

Natural remedies for poultry diseases common in ‘natural’ and ‘organic’ flocks

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Health management in organic and/or natural poultry production is primarily based on disease prevention through implementation of a biosecurity plan. While implementation of a cost-effective biosecurity plan is very important, it is also critical to have a plan in place to react to any health crisis that may occur. For those that are organically certified, ***this reaction plan should be written down and pre-approved by your certifier.***

There are three parts to an overall **health management plan**

1. A biosecurity plan, which is key to reducing the risk of health problems on your farm.
2. It is important to monitor the health of the flock since early detection of a problem is key to reducing the economic impact of any health problem experienced.
 - a. Everyone working with your flock should know what clinical signs to look for.
 - b. A specific time should be set aside daily to just stand still and observe your flock. Once the flock has settled down, birds that are only mildly ill may be identified. When things quiet down in the barn, abnormal respiratory sounds, called a ‘snick,’ can be heard. The sounds may have a variety of characteristics such as a high-pitched ‘squeak,’ a sudden ‘chuck’ sound like a cough, or a gurgling or rattling sound.
 - c. It is important to keep good records of daily activities and observations, feed and water consumption, production (egg production or growth rate), and mortality. The first signs of a health problem can be detected by drops in feed consumption and/or egg production or a slight, but continuous increase in the number of dead birds found each day.

3. You should have in place a reaction plan in the case of a health problem. You need to know what to do prior to the problem occurring so that the time lag between detection and reaction to the problem is kept to a minimum.
 - a. This includes first diagnosing problem—you can not decide what to do if you do not know what the problem is. It is good to have a list of things to check—including the proper functioning of the feed, water, heating, and ventilation systems.
 - b. The second step is correcting the problem whether that is a management change or treating a disease.

BEHAVIORAL DISTURBANCES

Poultry kept in cage-free housing system, whether on littered floor only or with outdoor grazing, can be affected by a number of behavioral disturbances. The most common problems in organic laying hens are similar to those in conventionally managed poultry – feather pecking and cannibalism. It is known from research with conventional egg production that these problems can be triggered by a number of different factors including breed, feed composition, rearing environment, external parasites, and other management factors. Most likely the same factors are involved in the outbreaks of feather pecking or cannibalism in organic poultry flocks.

Genetics plays a role in behavior problems. A producer’s choice of breed or hybrid can have an affect on the level of feather pecking and/or cannibalism in organic flocks. However, due to intense ongoing breeding efforts the available commercial hybrids are continuously changing, both in terms of production capacity and tem-

perament. It is difficult, therefore, to give any specific advice regarding the choice of breed or hybrid. It is important, however, to consider the temperament of the breed when choosing your poultry flock.

There has not been a lot of research done on the use of wound treatments for poultry. Most commercial poultry producers think in terms of flock health and not any specific individual bird. For large operations it is often more cost effective to cull injured birds. In smaller flocks, however, care and recovery of such birds may play a role. In Australia a 'wound spray' is commercially available. As the name implies, the spray is said to assist with healing of a wound on an injured chicken. While the product is not currently available in the U.S. it may be helpful to examine the contents of the Australian product. It contains Aloe Vera juice, 3% hydrogen peroxide, sea salts, copper sulfate, and tea tree oil.

Sometimes it is necessary to 'think outside the box' when trying to find solutions to bird-to-bird aggression in a poultry flock. An Australian company sells a liquid said to 'keep the peace between chickens.' The elixir is made with Bach Flower Essences which are sold to modify the mood of humans – aromatic therapy of sorts.

EXTERNAL PARASITES

Continuous external parasites are those that spend all of their adult life on the host. Common continuous external parasites of poultry are sticktight fleas, chicken body lice, scaly leg mites, and northern fowl mites. Temporary external parasites are those which feed on the host but don't live on the host. Common temporary external parasites of poultry include fowl ticks (also known as blue bugs), bed bugs, and chicken mites (also known as red mites or roost mites).

While there are a number of products approved for use in Europe, there are only a few approved for use in the United States. MGK Co. sells a pyrethrum-containing product (PyGanic) that can be used in poultry houses

to control insects. The pyrethrum is a botanical insecticide derived from chrysanthemums.

Old time remedies are making a re-appearance. Some have been tested in a research setting while others have been tested on-farm by individual producers with only antidotal information available.

