

USING THE BREWERS DRIED GRAIN IN FEEDING OF GROWING QUAILS

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Results of the studies are shown in article on determination of the optimal level of brewers dried grain (BDG) in mixed fodders for growing quails. It is studied parameters of growth and expenses of forages on 1 kg of quails body weight at the age of 1-35 days depending on levels of BDG in mixed fodders. It is established, that use mixed fodder for quails with contents 4 % BDG brings about increase the body weight by 4,9 % and decrease of expenses of a forage at 1 kg of again by 4,3 %.

Key words: *quail, body weight, expenses of forage, mixed fodder, brewers dried grain.*

By promising source of replenishment, fodder includes waste brewing industry. According to national and foreign research, brewers grain are used not only in the fattening of cattle, but also pigs and poultry, including in the diet as a supplementary source of protein [3, 6, 8].

Because in the brewers dried grain contains a large amount of protein, minerals, vitamins B and E, amino acids, and especially linoleic acid [1], it can be included in the composition mixed fodder for poultry. The content of metabolically energy in BDG for quail is 0,816 - 1,028 MJ/100 g, and protein digestibility is 72,6±2,82 % [2].

By to research by scientists from different countries, brewers grain in various aggregate states can be fed to laying hens, broiler chickens, geese and quail. [4, 5, 6, 7]. However, the use of brewers dried grain in feeding of growing quail breeds Pharaoh not studied.

The purpose of the study - to find out the optimal content of dry spent grains in mixed fodder and its effect on productivity and feed conversion at growing quails.

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Materials and methods. The experiment was conducted at the National University of Life and Environmental Sciences of Ukraine and Research laboratory. Object of study is the growing quail of Pharaoh Breed. At the beginning of the experiment, the birds were weighed and randomly allotted to four experimental diets. Each treatment had 100 birds, replicated twice with 50 birds each. The experiment lasted for 35 days and was divided into 2 periods (1-21 and 22-35 days) and 5 sub-periods, each of which lasted 7 days according with the scheme of experiment.

1. Experimental scheme

| Group | Age, days | |
|-------------|--------------------------------|-------|
| | 1-21 | 22-35 |
| | BDG content in mixed fodder, % | |
| Control: 1 | – | – |
| Research: 2 | 2 | 2 |
| 3 | 4 | 4 |
| 4 | 6 | 6 |

Experimental herd growing quail were kept in single-tier cellular batteries. Landing space per head was 73.5 cm², the front feeding – 1.5 cm.

Were fed experimental poultry plaser complete feedstuff, which handed out twice a day (morning and evening), taking into account their residues, and watered – from vacuum drinker.

In the during the experiment was carried out accounting the safety of livestock, weight growth of the quail and calculated absolute, daily and relative increase average of their body weight, and expenses of forages per 1 kg gain.

Results. Depending on the level of brewers dried grain in the fodder varied and body weight of experimental poultry. For example, in the age of body weight daily quail experimental groups did not differ significantly, from 7-day age varied depending on the period of growth (table. 2).

In the 7-and 14-day-old quail live weight vary slightly, but there was a tendency to its increase in quail second group who consumed the mixed fodder with a brewers dried grain 2 %. At 21 days of age, the live weight was in the third group of quail that were fed mixed fodder containing up to 4% of the brewers dried grain. It was larger as compared with the control, the 2nd and 4th groups respectively 2,5 % (p<0,05),

0,3 % and 3,3 % ($p < 0,01$).

2. Quail body weight, g

| Age of poultry, days | Group | | | |
|----------------------|--------------|---------------|----------------|--------------|
| | 1 | 2 | 3 | 4 |
| 1 | 9,37±0,089 | 9,39±0,101 | 9,38±0,099 | 9,39±0,098 |
| 7 | 31,57±0,602 | 30,99±0,528 | 30,86±0,513 | 30,85±0,547 |
| 14 | 88,35±1,010 | 90,45±0,984 | 89,91±1,014 | 88,59±1,068 |
| 21 | 146,91±1,277 | 150,10±1,134 | 150,57±1,266* | 145,77±1,256 |
| 28 | 198,87±1,808 | 204,22±1,819* | 205,98±1,881** | 199,13±1,731 |
| 35 | 235,95±2,603 | 243,59±2,645* | 247,47±2,864** | 237,14±2,876 |

Note: * $p < 0,05$; ** $p < 0,01$ compared with the control group.

