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Inside this issue:

<i>Molting in Chickens</i>	1
<i>Determining the Quality of Eggs</i>	2
<i>Determining the Quality of Eggs</i>	3
<i>Factors Affecting Flock Egg Production</i>	4
<i>Contact Information</i>	4

Feathered Facts

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Molting in Chickens

Have you noticed some of your chickens losing feathers during the last couple of months? Have your hens also decreased their egg production or stopped laying entirely? If so, your chickens are most likely going through a molt.

Molting in chickens is defined as the shedding or loss of old feathers to make way for new growth. Molting is normal in chickens and other birds and can occur in both males and females. Wild birds will typically shed older feathers before the cold weather season or before migration. This seasonal molting in wild birds is not associated with reproduction or egg laying.

The domesticated chickens that we have today have been bred over time to produce more eggs than their wild counterparts. Because of this, there is a link between egg production and molting in domesticated chickens.

Hens that are kept on a natural daylength cycle (no additional light beyond natural sunlight) will typically molt after they have been in production for 8 to 12 months. It can take up to four months for the molting cycle to be complete and you may notice a decrease or cessation of egg production during this time.

Molting is controlled by the reproductive organs (ovaries or testes) and the thyroid gland. In hens, a decrease in estrogen will be the main cause of a molt. It is because this decrease in estrogen also affects the reproductive system as a whole that we see a decrease in egg production during the molt.

Even though the molt is controlled by gonadal and thyroid hormone production, it is usually an external factor that initiates the decrease in estrogen, thus resulting in the molt. This initiator is typically decreasing day length, and it occurs after the fall equinox in September, but before the winter solstice in December (at least in the Northern Hemisphere). There are also other factors that can lead to a premature or partial molt including such stressors as feed and water shortages, disease, or cold temperatures.

Prescribed molting is frequently used in commercial egg production. As hens age, their egg quality and production rate will decrease. Molting is used as a “reset” for these hens. The process allows the hens’ reproductive system to rest and recuperate from high production levels. Hens that have been through a molt will, most likely, not lay at the same rate as their highest production, but they will produce at 85% to 90% of their highest production rate (for the first molt only).

Remember that molting is a natural process that is usually brought on by decreasing day length. Not all hens will respond to decreasing day length with a molt, but many will. If you have additional questions about chickens and molting, please contact the UF/IFAS Extension, Baker County Office via the information in page 4 or reference [this article](#).

Determining the Quality of Eggs

Whether or not you have your own flock of hens for egg production, if you purchase them from a local vendor, or you purchase them from a grocer, it is important to be able to identify issues that may impact the quality of the eggs that you plan to consume. However, the term quality may have different meanings for different people. It is also important to differentiate between quality and safety.

Most eggs that are purchased from retailers have been graded for both interior and exterior quality along with size. Generally, you will see the “Grade A” designation along with the size. You may occasionally see “Grade AA” or “Grade B” at a specialty retailer, but these grades are almost never seen on your grocer’s shelves. Additional information about egg grading can be found [here](#) and [here](#). Eggs that are not graded can also be sold in Florida under the Limited Poultry and Egg Farm Operation rule passed in 2014. Information about this rule can be found in a previous edition of [Feathered Facts](#).

Since an egg is graded on both interior and exterior characteristics, let’s take a look at some of the reasons why an egg might not make “Grade A”.

DIRTY EGGS—Dirty eggs are those which have visible mark of contamination by feces or other foreign material. Commercial eggs are almost always washed before packaging, so this tends to clean up any dirty eggs. However, there are some eggs that cannot be cleaned sufficiently. These eggs are either downgraded to a “B” grade or are not sold for human consumption. Those eggs that are not fit for human consumption can be used for other products such as pet food.

