

DATA ANALYSIS ON THE PERFORMANCE FOR THREE STRAINS OF DUCK IN EGYPT 3- AGE AT 10%, 50% AND AGE AT THE PEAK OF EGG PRODUCTION

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Abstract

Results were built upon the data of 436422 ducklings day-old represented three different strains (Pekin, Muscovy and Khaki-Campbell) located in Behaira, Kafr El-Sheikh, Demietta, Gharbeya, Giza and Dakahalia Governorates. The data were taken through the production period from 1990 to 2000 belonging to ten farms from each of the governmental and private sectors. The traits studied were age (weeks) at 10%, 50% and age at the peak of egg production.

The main results could be summarized as follows:

The average ages for the Pekin, Muscovy and Khaki-Campbell ducks at 10 % egg production were 25.33, 26.94 and 25.06 weeks, at 50 % egg production were 30.59, 34.35 and 29.74 weeks and at the peak of egg production were 37.16, 45.88 and 42.68 weeks, respectively. It was observed that the age at the peak of egg production was reduced by 8.72 and 5.52 weeks in Pekin ducks compared to Muscovy and Khaki-Campbell ducks, respectively. The corresponding means for the governmental and private sectors were 25.61 and 25.32 weeks at 10 % egg production, 31.65 and 29.76 weeks at 50 % egg production and 38.43 and 42.53 weeks for age at the peak of egg production, respectively. The birds of the private sector reached peak of egg production later than the governmental ones due to the fact that the second sector used a definite lighting programs.

INTRODUCTION

Duck eggs are not consumed freshly in our countries, they are used for duckling production only. Egyptians have known waterfowl production thousands of years ago, as duck production ranked second after chicken production for the majority of human. Meat and eggs products from waterfowl play an important role in the poultry industry in Egypt. Ducks have higher production ability, modest house, easy management and higher resistance to diseases when compared with the production of the other animals as an example. There is a quite huge deficiency in the Egyptian citizen share regarding duck and geese meat, even if we discarded young children and

infants who do not consume meat (1.12 kg duck and 0.57 kg geese/person/year) El-Sayad (1999). The situation in Egypt regarding waterfowl production is really very bad. This needs great efforts to improve such production generally. The averages age at 10 %, 50 % and age at peak of egg production for the Muscovy ducks were 184, 213 and 242 days, respectively as found by Abd El-Azeem (2002), and for Khaki-Campbell ducks were 184.7 and 198.1 days at 50 % and age at peak of egg production as found by Abd El-Ghany (2002).

The main objective of this study was to detect the effects of both strain and sector on age at 10%, 50% and at the peak of egg production.

MATERIALS AND METHODS

The present study was carried out at the Poultry Department, Faculty of Agriculture, Alexandria University. Data for this investigation have been collected during the period from 1990 to 2000 from three parent duck flocks comprising the Pekin, Muscovy and Khaki-Campbell strains belonging to ten farms from each of the governmental and private sectors, produced in 116 cycles (436422 ducklings day-old). Random samples of duck farms in Behaira, Kafr El-Sheikh, Demietta, Gharbeya, Giza and Dakahalia Governorates were included in this study. Production data was collected from the accounts of balance sheet of the farm .

Production aspects include Age (weeks) at 10%, 50% and age at the peak of egg production.

Statistical analysis The data were classified and tabulated on Microsoft Excel (6) in Windows 98, then, was analyzed by statistical program on SPSS 8 (1997) Windows. Means and standard errors for all studied traits were calculated.

RESULTS AND DISCUSSION

1. Effect of strain

The means and their standard errors of age at 10, 50 % and at the peak of egg production for the Pekin, Muscovy and Khaki-Campbell ducks are shown in Tables 1, 2 and 3. The averages of age at 10%, 50% and peak of egg production were 25.33, 30.59 and 37.16 weeks in Pekin ducks, 26.94, 34.35 and 45.88 weeks in Muscovy ducks and 25.06, 29.74 and 42.68 weeks in Khaki-Campbell ducks, respectively. It was observed that the age at the peak of egg production was reduced by 8.72 and 5.52 weeks in Pekin ducks compared to Muscovy and Khaki-Campbell ducks, respectively.

The differences among these strains were highly significant ($P \leq 0.001$). Duncan's test showed that for the age at 10 % and 50 % egg production the Muscovy ducks had the highest significant mean and the Khaki-Campbell ducks had the lowest mean, but the differences with the Pekin ducks were not significant, while, for age at the peak of egg production the Pekin ducks had the lowest significant mean.

These results are in agreement with those reported by Goher (1968) who reported that Khaki-Campbell ducks matured earlier than Pekin ducks. Olver (1995) found that age at 50 % egg production for the Pekin ducklings was 187, 180 and 173 days at restricted feeding by 50 %, 75 % and ad libitum, respectively.

