

THE WORLD'S POULTRY SCIENCE ASSOCIATION
(WORKING GROUP N. 8)
WATERFOWL

Dept of Anatomical
Physiological and Animal
Production Science
University of PISA - ITALY



Proceedings

**9th INTERNATIONAL
SYMPOSIUM
ON WATERFOWL**

PISA - ITALY

16-18 September 1992

MUSCOVY AND COMMON DUCK: EFFECT OF SYSTEM OF BREEDING ON PERFORMANCE

Paci G., Marzoni M., Bagliacca M., Avanzi C.F.

Department of Anatomical, Physiological and Animal
Production Science - Pisa University.
56100 PISA - ITALY

ABSTRACT

Since meat quality is actually of great importance in Europe and open air breeding is imposed by several trademarks of quality, the authors evaluated the performance of Muscovy and common duck bred with different techniques (breeding period: whole inside a poultry house and breeding period with finisher at open air).

Results showed that systems which impose the finisher period at open air determined a slightly reduction of growth speed in Muscovy ducks while determined an increase of live weight in common ducks. Open air breeding during the finisher period induced a little increase of feed consumption in both species but only in Muscovy duck conversion efficiency was slightly worsened.

INTRODUCTION

Muscovy duck (MD) is characterized by high meat quality according to the meaning of quality given by the consumers of most of the Developed Countries (Countries located in the temperate and hot zones, where meat quality means meats characterized by low fat content). On the contrary, common ducks (CD), of Pekin or other breeds, are generally preferred in Northern and in Developing Countries where the energy content of meat is of fundamental importance and the high fat content does not represent a demerit (6,7). Both ducks can be bred by intensive breeding or by systems which provide a breeding period at open air similarly to the system already scheduled in France to accord the registered trademark "Label Rouge" (1,2) and considered as a satisfactory breeding technology for the obtaining a quality label in the Countries bearing to the European Economical Community (4).

For these reason it is interesting to compare the performance of MD and CD bred for the whole breeding period in a windowless poultry house with the performance of the same ducks bred at open air during the last period of growth. The goal of this studies is to determine the true relationships between performance, meat quality, breeding line and breeding technology. In the present research the performances of growth and feed intake are evaluated.

MATERIALS AND METHODS

Six hundreds duck females (300 MD and 300 CD) were used for the trial. All the birds were bred from first day of life to 28 days old inside a windowless

poultry house (day light: 23L:1D, density: 10 ducks/m²). At the age of 29 days (May, 28, 1991) the birds of each species were assigned to two groups: one half MD and CD were continued to be bred inside the poultry house and one half MD and CD were transferred to open air pens (the second group of ducks was bred at open air similarly to the France breeding system which assigns the "label rouge"). Twelve pens at open air and 12 pens inside the poultry house were used, 5 ducks/m² was the density in each pen. Crumble feed was used from one day to 42 days, pellet feed was used from 43 days to slaughtering age. All birds fed the same feed used in our previous experiments (3).

Individual live weights were analysed according to the following model:

$$\text{Live Weight}_{ijk} = \mu + \text{BS}_i + \text{SP}_j + \text{BS} \cdot \text{SP}_{ij} + \text{PEN}_k + \varepsilon_{ijk}$$

Feed conversion efficiency (FCE) and daily feed consumption per duck (FC) were calculated per pen and analysed according to the following model:

$$(\text{FCE or FC})_{ijk} = \mu + \text{BS}_i + \text{SP}_j + \text{BS} \cdot \text{SP}_{ij} + \varepsilon_{ijk}$$

where BS = breeding system, SP = species, PEN = pen.

RESULTS AND DISCUSSION

Individual live weight (estimated mean \pm s.dev.) are reported in table 1 and estimated daily intake per duck is shown in figure 1. The quickest growth rate which is a characteristic of CD was well evident: notwithstanding one day old MD were slightly heavier than one day old CD, CD became heavier than MD already from the first week old.

Table n.1 Estimated live weights (g)

