



guidance and design by charline
rootsaboveground.com

chicken keeping

updated on
march 2025



beginner urban
chicken keeping



nipmuc and
massachusetts land



a head's up

Chickens are incredibly beautiful, **social** and **intelligent** animals. Like every animal, chickens deserves **respect** and maintenance.

If you aren't able to offer a secure safe home year-round along with routine maintenance, **please consider taking your time to research the needs and lifestyle adjustments before adopting chickens** and raising chicks.

history of chickens



The chicken's first appearance range between 4,000 – 10,500 years ago. Chickens are native to Southeast Asia, India and Northern China.



Domestication began in rice fields planted by Southeast Asian farmers **3,500 years ago**.



The birds were then traded and sold westward, treated as exotic and culturally revered animals.



They became domesticated in the Mediterranean around 2,800 years ago and then appeared in Africa 1,100 years ago.



Through trading and relocating these **junglefowl**, they had to adapt to new environments and temperatures, encouraging evolving to feed on waste from human societies.



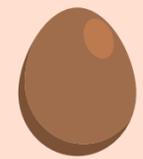
In 2020, a [Nature.com study](#) "found that fully sequenced 863 chickens across the world suggests that all domestic chickens originate from a single domestication event of red junglefowl whose present-day distribution is predominantly in southwestern China, northern Thailand and Myanmar."



Shout out to the upcoming Asian American and Pacific Islander Heritage Month!

infrastructure

to get started, you'll need:



