Iowa Poultry Exhibition Health Book

This book brought to you by The North Central Poultry Association and USDA Avian Cooperative Agreement Funding

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Table of Contents

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NCPA Poultry Health Book

The North Central Poultry Association, in conjunction with USDA cooperative agreement funding have put together this book of resources for hobbyists and backyard poultry owners. We believe it is imperative that we are inclusive of all facets of our industry when addressing biosecurity, disease, and health concerns. Poultry shows and exhibitions, sales, and hobby ownership are an important part of community and consumer education and prepare young people for a potential future career in the industry. With this health book, we aim to provide valuable resources on exhibition and show testing requirements, information on common poultry diseases and the NPIP program. I hope you find these resources valuable as you continue to support Iowa's thriving poultry industry.

Elycia VanVacter
NCPA Director of Health and Education
Iowa NPIP Coordinator
elycia@ncentralpoultry.com

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PT Testing FAQ

Which birds need PT tested to show at fairs and exhibitions?

All poultry, waterfowl, and game birds need a negative PT test in order to participate in shows and exhibitions. Broilers may be exempt if the show location has them separated by a distance of 10 feet and/or an 8 foot tall barrier from all other poultry, and are consigned directly to harvest. Pigeons are exempt from testing.

When do I need to get my birds tested?

Birds must be a minimum of 30 days old and tested within 90 days of the fair, show, or exhibition by a certified PT tester or accredited veterinarian. An NPIP PT Clean certified flock may use their flock certification and will not need an additional test before fairs.

Where do I find a certified tester to test my birds?

A list of public certified testers can be found on www.ncentralpoultry.com. Certified testers should provide all flock owners with a copy of the negative test result when the test is completed. Flock owners should keep a copy and have a copy ready to present to the fair, sale, or exhibition. Accredited veterinarians can also test birds and provide the flock owner with a health certificate.

Which forms should I receive from my tester?

A certified PT tester can use a Certificate of Pullorum-Free Status for birds in fairs, shows, and exhibitions. They may also use an NPIP 9-2 form. Either form is acceptable for proof of negative PT status. A veterinarian may provide you with a health certificate with negative test results, this is also acceptable for fairs, shows, and exhibitions.

What if I am an NPIP participant?

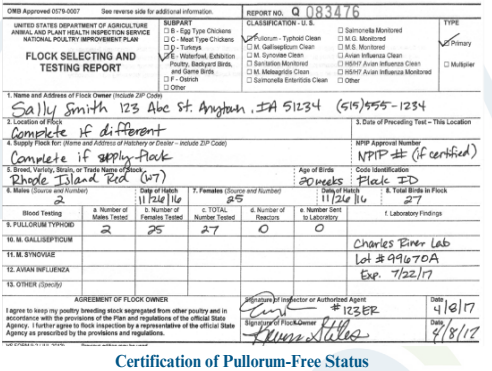
Your birds are already certified PT-negative. Present proof of your flock's NPIP participation through your breeder card or copy of your 9-2 form. If you need copies please reach out to elycia@ncentralpoultry.com. Interested in becoming NPIP certified and only PT testing your flock once per year? Reach out to the North Central Poultry Association.

Don't get caught without these forms

when performing tests for fairs, shows, exhibitions, sales, or NPIP certification make sure you have these forms ready.

VS 9-2 form

A VS 9-2 can be used for exhibition or NPIP certification testing. VS 9-2 booklets are available by request from the NCPA offices. These forms are accepted by all states as certification of disease status and must be filled out completely to be valid. Ensure that you include your name and tester number written legibly as well as your PT antigen information. A copy of this form must be sent to the NCPA within 10 days of completing the test. Only one flock can be recorded per page.



OMB Approved 0579-0007 See reverse side for additional information.

REPORT NO. Q 083476

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
NATIONAL POULTRY IMPROVEMENT PLAN

FLOCK SELECTING AND TESTING REPORT

SUBPART
☐ B - Egg Type Chickens
☐ C - Meat Type Chickens
☐ D - Turkeys
☑ E - Waterfowl, Exhibition Poultry, Backyard Birds, and Game Birds
☐ F - Ostrich
☐ Other

CLASSIFICATION - U. S.
☑ Pullorum - Typhoid Clean
☐ M. Gallisepticum Clean
☐ M. Synoviae Clean
☐ Salmonella Monitored
☐ M.G. Monitored
☐ M.S. Monitored
☐ Avian Influenza Clean
☐ Salmonella Enteritidis Clean
☐ H5/H7 Avian Influenza Clean
☐ H5/H7 Avian Influenza Monitored
☐ Other

TYPE
☑ Primary
☐ Multiplier

1. Name and Address of Flock Owner (Include ZIP Code)
Sally Smith 123 Abc St. Anytown, IA 51234 (515)555-1234

2. Location of Flock
Complete if different

3. Date of Preceding Test – This Location

4. Supply Flock for: (Name and Address of Hatchery or Dealer – Include ZIP Code)
Complete if supply flock

NPIP Approval Number
NPIP # (if certified)

5. Breed, Variety, Strain, or Trade Name of Stock
Rhode Island Red (47)

Age of Birds
20 weeks

Color Identification
Flock ID

6. Males (Source and Number)
2

Date of Hatch
11/26/16

7. Females (Source and Number)
25

Date of Hatch
11/26/16

8. Total Birds in Flock
27

Blood Testing	a. Number of Males Tested	b. Number of Females Tested	c. TOTAL Number Tested	d. Number of Reactors	e. Number Sent to Laboratory	f. Laboratory Findings
9. PULLORUM TYPHOID	2	25	27	0	0	
10. M. GALLISEPTICUM						Charles River Lab
11. M. SYNOVIAE						Lot #99670A
12. AVIAN INFLUENZA						Exp. 7/22/17
13. OTHER (Specify)						

AGREEMENT OF FLOCK OWNER

I agree to keep my poultry breeding stock segregated from other poultry and in accordance with the provisions of the Plan and regulations of the official State Agency. I further agree to flock inspection by a representative of the official State Agency as prescribed by the provisions and regulations.