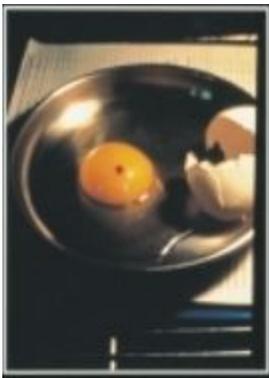
MISSHAPEN EGGS or SHELL DEFECTS—We all know what eggs are supposed to look like. However, there are instances where eggs do not conform to the traditional egg shape. In most cases, these eggs do not pose any safety risk to the consumer, but they are downgraded to “B” because of the way that they look (these eggs also don’t fit very well into cartons or flats). Eggs that have cosmetic issues with the shell are also downgraded. These can include eggs with rough or pimpled shells and also, occasionally, includes eggs that have “body checks”. A “body check” happens when the egg shell is cracked slightly while still inside the hen. The hen will add an additional layer of shell to the spot. Many “body check” eggs are not detectable unless candled.

INTERIOR QUALITY ISSUES—Interior issues that will downgrade an egg are typically concerned with yolk or albumen quality. Disease within the flock can be a major cause of downgrades and loss of interior quality. It is important to note that albumen quality will decrease as the age of the hen increases. Flattened yolks can also be an issue. The yolk will decrease in quality over time after laying, so the age of the egg is important for this quality issue. Rubbery yolks are typically caused by the freezing of fresh eggs, but can also be caused by feeding issues such as the overuse of cottonseed oil or the use of velvetleaf seed.

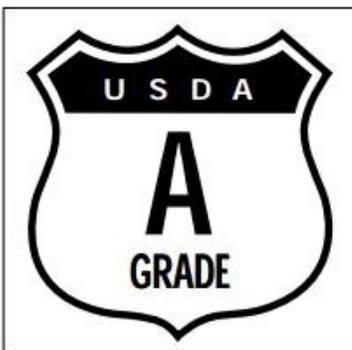
YOLK COLOR—Yolk color can also vary in eggs. The color of the yolk is determined by the amount of plant pigments called xanthophylls in the diet of the hen. The use of white corn or other low-pigmented plants in the diet will cause the yolk to be paler than expected. Some producers will add



A blood spot visible on a candled egg. Image from [USDA Egg Grading Manual](#).



A broken out egg with a blood spot. These spots are not safety issues, but are considered quality defects. Image from [USDA Egg Grading Manual](#).



An example of the shield placed upon packages of Grad A eggs by the U.S. Department of Agriculture

Determining the Quality of Eggs *Continued from Page 2*

marigold petals or marigold extract to the feed mix allowing for a more intense color in the yolk. Mild variations in yolk color are not a safety issue. It is sometimes reported that the yolks of hard-cooked eggs may have a green ring around the yolk. This is typically caused by one of two issues: 1) the eggs have been overcooked, or 2) there is an abundance of iron and sulfur in the water that the hens are consuming. In each of these cases, the green ring does not pose a safety issue, it is purely cosmetic.

AIR CELL SIZE—Eggs have an air cell that is typically located at the large end of the egg. The air cell is used for gas exchange during chick development. Over time, even in unfertilized, un-incubated eggs, the air cell will get larger. This is the reason that fresh eggs usually sink in water, while older eggs float. At candling, the air cell is measured and eggs with air cells larger than the measurement for “A” grade or better will be downgraded to “B”.

BLOOD & MEAT SPOTS—The main goal of candling eggs other than determining the size of the air cell is to look for blood and meat spots in the eggs. In commercial settings, these eggs are removed from the consumer chain, but eggs with blood spots or meat spots can be found in circumstances where the product has not been graded by the USDA or a state agency.

Blood Spots—As the yolk is developing within the ovary of the hen, it is held within a small sac and blood vessels bring the nutrients that are stored within the yolk. Then it is time for the yolk to leave the ovary and continue the process, this sac splits open and drops the yolk into the infundibulum, which is at the top of the reproductive tract. In most cases, the place where the sac

splits (the stigma) is devoid of blood vessels. In some cases, however, a vessel will cross the stigma. In these cases, the vessel ruptures when the sac does and deposits a drop of blood onto the yolk, resulting in a blood spot. These spots do not pose a safety risk, but eggs of this kind are removed from commercial production because of aesthetic reasons. Blood spots can be removed with the tip of a knife or tine of a fork when the egg is broken out for consumption.

