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Midwest Poultry Show Ed. March 2017

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Paying Attention to Detail Ventilation – Are You Ready for Warm Weather??

by John Menges, BVS

jmenges@bestvetsolutions.com

In the last edition of *Poultry Talk* (Winter 2016-17), I discussed the importance of *Paying Attention to Detail*. In that article, I referenced ventilation as one of the keynotes to being successful in poultry production. Anyone paying *Attention to Detail* would have notice that I was remiss in my short discussion on ventilation, only concentrating on minimum ventilation and younger birds. I will defend myself by saying that article was written in the middle of winter and I did not expect, at that time, to have to be concerned about controlling temperature due to warmer weather. However, one must always be prepared for mother nature. Never in my almost 30-year career working with poultry did I expect to see the mercury rise to 76° in Southcentral Pennsylvania in February. But, as I was riding down the road from a turkey farm on February 23, 2017 at 2:30 in the afternoon being chauffeured by the Curmudgeon, the dashboard read 76°. So, we must be prepared at all times and *Pay Attention to Detail* at all times. So, this article will discuss some basics of warm weather ventilation ideas, concentrating on transitional ventilation from negative to tunnel and managing tunnel.

continued on page 3

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The Curmudgeon's Corner

Robert L. Owen, VMD, Ph.D.,
Director of Technical Services

Recently, I was privileged to be invited to participate in a panel discussion at the National Turkey Federation Winter Meeting entitled "Turkey Health in an Evolving World". As with most discussions about this topic, we eventually came around to the No Antibiotics Ever (NAE) marketing strategy and the homeopathic remedies that we are currently using for these poor animals. Yes, I meant to say poor animals because, in this author's opinion, these animals are being placed in their current situation by human beings and have absolutely no choice about whether they are going to spend their lives in a conventional system where, if they get sick, they can be rapidly and efficiently treated or in a NAE world where some tools are still available to prevent disease, or in the world of organic production where, because we legislate doors in the sides of the poultry houses, nothing evil can befall them.

The lunacy of the situation was driven home when, during the discussion, a member of the audience stated that maybe we will have to lower our expectations regarding treatment efficacy. Think about it: because of some humanly conceived artificial marketing strategy the animals may have to accept a 50% death loss if treated with a homeopathic remedy rather than a 10% death loss if treated with an efficacious FDA approved therapeutic agent and - we will tell ourselves that is a success. Who is going to tell the additional 40% of the animals: "I'm sorry you are going to be sacrificed for the sake of the easy sales." Yes easy sales - it is far easier to slap on a label of NAE or Organic on a product and have the consumer purchase it with a warm fuzzy feeling than it is to spend the money and make the effort to educate consumers that unfortunately sometimes animals do get sick and veterinarians need to treat them but when we do the safety of the product produced is in no way compromised.

Is there a place for homeopathic remedies in today's production agriculture systems? Who knows because the therapeutic effects of the products being sold and used are never tested under the watchful eye of the Food and Drug Administration (FDA). Most people do not understand the process for FDA drug approval in the United States. It includes safety testing, efficacy testing, environmental impact evaluation, stability testing, manufacturing evaluation and the list goes on and on. All this testing and evaluation comes with a huge price tag. Current estimates are that FDA approval of a drug can cost over of \$100 million and take 7 or more years. As a result, current homeopathic remedies are being marketed with only anecdotal support for safety, efficacy, and potency. And who pays - once again it is the animals.

The animals deserve the very best we have to offer and they are not getting it. Furthermore, we are not even discussing it in open forums. Please let us just once have an open discussion about the animal welfare implications of NAE and most especially organic production. Are animals raised in these production systems really better off? This author would argue emphatically no because the industry has not made the necessary capital expenditures to improve the husbandry and housing to help prevent disease. When disease does strike we reach for some unproven homeopathic remedy because, rather than actually being concerned about the animals, we are concerned about meeting our orders. By the time the animals are allowed to be treated, a rare occurrence, therapy is

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Ventilation – Are You Ready for Warm Weather??

continued from cover

Table 1.

- **13° to 24°C (55° to 75°F)** - Thermal neutral zone – bird does not need to alter its basic metabolic rate to maintain its body temperature
- **24° to 29°C (75° to 85°F)** - Slight reduction in feed consumption, feed conversion compromised – panting
- **29° to 32°C (85° to 90°F)** - Feed consumption falls further, weight gains lower, feed conversion further compromised – excessive panting
- **32° to 35°C (90° to 95°F)** - Feed consumption continues to drop, birds in survival mode

For those who have had to sit and listen to any talk I have given on warm weather management in the past, I like to reference Table 1. For turkeys, this is a good guideline to maintain the thermal neutral zone or comfort zone of turkeys over 12 weeks of age. In order to maximize growth rate and attain optimum feed conversion, turkeys in this age range should always 'feel' like the temperature is between 55-75°. So, as the temperature increases (even in February in PA as noted above), we need to be transitioning birds into warmer weather ventilation. Birds that sit and pant are already past the point of their comfort zone and are expending energy to maintain body temperature, something we should be helping them with through optimal ventilation. So, how do we get this done?

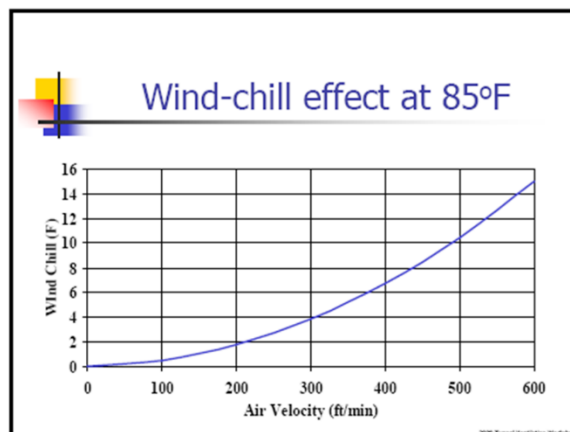
Table 2.

112 days old		50x600							
Target	65					Wind chill	Effective		
	Fans	Stage	On	Off	at 85°F	Temp			
	1 x 36,1x54	1	Timer				Negative		
	2 x 36,1x54	2	67	66			Negative		
	2x54	3	69	68			Negative		
	2 x 54		73	71	1	72	Tunnel	about 150	
	4 x 54		75	72	4	71	Tunnel	about 300	
	6 x 54		77	76	9	68	Tunnel	about 450	
	8 x 54		79	77	15	64	Tunnel	600 fpm	
	Evap Cool		87	84			Foggers run cont		

Table 2 is an example of a basic controller set up that incorporates minimum, natural and gradual tunnel applications for turkeys that are around 16 weeks of age. Notice that the controller will be able to handle temperatures that are cold with timer fans running in minimum ventilation. It transitions to negative pressure ventilation when the outside air warms up and inside temperatures move through the 60's. When the inside temperature reaches 73°, the house converts to tunnel ventilation at a low speed and gradually increases as the house warms. The Effective Temp column shows the approximate

effective temperature that the bird 'feels' due to the wind speed as it increases. Notice that the birds remain in the 55-75° comfort zone, even though the actual temperature in the house is as high as 79°. Table 3 below shows the relationship between air speed and effective real feel temps for poultry at an ambient temperature of 85°.

Table 3.



