



This presentation is part of an educational modular program designed to provide new and beginning farmers and ranchers with relevant information to initiate, improve and run their agricultural operations



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Beginning Farmer and Rancher  
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UNIVERSITY OF  
ARKANSAS



# Safe Egg Handling

# Layers



Layer pullets are usually raised the same way as broilers

- ❧ Leghorn layers usually begin laying at 18-22 weeks of age
- ❧ Brown-egg hybrids may start a little earlier (18 weeks of age)
- ❧ Dual purpose hens usually start later (24-26 weeks of age)
- ❧ Approximately every 25 hours one egg is formed
  - ❧ They may lay every day and then skip a day and then start again
  - ❧ Most hens stop laying in winter (because of the change in daylight hours)



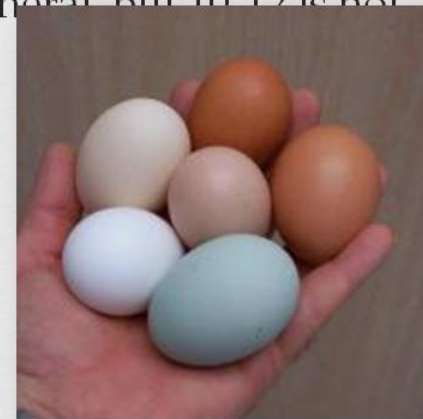
Roosters are  
not needed  
for egg laying



# Layers



- ✧ In average a hen can produce about 250 eggs or more a year (depends on breed, diet and environmental conditions)
  - ✧ Egg size depends on breed, weight and age of the hen (they get bigger with age)
  - ✧ Color is determined by breed and environmental conditions (temperature, stress)
- ✧ A good laying hen can last for several years, 3-6 in general but 10-12 is not odd



Penedescas lay the darkest brown egg of any breed (people call them “chocolate eggs”)

# Colorful eggs

White-egg	Brown-eggs	Blue-eggs (Easter eggs)
Ancona Appenzeller Campine Buckeye Dorking Fayoumi Hamburg Houdan Leghorn Minorca Old English Phoenix Polish Silkie Sultan Yokohama	Assel Australorp Brahma Chantecler Cornish Delaware Dominique Java Jersey Giant Malay Orloff Orpington Plymouth Rock Red Sex Link Rhode Island Wyandotte	Ameraucana Araucana



Green eggs result  
from crossing a  
blue-egg layer  
with a brown-egg  
layer

# Safe egg handling



- ❧ Eggs will easily get covered with mud, dirt, feces, feathers which predispose them to bacterial contamination, thus keeping them clean should be an essential part of your business
- ❧ Hens must have access to clean nesting material and a clean area around the nests (you can use wood shavings, shredded paper. Hay and straw can get moldy quickly so keep an eye on it)
- ❧ Hens should not sleep in the nest boxes because they will defecate in them
- ❧ Some nest boxes have a grill or door to keep birds out during the night
- ❧ If you decide to use communal nests, instead of individual nest boxes, you need to follow the manufacturer's recommendations regarding the size of the nest and number of hens (usually no more than 5 eggs per box)

- Most hens will lay eggs within 5 hours of the first light in the morning
- You should collect eggs twice in the morning and check once in the afternoon to reduce the number of dirty and broken eggs
- Collections should be more often in very cold or hot weather



# Safe egg handling



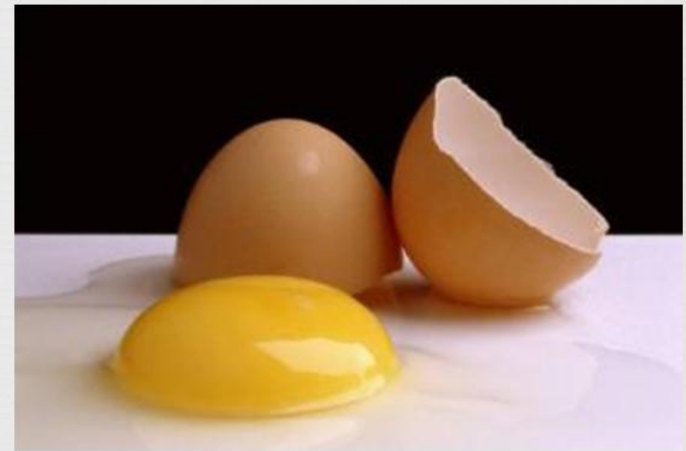
One of the first things you should do to avoid dirty eggs is to encourage your hens to lay in the nest boxes