chicken coop

4 square feet per bird



covered food source

to keep food clean



nesting box

1 box per 2 birds



covered water source

to keep water clean



covered chicken run

8 square feet per bird



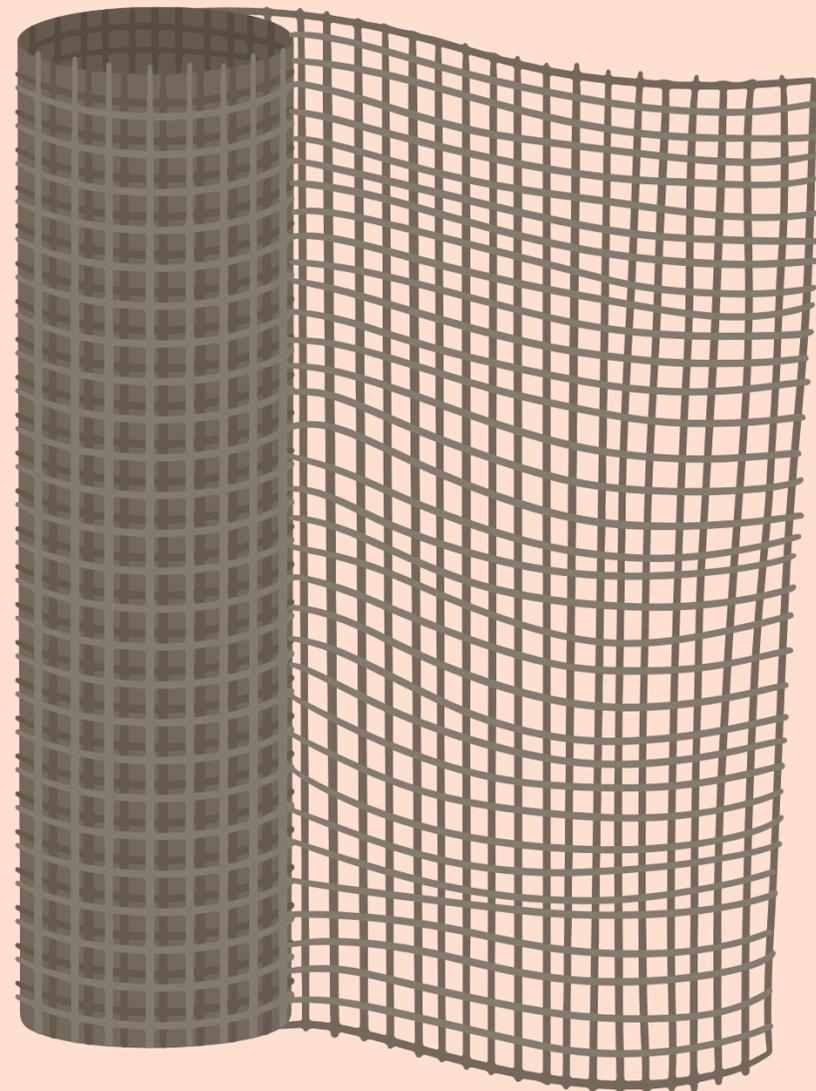
water source heater

for cold seasons

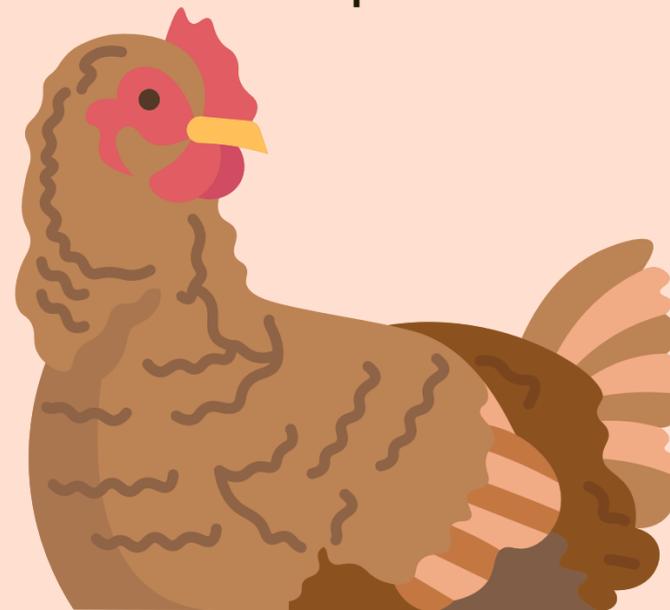


dust bath area

for hygiene and joy



hardware cloth
hardware cloth
hardware cloth





chicken hospital

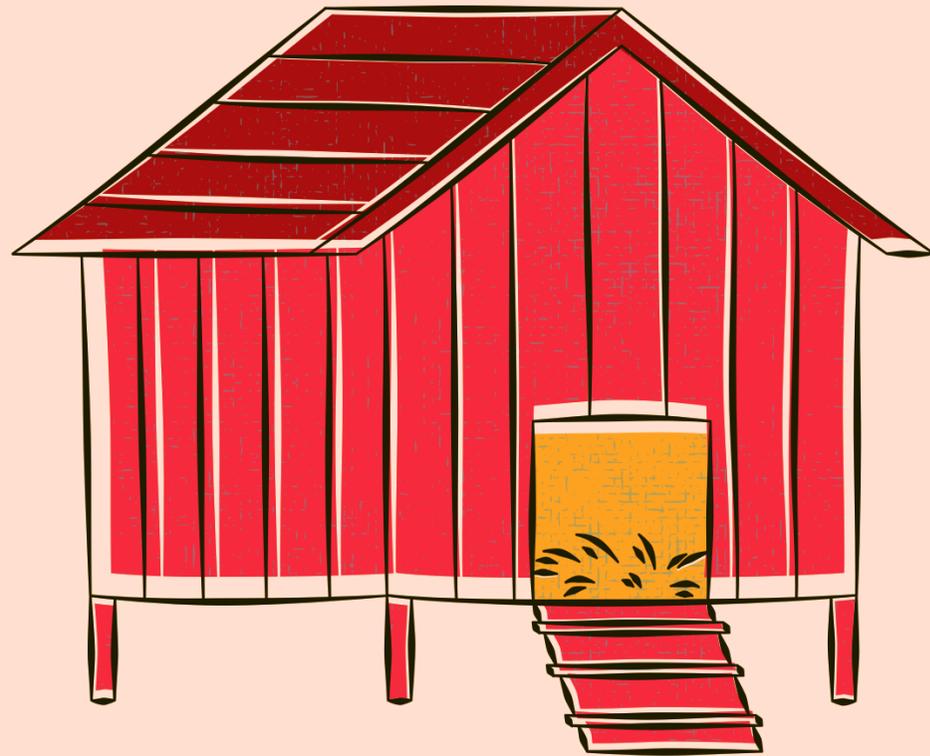
healing space: temperature controlled, quiet, dark

- chickens don't show illness until very late, and can be very vulnerable depending on the illness or injury
- to keep them safe from bullying and from spreading any illness, isolating them in a healing space or mobile healing crate is crucial

observation:

- monitor watch their behaviors and symptoms, document your observations and have clear images and/or videos to show if and when you are able to ask for help
- make sure the chicken gets enough nutrients and hydration
 - if they are struggling, you may need to assist, but be very careful with tube feeding since their airway is in their tongue

consider a healing space inside the chicken pen or coop and a healing space you can bring inside



coop infrastructure

each coop will need:

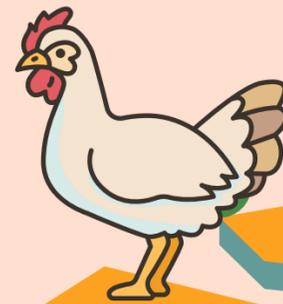
no fewer than 3 chickens

3 chickens: 6-12 square feet

6 chickens: 12-24 square feet

8 chickens: 16-32 square feet

- consider adding a chicken hospital inside coop or having an indoor option.
- small to medium animal crates will work just fine.
- consider getting a smaller food, water, and dust bath containers for the hospital.



minimum traffic nesting box



predator proof security



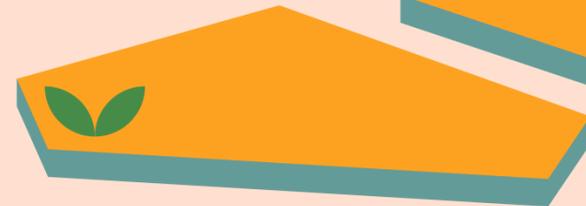
litter material



ventilation



lockable door

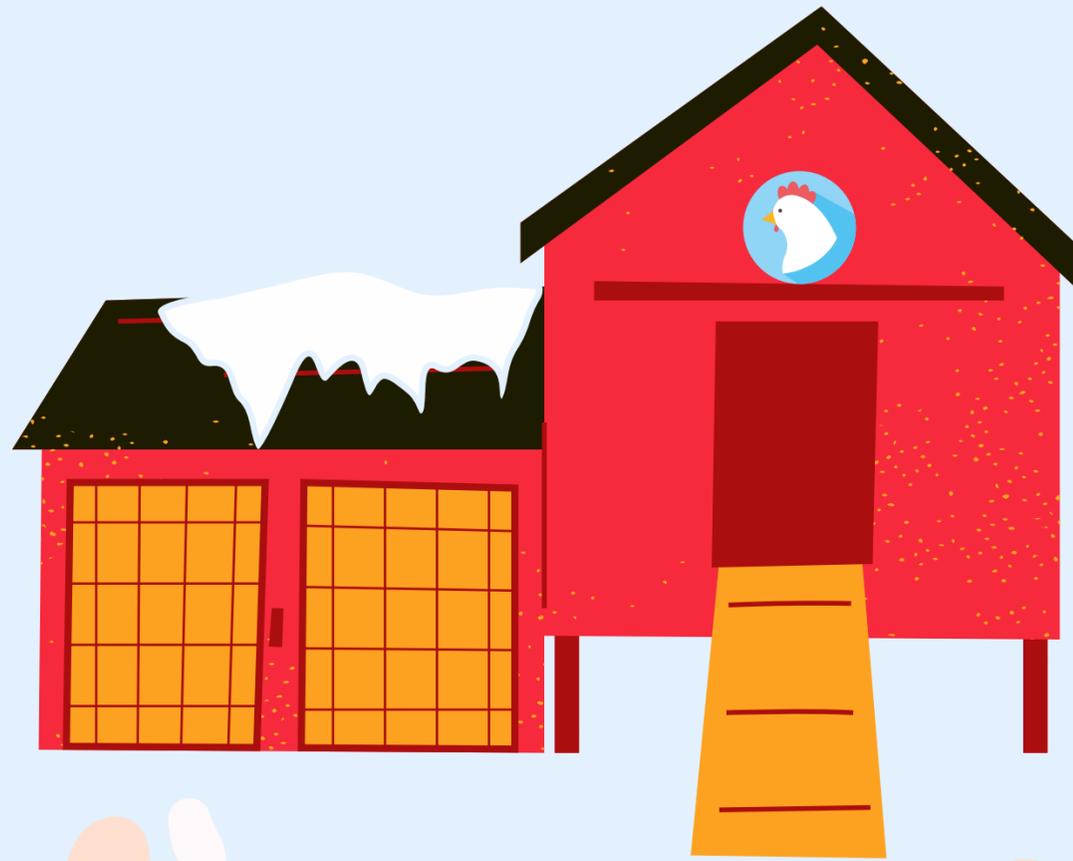


cascading roosting bars



durable weatherproof roofing





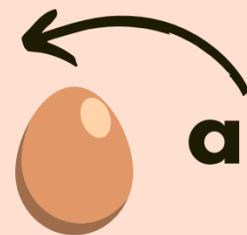
winterize chickens below 40°F

hens usually take a break laying eggs during the cold season. this allows their bodies to focus on their overall health and maintaining energy to keep warm during the winter. **consider not adding heat or additional light for your flock to rest.**

