



Egg Safety & Quality Management

Egg Quality



Purpose

- Review regulations pertaining to the producing and sales of eggs
- Learn good biosecurity practices
- Learn safe egg handling practices
- Learn to identify egg defects

Egg Regulations

- Food and Agricultural Code: Sections 27501-27690
- California Code of Regulations: 1350-1358.7
- Code of Federal Regulations Title 21 Part 118

Egg Regulations

- Any person engaged in business in this state as an egg producer or egg handler, or any out-of-state egg handler or egg producer selling eggs into California, shall register with the secretary. A new registration shall be submitted if any current information changes. (FAC 27541)



Egg Regulations

- It is unlawful to sell to consumers:
 - Eggs lower than Grade B
 - Eggs classified as Inedible (bloods, rots, mold, leakers, incubator rejects, etc)
 - Unwashed eggs
 - Ungraded eggs
 - Eggs labeled with false or misrepresented information
 - Eggs that are not labeled according to California regulations

Labeling

- Labels must include the following:
 - Identity – Eggs
 - Responsibility – Name, Address, Zip Code
 - Quantity – 1 Dozen, 18 Count, 15 Dozen, etc...
 - Keep Refrigerated – Safe Handling Instructions
 - Sell By Date
 - Julian Date – Date of Pack
 - CA Registration Number – CA 1234
 - Size and Grade – **Minimum 1/4-inch height**
 - CA SEFS COMPLIANT – **Minimum 1/4-inch height**



Labeling



- **JULIAN DATE:** Date of pack.
 - Must be 3 digits:
 - Example – January 1 – 001, December 31 – 365
- **SELL BY:** 30 days from date of pack.
 - Has to say Sell By!
- **SIZES:**
 - Can put multiple sizes in one carton but carton has to be labeled with **only one size, the smallest size in the carton.**
 - Example: carton has Small, Large and Extra Large – carton should be labeled as Small

Labeling

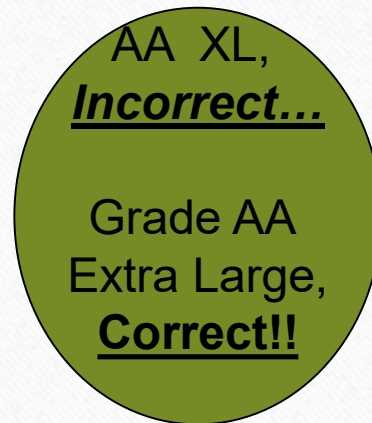


Labeling

<u>Size or Weight class</u>	<u>Ounces</u>	<u>Grams</u>
Jumbo	2 5/12	68.51
Extra Large	2 1/6	61.42
Large	1 11/12	54.34
Medium	1 2/3	47.25
Small	1 5/12	40.16
Pee Wee	No Minimum	

Labeling

- Any advertisement, sign or placard which indicates the price of eggs for sale, must also use the full description of size and grade. CCR 1354. (b)



Labeling Exemptions

- **Exempt from size, grade, name and address:**

1. If sold at retail from a properly marked bulk display and packaged in the presence of the purchaser.
2. If packed for shipment or in transit to points outside the state.
3. If sold to household consumers without advertising by the producer on the premise where produced from a flock of 500 hens or less
4. If being delivered from outside the state to dealers for candling and grading.
5. If being delivered to, or are in possession of, a dealer for candling and grading, or being delivered, stored or removed from cold storage.
6. If packed for sale to military forces of the United States, labeled with one of the United States Department of Agriculture Grades.

Labeling Exemptions

- Eggs are exempt from standards established by these regulations when being transported:
 1. From a location which does not have proper or adequate facilities for grading or reconditioning to a shell egg grading plant that does.
 2. To first point of grading.
- No markings required on eggs packaged for export

Egg Safety

- Begins with you, the producer!
- Biosecurity will help prevent the spread of disease/infection to both birds and consumers
- Washing and Candling Eggs helps ensure good, clean eggs are going to consumer



Biosecurity

- Salmonella prevention should start before the egg is even laid
- “An ounce of prevention is worth a pound of cure”
- Protecting not only consumers but your investment as well

Picking Birds

- Ideally want NPIP (National Poultry Improvement Plan) SE Clean birds
- Buying birds from auctions, fairs, feed stores, craigslist puts you at higher risk for stress and disease
- Want birds that look healthy and happy



Protecting Your Birds



- Enclosure should protect birds from outside sources of contamination
 - Limit traffic in and out of enclosure
 - Clean items before bringing them into enclosure
 - Only wear clean clothes and shoes
- Need a way to monitor fly and rodent activity
 - Flies: spot cards, sticky tape
 - Rodents: Traps, tin cats, bait stations