Signature of Inspector or Authorized Agent
#123ER
Date 4/8/17

Signature of Flock Owner
Sally Seller
Date 4/8/17

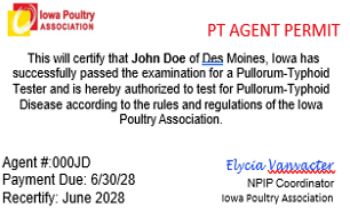
Certification of Pullorum-Free Status

This form is an alternative to the 9-2 and can be used for exhibition testing in Iowa. This form may save you going through multiple booklets. A copy of the completed form must be sent to NCPA and a copy given to the flock owner. This form is only accepted in Iowa, so do not use for out-of-state exhibitions without prior approval. Only one flock can be recorded per page.

PT tester Card

Be prepared to present your PT tester card to any veterinarians, fair superintendents, or IDALS staff on site. If a testing form is submitted by an uncertified or expired tester the test will be invalid and the birds will not be able to be sold.

For more information on becoming a certified tester reach out to elycia@ncentralpoulttry



Iowa Poultry Association

PT AGENT PERMIT

This will certify that John Doe of Des Moines, Iowa has successfully passed the examination for a Pullorum-Typhoid Tester and is hereby authorized to test for Pullorum-Typhoid Disease according to the rules and regulations of the Iowa Poultry Association.

Agent #:000JD
Payment Due: 6/30/28
Recertify: June 2028

Elycia Vanvactor
NPIP Coordinator
Iowa Poultry Association

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Certification of Pullorum-Free Status

National Poultry Improvement Plan
Iowa Poultry Association
8515 Douglas Avenue, Suite 9, Urbandale, IA 50322-2924
(515) 727-4701 ext. 100

FLOCK OWNER: _____

ADDRESS: _____

_____

TESTING FOR: ☐ Annual Flock Test ☐ Sale ☐ Fair/Exhibition

NAME OF FAIR/EXHIBITION: _____
TEST RESULTS:
Number of:
Birds Tested: _____ Positives: _____ Negatives: _____

BREEDS	No. in FLOCK	BAND NUMBER

This is to certify the above birds have been tested for Pullorum-Typhoid and that no reactors were found. (See note below.)

Signed: **Dated:**

_____ _____
(Tester Name & Tester Number)*

ANTIGEN BRAND: _____

LOT NUMBER: _____ **EXPIRATION:** _____

THIS CERTIFICATE IS VOID AFTER 90 DAYS. IT SHOULD BE USED WITHIN IOWA, AS OTHER STATES MAY NOT HONOR IT.

NOTE: If reactors are found, note on this form the number and strain of the bird(s) that reacted.

*Testers must have a valid Pullorum-Typhoid tester's permit card. The exhibition is responsible for insuring the tester is permitted by the State of Iowa NPIP program, which can be verified through the IPA office listed above.

Distribution: Original to exhibitor; copy to IPA office; copy retained by PT tester.

Revised 11/23

Poultry Terms

Poultry Terms Reference Guide

General Terms:
Breed—a variety of bird with distinct appearance and characteristics.
Brooding period—from hatching until offspring no longer require supplemental heat.
Poultry—domesticated birds including chickens, turkeys, waterfowl, game birds, and emus, ostriches and rhea.

Body parts:
Axial feathers—short feathers between primary and secondary feathers of the wing
Covert feathers—feathers that cover primary and secondary wing and tail feathers
Fluff—soft downy feathers
Hackle feathers—neck plumage
Hock—joint between thigh and shank
Parti-colored—having feathers of 2 or more colors or shades of color
Primary feathers—wing feathers located toward the wing tip, provide thrust during flight
Quill—hollow shaft that connects feather to the body
Saddle feathers—long and pointed back plumage
Secondary feathers—wing feathers located closer to the body, provide lift during flight
Shank—portion of the leg below the hock
Sickle feathers—long tail feathers on male fowl
Spur—hard protrusion on the inner shank
Wattle—growth of flesh on the sides and upper throat of fowl

Chicken terms:
Breeder—bird whose purpose is for genetic improvement of a breed or variety
Chick—young chicken, newly hatched
Broiler—bird whose purpose or breed is for meat production
Capon—castrated male chicken
Rooster—mature male chicken
Cockerel—young male chicken
Hen—mature female chicken
Layer—bird whose purpose or breed is meant for egg production
Pullet—young female chicken

Waterfowl terms:
Drake—mature male duck
Duck/ Hen—mature female duck
Duckling—young duck
Gander— mature male goose
Goose/hen—female goose
Gosling—young goose

Turkey Terms:
Hen—mature female turkey
Poult—young turkey
Tom—mature male turkey

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Basic Biosecurity:

Keep your birds safe and healthy at fairs, shows, and exhibitions

Before you go

Know your state laws. What kinds of tests are needed before you take your birds to fair, shows, or sales? Get these done in plenty of time and keep records of all test results

Check for signs of illness. If your birds are sick, or you think they might be sick, STAY HOME! Do your part to protect other birds

Disinfect all equipment and carrying containers thoroughly. Start off on the right foot by not introducing potential disease to other exhibitors

At the show

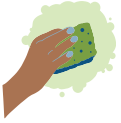
Bring copies of your testing paperwork. Make sure the fair, exhibition, or show is following all state laws and requiring the right tests before hosting

Do not handle any birds except your own. If you have to, make sure to wash your hands between each bird.

