

# **Let's Talk Eggs! Exploring Manitoba's Egg Industry**

## **The Journey of the Egg Discovery Sheet**

### **TEACHER GUIDE (Gr 5)**

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#### **HENS LAY EGGS**

Eggs are produced by hens (female chickens) on farms. Hens begin laying eggs when they are 4-6 months old. A good laying hen will produce 6-7 eggs per week for the first 1-2 years of her life. There are many varieties of laying hens, but White Leghorns are the most common.

White Leghorns reach egg-laying maturity early, adapt well to different climates, and are known for consistently laying a large number of white-shelled eggs. They have a relatively small body size and can produce, on average, 250-350 eggs a year. Eggs come in various shell colours, although there is no nutritional difference between different coloured eggs. The shell colour depends upon the breed of chicken.

Eggs can be white, tan, brown, or even a light shade of green. Chickens live in houses called coops. They eat a special nutritionally balanced feed made up of grains, vitamins, and minerals.

On a farm, eggs are collected every day. They are gathered frequently and refrigerated quickly. Warm temperatures lower the eggs' freshness and quality. Eggs that are produced for the purpose of eating will not develop a chick because the eggs are never fertilized by a rooster and they are never incubated (kept warm).



## LET'S TALK EGGS | THE JOURNEY OF THE EGG

### EGGS ARE WASHED

All eggs are washed with a specialized solution of warm water ( $41^{\circ}\text{ C}$ ) and soap to clean and sanitize the eggs and remove any contaminants (manure, grease, yolk, etc.) before they are sold to consumers.

After washing, the eggs are sprayed with a warm water spray containing sanitizer to remove any remaining bacteria. The eggs are then thoroughly dried to remove excess moisture before they are packaged. Bacteria cannot penetrate a dry egg shell. Removal of contaminants prevents egg spoilage by bacteria.

Strict regulations specify the procedures and food-safe cleaning compounds that may be used to wash eggs. Most eggs are cleaned in mechanical washers that use sprayers, brushes, detergent-sanitizers, rinsers, and dryers. A dirt detection system is used to find eggs that are dirty. This system uses multiple cameras to find eggs that have spots on them. Any dirty eggs are rerouted back to the washer.



## EGGS ARE CHECKED FOR CRACKS

Egg shells are the first barrier to keep bacteria from entering the egg. Cracks in egg shells create a food safety risk due to bacterial contamination.

Large cracks can easily be seen with the human eye or by candling the egg (holding the egg up to a light). Microcracks in the shell are more difficult to detect. Microcracks are very small cracks in the shell surface that reduce the protective barrier benefits of the shell. Microcracks are not easily seen with the human eye.

Crack detectors check the eggs sonically. Tiny probes tap each egg and listen for the sound it makes. The machine taps the egg multiple times while listening to the sound it produces. If a crack is detected, the egg is removed from the production line.