Protecting Your Birds

- Remove pest attractants
 - Harborage: any vegetation or debris that would make a nice home for pests
 - Attractants: soupy manure, spilled feed
 - Holes in enclosure
- Quarantine new and sick birds
 - Keep new birds separate for 4-6 weeks to ensure they are disease free
 - Put one of your current birds in to test if they are carriers



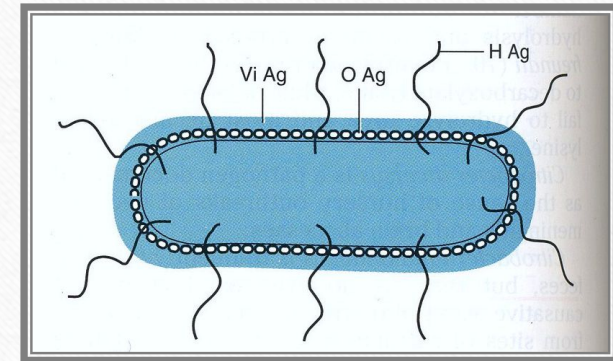
Recognizing Signs of Disease/Illness



- Lack of energy and appetite
- Decreased egg production
- Swelling of the head, eyes, comb, wattles, and hocks
- Purple discoloration of wattles, combs and legs (Avian Influenza)
- Coughing, wheezing and sneezing/breathing difficulties
- Nasal discharge/runny noses
- Lack of coordination in mobility
- Diarrhea, watery stools, bloody stools
- Lethargy
- Soft-shelled eggs or misshapen eggs

Salmonella Enterica and Typhimurium

- Causes Salmonellosis
- Pretty hardy bacteria
 - Can do aerobic respiration and fermentation
 - Good at escaping host defense mechanisms
 - Has genes coding for stronger cell walls and damage repair
 - Can slow down metabolism in unfavorable conditions to survive longer on the surface of the shell
 - Doesn't cause noticeable changes to the egg



Salmonella Enterica and Typhimurium

- Multiple sources of contamination:
 - Hen laying egg is infected and passes it into egg during formation
 - Feces from infected hen comes in contact with egg
 - Person handling egg comes in contact with the bacteria and touches egg before washing hands properly
- More likely to infect egg during formation than getting through shell

Egg Washing

- Why wash? Remove all possible contaminants from the outside of the egg
 - 4 Steps:
 - Washing
 - Sanitizing
 - Rinsing
 - Drying



Refrigeration



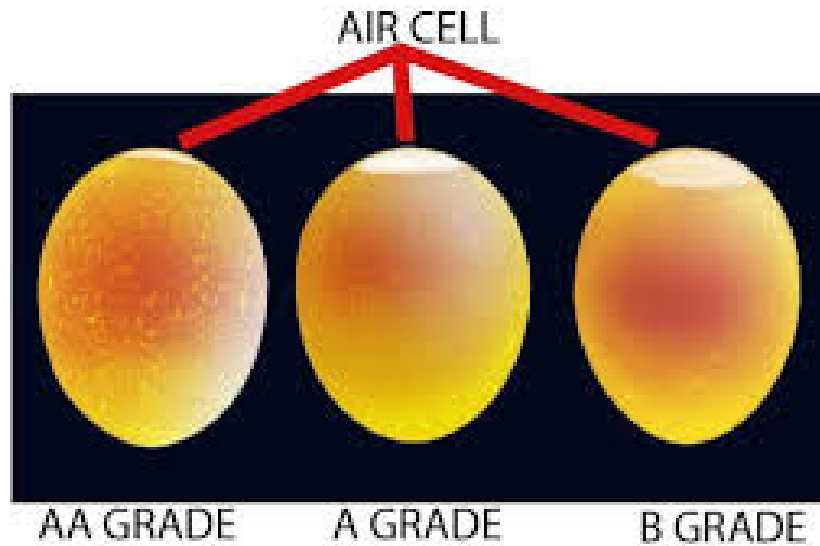
- Eggs must be refrigerated at 45F or below within 36 hours of lay



Candling

- Candling is the process of holding the egg up to a light in order to examine the inside
- All eggs must be candled to grade them and check for defects

