

First egg to retirement

**A reference guide to keeping
happy, healthy hens**



Congratulations on your first egg.

Finding your first egg is a magical moment, and it's just the beginning. With the right nutrition and care, you're in for years of farm fresh eggs.

We've enjoyed being with you—from strong baby chicks to the comical teenage phase and now as you raise happy, healthy hens.

This brochure is a sequel to our *My First Year with Chickens* guide and offers tips for raising and caring for adult laying hens. Print and keep this guide near your coop as a quick reference.

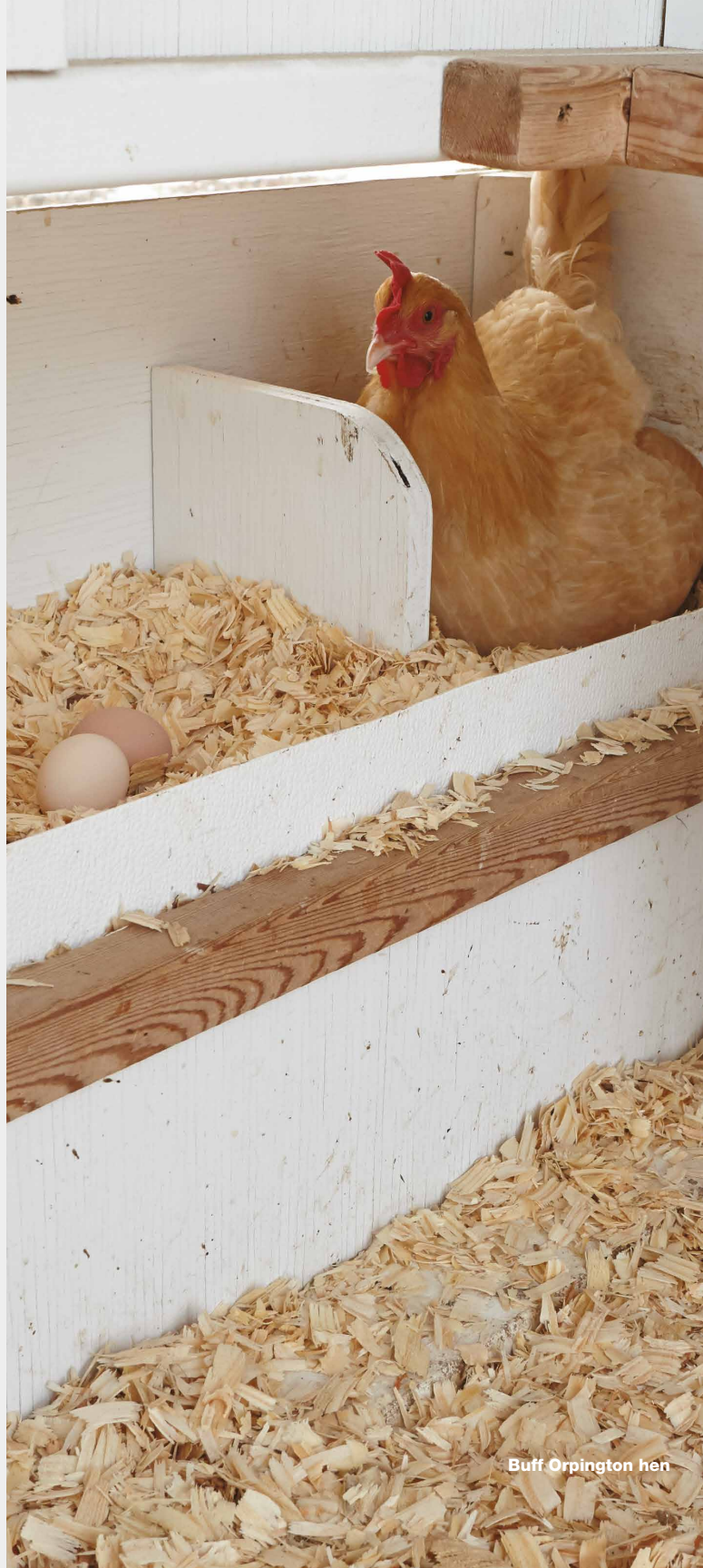
Throughout this guide, we share learnings from our own backyard coops on our farm in Missouri where our team works with backyard chickens each day.

If you have any questions as you go, connect with us online or stop by your local Purina® retailer. We're happy to be with you each step of the way. And, like you, we love talking chickens!

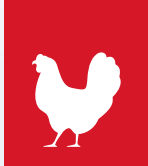
Enjoy the journey!
Your friends at Purina



www.purinamills.com/chicken-feed



Buff Orpington hen



Silver Laced Wyandotte hens

Your quick guide to strong hens



Fast facts by age

- Flock feeding guide 6-7
- Egg-ticipation: Weeks 15-17 8-9
- Laying hens 10-11
- Molt and retirement 12-13



Hen nutrition

- Choosing a layer feed and switching feeds 14-15
- The Flock Strong™ and Oyster Strong® Systems 16-17
- Supplements, treats and foraging 18-23
- Signs of good nutrition and hen health 24-25



Coops and comfort

- Coop comfort and safety 26-27
- Biosecurity and coop cleaning 28-29
- Seasonal weather care 30-33



Eggs

- Egg goals 34-35
- Egg information 36-41
- Colored eggs 42-43



Physiology

- Feed digestion and egg formation 44-47
- Why hens stop laying 48-49
- Molt 50-51



Behavior

- Hen pecking 52-53
- Rooster care and feeding 54-55
- Adding new birds 56-57



Other

- Going organic 58-59
- Hatching eggs at home 60-61
- Other frequently asked questions 62-65



Stay connected

66

Choose a Complete Feeding Program for your Birds

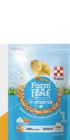
Chickens

layer chicks
day 1 to 18 weeks

COMPLETE
STARTER FOOD
with whole-food
ingredients

NEW!
Farm to Flock®
Lifestage
System

Farm to
Flock®
Starter



Farm to
Flock®
Grower



Farm to
Flock®
Layer

COMPLETE
LAYER FOOD
with whole-food
ingredients



Purina®
Layena®+
High
Protein

COMPLETE
LAYER FEED
WITH ADDED
PROTEIN
contains black
soldier fly larvae

MEDICATED
COMPLETE
STARTER FEED
for chicks not
vaccinated
for coccidiosis

VALUE FEED

Home Grown®
Starter/Grower
Medicated



Purina®
Start & Grow®
Medicated

NON-MEDICATED
COMPLETE
STARTER FEED
for chicks
vaccinated
for coccidiosis

VALUE FEED

Home Grown®
Starter/Grower
Non-Medicated



Purina®
Start & Grow®
Non-Medicated

VALUE FEED

Home Grown®
Layer



Purina®
Layena®
Crumbles,
Pellets, or
Pearls

COMPLETE
LAYER FEED

COMPLETE
STARTER FEED



Purina® Organic
Starter/Grower



Purina® Organic
Layer
Crumbles
or Pellets

COMPLETE
LAYER FEED

SUPPLEMENTS



Purina®
Electrolyte



Purina®
Probiotic

During hot weather or periods of stress,
these supplements can be added to
fresh water to support digestive health



Farm to Flock®
Hen Treats



Farm to Flock®
Block



Purina®
Flock Block®



Purina®
Scratch Grains



Purina® Organic
Scratch Grains

Mixed Flock

non-laying birds

chickens, ducks
and geese
from day 1

turkeys, pheasants
and quail
8+ weeks

COMPLETE FEED



Purina®
Flock Raiser®
Crumbles
or Pellets

ducks
from day 1

COMPLETE
FEED



Purina®
Duck
Feed

laying
birds

During periods of egg production,
supplement mixed flock feed with
oyster shell for added calcium

meat birds
day 1 to
market weight

COMPLETE FEED



Purina®
Meat Bird

traditional

organic
non-gmo

water
additives

traditional

organic
non-gmo

treats



Fast facts by age

A laying hen has several key moments in her egg production career. During each stage, hens require different care and nutrition to stay strong and productive. Read this section for a quick overview of each stage. Then flip further through the guide for deeper dives on each topic.

Weeks 15-17: Egg-ticipation

If you haven't yet found your first farm fresh egg, you're likely experiencing a bit of "egg-ticipation." This is the term we've given for weeks 15-17. Hens are nearly full grown and, depending on breed and individual bird, the first egg is just around the corner.

When pullets are nearing their first lay, their behavior changes. Signs it's time to prepare for eggs, include:

- Spending more time with the rooster
- Crouching for breeding
- Investigating the nesting area

Prepare nesting boxes: If you covered or blocked off nest boxes for pullets, you can now remove the coverings and allow hens to explore the boxes.

Provide one 1-foot square nest box for every four or five hens, raised off the floor in the darkest corner of the coop. The flock will take turns using the boxes. Line each box with a thick layer of straw or other bedding to cushion the eggs and keep them clean and unbroken.

Be sure all nest areas have a uniform environment. Once a hen begins laying, it's her tendency to lay in the same spot moving forward. If hens decide one nest is preferable to others, they may all try to use it, causing stress, which can lead to egg breakage or egg eating. On our farm, we built the nests on the sides of our coops for easy outdoor access. This way, we can easily collect eggs without disrupting the flock.

When hens show signs of laying, place golf balls or decoy eggs in the nesting boxes to help hens understand how to use the boxes.

Pick a layer feed: Before the first egg arrives, continue feeding a complete starter feed. Feeding layer feed too early can cause kidney damage to young birds. Plan ahead, and select a layer feed in advance for a smooth transition when the first egg arrives around week 18.

As compared to starter, a layer feed has less protein and more calcium. This added calcium is important for egg production.

Look for a complete layer feed that matches your flock goals—whether it's Purina® Organic Layer Pellets or Crumbles, Purina® Layena®+ Omega-3, Purina® Layena®+ High Protein, Purina® Layena® or Farm to Flock 18% Layer. These complete layer feeds include the unique nutrients and the Oyster Strong® System hens need to stay healthy and produce strong-shelled eggs. For a value option, try Home Grown® Layer feed.

Continue feeding a complete starter feed:



Choose a complete layer feed to transition to when the first egg arrives around week 18:



premium

value

organic



Weeks 18-20: Welcome to adulthood

If raising a backyard flock was a treasure hunt, the ultimate prize would be a hen's first egg.

