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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Technical specification for performance testing of meat-type
duck**

肉鸭生产性能测定技术规范

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1 Scope

This document specifies the basic conditions, the items to be measured and the numbers to be measured in the performance testing of meat-type ducks, and describes the measurement methods and the verification method.

This document applies to performance testing of breeder meat ducks and of commercial meat ducks; the performance testing of Muscovy ducks, mule ducks and mallards may follow it for reference.

3 Terms and definitions

3.1 Meat-type duck: a duck raised for the production of meat for human consumption, and its parent stock. Note: this covers local breeds, developed breeds and the successive generations of a crossbred line.

4 Basic conditions

4.1.1 Hygiene at the testing farm. The environmental hygiene quality shall comply with NY/T 388. The treatment of waste water and waste matter shall comply with HJ/T 81.

4.1.2 Hatchery and duck houses. The farm shall have the infrastructure needed for performance testing of meat ducks at every stage, at least a hatchery and testing duck houses. The hatchery shall be equipped with the plant and facilities for hatching egg storage, incubation, hatching and the handling of day-old ducklings. The testing duck houses shall be equipped with control systems for temperature, humidity, ventilation and lighting, and shall be easy to clean and disinfect.

4.2 Laboratory. The environmental conditions shall comply with GB/T 27404, and the instruments and equipment shall be capable of meeting the requirements for measuring slaughter performance, meat quality and hatching egg quality.

4.3 Personnel. Staff shall have received specialist training, shall have the corresponding skills and shall be capable of carrying out the measurement work.

4.4 Samples. Samples shall come from a flock that is well managed and in good health, and shall be accompanied by basic information such as the place of production, the type of breed, the age of the breeder ducks in weeks and the immunization status. The collection and management of hatching eggs shall meet the requirements of GB/T 40454, and the time from lay to setting should not exceed 7 d.

5 Items to be measured

5.1.1 Conformation and appearance of breeder meat ducks. The down, bill, shank, web and skin of the day-old duckling shall be recorded. The body type of the adult male and female duck shall be recorded, together with the plumage, head, neck, bill, bill bean, shank, web, claw and skin.

5.1.2 Body weight. Day-old weight, weight at onset of lay, weight at 43 weeks of age and weight at 66 weeks of age shall be measured.

5.1.3 Body measurements at 43 weeks of age. Body slope length, keel length, chest width, chest depth, shank length, shank circumference, hip bone width and half-diving length shall be measured.

5.1.4.1 Laying performance. Age at onset of lay, eggs per hen housed, eggs per hen day, qualified hatching eggs per hen housed and qualified hatching eggs per hen day shall be measured.

5.1.4.2 Hatching performance. Fertility, hatchability of fertile eggs, hatchability of eggs set and the rate of healthy ducklings shall be measured.

5.1.5 Hatching egg quality at 43 weeks of age. Egg weight, shell colour, egg shape index, shell thickness and shell strength shall be measured.

5.1.6 Viability. Survival rate over the brooding and rearing period and over the laying period shall be measured.

5.1.7 Feed consumption. Feed consumed over the brooding and rearing period and over the laying period shall be measured.

5.2.1 Conformation and appearance of commercial meat ducks. The down, bill, shank, web and skin of the day-old duckling shall be recorded, as shall the body type of male and female ducks at marketing, together with the plumage, head, neck, bill, bill bean, shank, web, claw and skin.

5.2.2 Body weight. Day-old weight, male marketing weight, female marketing weight and the mean marketing weight of males and females shall be measured.

5.2.3 Viability. Survival rate to marketing for males, for females and for males and females combined shall be measured.

5.2.4 Feed conversion ratio. The feed conversion ratio shall be measured for males, for females and for males and females combined.

5.2.5 Slaughter performance. For males and females at marketing, the dressing percentage, half-eviscerated yield, eviscerated yield, leg proportion, breast muscle percentage, leg muscle percentage, abdominal fat percentage, skin and fat percentage, wing weight and liver weight shall be measured.