Grading

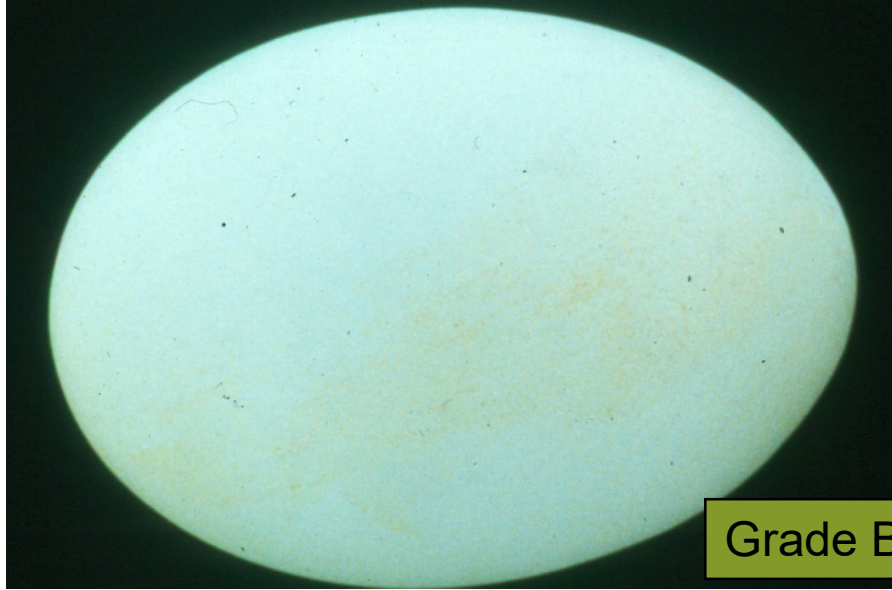


- Grades based on air cell size
 - AA
 - A
 - B
- AA and A eggs must be clean (free of foreign material, visible stains, or discoloration)

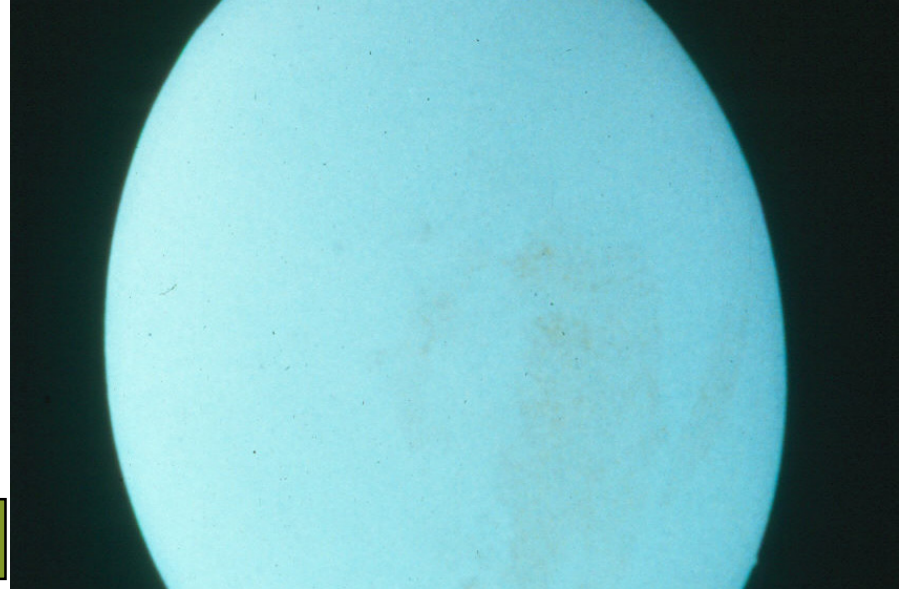
Grading: Stains

- Stains can be slight, moderate, or prominent
- Slight stains and cage marks are Grade B except when applying to definition of clean





