

Trouble Shooting your Hatchery

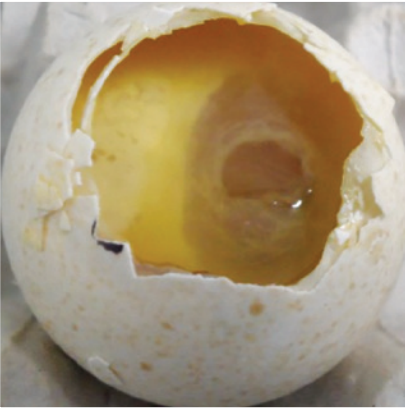


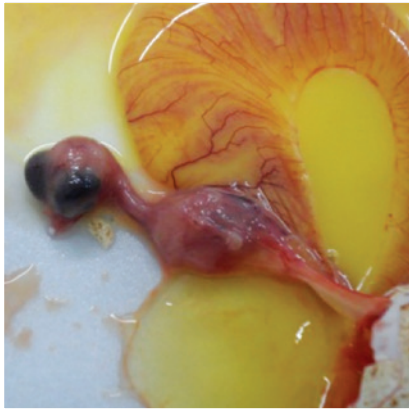
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Symptoms	Probable Cause	Probable Corrective Measures
↳ Clear eggs with no embryonic development (infertile)		
	1. Male sterility	1. Replace males
	2. Inadequate nutrition or insufficient water (or too hot or cold)	2. Review nutrient balance and drinker management
	3. Improper artificial insemination techniques	3. Review insemination technic and semen management
	4. Eggs damaged by environment	4. Collect eggs frequently from the nest, do not expose them to extreme weather
	5. Eggs stored too long or incorrectly	5. Check temperature (14-16°C), egg turning during prolonged storage
	6. Improper fumigation	6. Review fumigation protocols
	7. Breeder flock disease	7. Check health status, biosecurity, vaccination protocols

Symptoms	Probable Cause	Probable Corrective Measures
↳ Many dead embryos at early stages		
	1. Eggs stored too long or incorrectly. Severe temperature fluctuations	1. Check temperature (14-16°C), gather eggs often, cool properly and quickly. Egg turning during storage
	2. Transportation	2. Be careful not to damage during transport by jarring
	3. Temperature very high or low during early incubation	3. Check shell temperatures and profiles. Check accuracy of thermometer with calibration
	4. Contamination	4. Check cleaning and disinfection procedures at farm and hatchery
	5. Embryos less developed at oviposition	5. Pre incubate or pre warm the eggs
	6. Severe nutritional deficiencies	6. Check levels eg: of biotin, vitamin A, copper, vitamin E, boron, pantothenic acid, or linoleic acid
	7. Fumigation	7. Check doses and times. Fumigant not cleared from machine soon enough or early during incubation
	8. Ventilation	8. Check ventilation, maybe lack ventilation or high levels of CO2 (>1%)
	9. Turning	9. Check frequency and angle

Symptoms	Probable Cause	Probable Corrective Measures
↳ Many embryos dead at middle stages		
	1. Nutrition	1. Check for deficiencies -- riboflavin, vitamin B12, biotin, niacin, pyridoxine, pantothenic acid, phosphorus, boron, or linoleic acid
	2. Improper incubator temperature, humidity, turning, ventilation	2. Check machine calibration, measure shell temperature; measure moisture lost
	3. Contamination	3. Review cleaning and disinfection programs, perform environmental monitoring

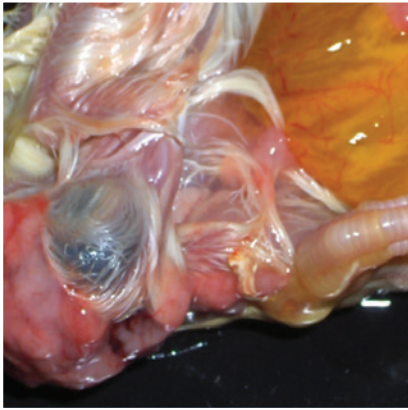
Symptoms	Probable Cause	Probable Corrective Measures
↳ Not pipped. Full-term embryo, large yolk sac, may have residual albumen		
	1. Turning	1. Check turning system; frequency (24-90 times a day) angle (45°)
	2. Temperature	2. Check temperature. Too low in incubators or too high in hatchers
	3. Humidity	3. Check humidity. Too high during incubation or immediately after transfer
	4. Ventilation	4. Ensure adequate ventilation
	5. Prolonged egg storage	5. Reduce egg storage or improve egg storage conditions (lower temperature, turning)
	6. Egg chilled during transfer	6. Check the temperature of the rooms and shells
	7. Breeder diseases	7. Monitor biosecurity and vaccination protocols

