## Why indivdually weigh broiler breeder females in production?

Birds should be weighed at least weekly after transfer to the production facility.

Routine accurate estimates of average body weight allows:

- Correct feed allocation to a population during production to help manage persistent egg production, egg weight, and body weight.

# The procedure for individually weighing broiler breeder females in production

## Bird Handling

**Birds must be handled in a calm and correct way by people who have been appropriately trained. Bird welfare must be a priority at all times.**

## Equipment

1. A good set of electronic or manual / mechanical dial scales with 10 g (0.02 lb) increments, an accuracy of +/- 20 g (0.04 lb) and have a minimum capacity of 5 kg (11 lb).

Electronic scale (left) and mechanical dial scale (right) for taking individual bird weights.

2. A pen or pencil.
3. Weight recording charts.
4. Scientific calculator if weighing using manual / mechanical dial scales.

***Note*** *- All scales should be calibrated on a regular basis (at the beginning and end of every weighing) to ensure they are weighing accurately and correct body-weight management is maintained.*

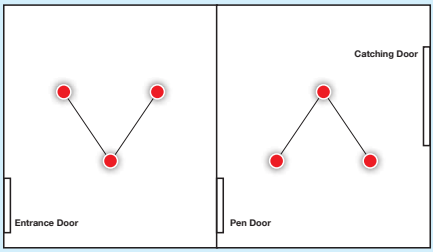
## Procedure

Birds should be weighed on the same day each week and at the same hour of the day; ideally 4-6 hours after feeding.

**Step 1** Suspend / situate scales in a secure, easily accessible place in the pen where weighing will take place. Set scales to zero and have a secure shackle to hold birds in place before weighing begins.


Step 1

**Step 2** Catch and pen up a sample of at least 2% or 50 females per population, whichever is greater. Male sample size should be increased to at least 10% from mating-up. Bird samples should be taken from a minimum of 3 random locations. Samples should be taken from towards the middle of each pen or house avoiding side wall areas and areas close to entrance doors.



Bird sample points

**Step 3** Collecting one bird at a time, place its legs into the shackles, wait until the bird is calm and read the weight from the scale (to the nearest 20 g [0.04 lb] for mechanical scales).


Step 3

**Step 4** Record the weight obtained and gently release the weighed bird back into the main pen population.

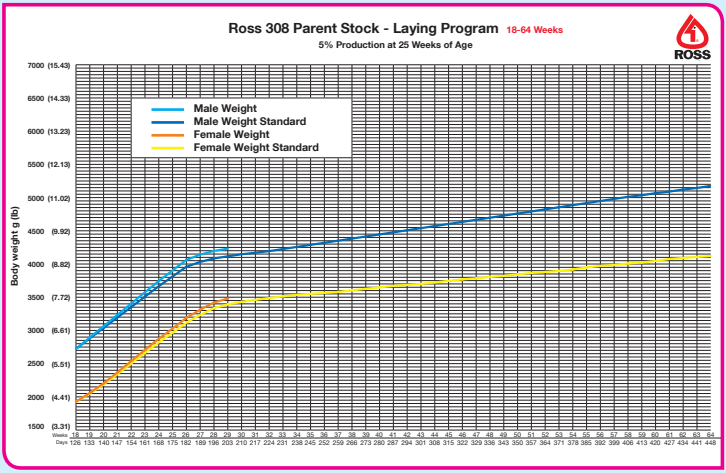
Mechanical dial scales require manual data records to be kept and data calculations to be made for:

- Total number of birds weighed.
- Average weight per bird (Total weight of all birds ÷ Number of birds weighed).
- Weight range.
- Coefficient of Variation (CV%).

**Step 5** Repeat the weighing process until **ALL** birds in the catching pen have been weighed and the weight recorded. This will eliminate selective bias.

**Step 6** Calculate average weight and the Coefficient of Variation (CV%). CV% is usually calculated automatically when using digital scales. If manual scales are used, it will be necessary to calculate the standard deviation using either a scientific calculator or a computer spreadsheet.

**Step 7** Average body weight and CV% should be plotted on a body weight for age chart and compared to target. Variation from performance targets will help determine future feed allocations.