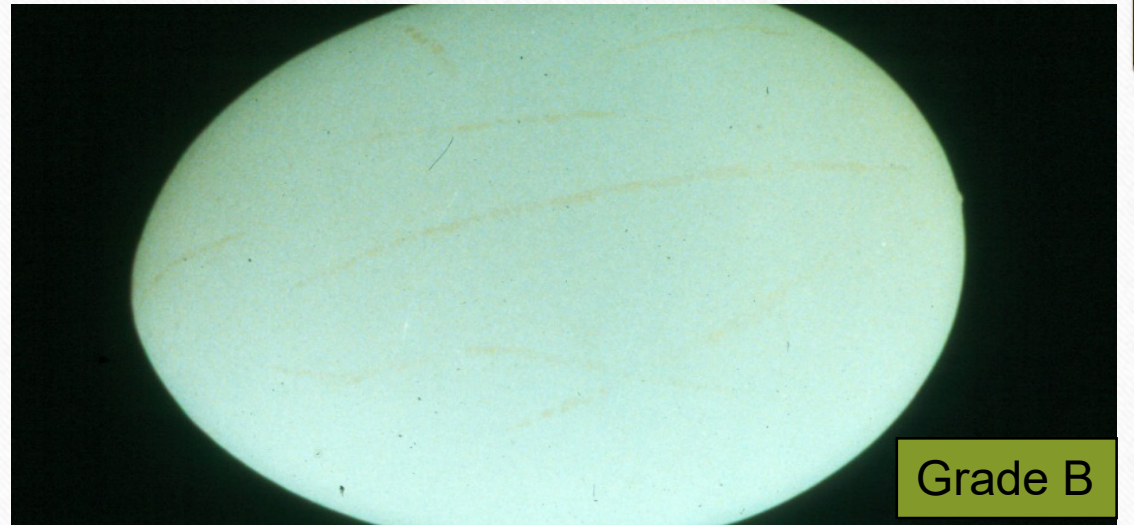
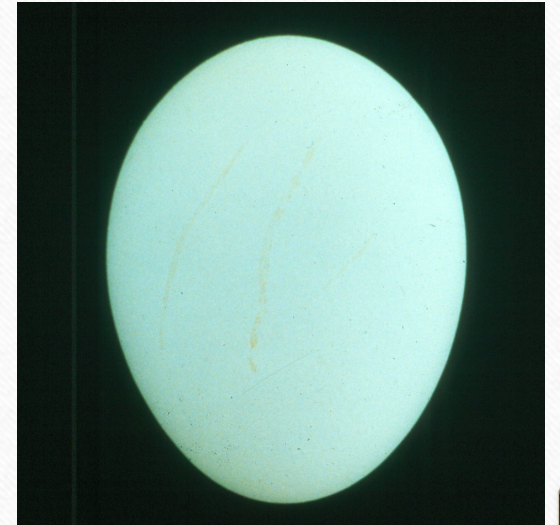
Grade B



