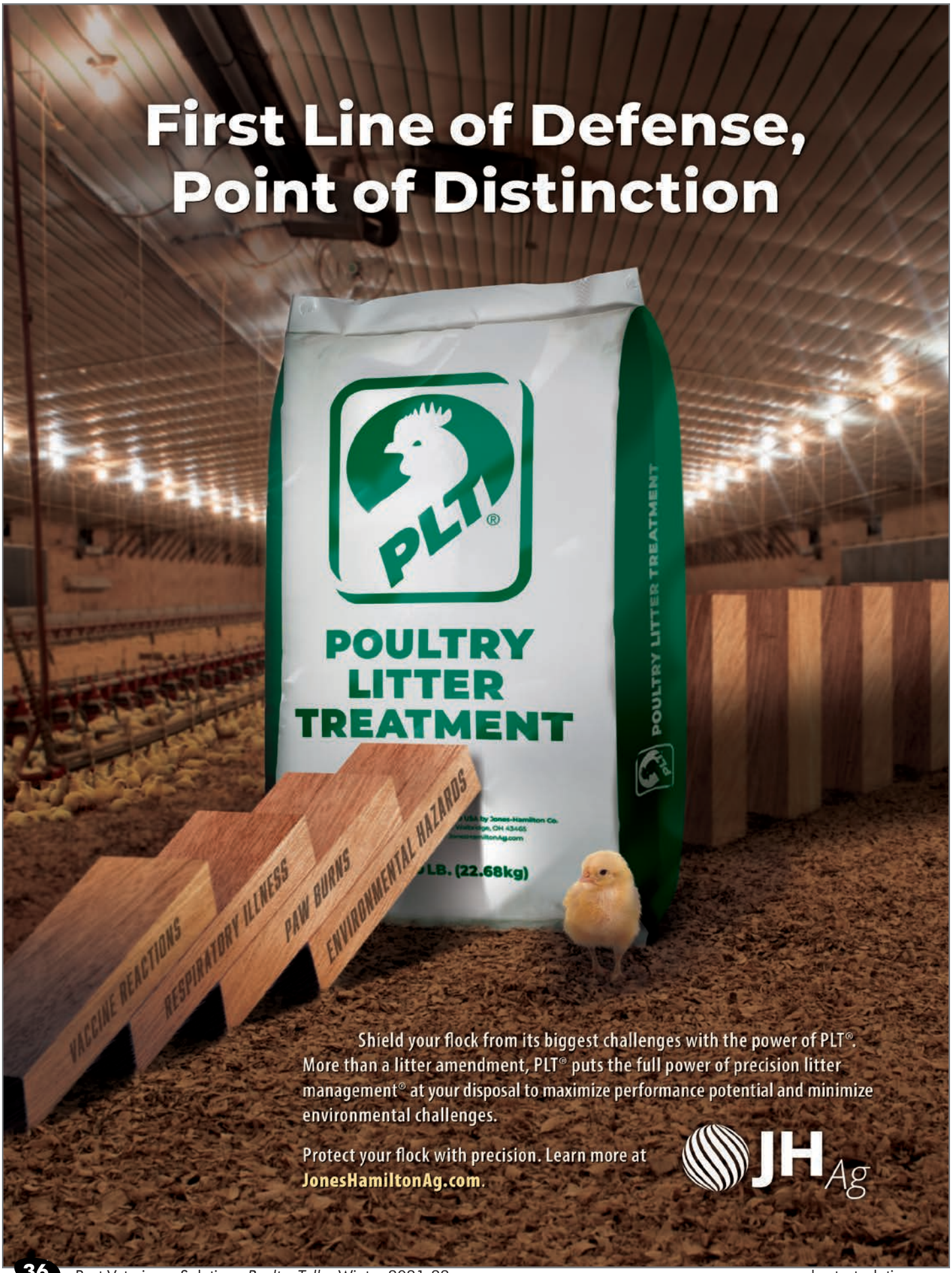
Figure 2: Danish Entry System

continued on page 35

from red to green. Small things such as boots and buckets can be effectively cleaned and disinfected between houses, but intricate and large equipment such as a tiller is probably too complicated to insure that it is returned to greenness.

