

HOW TO...

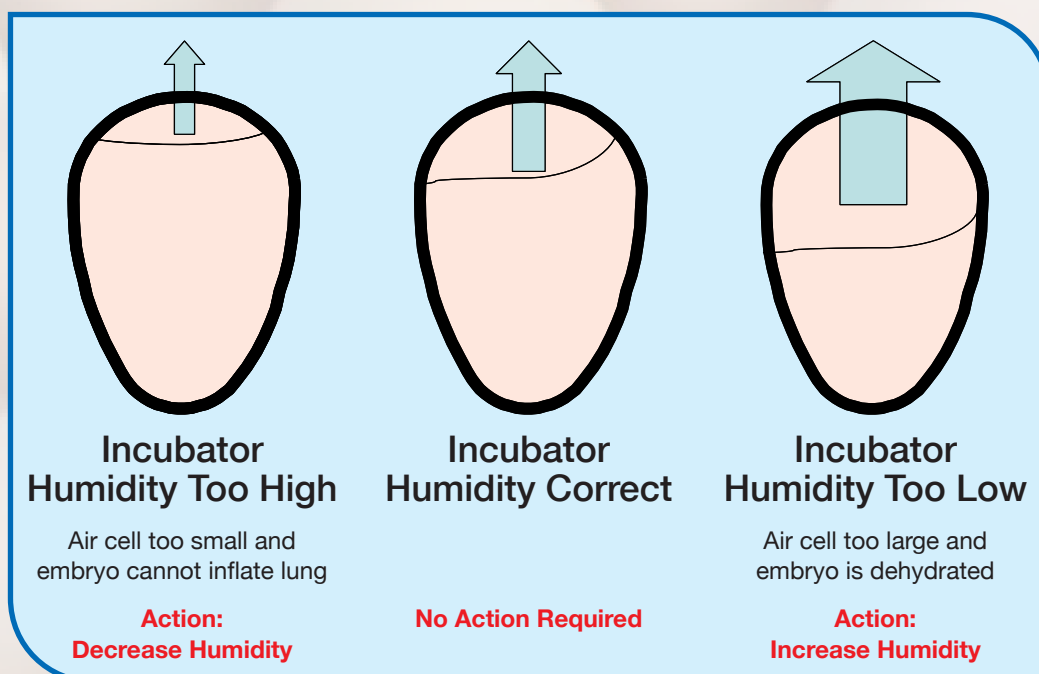
Measure Egg Water Loss



01

WHY MEASURE EGG WATER LOSS?

- Controlling incubator humidity to ensure that egg weight loss is in the optimal range will maximize hatch and chick quality.
- Routine monitoring of egg water loss is the best way to check that incubator humidity is correct - it uses the egg to tell us what is required.



- Changes in egg weight during incubation are due entirely to the loss of water from the egg. Therefore egg weight loss can be easily measured by weighing the egg.
- Incubated correctly, eggs lose on average 11 - 12% of their egg weight **between laying and transfer at 18 days.**

Note: A small amount of water (typically 0.5% per week of storage) is lost from the egg during storage. Any water loss during storage should be taken off that lost during incubation, e.g. if eggs are stored for a week average water loss between set and transfer at 18 days would be 10.5 - 11.5%.

THE PROCEDURE FOR MEASURING EGG WATER LOSS

- To accurately measure egg water loss:
 - monitor egg water loss from 3 incubator trays from each breeder flock
 - use a balance that can weigh a whole incubator tray of eggs to an accuracy of at least 5 grams (0.2 oz)

Step 1:

Fill setter tray with the fresh eggs - exclude any cracked or poor shell quality eggs.

Step 2:

Weigh full setter tray - record weight and number of eggs on tray.

Step 3:

Label the tray so that it can be relocated at transfer.

***Note:** Trays should be located in the incubator so that one is positioned near the top, one near the middle and one near the bottom of the incubator rack.*

Step 4:

If eggs are fertility tested prior to transfer, do not remove any clear or non-viable eggs.

Step 5:

At 18-day transfer, reweigh the tray of eggs - record weight. Reject any tray weights if there are cracked eggs on the tray.

Step 6:

Weigh empty setter tray - record weight.