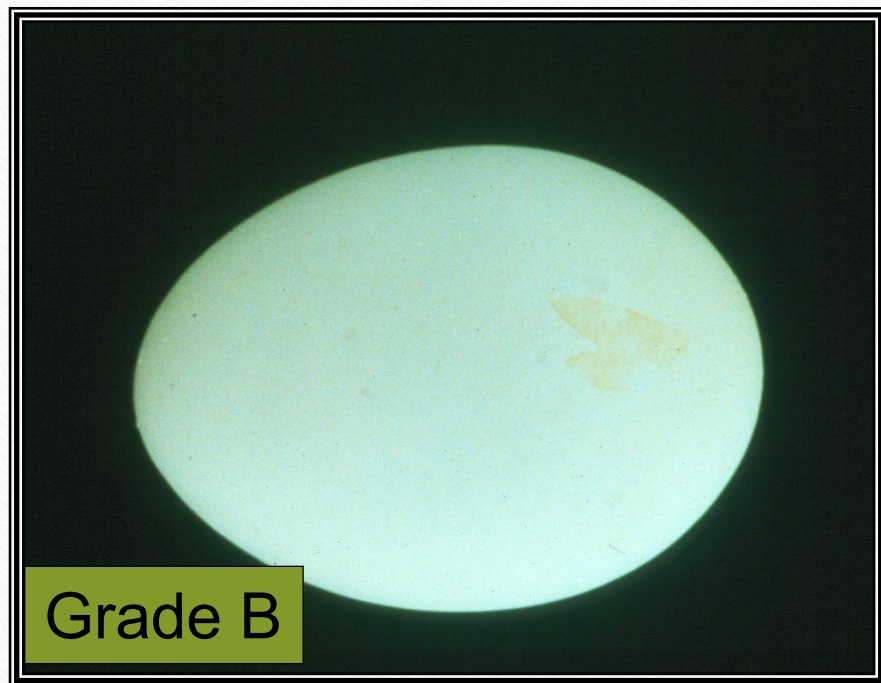
Slight Stain

Cage Marks

- Marks that arise from egg being kicked around cage



Moderate Stain

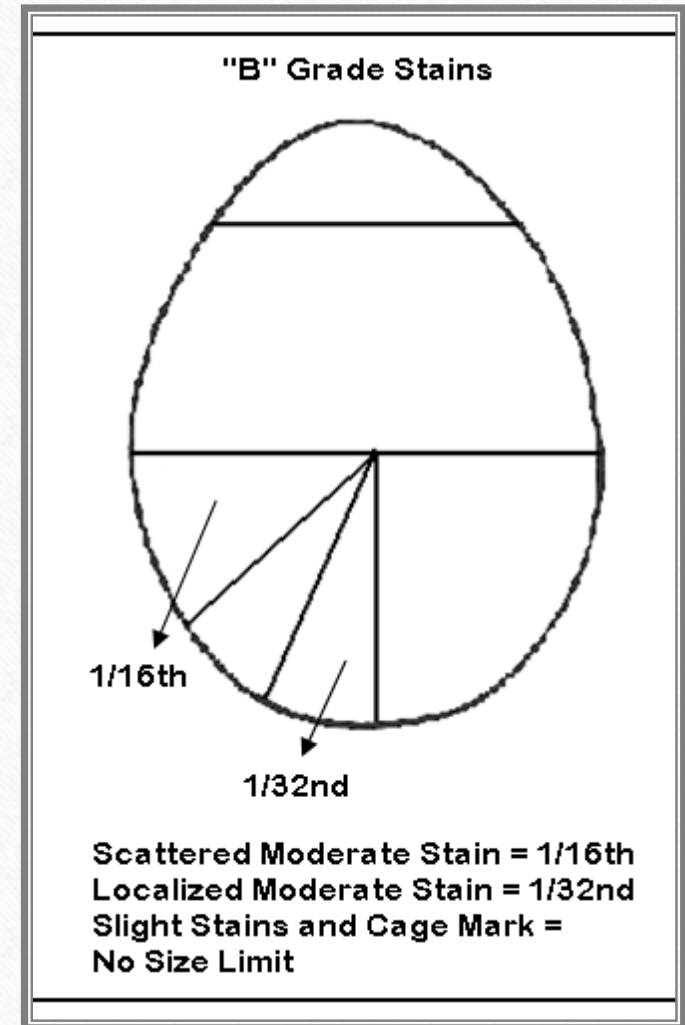


Prominent Stains



Stained Shell Eggs

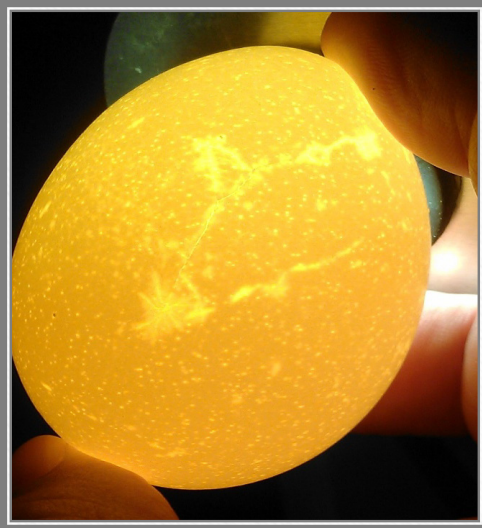
- Moderate stains are acceptable as Grade B if they are limited to a specific dimension on the shell area no longer than $1/16$ th of the shell surface. A localized moderate stain, confined to $1/32$ nd of the area of the egg surface is also a Grade B.



Grading Categories

- **Origin** and Destination
 - Checks
 - Dirts
 - Loss
 - Inedibles
 - Underweight

Checks



- An egg having a fractured shell, but with its membranes intact and not leaking.
- **Check Tolerances:**
 - Grade AA, A, at Origin, 5%, Jumbo 7%
 - Grade AA, A, at Destination, 7%, Jumbo 9%
 - Grade B, at Origin or Destination 10%

Dirts

- An egg that is unbroken, with dirt or foreign material adhering to its surface, or has prominent stains, or moderate stains greater than permitted in B quality.
- Dirties are classified as a loss.
- **Loss Tolerances:**
 - Grade AA, A, B at Origin, 0.5%
 - Grade AA, A, B at Destination, 1%

