



Trouble Shooting Failures with Egg Incubation

When incubation of eggs fails, indications are often available that a well trained professional uses for diagnosing the causes for failure. The information listed below includes the more common symptoms for incubation failures, the causes for each symptom, and the recommended corrective measures. A good incubation publication, MCES Publication 1182, [*Hatching Quality Chicks*](#) helps in analyzing the incubation procedure. It explains the artificial incubating process in more detail.

Symptoms of incubation/breeder management problems include:

- [Clear eggs with no visible embryonic development.](#)
- [Blood rings in incubated eggs.](#)
- [Many dead embryos at an early stage.](#)
- [Chicks fully formed, but dead without pipping.](#)
- [Pipped eggs, but died without hatching.](#)
- [Early hatching.](#)
- [Late hatching or not hatching uniformly.](#)
- [Sticky embryos.](#)
- [Embryos sticking or adhering to shell.](#)
- [Crippled and malformed chicks.](#)
- [Abnormal, weak, or small chicks.](#)
- [Chicks with labored breathing.](#)
- [Large, soft-bodied mushy chicks.](#)
- [Rough or unhealed navels on chicks.](#)
- [Short down on chicks.](#)
- [Excessive yellow down color.](#)

Symptoms

Probable Cause

Corrective Measures

Clear Eggs with no embryonic development (infertiles)

Males undernourished

Follow a recommended feeding program to provide adequate nutrition. Replace underweight males with vigorous ones

Too few males

Increase the number of males in the flock.

Seasonal decline in fertility

Use young cockerels more resistant to environmental stress.

Competition among breeding males

Do not use too many males. Rear all males together. Place temporary partitions within large pens.

Diseased flock

Conduct an approved disease control program.

Frozen combs and wattles

Provide comfortable housing. Properly select and maintain drinking fountains.

Old males

Replace with younger males.

Selected mating in pens

Artificially inseminate infertile hens. Replace males in the pen/house.

Male sterility

Replace males in the pen/house.

Crowded breeders

Provide recommended floor space, at least 3 ft²/bird.

Improper artificial insemination techniques or use of old/over-diluted semen.

Follow recommendations of primary breeder company.

Eggs damaged by environment

Gather eggs frequently (at least once daily).

Eggs stored too long or incorrectly

Store eggs at 50-60 degrees F. and 60% relative humidity. Incubate eggs within

7 days of lay.

<u>Symptoms</u>	<u>Probable Cause</u>	<u>Corrective Measures</u>
<i>Blood rings</i>	Improper storage	Follow recommended egg storage and gathering recommendations.
	Improper incubation temperatures	Check thermometer accuracy and incubator functions. Follow recommended temperature settings.
	Improper breeder nutrition	Feed breeders a diet with balanced nutrient levels.
	Improper fumigation	Follow fumigation recommendations.

<u>Symptoms</u>	<u>Probable Cause</u>	<u>Corrective Measures</u>
<i>Many dead embryos at early stages</i>	Improper incubation temperatures (usually too high)	Follow recommended incubation temperatures.
	Improper egg turning	Turn at least 3 times daily.
	Inherited low hatchability	Avoid cross breeding. May need to secure different breeding stock.
	Improper ventilation	Increase ventilation rate in incubator and/or room, but avoid drafts. Add oxygen at high altitudes.
	Pullorum disease or other salmonellosis	Use eggs from disease-free sources. Have NPIP representatives blood-test the breeder flock.
Improper nutrition of breeders	Provide a well-balanced nutritional diet to breeders.	

<u>Symptoms</u>	<u>Probable Cause</u>	<u>Corrective Measures</u>
<i>Chicks fully formed, but dead without</i>	Low average humidity	Maintain recommended humidity for species of bird incubated.

pipping

Improper incubation temperature	Check thermometer accuracy and incubator functions. Follow recommended temperature settings.
Improper ventilation in incubator	Adjust ventilation to provide optimum moisture-loss rate from egg during incubation.
Improper turning of eggs	Turn eggs at least three times daily until 3 days prior to hatching.
Chilling of eggs	Gather eggs frequently and store under proper conditions.
Diseased or poorly conditioned breeder flock	Conduct a good disease control and breeder management program. Use a well-balanced nutritional diet.

Symptoms

Probable Cause

Corrective Measures

Pipped eggs, but died without hatching

Insufficient moisture

Increase humidity (wet-bulb temperature) during the hatching period.

Improper ventilation

Increase ventilation rate in incubator and/or room, but avoid drafts.

Improper setting of eggs causing malpositioned embryos

Set eggs with small end down. Turn eggs properly but avoid turning within 3 days of hatching.

Symptoms

Probable Cause

Corrective Measures

Early hatching (may have bloody navels)

High incubation temperatures

Follow recommended incubation temperatures. Check equipment for proper function. Guard against electrical surges or high incubator room temperatures.

Improper egg

Store eggs at 50-60 degrees F. and 60% R.H. Turn at

storage least 3 times daily.