CALCULATION OF EGG WATER LOSS

$$\% \text{ Water Loss} = \frac{\text{Full tray weight at set} - \text{Full tray weight at transfer}}{\text{Full tray weight at set} - \text{Empty tray weight}} \times 100$$

For Example: Empty tray = 1205g;
Full tray at set = 8201g; Full tray at transfer = 7382g

$$\% \text{ Water loss} = \frac{8201 - 7382}{8201 - 1205} \times 100$$

$$\% \text{ Water loss} = \frac{819}{6996} \times 100$$

% Water loss 11.7%

This calculation also applies to imperial measurements

Note: If eggs are not transferred and weighed at 18 days, calculated water loss should be corrected to 18 days to allow accurate and appropriate quality control. This is done by dividing by the actual number of days at transfer and then multiplying by 18. If eggs are transferred at 17 days then water loss corrected to 18 days would be: (11.7% / 17) x 18 = 12.4%

Example of water loss recording sheet. This sheet also records chick yield information as the two quality control processes can be easily combined – see **How To... Measure Chick Yield**

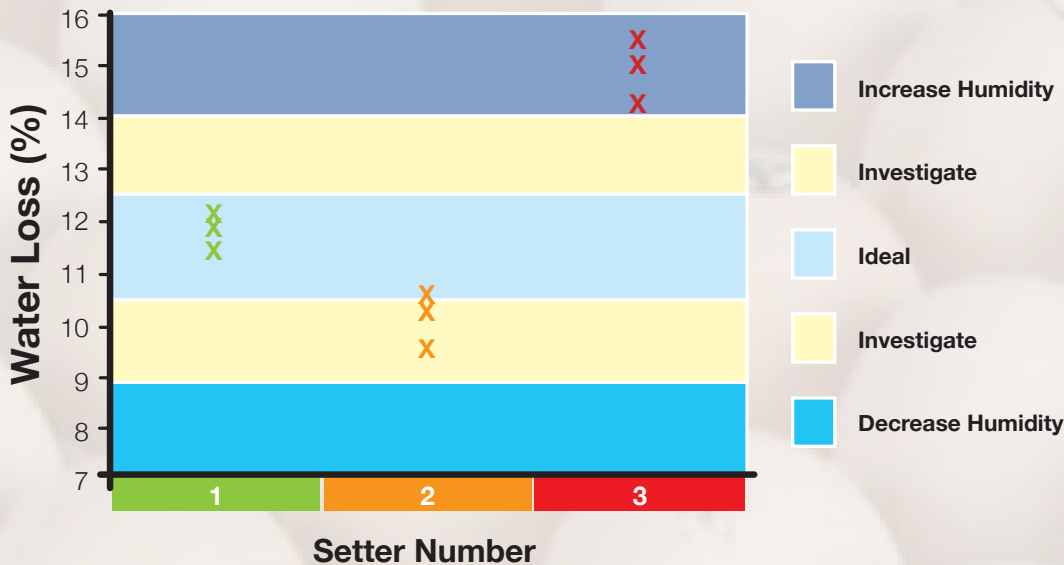
Egg Weights and Chick Weights

Company ACME Farming Date Set 26th Oct 2009
 Farm Windyhill Farm Date Hatched 16th Nov 2009
 Age 26 weeks Date Broken Out 16th Nov 2009
 Setter No. 1, 2 and 3 Hatcher No. 1

Tray No.	1	2	3	4	5	6	7	8	9
No. of Eggs	132	132	132	132	132	132	132	132	132
Weight of Empty Tray	1205	1210	1205	1208	1206	1208	1212	1201	1205
Weight of Full Tray	8201	8364	8175	8191	8242	8336	8089	8263	8307
Transfer Weight	7382	7499	7324	7451	7510	7637	7113	7183	7206
No. of Chicks Hatched	120	116	123	122	115	118	109	104	106
Total Chick Weight	4268	4238	4384	4395	4193	4371	3748	3667	3724
Culls and Deads	1	0	1	1	2	1	2	3	2
Unhatched Eggs	11	16	8	9	15	13	21	25	24
Egg Weight Loss (%)	11.7	12.1	12.2	10.6	10.4	9.8	14.2	15.3	15.5
Mean Egg Weight (g)	53.0	54.2	52.8	52.9	53.3	54.0	52.1	53.5	53.8
Mean Chick Weight (g)	35.6	36.5	35.6	36.0	36.5	37.0	34.4	35.3	35.1
Chick Yield (%)	67.1	67.4	67.5	68.1	68.4	68.6	66.0	65.9	65.3

INTERPRETING RESULTS

The graph below shows the water loss results from 3 different incubators:



Incubator 1 has water losses within the acceptable range.

No action required.

Incubator 2 has slightly low water loss but close to the acceptable range.

Action: Check the water loss from this incubator again, make sure humidifiers are working correctly and if it is still low, decrease incubator humidity.

Note: this water loss would be normal for long stored eggs.

Incubator 3 has very high water loss.

Action: Make sure there were no cracked eggs on these trays (these will lead to an artificially high estimate of water loss), make sure humidifiers are working correctly and increase incubator humidity.

if cracked eggs are found to be present the data for that tray should be ignored and a repeat measurement taken.

- To alter egg weight loss by 1%, humidity should be changed by about 5%RH or 2°F (1°C) wet bulb.