- ❧ Provide them with clean nesting material, and change it often
- ❧ Keep the boxes in a dark, quiet corner of the coop
- ❧ Boxes should be a few inches off the floor
- ❧ Some producers set ceramic eggs or golf balls in the nest boxes to give the hens a hint as to where to lay their eggs
- ❧ Since most hens will lay early in the first hours of the morning, keep them in the coop until most of the egg-laying is done, that way you maximize the chances that they will lay in the nest boxes instead of running to their favorite spot outside the coop
- ❧ Young hens will often lay outside the boxes, so keep an eye on them



# How does bacteria get in the eggs?

- Some bacteria can be on the outside of a shell egg. That happens because the egg exits the hen's body through the same passageway as feces are excreted
- That is why all eggs are required to be washed and cleaned before storage
- All eggs for human consumption must be kept under refrigeration



- ❧ It is also possible for eggs to become infected with bacteria that naturally present in the environment (soil, water, air) and in the chickens like *Salmonella*, *Campylobacter* and *E. coli*
- ❧ These bacteria usually don't make the hens sick, but the eggs will contain the bacteria
- ❧ Bacteria can be found both in the yolk (yellow part) or the albumen (egg whites). People are advised against eating raw or undercooked eggs or foods prepared with them

# Safe egg handling

**ALL eggs should be cleaned always**

- Eggs are usually covered with dust, mud, feces, feathers that promote bacteria that can contaminate the eggs



# Safe egg handling



- There are two options for cleaning the eggs
  - Dry cleaning
  - Wet washing
- Dry cleaning
  - A slightly dirty egg can be gently cleaned with a soft sponge or brush. Dry stubborn small spots can be gently rubbed with sandpaper
  - Even if the egg appears clean, you should dust it with a dry soft sponge or towel



# Wet cleaning of eggs



There are two very important things to know

- 1. Eggs should NOT be soaked or immersed in water**
  - ✧ USDA doesn't allow this because it can allow the passage of bacteria into the egg through the shell pores
- 2. All the water used for cleaning eggs should be at least 90-120°F.**
  - ✧ If the water is colder than the egg, it will penetrate the shell and could carry bacteria into the egg.



# Wet cleaning of eggs

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The egg is naturally covered with a waxy layer that prevents microbes from entering into the egg (called the cuticle or the “bloom”)

- To avoid removing the bloom (cuticle), it is important to limit the amount of time that the shell is wet

This is the reason why old books recommended not to wash the eggs, but that was before refrigeration was available, so now the recommendation is to always clean all eggs for human consumption and then keep them in refrigeration



# Wet cleaning of eggs

- Washing can be done by spraying, pouring or dipping the egg to reduce the time of contact between water and egg
- If you have just a few eggs, use a soft brush and wash them in a sink with hot running water and then dip them quickly in a water with a sanitizer



# Wet cleaning of eggs



- There are specific detergents and sanitizers in the market available for egg cleaning.
- For example, chlorine (bleach) cannot be used for organic eggs and detergent for dishes is usually too harsh.
- If you sell organic eggs, you should review the list of USDA approved sanitizers for eggs.
  - If you decide to use bleach, it should be added to about a tablespoon of bleach into a gallon per water (to get about 200 ppm of chlorine)
  - But, the chlorine is inactivated by organic materials such as dirt, feces, feathers, so the sanitizing solution needs to be prepared again as soon as the water becomes dirty

# Safe egg handling

- If you have several dozen eggs to wash, make up separate basins of washing water, rinse water and sanitizer solutions
  - Wash each egg separately and DO NOT SOAK!
    - There are specific detergents for washing the eggs that you can buy (dish detergent can be too harsh!)