As stated above successfully preventing the challenge that is coming is going to take a significant change in mindset. We have been very lax in our biosecurity procedures in the US because we, fortunately, have been spared from widespread severe disease challenges for many years. Those days are over and the challenge we are facing may be with us for a long time so we might as well hunker down and prepare to meet the challenge. No excuses. The government is not going to help us protect our farms and our animals. We have to do it ourselves and we should not be ignoring a tool as inexpensive and effective as the Danish entry system. As you go through your daily chores try to think of red and green behaviors. You will be surprised how many times you say to yourself that is a red behavior and I will lose. Pretty soon, though, things will start to fall into place and we will all achieve what we want – a green world.

Figure 3: Practical application of Danish Entry System (Picture courtesy of Michelle Kromm, 2015)


First Line of Defense,
Point of Distinction
PLT®
POULTRY LITTER TREATMENT
POULTRY LITTER TREATMENT
VACCINE REACTIONS
RESPIRATORY ILLNESS
PAW BURNS
ENVIRONMENTAL HAZARDS
Shield your flock from its biggest challenges with the power of PLT®. More than a litter amendment, PLT® puts the full power of precision litter management® at your disposal to maximize performance potential and minimize environmental challenges.
Protect your flock with precision. Learn more at JonesHamiltonAg.com.
JH Ag

A Little Bait Goes a Long Way

with

Judgement™

Image not representative of bait placement

- Palatable formulation
- Formulated using high quality ingredients including wheat flour, chopped grain and soft lard
- Soft baits remain pliable in extreme weather
- Second generation active ingredient Difenacoum
- Easy to place sachets

Scan below to sign up to 'Rat Chat'
Making Rodent Control Simple

NEOGEN®

800.621.8829 • 859.254.1221 • NEOGEN.com

BIOSUPREME®

Phytogenic Feed Ingredient

POULTRY FORMULATION

100% *Yucca schidigera*

- **Reduces ammonia in poultry production**
- **Improves feed utilization**

BIOSUPREME® contains saponins (active ingredient), which have surfactant properties, playing an important role in animal nutrition. The glycocomponents within *Yucca schidigera* extract have a natural affinity to bind ammonia and other noxious gases, therefore improving the environmental air quality within the poultry houses, swine barns, and other livestock commercial facilities.

- **Quality and Food Safety**

BIOSUPREME® is produced under strict certified Food Safety Management System guidelines and manufacturing process. We use only mature and overmature *Yucca schidigera* plant stems obtained under an environmentally conscience and sustainable harvesting program.

BIOSUPREME® L

Available in concentrated liquid, which can be included in drinking water systems.

GMP+ Feed Safety Assurance · ISO 22000 SGS · HACCP SGS · OMRI LISTED For Organic Use · OMRI.org · KOSHER

Manufactured by:
AGROIN® BAJA AGRO INTERNATIONAL
www.yucca.com.mx
Ensenada, B.C. Mexico

BVS

Exclusively Distributed in the United States by:
Best Veterinary Solutions, Inc.
325 Lakeland Dr., N.E. Willmar, MN 56201
Toll Free: 1-888-378-4045
www.bestvetsolutions.com

Take a Team Approach to Intestinal Integrity

Ensuring Intestinal Integrity (I2) in your flock requires more than great products. It also requires program planning and rotational timing, management strategies, attention to I2 score and performance monitoring — all focused on overcoming your unique challenges.

Get all of that and more from the experts at Elanco, the trusted, experienced leader in Intestinal Integrity.

Contact your Elanco representative or visit **ElancoPoultry.com/I2** to learn more.

Confidence raised.