The first egg typically arrives between week 18-22 (4-5 months of age) but can vary based on breed, environment and nutrition. A rooster is not necessary for egg production.

When birds reach 18 weeks old or when the first egg arrives, begin the transition to a layer feed. We've found the more similar the two feeds are, the smoother the transition goes. A typical transition from one feed to the next should take about a week.

The Flock Strong® System stamp on Purina® flock feeds is your symbol of all-around bird health. With our proprietary blend, you're giving your birds everything they need to live happy, healthy and full lives — while nurturing a bond that grows with each meal.



If birds have not started laying by weeks 18-20, you can still switch to a complete layer feed that includes the Oyster Strong® System. The extra calcium in layer feed can help jump-start egg production.

The first eggs a hen lays may be irregular - possibly small, with soft shells, no yolks or double yolks. After a week or so, egg production should become more consistent. A hen will reach peak egg performance at about 30 weeks of age.

Begin collecting eggs regularly—every morning and evening—to keep eggs fresh and prevent hens from eating eggs.

Once hens start laying, you can also reward them with a few treats and scratch. Keep treats to 10 percent of the diet or less to prevent diluting the nutrients in their complete feed.

Years 1-6: The prime layer years

High-producing hens can lay up to 300 eggs per year. It takes approximately 25 hours for a hen to produce one egg; six eggs per week is an ideal goal. Hens are typically most productive in their first year and then produce fewer eggs each subsequent year. Production slows drastically in years four, five and six.

Season can also play a role in how many eggs your hens will lay. As days get shorter, hens will naturally take an egg break due to a hormonal response caused by a decrease in day length.

To keep your hens laying eggs, you can add supplemental light to sustain egg production when natural day light is decreasing. Use a combination of natural and artificial lighting to provide your ladies with a total of 16 hours of light each day. Without added light, egg production will slow as the days get shorter and will start to pick up again as the days get longer in the spring.

While hens are laying eggs, feed a complete layer feed for at least 90% of the diet:



The other 10% of their diet can come from blocks, scratch grains or treats they find while foraging.





Month 18 and annually thereafter: Molting

When chickens are around 18 months old, feathers will begin covering the coop floor. Welcome to molting season!

Molt is the term for when birds lose and regrow feathers. The first molt usually occurs in the fall when days become shorter and then annually thereafter.

Hens will take a break from egg laying and shed feathers for a few weeks. Expect about 8 weeks of feather loss and regrowth with the process taking up to 16 weeks for some birds.

If you notice your chickens are losing feathers, you can switch them to Purina® Flock Raiser® if you are feeding your flock conventional feed or Purina® Organic Starter-Grower if you are feeding your flock organically. The higher protein and energy in these complete feeds can help hens channel nutrients into feather regrowth and get back to laying eggs.

While you have your birds on Purina® Flock Raiser® or Purina® Organic Starter-Grower, you shouldn't expect a lot of eggs from your flock. There isn't enough calcium in the feed to support egg production.

Feed hens the high-protein feed for two weeks, and then begin providing supplemental oyster shell for an additional two weeks to get your hens back in egg production. After all four weeks, transition hens back to your Purina® complete layer feed of choice to get eggs again. See page 50 for more molting tips.

During molt, switch to Purina® Flock Raiser® Pellets or Crumbles, Layena®+ High Protein or Purina® Organic Starter-Grower.



Supplement with a dish of oyster shell for added calcium.

Retirement: Years 6+

While the average lifespan of a chicken is 8-10 years, we've also seen well cared-for hens live well-beyond that. Just like people, as birds age they tend to slow down.

One day, the time may come for the veterans of a flock to take a vacation and retire from egg-laying. Although a hen will stop laying as she ages, she still has an important place in the flock as a steady companion who brings joy to the entire family.

At this point, transition to Purina® Flock Raiser® or Purina® Organic Starter-Grower for organically-fed birds. If you have younger laying hens in the flock, be sure they are still getting a complete Purina® layer feed high in calcium to keep them laying eggs.

Just like the other stages, be careful not to overdo treats and scratch as it dilutes the essential nutrients in the complete feed. Limit treats and scratch to 10 percent or less of the bird's diet.

Feed retired hens Purina® Flock Raiser® Pellets or Crumbles or Purina® Organic Starter-Grower.





What to look for in a layer feed

The biggest contributor to hen health, happiness and egg production is their nutrition. Laying hens require unique nutrients to stay strong and produce quality eggs.

Each nutrient plays a specific role and works in tandem with other nutrients to support hen health and egg production. If one is lacking or supplied in excess, the imbalance can quickly impact bird health.

If you choose a Purina® complete layer feed, each of the essential nutrients is included at the correct level – no need to supplement.

The feed you select can also impact the nutrition profile of a hen's eggs. For added nutrition, look for a complete feed that includes omega-3. It's been shown that hens fed Layena®+ Omega-3 produce eggs with at least 250 mg omega-3 fatty acids per egg versus only 50 mg omega-3 in a traditional store-bought egg.¹

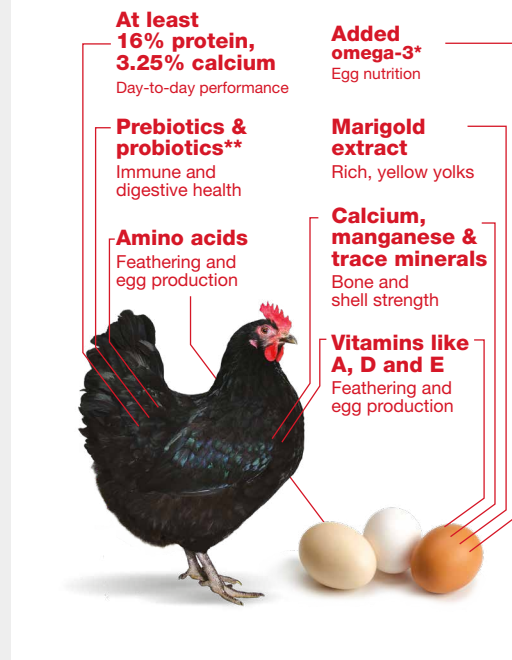
¹When fed a diet of Layena®+ Omega-3 exclusively for at least 3 weeks. Based on large egg (56 g). Results may vary with factors such as total diet and hen health. A typical store bought egg contains 50 mg of Omega-3 fatty acids per large egg (USDA: National Nutrient Base).



Crumbles vs. pellets? The great debate

This decision comes down to personal preference. Some birds prefer pellets while others love crumbles. Both pellets and crumbles include the same essential nutrients laying hens require. Crumbles are simply pellets broken into smaller pieces to accommodate birds that prefer a smaller particle size. They are often a good choice for recently hatched chicks. Studies have shown less feed waste with pellets. On our farm, we start our chicks on starter crumbles and then transition to pellets as they grow.

What to look for in a layer feed



* Added omega-3 available in Purina® Layena®+ Omega-3 feed only

** Prebiotics and probiotics not available in Purina® Home Grown® feeds.

How to switch feeds

When you're ready to switch feeds, sign-up for our Feed Greatness® Challenge to receive a coupon for layer feed. Then make the transition to a new feed slowly. Birds love consistency, so it may take a few days for them to acclimate to their new feed. If birds are used to crumbles, start with a crumbled Purina® feed. The same goes with pellets. The more similar the two feeds are, the more smoothly the transition will go.

1. Sprinkle a handful of new feed on top of the current feed.
2. Over the next several days, increase the proportion of new feed added each day. Mix the feeds together so birds eat both old and new feed.
3. By the end of the 7-10-day period, the feeder should contain only the new feed, and the transition is complete.



Look for the Flock Strong® System stamp on Purina® flock feeds

The Flock Strong® System stamp on Purina® flock feeds is your symbol of all-around bird health. With our proprietary blend, you're giving your birds everything they need to live happy, healthy and full lives — while nurturing a bond that grows with each meal.

Shell-strengthening nutrients in every bite

Help say goodbye to soft shells. All Purina® premium layer feeds are infused with the Oyster Strong® System to ensure your laying hens achieve a consistent supply of calcium through a blend of oyster shell, vitamin D and manganese. These three ingredients work together to help your chickens produce strong-shelled, delicious eggs each day.

The Oyster Strong® difference

Hens that lack proper calcium levels typically produce soft or brittle eggshells. Sometimes an improper calcium balance can cause hens to pull calcium from their bones to produce eggshells, weakening their overall skeletal structure.

The Oyster Strong® System utilizes larger particles of oyster shell to provide a slow and steady release of calcium during the night when hens are forming eggshells. Vitamin D is like the taxi that gets the calcium into your hen's bloodstream where it's needed, while manganese helps strengthen and create the structure of the egg. The Oyster Strong® System brings all three nutrients together to help your hens make strong, healthy eggshells.

Choose a layer feed with the Purina® Oyster Strong® System to help your hens lay strong and stay strong.

Why strong shells matter

Strong shells directly impact egg safety. Strong eggshells are better able to keep bacteria out.

Let's start by looking at the shell under a microscope. A strong eggshell is about 0.3 millimeters thick and has between 7,000 and 17,000 tiny pores². These pores allow oxygen, carbon dioxide and moisture to pass through while working to keep bacteria out.

Eggshells with larger pores or thinner shells have less protective power. A strong shell can help deflect bad bacteria, while bacteria can fit through the larger pores of a weak shell.

The shell is then covered by a thin coating called the bloom, or cuticle, for added protection. Just inside the shell, the inner and outer membranes provide yet another layer of defense. These protective shields work together to keep the contents of an egg safe and healthy. However, none of these barriers are effective unless you start with a strong eggshell; it's the egg's first line of defense.



Why calcium matters to laying hens



Strong shells help keep bacteria out.



Each eggshell includes 2 grams of calcium.



It can take up to 20 hours to make an eggshell. Calcium is needed the entire time.



To make an eggshell, a hen needs 4 grams of calcium per day.



Calcium needs to come from the diet. The Oyster Strong® System provides multiple sources of calcium for the hen to make her eggs.



Supplements

There are many supplements available to backyard chicken raisers. If you feed a complete layer feed for at least 90 percent of the diet, additional supplements are needed only on rare occasions.