Beginning with 28-day-old quail live weight, were fed 2-6 % brewers dried grain in the structure of mixed fodder was great compared to the control. Quail 4th group were fed 6 % brewers dried grain had not significantly more weight compared with control counterparts, while the poultry 2nd and 3rd groups were respectively 2,7 % ($p < 0,05$) and 3 6 % ($p < 0,01$) heavier than the control.

Upon completion the experience of quail third group had more to 4,9% ($p < 0,01$) body weight compared with the control group of poultry.

In accordance with changes in body weight changes observed in quail absolute increases (Table. 3). During the first week of growing experimental quail had similar rates of absolute weight gain. When rearing quails from 8 to 14-day-old absolute increases in the 2nd and 3rd groups were 4,2-5,0 % ($p < 0,01$) more compared to the control.

3. Absolute growth of quail body weight, g

| Age period, days | Groups | | | |
|------------------------------|------------|-------------|--------------|------------|
| | 1 | 2 | 3 | 4 |
| 1-7 | 22,2±0,52 | 21,6±0,43 | 21,5±0,42 | 21,5±0,45 |
| 8-14 | 56,5±0,43 | 59,3±0,47** | 58,9±0,52** | 57,5±0,54 |
| 15-21 | 58,2±0,32 | 59,3±0,28** | 60,3±0,35** | 56,7±0,27 |
| 22-28 | 52,0±0,69 | 54,1±0,74* | 55,4±0,69** | 53,4±0,56 |
| 29-35 | 37,1±0,86 | 39,4±0,91 | 41,5±1,03** | 38,0±1,17 |
| For the period of experiment | 226,5±2,52 | 234,1±2,55* | 238,0±2,77** | 227,6±2,78 |

Note: * $p < 0,05$; ** $p < 0,01$ compared with the control group.

In the growing period of 15 to 21-day-old poultry who consumed the structure mixed fodder 2-4 % BDG had large absolute increases to 1,9-3,6 % ($p < 0,01$) compared with counterparts in the control group. Among the experimental quails at the age of 22-28 days of absolute increases were the lowest in the control group. In the 2nd, 3rd and 4th groups relative to the control they were higher, respectively 4,0 ($p < 0,05$); 6,5 ($p < 0,01$) and 2.7 %. During of growing quails aged 29-35 days were characterized by high absolute growth birds of group 3, in which it was 11,9 % ($p < 0,01$) higher compared with the control. In other experimental groups was noted that quail do not differ significantly from the control group analogues.

During the whole period of experience quails that received in mixed fodder 2 and 4 % BDG, respectively had 3,4 ($p < 0,05$) and 5,1 % ($p < 0,01$) large absolute increases in comparison with those who are not in the structure mixed fodder were fed BDG.

Similar regularity is observed in quails relatively their average daily gain in body weight (Fig. 1).