Czarick, 2008



The picture of the Kestrel air speed tool shows the airspeed in the house, which is obviously a *detail* that should be monitored. Many times we have house controllers set up to do what we *think* they are doing, but without measuring, we really don't know. If I have a house set up to give me 600 fpm (feet per minute) maximum when I have 19 week old toms in 100° heat, I better make sure it is doing that. At the same time, as in the controller set up for younger birds above, I don't want to get too much air speed too quickly or I will chill the birds. When this happens they sit tight to the floor and do not get up to eat and drink. This leads to several problems – enteric issues, poor weight gain and feed conversion.

In the controller example above, I did not include the importance of evaporative cooling. This is a topic for an article itself. But, evaporative cooling is necessary when temperatures in the house get about 22° above my target temperature. Using evaporative cooling too early (below 85°),

continued on page 5

Solutions for Organic Production

Acidifiers:

BVS Citric Acid
BVS Liquid Citric Acid
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LPH 100 (CIO2 Activator)

Supportive Care:

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Organic Manage
Mucosol®
BVS Vitamin D3 Liquid
BVS Poult Start
BVS Vitamin EKA + D3
BVS Sol-U-K
BVS Solulytes Natural

Essential Oils:

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Biosupreme® Organic Feed Grade
EnviroSupreme Green
Orego-Stim Liquid
Orego-Stim Feed Grade

Insecticides:

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Elector PSP
PyGanic

Probiotics:

Gut Pro-O

Cleaners/Disinfectants:

Keno™ X5
Keno™san
Pro Oxine®
Gil-O-Fact II

Litter Ammendments:

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Activated Barn Fresh
Stall Dry
Enviro Green

Please contact your BVS Salesman for more information on the products we offer for organic production

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

*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.



Ventilation,

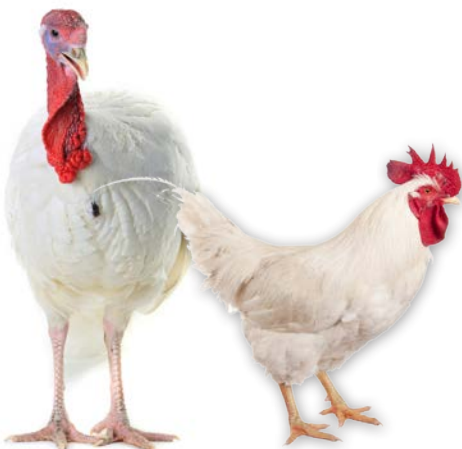
continued from page 3

is unnecessary due to the wind chill effect of the fans and will result in high humidity, wet litter and danger to the birds. Using evaporative cooling too late will result in birds panting and becoming heat stressed.

Trouble shoot your system – make sure your tunnel system is ready to go – even in February in the case noted at the beginning of this article.

- Tunnel fan belts and motors ready to go.
- Tunnel fan shutters and butterfly doors working properly, clean off all screens and fan blades.
- Ideally, we want all air coming through the tunnel opening, so make all sidewall inlets close properly and any holes in curtains and seal strips are in place. A leaky house will not produce the necessary air speed and is inefficient.
- Test static pressure reading to make sure your controller is reading the correct pressure.
- **And, always test your back-up alarm and generator system** to make sure it is ready to go.

Paying Attention to Detail is a constant challenge. Keeping birds comfortable in all weather conditions is possible if we have our houses set up to be able to handle cold, mild and hot weather. ●



Barnes Paper

- ✓ "A" & "B" Flute Brooder Guard Feed Paper
- ✓ 12" Water Line Paper
- ✓ Jumbo Corrugated Feed Lids
- ✓ Disposable Feed Lids
- ✓ Red & Gray Plastic Feed Lids
- ✓ Egg Cases and Egg Flats

The Curmudgeon's Corner,

continued from page 2

largely unsuccessful because the disease is well established in the flock and the animals are not able to consume the therapeutic being administered.

There are no easy answers to the problem but production agriculture has to start down the road towards finding solutions. We cannot and must not continue to ignore the welfare of the animals which we have been charged with protecting. The first step that must be taken is for all the stake holders along with the American Veterinary Medical Association and the American Association of Avian Pathologists to open a dialog with FDA to see what can be done. Is there some middle of the road that can be developed such that getting some sort of seal of approval from the FDA is not a long onerous expensive process? The concept of process verified that is being explored by several production companies in partnership with USDA comes to mind. The other dialog that needs to occur with FDA and USDA is starting a media campaign to let the public know what they currently do to protect the safety of our food. My wife cringes every time she hears President Trump rale about the crooked media. But would it not be refreshing, rather than hearing on the national news what bracelet Ivanka Trump was wearing at what meeting, if we heard about improved efforts for monitoring antibiotic residues or meat inspection. Granted the headlines are not sensational but the education of the consuming public needs to start somewhere other than an unreviewed blog on the internet.

The second step is for animal agriculture to figure out a way for the health of the animals to be controlled by veterinarians not advertising departments. When an infant dies because the parents refuse to have the child treated or vaccinated, the news is right there showing us the parents being lead away. Do our animals deserve any less? Our goal in animal agriculture should be to provide the very best in housing and husbandry in order to prevent disease and rapid efficacious treatment if disease strikes. That is the essence of veterinary medicine and that is the essence of animal agriculture. Think about it. ●

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Believe in hygiene!

2017 MPF Conventrion BVS Hospitality Night



Intercontinental Hotel St. Paul
The Minnesota Ballroom
1 floor down from lobby
Wednesday, March 15, 2017
5:00 pm-9:00 pm

BVS would like to thank the following partners for sponsoring this event:

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- Deeply penetrating alkaline foam for farms, incubators, trucks, ...
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- QAC/glutaraldehyde based, dil 1/3 oz – ½ oz/gal
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KENO™ X5

- EPA approved "broad spectrum disinfectant"
- Per Acetic Acid based, dil ½ oz/gal
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CID 2000

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Shoe Cover 4 mil Clear



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Latex Powder Free Gloves



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Yellow Rubber Boot Cover LG & XL



Moldex 1200N95 Mask



Moldex 2400N95 Mask



Moldex 2200N95 Mask



Nuisance Mask



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Moldex Cartridges Multi-Gas



Moldex P100 Filter Disk



Moldex Piggyback Adapter



Navy Polypropylene Coveralls



White Micromax Coveralls



White Coveralls with Hood and Boot

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Sanitizing/Cleaning Equipment



BVS Handy Foamer



BVS Handy Foamer with Tank



Hydro Foamer 481



0.5 Gallon Foam Unit



1.3 Gallon Foam Unit



15 Gallon Concentrate Foam Unit



Concentrate Foam Unit



Doorway Foam Unit



Footwear Sanitizing Unit with Boot Scrubber



10 Gallon Fog Unit



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Doorway Foam Unit



0.5 Gallon Foam Unit

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Poultry & Swine Wash – “your gentle solution to disease control”

A new topical broad spectrum antimicrobial
for treatment of poultry and livestock skin conditions

Rosemary A. Marusak, PhD, DVM, MSpVM, dACPV
Staff Veterinarian, BVS
Dennis Costello, President
CostWin Technologies

Introduction – skin disease in poultry

Bacteria and other microbes are ubiquitous in environments where poultry and other livestock are raised. The integument (skin) is the first line of defense for the immune system, providing a physical barrier to pathogen invasion of the host to prevent disease. When this barrier is compromised through scratches, tears, or other inflammatory processes, pathogenic bacteria can enter the host and cause local and sometimes systemic disease. Local skin bacterial infections cause discomfort to the live animal, compromising welfare and production, and often lead to downgrading of carcasses at the processing plant. In breeders and layers, these conditions can contribute to decreased egg production and may negatively impact the quality of the offspring. Importantly, bacteria that enter through patent skin can travel systemically and cause significant mortality. **Table 1** lists common bacterial skin conditions that can occur in poultry.