When you get home

Keep show birds under quarantine before introducing them back to the flock for at least 30 days

Clean and disinfect all equipment and carrying cases again



Keep a record of all bird movements to and from shows, exhibitions, or fairs for the life of the flock

Stay Healthy When Working with Farm Animals:

Follow these simple tips to help prevent illness when working with farm animals

Working with farm animals can be a rewarding and meaningful experience for children. Caring for and showing these animals are great ways for children to learn about agricultural sciences and personal responsibility. However many farm animals, including cattle, goats, sheep, swine, and poultry, can carry germs such as Salmonella **or** E. coli **that can make people sick. Luckily, there are simple steps that you can take to help prevent illness.**

How do people get sick from farm animals?

Animals can carry germs even when they appear healthy and clean. The germs are shed in animals' feces (poop) and can easily contaminate their bodies (fur or feathers) and anything in areas where these animals live and roam. People can become ill by touching farm animals or the areas where the animals live and roam.

Who is at most risk?

Anyone can get sick from farm animals, but some people are more likely to have a serious illness:

- Children younger than 5 years of age
- Adults 65 years of age or older
- Pregnant women
- People with some illnesses (like cancer) that weaken immune systems

Follow these simple tips to help prevent illness:

- Wash your hands thoroughly with soap and water right after touching farm animals or anything in the areas where they live and roam. Washing hands with soap and water is the best way to reduce the number of germs on them.
  - If soap and water are not available, use an alcohol-based hand sanitizer that contains at least 60% alcohol.
- Supervise children younger than 5 years of age if they handle or touch farm animals or animal areas and equipment. Young kids should avoid certain animals that are more likely to spread germs, including poultry, pre-weaned calves, young goats and sheep, and any ill animals.
- Keep your food and drinks away from farm animals and out of animal areas.
- Keep animals away from areas where food or drink is prepared, stored, or consumed, including kitchens and outdoor patios.
- Have a set of dedicated shoes or boots, gloves, coveralls, or other work clothes that you use just for working in animal areas. Remove them as soon as possible after leaving animal areas.
- Clean gloves and work clothes regularly.
- Clean and disinfect work shoes, boots, and equipment regularly.

To learn more, visit http://www.cdc.gov/Features/AnimalExhibits/

USDA United States Department of Agriculture

CDC

CS251783-A

Establishing a Backyard Poultry Flock

Christa Hartsook
Program Coordinator, Small Farms/Acreage Living
Iowa State University Extension & Outreach

One of the fastest growing trends for small and beginning farmers is backyard poultry. Typically, poultry offers a small-scale livestock enterprise without requiring large amount of capital, land, time or equipment. Careful planning and preparation prior your poultry's arrival will help ensure the establishment of a healthy flock for your family's enjoyment and food production.

Once you decide you would like to raise poultry, you then need to decide if you want to raise meat birds or egg layers. Once you determine what type of flock you wish to raise, you can then select your breed of chickens.

Birds typically raised for meat production are generally a hybrid Cornish Cross, (Cornish crossed with the White Plymouth Rock). These birds are bred for fast growth and feed efficiency, often reaching 6 to 10 pounds in 8 weeks. Broiler chickens typically do not do well in a straight pasture system, as they need large volumes of feed for body maintenance and grow much slower in a pasture-based system without supplemental grain.

Egg layers generally lay either white eggs or brown eggs. The most popular white egg breed is the White Leghorn. One consideration is to select a heavy breed that can withstand Iowa winters. Heavier breeds generally lay brown eggs and include Americanas, Brahmas, Orpingtons, Silkes or Wyandottes. Prior to April, hatcheries may have a higher minimum order necessary to ensure safe shipping of live chicks.

Chicks for meat or egg production will ship via United States Postal Service to your nearest post office. From there, the post office will call you to pick up your chicks. Proper care of your newly hatched chicks is essential to their survival rate. Chicks must be kept under a brooder light or brooder heater at 90 to 95 degrees for the first week. To keep them close to the heat source and prevent drafts, use a brooder ring, child's hard plastic swimming pool or cardboard circle with pine shavings inside. For the first day, cover your pine shavings with newspaper so the chicks do not mistake the shavings for a food source. Reduce the heat needed 5 degrees per week until you get to 70 degrees. Red bulbs are generally considered better than clear bulbs in heat lamps as they cause less picking of the chicks. The bulb should be approximately 18 inches from the floor.

A general rule of thumb is one bulb per 50 chicks in cold weather and one bulb per 100 chicks in warm weather. Keep your draft shield approximately 5-6 feet across for starting 50 chicks or roughly ½ square foot per bird.

Your birds will be thirsty once they arrive – hand dip each chick's beak in water before you turn in loose in the brooder circle. Use a one gallon chick waterer for every 50 chicks. Using chick waterers is preferred for the first few weeks as the baby chicks can climb into the watering trough of larger waterers, which gets them wet and chilled. A chilled chick does not do well and may die.

Start your chicks on a commercial starter diet for the first 8 to 10 weeks of life, prior to pasture turn-out or other food sources. Meat birds will require a higher protein diet than egg layers – please refer to your hatchery guidelines when ordering. Commercial feed can be purchased in bulk or 50 pound bags from your local co-op or farm supply stores.

If you are raising layers for eggs, they also require grit for proper digestion. On the third day after receiving your chicks, sprinkle some grit on your feed daily. It is too soon to fill an entire hopper of grit or the chicks will fill up on that and not eat their food. After four weeks, a hopper of grit can be established in the coop.

After four weeks, your birds are a little more established. They need additional floor space – one square foot per bird. Waterers can also be increased to one five gallon fount for every 100 birds. If you are raising layers, add roosts at the back of the brooder area. Meat birds do not need roosts.