seasonal adjustments

-  **manage drafts and insulate coop and run**
to keep chickens dry and healthy
-  **water source heater** - in or under source
to keep water from freezing
-  **manure and bedding**
deep litter method, winter routine
-  **develop a winter routine**
egg schedule, clear a path to chicken run
health check: combs, feet, vent
-  **supplemental feed and treats**
scratch grains and all flock feed help with molting and keeping warm

breeds for beginners



australorp



barred rock



maran



rhode island red



easter egger



brahma



cochin



orpington



wyandotte



ameraucana



diet and feeding

to be happy and healthy chickens require a balanced diet packed with the following essential nutrients:



protein - assists with growth, development, recovery and egg production



carbohydrates - provide energy for your active and curious flock



fats and oils - provide energy and help maintain skin and feather health



shell grit - shell grit assists their digestive tract in processing food and also provides minerals for optimum health



vitamin a - assists their immune system



vitamin b - assists in development and maintaining skin and feather health



vitamin d - assists in development and egg production



minerals - calcium and phosphorus promote strong egg shells and healthy bones





diet and feeding

choosing the correct feed, treats and feed form (texture) depends on your flock's age, breeds, sex, and purpose.

chick feed comes in 2 forms:

protein level: 18%–20% for both



medicated chick feed includes 0.0125% **amprolium** to prevent coccidiosis which helps reduce spread and mortality.



unmedicated chick feed does **not** include amprolium, but contains the essential nutrients, proteins, vitamins, minerals, prebiotics and probiotics.

crumble

pellet

whole grain



broiler feed is specialized feed for pullets and adult hens with high protein, vitamins and minerals to **promote rapid growth**.

protein level: 20%–25%



layer feed is specialized feed for pullets and adult hens formulated in higher levels of protein and calcium to support **egg production** (protein) and strong egg shells (calcium).

protein level: 16%–18%



all flock feed has lower levels of calcium than layer feed but contains a **balanced protein level for roosters, non laying hens, and laying hens** to stay health. if you have layers on this feed, add calcium sources.

protein level: 16%–18%



common behaviors

spring

- shedding down feathers
- more egg laying
- broodiness
- adjusting daily routines to longer daylight
- more active and joyful behavior
- combs start to brighten and grow back to full size

summer

- panting and wing ventilation (holding wings away from their body)
- active laying
- more dust bathing for lice and mite prevention
- more resting and lying down in cool and shaded areas
- combs are plump and bright

autumn

- molting begins
- laying pauses or decreases
- broodiness
- adjusting daily routines to shorter daylight
- stress due to the environmental changes
- combs are plump and bright, can shrink and fade a bit as molting begins

winter

- down feather growth
- laying sporadically
- huddling, cuddling
- immune system drops, needs supplements
- needs rest to improve overall health
- activity reduction
- combs shrink and fade to paler shades during molting season



did you know?

chickens have over 30 vocalizations, communicating in clucking, cackling, crowing, and purring, etc.



common behaviors

all year behaviors:

-  **preening** – chickens will use their beak to properly place their feathers, apply oils from their preening gland at the base of their tail. this daily grooming enhances feather performance in insulating heat and waterproofing.
-  **dust bathing** – chickens will dive in, thrash around, coating their skin under the feathers with the dust, stand up and then shake the dust off. dust: mixture of sand and wood ash. dust bathing keeps their feathers clean and insects away.
-  **scratching - foraging** – chickens use this instinctual behavior to create space for dust baths or a nap, to forage for bugs and seeds, to make a nest. this helps them remain active, alert and entertained.
-  **explore and rest** – chickens will explore horizontally and vertically. they are curious and social animals so with each great adventure comes good rest. chickens usually sleep with one eye open to stay aware of predators and can tuck their heads in under their wing to doze.
-  **pecking order** – hierarchical social system. ranking begins at the pullet stage (1 year+) and re-adjusts anytime the flock loses or adds a member. chickens will learn behaviors from their flock mates and handler. separate the bully first, re-introduce the bully, and consider pin-less chicken 'peepers'
-  **broodiness** – the hen has decided she's ready to sit on the egg clutch and begin motherhood. while their hormones elevate, the hens will eat and drink less, dedicating all her energy in keeping the eggs warm. this is a vulnerable and potentially dangerous state.



did you know?

chickens' right eye is near-sighted for foraging, and their left eye is far-sighted for spotting predators.



dustbathing and bonding

left - jigglypuff, right - wigglytuff
mother and daughter
wiggly is wearing a chicken
blinder/peeper because of bullying



arguing over nesting box

left - buttercup, right - jiggly
blossom is laying an egg in the nesting box,
there's an empty nesting box next door,
but that's not the point..



far-sighted vision

buttercup is checking for
predators, ready to alert the
flock, even when safe in the
pen.



social dynamics

chickens are inherently social and need a flock to thrive.