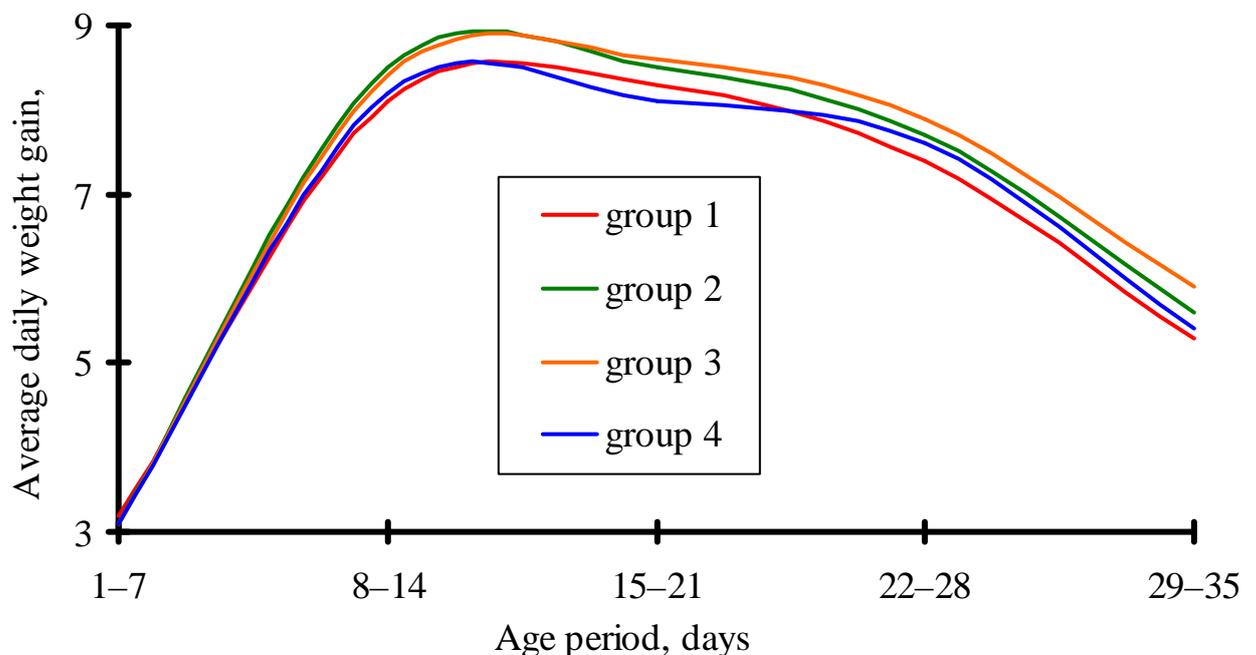


Figure. 1 Graphical model changes daily weight gain of quails

It was revealed that quails third group were fed as part of mixed fodder 4 %

BDG, starting from the second age period was dominated by daily gain analogues control group. It should be noted that the quail 2nd and 4th group were fed with mixed fodder containing 2 and 6 % BDG in the 22-35-day-old also had high average daily gains compared to the control.

On the average for the entire period of growing daily average weight gain of young research groups was respectively 4.1 ($p < 0.01$), 6.2 ($p < 0.001$) and 1.0 % higher compared to the levels in a control group of poultry.

Depending on the intensity of growth quails at different levels BDG in mixed fodders was observed changes in expenses of fodder per unit of growth of live weight (Table. 4).

4. Expenses of fodder per 1 kg increase in body weight of quail, kg

| Age period, days | Groups | | | |
|------------------|--------|-------|-------|-------|
| | 1 | 2 | 3 | 4 |
| 1–7 | 1,416 | 1,442 | 1,439 | 1,461 |
| 8–14 | 1,779 | 1,725 | 1,730 | 1,783 |
| 15–21 | 2,382 | 2,443 | 2,448 | 2,491 |
| 22–28 | 3,738 | 3,620 | 3,576 | 3,696 |
| 29–35 | 6,636 | 6,334 | 6,075 | 6,527 |

In the first age period were low cost feed quails control group at 1,6-3,1% less compared to expenses of fodder in the experimental groups. Between 8-14 days of growing, the lowest expenses of fodder quails were in group 2, which is 3 % less than in the control. Quails 15-21-day-old, were fed mixed fodder without a BDG characterized less by 2,5-4,1 % of expenses of fodder compared with those were fed BDG.

In the 22-28- and 29-35-day-old were the least expenses of fodder quails third group were fed compound feed in 4 % BDG, that respectively 4.3 and 8.5 % less than the control. It should be noted that in these age periods of the high expenses of fodder were quails in the control group.

The expenses of fodder per 1 kg of live weight quails for the entire growing period are shown in Figure 2.