Grit: Grit is not a necessary part of your chicken's diet. Although chickens do not have teeth to breakdown feed, they do have a gizzard that breaks food down into smaller particles for digestion. Grit does not provide any nutrition to your chickens as it is small pieces of rock. Having the gizzard work more to digest the feed is actually better for the chickens. And if your chickens are pecking outside, they are probably picking up pieces of rock on their own.

Oyster shell: Laying hens benefit from a calcium source that is slowly released to produce eggs with strong shells. If you feed a layer feed that includes our Oyster Strong® System, there is no need to supplement. Supplement oyster shell to free-range flocks, during molt, during periods of heat stress, or when a complete layer feed is not available.



Probiotics and prebiotics



Prebiotic and probiotic supplements are available on the market. If you feed a premium Purina® complete feed, the probiotics and prebiotics are included right in the feed to help maintain a healthy digestive system.

Substantial amounts of bacteria, known as microflora, live inside a chicken's digestive system. Some of these bacteria are good while others can be harmful.

The success of the digestive system depends on a higher ratio of beneficial to harmful bacteria. Probiotics and prebiotics are included in Purina® feeds to help maintain proper balance.

Probiotics support beneficial bacteria.

Probiotics are the beneficial bacteria that work to keep the digestive tract healthy. They support the other beneficial bacteria in the digestive tract. This ultimately supports hen health.

Prebiotics support beneficial bacteria. While prebiotics help support digestive health, they work differently than probiotics. Prebiotics are not actual live bacteria but are a form of carbohydrate that provides nutrition to support the growth of beneficial bacteria already inside the gut.

Purina® Probiotic Digestive Supplement for Poultry

Purina® Probiotic Digestive Supplement for Poultry supports the digestive health and appetite of birds especially during periods of stress and after antibiotic treatment. Easy to use, just mix one packet with a gallon of fresh water.





Treats and supplements

Once hens start laying eggs, you can start offering treats. Treats, scratch grains and table scraps can be a fun way to spend time with the backyard flock. When you sprinkle scratch grains or place a Purina® Flock Block™ supplement in the coop, the flock comes running. But it's not really the treats that make the flock come running, it's the attention. Chickens will flock for complete feed just as they would for treats. This is because chickens have fewer than 350 taste buds compared to humans' roughly 10,000 taste buds.

Still, treats and foraging can be fun pastimes for the flock. If you'd like to offer treats and free-range time, here are a few tips to keep in mind.

Follow the 90/10 rule

Limit treats to 10 percent of the diet. More treats than this can dilute the essential nutrients provided in the complete feed.



Think of treats, kitchen scraps and scratch grains as candy for birds; fun to eat and a nice treat, but you wouldn't want to make a meal of them. Like candy for us, kitchen scraps and scratch grains are not fortified with vitamins and minerals.

Every time you provide treats, you dilute the complete nutrition of the layer feed and the hens may receive less nutrition than they would if they just ate their complete feed. If you feed high levels of treats, the hens will likely eat less fortified feed, causing them to miss out on the nutrients they need.

Corn, scratch grains, fruits and vegetables are all considered treats. Since we know it is fun to feed treats, view these items as special goodies hens get in small amounts a few times a week. Just be cautious not to over-treat.

What does the 90/10 rule mean?

Laying hens eat approximately 0.25

Suggested feed ratio



pounds of complete feed each day, which is about the same as one-half cup. When putting the 90/10 rule into practice, this means treats should not exceed 2 tablespoons. A few small treats are all each bird should have per day.

Scratch grains

Scratch grains should be viewed as a treat. Do not feed scratch grains for more than 10 percent of a chicken's diet. Whereas complete feeds are fortified with all the nutrients chickens need, scratch is more like candy. Scratch grains are a nice treat that your hens will surely enjoy, but scratch grains should not be fed as a sole or primary component of your flock's diet.



Purina® Flock Block® and Farm to Flock® Block supplements

Purina® Flock Block® and Farm to Flock® Block supplements are fun and healthy treats. Made with whole grains and fortified with vitamins, minerals and amino acids, they provide enrichment no matter the season while also providing more nutrition than scratch grains to keep your hens healthy and productive.



In the summer, place the block supplements outside to encourage natural pecking behavior. In colder weather, the block supplements can be a useful boredom buster - keeping the flock occupied and less likely to peck one another while in the coop. They can also serve as a backup weekend or vacation feeder for your flock in case something happens to their regular feeder.

Purina® Farm to Flock® Hen Treats

Purina® Farm to Flock® Hen Treats are the perfect complement to a complete layer feed and are available in two varieties:

Protein Blend for Hens and Larvae for Ladies®.

With Protein Blend for Hens you can spoil your hens, but not their diet. The balanced recipe is made with goodies like wheat, safflower, peas, papaya, pumpkin seed, black soldier fly larvae and a high-protein nugget. This treat helps give a nutritional boost, especially during molt when birds need additional protein. Larvae for Ladies® is made with whole, dried black soldier fly larvae specially selected for your hens' enjoyment.





Foraging

Birds love to explore the backyard and it can be quite entertaining to watch their adventures. If birds free-range, start by feeding their complete feed in the morning before they go out exploring.

Whistle or sing a consistent song when feeding the flock. Birds will get used to the sound and come running. This is a good way to train them to come back to the coop when called.

Chickens are natural foragers, so trying new foods is inevitable. They tend to avoid foods that are bad or harmful for them.

Install a chicken fence or tunnel in the yard to keep them from your favorite gardens. Consider planting a chicken-friendly garden for them to explore and placing a Purina® Flock Block™ supplement in the yard to encourage natural pecking.

Refer to the graphics on the next page as baseline foods to offer and avoid.

Whether your birds are foraging or spending more time in the coop, start with a complete feed as the baseline and then be careful not to over-treat your birds with goodies. The 90/10 rule still applies.

Foods chickens should avoid



Treats chickens love

Limit to 10% of the diet or less.

Grains



Vegetables

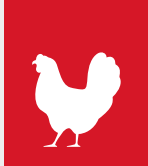


Herbs



Perennials





Signs of good nutrition and healthy birds

As you get to know your flock, you'll learn your birds' personalities and habits. If their attitudes, behavior or performance change, investigate your management and nutrition for possible gaps, or potential management stressors.

Many flock raisers begin by looking at nutrition as a first reason for flock problems. But if you are feeding a complete feed for at least 90 percent of the diet, nutritional deficiencies are unlikely. Evaluate other reasons that bird behavior and performance may change—from stress and predators to shorter days, illness or over-treating. See page 48 to help troubleshoot.

Always remember, a quality nutrition program is the cornerstone of bird health and happiness. Hens receiving the nutrients they need are better equipped for success, because they channel nutrients directly into their eggs, appearance and health. You'll be able to tell birds are receiving the nutrition they need by their appearance and behavior.

If you are feeding a complete feed and not over-treating, you should notice:

Strong eggshells: Strong shells are about 0.3 millimeters thick and serve to protect the inside of the egg. Strong shells are an indicator of healthy birds and good nutrition, showing hens are receiving the calcium they need.

Consistent egg production: The number of eggs hens produce can vary greatly by breed, but most average to above-average egg-laying breeds will produce 5-6 eggs per week during their prime laying years. Expect peak performance in the first year, with egg production decreasing year-over-year as hens age.

Dark, golden yolks: Many flock raisers praise farm fresh eggs for their vibrant golden yolks. Rich yolks are a result of xanthophylls in their feed, a natural yellow-orange pigment found in plants and yellow corn. Pale yolks are a sign that hens may not be getting enough xanthophylls in their diet, which can be caused by too many treats or scraps. See page 20 for tips on treats. The nutrient content of the eggs are the same regardless of the color of the yolk. A pale yellow or white yolk contains the same nutrition as a dark, golden yolk. While you may have a preference for a darker colored egg yolk, a pale yolk is just as good for you as the dark colored yolk.

Shiny feathers: When not in molt, healthy feathers have a sheen that gives birds a slick appearance. Healthy feathers are vibrant and sturdy. Some of our fans have referred to their bird's feathers as having the "Purina® sheen."

Brightly colored combs: When a hen begins laying eggs, her comb and wattles will get larger and blood flow will increase, which causes them to be a darker red color. When those hens molt or stop laying eggs, the combs and wattles will fade to pink or a pale red color and will also shrink in size. When she returns to laying eggs, the combs and wattles will change again. In birds with black combs and wattles, color change is less noticeable, but you will notice a change in size regardless of color. Big combs mean she is deep in the throes of egg production. Shriveled combs and wattles means she is taking a break from egg production for a short period.

High energy: Healthy chickens are social, curious and should feel energized to freely move throughout the coop, run or backyard. A lack of movement, low head carriage and overall depressed appearance may be a sign that something is wrong.



Gold Laced Wyandotte hen



Coops and comfort

As hens mature and spend more time in the coop, it's important to keep the coop safe and clean. Here are some coop tips to keep your adult hens comfortable:

Space: Ensure at least 2 square feet of indoor space and 8 square feet of outdoor space per bird. The coop is their house, and the run is their playground. If you add more birds to your flock, provide additional space.

Nest boxes and roosts: Hens spend a lot of time in nest boxes and on roosts, so check them regularly for cleanliness and quality. You should have one 1-foot-cube nest box for every four hens. If the nest boxes are free standing, then make sure that they are secure and will not fall over.

For roosts, at least 1 foot of roosting space per bird for sleeping is ideal. Chickens like to sleep off the ground. A two-by-four board with the wide edge facing up works well for a roost. Do not use metal or plastic for roosts as they can cause feet problems and will chill the hens in cold weather.

Predator proof: At least monthly, check the coop's predator proofing. Check the screens, buried galvanized wire, latches and coop corners for signs of predators and replace accordingly. Do not use chicken wire as it can easily stretch.

Ventilation: Sit on the coop floor and smell the air. With proper ventilation and cleaning, you should not smell ammonia. Coops should have ventilation during all seasons with windows on all four sides and ventilation holes at the top.

Lighting: Laying hens require 16 hours of light for maximum egg production. We suggest an incandescent 25-watt or LED 9-watt bulb per 100 square feet of coop space. Put lights on timers for consistent sleeping schedules. Don't leave lights on 24 hours a day. Hens also need a dark period to maintain egg production.