- it is common in backyard and small flocks with no rooster that one of the hens will act as one. the hen will start to crow, grow saddle feathers, even spurs, and maintain order within the flock but cannot fertilize eggs.
- like us, each chicken has their preferences, personalities, and love languages. observing their 'norm' is important in being able to catch illness.
- routinely engage with the flock, check flock health and flock order to monitor changes to maintain a healthy environment and relationship.
- chickens often include you in their flock, so routines are important for them, and being able to maintain the routines and adjust to the seasons, environment and their needs is crucial.

dust baths



chickens often bond with one another by **participating in activities together**, like bathing together, preening one another, sharing treats, roosting and sunbathing together.

if this is new behavior: what could have caused this?
is this a sign of bonding or a sign of potential lice or mites?

at this time, the flock lost a cherished member and while recalibrating the new flock order, they also engage with one another differently.

common signs of illness

feather plumage change

- feathers out of place, disintegrating, quality decrease
- when stressed, chickens can molt
- if there's no stress triggers, check for lice and mites at the base of the feathers at the vent, wings and neck.

stance and posture

- head and tail is down, feathers puffed up
- walking with a limp, only standing on one leg
- walking like a penguin could be a sign for being 'egg-bound'



egg peritonitis – egg leaks into abdominal cavity (peritoneum) and causes inflammation and infection. can be caused by: egg development deformity, egg broken in oviduct, infection, and/or stress.

buttercup

age: 2.5 years

pecking order: top

laying? yes, daily

egg quality: shell is strong

energy level: active

vocal volume: medium

social? very





common signs of illness

combs and wattles

- drastic color change, color change for prolonged amount of time
- chickens will peck one another which causes some spots and scabs, but continuous spotting could be 'fowl pox'

legs, feet and scales

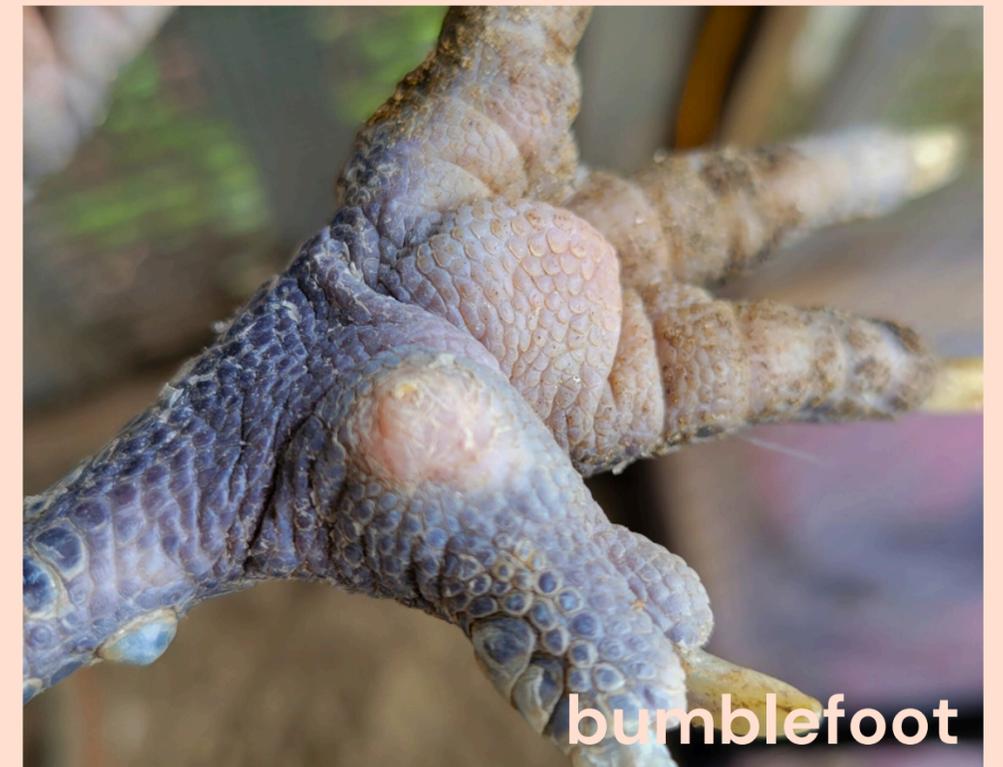
- any scales that are lifted should be examined could mean 'scaly leg mites'
- any bumps on pads of feet could lead to infection which causes 'bumblefoot'



bumblefoot – pododermatitis: a bacterial infection of the foot pad. causes: injury to the foot pad, from sharp objects, rough surfaces, litter material is too hard. contamination with staphylococcus aureus bacteria.