Symptoms	Probable Cause	Probable Corrective Measures
↳ Pipped. Full-term embryo, dead or alive in shell		
	1. Low humidity during incubation or hatching	1. Check moisture loss levels at transfer and poult yield
	2. High temperature during hatching	2. Check temperature profiles. Check accuracy of thermometer
	3. Low temperature for a long period	3. Check temperature profiles and shell temperatures. Check accuracy of thermometer
	4. Poor ventilation or excessive fumigation during course of hatch	4. Check levels of carbon dioxide
	5. Inadequate turning during first 12 days	5. Check turning system
	6. Rough handling at transfer	6. Reduce the speed during the process
	7. Prolonged egg storage	7. Check egg storage conditions, temperature (14-16°C), egg turning
	8. Fumigation	8. Excessive fumigation during hatching
	9. Eggs set small end up	9. Review egg collection

Symptoms	Probable Cause	Probable Corrective Measures
↳ Many pips, stuck to shells		
	1. Excessive residual albumen due to high relative humidity and/or low temperature incubation	1. Monitor moisture loss at transfer and embryo temperature during incubation
	2. Low humidity during hatching	2. Recommend over 90°F after pipping begins

Symptoms	Probable Cause	Probable Corrective Measures
↳ Small air cell, broad pip area, membrane incompletely cut, red hocks, edematous poult, unabsorbed albumen, yolk incompletely retracted, egg weight loss <10%		
	1. High incubator humidity	1. Review moisture loss at transfer
	2. Very thick shells	2. Review profiles
	3. Low incubator temperature	3. Check profile. Check accuracy of thermometer

Symptoms	Probable Cause	Probable Corrective Measures
↳ Premature hatching; bloody navels		
	1. Temperature too high in incubators or hatcher	1. Check shell temperatures. Check accuracy of thermometer

Symptoms	Probable Cause	Probable Corrective Measures
↳ Navel scabs		
	1. High hatcher temperature. Poult develops quickly and does not fully absorb the yolk sac into the body which forms a scab	1. Check temperature profiles. Check accuracy of thermometer
↳ Navel strings		
	1. High humidity in the hatcher. The umbilical blood vessel does not dry down and fall off normally	1. Review hatcher humidity profiles
↳ Malformations		
	1. Transportation 2. Nutritional 3. High or low incubator temperature 4. Ventilation 5. Turning 6. Egg orientation 7. Heredity	1. Avoid jarring of eggs. Transport eggs small end down 2. Check deficiencies, e.g., biotin, riboflavin, zinc, or manganese 3. Check shell temperature. Check accuracy of thermometer 4. Look for inadequate ventilation or shells with low porosity or permeability 5. Check turning system, frequency (24-90 times a day) angle (45°) 6. Check for small end up on trays

Symptoms	Probable Cause	Probable Corrective Measures
↳ Malposition. Normal position: embryo's long axis same as long axis of egg; head in large end of egg; head to the right and under right wing; beak toward air cell; feet toward head		
	1. Eggs incubated upside down	1. Check egg position on trays
	2. High temperatures in the incubator	2. Check shell temperatures. Check accuracy of thermometer
	3. Inadequate or improper turning	3. Check turning system, frequency, angle
	4. High humidity	4. Review hatcher humidity profiles and moisture loss at transfer
	5. Round-shaped eggs or very large eggs	5. Check egg selection
	6. Nutritional deficiencies	6. Check levels of vitamin A, B12 and linoleic acid

Symptoms	Probable Cause	Probable Corrective Measures
↳ Exploders		
	1. Contamination at house level	1. Do not set floor eggs, review collection frequency, review nest disinfection and avoid wet spots.
	2. Improper washing of eggs or disinfection with contaminated equipment	2. Solutions at adequate temperature and concentrations. Replace solutions regularly
	3. Contamination in the hatchery	3. Review programs of cleaning and disinfection of incubators, hatchers trays and baskets. Do not recirculate foul air
	4. "sweating eggs"	4. Hold eggs at appropriate temperature and avoid strong fluctuations. Proper prewarm
	5. Contamination from previous exploders	5. If it occurs remove all organic material before using any disinfectant product

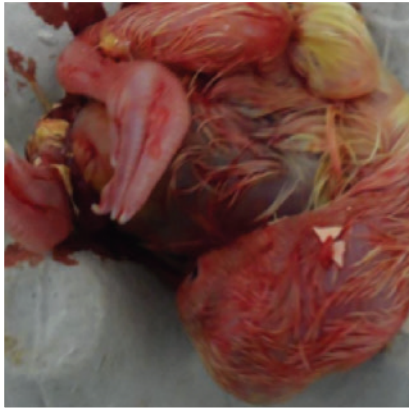
Symptoms	Probable Cause	Probable Corrective Measures
↳ Leg problems		
	1. Legs harmed by hatching or holding poults on a smooth surface	1. Use of hatch pad in smooth hatch trays
	2. High temperatures	2. Check shell temperatures during incubation and review hatcher profiles
		

