

INCUBATION AND FERTILITY RESEARCH GROUP

{WPSA Working Group 6 (Reproduction)}

2012 Meeting – Pisa, Italy

13th–15th June 2012

The IFRG meeting organised by Drs Margherita Marzoni and Annelisse Castillo from the University of Pisa covered a wide range of topics from the microbiological defence systems of the egg, techniques for freezing semen, nest construction in wild birds, the long term effects of incubation temperature on chick performance and chick vocalisation during hatching. There were four invited speakers: Tommaso Pizzari (University of Oxford, UK) who discussed male behaviour and fertility; Maureen Bain (University of Glasgow, UK) describing new techniques for measuring shell quality; Jessica Dymond (USDA Beltsville, USA) who reported on experiments to improve the hatch of long stored eggs; and İlhami Çelik (University of Selçuk, Turkey) who described the effects of incubation temperature on the development of the thymus and bursa in the chick. Dr Nick French, who has chaired the IFRG for the last 3 years, stepped down as Chairman at the meeting and Dr Marleen Boerjan (Pur Reformat, The Netherlands) took over the position. It was agreed that the 2013 meeting would be held in Germany, further details would be made available on the IFRG website when they are available: www.ifrg.org

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Egg production, fertility and hatchability in the Italian chicken breed *Milanino*

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Local chicken breeds are a vital reservoir of gene resources and their conservation has a technical role related to the future development of the productive system, as well as a social-cultural role. In Italy, 90 local avian breeds were described, the majority (61%) were classified as extinct and only 8.9% still used on local farms. Therefore, efforts for conservation of Italian avian breeds are urgently required. The aim of this study was to record the breeding performance of the Italian local breed *Milanino* and multiply a small population in order to develop a conservation program.

Milanino is a chicken composite breed selected at the beginning of the 20th century in Lombardia and was largely used on local farms mainly for meat production. *Milanino* breed is currently included in a conservation project run by the University of Milan (CoVAL project funded by Regione Lombardia in 2011). The breed has beautiful plumage perfectly white and soft, white skin and simple comb. The rooster has beautiful shape with a massive chest size; the hen has extraordinary fecundity and reduced space requirements. The mean body weight is 3.5 kg and 2.5–3 kg for adult males and females respectively.

Seventeen females and four males were kept at the Poultry Unit (Faculty of Veterinary Medicine, Lodi) during the reproductive season (January–June) in 2011. Birds were divided into four families (one male/four or five females) housed in floor pens in controlled environment.

Birds received a photoperiod of 15L:10D and were fed *ad libitum* a commercial standard breeder diet. Egg production was recorded daily. Eggs were weighted and stored until settings every two weeks. Eggs were classified in three egg storage groups: 1–0–5 days, 2–6–10 days and 3–11–15 days. Standard incubation parameters for chicken eggs were used. Fertility and early embryo mortality were recorded on the 7th day of incubation by candling. Hatchability and late embryo mortality were recorded.

Mean egg production recorded from January to June was 58% and the peak of oviposition, corresponding to 82%, was recorded in mid-March. Mean egg weight was 59 ± 4 g. Six consecutive incubations were performed from February to June. High fertility values, from 85 to 91%, were recorded in all incubations. The highest hatchability values were recorded in incubation 1 and 2, 69 and 66% respectively, and a progressive decrease was found in the subsequent incubations. The length of egg storage significantly affected hatchability. The mean hatchability value recorded in eggs stored up to 5 days was 72%, and it was greatly progressively decreased in eggs stored from 6 to 15 days.

The present results contribute to the knowledge on reproductive parameters necessary to improve the reproductive efficiency of *Milanino* breed within the conservation project.

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INTRODUCTION

In Italy, 90 local avian breeds were described, the majority (61%) were classified extinct and only 8.9% still present in rural farms. Therefore, efforts for conservation of Italian avian breeds are urgently required.

AIM

The aim of this study was to record the breeding performance of the Italian local breed *Milanino* and multiply a small population in order to develop a conservation program.



Milanino is a chicken composite breed selected at the beginning of the 20th century in Lombardia and was locally reared mainly for meat production. The breed has beautiful plumage perfectly white and soft, white skin and simple comb. The mean body weight is 3.5 kg and 2.5-3 kg for adult males and females respectively. This breed is currently included in a conservation project run by the University of Milan (CoVAL project n. 1723, funded by Regione Lombardia in 2011).

