Puberty of Volzhskaya Belaya Guinea Fowl and the reproductive qualities

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The research was performed on Volzhskaya Belaya guinea fowl of the maternal line selected for reproductive qualities at the ZAO Mariiskoye pedigree farm of Medvedevo Region (Mari El Republic, Russia).

The reproductive qualities of 635 female fowls with the puberty age of 224 – 265 days were analyzed. The fowls were divided into 6 groups according to the puberty age, defined as the age of the first egg laid. According to this criterion the interval within groups was 7 days (group 1 to 6 defined as resp. age 224 to 230 d, 231 – 237 d, 238 – 244 d, 245 – 251 d, 252- 258 d and 259 – 265 d). The fowls of the first and second groups were defined to be fast ripening, those of the third and fourth groups were mid-ripening, while those of the fifth and sixth groups were considered to be late-ripening. An established difference between the values in the groups was defined according to the t-Student criterion. Fowl reproduction was carried out by artificial insemination. Fowl growing, and egg incubation techniques corresponded to the standards of All-Russia Poultry Research Institute. Reproductive qualities showed that the second and the third group of fowls had better egg-laying qualities. The least egg-laying values were inherent to the layers to be late-ripening which confirms earlier findings in other poultry species. It was evident that fast-ripening guinea fowls have a longer egg-laying cycle and short oviposition intervals, whereas late-ripening fowls are characterized by long intervals and a shorter egg-laying cycle. Egg incubation results showed that eggs laid by fast-ripening fowls of the second group and mid-ripening layers of the third group had maximum fecundation. Fast-ripening layers of the first group and late-ripening fowls of the fifth and sixth group had the least fecundation. In general, hatch values were stable and homogeneous (P>0.05). It can be concluded that fast and mid-ripening guinea fowls of Volzhskaya Belaya breed being 231 – 244 days old by the first egg production had better egg-laying qualities. The second group fowls had the best fecundation and hatch. Thus, while selecting fowls for an increase in reproductive qualities it is recommended to let the layers attain their puberty on the 231 – 244 days of age.

Keywords: guinea fowl; puberty; reproductive qualities

Introduction

Volzhskaya Belaya guinea fowls with early puberty have better egg-laying qualities. At the same time egg-laying qualities of early maturing fowl is not very high and incubation indicators surpass those of with later puberty. Fowls with the same puberty start and finish egg laying simultaneously, thus, the oviposition peak comes to all fowls of the flock and this gives the largest economical efficiency. As a result, the problem of puberty influence upon the productive and reproductive qualities of Volzhskaya Belaya guinea fowls is of great importance. The objective of this trial was to evaluate the effect of puberty on lay performance of Volzhskaya Belaya guinea fowl.
Material and methods

The research was performed on Volzhskaya Belaya guinea fowl of the maternal line selected for reproductive qualities at the ZAO Mariiskoye pedigree farm of Medvedevo Region (Mari El Republic, Russia). The reproductive qualities of 635 female fowls with the puberty age of 224 – 265 days were analyzed. The fowls were divided into 6 groups according to the puberty age, defined as the age of the first egg laid. According to this criterion the interval within groups was 7 days (group 1 to 6 defined as resp. age 224 to 230 d, 231 – 237 d, 238 – 244 d, 245 – 251 d, 252- 258 d and 259 – 265 d). The fowls of the first and second groups were defined to be fast ripening, those of the third and fourth groups were mid-ripening, while those of the fifth and sixth groups were considered to be late-ripening. Fowl reproduction was carried out by artificial insemination. Fowl growing, and egg incubation techniques corresponded to the standards of All-Russia Poultry Research Institute. Measurements included decundation, fertility and hatchability. An established difference between the values in the groups was defined according to the t-Student criterion.

Results and discussion

The reproductive qualities showed that the second and the third group of fowls had better egg-laying qualities (Table 1). The least egg-laying values were inherent to the layers to be late-ripening which confirms earlier findings in other poultry species. It was evident that fast-ripening guinea fowls have a longer egg-laying cycle and short oviposition intervals, whereas late-ripening fowls are characterized by long intervals and a shorter egg-laying cycle. Egg incubation results showed that eggs laid by fast-ripening fowls of the second group and mid-ripening layers of the third group had maximum fecundation. Fast-ripening layers of the first group and late-ripening fowls of the fifth and sixth group had the least fecundation. In general, hatch values were stable and homogeneous (P>0.05).

<table>
<thead>
<tr>
<th>Group Number*</th>
<th>Age (d)</th>
<th>Amount of eggs per season, pieces</th>
<th>Fecundation, %</th>
<th>Hatching, %</th>
<th>Hatch, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>224-230</td>
<td>143.9 ± 6.1</td>
<td>80.0 ± 4.6</td>
<td>75.9 ± 5.4</td>
<td>60.7 ± 5.2</td>
</tr>
<tr>
<td>2</td>
<td>231-237</td>
<td>148.6 ± 8.2</td>
<td>92.7 ± 3.1</td>
<td>71.8 ± 7.5</td>
<td>66.6 ± 7.5</td>
</tr>
<tr>
<td>3</td>
<td>238-244</td>
<td>148.1 ± 2.8</td>
<td>90.4 ± 4.3</td>
<td>64.0 ± 5.2</td>
<td>57.8 ± 6.3</td>
</tr>
<tr>
<td>4</td>
<td>245-251</td>
<td>144.2 ± 4.3</td>
<td>88.3 ± 1.3</td>
<td>68.9 ± 2.2</td>
<td>60.8 ± 2.2</td>
</tr>
<tr>
<td>5</td>
<td>252-258</td>
<td>143.6 ± 7.3</td>
<td>83.3 ± 3.2</td>
<td>74.8 ± 2.4</td>
<td>59.7 ± 3.9</td>
</tr>
<tr>
<td>6</td>
<td>259-265</td>
<td>138.1 ± 3.6</td>
<td>84.7 ± 3.0</td>
<td>70.4 ± 3.7</td>
<td>59.7 ± 3.9</td>
</tr>
</tbody>
</table>

P<0.05  6 vs 1,3,4  1 vs 2  -  -

It can be concluded that fast and mid-ripening guinea fowls of Volzhskaya Belaya breed being 231 – 244 days old by the first egg production had better egg-laying qualities. The second group fowls had the best fecundation and hatch. Thus, while selecting fowls for an increase in reproductive qualities it is recommended to let the layers attain their puberty on the 231 – 244 days of age.