

The relationship between yolk-free body mass and subsequent performance

The goal of every hatchery is to produce poults of excellent quality. Poults quality is reflected in low mortality after placement and ideal production performance. Several studies have shown a positive relation between yolk-free body mass and subsequent performance of the bird after placement.

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A small yolk sac at pulling time is preferred as this indicates ideal environmental conditions in the incubators and hatchers. It also reflects the ability of the embryo to utilise the yolk components to form muscle and bone. The procedure to measure the yolk-free body mass is as follows:

- Select at least 15 saleable poults per flock.
- Euthanise poults humanely (based on approved regional and corporate methods).
- Weigh the euthanised poults individually and record their weights.
- Carefully remove the entire yolk sac from the body cavity using standard necropsy technique:
 - Place the body of the euthanised poult on its back with its feet facing you.
 - Reflect the wings back.
 - Cut through the skin, between the legs and the breast, so the legs can be fully abducted and lie flat against the table.
 - Remove the skin from the ventral surface of the poult by cutting across at the caudal edge of the keel, and then pulling skin cranially and caudally. You will see the muscular body wall (1).



Acceptable yolk sac: the poult in this example was incubated at a low temperature with shell temperature readings below 100°F (37.8°C). After hatch, the rectal temperature of the poults measured inside the hatcher, was 103°F (38.4°C). The yolk sac to body weight ratio was 8%.



Unacceptable yolk sac: the poult in this example came from eggs, that after the second week of incubation, were exposed to temperatures over 101°F (38.3°C). The internal temperature of the poults at time of pull was 106°F (41.1°C). The yolk sac to body weight ratio was 25%.

- Cut into the body cavity, using scissors behind the breast bone, then pull the abdominal muscle caudally to expose some abdominal viscera (2).
- Remove the yolk sac by incising the yolk stalk. The yolk stalk is a narrow tube-like tissue that attaches the yolk sac membrane to the jejunum-ileum junction (3).
- Weigh each yolk sac individually (4).
- Calculate the yolk sac to body weight ratio by taking the weight of the yolk sac and dividing it by the weight of the poult.
- Multiply the total by 100 in order to determine the ratio as a percentage:
 - An acceptable yolk sac to body weight percentage is 11% or less. ■

Key notes

- Monitor egg shell temperature frequently. GOAL: Egg shell temperature below 100°F (37.8°C).
- Monitor hatch window 36 hours before pull time. GOAL: Maximum 1-2% of poults hatched at this time.
- Monitor internal temperature of the poults after hatch. GOAL: Internal temperature of 103-104°F (39.4-40.0°C).
- Monitor poult activity once placed at the farm. GOAL: Poults are alert and active, and seek out food and water.