Feed and treats: Place the feeder, waterer and any treats in the run. This allows the coop to be a space for sleeping and laying eggs and encourages exercise. Offer complete feed and fresh water in the morning before hens explore. Place treats in a separate area after birds have finished eating their complete feed.

Monitor aggression: The pecking order can shift at times. If birds are becoming aggressive, place a Purina® Flock Block™ supplement in the run as an option to redirect that aggression. If one bird is overly aggressive, she may need to be moved to a separate coop. Also, ensure your flock is not too crowded, which can cause an increase in aggression.



Additional coops: As your flock grows, consider a second coop. Many flock raisers have second coops for broody hens, new birds, aggressive flock members or pullets. If you add new birds to the flock, keep the new group of birds in the second coop for 30 days as a biosecurity precaution.

Bedding: On our farm, we use pine shavings in the coop and gravel in the run. Another good option in the run is construction grade sand. It is a courser material that allows better drainage than play sand.

Straw can work in the coop but be sure it is high-quality and stored in a clean, dry place. Wet or damp straw can lead to mold growth which can be a health hazard. Avoid cedar because of its strong odor and sawdust as it can become a respiratory irritant. The fine particles can be inhaled when sawdust is disturbed.

You likely built your coop when your chicks were in the teenage stage and moved them to the coop around 6-weeks-old. For our top coop building tips from the Purina Animal Nutrition Center, see pages 20-21 in the *My First Year with Chickens* guide. [Click here to download that guide.](#)



Flock biosecurity and coop cleanliness

To help prevent diseases and parasites and to help keep birds healthy, focus on good sanitation and biosecurity.

Biosecurity is defined as a set of procedures intended to protect humans or animals against disease. The first step to a healthy flock is regular sanitation.

Start by adding absorbent wood shavings to the coop floor and nest boxes, 3 to 4 inches deep to keep the area dry and odor-free. Damp litter creates conditions perfect for parasites, viruses and bacteria to thrive. Cleaning the chicken coop can be a quick process if done regularly.

Daily:

- Spot check for problem areas. Remove wet or soiled bedding.

Weekly:

- Replace bedding.
- Clean chicken waterers, chicken feeders and roosts. Choose a disinfectant that is safe for animals and doesn't leave a residual film. A mixture of 10 percent bleach and 90 percent water can work well. Rinse thoroughly.

Twice per year:

- Perform a deep clean by removing everything from the coop and sanitizing with a 90/10 solution of water and bleach.

Other tips for keeping healthy chickens:



Whenever working with backyard chickens or supplies, wash your hands with soap and water before and after handling birds and eggs.



Minimize exposure to external sources of contaminants, both human and animal. This means reducing the flock's exposure to visitors who may own poultry; if you or a visitor has been with another flock, change your clothes and shoes to prevent carry of disease. Designate a pair of shoes or boots to be worn only when you are spending time with your flock.



Avoid wildlife and domestic pets by keeping food in safe areas, such as inside the coop or runs. Reduce contact with wild birds or their droppings by placing wild bird feeders far away from the coop and by constructing a roof or cover over the run.



When adding new birds, follow a 30-day quarantine. Keep any new birds cooped in a different building at least 12 yards from your flock. Observe them for signs of illness and care for new birds last to help keep from spreading disease.



Report sick birds. If your birds are sick or dying, call your local cooperative extension office, veterinarian, the State Veterinarian or State animal/poultry diagnostic laboratory or the U.S. Department of Agriculture at 1-866-536-7593. The USDA will put you in touch with a local contact that can help you.



Summer flock care

Summertime essentials are similar for both humans and backyard flocks: stay hydrated, protect yourself from the heat and maintain a complete and balanced diet.

Birds are unable to sweat. To cool down, they open their beaks and pant or spread their wings away from their bodies. If these cooling strategies are not enough, birds are more likely to become lethargic and may stop eating feed, which can lead to subsequent health challenges and reduced egg production.

Remember the H2O. Clean, cool water is essential. Provide at least 500 milliliters (17 ounces) of fresh water per bird per day. This equates to one gallon for every seven adult birds. In high temperatures, chickens will drink up to twice as much as temperate conditions.

- Provide extra waterers so each bird has access.
- Place waterers in a shaded area to keep the water cool and the coop dry.
- Offer fresh, cool water in the morning and evening.
- Freeze water in a storage container. Place the resulting ice in the waterer in the morning to keep the water cool.
- Place marbles in waterers to prevent splashing.
- Wash waterers weekly with a mixture of 10 percent bleach and 90 percent water. Rinse thoroughly.



Keep your flock hydrated. Purina® Electrolyte & Antioxidant Supplement is designed to keep your flock hydrated and healthy during periods of heat and times of stress. Mix a single packet into 1 gallon of cool, clean water, while also providing plain water.

Keep body temperature in check. If a bird's body temperature climbs, it can cause a lasting strain. Create a cool and comfortable environment for the flock to enjoy.

- Provide shade by placing roofs on the run and/or shade cloths over the door. Add misters outside

the coop that spray onto the roof or shade cover for evaporative cooling.

- Create air flow inside the coop. Open all windows and roof vents to allow hot air and ammonia to escape. Add a small fan for air circulation.
- Swap solid coop doors with screen doors and keep lights off during the day. Reduce bedding to two inches or less to avoid heat being trapped.
- Provide a peat moss dust bath. If mites are a concern, switch to a mix of 90 percent peat moss, 10 percent diatomaceous earth.
- Avoid overcrowding by providing at least 2 square feet of indoor space and 8 square feet of outdoor space per bird.
- Fill bottles with water and freeze them. Place the frozen bottles in the coop as cooling stations for birds to lay by.

Indulge a bit but keep a balance. Summer is the perfect time to give birds a few indulgent snacks, but don't forget the 90/10 rule.

- Give fresh complete feed in the morning and evening in a shaded area, offering treats only after the flock has finished their complete feed.
- Offer cold or frozen fruits and vegetables as a summertime treat.
- Provide special treats such as Purina® Farm to Flock® Hen Treats, Purina® Flock Block® or Purina® Scratch Grains as a complement to a complete feed. Treats formulated specifically for birds can provide beneficial nutrients while keeping birds active.
- Offer a dish of oyster shell to help maintain calcium intake and eggshell quality when birds may be eating less due to heat.
- Provide at least 6 inches of feeder space per bird.



Summer heat tends to reduce feed intake, so the complete feed should be the first dietary priority. When birds have a balanced diet, plenty of water and a cool, comfortable environment, they are better able to remain productive and enjoy a peaceful backyard summer.



Winter flock care

Raising chickens in the winter can be a lot of fun. Some hens love wandering around the yard and their first snow sighting can be quite entertaining. A bird's thick feathers are a natural protective coat, so most breeds are well-equipped for winter.

Here are a few tips to keep your flock strong through the winter months:

Do not add heat lamps. Chickens, especially cold-tolerant breeds, can withstand winter temperatures without supplemental heat. A chicken's body temperature is around 106 degrees Fahrenheit, and they have their own protective layer of feathers to keep them warm.

If you feel it is necessary to provide a source of heat, only provide enough heat to raise the temperature a few degrees. The hens will adjust to the cold temperature, but if it is 70 degrees Fahrenheit in the coop and 0 degrees Fahrenheit in the run, birds will not be able to regulate their body temperature.

Allow exploration. Birds can tolerate snow, cold air and ice water. There is very little muscle in the lower part of bird legs and feet. The movements are controlled by tendons that stretch from the upper part of the legs down to the toes. Secondly, the blood entering the lower legs and feet are cooled by the blood returning to the heart. The blood returning is thus warmed by the blood going to the toes. The tissue receives just enough heat to avoid frostbite while also being provided with enough oxygen to keep things functioning.

Collect eggs more frequently. Temperatures below freezing result in frozen eggs. As the egg freezes, the contents expand and will cause the egg to crack.

Keep the coop draft-free, but don't seal it completely. Some air needs to be exchanged to prevent ammonia build up. Open the top vent or higher windows slightly so fresh air can enter and stale air can exit.

Keep the coop dry. Remove any wet spots daily. Provide more bedding than you would in other seasons so birds have a place to burrow and stay cozy.

Continue offering coop activities. Hens will spend more time in the coop, so offer enrichment. Logs, sturdy branches or chicken swings can work well and place a Purina® Flock Block™ supplement modifier in the coop for a nutritious place to peck.



Ensure feed and water isn't frozen. Consider heated waterers. Feed and water birds more often when it's below freezing. Energy needs increase in winter. Animals expend a considerable amount of energy to stay warm and will eat more feed. Complete layer feeds include all the energy hens need, the 90/10 rule still applies in winter.

Oatmeal not needed. A common myth is to feed oatmeal to birds in the winter. This is not a beneficial treat for chickens. Oats contain fiber they can't digest and can cause the contents of the digestive tract to thicken. This leads to a reduction in the bird's ability to digest and absorb nutrients.

Greens unnecessary. Hens may pick at hay and spread it around, but they are not going to eat it. Feeding a complete layer feed will provide the necessary nutrition hens need to get through the winter.



Egg goals

High-producing hens will lay up to 300 eggs per year. This is because it takes 24-26 hours to create each egg, and hens take a natural break each year for molting. Eighty to 90 percent is considered excellent egg production (100 percent = 1 egg per hen per day), but breed, housing, weather, management, parasite load and nutrition can all affect the rate of lay of your hens.

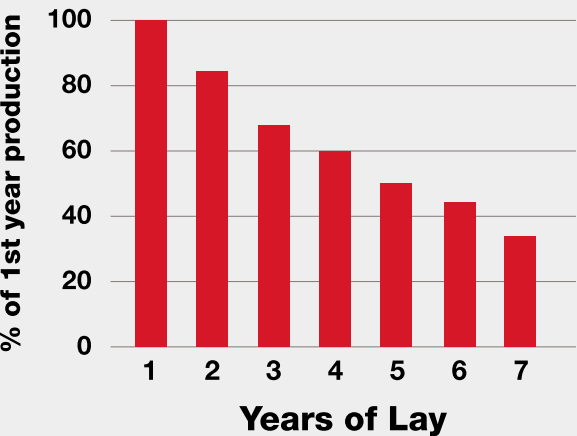
Within their first year of life, your birds will be at their peak laying production at about 30 weeks of age. The first eggs will likely be smaller and increase in size over time. As your birds age, egg size will even out and egg count will gradually drop.