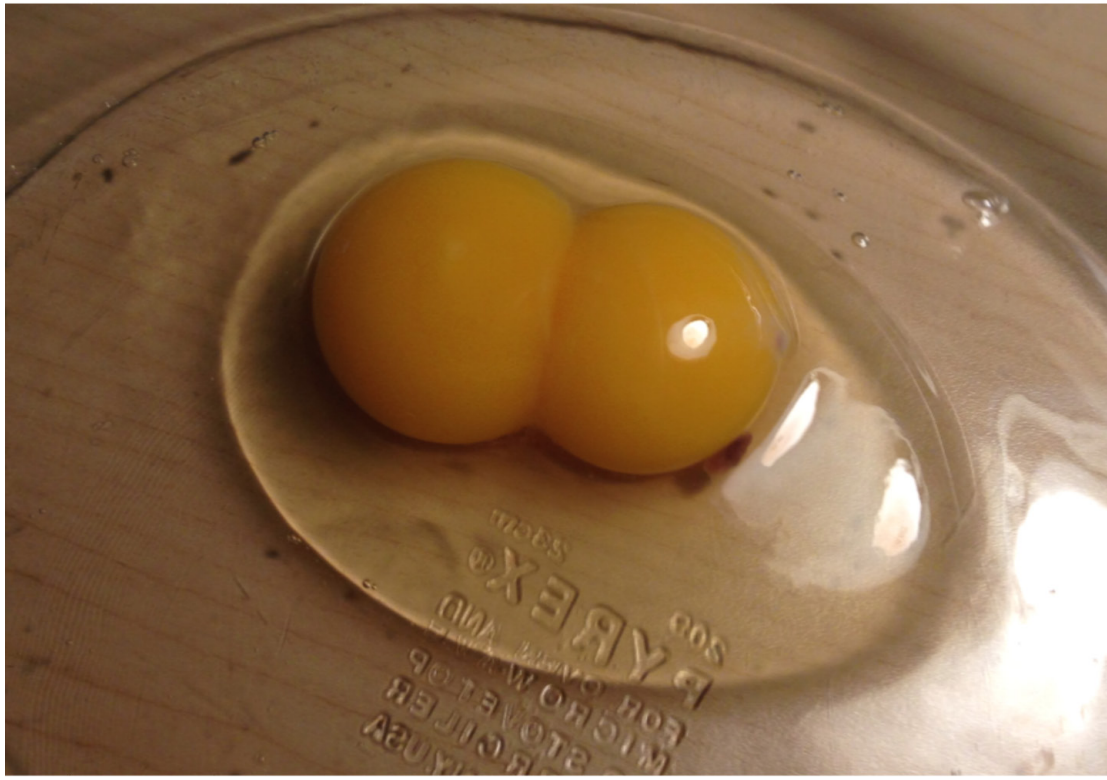




Loss: Leaker

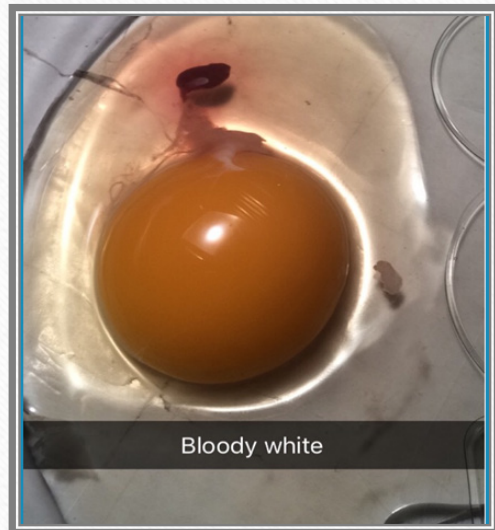
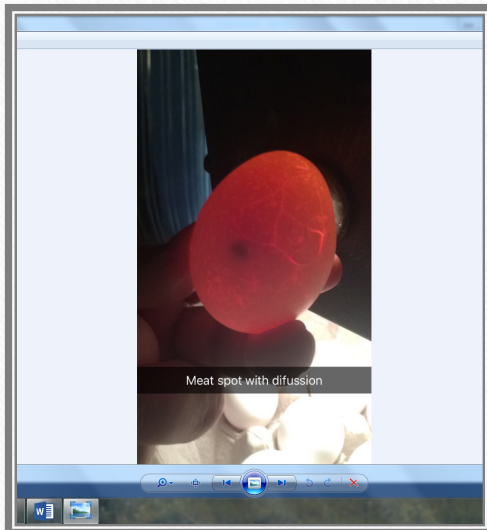
- An egg having a break in the shell and membranes, with contents exuding or free to exude.
- **Loss Tolerances:**
 - Grade AA, A, B at Origin, 0.5%
 - Grade AA, A, B at Destination, 1%

Loss: Meat Spot



- A piece of the chicken's reproductive tract sloughs off and is encapsulated inside the egg
- Considered loss if more than 1/8 inch
- **Loss Tolerances:**
 - Grade AA, A, B at Origin, 0.5%
 - Grade AA, A, B at Destination, 1%

Loss: Blood Spot



- These are spots on the surface of the yolk or suspended in the white that are larger than 1/8 inch in diameter. May show only slight diffusion into the white.
- If less than 1/8 inch in diameter, classed as C quality
- **Loss Tolerances:**
 - Grade AA, A, B at Origin, 0.5%
 - Grade AA, A, B at Destination, 1% (of this 1%, not over 0.5% loss due to blood or meat spots).