Elanco™ | Poultry

ProOxine®(AH) Disinfecting Solution

For Animal Drinking Water

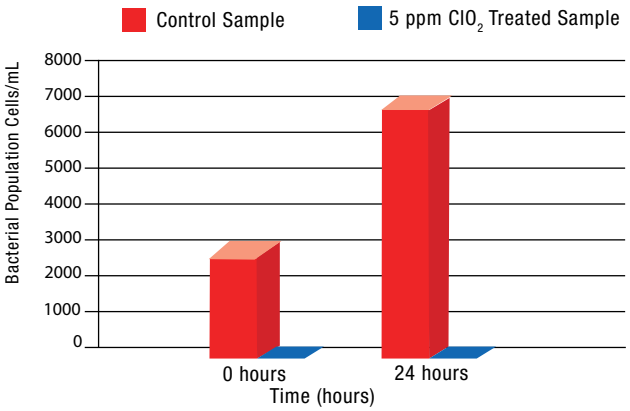
ProOxine® is the most effective tool for water management in animal facilities. ProOxine® keeps the bacteria level down in the water lines, and prevents biofilm from developing thus keeping the animals healthier by keeping down the pathogen level that could potentially travel from one animal to another. ProOxine® makes drinking water more palatable to poultry and livestock and therefore they drink more. Additionally, ProOxine® is highly effective in keeping water systems free of build up.

AANE (Automated Activation Non-Electric) System

Efficacy of ProOxine® against Biofilm

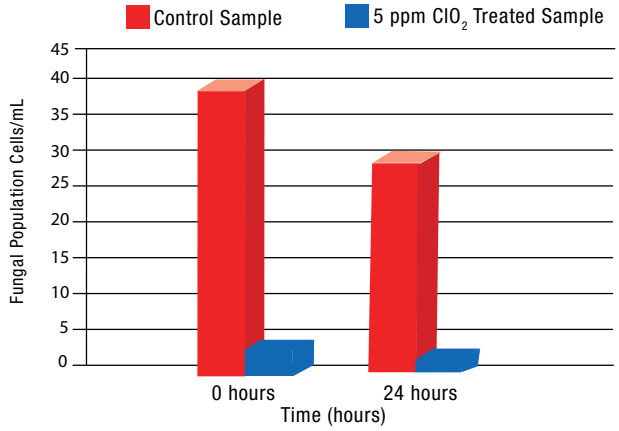
CONTROL EFFECT OF 5 ppm ClO_2 AGAINST BIOFILM BACTERIA

On Bacteria	Control Sample	5 ppm ClO_2 Treated Sample
0 Hour	3000	30
24 Hours	7000	2



CONTROL EFFECT OF 5 ppm ClO_2 AGAINST BIOFILM FUNGI

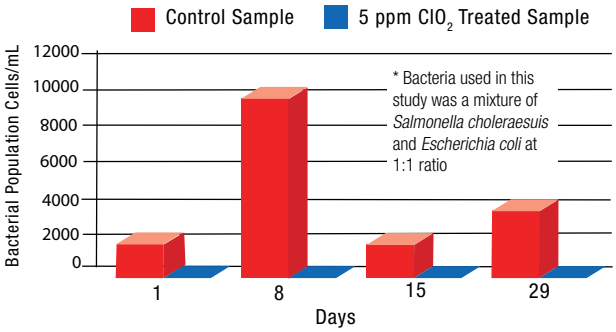
On Fungi	Control Sample	5 ppm ClO_2 Treated Sample
0 Hour	40	4
24 Hours	30	2



Efficacy of ProOxine® against Salmonella and E-coli

REDUCTION OF BACTERIAL POPULATION* IN WATER AFTER CONTACT WITH 5 ppm CHLORINE DIOXIDE

On Bacteria	Control Sample	5 ppm ClO_2 Treated Sample
1 Day	2000	20
8 Days	10000	2
15 Days	2000	2
29 Days	4000	2