At about 2 years old, you can estimate a hen will lay about 80 percent the eggs she did in her first year. So, if your hen lays 300 eggs in her first year, you can estimate she'll lay about 240 eggs under ideal conditions in her second year.

When your hen is in her third year of laying, you can estimate to have just under 70 percent the production of the first year, and in the fourth year of laying about 60 percent of the first year's production. See the accompanying graph from the University of Florida to help estimate the number of eggs you can expect from your flock each year.³

Benchmark egg production by year

Source: University of Florida-Extension





Egg collection and handling

The daily egg hunt can be a fun family activity. Kids love running out to the coop to find eggs in the morning.

When egg production is in full swing, you can collect about one egg per hen per day.

Egg laying schedules vary. Some hens tend to lay in the morning while others lay later in the day. If you are planning to eat or hatch eggs, it is important to collect eggs regularly and store them properly.

Collect often. Gather eggs two to three times per day, at least in the morning and evening. Collect even more often during extreme warm or cold weather. This helps keep eggs cleaner and reduces chances for eggs to get cracked by hen traffic in the nests.

Egg cracks can allow bacteria access to the interior of the egg. Always discard eggs with noticeable cracks. Microscopic cracks and large cracks can be a result of an inadequate diet and infrequent egg gathering.

Frequent collection can also help prevent egg eating. Egg eating generally occurs when a hen finds a broken egg, tastes it, likes it and begins searching for other broken eggs, then learns to break them herself.

If eggs are not collected, hens are also likely to go broody. A broody hen is a hen that sits to incubate her eggs and hatch chicks. A broody hen will stop laying eggs. If there are no roosters in your flock, the eggs are not fertile and will never hatch.

Store properly. A common egg question is to wash or not wash eggs. There are solid points for both sides, so it comes down to personal preference.

Unwashed eggs have a protective layer called a cuticle and can be stored on the counter. This protective coating helps keep bacteria out. It is best if this is not disturbed. Brush any foreign material off the shell with your finger or a soft brush. Leaving manure on the shell can provide a source of bacteria to get into the egg.

Washing eggs removes this cuticle; therefore, washed eggs should be refrigerated to prevent contamination. If washing is necessary, be gentle and quick, using water only. Use water warmer than the egg. Dry and cool eggs as quickly as possible and then refrigerate between 32 and 40 degrees Fahrenheit.

Whether you wash or not, always practice good food safety when storing and cooking eggs. If refrigerated, farm fresh eggs can last up to 45 to 60 days. When kept at the proper temperature, eggs do not go bad; however, the interior quality deteriorates, and the eggs will dehydrate.

Eggs for hatching: If collecting eggs for hatching, you must have a rooster in the flock for the eggs to be fertilized. If storing for incubation later, wash any foreign material off the shell and refrigerate at 55 degrees Fahrenheit with 70-75 percent humidity. Prior to incubation, store eggs point down for a maximum of one week. The older a fertilized egg, the less likely it is to hatch. Store eggs at an angle (\\) and change the angle once a day (/). This will keep the yolk from sticking to the side of the egg.

When you're ready to incubate, let the eggs warm to room temperature, then give them to your broody hen or place in an incubator. After eggs have been stored and incubated, 70 percent hatch ability is considered very good.

See page 60 for tips on hatching eggs with a broody hen or incubator.



Getting more nutritious eggs

At just 70 calories, we can enjoy the health benefits of eggs guilt-free. Each large 2-ounce (57 gram) egg provides 6 grams of digestible protein. With 18 of the 20 amino acids and all 9 essential amino acids in abundance, eggs are known as one of nature's most perfect protein sources.⁴

The most tangible benefits of farm fresh eggs are freshness, flavor, color and nutrition. Farm fresh eggs are known for having rich, vibrant yolks and firm, clear whites. This is because specific feed ingredients are responsible for taste and appearance. For example, marigold extract impacts yolk color while calcium promotes strong shells.

One way to level-up your eggs' nutrition is by feeding for added omega-3's. Many institutions, including Harvard School of Public Health⁵, have listed benefits of consuming omega-3 fatty acids. Traditional sources of omega-3's for humans include fish, nuts and green, leafy vegetables. Today, you can add farm fresh eggs to that list.

Hens are excellent converters of feed nutrients. They can channel specific nutrients directly into their eggs. If their layer feed is fortified with omega-3-rich nutrients, their eggs are more likely to have higher omega-3 levels.

In Purina's research trials, hens fed Purina® Layena®+ Omega-3 feed for at least three weeks laid eggs with 250 milligrams of omega-3 fatty acids⁶. Conventional, store-bought eggs only contain around 50 milligrams of omega-3 fatty acids.

Purina® Layena®+ Omega-3 feed also includes our Oyster Strong® System and the essential nutrients hens need to stay strong and healthy.

⁴ "Egg Nutrition Center." American Egg Board. <http://www.eggnutritioncenter.org/egg-101/>. 10 June 2016.

⁵ "Omega-3 fatty acids: An essential contribution." Harvard School of Public Health. <https://www.hsph.harvard.edu/nutritionsource/omega-3-fats/>. 9 December 2016.

⁶ When fed a diet of Layena®+ Omega-3 exclusively for at least 3 weeks. Based on a large egg (56 g). Results may vary with factors such as total diet and hen health. A typical store bought egg contains 50 mg of omega-3 fatty acids per large egg (USDA: National Nutrient Base).

A tale of two eggs



6 grams of digestible protein	9 essential amino acids	70 calories
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Both farm fresh and store bought eggs are great protein sources



Where farm fresh eggs can stand apart is omega-3 fatty acids.

A store-bought egg is a good source of omega-3.



Farm fresh eggs can bring even more to the table.

Feed Purina® Layena®+ Omega-3 for up to 250 mg of omega-3 per egg.⁵





Shell-less eggs and egg oddities

Once hens start laying eggs, they typically lay consistently. However, every hen will occasionally lay an egg with some abnormality. Egg oddities can be an outlier, or they could be a sign of a serious issue.

Shell-less eggs: An egg with no shell is often referred to as a “rubber egg.” These can be caused by numerous issues.

- **Age of the bird:** New layers may produce a shell-less egg because their bodies aren’t quite in tune with the egg making process. Older birds or birds approaching a molt may also produce shell-less eggs as their reproductive tract tires.
- **Nutrition:** Not enough calcium or vitamin D can lead to a shell-less egg. Shell-less eggs tend to appear more in summer when birds are laying regularly but not getting enough calcium because they are too hot and don’t want to eat.
- **Too many treats:** Consider cutting back on scratch grains and treats when these eggs appear so the hen receives the nutrition she needs from her layer feed. Be sure to follow the 90/10 rule for treats.
- **Stress:** Stressed hens may lay the egg before it is fully formed. This is common when predators are in the area. The predator harasses the hens at night while the shells are being formed, which causes the hen to lay an incomplete egg.
- **Disease:** If shell-less eggs become a common occurrence or happen several days in a row, take a closer look at the hens to see if anybody isn’t looking 100 percent. Consult a veterinarian to determine if this is a health issue and develop a treatment plan.

Calcium deposits: Some eggs are laid with calcium build up on the shell.

There are several reasons this could happen. It could be a genetic issue. It could also be that hens are beginning to age and need a break. This break usually occurs in the form of a molt. The eggshell gland may be getting “tired” from laying so many eggs, and it may be time for your hen to stop laying eggs for a few weeks. This break will occur naturally and allow her reproductive tract to rest and rejuvenate itself. Although the egg doesn’t appear as you would expect, there is nothing wrong with these eggs other than appearance and they can be eaten.

Small, misshapen or discolored eggs: You see most of the eggs that come out of your hens and you are going to notice not all eggs are uniform. Abnormalities tend to appear more often in hens coming into production and for older hens approaching the end of a laying cycle. Early on, the hormones aren’t quite right, so you get some interesting looking eggs. As the hens age, abnormalities reappear because the reproductive tract is getting older.

Abnormalities in older hens may be a sign more calcium is needed for consistent egg producer; provide a complete layer feed for at least 90 percent of the hen’s diet.

If the shell is still intact, there is nothing wrong with eating what’s inside the egg. If the shell is cracked, then you are best to throw away the egg as it may be contaminated with bacteria.



Colored eggs

From olive to blue and speckled to chocolate brown, colored eggs make for great conversation.

Eggshell color does not change egg nutrients. The color of the shell is simply decoration.

Towards the end of shell production, pigments, called porphyrins, are secreted from cells within the uterus to add color to the egg shells. Hens that produce eggs with white shells do not produce any of these pigments.

Each breed has specific genes that affect egg color. The hen will not change egg colors throughout her life; although, toward the beginning of a laying cycle the hue may be darker than towards the end of the cycle.

When breeding hens and roosters, both parent’s genetics contribute to the eggshell color of their offspring.

You may be able to tell the shell color by the hen’s earlobe. Hens with white earlobes typically lay white or lightly tinted eggs. Hens with red earlobes most commonly lay brown eggs.

Crossbreeding

Have you ever seen eggshell colors like deep pink, dark green or speckled? Crossbreeding can add unique colors like these to your basket.

Crossing can result in uniquely colored eggs laid by their offspring because genes from both parents contributed to the eggshell color. One of the most popular crosses is called an Olive Egger. Olive Eggers are aptly named for the olive-colored eggs they lay and are a result of crossing a brown egg layer with a blue egg layer.

Egg Layers



Ancona, Blue Andalusian, Campine, White Leghorn



Australorp, Orpington, Plymouth Barred Rock, Rhode Island Red, Sussex



Ameraucana, Araucana, Cream Legbar



Marans, Penedesenca



Barnevelder, Welsummer



Easter Eggers, Olive Eggers, Favaucana

Dual-Purpose

Rock, Jersey Giant, Sussex, Wyandotte

Meat Birds

Cornish Rock, Red Ranger, New Hampshire

Heat-Tolerant

Ameraucana, Leghorn, Minorca, Rhode Island Red, Turken

Cold-Tolerant

Araucana, Australorp, Minorca, Orpington, Barred Rock, Wyandotte

Multi-generational crosses can create many unique eggshell colors. It is important to remember, though, there are dominant and recessive genes at play and you could end up with a color you weren’t expecting. Keep in mind it may take several generations to achieve the exact color you’re looking for.