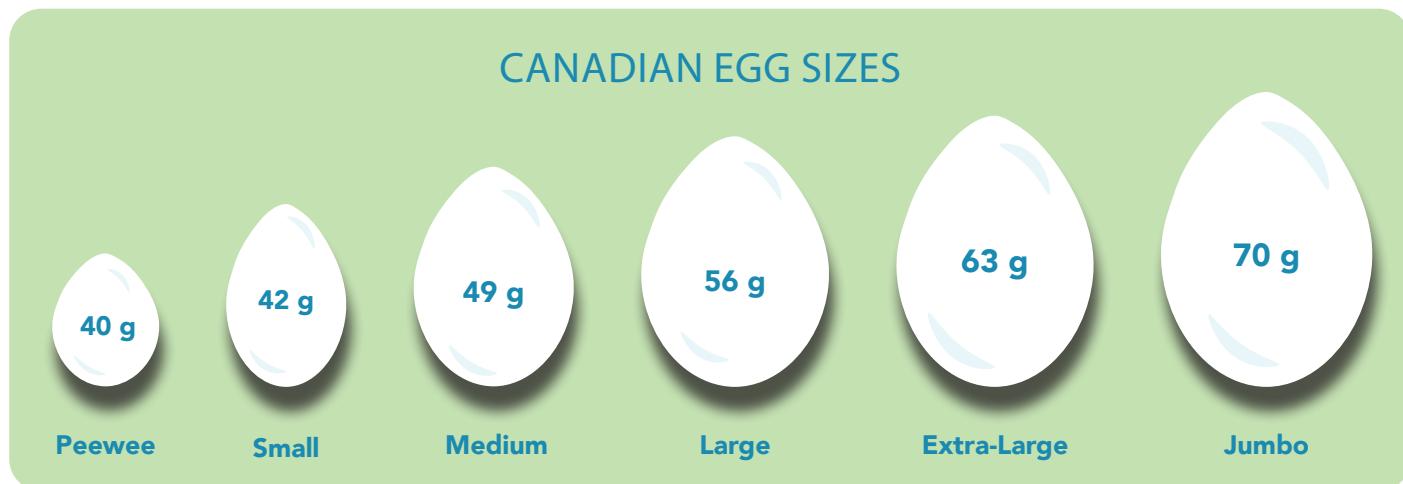
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### EGGS ARE SIZED

Egg size is one of the factors considered when the price of eggs are determined. Egg size is determined by the average weight per dozen eggs. While some eggs may look slightly larger or smaller than each other in the same carton, the weight of the dozen eggs as a whole determines their class size.

The eggs are weighed by electronic scales and packaged according to their size based on weight. Jumbo eggs are 840 grams per dozen, extra large are 726 grams, large eggs are 672 grams, medium are 588 grams, small eggs are 504 grams, and peewee eggs are approximately 504 grams per dozen. In recipes, large eggs are generally the standard.

The age, breed, and weight of the hen influences the size of an egg. As the hen ages, her eggs increase in size. Underweight hens produce smaller eggs. Environmental factors, such as stress, heat, overcrowding, and poor nutrition can result in smaller eggs.



\*Nutritional value per serving can vary depending on the type/size of egg you purchase. Nutritional value can be found on the carton.

### EGGS ARE GRADED

Grading eggs normally includes cleaning (usually by washing), candling, weighing (Canada A and B) and packing into containers with the applicable grade name. The four grades under the Canadian Egg Regulations are Canada A, Canada B, Canada C and Canada Nest Run (CNR). Eggs are inspected for quality using special lights. This process is called candling.

Canada Grade A eggs have thick, firm whites, a yolk that is round in shape, centred, and free from any defects, and an air cell that is maximum 5 mm in depth. Their shell is clean, smooth, and oval in shape. Grade B eggs have a slightly lower interior quality. Grade C eggs may have slight stains and be irregular in shape. They are not sold in supermarkets, but are used in powdered or liquid egg products. There is no nutritional difference between the different grades.



## LET'S TALK EGGS | THE JOURNEY OF THE EGG

### EGGS ARE PACKAGED AND SHIPPED

Eggs are usually shipped within a week of being laid. They are packaged by size based on weight and by grade. Expiration, sell by, best by, and/or use by dates are burned into the egg cartons. Many cartons also show the Canada Egg grade seal in addition to the brand, size, number of eggs, and nutrition label. Carton labels may also indicate the producer and instructions about how to properly store them.

Whether made of pulp, foam, or clear plastic, the carton protects the eggs from breaking or crushing, bacteria, and loss of moisture. New packaging designs are continually being tested to provide the best protection for the eggs. Eggs are placed into the cartons large end up to keep the air cells in place and the yolks centered.

The egg cartons are packed into boxes and moved into a refrigerated room for storage until they are transported to stores. Eggs must be refrigerated. They will age more in one day at room temperature than in one week in the refrigerator. Eggs are transported to the grocery store in refrigerated trucks.