However, these results were higher than those reported by Abd El-Azeem (2002) who found that the averages age at 10 %, 50 % and age at peak of egg production for the Muscovy ducks were 184, 213 and 242 days, respectively. Also, Abd El-Ghany (2002) found that the average ages at 50 % and age at peak of egg production for the Khaki-Campbell ducks were 184.7 and 198.1 days, respectively.

2. Effect of sector

The means and their standard errors of age at 10, 50% and age at the peak of egg production as comparing among sectors are presented in Table 4, It is obvious that, these means for the governmental sector are were 25.61, 31.65 and 38.43 weeks of age at 10%, 50% and peak of egg production, respectively. While the means of the same ages in private sector were 25.32, 29.76 and 42.53 weeks. The birds of the private sector reached peak of egg production later than the governmental ones due to the fact that the second sector used a definite lighting programs. The differences between the two sectors were highly significant for age at 50 % and the peak of egg production, but non significant for age at 10% egg production.

These results are in agreement with the averages calculated in the governmental sector from the results reported by Hocking (1990), Crawford (1990), Pingel (1992) and El-Sheikh (1999). Since, the average age at 50 % egg production was 173.0 day for the Pekin ducks. While were higher for the average of Muscovy ducks 213.0 and 242 days at 50 % and the peak of egg production respectively as calculated from the results reported by Crawford (1990), Pingel (1992), Osman (1997), Hu (1999), El-Sheikh (1999) and Abd El-Azeem (2002).

Table 1. Means and standard errors ($\bar{X} \pm SE$) of the age (weeks) at 10%, 50% and age at the peak of egg production for Pekin ducks.

Farm	Circle count.	Age at 10% egg production	Age at 50% egg production	Age at the peak of egg production
Governmental sector				
1	39	25.38 \pm 0.16	30.67 \pm 0.27	33.74 \pm 0.49
2	4	26.00 \pm 0.41	34.25 \pm 0.85	45.00 \pm 2.65
3	3	24.67 \pm 0.33	33.00 \pm 0.58	41.00 \pm 2.52
Overall mean	46	25.39 \pm 0.15	31.13 \pm 0.29	35.20 \pm 0.71

performed by many workers (Ofuya, 1987, Gatehouse *et al.*, 1979 and Gatehouse and Boulter, 1983) who suggested that high levels of trypsin inhibitor was responsible for the observed resistance to *C. maculatus*. Baker *et al.* (1989) did not find a significant relationship between tannins and *C. maculatus* larval mortality or developmental time. In contrast, Redden and McGuire (1983) have reported that the developmental period could be the most discriminating. Further investigations are needed, to explain the relationship between plants and bruchids on a biochemical basis. Baker *et al.*, 1989, Xavier-Filho *et al.*, 1989, Fernandes *et al.*, 1993 did not obtain a significant correlation between the level of cysteine proteinase inhibitors in seeds of cowpea and their susceptibility or resistance to predation by *C. maculatus*. Xavier-Filho. (1991) and Maccedo *et al.*, 1993 found that resistance to *C. maculatus* larval development is due to a variant form and vicilin storage protein, which is resistant to digestion by the larval midgut proteinases and thereby limits the food supply to the larva. The summary and conclusion of the present work showed that female fecundity did not change according to the physico-chemical nature of pulse seeds. Each pulse has its own effect on egg laying. The data of the ovipositional preference for *C. maculatus* showed that mung bean was the most preferred pulse while the chickpea was the least preferred pulse and other pulses showed insignificant variation. In respect to data of *C. chinensis*, were insignificantly different among cowpea, chickpea, mungbean and lentil. On the other hand, pea and kidney bean seeds received lower

Table 3. Means and standard errors ($\bar{X} \pm SE$) of the age (weeks) at 10%, 50% and age at the peak of egg production for Khaki-Campbell ducks.

Farm	Circle count.	Age at 10% egg production	Age at 50% egg production	Age at the peak of egg production
Governmental sector				
1	5	25.20 \pm 0.37	30.40 \pm 0.51	43.60 \pm 1.08
2	4	25.25 \pm 0.25	31.25 \pm 0.48	47.50 \pm 0.65
3	3	24.33 \pm 0.33	30.33 \pm 0.33	40.33 \pm 0.88
Overall mean	12	25.00 \pm 0.21	30.67 \pm 0.28	44.08 \pm 0.97
Private sector				
6	3	26.00 \pm 0.58	30.00 \pm 0.58	46.00 \pm 1.15
7	4	25.00 \pm 0.41	29.50 \pm 0.65	42.75 \pm 1.32
8	4	25.50 \pm 0.29	30.00 \pm 0.41	47.25 \pm 0.48
11	5	24.60 \pm 0.40	28.00 \pm 0.55	34.60 \pm 1.29
12	3	24.67 \pm 0.33	28.67 \pm 0.41	41.00 \pm 1.03
Overall mean	19	25.11 \pm 0.20	29.16 \pm 0.31	41.79 \pm 1.38
Means of Khaki-Campbell	31	25.06 \pm 0.15	29.74 \pm 0.25	42.68 \pm 0.94

Table 4. Means and standard errors ($\bar{X} \pm SE$) of the age (weeks) at 10 %, 50 % and age at the peak of egg production as affected by sectors and strains.