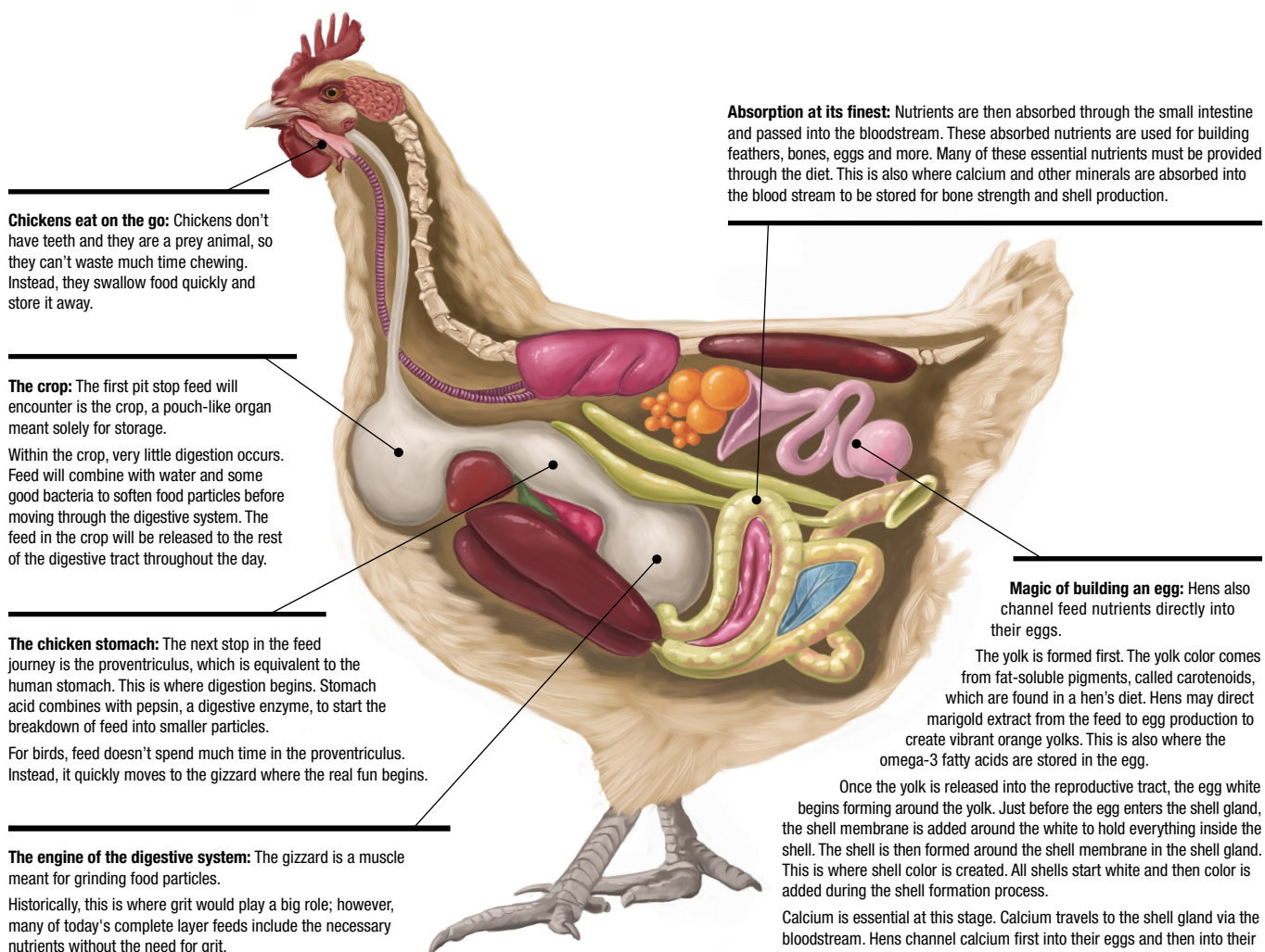
How chickens digest feed

Chickens digest food through a unique pathway for digestion with each ingredient serving a specific purpose. Hens are excellent converters of feed, channeling those nutrients directly into their eggs.

Benefit of calcium in multiple particle sizes.

Small particle calcium is found in most layer feeds and breaks down quickly. This provides the hen with a quick release source of calcium that is important for bird health but can leave a void after hens have eaten and are forming eggs at night.

Large particle calcium (oyster shell) breaks down slowly so hens can channel the calcium when they need it most for shell development. Think of oyster shell as a slow-release source of calcium. The Oyster Strong® System, found exclusively in Purina® layer feeds, provides both small and large particle calcium to hens.



Chickens eat on the go: Chickens don't have teeth and they are a prey animal, so they can't waste much time chewing. Instead, they swallow food quickly and store it away.

The crop: The first pit stop feed will encounter is the crop, a pouch-like organ meant solely for storage.

Within the crop, very little digestion occurs. Feed will combine with water and some good bacteria to soften food particles before moving through the digestive system. The feed in the crop will be released to the rest of the digestive tract throughout the day.

The chicken stomach: The next stop in the feed journey is the proventriculus, which is equivalent to the human stomach. This is where digestion begins. Stomach acid combines with pepsin, a digestive enzyme, to start the breakdown of feed into smaller particles. For birds, feed doesn't spend much time in the proventriculus. Instead, it quickly moves to the gizzard where the real fun begins.

The engine of the digestive system: The gizzard is a muscle meant for grinding food particles. Historically, this is where grit would play a big role; however, many of today's complete layer feeds include the necessary nutrients without the need for grit.

Absorption at its finest: Nutrients are then absorbed through the small intestine and passed into the bloodstream. These absorbed nutrients are used for building feathers, bones, eggs and more. Many of these essential nutrients must be provided through the diet. This is also where calcium and other minerals are absorbed into the blood stream to be stored for bone strength and shell production.

Magic of building an egg: Hens also channel feed nutrients directly into their eggs.

The yolk is formed first. The yolk color comes from fat-soluble pigments, called carotenoids, which are found in a hen's diet. Hens may direct marigold extract from the feed to egg production to create vibrant orange yolks. This is also where the omega-3 fatty acids are stored in the egg.

Once the yolk is released into the reproductive tract, the egg white begins forming around the yolk. Just before the egg enters the shell gland, the shell membrane is added around the white to hold everything inside the shell. The shell is then formed around the shell membrane in the shell gland. This is where shell color is created. All shells start white and then color is added during the shell formation process.

Calcium is essential at this stage. Calcium travels to the shell gland via the bloodstream. Hens channel calcium first into their eggs and then into their bones. If a hen doesn't have enough calcium, she will still form the eggshell, but her bone strength may suffer which could lead to weakening of her bones.



How hens make eggs

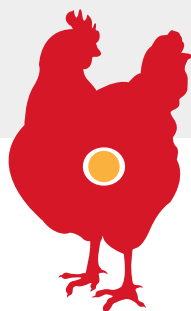
The magic behind each farm fresh egg is a 24-26-hour process. The biggest involvement for the hen is creating the eggshell. The shell defends the yolk from bacteria and keeps the chick or yolk safe.

Hens spend much of the process making sure the calcium-rich shell is strong and protective. When the lights are off, and the hens are sleeping, that's when most of this internal work happens. Here is an approximate timeline of the egg production process:



Ova release (1/2 hour):

Each female chick is born with thousands of immature yolks, known as ova. Over time, the ova mature. When the first ova is developed and ready to start the egg production process, it is released into the hen's reproductive funnel. This release takes about half an hour.



Initial egg white is created (3 hours):

As the egg enters the reproductive tract, the egg white begins formation. If a rooster is present, this is where fertilization of the egg occurs. As the ova travels down the reproductive tract into and through the magnum, layers of thick and thin proteins, known as the albumen, begin forming, creating the egg white.



Egg shape is formed (1 hour):

The developing egg then travels to the isthmus. Here, the ova is shaped into the oval-shape recognized as an egg, a process that takes about one hour. The inner and outer shell membranes are also formed during this stage.



Shells are formed (20 hours):

The most significant piece of the egg formation process happens in the uterus or 'shell gland' of the hen. The developing egg spends about 20 hours in the shell gland, where the shell is formed, and its color is added during the last 5 hours.

Eggshell formation requires very high levels of calcium. If the hen does not have the nutrient to support shell production, she may pull the calcium from her specialized (medullary) bones to support shell formation.

The Oyster Strong® System in your layer feed is especially important to support eggshell formation. The vitamins and large-particle calcium help to supply the nutrition to hens at night when they need it most.





Why did my hens stop laying?

Hens might take a short vacation from laying eggs; the reasons range from life stage to the rising and setting of the sun. First, confirm your hen isn't hiding her eggs and creating a nest outside the coop.

If your hen is not laying eggs, here are some areas to evaluate.

Daylight: The most common cause of decreased egg production is light. Hens need 16 hours of daylight to sustain strong production. Without supplemental light, they may naturally stop laying eggs due to a hormonal response as days get shorter.

Hens lay best when provided 16 hours of day light, whether natural, artificial or a combination of the two. Some flock raisers use winter as a period of rest for their hens without supplemental light.

If you're looking for consistent egg production through winter, provide additional light to encourage birds to keep laying. We recommend one incandescent 25-watt or LED 3- to 9-watt bulb per 100 square feet of coop space. If supplementing with artificial light, put lights on timers for a consistent sleeping schedule.

Coop Environment: If birds are stressed, egg production may suffer. Stress comes in many forms —predators, over-crowding, aggressive hens, loud noises, too much heat or cold, poor nutrition and illness. Check the environment for stressors in the area. Keep temperatures comfortable in the coop but not drastically different than outdoors. Chickens, especially cold-tolerant breeds, can withstand winter temperatures without supplemental heat.

If you feel providing a source of heat is necessary, only raise the temperature a few degrees. Hens will adjust to the cold temperature, but if it is 70 degrees Fahrenheit in the coop and 0 degrees Fahrenheit in the run, they won't be able to regulate their body temperature.