MATERIALS AND METHODS

- 17 females and 4 males were kept at the Poultry Unit (Faculty of Veterinary Medicine, Lodi) during the reproductive season (January-June) in 2011.
- Birds were divided into 4 families (1 male/4-5 females) housed in floor pens in controlled environment. Birds received a photoperiod of 15L:10D and were fed *ad libitum* a commercial standard breeder diet.
- Egg production was recorded daily. Eggs were weighted and stored until settings every two weeks. Eggs were classified in 3 egg storage groups: 1=0-5 days, 2=6-10 days and 3=11-15 days.
- Standard incubation parameters for chicken eggs were used. Fertility and early embryo mortality were recorded on the 7th day of incubation by candling. Hatchability and late embryo mortality were recorded.
- Data on fertility and hatchability were analyzed using the χ^2 test to determine results diverging from the null hypothesis; egg storage groups were considered as frequency categories.

RESULTS

Mean egg production recorded from January to June was 58% and the peak of oviposition, corresponding to 82%, was recorded in mid-March (Figure 1). Mean egg weight was 59 ± 4 g.

Six consecutive incubations were performed from February to June. High fertility values, from 85 to 91%, were recorded in all incubations (χ^2 test not significant).

The highest hatchability values were recorded in incubation 1 and 2, 69 and 66% respectively, and a progressive decrease was found in the subsequent incubations (Figure 2).

The length of egg storage significantly affected hatchability. The mean hatchability value recorded in eggs stored up to 5 days was 72%, and it was greatly progressively decreased in eggs stored from 6 to 15 days (Figure 3).

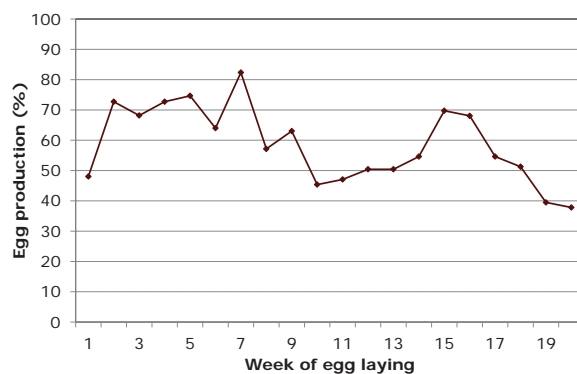


Fig.1 Egg production recorded weekly from January to June.

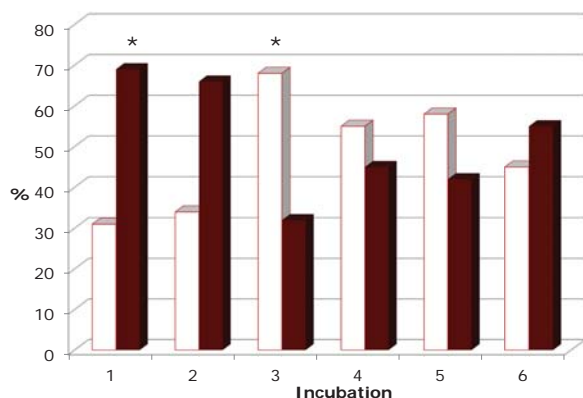


Fig.2 Proportions of dead embryos (DE) and hatched chicks (HC) calculated on fertile eggs per each incubation. Asterisks show a significant difference between recorded and expected values (χ^2 test, $P < 0.001$).

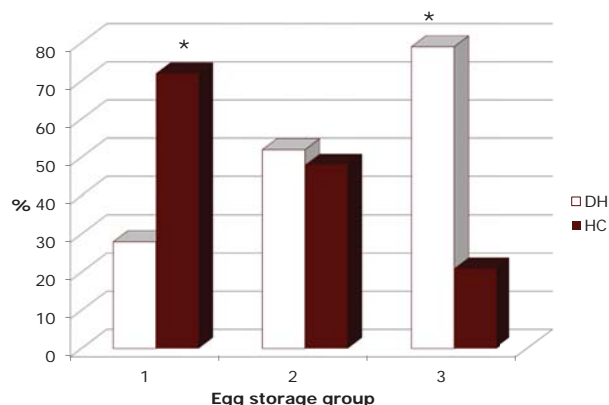


Fig.3 Proportions of dead embryos (DE) and hatched chicks (HC) calculated on fertile eggs per each egg storage group (1=0-5 days, 2= 6-10 days, 3= 11-15 days). Asterisks show a significant difference between recorded and expected values (χ^2 test, $P < 0.001$).

CONCLUSIONS

The present results contribute to the knowledge on reproductive parameters necessary to improve the reproductive efficiency of *Milanino* breed within the conservation project.

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