Strains	N.	Governmental sector	N.	Private sector	N.	Overall mean
Age at 10% egg production						
Pekin	46	25.39 \pm 0.15	18	25.17 \pm 0.31	64	25.33 \pm 0.14 ^b
Muscovy	11	27.18 \pm 0.30	6	26.50 \pm 0.22	17	26.94 \pm 0.22 ^a
Khaki-Campbell	12	25.00 \pm 0.21	19	25.11 \pm 0.20	31	25.06 \pm 0.15 ^b
Overall mean	69	25.61 \pm 0.14	43	25.32 \pm 0.17	112	25.49 \pm 0.18
Age at 50% egg production						
Pekin	46	31.13 \pm 0.29	18	29.22 \pm 0.45	64	30.59 \pm 0.27 ^b
Muscovy	11	34.91 \pm 0.39	6	33.33 \pm 0.61	17	34.35 \pm 0.37 ^a
Khaki-Campbell	12	30.67 \pm 0.28	19	29.16 \pm 0.31	31	29.74 \pm 0.25 ^b
Overall mean	69	31.65 \pm 0.27	43	29.76 \pm 0.32	112	30.92 \pm 0.19
Age at the peak of egg production						
Pekin	46	35.20 \pm 0.71	18	42.17 \pm 1.56	64	37.16 \pm 0.77 ^c
Muscovy	11	45.82 \pm 1.36	6	46.00 \pm 0.89	17	45.88 \pm 0.92 ^a
Khaki-Campbell	12	44.08 \pm 0.97	19	41.79 \pm 1.38	31	42.68 \pm 0.94 ^b
Overall mean	69	38.43 \pm 0.77	43	42.53 \pm 0.91	112	40.15 \pm 0.53

Means having the different letters in the last column differ significantly ($p \leq 0.05$)

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تحليل بيانات صفات ثلاثة سلالات من البط في مصر ٣- العمر عند ١٠% و ٥٠% وعند قمة إنتاج البيض

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تم تجميع بيانات ميدانية على عدد ٤٣٦٤٢٢ بطه عمر يوم تمثل ثلاث سلالات مختلفه من البط هي البكىنى والمسكوفى والخابكى كامبل فى محافظات البحيره وكفر الشيخ ودمياط والغربيه والجيزه والدقهليه. جمعت البيانات خلال مرحله إنتاج البيض وذلك خلال السنوات من ١٩٩٠-٢٠٠٠م وكانت تمثل عشرة مزارع لكل من القطاعين الحكومى والخاص حيث تم دراسة العمر عند ١٠% و ٥٠% إنتاج بيض وكذلك العمر عند قمة إنتاج البيض

وكانت أهم النتائج المتحصل عليها كالآتى:-

كان متوسط العمر للبط البكىنى والمسكوفى والخابكى كامبل عند ١٠% إنتاج بيض هو ٢٥,٣٣ و ٢٦,٩٤ و ٢٥,٠٦ أسبوع وعند ٥٠% إنتاج بيض هو ٣٠,٥٩ و ٣٤,٣٥ و ٢٩,٧٤ أسبوع بينما كان عند قمة إنتاج البيض هو ٣٧,١٦ و ٤٥,٨٨ و ٤٢,٦٨ أسبوع من العمر على التوالي. وأوضحت كذلك النتائج أن العمر عند قمة إنتاج البيض كان يقل للبط البكىنى بمقدار ٨,٧٢ و ٥,٥٢ أسابيع بالمقارنه بكل من البط المسكوفى والخابكى كامبل على التوالي.

كان متوسط العمر للبط المربى فى كل من القطاعين الحكومى والخاص هو ٢٥,٦١ و ٢٥,٣٢ أسبوع عند ١٠% إنتاج بيض وكان ٣١,٦٥ و ٢٩,٧٦ أسبوعاً عند ٥٠% إنتاج بيض بينما كان ٣٨,٤٣ و ٤٢,٥٣ أسبوعاً عند قمة إنتاج البيض على التوالي. الطيور فى القطاع الخاص وصلت لقمة إنتاج البيض متأخره مقارنه بالقطاع الحكومى لأن ذلك يعود لاستخدام القطاع الحكومى لبرامج اضاءه ثابتة.