Nutrition: Another reason for decreased egg production is over-treating and over-supplementing hens. Added treats and scratch can dilute the nutrients in a complete layer feed so the hen is less able to produce eggs consistently. A general rule is the 90/10 rule. This means the hen's diet should be made of at least 90 percent complete feed.

Molt: Around 18 months of age and annually after, chickens go through molt or a period of feather loss and regrowth. Molt usually occurs in autumn and is associated with a decrease or cessation in egg production.

Molting chickens redirect their energy from laying eggs to growing feathers. This results in a brief break from egg production. A molt can last from 4 to 16 weeks depending on the bird and how she is managed. Once she has rested and her feathers start to regrow, she will return to egg production.

To help hens through molt and return to laying eggs, switch to Purina® Flock Raiser® feed for higher protein and energy. Once egg laying resumes, transition back to a complete layer feed.



Breed: Not all breeds are great egg layers.

Australorps, Leghorns, Rhode Island Reds and Easter Eggers are great egg layers while Bantams and Silkies will lay significantly less eggs per year.

Hen age: Egg production will peak at about 250-280 eggs for high-producing breeds during the first of year laying eggs. After that, the number of eggs produced each year declines until she retires. A hen can continue to be a valued member of your flock after her peak production has passed. Retired hens provide great companionship and often become leaders in their flocks by showing younger birds the ropes.

Comb and wattle color are an easy way to determine if your hens are actively laying eggs. When a hen begins to lay eggs, her comb and wattles will get larger and the blood flow will increase, which causes them to be a darker red color. When hens molt or stop laying eggs, the combs and wattles will fade to pink or a pale red color and they will also shrink in size. When a hen returns to laying eggs, the combs and wattles will change again.



Molt

Shorter days often signal time for a break. Birds may stop laying eggs, lose old feathers and grow new ones. This annual vacation from egg laying is called molt.

Molt is driven by season and usually occurs in the fall when the hours of sunlight decrease. Fall means it's time to prepare for winter, which requires quality feathers. That's why hens take a vacation from laying eggs and redirect their energy to regrowing feathers.

The first adult molt happens when birds are approximately 18 months old and then occurs annually. Expect about 4 weeks of feather loss and regrowth, but a molt could take up to 16 weeks for some birds.

How long chickens molt depends on factors such as age, consumed nutrients and the environment. You'll often first notice feathers are losing their sheen. Hens may then gradually lose a few feathers, or it could happen overnight. We've noticed more productive egg-layers and younger hens recover from molt more quickly than older or less productive hens.

Proper nutrients and management can help birds through molt. Here are some tips for molting chickens:

Pack the protein: When you notice your chickens losing feathers and egg production begins to slow or stop, switch to Purina® Flock Raiser® feed. Flock Raiser® is a complete feed that's 20 percent protein and includes probiotics, prebiotics and key vitamins and minerals. The high-protein and energy in this feed can help hens channel nutrients into feather regrowth and get back to laying eggs.

If you are managing your flock to get everyone to molt at the same time, then Flock Raiser® feed is your best option. If you are allowing nature to run its course and allowing some birds to molt while some are still laying eggs, then Layena®+ High Protein feed is your best option. The higher protein content will help support birds



that need to regrow feathers while the calcium content will continue to support the hens that are still laying eggs.

For organic flocks, try switching hens to Purina® Organic Starter-Grower feed when molting begins to maintain organic status and provide a higher level of nutrition they need for feather regrowth.



Keep stress low: During molt, the area where the feather shaft meets the skin can be very sensitive, so reduce handling and provide plenty of clean bedding. Offer enough space for your birds to rest and relax in private.

Provide access to plenty of fresh, clean water and proper air ventilation. Hydration and ventilation can help keep the backyard coop spa-like for feather regrowth. Avoid introducing new flock members during this time, as adding in new friends and potentially re-shuffling the pecking order could add stress.

Transition back to layer feed: Once birds are ready to return from vacation and begin producing eggs, switch back to a complete layer feed.

Once they're back on a complete layer feed and have vibrant new feathers, get ready again for farm fresh eggs for your family.



Araucana hen



Preventing hen pecking

Boredom can bring out changes in behavior such as pecking.

Chickens are naturally inquisitive and use their beaks to explore. Pecking is a natural chicken behavior that allows them to check out their surroundings and flock mates. Though pecking is natural, the nature of pecking can change when birds spend more time inside during the fall and winter.

Not all pecking is bad. When it is gentle, this behavior is fun to watch. If pecking becomes aggressive, it can be problematic to other birds.

Here are a few tips to keep a peaceful backyard flock:

Investigate the reason for pecking. Start with a list of questions about the environment: Are the hens too crowded? Do they ever run out of feed or water? Are they receiving too many treats or scratch? Are they too hot or cold? Is there a predator in the area? Is something outside the coop causing them to be stressed?

After the stressor has been identified, remove the problem and the aggressive behavior may go away or diminish. To maintain this newfound peace, make sure your birds have a minimum of 2 square feet indoors and 8 square feet outdoors per bird. Adequate feeder and waterer space is also critical.

If a new hen is added to the flock, there may be a period of uneasiness. The new addition(s) will cause the rest of the flock to adjust the pecking order. Some of the hens will naturally be dominant while others will be less aggressive. This is how the pecking order naturally works. There are typically one or two boss hens who rule the roost. Once the pecking order is determined, the birds usually live together peacefully.

Chickens take baths, too. Chickens take a different type of bath than you might expect. They often dig a shallow hole, loosen up all the dirt and then cover themselves in it. This process is called a dust bath. Dust bathing is an instinct that helps keep birds clean.

On our farm, we make dust baths for our hens by following these three steps:

1. Find a container at least 12 inches deep, 15 inches wide and 24 inches long.
2. Fill the container about 1/3 full of peat moss. If you'd like, you can also use an equal blend of sand, wood ash and natural soil.
3. Watch your birds roll around in the bath and clean themselves.

Dust baths can also prevent external parasites such as mites and lice. If external parasites are an issue, supplement your chicken dust baths with a cup or two of food-grade diatomaceous earth (DE). If you add DE, mix it in well. DE can be harmful if inhaled in large amounts. By mixing the DE into the dust bath, it is less likely to become airborne while still helping prevent external parasites.

Offer an alternative place to peck. Interactive objects can make the coop more complex and exciting for your birds. Logs, sturdy branches or chicken swings are a few flock favorites. These toys provide unique retreats for hens who may be lower in the pecking order.

Another flock boredom-buster is the Purina® Flock Block™ supplement. You can simply place this block in the coop for hens to peck. The Flock Block™ supplement encourages natural pecking instincts. It also contains whole grains, amino acids, vitamins, minerals, and oyster shell to provide nutrients that contribute to the hen's well-being.





Rooster care and feeding

Before you add a male bird to your backyard flock, weigh the pros and cons and be prepared to manage him differently than your hens.

Is keeping roosters legal? Check any applicable regulations to determine if it is legal to have a rooster. Roosters tend to crow often including overnight and early morning hours, and some towns have noise ordinances that prohibit the keeping of roosters. Roosters crow in response to noise and to announce their presence. In the rooster's mind, the loudest bird wins. De-crowing a rooster is not an option, as the surgery is very dangerous and would generally be considered inhumane.

Are roosters aggressive? A rooster's instinct is to protect the flock and help ensure hens are well taken care of. Many take this job very seriously. Unfortunately, a rooster's methodologies are not always friendly. He may view you, your children or other pets as a threat to the flock and act hostilely to protect the hens. Behavioral training can help, but sometimes you just need to find a mellow rooster.

At night, it may help to keep roosters in a separate coop away from the hens. Crowing and aggression can sometimes be reduced this way.

Are there rooster breed differences? In general, some breeds have a reputation for producing more docile roosters than others. These include the Langshan, Silkies, Brahma, Orpington and Cochin.

Leghorns, Barred Rocks, Rhode Island Reds and Minorcas are typically more active. Roosters raised from the time they hatch are sometimes more docile. Aggressive behaviors are also lessened when hens are not present; however, there are no guarantees on how a bird will behave with maturity.

So why keep a rooster? Roosters are good protectors and can earn their keep when you have a large area in which your hens free-range. Roosters will also seek out and alert hens of the best food finds and tasty treats. If you wish to breed your hens and hatch baby chicks from your flock, a rooster is required to fertilize the eggs. Aesthetically, roosters are quite stunning, with their long, colorful feathers and stately presence.

A rooster need not be present for hens to lay eggs, but you will need a rooster if breeding for live chicks is a goal.

How many roosters? To prevent fighting, consider owning just one rooster. Keeping multiple roosters is usually not recommended, unless you have a large flock of hens or no hens at all. One rooster per 10 hens is a rule of thumb. This will help prevent over-breeding. If you have a rooster and fewer than 10 hens, consider housing the rooster separately.

Always have a game plan for how to deal with a rooster that does not fit in with your flock or family. Re-homing an aggressive rooster can be challenging, so have a plan before you get the rooster.

What do roosters eat? Roosters require higher protein and less calcium than laying hens. We recommend feeding roosters a separate diet of Purina® Flock Raiser® feed. You can either feed roosters in a separate pen or raise one of the feeders so only the roosters can reach it.

If you'd like to feed one feed to all adult birds, you can also feed Flock Raiser® to both hens and roosters and then supplement with oyster shells to give hens the added calcium they need.





Adding new birds to existing flocks

Whether you are adding new adult birds or baby chicks to your flock, integrate them gradually to keep both sets of birds healthy.

Manage new birds separately. Keep new birds separate from the rest of the flock. New birds have often traveled a fair amount and been near other birds – and your existing flock may have built immunity to germs in your area.

Keep new birds in a separate room or coop for 30 days and monitor them to make sure they are free of disease and to acclimate them to your backyard. Work with the existing flock first and wash your hands between groups to prevent any cross-contamination.

For chicks, though, we recommend waiting until they are 18 weeks old before introducing them to an existing flock so birds reach mature size and transition onto a layer feed.

Start new chicks in a brooder away from the flock. This allows you to provide supplemental heat and feed a Chick Strong™ starter feed. Once they are ready to enter a coop, raise them separately until they reach the same size as the mature birds.

Introduce birds in groups. After the quarantine period, gradually familiarize new birds to the existing flock. Introduce groups similar in size. Provide plenty of space to prevent overcrowding.