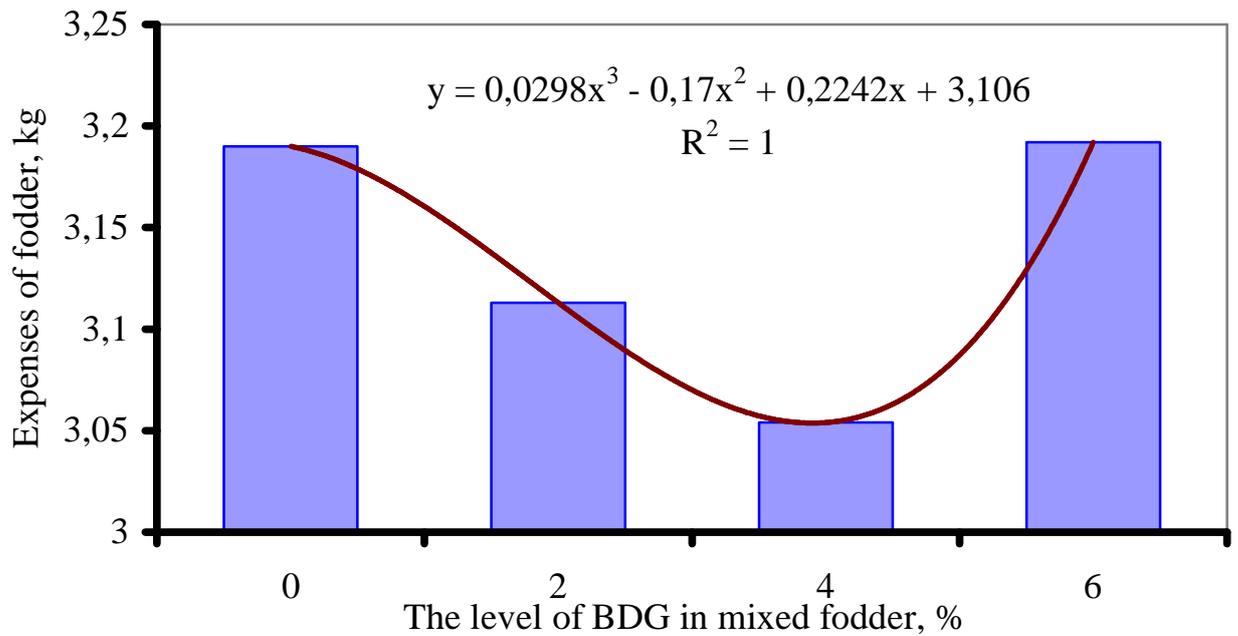


Figure. 2 Relationship between expenses of fodder and the level of BDG in mixed foders

Calculating the cost of feed points out that quail were fed mixed fodder containing up to 4 % BDG feed spent 4.3 % less in comparison with analogues control. The highest expenses of fodder were quails who consumed mixed fodder with the content of 6 % BDG.

The relationship between the cost of feed and BDG content in mixed fodder, which is described by a polynomial curve with a high coefficient of reliability of approximation ($R^2 = 1$). Calculated regression equation enables predict the cost of feed, depending on the level of BDG in mixed foders, which is were fed young pharaoh quails breed.

Conclusion. Experimentally proved the feasibility of using a BDG in mixed foders for young quails meat direction of productivity. Using the structure mixed fodder 4 % BDG increases in body weight quails of 4.9 %, average daily gain of 6.2 % and a decrease in feed expenses per 1 kg of live weight gain of 4.3 %. The use of feed with 6 % BDG had no negative impact on the growth quails meat direction of productivity.

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ВИКОРИСТАННЯ СУХОЇ ПИВНОЇ ДРОБИНИ У ГОДІВЛІ МОЛОДНЯКУ ПЕРЕПЕЛІВ

Т. А. ГОЛУБЄВА

Наведено результати досліджень з визначення оптимального рівня сухої пивної дробини (СПД) в комбікормі для молодняку перепелів породи фараон. Вивчено показники росту та витрати комбікорму на 1 кг приросту живої маси перепелів віком 1–35 днів залежно від рівня СПД у повнораціонних комбікормах. Встановлено, що використання комбікорму для перепелів з вмістом 4 % СПД сприяє збільшенню живої маси на 4,9 % та зниженню витрат корму на 1 кг приросту на 4,3 %.

***Ключові слова:** перепела, жива маса, витрати корму, комбікорм, суха пивна дробина*

ИСПОЛЬЗОВАНИЕ СУХОЙ ПИВНОЙ ДРОБИНЫ В КОРМЛЕНИИ МОЛОДНЯКА ПЕРЕПЕЛОВ

Т. А. Голубева

Приведены результаты исследований по определению оптимального уровня сухой пивной дробини (СПД) в комбикорме для молодняку перепелов породы фараон. Изучены показатели роста и затраты комбикорма на 1 кг прироста живой массы перепелов в возрасте 1-35 суток в зависимости от уровня СПД в полнорационных комбикормах. Установлено, что использование комбикорма для перепелов с содержанием 4 % СПД способствует увеличению живой массы на 4,9 % и снижению затрат корма на 1 кг прироста на 4,3 %.

***Ключевые слова:** перепела, живая масса, затраты корма, комбикорм, сухая пивная дробина.*