An example of treatment identified in a laboratory study is the topical application of garlic to reduce northern fowl mite infestation. In a research setting, laying hens were individually sprayed around the vent with either water or 10% garlic juice in water. They were sprayed continuously each week for three weeks. Topical application of garlic juice was shown to be an effective way to decrease northern fowl mite infestation in laying hens.

An example of antidotal information is the treatment of scaly leg mites. To combat an infestation, one producer obtained good results by bathing and softening the bird's feet for a few minutes in a medium strong solution of potassium permanganate. The skin was then washed thoroughly, dried, and Vaseline rubbed on. The treatment was repeated every three days.

Diatomaceous earth (DE) is believed to be a natural insect control powder. DE is obtained from deposits of diatomite which are the fossilized sedimentary layers of tiny phytoplankton called diatoms. DE is a form of amorphous silica that can kill insects by desiccation (drying them out) by absorbing the oily or waxy cuticle layer during direct contact. When the thin, waterproof layer is lost, the insect loses water and dies. In addition to its desiccant action, DE works abrasively to rupture insect cuticles. Diatomaceous earth is OMRI Listed as approved for organic poultry production.

INTERNAL PARASITES

The most common internal parasite of poultry is **coccidia**, a protozoa found almost everywhere poultry are kept. Today, a reasonably safe and effective vaccine is available for use in organic poultry production but it must be

given early (typically to day-old chicks).

Garlic is used with many animals to prevent intestinal worm and parasite infestations. Regular addition of garlic into the drinking water is said to control intestinal worms. Garlic is said to be especially effective when used in conjunction with worm-repelling plants, such as wormwood and mint, strategically placed around the coop.

Chopped or ground pumpkin seeds are said to be good for the control of tapeworms in laying hens.

Pasture management for parasite control

There are very few de-worming products available for use with organic or natural poultry. Pasture rotation to break the life cycle of worms is the best management practice to prevent infestation. The choice of pasture crops has also been shown to have some affect.

A company in Australia is recommending the use of a number of plants to help with the control of external and/or internal parasites. For example:

Wormwood is a medium-sized bush that is said to have remarkable pest fighting properties. The chickens will pick at the leaves

and will brush against it, helping to get rid of any internal and external parasites.

Peppermint is a creeper plant that also offers a terrific scent around the poultry yard. When planted around the coop area, the chickens will eat and walk on the leaves assisting with internal and external parasite eradication.

Citronella, also known as lemon grass, forms large clumps of aromatic long leaves that are said to keep flies, fleas and mites away from the coop area. The chickens eat the tips and brush against the bushes when planted close by.

Additional plants recommended for poultry pastures:

Dandelion is believed to be a stimulant to the immune system. In alternative medicine, dandelions are used to treat kidney and liver disorders of humans. Externally dandelion is used to treat skin disorders.

Yarrow is a medicinal herb used as an anti-septic and digestive aid. In alternative medicine, yarrow is used against colds and skin irritations.

Sage has been held in high regard throughout history for its culinary and medicinal properties. It is believed to have 'health-promoting properties.'

Nasturtium is a ground cover creeper which has beautiful flowers. When planted near

Off-label use is the practice of prescribing pharmaceuticals for a purpose outside the scope of a drug's approved label, most often concerning the drug's indication. In the United States, the Food and Drug Administration (FDA) requires numerous clinical trials to prove a drug's safety and efficacy in treating a given disease or condition. If satisfied that the drug is safe and effective, the drug's manufacturer and the FDA agree on specific language describing dosage, route and other information to be included on the drug's label.

Drug use is considered off-label when a product is used at a:

- different dosage than what is approved on the label
- greater or lesser frequency of administration than what is approved on the label
- longer or shorter duration of treatment than what is indicated on the label
- different route of administration
- different species than what is indicated on the label
- different age group
- different stage of the animal's production cycle
- different dosage form
- different formulation

the coop area the chickens will eat the juicy leaves and succulent bright orange or yellow flowers helping to rid them of any internal parasites.

DISEASE CONTROL AND TREATMENT

There is a variety of potentially useful ingredients that can be added to the feed or drinking water of a poultry flock to improve production or to reduce the spread of disease. Some of these potential ingredients have been tested in live poultry flocks while others have only been tested in a laboratory without the use of live birds. Many of the potential ingredients need to be more thoroughly tested in live birds and in real production flocks before they will be completely embraced by poultry producers. There are, however, a few products that are OMRI listed that can be used to prevent or treat some disease situations of organic poultry flocks.