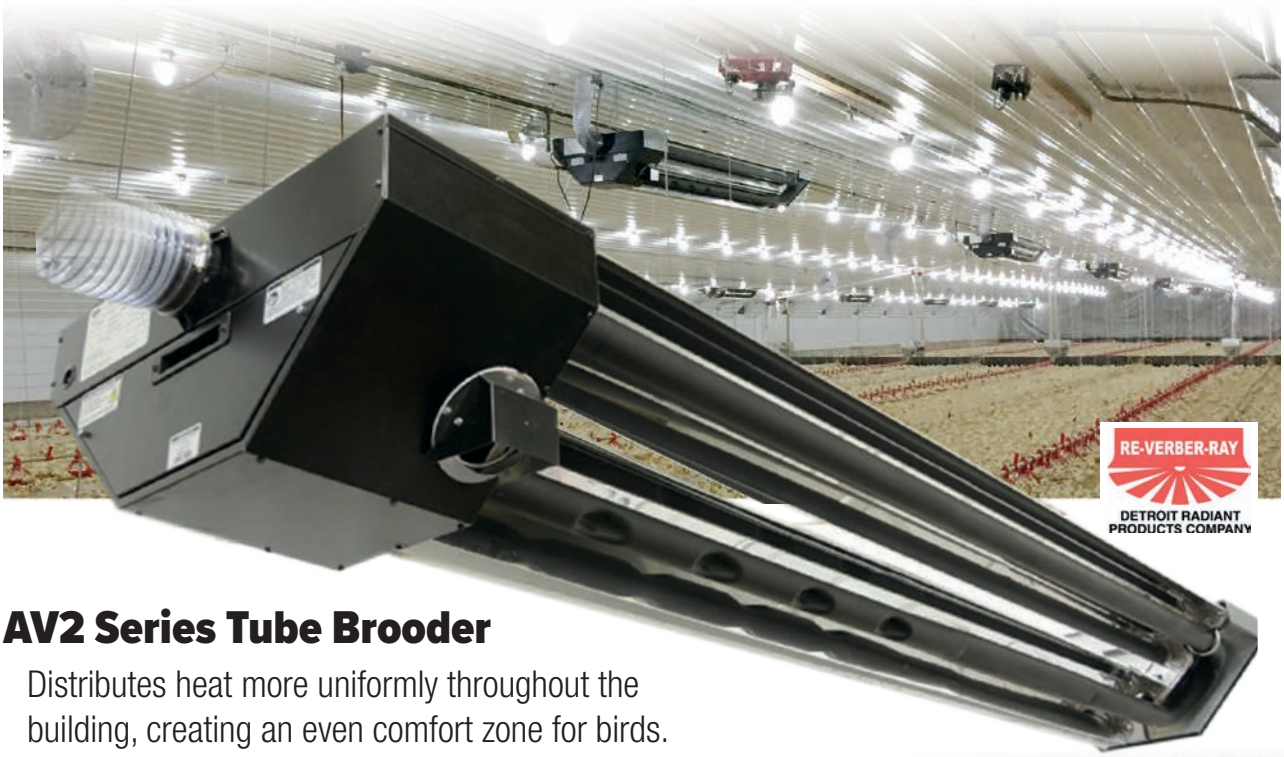
Bio-Cide INTERNATIONAL

Exceptional Chemistry • Extraordinary People • Excellent Service
www.bio-cide.com • 2650 Venture Drive, Norman, OK 73069
405.329.5556 • 405.329.2681 fax • 800.323.1398
Bio-Cide International is ISO 9001:2000 certified

BVS BEST VETERINARY SOLUTIONS, INC.

Distributed by:
Best Veterinary Solutions, Inc.
515-836-4001 • 888-378-4045
www.bestvetsolutions.com

Manage the Cold Better
with Efficient Tube Heaters



AV2 Series Tube Brooder

Distributes heat more uniformly throughout the building, creating an even comfort zone for birds.

Insulated Tunnel Inlet Doors

Mounted with galvanized brackets that provide durability & Insulation value of R-8

Cumberland

(800) 845-3374

FARMER BOY®

FarmerBoyAg.com

☑ Parts You Need. ☑ Brands You Know. ☑ Prices You Can Afford.

Gil Bio Bleach

Long-Lasting Stabilized Chlorine • Effective for up to 2 Weeks

pH-buffered for enhanced efficacy

\Does not provide a source for bacterial growth greatly
Reduces cross-contamination potential

Does not Freeze nor Evaporate

TRUE PAN POWDER
Ultra-dry, fine composition resists moisture clumping while providing superior foot coverage

Effective Cleaning, Bleaching and Deodorizing Properties

Economical way to clean footwear

DIRECTIONS

- Add as needed to foot pan to maintain a half-inch layer. (A thicker layer will not increase effectiveness.)
- Remove organic contaminates as necessary.
- Change out pan powder every 2 weeks for optimal results.