| SPECIE | MUSCOVY DUCK n avg \pm s.dev. | | PEKIN DUCK n avg \pm s.dev. | |
|--------------------|------------------------------------|--------------------------------|----------------------------------|--------------------------------|
| Live weight | | | | |
| 1 d. | 300 | 44 \pm 3 ^a | 300 | 41 \pm 4 ^b |
| 7 d. | 300 | 100 \pm 18 ^b | 298 | 190 \pm 25 ^a |
| 14 d. | 300 | 280 \pm 46 ^b | 298 | 389 \pm 46 ^a |
| 21 d. | 300 | 523 \pm 69 ^b | 296 | 772 \pm 74 ^a |
| SYSTEM OF BREEDING | INTENSIVE n avg \pm s.dev. | LABELLED n avg \pm s.dev. | INTENSIVE n avg \pm s.dev. | LABELLED n avg \pm s.dev. |
| Live weight | | | | |
| 28 d. | 152 | 895 \pm 105 ^{ns} | 148 | 849 \pm 85 ^{ns} |
| 35 d. | 152 | 1183 \pm 173 ^{ns} | 148 | 1081 \pm 99 ^{ns} |
| 42 d. | 152 | 1410 \pm 177 ^{ns} | 148 | 1405 \pm 129 ^{ns} |
| 49 d. | 152 | 1736 \pm 220 ^a | 148 | 1690 \pm 180 ^b |
| 56 d. | 142 | 1954 \pm 259 ^{ns} | 138 | 1933 \pm 189 ^{ns} |
| 63 d. | 132 | 2135 \pm 332 ^a | 128 | 2089 \pm 208 ^b |
| 70 d. | 122 | 2212 \pm 398 ^a | 118 | 2153 \pm 214 ^b |
| 77 d. | 112 | 2280 \pm 446 ^a | 108 | 2189 \pm 210 ^b |
| 91 d. | 102 | 2348 \pm 479 ^a | 98 | 2294 \pm 240 ^b |
| 105d. | 84 | 2404 \pm 529 ^{ns} | 78 | 2407 \pm 179 ^{ns} |
| | | | 148 | 1056 \pm 94 ^{ns} |
| | | | 148 | 1246 \pm 112 ^b |
| | | | 146 | 1491 \pm 135 ^b |
| | | | 136 | 1562 \pm 147 ^b |
| | | | 126 | 1775 \pm 174 ^b |
| | | | 116 | 1741 \pm 206 ^b |
| | | | 106 | 1835 \pm 239 ^b |
| | | | 96 | 1799 \pm 176 ^b |
| | | | 86 | 1881 \pm 193 ^b |
| | | | 78 | 1899 \pm 200 ^b |
| | | | 150 | 1053 \pm 92 ^{ns} |
| | | | 150 | 1319 \pm 118 ^a |
| | | | 150 | 1665 \pm 150 ^a |
| | | | 140 | 1839 \pm 172 ^a |
| | | | 128 | 1970 \pm 191 ^a |
| | | | 118 | 2046 \pm 209 ^a |
| | | | 108 | 2065 \pm 208 ^a |
| | | | 98 | 2033 \pm 204 ^a |
| | | | 88 | 2076 \pm 232 ^a |
| | | | 78 | 2133 \pm 249 ^a |

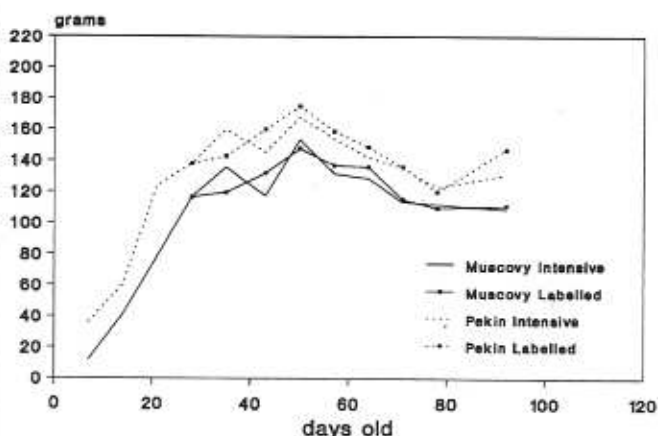
means on the same row bearing different superscripts differ per $P \leq 0.05$.

A different trend of growth between the two species in relationship to open air breeding was also showed. The speed growth of MD slightly slowed down

with open air breeding (significant differences were observed at 49 days and 63 through 91 days old). The speed growth of CD, on the contrary, was improved by the finisher period at open air. The improvement of CD performance was observed till from the first week of breeding in pens at open air.

FC was stimulated by open air breeding in both species (see figure 1) but FCE was slightly worsened (with no significantly difference) only in MD.

figure 1 - duck daily intake



CONCLUSIONS

The employment of the open air breeding technique for the finisher period, generally requested for high meat quality labels, does not worsen the performances of CD which seem to improve growth. On the contrary, the performances of MD are slightly worsened by the breeding period at open air: FCE decreases of .2 point and avg. live weight decreases of 26 grams.

Since the present experiment was carried out during the favourable season (Spring)⁽⁵⁾, the performances of duck bred during the second part of growth at open air remain to be evaluated during the cold seasons.

REFERENCES

- 1 - AA.VV. (1990) DOSSIER LABEL. L'Aviculteur 513: 29-46.
- 2 - Anonymous (1981) - Canards de Barbarie: conditions minima à remplir pour l'obtention d'un label. L'Aviculteur 416: 51-56.
- 3 - Bagliacca et Al. (1990) - Effect of small quantities of proteolizates or synthesized aminoacids in duckling feed. Proc 8TH Europ. Poultry Conf. vol 1 320-323.
- 4 - EEC Directive 79/112 (1979). O.J. of EEC. n. L 033, 08.02.1979, p.1; EEC Directive 89/108 (1989). O.J. of EEC. n. L 40, 11.02.1989, p.51; EEC Directive 89/395 (1989). O.J. of EEC. n. L 186, 13.06.1989, p.17.
- 5 - Gualterio L. et Al. (1988) - Anatra di Barberia: possibilità di allevamento integrato nella conigliocultura all'aperto. Riv. di Avic. 57(3):4346.
- 6 - Pingel H. (1989) - Combining the qualities of Muscovy and pekin ducks. Poultry Misset, 4, (7): 11-13.
- 7 - Torges H.-G. (1986) - Slaughter-performance of Muscovy ducks due to their age and sex. Arch. Geflügelk., 50, (1): 31-41.

Work supported by National Research Council of Italy, Special Project RAISA, sub-project N. 3. Paper N. 564.