**Example for calculation of CV%:**

$$CV\% = \frac{\text{Standard Deviation}}{\text{Average Body Weight}} \times 100$$

For example:

Where standard deviation = 0.248 kg / 0.547 lb and average weight = 2.471 kg / 5.448 lb

$$CV\% = \frac{0.248 \text{ kg} / 0.547 \text{ lb}}{2.471 \text{ kg} / 5.448 \text{ lb}} \times 100 = 10.2$$

Example of a body weight recording chart when manual scales are used for weighing.

| Farm | Breed | House | Pen | Sex | Age | Date |
|---|---|---|---|---|---|---|
| | | 2 | | Female | 22 weeks | Mar - 15 |

| Number Weighed | Average Weight | Target Weight | % Coefficient of Variation |
|---|---|---|---|
| 212 | 2464 g (5.43 lb) | 2500 g (5.51 lb) | 10.3 |

| Weight Grams | Weight Pounds | Number of Birds | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 2020 | 4.45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2040 | 4.50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2060 | 4.54 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2080 | 4.59 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2100 | 4.63 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2120 | 4.67 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2140 | 4.72 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2460 | 4.76 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2180 | 4.81 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2200 | 4.85 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2220 | 4.89 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2240 | 4.94 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2260 | 4.98 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2280 | 5.03 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2300 | 5.07 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2320 | 5.11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2340 | 5.16 | x | x | x | x | x | | | | | | | | | | | | | | | | | | | | | | | | |
| 2360 | 5.20 | x | x | x | x | x | x | x | x | x | x | x | | | | | | | | | | | | | | | | | | |
| 2380 | 5.25 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | | | | | | | | | | | | | | | |
| 2400 | 5.29 | x | x | x | x | x | x | x | x | x | x | x | x | | | | | | | | | | | | | | | | | |
| 2420 | 5.34 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | | | | | | | | | | | |
| 2440 | 5.38 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | | | |
| 2460 | 5.42 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | | | | |
| 2480 | 5.47 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | | | | |
| 2500 | 5.51 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | | | | |
| 2520 | 5.56 | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | | | | | | | | |
| 2540 | 5.60 | x | x | x | x | x | x | x | x | x | x | x | x | | | | | | | | | | | | | | | | | |
| 2560 | 5.64 | x | x | x | x | x | x | x | x | x | x | x | | | | | | | | | | | | | | | | | | |
| 2580 | 5.69 | x | x | x | x | x | x | x | | | | | | | | | | | | | | | | | | | | | | |
| 2600 | 5.73 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2620 | 5.78 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2640 | 5.82 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2660 | 5.86 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2680 | 5.91 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2700 | 5.95 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2720 | 6.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2740 | 6.04 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2760 | 6.08 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2780 | 6.13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2800 | 6.17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2820 | 6.22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2840 | 6.26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2860 | 6.31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2880 | 6.35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Example of printouts from automatic weighing equipment – CV%, number of birds weighed, average weight, and standard deviation are all calculated automatically when using electronic scales.

| CURRENT DATA METRIC | |
|---|---|
| TOTAL WEIGHED: | 79 |
| AVERAGE WEIGHT: | 2.471 |
| DEVIATION: | 0.242 |
| C.V. (%): | 10.2 |

| Band limits | Total |
|---|---|
| 2.320 to 2.339 | 1 |
| 2.340 to 2.359 | 1 |
| 2.360 to 2.379 | 2 |
| 2.380 to 2.399 | 2 |
| 2.400 to 2.419 | 4 |
| 2.420 to 2.439 | 7 |
| 2.440 to 2.459 | 12 |
| 2.460 to 2.479 | 15 |
| 2.480 to 2.499 | 14 |
| 2.500 to 2.519 | 10 |
| 2.520 to 2.539 | 6 |
| 2.540 to 2.559 | 3 |
| 2.580 to 2.599 | 2 |

| CURRENT DATA IMPERIAL | |
|---|---|
| TOTAL WEIGHED: | 79 |
| AVERAGE WEIGHT: | 5.45 |
| DEVIATION: | 0.555 |
| C.V. (%): | 10.2 |

| Band limits | Total |
|---|---|
| 5.11 to 5.16 | 1 |
| 5.16 to 5.20 | 1 |
| 5.20 to 5.24 | 2 |
| 5.25 to 5.29 | 2 |
| 5.29 to 5.33 | 4 |
| 5.34 to 5.38 | 7 |
| 5.38 to 5.42 | 12 |
| 5.42 to 5.47 | 15 |
| 5.47 to 5.51 | 14 |
| 5.51 to 5.55 | 10 |
| 5.56 to 5.60 | 6 |
| 5.60 to 5.64 | 3 |
| 5.64 to 5.69 | 2 |
| 5.69 to 5.73 | |

# Interpreting results

A deviation from expected body weight may be due to an inaccurate weighing. If an inconsistent body weight is recorded, check that the scales are working correctly and then weigh a second sample of birds immediately as a check before making any changes to feed levels.