Keeping your coop area clean is critical to minimizing ammonia buildup in the coop, keeping your chicks dry and comfortable and preventing contamination in the water or feed. As your birds grow, you will need to change the shavings regularly. Your coop can be housed in an existing building on your property, a small garden shed or new construction using one of the many plans found online. Attention should be given to roosting space, nesting space and easy access for someone to enter to refill food and water, collect eggs and clean the coop. You may allow your layers or meat birds out during the day to forage in pasture, but birds should be shut

USDA
United States Department of Agriculture

Let's Keep Our Poultry Healthy Together

Report Sick Birds: 1-866-536-7593

#DefendTheFlock

www.aphis.usda.gov/animalhealth/defendtheflock

Animal and Plant Health Inspection Service

Program Aid No. 2239
Issued May 2019

USDA

United States Department of Agriculture

Checklist: Tips To Help Keep Your Flocks Healthy

This checklist is a general guide to practicing good biosecurity, but if you have a site-specific biosecurity plan, please follow it. Commercial growers should be sure their site-specific plans follow the National Poultry Improvement Plan biosecurity principles.

- ☐ **Wear personal protective equipment** or clothing and shoes that you only use when caring for your poultry. This includes boot covers or boots that can be disinfected. Change into fresh protective gear between poultry houses or coops.
- ☐ **Enclosures must be empty for a thorough cleaning.** If you have a poultry house, wait until the house is empty to start the cleaning process. If you have a coop or other type of enclosure, move the birds to a separate area before cleaning.
- ☐ **Remove all litter, manure, and other debris.**
- ☐ **"Dry" clean all areas**—brush, scrape, and shovel off manure, feathers, and other materials. Disinfectant will not penetrate organic matter or caked-on dirt.
- ☐ **"Wet" clean all surfaces**—scrub with water and detergent. Work from top to bottom and back to front.
- ☐ **Rinse all surfaces carefully with water.**
- ☐ **Apply disinfectant** according to the directions on the label. Be sure to use a disinfectant that is registered by the U.S. Environmental Protection Agency (EPA) and indicates that it is effective against avian influenza and other poultry diseases.
- ☐ **Leave the enclosure empty** until it is completely dry. Use fans and/or open doors and windows to help speed the drying process. Wet surfaces can be harmful to poultry.
- ☐ **When you're done, remove and discard** your protective gear. If using dedicated clothing and boots, change clothing and clean and disinfect your boots.
- ☐ **Wash your hands thoroughly** with soap and water. Wash and dry your dedicated clothing.

For more information about how to keep your flocks healthy, follow **Defend the Flock** on **Facebook** and **Twitter** and visit **www.aphis.usda.gov/animalhealth/defendtheflock.**

Animal and Plant Health Inspection Service
Program Aid No. 2235-1 • Issued November 2018

USDA

United States Department of Agriculture

Checklist: Tips To Help Keep Your Flocks Healthy

This checklist is a general guide to practicing good biosecurity, but if you have a site-specific biosecurity plan, please follow it. Commercial growers should make sure their site-specific plans follow the NPIP biosecurity principles.

- ☐ **Only purchase or source poultry** from NPIP-certified breeders, hatcheries, and dealers. When sourcing replacement poultry, you can request a copy of the hatchery or source farm's biosecurity protocols.
- ☐ **Confirm that the poultry you purchase** tested clean for the same diseases your current flock tested for.
- ☐ **When purchasing poultry in person,** check for signs of good health and approximate age. Do not purchase birds that appear old or unhealthy.
- ☐ **Always transport replacement or new poultry** in equipment and vehicles that are regularly cleaned, disinfected, and inspected. For commercial operations, the tractor/trailer carrying the birds should follow premises entry biosecurity protocols when entering the farm.
- ☐ **Be sure to clean and disinfect** tools, cages, and any other equipment used for transport. Return empty cages to the trailer and then clean and decontaminate the cages before taking them to another site.
- ☐ **Wear site-specific clothing,** including footwear, when loading or delivering poultry. For commercial operations, personnel loading poultry cages into the trailer should wear site-specific clothing or not enter the Line of Separation.
- ☐ **Once home, quarantine the new additions** for 30 days. Check for sneezing, coughing, nasal drainage, swollen eyes, mites, lice, and other health issues daily.
- ☐ **After combining new birds with your existing flock,** check original stock daily for any signs of illness. The stress of this change can cause an underlying illness to surface.
- ☐ **To prevent bullying,** do not add young poultry to your existing flock until all the birds are about the same size.

Did you know?

Mail-order hatcheries offer vaccines for day-old baby chicks. Check for needed vaccines in your area based on past disease outbreaks and what vaccines the hatchery administered.

For more information about how to keep your flocks healthy, follow **Defend the Flock** on **Facebook** and **Twitter** and visit **www.aphis.usda.gov/animalhealth/defendtheflock.**

Animal and Plant Health Inspection Service
Program Aid No. 2235-S • Issued March 2019

20 COMMON EGG SHELL QUALITY PROBLEMS

Pale-shelled Eggs

The degree of brown color in the egg shell is determined by the quality of deposited pigment in the cuticle.

Causes:

- Infectious bronchitis
- Bird age (older hen)
- High stress in the flock
- Egg Drop Syndrome 76
- Use of chemotherapeutic agents (i.e. sulfonamides and nicarbazin)

Lilac Eggs/Pink Eggs

The egg appears to be pink or lilac due to the association between the cuticle and an extra calcium layer.

Causes:

- Stress
- Excess calcium in the feed

Dirty Eggs

If the egg shell is stained by feces, it is important to avoid feed ingredients which cause wet and sticky droppings.

