

Hatchery management is a complex and critical component of modern poultry production. A reduction in hatchability of even 1% can have significant financial implications for the company. In this Team Activity, your Team will be responsible for answering some basic Hatchery Management questions, and trouble shooting some common hatchery scenarios that could impact hatchery performance or chick quality.

These questions are derived from the Cobb Hatchery Management Guide, please select the option that best answers each question.

After all questions are answered, you will have 5 minutes for preparing your presentation, and 5 minutes to recap what you have learned and any conclusions you have.

GOOD LUCK!

1. Hatchability is influenced by many factors. Some of these are the responsibility of the breeding farm and some are the responsibility of the hatchery. Which of the following would NOT be factor that is controlled by the farm. (Page 1)
 - a. Breeder nutrition
 - b. Disease
 - c. Chick handling
 - d. Correct male and female body weight
 - e. Mating activity

2. "Hatch of fertile" is a measurement of the how well the hatchery machinery (setter, and hatcher) are operating. This measure takes into account the following factors: (Page 2)
 - a. Fertility
 - b. Hatchability
 - c. Cause of early dead mortality
 - d. Chick quality
 - e. Both A and B

3. At peak production, flocks should be achieving 96.7% fertility and _____% hatch of fertile (Page 2).
 - a. 97
 - b. 93.5
 - c. 90.2
 - d. 98
 - e. 82

4. Setter conditions are critical for optimum hatchability, but also energy consumption, and capital costs. The optimum temperature in the setter machine is _____. (Page 5)
- a. 75 – 80°F
 - b. 80 – 85°F
 - c. 88 – 93.5°F
 - d. 99.5 – 100°F
 - e. 105.5 – 108°F
5. Most eggs will be stored for some time prior to setting in the incubator (also called setter). Eggs can be stored on the breeder farm or in the hatchery, but prolonged storage can affect chick quality and broiler weight. Eggs should not be stored longer than _____ days. (Page 7)
- a. 3 days
 - b. 5 days
 - c. 14 days
 - d. 18 days
 - e. 21 days
6. Hatchability is reduced by prolonged storage of eggs prior to setting. A given hatchery has a typical Hatchability of 96%, for eggs that have been stored 4-6 days before setting in the incubator. In a given week, due to an abundance of hatching eggs coming into the hatchery, 20,000 eggs that had been stored for 9 days were set to begin incubation. Hatchability of these eggs was decreased by 1.5% for every day beyond 6 days of storage. Calculate the number of chicks that will be expected to hatch out of these 9 d old eggs (Page 1 and Page 7).
- 96% typical hatchability – 1.5% for 7 d – 1.5% for 8 d - 1.5% for 9 d = 91.5% hatchability of 9 day old eggs.
- 20,000 eggs x 91.5% hatchability = 18,300 eggs to hatch
- a. 19,200 chicks
 - b. 18,300 chicks
 - c. 17,500 chicks
 - d. 17,000 chicks
 - e. 16,800 chicks
7. Eggs must be turned during incubation. What is the purpose of turning the eggs? (Page 12)
- a. Prevents embryo from sticking to shell membranes
 - b. Aids in development of embryonic membranes
 - c. Aid air flow in setter
 - d. Assist in egg cooling
 - e. All of the above

Each of the hatcheries, listed in the table below, hatch 1,200,000 chicks per week. The average weight of this complex is 6.48 lbs. Complete the calculations to fill out the table below, and answer questions 8 – 12.

HINT – THIS CAN BE DISCUSSED IN PRESENTATION. Which hatchery was operating most efficiently

Hatchery	Chicks Produced	% Hatch	% Fertile	Hatch of Fertile %
A	1,044,000	87	96	90.62
B	900,000	75	82	91.46
C	1,008,000	84	97	86.59

8. In this scenario, what is the hatch of fertile for Hatchery A?

$$(87\% \times 96\%) \times 100 = 90.6\%$$

- a. 83.5%
- b. 79.7%
- c. 90.6%
- d. 86.6%
- e. None of the above

9. In this scenario, calculate the number of fertile eggs set during 1 week at Hatchery A?

$$1,200,000 \times 96\% = 1,152,000 \text{ fertile eggs set}$$

- a. 996,000
- b. 1,164,000
- c. 1,140,000
- d. 1,152,000
- e. 984,000

10. In this scenario, how many chicks are hatched each week at Hatchery B?

$$1,200,000 \text{ eggs set} \times 75\% = 900,000$$

- a. 900,000
- b. 984,000
- c. 995,500
- d. 1,115,000
- e. None of the above

11. Take into consideration hatchability, fertility, chicks produced, and hatch of fertile. Which hatchery was operating most efficiently?

