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UNIVERSITY of FLORIDA

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SOLUTIONS

Feathered Facts

Volume 2, Issue 2 February 2015

UF | IFAS Extension | Baker County

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Inside this issue:

Flock Management & Disease

Proper flock management is important when it comes to the health of your chickens. Prevention of disease is always more time and cost effective than treatment and your flock will perform better in a clean and disease-free environment.

One of the first priorities is to develop a clean-out schedule. This schedule can vary depending on the size of your flock and their current housing, but it is important to clean the growout area regularly. It is also important to clean the waterers and feeders. Waterers should be cleaned daily by scrubbing or the use of a chlorine bleach solution. Feeders can be cleaned less often than waterers, but should definitely be cleaned if they appear soiled.

There are many types of issues that can affect the health of a flock, including disease (both contagious and hereditary), parasitic infestations, and nutritional deficiencies.

Contagious diseases can typically be prevented with the use of vaccination. Make sure to obtain your chicks or replacement birds from a reputable hatcher and inquire about the vaccinations that the birds have received.

Hereditary diseases are prevented by using stock that is certified to be free of these types of diseases. Once again, make sure to deal with a reputable dealer or hatcher and make sure that your birds come from disease-free flocks.

Nutritional deficiencies that mimic the signs of a disease can be prevented by feeding the birds a balanced ration. Be sparing in giving your birds 'treats' such as cracked corn or other feeds that are not part of balanced ration.

Parasitic infestations can usually be prevented via good flock management. However, even the best managed flock can succumb to parasites.

There are drugs and antibiotics that are available to treat both diseases and parasitic infestations. However, these treatments only work efficiently when given at the recommended dose for the recommended time. Random or irregular use of drugs and antibiotics can actually cause more problems in a flock.

Finally, keep the following principles in mind to help reduce the chances of disease in your flock:

- Provide adequate ventilation during hot weather.
- Use screening or other methods to keep your birds isolated from other animals.
- Segregate birds of different ages, if possible.
- Limit visitors to the growout area.
- Quarantine new birds for 30 days, if possible, to identify any signs of disease.
- Eliminate trash or junk piles near the growout area. They can harbor vermin and other disease carriers.

Additional information on diseases can be found here.

Determining the Quality of Eggs

Egg Size	Oz. per Doz.
Jumbo	30
Extra Large	27
Large	24
Medium	21
Small	18
Peewee	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 again 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.

Whether or not you have your own supply of hens for table eggs, you purchase them from a local vendor or purchase them from the grocery store, it is important to be able to identify issues that may impact the quality of the eggs that you plan to eat. However, the term quality may have differing 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 a size (Jumbo, Extra Large, Large, Medium, Small and Pee Wee). You may occasionally see "Grade AA' but this is rare. You will almost never see a 'Grade B' egg sold in stores as these eggs are typically used in food service such as baking and other food processes that require eggs. You can find additional information on grading of eggs here and here. Eggs that are not graded can also be sold in Florida directly to consumers under the Limited Poultry and Egg Farm Operation Rule that was passed in 2014. Information about this rule can be found in a previous edition of *Feathered Facts.*

Since an egg is graded based on both exterior and interior 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 marks 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 for a 'B' grade or are not sold for human consumption. Those eggs that are not fit for human consumption can be used for other processes 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 a 'B' Grade because of the way that they look (these eggs also don't fit very well into carton 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 able to be detected unless they are candled.

Interior Quality Issues—Interior issues that will downgrade an egg typically have to do with yolk or albumen quality. Disease within the flock can be a major cause of downgrades and loss of interior quality. It is also important to note that albumen quality will decrease age the age of the hen increases. Flattened yolks can also be an issue. The yolk will decrease in quality over time, so the age of the egg is important for this quality issue. If the yolks are rubbery, this is typically caused by freezing or 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 marigold petals 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.

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Ask the Expert

This month's question relates to eggs and their nutrition. **I've heard that quail eggs are more nutritious than chicken eggs. Is this true? What are the differences in nutrition between chicken and quail eggs**?