Table 1. Bacterial skin diseases of poultry¹⁻³

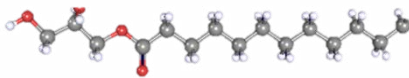


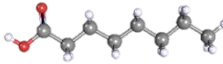
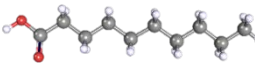
Disease	Site of Introduction	Commonly isolated bacteria
Dermatitis/cellulitis	Skin	<i>Staphylococcus spp.</i> (e.g. aureus, hyicus), <i>E. coli</i> , <i>Streptococcus faecalis</i> , <i>Bacillus sp.</i> , <i>Proteus sp.</i>
Sternal Bursitis	Skin	<i>Staphylococcus spp.</i> , <i>E. coli</i>
Bumblefoot	Feet	<i>Staphylococcus spp.</i> , <i>E. coli</i> , <i>Pseudomonas sp.</i>
Omphalitis	Naval	<i>Staphylococcus spp.</i> , <i>E. coli</i> , <i>Salmonella sp.</i>
Periocular inflammatory disease	Eyelid (accompanying conjunctivitis)	<i>Staphylococcus spp.</i> (e.g. aureus, hyicus)
Non-feathered skin inflammation and abscesses	Comb, wattle, snood	<i>P. multocida</i> , <i>E. coli</i>

Not only bacteria are implicated in skin disease, but viruses (e.g. Avian Pox and Marek's Disease) and molds and fungi (e.g. *Aspergillus sp.* and *Candida sp.*) can also be involved.

Introducing the new BVS Poultry & Swine Wash

Poultry and Swine Wash (P&S W) is a new liquid, topical product offered by BVS that contains a combination of naturally occurring medium chain organic acids, which together, have broad spectrum antimicrobial activity.

The names and structures of the ingredients found in the BVS P&S W are shown in **Table 2**.

Name	%	Structure (https://pubchem.ncbi.nlm.nih.gov/)	Value Added Properties
1- Monolaurin (Lauricidin, 2,3-dihydroxypropyl dodecanoate)	1.5		Emollient moisturizer
1,2-Propylene glycol	10-30		Humectant
Lactic acid	5-10		Skin plasticizer moisturizer
Octanoic acid (caprylic acid)	1-5		
Decanoic acid (capric acid)	1-5		
Oils, orange, sweet	0.1-1		

All of the acids listed above are found in various milk products and are GRAS (generally recognized as safe) listed by the FDA. In addition, the P&S W ingredients offer a three-part moisturizing system that includes a skin emollient (Glycerol monolaurate, GML), a humectant (propylene glycol), and plasticizer (lactic acid). In field tests, the use of this unique moisturizing system has resulted in excellent skin condition under a wide variety of environmental conditions.

Laboratory Testing

Laboratory tests have shown BVS P&S W to be greater than 99.99% effective in less than 2 minutes in the presence of up to 10% organic bioburden against common pathogens, including not only bacteria, but also fungi, yeast, lipid-coated viruses and mycoplasmas. Testimonies from work carried out by independent laboratories include:

1. University of Wisconsin, River Falls: showed the effectiveness of the balm form of P&S W to inactivate *S. aureus*, *E. coli*, *MRSA*, and *Trichophyton mentagrophytes* at 35 and 90 minutes and 4 and 8 h.⁴
2. University of Minnesota: confirmed the germicidal efficacy of the liquid product (1:5 dilution rate, 2-10 min exposure) against *S. aureus* and *E. coli*.⁵
3. USDA-ARS: reported the efficacy of P&S W on reduction of *Staph sp.*, *Listeria sp.*, *Salmonella typhimurium*, and *E. coli* in studies involving processed broiler carcasses.⁶

The bacterial kill rate of P&S W is not affected when diluted with waters of varying degrees of hardness. Tested under Standard Methods for Water Testing protocols, the wash had full efficacy when mixed with very hard water, up to 400 grains of hardness and in the presence of 10% bioburden. (Very hard water is defined as 280-320 mg/l of CaCO₃). The diluted product has a convenient shelf life of 90 d and can be stored at room temperature.

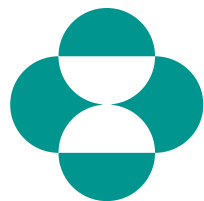
Glycerol monolaurate (GML)- the “gold star” ingredient in Poultry & Swine Wash

The primary active ingredient in P&S W is glycerol monolaurate (GML), a medium chain fatty acid that has growth inhibition effects on both gram positive (e.g. *S. aureus* including MRSA) and gram negative (e.g. *E. coli*) bacteria. In addition to its microbicidal and microbistatic activity, GML has been shown to block bacterial exotoxin production by *S. aureus*,⁷⁻⁹ superantigen production by *Streptococcus pyogenes*,⁷⁻⁹ the induction of Vancomycin resistance by *Enterococcus faecalis*,¹⁰ and virulence factor production in *Bacillus anthracis* (Sterne strain).¹¹ GML is thought to exert its effects by inserting into the lipid membrane and disrupting key signal transduction mechanisms. Multiple mechanisms of action prevent development of resistance. Because of its unique properties and modes of action, GML is currently being developed as a complementary, protective microbicide in anti-retroviral combination therapy against HIV.¹²

Poultry and Livestock Field Successes!

BVS P&S W has been used to successfully treat both *Staphylococcal spp.* associated periocular inflammatory disease in turkeys¹³ and show pigs (balm formulation), respectively, and epidermitis in swine.¹⁴ These conditions are extremely pruritic (itchy) and stressful for the

continued on page 14



MERCK

Animal Health

INNOVAX®-ND

TSP-V-048278 2000 dose ampules
TSP-V-116951 4000 dose ampules

Marek's Disease - Newcastle Disease Vaccine

(Serotype 3, Live Virus, Live Marek's Disease Vector)

INNOVAX®-ND is a frozen, live, cell-associated Newcastle disease (ND) and Marek's disease (MD) vaccine. It provides proven protection against virulent NDV and MD. It is approved for *in ovo* injection of 18-day embryonated eggs.



Advantages:

- Provides extended protection for virulent ND and MD
- Offers effective protection in the face of NDV maternal antibodies
- Replaces a conventional live ND vaccination program in the absence of exotic ND
- Removes the potential for respiratory reactions due to live ND vaccines
- Allows the use of monovalent infectious bronchitis (IB) vaccines, improving IB protection

NEWHATCH-C2®

TSP-V-053805 10,000 dose vials

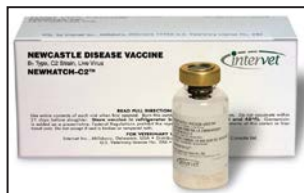
Newcastle Vaccine

(B₁, Type, C2 Strain, Live Virus)

NEWHATCH-C2® is the patented, virtually nonreactive C2 strain of B₁ Type Newcastle disease (ND) virus. It is a lyophilized vaccine approved for spray vaccination of chickens one day-of-age or older for protection against Newcastle disease.