- a. Hatchery A
- b. Hatchery B

HINT – CAN BE DISCUSSED IN PRESENTATION – What is your reasoning behind answer to question 11

12. Each of these 3 complexes had 3.5% mortality (birds that died at the farm) prior to delivery to the processing plant. Comparing complexes B and C, what impact (in lbs) did reduced hatchability have on pounds delivered to plant?

A – 1,044,000 chicks hatched x 3.5% mortality = 1,007,460 birds x 6.48 lbs = 6,528,340.8 lbs

B – 900,000 x 3.5% mortality = 868,500 birds x 6.48 lbs = 5,627,880

C - 1,008,000 x 3.5% mortality = 972,720 birds x 6.48 lbs = 6,303,225.6

- a. 225,115 lbs
 - b. 6,765,120 lbs
 - c. 5,832,000 lbs
 - d. 675,345 lbs
 - e. 900,460 lbs
13. Considering chick embryo development chart in Cobb Hatchery Manual, which of the following WILL NOT be new development of the embryo on day 18 of incubation?

- a. Voluntary movements begin
- b. Growth of embryo nearly complete
- c. Yolk sac is still on outside of embryo
- d. Head is under right wing

14. Which of the following WILL NOT cause chicks to hatch late? (Page 34)

- a. Low temperature or humidity – 1 to 19 days
- b. Egg storage
- c. Large eggs
- d. Low hatcher temperature
- e. Small eggs

15. Evaluate the egg set on Table #15. This is a subset of a truck of eggs that arrived from a breeder farm. What % of eggs would be suitable for setting? (Page 4)

Students will be responsible for determine which eggs are appropriate for setting based on Page 4 of Hatchery Management Guide and calculating %.

- ANSWER CHOICES AVAILABLE ON PRACTICUM TABLE

HINT – DISCUSS IN PRESENTATION – the eggs not suitable, explain why.

16. Evaluate the egg set on Table #16, (DO NOT TOUCH THE EGGS OR PLATES). For this 10 egg sample set, calculate the % fertility of this sample of eggs.

Students will be responsible for determining fertility based on the appearance of the germinal disc

- ANSWER CHOICES AVAILABLE ON PRACTICUM TABLE

HINT – DISCUSS IN PRESENTATION – Expected fertility would be 96.7%, would this set be greater of less than expected? Would this be the responsibility of the farmer or the hatchery?

17. Weigh egg sample set 1, located on Table #17. Calculate the average weight of this sample, what will be the average chick weight from these eggs? (Page 14)

Students will be responsible for weighing a sample of eggs and calculating the average weight, then calculating the average chick weight from these eggs

- ANSWER CHOICES AVAILABLE ON PRACTICUM TABLE

HINT – DISCUSS IN PRESENTATION – How would these weights compare to average chick weight?

18. Weigh egg sample set 2, located on Table #18. Calculate the average weight of this sample. Considering ideal percentage moisture loss what should the weight of this sample be at day 18 of incubation? (Page 11).

Students will be responsible for weighing a sample of eggs and calculating the average weight, then calculating the % moisture loss during incubation

- ANSWER CHOICES AVAILABLE ON PRACTICUM TABLE

HINT – DISCUSS IN PRESENTATION – What factors effect moisture loss?

19. Comparing egg sample set 1 and sample set 2, which would require longer incubation? (Page 7)
- a. Sample set 1
 - b. Sample set 2

Larger eggs take longer to incubate

HINT – TO DISCUSS IN PRESENTATION – Discuss the chick size from sample set 1 and sample set 2, which would the chick set would the farmer prefer?