Causes:

- Wet droppings
- Large amounts of indigestible compounds in the feed
- Poor gut health
- Electrolyte imbalance/ saline water

Blood Stained Eggs

Usually from pullets in early lay, eggs are contaminated by smears of blood from a prolapsed cloaca, vent pecking, or cannibalism.

Causes:

- Overweight pullets
- Pullets coming into lay
- Sudden, large increases in day length
- Poor hygiene: Cage, trays, belt pick-up system

Shell-less Eggs

Laid without a shell layer, these eggs are protected only by the shell membrane.

Causes:

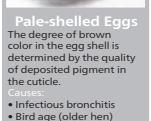
- Immature shell gland
- Disease: Avian Influenza NDV, infectious bronchitis, Egg Drop Syndrome 76
- Inadequate nutrition: Calcium, phosphorus, manganese, or vitamin D3

Soft-s

Laid with shell, onl calcium i shell mer

Causes:

- Excessiv consum
- Heat st
- Bird ag
- Saline w
- Mycoto

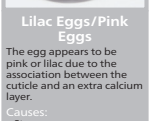


Corrugated Eggs

Characterized by a very rough, corrugated surface, these eggs are produced when plumping is not controlled and terminated.

Causes:

- Heat stress
- Saline water
- Bird age (older hen)
- Poor nutrition, especially calcium and vitamin D3
- Mycotoxins

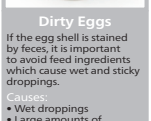


Wrinkled Eggs

Eggs with thinly creased and wrinkled surfaces.

Causes:

- Stress
- Infectious bronchitis
- Defective shell gland
- Overcrowding

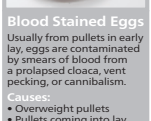


Pimpled Eggs

Classified by small lumps of calcified material on the egg shell, the severity of pimples depends on the foreign material present during the calcification process.

Causes:

- Bird age
- Strain of bird
- Inadequate nutrition

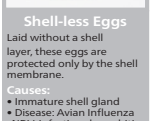


Calcium Coated Eggs

An extra layer of calcium can be seen all over the egg or on just one end.

Causes:

- Defective shell gland
- Disturbances during calcification
- Excess calcium in the diet

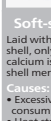


Calcium Deposits

These eggs are classified by white, irregularly shaped spots deposited on the external surface of the shell.

Causes:

- Defective shell gland
- Disturbances during calcification
- Excess calcium in the diet



Wh S

With sma calcium eggs may before or is formed

Causes:

- Defecti
- Disturb calcifica
- Excess

Mottled Shells

When placed in front of a light, the translucent areas appear mottled or glassy as a result of the shell's failure to dry out quickly.

Causes:

- High humidity in the shed
- Disease and mycotoxins
- Manganese deficiency
- Overcrowding

Body-Checked Eggs

The egg is cracked in the shell gland pouch and then repaired before lay.

Causes:

- Incorrect lighting
- Stress
- Bird age (older hen)
- Overcrowding

Broken and Mended

A diagonal break occurs during formation and is mended again before lay.

Causes:

- Stress during calcification

Misshapen Eggs

These eggs are too small or large, round instead of oval, or differ from normal shapes.

Causes:

- Immature shell gland
- Disease: Avian Influenza NDV, infectious bronchitis, Egg Drop Syndrome 76
- Stress
- Overcrowding

White Banded Eggs

If two eggs come into contact with each other in the shell gland pouch, normal calcification is interrupted. The first egg retained in the pouch will have an extra layer of calcium seen as the white band marking.

Causes:

- Stress
- Changes in lighting

Slab

The secon the shell as compl and is fla eggs mad

Causes:

- Stress
- Change
- Disease

shelled Eggs

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xins

Cracks

This problem includes hair line cracks, star cracks, or large cracks that result in a hole in the shell.

Causes

- Heat stress
- Saline water
- Bird age (older hen)
- Inadequate nutrition: Calcium and vitamin D3
- Mycotoxins

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-sided Eggs

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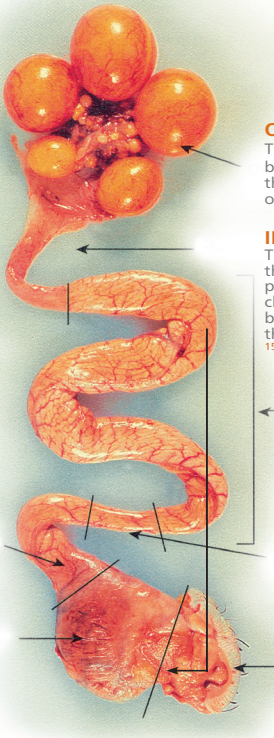
s in lighting

The process of egg formation in a hen's oviduct and the time an egg spends in each section



OVARY (left)
The ovulation process, begins with the release of the yolk (or ova) into the left oviduct.

INFUNDIBULUM
The yolk is captured and the formation of the perivitelline membrane and chalazae occurs. In breeder birds, fertilization occurs in this section.
15 minutes

MAGNUM
The egg white protein (albumen) is produced here.
3 hours

ISTHMUS
The isthmus produces the fibers that make up the inner and outer shell membranes.
1 hour

VAGINA/ CLOACA
The egg is laid via this section.
1 minute

TUBULAR SHELL GLAND
A process called "plumping" occurs where water rich with electrolytes enters the albumen and the formation of the mammilary cores commence.
5 hours

SHELL GLAND POUCH
The egg shell is formed and the pigmentation process occurs.
15 hours

Acknowledgement: Some information has been extracted from the book "Egg Shell Quality Problems: Causes and Solutions" published by University of New England, Australia. We thank the Australia Egg Corporation Limited and the University of New England for their permission to use the oviduct photo.

FAST FACTS

Avian Influenza

Bird Flu

What is avian influenza and what causes it?