Advantages:

- Effective against field challenge of Newcastle disease virus
- C2 strain of B₁, Type Newcastle minimizes reaction to one day-of-age vaccination in broiler chicks
- NEWHATCH-C2 eliminates problems with lingering hatchery reaction prior to field boost
- Safe to use for hatchery application



ORALVAX-HE®

TSP-V-065396 5 x 2000 dose vials
TSP-V-065398 5 x 5000 dose vials

Hemorrhagic Enteritis Vaccine (Live Virus)

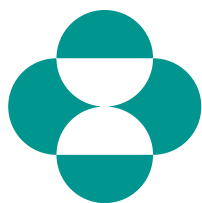
ORALVAX-HE® vaccine is a high titer vaccine that safely protects turkeys 6 weeks of age or older against the immuno-suppressive effects and death losses caused by hemorrhagic enteritis.

Advantages:

- Safe and efficacious: produced with a stable and avirulent strain of type II avian adenovirus of pheasant origin
- Produced under federal quality control standards, ensuring purity and sterility
- Consistent high potency titers to ensure protection of every vaccinated bird, flock after flock
- Recommended administration at 6 weeks of age or older helps assure no maternal antibody interference



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Animal Health



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Animal Health

PM-ONEVAX®-C

TSP-V-065417 1000 dose units

Pasteurella multocida Vaccine

(Avirulent Live Culture, Avian Isolate)

PM-ONEVAX®-C vaccine. The seed culture used to make this vaccine has been laboratory tested for protection of chickens against challenge with the X-73 (Type 1) strain of *P. multocida* and in turkeys against challenge with the P1059 (Type 3) strain of *P. multocida*.

Advantages:

- A temperature sensitive mutant of the CU strain that produces stronger takes than the M-9 strain, but less than the CU strain
- Offers protection against naturally occurring field strains of *P. multocida*
- Easy wing-web administration in broiler breeders, layers and turkey breeders



ART VAX®

TSP-V-065236 1000 dose units

Bordetella avium Vaccine

(Avirulent Live Culture)

ART VAX® vaccine is a live bacterial vaccine containing a chemically induced mutant of *Bordetella avium* which is immunogenic for turkeys when vaccinated by spray cabinet at day of age; then revaccinated in the drinking water at 2 weeks of age.

Advantages:

- Approved for spray administration at day of age followed by drinking water at 2 weeks of age
- Proven efficacy in preventing coryza in turkeys
- Time proven. This vaccine strain has been used effectively in the field for over twenty years
- Mild reaction
- Freeze dried product of proven quality and stability



M-NINEVAX®-C

TSP-V-065378 1000 dose units with diluent and wing-web stabbers

Pasteurella multocida Vaccine

(Avirulent Live Culture, Avian Isolate)

M-NINEVAX®-C vaccine is a live bacterial vaccine containing the mild avirulent M-9 strain of *Pasteurella multocida*, Heddlestone Type 3-4 cross, in a freeze-dried preparation sealed under vacuum.

This vaccine strain has been shown to offer protection against fowl cholera in chickens and turkeys. The seed culture used to make this vaccine has been laboratory tested for protection in chickens against *P. multocida* serotype 1 and in turkeys against challenge with *P. multocida* serotype 3.

Advantages:

- Strong protection against *P. multocida* serotype 1 (chickens) and serotype 3 (turkeys)
- Mild. Less reactive than competitive products
- Safe. Avirulent live culture will not revert to virulence, will not cause mortality
- Specially formulated diluent provides excellent reconstitution stability



*BVS is the
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and marketer
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turkey vaccines
in the U.S.*



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Poultry and Swine Wash, continued from page 11

animals. P&S W treatment is as much a welfare remedy as a performance enhancer.

Figure 1a shows a turkey breeder hen with mild to moderate *S. aureus* periocular inflammatory disease.¹³ A microscopic look at the eyelid from a more severe, ulcerated lesion is shown in **1b**. The serocellular crust (scab formation) contains gram positive bacteria consistent with *Staph. aureus* isolates. Other lesions also showed the presence of yeast. When left untreated, the bird will constantly wipe her eye on her back feathers and the eye can become swollen shut completely (severe lesion). If the condition is bilateral, loss of sight in both eyes results in decreased feed and water consumption, follicular regression, and egg production loss. This condition is considered to be a welfare issue for breeders and treatment is required under the NTF breeder welfare guidelines. **Figure 1c** shows a healed lesion post P&S W treatment. Although there is some scarring, the eyelid is healthy.

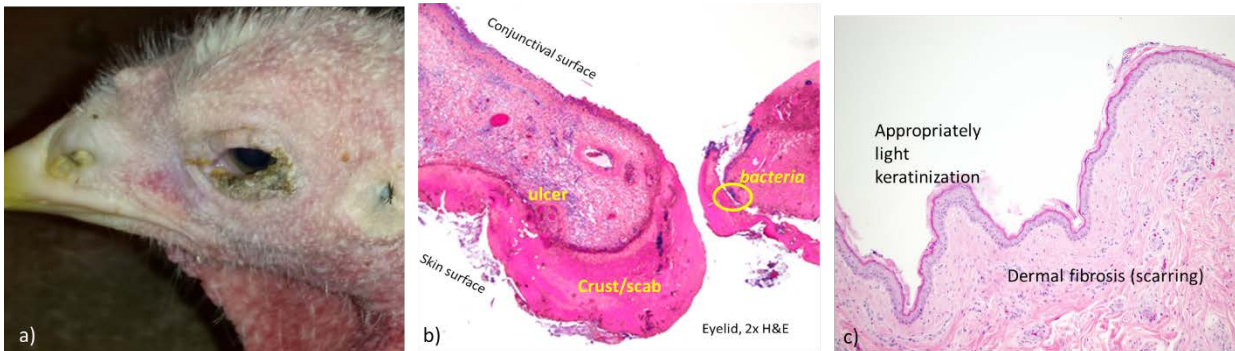


Figure 1. a) Turkey hen with mild *S. aureus* periocular inflammation b) microscopic view of the ulcerated lesion c) microscopic view of a healed lesion. (from ref. 13)



BVS P&S W is also being used very successfully in the show pig industry to treat periocular inflammatory disease and epidermitis. **Figure 2** shows the P&S W product being gently foamed onto a pig. A short video of this can be seen on the BVS website: <https://www.bestvetsolutions.com>. Eye and skin lesions are cleared in just a few days.¹⁴

Figure 2. Show pig being foamed with P&S W.



Skin cleansing has also become an important element in today's successful commercial pork production operations, especially when introducing new pigs into the herd and prior to farrowing. Hard surface cleaners commonly used today are not intended for animals and can cause dryness and irritation. P&S W offers a gentle, moisturizing alternative that is extremely effective in preventing swine-related diseases.

Addressing Application Challenges

BVS Poultry & Swine Wash is a new and effective topical treatment for poultry and livestock skin conditions. Many of these conditions are irritating to the animal, and the stress induced can cause welfare and production problems. We have not attended to these issues in the commercial industry in the past, primarily because of a lack of efficacious and safe products, as well as difficulties in applying treatments to large numbers of animals. The latter still remains a problem today, especially for birds in large open production systems. However, we at

BVS believe that these challenges can be overcome in most cases with careful and creative thought and planning. The BVS staff wants to help you help your birds. We are willing to work with individual customers on application methodology and equipment design for challenging situations. Together, let's transform the health and welfare of our animals!