Loss: Bloody White

- An Egg with blood diffused through the white. Eggs with blood spots that only show slight diffusion into the white are not bloody whites
- No tolerance for bloody whites





Loss: Frozen and Cooked

- Frozen: cracked longways, feels heavier
- Cooked: may exude from egg or look chunky inside

Inedibles



BLACK ROT



- Any eggs of any of the following descriptions: black rots, yellow rots, white rots, mixed rots, sour eggs, green whites, stuck yolks, moldy eggs, and eggs showing embryo development at blood ring stage or beyond.

Inedible: Stuck Yolk

- Egg is old and has not moved from the same spot for awhile so yolk descends through albumin and adheres to inside of shell membrane

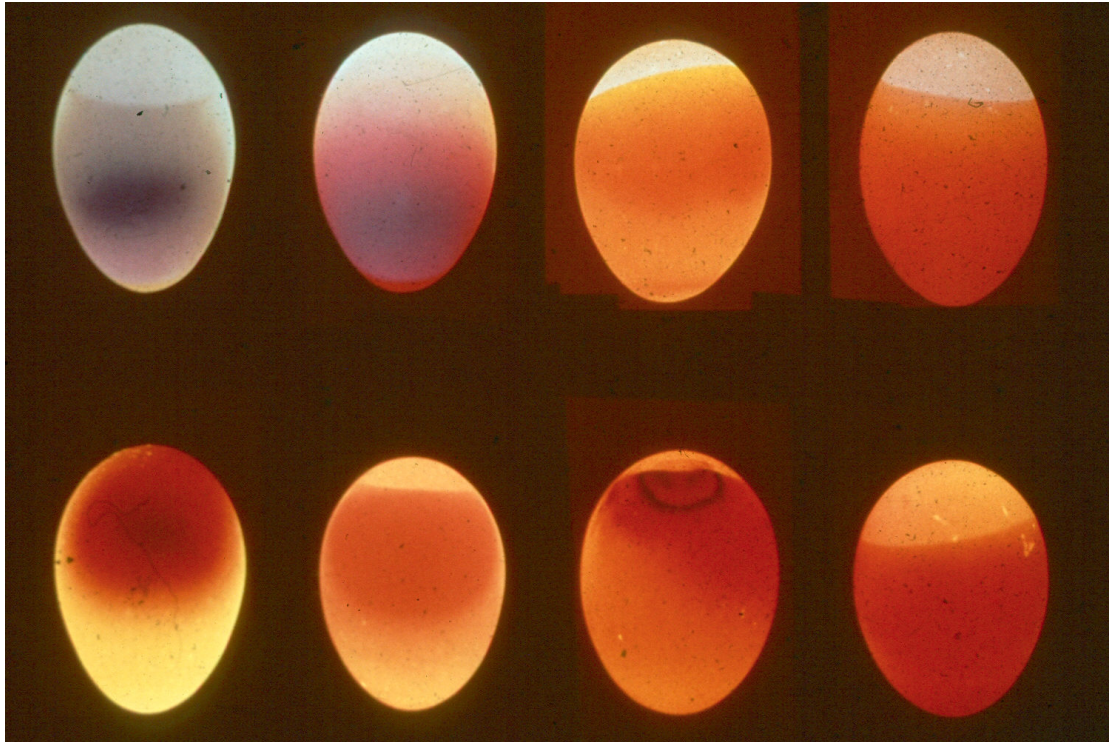


Inedible: Mixed Rot



- Murkiness inside the egg caused by the breakdown of the vitelline membrane (membrane around yolk)
- Looks like a tequila sunrise
- AKA “fresh rot” or “addled egg”

Inedible: Various Rots



- Green
- Red
- Black

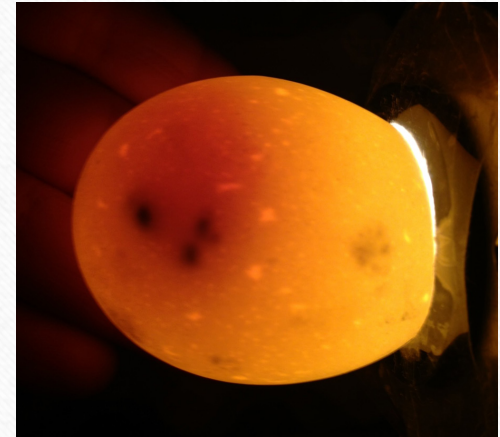
Maggot and Roundworm Eggs



- Sometimes other creatures make it inside the egg by crawling through the chicken's reproductive tract
- These are both actual eggs submitted to the CAHFS lab