One way to acclimate groups is to place the groups in side-by-side runs, next to one another for one week so birds form bonds. It can also alert you to potential personality clashes.

Another strategy is to let the new group free-range first and then introduce the existing flock. This strategy places focus on new surroundings rather than new flock members.

In either case, add additional feeders and waterers to the run to prevent new birds from being deterred from eating and drinking.

During the introduction period, the new pecking order will be established. In most flocks, one bird is dominant and the remaining birds will fall into an order below her. Occasionally two strong-willed birds may consistently fight to gain the lead position. In this case, you may need to find a new home for one of them to maintain peace in the flock. The pecking order is a very stable structure in the group until a bird is removed or new birds are added.

Monitor for success. Watch for fallouts or mistreated birds. Content birds will continue routines without changes in personality or feed consumption.

How to add new birds to an existing flock

Same size chickens



Quarantine & Monitor

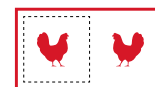
Slowly expose to each other for 2–3 days

Divide coop into 2 runs with visibility



Place a large pen within existing run

or



Allow birds to intermingle

1. Provide hiding spots
2. Add multiple feeders & waterers
3. Use a Flock Block™ Supplement as a place to peck





Going organic

No matter where you are in your chicken raising journey, it's always possible to produce organic eggs in your backyard.

Both traditional and organic feed options provide the same nutritional value. However, organic chicken feed ingredients are sourced differently.

For a feed to be considered organic, the ingredients must be raised and manufactured according to the requirements established by the USDA's National Organic Program. Feeds that meet these criteria, like Purina® Organic chicken feed, are typically certified by the U.S. Department of Agriculture (USDA) and will carry a seal from the certifying agency that verifies their authenticity.

Choosing between organic and traditional feeds comes down to personal preference. Two reasons to transition to an organic feed include:

- To produce eggs for your family from organic-fed hens;
- To market certified organic eggs.

The distinction between these two options is very important and will impact your transition process.

Producing organic eggs for your family: To produce eggs from hens fed organic feed, you can start chicks on organic starter-grower or transition to an organic layer feed later in life.

If you are making a transition, the process can happen quickly. Simply mix organic chicken feed with your previous feed over the course of 7-10 days. See [page 15 for feed transition tips](#).

Selling certified organic eggs: Raising certified organic chickens has a longer commitment with specific requirements. In addition to checking into the National Organic Program requirements and any state regulations, below are a few points to consider.

The USDA requires that for farm fresh eggs or meat to be certified organic, it must be from birds that have been under continuous organic management beginning no later than the second day of life.

This means chicks must be fed organic feed from the beginning for their eggs to be considered fully organic. Organic poultry, including birds used for meat or eggs, lose organic status if they are removed from the organic farm and managed on a non-organic operation. You can return them to organic feed but they cannot be rotated back into certified organic production.

No matter the way you choose to raise your flock, choose a complete feed that matches your birds' stage of life. Purina® complete poultry feeds—whether they are conventional or organic—are formulated to provide everything birds need.

Feed a complete starter feed to layer chicks from day 1 to week 18 and then transition to a complete layer feed at week 18 or when the first egg arrives. View Purina® Scratch Grains as a treat for adult birds.





Hatching eggs at home

If you want to hatch eggs, you will need a rooster in the flock to fertilize the eggs. Roosters fertilize eggs by mating with hens prior to egg formation. If you do not have a rooster, you can purchase fertilized eggs from a hatchery or reputable breeder. Either way, make sure your fertile eggs are coming from a National Poultry Improvement Plan (NPIP)-certified flock to help reduce the risk of disease.

Two ways to hatch eggs at home are with a broody hen or in an incubator.

Caring for broody hens: “Broody” is the term for a hen who sits on a nest to incubate her eggs. If you would like a hen to hatch eggs, set up a clean, draft-free and predator-proof nest for her to start laying eggs. Set a feeder and waterer near the nest.

Without a built nest, a broody hen will likely build a nest in a secluded location, adding another egg to the nest each day until she fulfills her clutch of eggs. Most hens will build a clutch of about 12 eggs.

Once the clutch is built, a hen will spend nearly all her time sitting on her eggs and keeping them warm for the 21-day incubation period. Most hens will naturally keep eggs between 99-102 degrees Fahrenheit and rotate the eggs to distribute heat and keep the yolk from sticking to the shell.

Broody hens will not remove bad eggs from her nest, so consider candling the eggs and removing any eggs that are not developing.

Broody hens may not always leave the nest to look for feed and water. It can be helpful to bring fresh, cool water and complete feed to the nest. The hen will consume about 80 percent less feed because she is expending less energy and focusing on incubating her eggs.

Since broody hens are no longer laying eggs, they no longer need added calcium in layer feed so switch to Purina® Flock Raiser® feed or a complete starter feed. Avoid feeding treats and scratch to broody hens. Since they are eating less, it is easier to dilute the nutrients in their complete feed.



Not all hens are naturally broody. Make sure to have incubator access in case hens don't sit on eggs. Similarly, maternal instincts are not guaranteed. Your hen may abandon the eggs or peck eggs and newborn chicks. If your hen behaves poorly towards eggs or chicks once, she will likely behave that way again. Pay close attention to your hen around day 19 until hatching to make sure she isn't pecking at the eggs when the chicks start chirping in the egg.

Once chicks hatch, provide a Purina® Chick Strong™ starter feed to start them strong. The hen will teach them how to eat and drink. The hen can eat chick starter at this time but will need a supplement as she nears laying again.

Most hens start laying again about 5 weeks after becoming broody.

Using an incubator to hatch eggs: Eggs can also be hatched at home in an incubator. An incubator is an enclosed structure with a fan and heater to keep eggs warm during the 21-day incubation period.

We recommend purchasing an incubator with some automatic features, such as egg turning (which is critical to chick development and to keep the chick from sticking to the inside surface of the shell) and a fan to facilitate even heat distribution.

For our complete 21-day incubation process, [click here](#).



Odds & Ends

We receive a lot of great questions from the Purina Poultry community and are always happy to answer. Here are a few common hen questions we receive.

Egg eating: Egg eating can become a bad habit in the flock if it's not stopped quickly. Once a hen gets a taste for eggs, she can teach others to do the same. If you notice a hen is cracking eggs, first find the culprit. One way to do this is by blowing out the contents of an egg and then putting dye or food coloring in that egg. The next day, see which hen has a colored beak. Because this is a learned behavior, consider separating her from the flock.

You can also teach hens not to crack eggs a few ways:

- Place ceramic, wooden eggs or golf balls in the nest.
- Blow out an egg and refill it with mustard. When the hen cracks into the egg, the mustard can deter her from eating other eggs.

Hens not using nest boxes: Once hens start laying, they typically lay in the same spot moving forward. However, they can create secret clutches if they are trying to go broody. If you want hens to lay in their nest boxes, show them where the boxes are by placing decoy eggs or golf balls in the boxes. If they continue to lay outside or in other areas, consider keeping them in the coop to break the habit.

Nest box competition: It is common for one nest box to get the most use. If the birds aren't fighting or harming each other, this is probably not a big issue. However, if you are concerned about it, you could block access to the preferred nest box and guide the hens to use one of the other available nest boxes. Once the hens have decided the other nest boxes work just as well, allow them access to the original nest box.

Breaking a broody hen: Collect eggs as often as possible. Limit her access to nest boxes. If she always goes to one specific nest box, then board that one up so she can't get into it. Don't let her stay in the nest box overnight. Pull her out and place her on the roost with the rest of the hens when the lights are out. If it is dark enough, she is unlikely to go back to the nest box.

When all else fails, try using a wire cage to isolate the hen. The floor should be wire as well. Place feed and water in the cage for her and leave her in there for 2-4 days. If she was broody, you shouldn't find any eggs in there. If she does lay an egg, you can let her out. Once out, if she continues to be broody, then you may have to repeat this process a few times.

Convincing a broody hen to not be broody is a difficult task. Persistence on your part is going to be key to success. Be sure to wear gloves when you are working with broody hens as they can be aggressive.

Hen acting as rooster: This is not an unheard-of occurrence. In the absence of a rooster, the head hen may try to fill the void by becoming more vocal (even start crowing). You may notice "mating," which is a hen's way of exhibiting her dominance over other hens. This is a common behavior seen in animals.





Odds & Ends (Continued)

Feeding eggshells to hens: Some flock raisers feed eggshells to their hens as a calcium source. Be aware of the following issues:

- The calcium in eggshells is not as available to the hen as it is from oyster shell and it may break down quicker than the large particle calcium in the Oyster Strong® System.
- Your birds will need to eat more eggshells to get the same amount of calcium as from oyster shell.
- You could be teaching your birds that eating eggshells is okay, which could lead them to start eating the eggs they lay.
- If you decide to offer eggshells, dry and clean the eggshells prior to giving them to your birds. You could be feeding the hens bacteria you do not want them to have and potentially make them sick.

Remember the Oyster Strong® System is incorporated into Purina® layer feeds. In most cases, you should not need to supplement oyster shell or eggshells when you are feeding a complete layer feed that includes the Oyster Strong® System.

Mixed flocks: Mixed flocks and unique poultry are an exciting part of the chicken math equation. Contact us online or visit your local Purina® retailer for specific feeding recommendations. For mixed flocks with multiple species, Purina® Flock Raiser® is a good all-flock feed.



Purina® feed trial: You can try Purina® through the Purina® Feed Greatness™ Challenge trial program. We designed this trial program to give backyard flock owners an opportunity to try our layer feed for 90 days. After signing-up, you will receive a feed offer and tips throughout the trial.

To sign-up, go to www.purinamills.com/flocktrial.

Local poultry resources and celebrations: Local Purina® retailers often have backyard chicken keeping experts as part of their teams. Contact your local Purina® retailer to learn about their Purina® Flock Talks™ workshops and annual Purina Flock-tober® festivities.

You can find your local Purina® **retailer here**.

Stay connected

We are happy to be with you each step of the way—celebrating memorable moments, answering questions and sharing in the joy of backyard chickens.

We would love to hear your story and share more flock fun with you online. Each of our channels offers a unique, educational experience. Please connect with us on the platforms that work best for you.

For additional and more in-depth chicken raising information, visit www.purinamills.com/chicken-feed.



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Light Brahma hen



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