Avian influenza is a viral disease that can affect bird species throughout the world. The disease can vary from mild to severe, depending on the virus strain involved. The most severe strain, called highly pathogenic avian influenza (HPAI), is caused by viruses with H5 or H7 surface proteins. Most human cases result from close contact with sick birds. Outbreaks have occurred in many countries, including the U.S., parts of Asia, Europe and Africa.

What animals get avian influenza?

Avian infuenza primarily affects wild and domestic bird species. Waterfowl can carry the disease without becoming sick. Poultry are very susceptible to the disease and can die in large numbers. Some strains of the virus can affect mammals, such as pigs, cats, horses, dogs and ferrets.

How can my animal get avian influenza?

In birds, avian influenza is spread by **direct contact** with the fecal droppings or respiratory secretions of infected birds. The virus can live for a long time in the environment and can also be spread by objects or **fomites** (e.g., shoes, clothing, equipment) that have been contaminated with the virus. Mammals may be exposed by **ingestion** of infected birds.

How does avian influenza affect my animal?

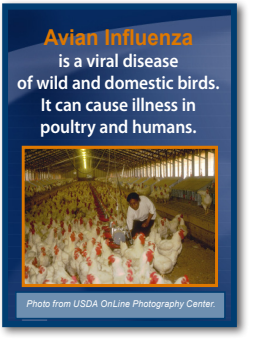
Poultry affected by avian influenza will appear depressed, have ruffled feathers and are unwilling to eat. Birds may have watery diarrhea that starts off bright green and changes to white. The combs and wattles are often swollen and can turn blue. Swelling may occur around the eyes and neck. Legs may have pin-point hemorrhages. Egg production drops and typically stops. Rare cases can affect the brain causing twisted heads, circling, or paralysis. Sudden death may occur.

Infected mammals will have fever, cough and breathing difficulty; some may die.

Can I get avian influenza?

Yes. Humans can be infected with the avian influenza virus, but most cases have involved very close **direct contact** with sick poultry. Some cases of person-to-person transmission have been reported, but are very rare.

Clinical signs in people can include swelling and reddening of the tissues around the eyes (conjunctivitis), flu-like illness (fever, body aches). Death can occur in rare cases.



Who should I contact, if I suspect avian influenza?

In Animals – Contact your veterinarian immediately.

In Humans – Contact your physician. Inform him or her that you have had contact with birds with avian influenza.

How can I protect my animals from avian influenza?

Prevent contact between poultry and wild birds, especially waterfowl. Use strict biosecurity measures, such as cleaning and disinfection of bird-housing facilities as well as rodent and insect control measures, to prevent spread of the virus. Vaccines may be used to help control an outbreak.

How can I protect myself from avian influenza?

Avian influenza infection in people is rare. Wear protective clothing such as masks, gloves, and safety glasses., when working with birds or poultry. Avoid touching your eyes or mouth until hands have been washed thoroughly with soap and water. Antiviral medication or vaccines may be used during an outbreak situation. People working with the virus in laboratories or on vaccination crews should take extra precautions.

For More Information

CFSPH Technical Fact Sheets. Avian influenza at http://www.cfsph.iastate.edu/DiseaseInfo/

U.S. Government site for Avian Influenza and Pandemic Influenza Information at http://www.pandemicflu.gov/index.html

the Center for Food Security & Public Health
Iowa State University

Last Updated: April 2008

AI Toolkit Overview

Prevention, Preparedness, and Mitigation Information for Highly Pathogenic Avian Influenza in Iowa

Iowa Poultry Association

The full toolkit with additional resources can be found at iowapoultry.com under the Biosecurity tab

Prevention

Biosecurity is your best line of defense against foreign animal disease. In the presence of a foreign animal disease threat, biosecurity practices should be heightened.

Actions: Premises should be secured. All vehicle and foot traffic from visitors should be kept to a minimum and logged. Vehicles entering the premises should be cleaned and disinfected. All contractors, personnel, guests, and outside visitors should be aware of necessary downtimes and biosecurity procedures

Detection/Preparedness

Being vigilant of clinical signs in and around your flock will help you to quickly catch and report any foreign animal disease.

Common Warning Signs

-Sudden increase in bird deaths without any clinical signs -Gasping for air
-Lack of energy and appetite -Coughing, sneezing, and/or nasal discharge
-Decrease in egg production -Stumbling or falling down
-Soft- or thin-shelled or misshapen eggs -Diarrhea
-Swelling of the head, eyelids, comb, wattles, and hocks
-Purple discoloration of the wattles, combs, and legs

Actions: Prepare potentially necessary documentation such as visitor logs, vehicle movement logs, traffic pattern maps, bird movement logs, etc. Ensure they are accurate and up-to-date. An electronic version may be helpful to quickly communicate information to USDA and IDALS.

Have sampling supplies on hand. If you are comfortable taking samples, collecting your own may expedite the diagnostic process at the direction of the state veterinarian and/or AVIC. These supplies can also be used for routine monitoring. If you are not comfortable, or have never sampled your birds, IDALS will respond with testers.
-Sterile polyester tipped swabs with plastic handles -Plastic quart size Ziploc
-5mL BHI broth tubes -Spray disinfectant
-Gloves -Ice packs
-Insulated shipping containers

Mitigation

In the event you suspect HPAI you must contact the state veterinarian or USDA before taking any further actions.

Actions:

During Office Hours (8am-4pm)
IDALS Reporting Line: 515-281-5305 USDA Reporting Line: 515-284-4140
After Hours
Dr. Jeff Kaisand: 515-240-6632 Dr. Kevin Petersburg: 515-669-6043

Biosecurity

procedures intended to protect humans and animals against disease

Biosecurity Responsibility

visit **ncentralpoultry.com** for an outline to create an on-farm biosecurity plan. Review this plan once a year and increase procedures during heightened risk.