Ready-To-Use;
NO MIXING

Available in
11, 35, 50, 100
and 400 pound
Re-Sealable
Containers

Gil Io-Poult & Gil Medic-Dyne

Multi-Purpose Iodine Supplement

Gil Io-Poult: 1.75% titratable iodine
Gil Medic-Dyne: 3.5% titratable iodine

Cold Weather Stable

Concentrate mixes readily in cold, hard water

Provides Essential Iodine to Poultry

Cleans and conditions water drinking systems, keeping them free of slime and mineral scale

Effective Deodorizer

Consult your local sales or service representative for use directions.

Available in 1, 5, 15, 55 and 275 Gallon Containers

Gilmer Industries has been manufacturing top-quality cleaners and disinfectants for over 40 years.

GILMER INDUSTRIES, INC. *Products that Perform*

560 Stone Spring Road
Harrisonburg, VA 22801

PO Box 1247
Harrisonburg, VA 22803

phone 800/200-4162
info@gilmerindustries.com

Knowledge
Through Production Tips

The Solution to Stock Solutions

Introduction

Medications – including vaccines, antibiotics and nutrients – are an expensive part of protecting swine from diseases and stress. The improper use of medicators, and especially the improper mixing of the stock solutions, can make the difference in delivering the appropriate dose per head or wasting the medication completely. For example, the results of inappropriate mixing in stock solutions can result in plugged proportioners, plugged nipples, low or no delivery of the medication to the animal, destruction of live vaccines or the inactivation of the medication due to reactions in the stock solution.

The following is a practitioner's point of view on the "Solution to Stock Solutions"

The Problem

- Most products in a stock solution are at high concentrations
- Products may be acidic, basic or neutral
- Acid base reactions tend to precipitate and or destroy products
- There is a lack of published compatibility testing of drugs to guide mixing
- Producers often want to use multiple products at one time
- Most barns have a single medicator

What I See in the Field

- Dirty buckets
- Buckets shared between products
- Buckets not cleaned on a daily basis
- Attempts to put (human) suspensions through the medicator
- The use of products where the maximum amount you can put in a stock solution results in under-dosing of the product and ultimately lack of efficacy
- Putting live vaccines into buckets previously used for antibiotics
- Using poor quality water for stock solutions

Examples of Poor Stock Solution Management

Looks Good From Afar!

Effect of Previous Product?

Vaccine Bucket has Antibiotics in it!

Combining Products Not Recommended

Not Recommended!

Wasted Outcome!

The Results of Inappropriate Mixing in Stock Solutions

- Plugged proportioner
- Plugged nipples
- Low or no delivery of the medication
- Destruction of live vaccines
- Inactivation of the medication due to reactions in the stock solution

BEST Practices for Stock Solution Preparation

- Use distilled water
- Product can be altered by tap/well water
- Chlorine/Iron/Other metals
- Q.S. (quantity sufficient)
- Add product then water
- Re-mix every 12 hours
- Use a different bucket for each medication
- Mark gallons on bucket
- Replace between groups of pigs
- Scrub the bucket between uses
- Break down and clean the medicator between products/uses
- Use liquid soap
- Rinse well
- Keep replacement washers on hand
- Clear the medicator and the water line between groups of pigs
- One cup bleach in a gallon of water (stock)
  - Can be corrosive to metal or concrete

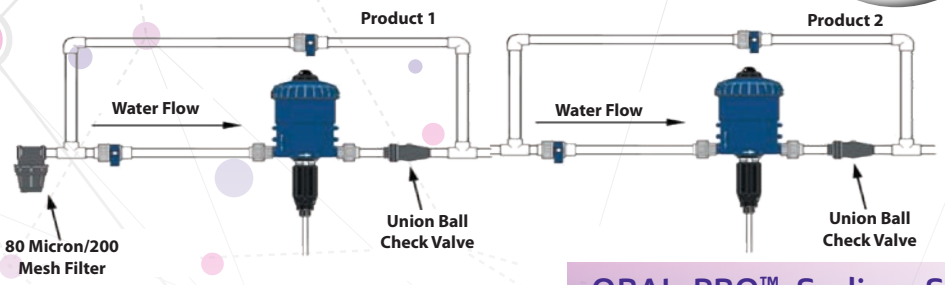
Presented By:

Grant Weaver, DVM
Technical Services Veterinarian
Aurora Pharmaceutical, Inc.