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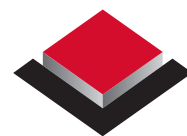


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CAL STAT® PLUS ANTISEPTIC HANDRUB WITH ENHANCED EMOLLIENTS

Cal Stat Plus Antiseptic Handrub with Enhanced Emollients is a 63% (v/v) isopropyl alcohol-based handrub designed to effectively decontaminate visibly clean hands of healthcare workers before and after patient contact, and after contact with inanimate objects. In a time kill study, Cal Stat Plus Antiseptic Handrub with Enhanced Emollients demonstrated complete kill in 15 seconds against a broad spectrum of transient microorganisms including methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant *Enterococcus faecium* (VRE). The product is formulated with a moisturizing system, adding moisture to the skin after every use. This dermatologist-tested, dye-free isopropyl alcohol-based handrub can be used in all areas of healthcare settings.

PHYSICAL PROPERTIES

Form Liquid
Color Colorless
Fragrance Baby powder
Typical specific gravity 0.891
Antiseptic
ingredient..... Isopropyl alcohol (63% v/v)

DIRECTIONS FOR USE

Wet hands thoroughly with Cal Stat Plus Antiseptic Handrub with Enhanced Emollients and rub until dry.

Storage: Do not store at temperatures below 32°F (0°C).

Flammable, keep away from fire or flame.

ALCARE® FOAMED ANTISEPTIC HANDRUB

Fast-acting, broad-spectrum antimicrobial action, including MRSA and VRE

Alcare Foamed Antiseptic Handrub is an alcohol-based handrub with fast-acting, broad-spectrum antimicrobial action against pathogenic microorganisms. Alcare Foamed Antiseptic Handrub also has proven activity against multiply resistant microorganisms such as methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant *Enterococci* (VRE). The Alcare Foamed Antiseptic Handrub formulation of 62% ethyl alcohol and emollients provides hand antisepsis and moisturizing at the same time. Alcare Foamed Antiseptic Handrub spreads easily to facilitate even distribution over all skin surfaces for effective disinfection. Alcare Foamed Antiseptic Handrub is convenient to use when there are no handwashing facilities available and hands are physically clean, but in need of degerming and can be used as an adjunct to handwashing when extra protection is desirable.

Storage: Protect product from freezing. Store and use at 55-85°F (12-29°C); do not store above 120°F (49°C).

PHYSICAL PROPERTIES

Form Foam
Color White
Fragrance Mild alcohol
Antimicrobial..... 62% (v/v) ethyl alcohol

DIRECTIONS FOR USE

Surgical Scrub

Clean under nails with a pick. Nails should be maintained with a 1 mm free edge. Dispense 5 g (about the size of a tennis ball) onto one hand. Spread on both hands paying particular attention to the nails, cuticles and interdigital spaces and forearms. Rub into skin until dry. Dispense 2.5 g (approximate size of a golf ball) onto one hand and spread over both hands and the wrists and rub into the skin until dry.

Healthcare Personnel Handwash

Apply product to hands and rub until thoroughly dry.

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- **Organic MANAGE®** when mixed at recommended levels will reduce drinking water pH of 4.0 - 5.5 (depending on pH of your water).
- **Organic MANAGE®** will hold pH down longer than other commercially available acidifiers.
- **Organic MANAGE®** contains higher levels of copper than other liquid copper products on the market.
- **Organic MANAGE®** works very well to maintain waterlines. Prevents scale build up.
- **Organic MANAGE®** fits well into an organic or antibiotic free program.
- **Organic MANAGE®** is the only patented product of its kind!

STANDARD DOSAGE: Administer 1 part Manage in 1024 parts drinking water.

1. For injectors/proportioners set to administer 1 oz. stock solution per gallon drinking water, prepare stock solution by mixing 1 gallon Manage with 7 gallons water.
2. For tank use, mix 1 gallon Manage with 1,000 gallons water.

OPTIMUM DOSAGE: Administer 1 part Manage in 512 parts drinking water.

1. For injectors/proportioners set to administer 1 oz. stock solution per gallon drinking water, prepare stock solution by mixing 1 gallon Manage with 3 gallons water.
2. For tank use, mix 1 gallon Manage with 500 gallons water.

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- ✓ will hold pH down longer than other commercially available acidifiers.
- ✓ contains higher levels of copper than other liquid copper products on the market.
- ✓ can be used in place of Chlorine or Iodine.
- ✓ is a dark purple solution that stays in solution without any settling out like that of competitive products.
- ✓ fits well into an antibiotic free program.
- ✓ works very well to maintain waterlines. Prevents scale and slime build up.
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- ✓ Is the only Patented product of its kind!

The Acid Sol® Zone

Dietary Agent for Poultry and Swine

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- ✓ has a pH of 1.3.
- ✓ when mixed at recommended levels will reduce drinking water to pH 3.5-5.5.
- ✓ will hold pH down longer than other commercially available acidifiers.
- ✓ can be used in place of Chlorine or Iodine.
- ✓ is a red solution that stays in solution without any settling out like that of competitive products.
- ✓ fits well into an antibiotic free program.
- ✓ works very well to maintain waterlines. Prevents biofilm build up.
- ✓ is a combination of buffered acids.
- ✓ contains No copper.

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BVS Poultry & Swine Wash Concentrate

BVS Poultry & Swine Wash contains a three-part moisturizing system that includes a skin emollient, a humectant, and a skin plasticizer. This moisturizing system is the best available on the market today.

All of the components in **BVS Poultry & Swine Wash** are approved for use in the manufacture of food as direct and indirect food additives.

BVS Poultry & Swine Wash utilizes no harsh cleaning chemicals. Cleaning and rinsing pigs with **BVS Poultry & Swine Wash** prior to their introduction into the herd and prior to farrowing has proven effective in increasing cleanliness.



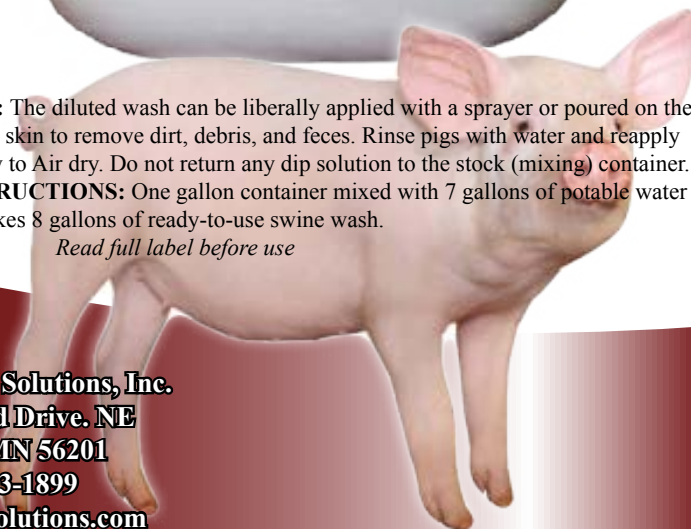
DIRECTIONS FOR POULTRY USE: The ready to use wash can be liberally applied with a sprayer. Do not rinse off: allow to air dry. Do not return any wash solution to the stock (mixing) container.