In general, eggs are a very nutritious food item. However, there are certain differences in the makeup of the egg that can be seen when comparing eggs from different species. In this instance we will take a look at some of the most common nutritional components of chicken eggs and quail eggs and how that compare. The information presented below was adapted from the USDA National Nutrient Database which can be found at http://ndb.nal.usda.gov/. It is also important to note that the values given are for 100 grams of eggs so that an equal comparison can be made. The nutritional information for the eggs is based on the edible portion of the egg only.

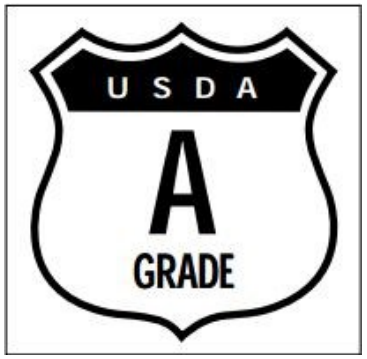
Nutrient	Unit	Chicken Egg Value per 100 g	Quail Egg Value per 100 g
Energy	kcal	143	158
Protein	g	12.56	13.05
Total Lipid (Fat)	g	9.51	11.09
Carbohydrate	g	0.72	0.41
Sugars (Total)	g	0.37	0.4
Calcium	mg	56	64
Iron	mg	1.75	3.65
Magnesium	mg	12	13
Phosphorus	mg	198	226
Potassium	mg	138	132
Sodium	mg	142	141
Zinc	mg	1.29	1.47
Fatty Acid (Total Saturated)	g	3.126	3.557
Fatty Acid (Total Monounsaturated)	g	3.658	4.324
Fatty Acid (Total Polyunsaturated	g	1.911	1.324
Cholesterol	mg	372	844

As you can see from the table to the left, chicken eggs and quail eggs are very comparable in many nutritional aspects. The thing to remember about this table is that it compares 100 grams of each of the types of eggs. For chicken eggs, 100 g is approximately 2 large eggs, as large eggs typically weigh about 50 grams each. For quail eggs, 100 g is approximately 11 eggs, as quail eggs typically weigh about 9 grams each.

It is also important to determine the cost difference based on the amount of each type of egg that you consume at a given time.

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

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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.

Believe it or not, there is a scientific name for the fear of chickens; it is called Alektorophobia

Air Cell Size, cont'd—This air cell is used for gas exchange while the chick is developing within the egg. Over time (even in unfertilized, un-incubated eggs) the air cell will get larger. This is the reason that fresh eggs typically sink in water, while older eggs will float. At candling, the air cell is measured and eggs with larger air cells are downgraded. This is also why older eggs are typically not able to be graded as 'AA'.

Blood and 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 on the eggs. In commercial settings these eggs are removed from the consumer chain, but they can be found in eggs that do not go through the commercial grading process.

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. When it is time for the yolk to leave the ovary and continue the process of making the this sac splits open and drops the yolk into the infundibulum, which is the top if the reproductive tract. In most cases, the place where the sac splits (the stigma) is devoid of blood vessels. However, in some cases a vessel will cross the stigma and when the yolk drops a small drop of blood will be deposited on the yolk. This results in an egg with 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. The blood spot can be easily removed with the tip of a knife or the 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, also like blood spots, they can be removed easily with the tip of a knife or the tine of a fork when the egg is cracked open for consumption. Meat spots occur when a small piece of the reproductive tract of the hen sloughs off during egg formation. While blood spots are generally found on the yolk of the egg, meat spots are generally found in the albumen of the egg.

Chalazae—The chalazae are the thick strands of albumen that are found close to the yolk of the egg. 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 is the sperm from the rooster that has 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 the incubation period. The chalazae are a vital part of the egg and are not considered a defect.

Summary—Eggs are a good source of nutrition and most of the quality issues that have been discussed here are not typically seen in commercial eggs. It is important to note that while these defects are considered quality defects and will cause an egg to be downgraded or not used at all in a commercial setting, they are not generally safety issues. If you procure your eggs from your backyard or from someone who keeps a few hens for egg production, keep these quality issues in mind so that you will have the best information when buying your eggs.

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