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REPRODUCTIVE PERFORMANCE OF ADULT FEMALE EMU BREEDER BIRDS REARED IN TROPICAL CLIMATE

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Abstract: The present study was undertaken to assess the reproductive performance of emu breeder birds reared under semi intensive system of management with *adlibitum* feed and water under tropical climatic conditions. The data regarding the egg production, egg weight and hatching performance of emu birds were collected from the perusal of the available records for the three consequent years 2010-2011, 2011-2012 and 2012-2013. The average egg production per bird was 20.5, 23.33 and 16.46 during 2010 – 2011, 2011 – 2012 and 2012 – 2013, respectively. The mean egg weights recorded during the three consecutive years were 584.56 ± 21.43 g, 580.11 ± 19.78 g and 573.83 ± 22.47 g, respectively. The per cent infertility was recorded as 19.51, 16.42 and 18.62 and the per cent hatchability on total eggs was 73.17, 80.0 and 80.0 respectively, during the three consequent years.

Keywords: Emu breeders, egg weight, egg production, hatchability.

Introduction

The emu (*Dromaius novaehollandiae*) is a flightless, exotic bird belonging to the order Ratite which includes the ostrich, rhea, cassowary and kiwi. Emu is the second largest bird in the world after the ostrich. The anatomical and physiological features of emu birds appear to be suitable for temperate and tropical climatic conditions. Emu is a prolific breeder with an annual reproductive cycle, both in the wild and captivity, in which egg-laying and sperm production varies with the latitude and photoperiodism (Malecki *et al*., 1998).

Materials and Methods

The present study was conducted in female emu birds reared at Tamil Nadu Veterinary and Animal Sciences University (TANUVAS) Regional Research Centre, Pudukottai. The data regarding the egg production, egg weight and hatching performance of emu birds were collected from the perusal of the available records for the year 2010-2011, 2011-2012 and

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2012-2013. Total hatchability and fertile egg hatchability were then worked out from the collected data.

Results and Discussion

The data on egg production, egg weight and hatchability performance of emu eggs during three consecutive years (2010 – 2011, 2011 - 2012 and 2012 - 2013) are presented in the Table 1.

Egg production

In the present study, the average egg production per bird was 20.5, 23.33 and 16.46 during 2010 – 2011, 2011 – 2012 and 2012 – 2013, respectively. The egg production recorded per bird at the Regional Research unit, TANUVAS was higher in the year 2011-2012 than in the year 2010-2011 and 2012-2013. This variation in the egg production may have been influenced by the environment, physiology, age and certain management factors related to egg production of emu hens during that period (Boopathi, 2009). The mean egg produced per bird in the present study was similar to that noticed by Davis (1997), Jagatheesan *et al*. (2010), Senthilkumar *et al*. (2010) and Boopathi *et al*. (2012) in the emu hens. Minnaar and Minnaar (1993) and Jeffery (2001) reported higher egg production per bird in the emu hens than that observed in the present study. Szczerbinska *et al*. (2003) opined that as the bird's age advances, egg production increased in emu breeders under captive conditions. Rao *et al*. (2005) reported the highest egg production was 24 per emu hen during the month of November under Indian climatic conditions.

Egg weight

The average egg weights recorded during the three consecutive years were 584.56 ± 21.43 g, 580.11 ± 19.78 g and 573.83 ± 22.47 g, respectively. The average egg weight recorded per emu hen in the present study was within the range observed by Scott (1993), Menezes *et al*. (2001), Jagatheesan *et al*. (2010), Boopathi *et al*. (2012) and Gnanaraj *et al*. (2013) in the emu breeders. Burley and Vadehra (1989), Romanoff and Romanoff (1989) and Minnaar and Minnaar (1993) reported slightly higher egg weight of emu eggs than that of the present study which may be due to the differences that exist in the bio-climatic conditions of rearing emu birds. Szczerbinska *et al*. (2003) reported that the age of the bird influenced the egg weight and it increased as the age of the bird advanced. Szczerbinska (2002) observed that the weight of the emu egg reached a plateau after the first two years of production. Majewska (2001) found that the weight of the eggs varied within a broad range from 390 g after reaching sexual maturity by the birds to about 700 g in successive reproductive seasons.

Considerable variation in egg weights was observed between the eggs laid by the same hen and also between different hens which was similar to that reported by Senthilkumar *et al*. (2014). The variation in the egg weight may be due to genetic character of emu birds (Rao *et al*., 2008), which will be modified by the environment.

Hatching performance

In the present study, the per cent infertility was recorded as 19.51, 16.42 and 18.62, the per cent hatchability on total eggs was 73.17, 80.0 and 80.0 and the per cent hatchability on fertile eggs was 90.9, 95.0 and 98.3 during 2010 – 2011, 2011 – 2012 and 2012 – 2013, respectively. The hatching performance of emu eggs observed in the present study increased during the three consecutive years. The mean per cent of total egg hatchability and fertile egg hatchability recorded was similar to that reported by Jagatheesan *et al*. (2012) and Paramasivam *et al*. (2012) in emu breeders. The incubation period of individual birds indicated a great deal of variability among the birds in the fertility and hatchability. Not many reports are available on the fertility and hatchability of emu eggs. The hatching performance of emu eggs greatly depends on its fertility and influenced by the method of storage, handling during storage, incubation temperature, humidity, turning and air circulation in the incubation (Boopathi, 2009). Hatchability can also be affected by managemental practices like poor nutrition, especially that involving a deficiency or imbalance of minerals and vitamins (Perelman *et al*., 2001), breeder and breeding season (Ipek and Sahan, 2004), low porosity and increased thickness of the eggs (Dzoma, 2010). Jeffery (2001) reported that the per cent hatchability of emu eggs was 50 to 80 per cent and suggested the importance of keeping good records to analyze hatching results and embryonic deaths at various points during incubation.

Conclusion

The present study provides a great insight in providing the data on reproductive performance or emu birds reared in tropical climate. The production performance is influenced by varying factors such as the environment, physiology, age and managemental practices.

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Table 1. Reproductive performance of female emu birds

Parameters	Year		
	2010-2011	**2011-2012**	**2012-2013**
Number of birds laid eggs	4	6	13
Number of eggs laid	82	140	214
Average number of eggs laid per bird	20.5	23.33	16.46
Number of eggs incubated	82	140	145
Number of chicks hatched out	60	112	116
Number of infertile eggs	16	23	27
Infertile per cent	19.51	16.42	18.62
Total hatchability (%)	73.17	80	80
Fertile egg hatchability (%)	90.9	95	98.3
Average egg weight (g)	584.56 ± 21.43	580.11± 19.78	573.83 ± 22.47