<u>Symptoms</u>	<u>Probable Cause</u>	<u>Corrective Measures</u>
<i>Late hatching or not hatching uniformly</i>	Low incubation temperatures	Follow recommended incubation temperatures.
	Warm and cool spots in incubator due to faulty design	Contact incubator company or obtain a different incubator design.
	Old or improperly stored eggs	Gather eggs frequently, cool immediately and store eggs properly. Do not store longer than 7 days.

<u>Symptoms</u>	<u>Probable Cause</u>	<u>Corrective Measures</u>
<i>Sticky embryos (embryos may be smeared with egg contents)</i>	High average incubation humidity	Follow recommended incubation humidity. Check size of air cell as an indicator for adjusting humidity condition.
	Low incubation temperature	Follow recommended temperature settings.
	Lethal genes	Avoid cross breeding. May need to secure different breeding stock.
	Inadequate ventilation	Increase ventilation rate in incubator and/or room, but avoid drafts.
	Improper fumigation of eggs	Fumigate eggs by following the procedure carefully.

<u>Symptoms</u>	<u>Probable Cause</u>	<u>Corrective Measures</u>
<i>Embryos sticking or adhering to shell</i>	Low incubation humidity (especially during hatching)	Increase incubation humidity by increasing water evaporation. Embryos dried too much.
	Excessive ventilation rate	Reduce ventilation rate but maintain

minimum air exchange to prevent suffocation of embryos.

<u>Symptoms</u>	<u>Probable Cause</u>	<u>Corrective Measures</u>
<i>Crippled and malformed chicks</i>	Improper incubation temperatures (usually too high)	Follow recommended incubation temperatures.
	Low incubation humidity	Increase incubation humidity by increasing water evaporation. Embryos dried too much.
	Improper egg setting position or turning during incubation	Set eggs with small ends down. Turn eggs at least 3 times daily. Do not turn eggs within 3 days of hatching.
	Heredity	Proper culling and breeding practices will reduce problems.
	Slick hatching trays	Use trays with wire floors or place crinoline on hatching surface.
Improper nutrition of breeders	Provide a well-balanced nutritional diet to breeders.	

<u>Symptoms</u>	<u>Probable Cause</u>	<u>Corrective Measures</u>
<i>Abnormal, weak, or small chicks</i>	High incubation or hatching temperatures	Follow recommended incubation temperatures.
	Small eggs hatch small chicks	Set only standard or large sized eggs.
	Insufficient incubation humidity	Maintain recommended humidity for species of bird incubated..
	Improper ventilation in hatcher unit	Increase ventilation rate, but avoid drafts.
	Diseased or poorly conditioned breeder flock	Use eggs from disease-free sources only. Have NPIP representatives blood-test the breeder flock.

Improper nutrition of breeders Provide a well-balanced nutritional diet to breeders (especially vitamin levels).

Excessive fumigation in hatcher Fumigate using proper procedures.

<u>Symptoms</u>	<u>Probable Cause</u>	<u>Corrective Measures</u>
<i>Chicks with labored breathing</i>	Excessive use of fumigant	Follow recommended fumigation procedures.
	Respiratory diseases	Check disease status of breeder flock. Conduct a thorough cleanup and disinfection of incubator and hatching facilities.

<u>Symptoms</u>	<u>Probable Cause</u>	<u>Corrective Measures</u>
<i>Large, soft-bodied mushy chicks; dead on trays; bad odor</i>	Low average incubation temperature	Follow recommended incubation temperatures.
	Poor ventilation	Increase ventilation rate in incubator and/or room, but avoid drafts.
	Navel infection (Omphalitis)	Clean and disinfect incubator and hatching units between settings of eggs. Maintain dry hatching trays. Properly store and fumigate eggs.

<u>Symptoms</u>	<u>Probable Cause</u>	<u>Corrective Measures</u>
<i>Rough or unhealed navels</i>	Improper incubation temperatures	Follow recommended incubation temperatures.
	High hatching humidity	Maintain proper humidity.
	Navel infection (Omphalitis)	Clean and disinfect incubator and hatching units between settings of eggs. Maintain dry hatching trays.

Properly store and fumigate eggs.

<u>Symptoms</u>	<u>Probable Cause</u>	<u>Corrective Measures</u>
<i>Short down on chicks</i>	High incubation temperatures	Follow recommended incubation temperatures.
	Low incubation humidity	Follow suggestions to correct insufficient humidity.
	Excessive ventilation	Reduce vent openings to restrict but maintain adequate air exchange.
	Holding chicks in hatcher too long after hatching	Remove all chicks as soon as fluffy but within 24 hours after hatching.

<u>Symptoms</u>	<u>Probable Cause</u>	<u>Corrective Measures</u>
<i>Excessive yellow coloring of down</i>	Improper and excessive fumigation in hatcher unit	Follow recommended fumigation procedures.

Prepared by Dr. Tom W. Smith, Emeritus Professor of Poultry Science, Mississippi State University.