Symptoms	Probable Cause	Probable Corrective Measures
↳ Short beak, missing beak, face abnormalities		
	1. High temperatures the first days of incubation	1. Check shell temperatures. Check accuracy of thermometer
	2. Nutritional deficiencies (niacin)	2. Check nutrition formulations
	3. Hereditary	
	4. Alteration during the development stages	

TROUBLE SHOOTING YOUR HATCHERY

Symptoms	Probable Cause	Probable Corrective Measures
↳ Exposed brain		
	1. Excessive high temperature days 1-3 of incubation	1. Check shell temperatures. Check accuracy of thermometer
	2. Low oxygen during days 1 to 3	2. Check ventilation

Symptoms	Probable Cause	Probable Corrective Measures
↳ Red hocks in hatched poult or unhatched pips		
	1. High incubator or hatcher humidity. Poults hatch with an excessively large belly, causing them to struggle to leave the shell	1. Check moisture loss
	2. Low incubator temperature	2. Check shell temperatures. Check accuracy of thermometer
	3. High hatcher temperature	3. Decreases hatcher temperature
	4. Prolonged pushing on shell during pipping and hatching due to low hatcher humidity (wide hatch window)	4. Set eggs to hatch uniformly
	5. Vitamin deficiencies	5. Review nutrients balance
	6. Thick shells, as in young flocks	6. Specific incubation profiles

Symptoms	Probable Cause	Probable Corrective Measures
↳ Hemorrhage; Red skin -Bleeding in chorioallantois		
	1. Red skin	1. Check: Incubator or hatcher temperature too high
	2. Bleeding in chorioallantois	2. Check for rough handling at transfer
	3. Nutritional deficiencies	3. Check vitamin K or vitamin E
	4. Mold and bacterial contamination	4. Culture plates by molds or other contamination
	5. Temperature too high	5. Check shell temperatures
	6. Heredity	

Symptoms	Probable Cause	Probable Corrective Measures
↳ Ectopic (exposed) viscera		
	1. Incubator temperature too high	2. Check embryo temperature during incubation period. Check accuracy of thermometer

Symptoms	Probable Cause	Probable Corrective Measures
↳ Eye abnormalities (missing eye)		
	1. High incubator temperature during first week	1. Check shell temperatures. Check accuracy of thermometer
	2. Low oxygen during days during first week	2. Check oxygen levels

Symptoms	Probable Cause	Probable Corrective Measures
↳ Weak poult		
	1. High hatcher temperature	1. Check hatcher temperatures. Check accuracy of thermometer
	2. Poor hatcher ventilation	2. Check ventilation profiles
	3. Excessive fumigation	3. Check dose and timing for ventilation especially after transfer
	4. Contamination	4. Check health status

Symptoms	Probable Cause	Probable Corrective Measures
↳ Sticky poult; poult smeared with albumen		
	1. Low incubation temperature	1. Check shell temperatures. Check accuracy of thermometer
	2. High incubation humidity	2. Check moisture loss
	3. Improper turning	3. Check turning system, frequency, angle
	4. Inadequate ventilation or excessive fumigation	4. Review room ventilation. Supply 100% fresh, tempered air
	5. Old eggs	5. Avoid using eggs stored for too long

Symptoms	Probable Cause	Probable Corrective Measures
↳ Poult stuck in shell, dry; poult with shell fragments stuck to down feathers		
	1. Humidity too low during incubation, and/or hatching	1. Check moisture loss. Do not over-ventilate
	2. Improper egg turning	2. Check turning system, frequency (minimum 8 times daily), angle
	3. Cracked eggs or poor shell quality	3. Collect the eggs frequently, close the nest at night. Review nutritional requirements

TROUBLE SHOOTING YOUR HATCHERY

Symptoms	Probable Cause	Probable Corrective Measures
↳ Poult hatch late		
	1. Large eggs and old breeders	1. Review incubation times, they may require additional incubation
	2. Eggs stored too long	2. Pre warm or pre-incubate
	3. Incubation temperature	3. Check for low incubation temperature in first week. Check accuracy of thermometer
	4. Incubator humidity	4. Check high incubator humidity
	5. Inbreeding and/or weak embryos	

Symptoms	Probable Cause	Probable Corrective Measures
↳ Excessively early poult mortality		
	1. Improper transportation conditions	1. Monitor truck temperature and ventilation. Rectal temperature of the poult 103 to 104°F at time of delivery.
	2. Poults held too long before access to feed and water.	2. Poults to be pulled at correct time according to timing of delivery.
	3. Diseases or microbial contamination	3. Review biosecurity and vaccination protocols. Set only clean, un-cracked eggs. Check nutrition programs and quality
	4. Poor hatchery sanitation	4. Review disinfection protocols. Check roofs, ducts and hidden places
	5. Improper nutrition or feed contamination (medications, fungicides, poisons)	5. Check nutrition programs and quality

References

Available upon requests.

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The information contained herein is a recommendation only and may differ by geographic region. The intent of this information sheet is to assist in improving turkey production.

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