My Practice Tip

- The use of multiple medicators in series can be a good solution to the problem of trying to mix products into a concentrated stock solution

One, Two or None

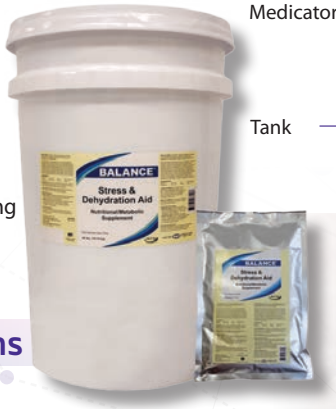


The Advantages of This Approach

- Mixing products at 128 times less concentration
- Less chance of significant chemical or physical interactions in the dilute drinking water solution
- Aurora tested 27 common water-based preparations in all combinations and saw no interaction at the drinking water dilutions
- Those same 27 products mixed together in the stock solution reacted in 120 out of 408 combinations tried
- It is scalable

BALANCE™ Stress and Dehydration Aid

- Increases water consumption and reduces body temperature in high-heat conditions
- Quicker rebound from stress-related issues including excess heat and handling
- Increases yield due to better hydrated animals and improves meat quality due to better muscle pH in animals at processing
- Available in easy-to-measure 40-lb. pails or 780-gm foil packets



BALANCE Mixing Directions

Water Administration

DOSAGE LEVEL	WATER MEDICATOR
780-gm foil pack	Administer 1 packet per 5 gallons of stock solution metered at 1 ounce per gallon (1:128) of drinking water
40-lb. bucket with scoop	Administer 3 cups per 5 gallons of stock solution metered at 1 ounce per gallon (1:128) of drinking water

DOSAGE LEVEL	WATER TANKS
780-gm foil pack	Administer 1 packet per 640 gallons of water (each packet treats approximately 64,000 pounds of livestock)
40-lb bucket with scoop	Administer 3 cups per 640 gallons of water (each cup treats approximately 21,300 lbs of livestock or 213 gallons drinking water)

www.aurorapharmaceutical.com

*Will work with any medicator

ORAL-PRO™ Sodium Salicylate Concentrate 48.6% w/v

- Aids in reducing fever caused by viral and bacterial infections
- Aids in reducing fever caused by heat stress from transportation, vaccination and processing
- Offers water solubility in hard water
- Available in 1-gallon no-spill plastic jugs

ORAL-PRO Sodium Salicylate Mixing Directions

Water Administration

DOSAGE LEVEL	WATER MEDICATOR
Water Medicator	Add 8 oz (236 mL) to make 1 gal of stock solution and administer through a medicator metered at 1:128 (1 oz per gallon). This will achieve a daily target dose of 11.3 mg/lb (25 mg/kg) body weight daily
Tank	Add 8 oz (236 mL) to 128 gallons of drinking water. This will achieve a target dose of 11.3 mg/lb (25 mg/kg) body weight daily

Take Home Messages

- Mixing medications in stock solutions requires veterinary supervision
- Any mixing of medications causes them to fall under AMDUCA as an extra-label use
- Many products are not compatible when mixed in the stock solution
- Most products appear to be mixable at the drinking water concentration
- Always test product compatibility before mixing

Best Veterinary Solutions, Inc.
325 Lakeland Drive NE
P.O. Box 266
Willmar, MN 56201

RETURN SERVICE REQUESTED

PRSRT STD
U.S. POSTAGE
PAID
WILLMAR, MN
PERMIT #644