- Dip the egg in rinse water and then dip in the sanitizer
  - You can wash the eggs and then put them in an egg basket or colander to rinse and sanitize several eggs at the same time
  - You should change the wash and rinse water after 3 or 4 dozen eggs. The sanitizer water should be changed when it looks dirty or murky

# Safe egg handling

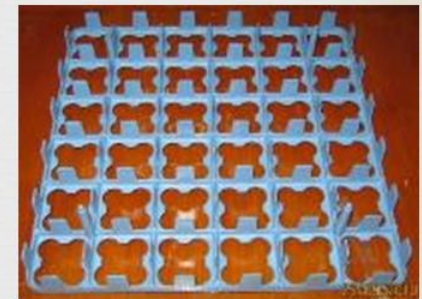


- Eggs are usually left to air dry or wiped dry
  - A fan can help to dry the eggs faster
  - Eggs should be completely dried to avoid the development of fungal or microbial organisms

This kind of trays help to dry the eggs faster and can be stacked, if needed



- After washing, eggs should be stored at 45°F and 70-80% humidity
  - Clean eggs stored at these conditions can keep for up to 3 months
  - In a standard refrigerator, the humidity is lower (usually around 40-50%) and eggs should only be kept for 5 weeks



# Safe egg handling

## Final notes:



1. Only potable water should be used for egg cleaning
2. Use gloves to protect your hands from the hot water and sanitizers
  - If the eggs are too cold, let them get to room temperature before you wash them with hot water to avoid cracking them
3. Brushes, towels, sponges, baskets and other tools that you use for washing eggs should be used ONLY for this purpose!!
4. After you finish washing the eggs, you must wash and disinfect all your tools and the sink or tub that you use for egg washing
5. The detergents and sanitizers used for this can affect a septic tank system



# Refrigeration?



❧ Refrigeration helps to prevent the growth of bacteria both inside and outside the egg

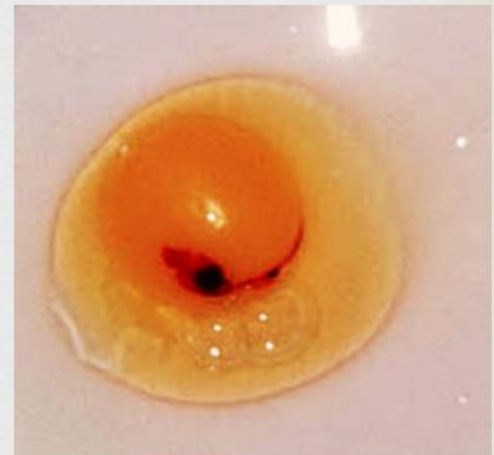
❧ Because bacteria can already be inside the egg by the time it is laid, the “bloom” or cuticle of egg, and/or the outside appearance doesn’t matter, eggs must always be refrigerated

- After eggs are refrigerated, they need to stay that way. A cold egg left out at room temperature can sweat, facilitating the movement of bacteria into the egg and increase the growth of bacteria
- Refrigerated eggs should not be left out more than 2 hours. If you are delivering eggs to clients, always carry a cooler with you

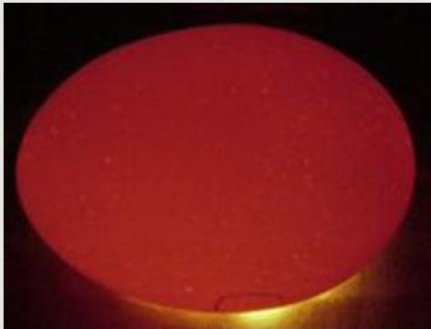


# Egg Candling

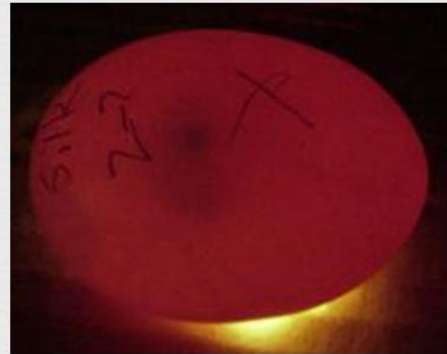
- ❧ Candling is the process of using light to help determine the quality of the egg
- ❧ This process helps to detect cracked eggs and interior defects (blood spots, cell development-fertile eggs, and others)
  - ❧ Presence of blood spots in the eggs can indicate low vitamin A and K in the feed, and/or frights or disturbances in the layer shed
  - ❧ Some diseases like avian encephalomyelitis can also cause this problem
  - ❧ Candling your eggs helps you to guarantee your clients that they will receive the best egg, but also for you to monitor how the hens are doing