A **probiotic** is a culture of a single bacteria strain, or mixture of different strains, that can be fed to an animal to improve some aspect of its health. Probiotics are also referred to as direct fed microbials (DFM). Probiotics are permitted under the rules specified by the National Organic Program (NOP) but may not be fed in amounts above those needed for adequate nutrition and health maintenance for the species and its specific stage in life. Under NOP rules, probiotics may not be used to stimulate growth or production. Examples of OMRI listed probiotics include PrimaLac[®] from Star Labs Inc, Avicorr from AgTech Products Inc and The Poultry Answer[®] from Environmental Care and Share Inc.

SCD EM Food Grade[™] from SCD[®] (Sustainable Community Development) is a specially formulated food-grade probiotic 'mother culture' suitable for human and animal consumption. It contains a source of live, naturally occurring microorganisms. The product introduces beneficial and effective microorganisms which work to repopulate the body or living system with healthy bacteria. It can be added to animal feed or can be used as a safe cleaner for livestock production areas. SCD

EM Food Grade is OMRI listed under Probiotics for health. It can not be offered on a routine basis and must not be administered in the absence of illness.

Probiotics are a potential tool for reducing intestinal contamination with disease-causing and foodborne bacteria. They may also be useful in prevention or treatment of coccidiosis.

Prebiotics are nondigestible carbohydrates (compounds containing carbon, hydrogen and oxygen—CHO). Many of these carbohydrates are short chains of monosaccharides, called oligosaccharides. Some oligosaccharides are thought to enhance the growth of beneficial organisms in the gut, and others are thought to function as competitive attachment sites for pathogenic bacteria.

Two of the most commonly studied prebiotic oligosaccharides are fructooligosaccharides (FOS) and mannanoligosaccharides (MOS). FOS can be found naturally in some cereal crops and onions. MOS is obtained from the cell wall of yeast. Examples of OMRI listed MOS products include Agristim[®] from Bioagra and Agrimos from Lallemand Animal Nutrition. Safmannan from Lesaffre Feed Additives is a concentration of yeast hulls obtained via the breakdown of a yeast by its own enzymes. Safmann is a source of MOS and is OMRI listed under yeast.

Organic acids have been used successfully in pig production for more than 25 years and continue to be the alternative of choice. While much less work has been done with poultry, research indicates that they have a potential role as an alternative to antibiotics. The antimicrobial activity of organic acids is related to reduction in pH and its ability to dissociate. The undissociated form of the organic acid penetrates the cell membrane of bacteria and disrupt normal cell metabolism. Formic, acetic and propionic acids, which are organic acids, have the potential to reduce *Salmonella* and *Campylobacter* colonization in the gut of poultry.

Acetic acid is the main component of vinegar.

Apple cider vinegar is rich in the vitamins, minerals and trace elements found in apples, especially potassium. In chickens it has been shown to lower the pH in the digestive tract which will make an environment less welcoming to pathogens reducing common infections and increasing resistance to disease. Typical inclusion levels are 1/8 – 1/4 of a teaspoon of apple cider vinegar to every 110 ml of water (or 4.5 - 8.5 teaspoons per gallon). This level of inclusion will also discourage algae growth. It should be given for 2-3 days at a time.

Various plant extracts have been studied for their antimicrobial abilities.

Essential oils are extracted from plants and possess the smell and characteristic properties of the plant. They are used chiefly in the manufacture of perfumes, flavors, and prescription drugs.

Herbs are flowering plants whose stem above the ground does not become woody and persistent. They are valued for the medicinal properties, flavor, scent, etc.

Botanicals are drugs made from a portion of the plant such as the roots, leaves, barks, etc.

Research with **plant essential oils** has yielded contradicting results, but there is enough evidence to suggest that they may have a role as a tool in combating bacterial diseases in poultry. Thyme, oregano, and garlic appear to have the most potential.

Royal Optimum Solution™, which is OMRI listed, contains a patented blend of ingredients derived from essential oils. It basically acts as a 'natural' antibiotic with a broad range of activity.

Slippery elm bark powder is a **botanical** used in alternative medicine in humans to assist with tummy upsets, including prevention of morning sickness often experienced by pregnant women. It is said to be useful if your chickens have diarrhea or are off their food.