Meat Spots—Meat spots are another aesthetic defect that can be found in eggs. Like blood spots, meat spots do not pose a safety risk and can be removed in the same manner. Meat spots occur when a small piece of the hen’s reproductive tract sloughs off during egg formation. While blood spots are usually found on the yolk, meat spots are typically found within the albumen.

CHALAZAE—The chalazae are the thick strands of albumen that are found close to the yolk. In some cases, candlers have mistaken very thick chalazae for meat spots or even a developing embryo. It is also an old saying that the chalazae are rooster’s sperm that have become trapped within the egg. In reality, the chalazae are really just thick strands of albumen. They function to keep the yolk centered within the egg as it is being turned by the hen during incubation. The chalazae are a vital part of the egg are not considered a defect.

SUMMARY—Eggs are a good source of nutrition and the defects discussed here are rarely seen in commercial eggs. It is also important to remember that even though some eggs may have defects by the quality standard, they do not pose a safety issue.

Egg Size	Oz. per Doz.
Jumbo	30
Extra Large	27
Large	24
Medium	21
Small	18
Pee wee	15

There are a lot of steps involved from the time that an egg is laid until it reaches your table. One of these involves the grading and sizing of the eggs. Grading consists of measuring the interior and exterior quality of the egg against known standards while sizing involves getting eggs of similar sizes together so that they can be packaged into a carton or flat. The sizes above are the minimum weights for egg sizes in the United States. For additional information about eggs, including grading and sizing information, please click [here](#).



Exterior quality issues for this egg include abnormal shape, pronounced ridges and thin spots. Image adapted from [USDA Egg Grading Manual](#).

There are 4 cities
in the United
States with
"chicken" in their
name:

Chicken, AK
Chicken Bristle, IL,
Chicken Bristle, KY
and
Chicken Town, PA

A candled egg that shows a clearly defined yolk. This egg would be a "B Grade" egg as defined by USDA Quality Standards. Image from [USDA Egg Grading Manual](#).



Most hens will begin laying eggs when they are between 18 and 22 weeks of age. They will typically lay between 9 to 12 months before ceasing production and going through a molt. Peak production in hens occurs around 30 weeks of age, but gradually declines over the course of the laying cycle. Sudden drops in egg production can cause alarm for the grower and can be attributed to many differing causes. The list below outlines some of the most common causes for a sudden decrease in egg production.

- **Aging Hens or Molt**—Hens will naturally decrease production over time. They will resume egg production after a molt, but will never revert back to peak production. Molting (see page 1) will result in sharp production decreases.
- **Improper Nutrition**—Laying hens require a balanced ration for maximum egg production. Unbalancing the ration with scratch, table scraps, or other items may cause drops in production. Incorrect levels of salt, calcium, Vitamin D, protein, and fat in the diet can also cause production issues.
- **Toxicosis**—A toxicosis is a toxic level of some molecule within the animal. There are many ingredients in a bird's diet that can cause a toxicosis if fed in excessive amounts. Balanced rations should not have issues. Other toxins that may cause issues with egg production include mycotoxins (toxins from mold). Botulism toxin, and plant toxins such as those from crotalaria, nightshade, and ornamentals.
- **Management Issues**—Birds that run out of water or feed for more than a few hours will most likely see a drop in production. In the warmer months, extremely high temperatures can cause issues with egg production. Adequate water and ventilation are essential during periods of potential heat stress.
- **External Parasites**—A large infestation of external parasites can cause a drop in egg production. Common external parasites include: Northern Fowl Mite, Lice, Sticktight Fleas.
- **Internal Parasites**—Internal parasites can also cause a drop in egg production. Roundworms (nematodes) and tapeworms are common internal parasites.
- **Disease**—Most diseases will cause a drop in egg production. Consult with your veterinarian or other poultry professional if you suspect disease in your flock.
- **Others**—Additional problems that may cause an apparent drop in egg production include: 1) predation of eggs by snakes and other animals, 2) egg eating by hens within the flock, and 3) egg hiding by hens.

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