

The effect of different lightning programs on reproductive performance of native turkeys

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Introduction Lighting is very important for turkey production, because their life period is longer than poultry (Nixey 1994). One of the important effects of lighting is to change the time of sexual maturity in pullets. Classen *et al.* (1994) concluded that constant light causes an increase incidence of leg problem and metabolic disorders. With lighting programs and lighting intensity, time of sexual maturation can be modified. Because there is little information about lighting programs in native turkey production in Iran, the aim of this research is determining the best lighting program for native turkey production.

Materials and methods The effect of 2 lighting program in growth period and 7 lighting program in production period on native turkey's reproductive performance was surveyed. Turkeys received (7L:17D) and (14L:10D) lighting programs by 36 weeks respectively. 400 female and 80 male turkeys were used on completely randomized design with four repeat, each contain 50 female and 10 male turkeys. The survey of lighting program continued in production period (37- 66 weeks). The groups receiving 7h light during the growth period received 4 different lighting program (12L:12D), (14L:10D), (16L:8D) and intermittent (1L: 3d) for 66 weeks. The group receiving 14h light during the growth period received 3 different lighting programs (14L:10D), (16L:8D) and (1L:3D). This period of experiment was carried on completely randomized design with four repeat, each contain 10 female and 2 male turkeys. Sexual maturity age, egg production, fertility, and hatchability percent and feed intake for every 1day's chick production were recorded.

Results The largest hatchability was in 7L: 17D in growing period and then 14L:10D in production period group, that was significant differences with 14L:10D in growing period and (1L:3D) in production period group ($p<0.05$). The least feed intake for every 1 day's chick production was in 14L:10D in growing and production period group, but there wasn't significant differences between treatments ($p<0.05$). The largest produced chick was in 7 and 14 lights respectively for growth and production period group, but there wasn't significant differences between treatments ($p<0.05$).

Table 1 Number of chicks produced from 100 female turkey, amount of feed intake(kg) for every 1day old chick production and mean of maturity age

| Lighting program | | Number chicks produced from 100 female turkey in every day | Fertility | Hatchability | Feed intake(kg) for chicken production | FI(kg) every chick production | for 1d | Mean of maturity age(day) |
|------------------|--------------------|--|----------------------|----------------------|--|-------------------------------|--------|---------------------------|
| Growth period | Production period | | | | | | | |
| 7L:17D | 1L:3D ¹ | 7.05 | 64 ^c ±20 | 77 ^{ab} ±18 | 54.93 | 7.79 | | |
| 7L:17D | 12L:12D | 9.30 | 72 ^b ±19 | 80 ^{ab} ±14 | 30.29 | 3.27 | | |
| 7L:17D | 14L:10D | 11.94 | 84 ^a ±12 | 85 ^a ±21 | 28.32 | 2.37 | | 259.25 |
| 7L:17D | 16L:8D | 10.55 | 77 ^{ab} ±12 | 79 ^{ab} ±19 | 42.52 | 4.03 | | |
| 14L:10D | 1L:3D | 8.19 | 72 ^{bc} ±26 | 71 ^b ±15 | 22.45 | 2.74 | | |
| 14L:10D | 14L:10D | 10.18 | 62 ^{bc} ±19 | 85 ^a ±15 | 22.48 | 2.21 | | 256.67 |
| 14L:10D | 16L:8D | 10.80 | 78 ^{ab} ±17 | 81 ^{ab} ±17 | 28.94 | 2.68 | | |

1-1L:3D=Intermittent program (1h light:3h dark). 2-7L:17D=continuous program(7h lightness:17h dark)

Conclusion The best FCR was for the groups received 14h L in growth period and 14h D in production period and also in the total production period, the highest egg production percent was for the groups received 7h L in growth period and 14h L in production period

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