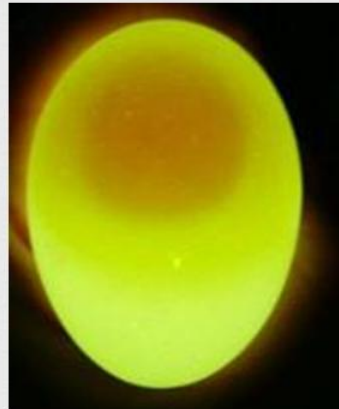
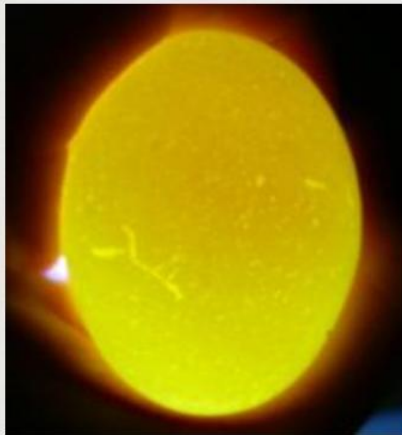
# Egg candling



Nothing here



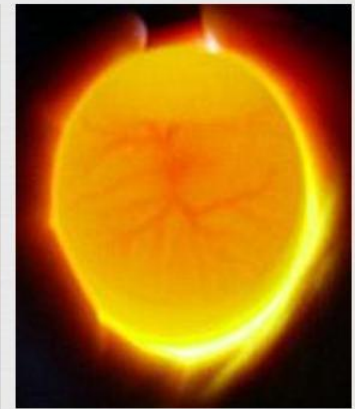
Chick developing



Day 1



Day 2



Day 3

# Designer eggs?

Pastured eggs reportedly have\*:

- 1/3 less cholesterol
- 1/4 less saturated fat
- 2/3 more vitamin A
- 2 times more omega-3 fatty acids
- 3 times more vitamin E
- 7 times more beta carotene

- But, e.g. for vitamin E, the increase goes from **0.8-1 mg** to **2-2.5 mg** while the daily recommendation is **22-25 mgs**.
  - In Europe you can get eggs that have up to 6 mg
- You must be very careful in using these claims

\*This is the link to the original source for these numbers:

<http://www.motherearthnews.com/Real-Food/2007-10-01/Tests-Reveal-Healthier-Eggs.aspx>

# Designer eggs?



- ❧ Some egg producers take advantage of consumers' perceptions about pastured eggs to try to promote them as healthier options
  - ❧ Eggland's Best stated that their eggs have 25% less saturated fats (this amounts to less than half a gram)
  - ❧ Land O' Lakes promoted their eggs as a good source of omega-3 fatty acids and "good for heart health", while the amount of saturated fat and cholesterol in eggs doesn't meet the definition of healthy from the FDA
  - ❧ FDA has asked this companies to withdraw these statements as they are misleading, or face severe fines
- ❧ You need to be careful of the claims that you make
- ❧ You know that your eggs are good and healthy... tell that to your clients, but be careful of the claims that you use. Talk to them and find out why they buy your eggs.



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# Want more information?



APPPA American Pastured Poultry Producers Association	<a href="http://www.apppa.org">www.apppa.org</a>
Pastured Poultry Resources	<a href="http://pasturedpoultry.org">pasturedpoultry.org</a>
Pasture poultry yahoo group	<a href="http://tech.groups.yahoo.com/group/PasturePoultry">http:// tech.groups.yahoo.com/ group/ PasturePoultry</a>
Appropriate Technology Transfer for Rural Areas (ATTRA)	<a href="http://attra.ncat.org">attra.ncat.org</a>
Sustainable Agriculture Research and Education (SARE)	<a href="http://www.sare.org">www.sare.org</a>