DILUTION AND MIXING INSTRUCTIONS: One gallon container mixed with 2 gallons of potable water makes 3 gallons of ready-to-use poultry wash
Read full label before use

DIRECTIONS FOR SWINE USE: The diluted wash can be liberally applied with a sprayer or poured on the pig's skin surface. Gently scrub the skin to remove dirt, debris, and feces. Rinse pigs with water and reapply diluted wash. Do not rinse off: allow to Air dry. Do not return any dip solution to the stock (mixing) container.

DILUTION AND MIXING INSTRUCTIONS: One gallon container mixed with 7 gallons of potable water makes 8 gallons of ready-to-use swine wash.

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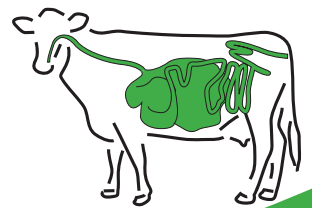
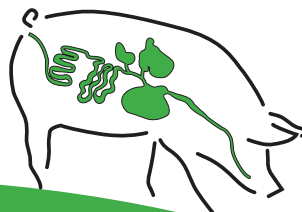
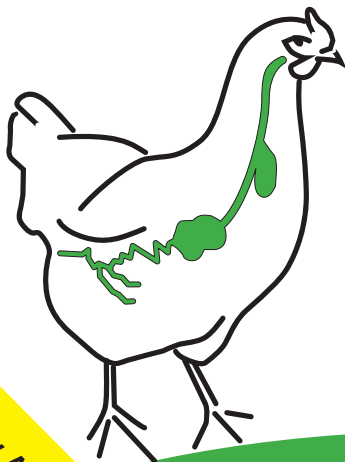
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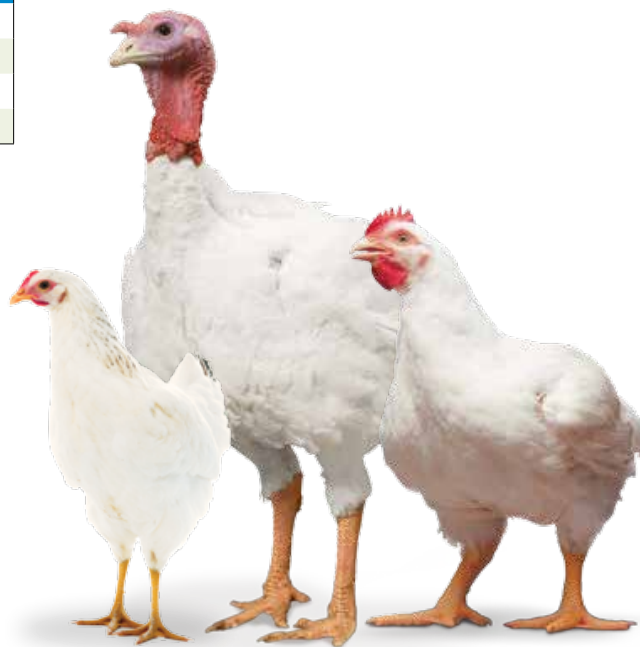
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¹Grogan K. "Beetles and houseflies play role in disease transmission." Poultry Times. August 25, 2008.
²Elanco Animal Health. Data on file.

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1 Perozo, F. et al (2008). Avian Pathology, 37:3, 237-245.
2 Merial internal data.
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Jones-Hamilton Co.
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PRESS RELEASE

February 8, 2017

FOR IMMEDIATE RELEASE

Jones Hamilton Appoints New Technical Services Manager

WALBRIDGE, OH—The Jones-Hamilton Company recently appointed Josh Payne, Ph.D., as the new Technical Services Manager of the Agricultural Division. Payne will be responsible for supporting territory managers with on-site technical guidance as well as providing oversight of field and laboratory trials. He brings nearly 20 years of poultry litter management experience with a focus on nutrient management, pathogen control and water quality.

Dr. Payne's prior role as State Poultry Specialist at Oklahoma State University gave him the experience necessary to assist producers in identifying environmental factors that may affect agricultural productivity. He developed educational outreach programs for commercial and small flock poultry production, provided training and support for County Educators, and also served as coordinator for the state's Poultry Waste Management Education Program.



Payne is a recognized national expert on avian influenza response, having directed mass mortality composting efforts on 24 avian influenza affected farms and given multiple presentations to industry, state agency and federal agency representatives regarding his experiences.

"As a State Extension Specialist working directly with poultry producers throughout Oklahoma and Arkansas, I came to understand the real challenges they face," said Payne. "Now with Jones-Hamilton, I'm able to support producers and integrators on a national level with products and solutions I believe in."

Payne received a B.S. in Agriculture from Arkansas State University, a M.S. in Poultry Science from the University of Arkansas, and a Ph.D. in Poultry and Animal Science from North Carolina State University. He grew up on a livestock production farm in Mountain Home, Arkansas.

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About Jones-Hamilton

For more than 20 years, the Jones-Hamilton Co. Agricultural Division has brought research-backed solutions and expert support to poultry producers around the world. The Jones-Hamilton Co. flagship product, PLT® litter acidifier, has become the industry-leading solution for successfully growing birds on built up litter. It eliminates ammonia and lowers litter pH for a more favorable litter ecology—allowing birds to optimize their genetic potential. As experts in all things pH, Jones-Hamilton also manufactures and distributes poultry water and poultry feed acidulants, LS-PWT2 and AFG.

www.JonesHamiltonAg.com

Media Contact: Blake Gibson, bgibson@jones-hamilton.com; 843-319-7791



COMPLETE LITTER MANAGEMENT IN ONE SOLUTION



Strong enough to manage the toughest litter challenges.
Safe enough to apply when birds are in the house.