Line of Separation/Perimeter Buffer Area

Reach out to the North Central Poultry Association and order biosecurity signs free of charge. Place these signs on your coop to remind everyone to take biosecurity precautions before entering.

Personnel

have designated shoes or boot covers for taking care of poultry. Ensure that you care for youngest and healthy birds first, then older or sick birds last. Wash your hands before and after caring for poultry.

Reporting of elevated morbidity or mortality

If you experience a spike in unexplained mortality, call the Iowa sick bird hotline **515-281-5305**.

Wild Birds, Rodents, and Insects

put up netting or fencing to deter wild birds from interacting with your poultry. Keep your birds inside during high migration days. You can track this using birdcast.info

Replacement Poultry

purchase birds from NPIP certified flocks and dealers. You can find a list on poultryimprovement.org. When introducing new poultry to an existing flock, make sure to quarantine them for a period of time to ensure they are not introducing disease into your existing flock.

Manure and Litter Management

Visit Mississippi State University's extension article "Managing Manure from the Backyard Flock" for tips on composting poultry manure.

This book brought to you by The North Central Poultry Association and USDA Avian Cooperative Agreement Funding
8515 Douglas Ave, Ste 9
Urbandale, IA 50322
PH: (515)-727-4701 Email: elycia@ncentralpoultry.com

Avian Influenza Testing Available

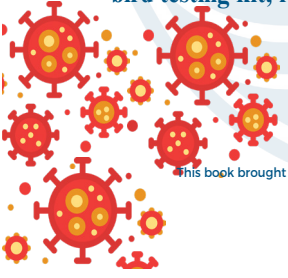
Your Iowa OSA offers free Avian Influenza monitoring for hobby and enthusiast flocks in the state of Iowa.
We can provide testing kits to use for import requirements to other states, NPIP AI Clean Status testing and flock monitoring for your peace of mind.

AI Egg Testing Program

Our free egg testing program is designed to test for AI in poultry flocks through laboratory analysis of antibodies within the egg. As this is a monitoring program only, the results are for the flock owner's benefit and cannot be used to certify egg quality or as a replacement for poultry health papers. For more information or to receive your testing kit, reach out to elycia@ncentralpoultry.com.

AI Bird Testing Kit

We provide oropharyngeal swab testing kits to Iowa flocks for the purposes of movement and NPIP certification requirements. This easy-to-use test includes shipping containers, swabs, BHI broth and all the necessary instructions for you to gather samples from your own birds or with the help of a veterinarian. For more information or to request an AI bird testing kit, reach out to elycia@ncentralpoultry.com.



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Backyard Poultry Diseases

Campylobacteriosis

Campylobacter are bacteria that can make people and animals sick with a disease called campylobacteriosis.

How it spreads: Campylobacter most often spreads to animals and people through the feces of infected animals, contaminated food, or the environment. People can get infected if they do not wash their hands after touching an animal or its feces, food, toys, habitats (including coops, pen, and cages), or equipment used around these animals.

Who is at risk: Anyone can get a Campylobacter infection, but children younger than 5 years old, adults 65 and older, and people with weakened immune systems are more likely to get severe illness.

Signs in poultry: Poultry usually don't show sign of Campylobacter infection. Even if they look healthy and clean, poultry can still spread the bacteria to people.

Symptoms in people: People can have diarrhea, fever, and stomach cramps. The diarrhea may be accompanied by nausea and vomiting. Symptoms usually start within 2-5 day after infection and last about a week.

Backyard Poultry Diseases

CENTERS FOR DISEASE CONTROL AND PREVENTION

E. coli

E.coli are bacteria found in the environment, foods, and intestines of people and animals. Although most kinds of E.coliare harmless, others can make people sick. How it spreads: E.coli most often spreads to animals and people through the feces of infected animals, contaminated food, or the environment. People can get infected if they don't wash their hands after touching an animal or its feces, food, toys, habitats (including coops, pens, and cages), or equipment used around these animals.

Who is at risk: Anyone can get sick from E.coli, but children younger than 5 years old, adults 65 and older, and people with weakened immune systems are more likely to get severe illness.

Signs in poultry: Poultry naturally have E.coli in their gut and don't normally show signs of illness. Even if they look healthy and clean, poultry can still spread the bacteria to people.

Symptoms in people: Symptoms depend on the kind of E. coli causing the infection. Shiga toxin-producing E.coliinfection is one of the most commonly diagnosed E.coli infections in the United Stated. Most people infected experience severe stomach cramps, diarrhea, and vomiting. Symptoms usually start within 304 days of swallowing the bacteria and last 5-7 days. Some people may develop a tyle of kidney failure and would need to be hospitalized.

Information provided by the CDC

www.cdc.gov

Backyard Poultry Diseases

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

Salmonellosis

Every year people get Salmonella infections after handling poultry, such as chickens and ducklings.

Who is at risk: Anyone can get sick from Salmonella, but children younger than 5, adults 65 and older, and people with weakened immune systems are more likely to get severe illness.

Signs in poultry: Poultry usually don't show signs of Salmonella infections. Even if they look healthy and clean, poultry can still spread the bacteria to people.

Symptoms in people: Most people infected with Salmonella have diarrhea, fever, and stomach cramps. Symptoms usually start 6 hours to 6 days after swallowing the bacteria. Most people recover in 4-7 days.