wigglytuff

age: 2 years
pecking order: top
laying? yes, daily
egg quality: shell is strong
energy level: active
vocal volume: loud
social? yes





common signs of illness

mouth and throat

- wheezing, sneezing and gasping can be signs of respiratory illness
- check mouth for any discoloration and throat to see if anything is stuck

crop and belly

- red, inflamed, or swollen belly could be ascites
- if the crop size expands or hangs low, it could be 'pendulous crop'
- if there's a fermenting smell or regurgitation, it could become 'sour crop'
- if the crop is hard and you don't see stool, this could be 'impacted crop'



pendulous crop - the crop (pouch at the base of the chicken's neck where food is stored before moving to the gizzard for digestion) becomes distended and hangs down, can lead to sour crop.
causes: excessive feed or water intake, genetic predisposition, maybe Marek's related.

rita

age: 1 year
pecking order: bottom
laying? not yet
energy level: medium
vocal volume: medium
social? she's picky





common signs of illness

eyes and nose

- any discharge, persistent sneezing could be signs of infectious coryza or mycoplasma gallisepticum

vent and stools

- lice and mites like to gather around the vent, where it's moist and warm
- anything sticking out of the vent that's not their stool, prolapse, continuing discharge, hardened or crusty discharge
- drastic discoloration or wet liquid or oil like stools, lack of stool, any blood or black stool



prolapsed vent – lining of cloaca (opening at the end of digestive and reproductive tract) protrudes outside of the body.
causes: trauma, tumors, straining during egg laying, beginning of laying again, weakness in cloacal muscles.

tina

age: 2 years
pecking order: top
laying? yes, daily
egg quality: shell is strong
energy level: active
vocal volume: medium
social? she's picky



prolapsed vent



the eggs

prime laying years: 1-2 years
during **laying season**,
hens will lay **one egg every 24-26 hours**
factors: breed, age, season, diet,
environment, health, molting

rooster crow: 130-140 decibels
egg song: 60-80 decibels

the 'egg song' is a pattern of **loud** squawks
and clucks similar to their predator alert
sounds. **factor noise** when considering
chicken keeping and building infrastructure