JH Ag 
WE KNOW pH MATTERS
www.JonesHamiltonAg.com

CANNON - YOUR NEW ROTATION PARTNER



8 gram placements

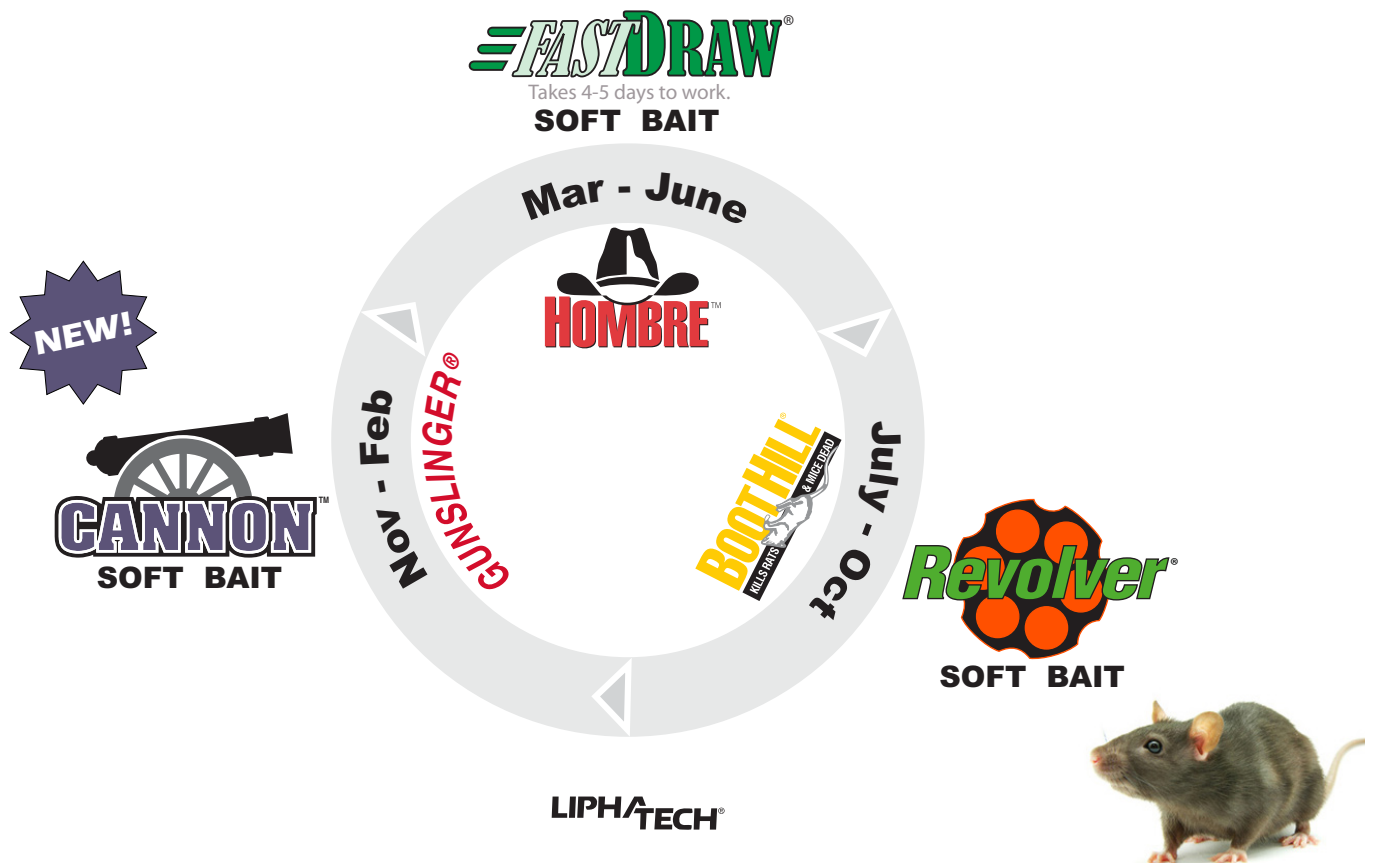


4 lb. Bag

THE WORLD'S FIRST BROMETHALIN SOFT BAIT

Biosecurity Rodenticide Rotations for all rodent control needs:

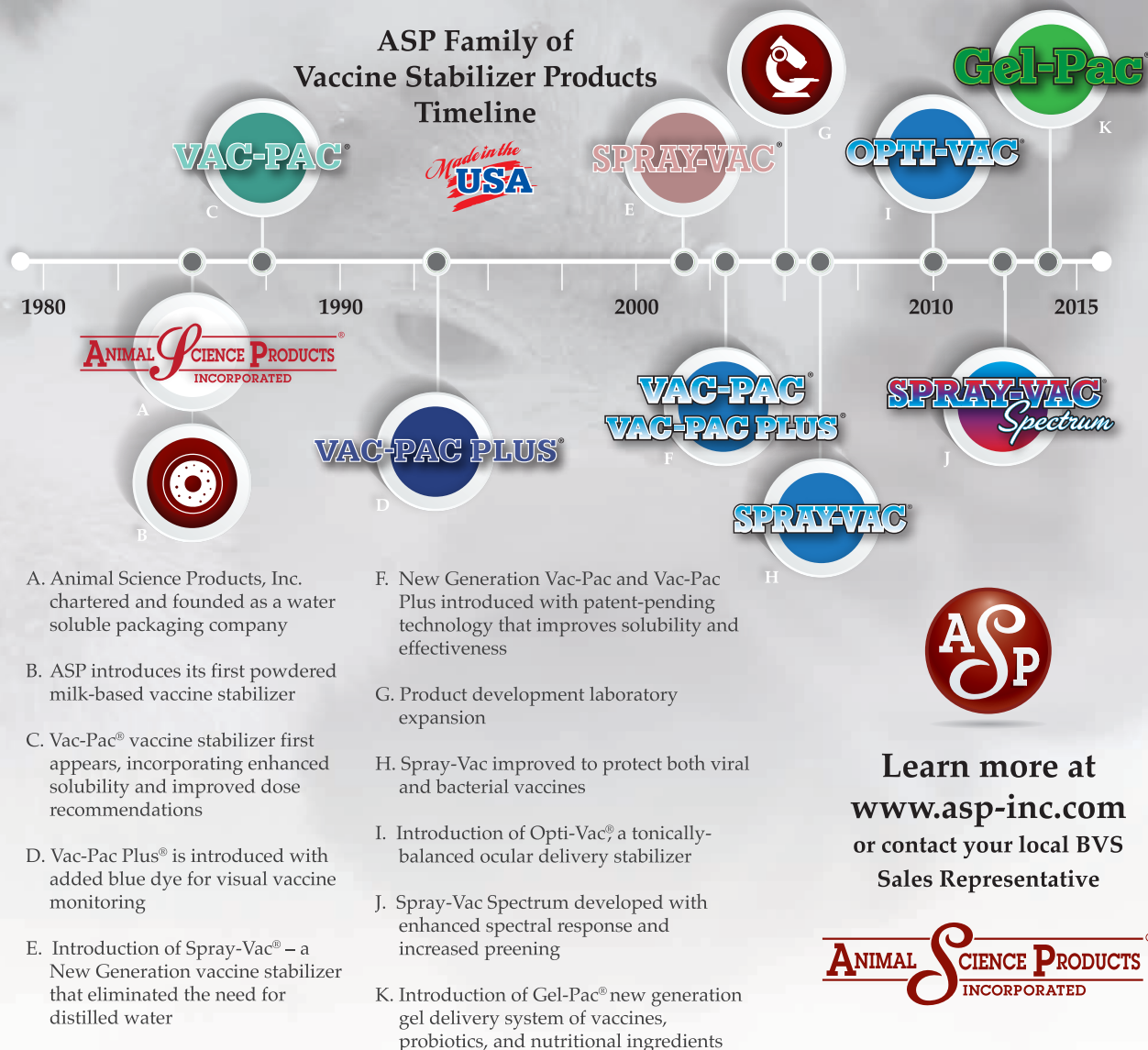
- A complete Soft Bait Rotation – FastDraw, Revolver, Cannon
- A complete Block Rotation – Hombre, BootHill, Gunslinger
- A combination Rotation of Soft Baits and Blocks – your choice



Vaccine Stabilization and Protection: A History of Innovation

Since its humble beginnings in 1985, Animal Science Products has expanded the boundaries of product development. For nearly twenty years, ASP has established a reputation as an innovator and industry visionary, eventually leading to the 2002 break-through we know today as New Generation vaccine stabilization. Once Spray-Vac, ASP's first New Generation vaccine protection product, was introduced to the market, the race was on to develop even more efficient, reliable, and cost-effective delivery methods for proper vaccination.