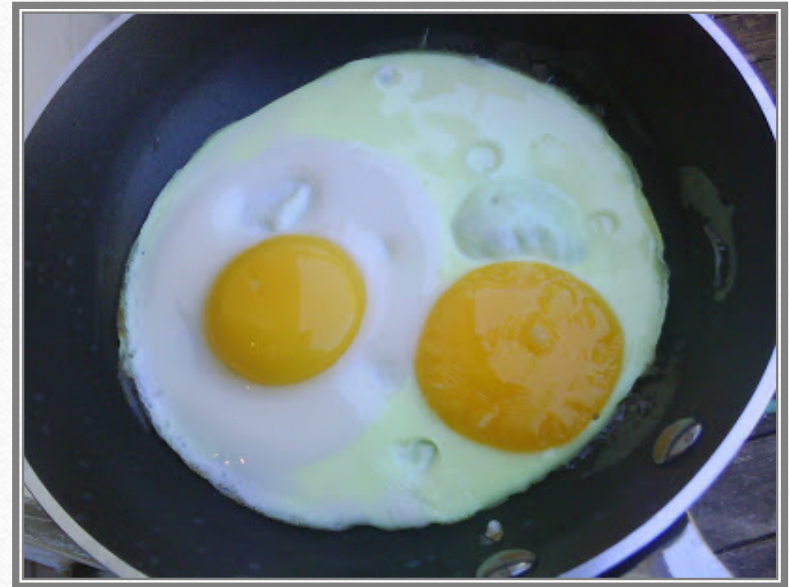
Inedible: Moldy Egg

- Mold can grow both inside and outside of an egg
- Warm, humid conditions encourage growth
- Submerging the egg in contaminated water can also cause this
- 0% Tolerance



One Egg Rule

- No lot shall be rejected due to a single inedible or loss egg
- Does not apply to checks



Underweights



- Tolerance is 4% at one size below
- 0% tolerance for more than one size below

Penalties

- Failing to follow the laws has consequences, expensive consequences...
- 3 categories:
 - Minor
 - Moderate
 - Serious

Table "A" Administrative Penalty Schedule for Egg Quality Control

Food and Agricultural Code	Title 3, Cal. Code Reg.	Description of Section Violated	Minor \$50-\$400 or notice of warning	Moderate \$401-\$1,000	Serious \$1,001-\$10,000
27621		Person forwarding company, or common carrier willfully fails or refuses to stop the transportation of the eggs with reasonable dispatch after being notified in writing by an enforcing officer of this chapter or regulation adopted pursuant to this chapter that such eggs are found to be delivered for shipment in violation of this chapter or regulation adopted pursuant to this chapter.			1 st violation
27632		Misrepresenting eggs to be product of this state.			1 st violation
27633	1358.3	Acting as egg handler without registering.		1 st violation	2 nd violation
27634		Unauthorized use of name, trademark, or trade name.	1 st violation	2 nd violation	3 rd violation
27635		Misrepresentation as chicken eggs.	1 st violation	2 nd violation	3 rd violation
27636		It is unlawful for any person to sell as "fresh eggs," "ranch eggs," or "farm eggs," or to represent as being fresh, any eggs which are below the quality of grade A or which have been held in cold storage more than 30 days.		1 st violation	2 nd violation
27637		False, deceptive, or misleading representation.		1 st violation	2 nd violation
27638		It is unlawful for any person to fail to comply with any lawful order of an enforcement officer, or any court, in any proceeding pursuant to this chapter or any regulation adopted pursuant to this chapter.			1 st violation
27639		Refusal to submit to inspections; Refusal to stop vehicle.			1 st violation

27640	1355	Unauthorized moving of eggs or container having warning tag affixed; Removal of tag.			1 st violation
27641	1357; 1358.5	Preparation, delivery, or sale of nonconforming eggs or containers		1 st violation	2 nd violation
	1350	Failure to meet Shell Egg Food Safety requirements.			1 st violation
27643	1358.5	Temperature requirements for eggs.		1 st violation	2 nd violation
	1352.4	Regraded and Repacked Eggs.	1 st violation	2 nd violation	3 rd violation
27644	1352.4; 1354; 1356; 1356.2	Signs and labels on eggs.		1 st violation	2 nd violation
27644.5		Signs and labels on pasteurized in-shell eggs.	1 st violation	2 nd violation	3 rd violation
27651	1352; 1353; 1353.2; 1353.4	Unlawful sale of ungraded eggs absence of finding and proclamation of emergency.	1 st and 2 nd violation	3 rd violation	4 th violation