5.2.6 Meat quality. Shear force, pH, water-holding capacity and fat content shall be measured.

6 Numbers to be measured

6.1 Flock size for breeder meat ducks. The minimum flock size for performance testing of breeder meat ducks shall comply with Table 1. For a breed or line, the minimum numbers are 1 000 hatching eggs set, 60 male and 300 female day-old ducklings housed, and 45 male and 240 female laying ducks housed. For the parent stock of a crossbred line, the minimum numbers are 260 hatching eggs set for the sire line and 1 000 for the dam line, 60 day-old ducklings housed for the sire line and 300 for the dam line, and 45 laying ducks housed for the sire line and 240 for the dam line. A note states that the number of replicate groups of day-old ducklings housed and of laying ducks housed shall be not fewer than three.

6.2 Flock size for commercial meat ducks. The minimum flock size shall comply with Table 2: 600 hatching eggs set, and 180 day-old ducklings housed for each sex. A note states that the number of replicate groups of day-old ducklings housed shall be not fewer than three.

6.3 Sample numbers for the items measured. The minimum numbers for conformation and appearance, body weight, body measurements, slaughter performance, meat quality, hatching egg quality and similar items shall comply with Table 3; the numbers for the other items shall comply with Tables 1 and 2. Table 3 gives, for males and females respectively, 30 and 100 birds for conformation and appearance, 30 and 30 birds for body weight, 15 and 15 for body measurements, 15 and 15 for slaughter performance and 15 and 15 for meat quality, and 30 eggs for hatching egg quality.

7 Measurement methods

7.1.1 Conformation and appearance of breeder ducks is assessed by eye. Day-old ducklings should be assessed within 24 h of hatching; adult ducks should be assessed at

43 weeks of age, males and females being described separately.

7.1.2 Body weight. Day-old weight: within 24 h of hatching, ducklings are weighed individually in grams, the calculated result being rounded in accordance with GB/T 8170 and reported to one decimal place. Weight at onset of lay and at 43 and 66 weeks of age: individual body weight is taken on an empty stomach at the age at onset of lay and at 43 and 66 weeks of age, in grams, the result being reported as a whole number and rounded as in 7.1.2.1.

7.1.3 Body measurements at 43 weeks of age, each taken in centimetres and reported to one decimal place. Body slope length: measured with a tape along the body surface from the front upper joint of the clavicle to the ischial tuberosity on the same side. Keel length: measured with a tape along the body surface from the front end of the keel to its rear end. Chest width: measured with callipers as the distance between the two shoulder joints. Chest depth: measured with callipers as the vertical distance from the first thoracic vertebra to the front edge of the keel. Shank length: measured with vernier callipers as the straight-line distance from the upper joint of the metatarsus to the space between the third and fourth toes. Shank circumference: measured with a tape as the circumference at the middle of the shank. Hip bone width: measured with vernier callipers as the distance between the two hip bone tuberosities. Half-diving length: measured with a tape from the tip of the bill to the midpoint of the line joining the two hip bone tuberosities.

7.1.4.1 Laying performance. Age at onset of lay is taken as the age in days at which the daily laying rate of the flock first reaches 5 % or more. Eggs per hen housed is the mean number of eggs per breeder hen housed, calculated from formula (1) as the total eggs laid over the period divided by the number of hens housed, and reported to one decimal place. Eggs per hen day is the mean number of eggs per hen actually kept, calculated from formulas (2) and (3), the mean daily number of hens kept over the period being the sum of the daily numbers divided by the number of days. Qualified hatching eggs per hen housed is calculated from formula (4) as the total qualified eggs divided by the number of hens housed; a note explains that qualified hatching eggs are those left once misshapen eggs, whether too long or too round, oversized and undersized eggs, glassy-shelled, soft-shelled, sandy-shelled, ridged and cracked eggs and other eggs that cannot be set have been discarded. Qualified hatching eggs per hen day is calculated from formula (5) as the total qualified eggs divided by the mean daily number of hens kept.

7.1.4.2 Hatching performance. Fertility: hatching eggs are collected and candled 6 d to 8 d after setting, the number of fertile eggs is counted, and fertility is calculated from formula (6) as the number of fertile eggs divided by the number of eggs set, times 100. A note states that eggs showing a blood ring or a blood line are counted as fertile and that eggs with a broken yolk are excluded. Hatchability of fertile eggs is calculated from formula (7) as the number of ducklings hatched divided by the number of fertile eggs, times 100. Hatchability of eggs set is calculated from formula (8) as the number of ducklings hatched