In just over 10 years, ASP has introduced five additional vaccine protection products, ranging in delivery methods from drinking water, to eye-drop application, to novel sprays that stimulate preening and feeding behaviors. Together, these products are changing the way poultry producers around the world protect their flocks against disease. Consumer demand for healthy poultry is on the rise globally. This demand calls for better ways to inoculate the entire flock, and is a driving factor behind ASP's commitment to innovation in vaccine protection.



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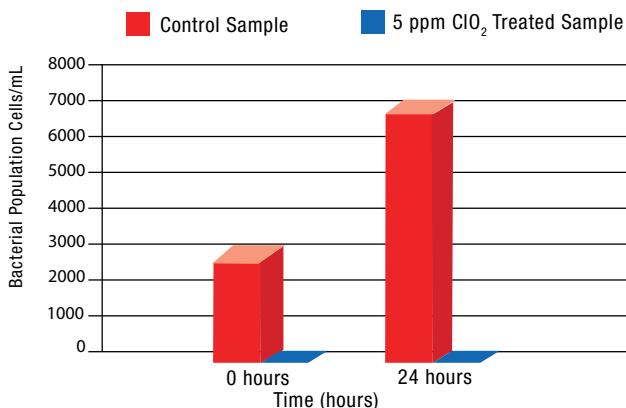
ProOxine® (AH) Disinfecting Solution For Animal Drinking Water

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.

Efficacy of ProOxine® against Biofilm

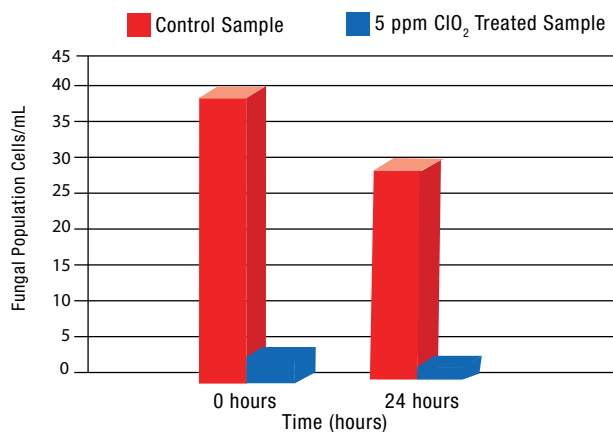
CONTROL EFFECT OF 5 ppm ClO₂ AGAINST BIOFILM BACTERIA

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



CONTROL EFFECT OF 5 ppm ClO₂ AGAINST BIOFILM FUNGI

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

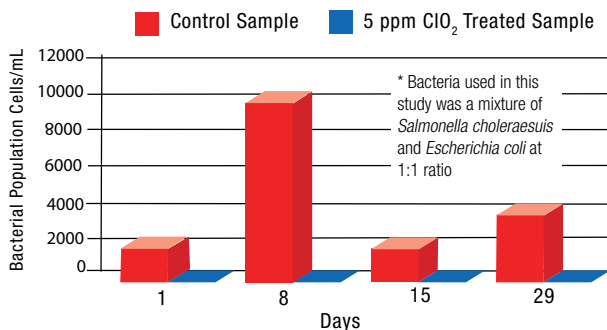


AANE (Automated Activation Non-Electric) System

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



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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

Ready-To-Use;
NO MIXING

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

DIRECTIONS

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

Gil I-Poult & Gil Medic-Dyne

Multi-Purpose Iodine Supplement

**Gil I-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.*



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Huvepharma® Water Solubles



Huvepharma is excited about the addition
of our new water soluble products:

Chloronex®
(Chlortetracycline HCl)

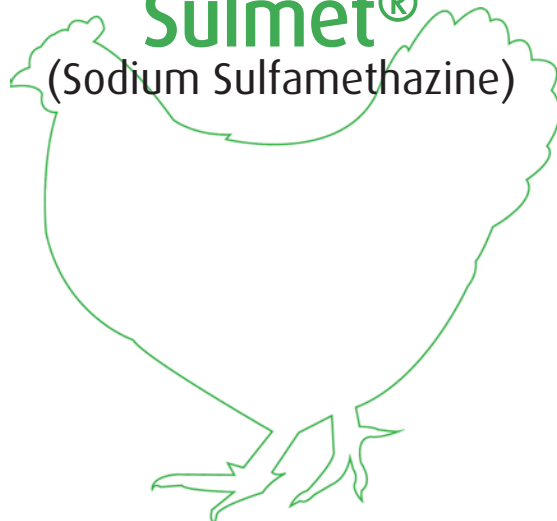
Oxytet Soluble®
(Oxytetracycline HCl)

Lincomycin
(Lincomycin HCl)

R-Pen®
(Penicillin G Potassium)

Neo-Sol®
(Neomycin Sulfate)

Sulmet®
(Sodium Sulfamethazine)



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Pure *Yucca schidigera* powder



BIOSUPREME®

ORGANIC FEED INGREDIENT

ENHANCES FEED EFFICIENCY

BIOSUPREME® contains saponins (active ingredient), which have surfactant properties, playing an important role in animal nutrition. The glycocomponents within saponins 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.

REDUCES THE NEGATIVE EFFECT OF AMMONIA

BIOSUPREME® is produced under strict certified Food Safety Management System guidelines as well as certified organic manufacturing process. We use only mature and over mature *Yucca schidigera* plant stems obtained under an environmentally conscience sustainable harvesting program, monitored by our own in-house forestry engineers.



BIOSUPREME® L

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



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Ensenada, Baja California, México
www.yucca.com.mx



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325 Lakeland DR., N.E. Willmar, MN 56201
Toll Free: 1-888-378-4045
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WITH ANTIOXIDANTS FOR TURKEYS & BROILERS

For Use in Closed Drinking Water Systems for Poultry

JUST
RECEIVED!
Patents
#8,298,593
#8,460,719

GUARANTEED ANALYSIS

CuSO₄.....18%

INGREDIENTS: Copper, Organic Acids, BioSupremel, Buffers,
Dye #40, Extract from Essential Oils.

Omegamune-Plus Precautions

- Acidic solution
- Corrosive to galvanized and mild steel equipment, piping and/or fittings.
- Wear goggles or full face shield when handling
- For animal use only; not for human consumption
- Keep out of the reach of children

WARNING: Follow label directions

MIXING DIRECTIONS

Standard Dosage - 1:1024 gallons drinking water. Administer 1 part Omegamune-Plus in 1024 parts drinking water. For injectors/proportioners administer 1 oz. stock solution per gallon drinking water. Prepare stock solution by mixing 1 gallon Omegamune-Plus with 7 gallons water.

Optimum Dosage - 1:512 gallons drinking water. Administer 1 part Omegamune-Plus in 512 parts drinking water. For injectors/proportioners administer 1 oz. stock solution per gallon drinking water. Prepare stock solution by mixing 1 gallon Omegamune-Plus with 3 gallons water.

Available in the following packaging:

4 x 1 gallon cases.....(Product # 100801)
5 gallon pails.....(Product # 100810)
55 gallon drums.....(Product # 100820)

Manufactured by: **Best Veterinary Solutions, Inc. • Willmar, MN 56201**
1-800-533-1899 • FAX 320-235-8629

“Marketed Exclusively by Best Veterinary Solutions”

Contact the BVS sales representative or distributor in your area for more details.