NPIP Information Request

For more information on having your flock become NPIP certified return the following information request form to elycia@ncentralpoultry.com or mail to:

NCPA
8515 Douglas Ave
Ste 9
Urbandale, IA 50322

Name:	Number of birds in flock:
Address:	List of Species:
Email:	Contact Number:

Name:	Number of birds in flock:
Address:	List of Species:
Email:	Contact Number:

Iowa Poultry Extension

The poultry Veterinary Extension program is an outreach program of the Department of Veterinary Diagnostic and Production Animal Medicine within the College of Veterinary Medicine at Iowa State University. Our purpose is to assist practicing veterinarians, extension specialists, and poultry producers in the state of Iowa and across the world. We work collaboratively with faculty in Food Supply Veterinary Medicine, Veterinary Diagnostic Laboratory and the North Central Poultry Association. Our mission is to provide current and scientifically accurate information to our producers and practitioners. Some of the activities in order to fulfill our mission include:

- Supporting practicing veterinarians with field investigations
- Delivering ISU research to poultry producers and practitioners
- Organizing the annual Iowa Egg Industry Symposium
- Providing continuing education programs for poultry producers and veterinarians
- Assisting veterinarians and extension agents with local producer meetings
- Develop field based research trials to assist poultry veterinarians in making better animal health and production decision
- EWorking with allied organization such as the North Central Poultry Association, Iowa Egg Council and Iowa Turkey Federation

Dr. Yuko Sato
Veterinary Diagnostic and Production Animal Medicine
Iowa State University
2201 Lloyd Veterinary Medical Center
1809 Riverside Drive
Ames, IA 50011-3619
- Ph: 515-294-0710
Fax: 515-294-1072
Email: ysato@iastate.edu

IOWA STATE UNIVERSITY
College of Veterinary Medicine

IOWA STATE UNIVERSITY
College of Veterinary Medicine

Avian Test Request Form

Page 1

Veterinary Diagnostic Laboratory
1850 Christensen Dr | Ames, IA 50011-1134
515-294-1950 | Fax 515-294-6961 | www.vetmed.iastate.edu/vdl

Laboratory Use Only Case No.

No. Samples

SUBMITTER _____

Company Name _____

Address _____

City, State & Zip _____

Phone _____ Fax _____

Email _____

❑ *If* ***Owner Name*** *and Address are same as* ***Animal Location*** *(include info under* ***Site Name****)*

OWNER _____

Address _____

City, State, & Zip _____

Third-Party Billing *(pre-approved)*	**Affiliates** *(list clinic names or codes)*
	❑ NPIP

Special Reporting Requests

❑ Fax _____

❑ Email _____

Species: Avian ❑ Chicken ❑ Turkey ❑ Other _____

ANIMAL LOCATION: Premises, Flock and Submission-Level Identifiers

SITE NAME _____

Address _____

City, State & Zip _____

County _____ Country _____

Premises ID# *(attach premises ID bar code sticker if available)*

Lot ID _____

Source or Flock ID _____

Reference (House/Barn) _____

Case Tag _____

Reason for Test

❑ General Diagnostics
❑ Business Continuity
❑ Surveillance (Regulatory)
❑ Research
❑ Other _____
(Specify reason for testing if for official regulatory purposes)

Premises Type (Best Description)

❑ Chicken, Broiler
❑ Chicken, Layer
❑ Turkey
❑ Gamebird, Waterfowl
❑ Backyard
❑ Exhibition
❑ Other _____

SAMPLES

Collection Date _____ **No. of Samples** _____

Consecutively numbering samples (e.g. 1, 2, 3, 4,…) greatly enhances receiving, accessioning, and sample processing efficiencies within the laboratory.

Sample #	Sample ID	Age (check unit) ❑ d ❑ wk ❑ NA	(Other)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

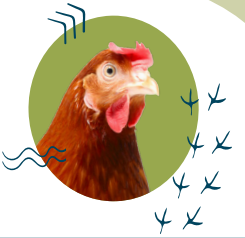
Sample #	Sample ID	Age (check unit) ❑ d ❑ wk ❑ NA	(Other)
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

The ISU VDL is a fully accredited laboratory by the American Association of Veterinary Laboratory Diagnosticians and a member of the National Animal Health Laboratory Network. A complete description of ISU VDL's diagnostic services, submission guidelines, client confidentiality policy, and the contractual terms associated with the requests and performance of diagnostic services at the ISU VDL are available at the ISU VDL web-site (www.vetmed.iastate.edu/vdl). Diagnostic specimens submitted for serological or molecular diagnostic testing are generally retained for 2 (serology) to 4 (molecular) weeks from the date received should the need for additional testing arise.

Starting a Backyard Flock?

Before you get birds

- ○ Consider whether poultry are a good fit for your family and your home.
- ○ Research breeds of birds and what you need to care for them.



Look into

- ○ Any requirements your neighborhood has for owning poultry.
- ○ Poultry veterinarians and local resources like university extension programs or agriculture departments.
- ○ Steps to keep your family and your flock safe from diseases, such as using work gloves and washing your hands often.

Identify a place for your flock

- ○ Pick a location for housing young birds (brooder) that can be cleaned and disinfected, like your garage or other outdoor protected space.
- ○ Determine a location for your outdoor coop.
- ○ Decide where you will clean and disinfect supplies outdoors.

Get these supplies

- ◯ An outdoor coop. Coops need to be safe from predators, easy to clean, and have roosts and nesting boxes
- ◯ Brooder for young birds that can be disinfected
- ◯ Heat source and fire alarm/smoke detector for your brooder, as needed
- ◯ Poultry bedding
- ◯ Poultry feed and supplements
- ◯ Feeder and waterer
- ◯ Treats or enrichment for the coop to show your birds love
- ◯ Cleaning supplies, including cleaning brushes, soap, and disinfectants made for this purpose
- ◯ Hand sanitizer to keep at your coop
- ◯ Dedicated pair of shoes or boots, for using only at your coop and while caring for birds
- ◯ Work gloves only for your coop (like garden gloves)

cdc.gov/backyardpoultry