BFI Innovations has a series of products made up of botanicals. They sell their products as tailored for use in game bird feeds, pasture

and/or free range chicken, backyard, and commercial poultry. The products contain a combination of different natural ingredients. The combination depends on the particular product. Some of the natural ingredients the products contains include:

- Aniseed: Digestive enhancer and antimicrobial
- Cassia: Antiseptic, anti-fungal and antiviral; antibacterial, especially against *E. coli*.
- Cayenne pepper: Appetite stimulant; antiseptic; digestive enhancement
- Garlic: Antimicrobial, antifungal; cholesterol reduction; circulation benefits
- Ginger: Reduces stress; positive effect on stomach activity; appetite stimulant; antioxidant
- Horse radish: Digestive stimulant; antiseptic; flavoring properties
- Juniper: Gastro-intestinal antiseptic; aids kidney function; attractive flavor for birds.

ADDITIONAL PRODUCTS AVAILABLE FOR HEALTH MANAGEMENT OF ORGANIC/NATURAL POULTRY PRODUCTION

There are a number of products containing diatomaceous earth (DE) that have been approved for use in organic poultry production. Rather than being used to control external parasites, DE can also be used to improve conditions in a poultry house typically by neutralize ammonia. Reducing ammonia level reduces the level of stress to the birds, increases weight gains and productivity. An example of an OMRI listed DE product is Barn Fresh® from Absorbent Products Ltd. which is contains diatomaceous earth and a particular clay.

In addition to its uses in external parasite and ammonia control, DE is also used as a feed additive. An example of an OMRI listed product is Fossil Shell Flour from Perma-Guard Inc which is made from pure freshwater diatomaceous earth. DE has been reported to absorb methyl mercury, *E. coli*, endotoxins, viruses, some pesticide residues and drug residues. The pyrethroid insecticide residues may also bind to DE. The DE product passes unchanged through the digestive tract.

Red Lake Earth[®] DE with calcium bentonite from Absorbent Products Ltd. Is also OMRI listed. Red Lake Earth can be added to animal feeds as an anti-caking agent or as an inert carrier in a premix. It is said to improve the flow ability and mix ability of all types of feed.

Ammonia control is important when poultry flocks are kept indoors, especially in the winter when there is limited opportunity for use of the pasture. Additional products are available to help control ammonia levels, improving the health and productivity of poultry. Extracts for the *Yucca schidigere* plant are often used for this purpose. An OMRI listed Yucca product is Biosupreme. The product comes as a liquid and a powder so can be added to either the water or feed.

Thermocal Neutralizer from Thermocal[®] Mines of Idaho also reduces odor but it is added to the litter rather than fed to the birds. In addition to reducing odor it absorbs moisture and enriches manure. When the enriched manure is applied to crop fields, it helps reduce soil acidity. Unlike limestone barnlime, Thermocal Neutralizer is not irritating or harmful to people or livestock. Thermocal Neutralizer contains high levels of calcium carbonate. It is considered a management tool rather than a feed additive.

Additional examples of an OMRI listed dietary sources of calcium carbonate are PENERGETI-T from Planistics Management Ltd. and Royal Optimum Powder[™] from Van Beek Natural Science LLC. Both products have been shown to improve appetite, when included in the diet at the recommended level.

Amaferm[®] from BioZyme Inc. is a dried extract of a non-pathogenic strain of the fungus *Aspergillus oryzae*. This OMRI listed product can be added to the feed and is said to enhance growth and development of microorganisms in the digestive tract responsible for the breakdown of fibrous feed ingredients.

Culbac[®] Fermentation Product for Animals is an OMRI listed product from TransAgra International Inc. It is obtained by growing the bacteria *Lactobacillus acidophilus* in a special nutrient medium. The finished product contains dried Lactobacillus fermentation product, lactic acid and roughage.

Levucell[®] SB from Lalleland Animal Nutrition is an active dry yeast that was selected for its ability to maintain the balance of intestinal microflora. It is said to neutralize toxins, bind to pathogenic bacteria, and reinforce intestinal wall integrity which allows animals to resist health challenges. Levucell is OMRI[®] listed under yeast.

XPC Green[™] Yeast and XP Green[™] Cultures from Diamond V Mills Inc. are produced by fermenting selected liquid and cereal grain raw ingredients with bakers yeast and drying the entire culture-media without destroying the yeast factors, B-vitamins and other fermentation products. The growth media of XPC Green consists of processed grain by-products, roughage products and cane molasses while the growth media of XP Green consists of corn gluten feed, hominy feed, wheat middlings, rye middlings and cane molasses. Both products are OMRI listed under yeast.

***Brand names appearing in this publication are examples only.
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