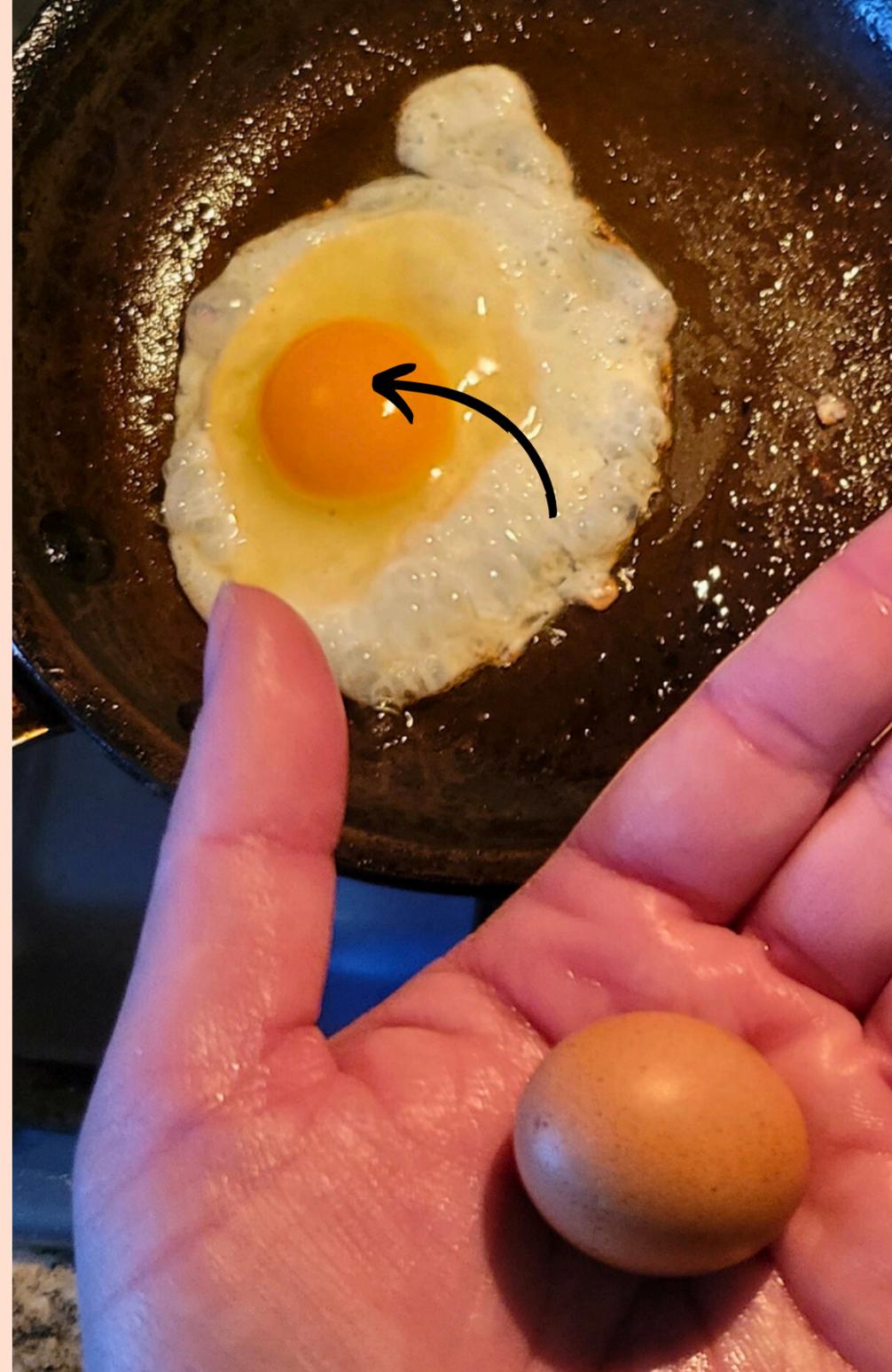


the song



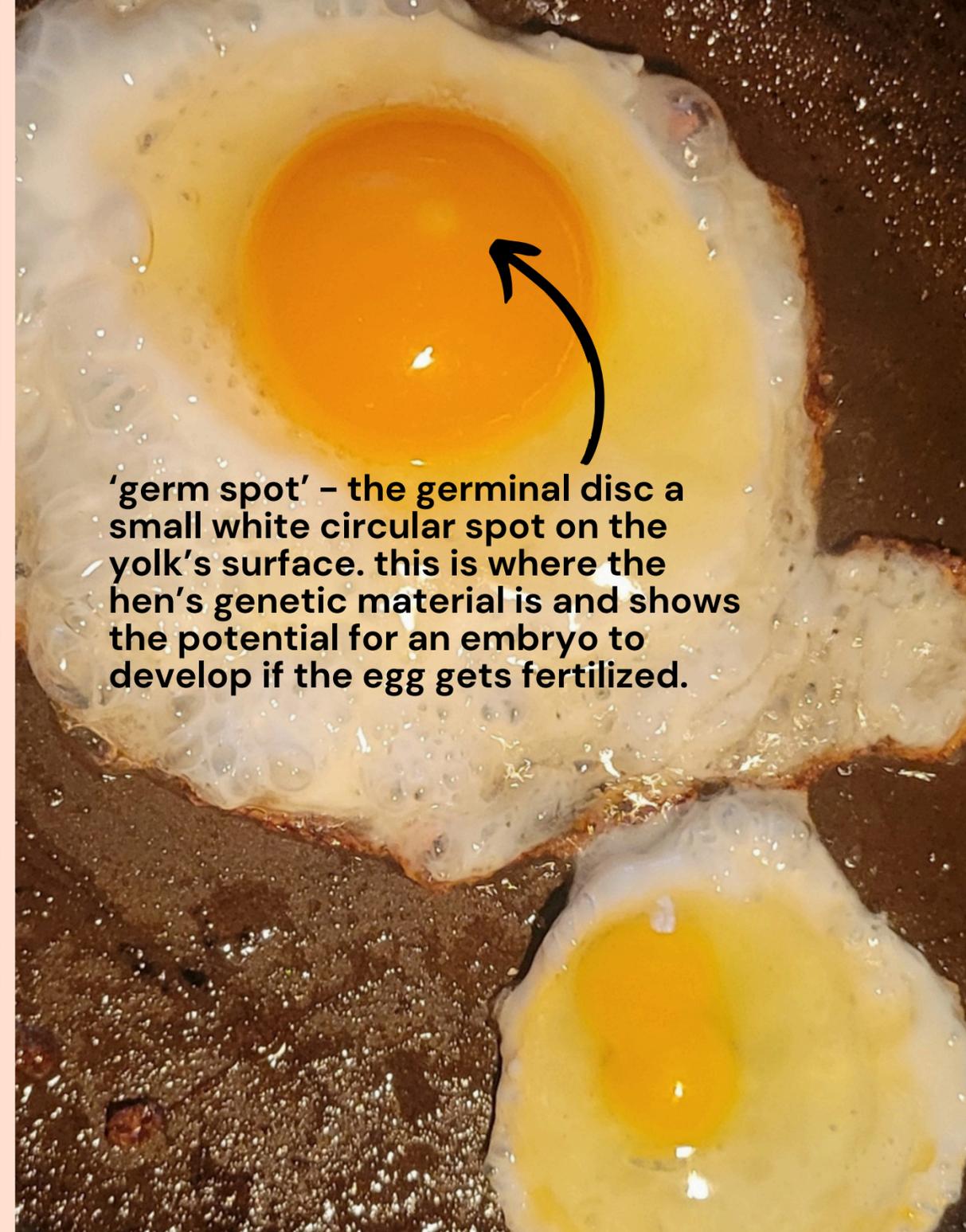
yolk color

feeding the hens red pepper changes the color of their yolk from a golden yellow to a dark orange



fairy eggs – irregular eggs

fairy egg: a very small egg, usually missing a yolk, laid by a hen that has recently had a disruption in the egg laying process or cycle. this one had a double yolk!



'germ spot' – the germinal disc a small white circular spot on the yolk's surface. this is where the hen's genetic material is and shows the potential for an embryo to develop if the egg gets fertilized.

are all eggs fertilized?

nope! the flock would need a rooster in order to have fertilized eggs. a hen can lay fertilized eggs up to 2-3 weeks after a mating, the sperm is stored in the reproductive tract



emergency kit

healing space:

- a small to medium animal crate
- clamp lamp, [heat lamp](#) (75 watt, ceramic)

digestive care:

- [probiotics](#) and [electrolytes](#)
- [poultry cell](#)
- [corid](#) (amprolium)

emergency food: omnivore

- [oxbow critical care](#)
- [emeraid intensive care](#) (requires prescription)
- baby aspirin
- [feeding tube and syringe](#)

mites, lice, worms:

- [elector psp](#)
- [ivermectin](#) pour on
- [permethrin](#) powder

wound, skin, combs and wattles care:

- [vetericyn](#) antimicrobial spray
- [pick-no-more cover up](#) lotion
- [healing ointment](#), or salve (batch coming soon!)
- betadine prep solution and/or povidone iodine solution
- simple first aid kit: scissors, tweezers, gloves, vet wrap (self adhesive), gauze pads, waterproof tape, restraint sling, cotton balls, saline wound wash, cotton cash padding, powder free antimicrobial gloves, mask
- wound coagulant powder
- triple antibiotic ointment no pain relief
- honey
- ky jelly, water based lubricant