**Pre-peak**

Females must continue to gain weight during early lay and into peak production to maximize egg production and hatchability. A deviation in body weight from standard (either above or below) or sudden change in body weight may indicate incorrect feeding techniques / allocation and this should be investigated.

Pre–peak, the difference in feed quantity allocated prior to first egg and the target feed level at peak, allows a feed allocation schedule to be established. Amounts of feed given up to and at peak should not be adjusted on body weight alone, but taking into account the following:

- Hen-day production.
- Daily egg weight and change in egg weight trend.
- Feed clean-up times.
- Dietary energy density.
- Environmental temperature.
- Bird body condition.

For example:

- **If hen day production and egg weight are increasing as expected but body weight is below standard, (>100 g [0.22 lb])**
  - Feed increases may be brought forward or daily allocations increased to bring female body weight back towards target while at the same time supporting egg production traits.
- **If body weights are deviating above standard (>100 g [0.22 lb]) and production and egg weight are increasing as expected:**
  - Follow recommended feed increases.
  - Do not reduce feed increases; this will have a negative impact on performance.
  - Reducing feed increases in this case will be more likely to affect production levels adversely.
  - For future flocks, investigate pre-production and feeding to peak feed programs.

**Post-peak**

- Post-peak females must gain body weight close to the recommended target while feed levels are reduced.
- If body-weight gain is inadequate, total egg production will be reduced.
- If body-weight gain is too rapid, post peak production persistency and fertility will be lowered.
- To ensure production and body-weight gain is maintained to optimum levels then feed reductions should be managed by monitoring:
  - Daily (or weekly) body-weight and body-weight change relative to the target.
  - Daily egg-weight and egg-weight change relative to the target.
  - Daily changes in feed clean-up time.

The following table provides general guidance as to the normal actions to be taken in a post-peak flock on a feed reduction program where body weight and egg weight trends deviate from target. A fuller description of the process is given in the Parent Stock Management Handbook.

Birds that have **always** been above or below target should be treated as if they are on target. The body-weight target should be redrawn and feed allocation adjusted accordingly.

| | Body Weight Trend | Egg Weight Trend | Action |
|---|---|---|---|
| Egg Production Good | Standard | Standard | Maintain feed reduction program |
| | | Below | Delay feed reduction |
| | | Above | Bring forward next feed reduction |
| | Below | Standard | Unlikely but if seen delay feed reduction |
| | | Below | Delay feed reduction |
| | | Above | Maintain feed reduction program |
| | Above | Standard | Maintain feed reduction program |
| | | Below | Maintain feed reduction program |
| | | Above | Bring forward next feed reduction |
| Egg Production Below Standard | Standard | Standard | Maintain feed reduction program |
| | | Below | Delay feed reduction |
| | | Above | Bring forward next feed reduction |
| | Below | Standard | Delay feed reduction |
| | | Below | Delay feed reduction |
| | | Above | Bring forward next feed reduction |
| | Above | Standard | Unlikely but if seen bring forward next feed reduction |
| | | Below | Unlikely but if seen delay feed reduction or increase feed |
| | | Above | Bring forward next feed reduction |

1. Feed clean-up times are important and should also be monitored. If feed clean-up times are increasing, then feed reduction may need to be brought forward. Similarly, if clean-up times are decreasing, then feed reduction should be delayed and possible causes investigated.
2. Higher or lower environmental temperatures may require adjustments in feed intake.
3. Poor feather cover may require higher feed intake, especially in cold environments.
4. Care should be taken if changing breeder diet specifications during production. Any change in feed allocation should be delayed during the change-over period so that feed intake can be properly evaluated on the new diet.
5. Female fleshing condition should also be considered. Birds with lower than target fleshing scores should be held on current feed levels or given a feed increase. Likewise birds with higher than target fleshing score should have a more aggressive feed reduction program.

## More Information

- Parent Stock Management Handbook.