- hemorrhoid cream no pain relief
- epsom salt for bath



avian flu

-  **Since 2021 Autumn**, this outbreak has led to the death of **over 280 million poultry birds** with an estimated millions of wild bird deaths around the world. HPAI also threatens **wild bird populations** as well and since they are carriers of the virus, the spread happens quick due to migration.
-  **About the 2021 HPAI Outbreak:** Eurasian Strain of HPAI H5N1, clade 2.3.4.4b was circulating in Europe since 2020–2021, making it's way to North America in late 2021. Avian Influenza generally does not infect humans, but there have been **rare cases**, mostly spread by dairy herds. This strain has **affected a wide range of terrestrial and marine mammal species** as well.
-  **Continue to monitor cases in your area:** Check USDA's **2022-2024 Confirmations of Highly Pathogenic Avian Influenza in Commercial and Backyard Flocks** for continued reports on HPAI break outs in your state and county.

avian flu continued

“MDAR (Massachusetts Department of Agriculture) is advising backyard and commercial poultry owners to practice strong biosecurity measures to prevent domestic poultry from having contact with wild birds, their feathers, and droppings. The **HPAI virus** is continuing to circulate in the wild bird population, particularly in wild waterfowl. Eliminating standing water and preventing domestic birds from having access to ponds, streams, and wetland areas that attract wild waterfowl is of critical importance. **Letting your flock “free range” poses substantial risk of exposure to HPAI. The consequences can be deadly.**”



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SCAN CODE FOR PRESENTATION

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thank
you

chicken math is
real real



*note: blue and underlined text are
hyperlinks for your convenience