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USE OF SORGHUM GRAINS IN COMPOUND FEED PRODUCTION FOR AGRICULTURAL FOWLS

В статье приведены результаты научно-хозяйственных опытов по скармливанию бройлеров комбикормом, содержащим зерна сорго в количестве 25% взамен зерна пшеницы.
Ключевые слова: сорго, пшеница, антипитательные вещества, комбикорма для сельскохозяйственной птицы, переваримость питательных веществ комбикормов

Мақалада еттік балапандарды бидай дәнінің орнына құрамында 25% құмай жүгері дәні бар құрама жеммен азықтандыру бойынша ғылыми-шаруашылық тәжірибелер нәтижелері келтірілген.
Түйінді сөздер: құмай жүгері, бидай, сіңімділігі нашар заттар, ауыл шаруашылығы құстарына арналған құрама жем, құрама жемнің қоректік заттарының қорытылуы

The article presents results of the scientific and economic experiments on feeding chickens with feed containing sorghum grain in the amount of 25% instead of wheat.
Key words: sorghum, wheat, anti- nutritional substances, feedingstuffs for poultry, the digestibility feed nutrient substances

The grains of unconventional crop in a poultry industry throughout Kazakhstan are used in deficiency. At the same time, for example, sorghum does not differ from many other essential corps in exchange

interaction energy. But, there is a negative factor which limits its usage in fowl feeding - that is an existence of antinutrients cyaneglycosides and tannins. First group contains hydrocyanic acid, which appears because of violation of grain storage conditions (high temperature and moisture). Hydrocyanic acid is a toxic which blocks a cellular breathing, mixing with ferrum of hemoglobulin it turns into ferrihemoglobin which do not have a function to oxygenate. Tannins -compound components of aromatic acids, which connect proteins (by tanning property) and decrease digestibility of feed simple proteins. Thus, each percent of tannin in over permissible rates in a diet decreases this figure up to 6% at monostomachal animals. Therefore it was important to determine the rate of grain sorghum in the input feed instead of wheat and to prove the effectiveness of its feeding in growing broilers.

The experiment used a mixture of red-grained and white-grained sorghum and IV class wheat. Chemical analysis of these crop revealed that the crude protein mixture exceeded this figure in the grain of wheat, but for account of crude fat and low crude fiber content in dry matter prototype was slightly higher in metabolizable energy content than in wheat (Table 1).

According to literature data, the rate of entry of sorghum in feed for broilers varies from 5 to 35%. Its further increase leads to an increase of tannins and glycosides. Therefore, in an experiment there

Table 1

Chemical analysis of sorghum and wheat cultivar mixture

Crop name	Dry matter, %	Content,%					Meta-bolizable energy, MJ/kg
		crude protein	crude fat	crude fiber	crude ash	NES	
Mixture of red-grained and white-grained sorghum	84,52	13,94	3,36	2,18	1,18	79,02	13,86
Wheat	83,84	11,82	2,15	3,12	1,63	81,72	13,62

were compared options with 5 -, 15 -, 25 - and 35%-s of his entry in the feed.

The test was carried out on the bird "Cross 5 Change" in the poultry sector of JSC "Kaz Ros-Broiler" (g.Chundzha, Almaty oblast). Duration of experiment lasted for 40 days. Chickens were kept in

Table 2

Consistence and nutrient value of a feed, %

Components	Groups				
	control	1st tested	2 nd tested	3rd tested	4th tested
Wheat	50	45	35	25	35
Sorghum	–	5	15	25	15
Barley	10	10	10	10	10
Sunflower bagasse	12	12	12	12	12
Meat-and-bone meal tankage	5	5	5	5	5
Fish-meal	4	4	4	4	4
Soy oil meal	7,5	7,5	7,5	7,5	7,5
Broad yeast	2	2	2	2	2
Vegetable oil	6	6	6	6	6
Premix	1	1	1	1	1
Whitening	2	2	2	2	2
Salt	0,5	0,5	0,5	0,5	0,5
Total	100	100	100	100	100
Nutrient value of 100gr feed, gr,					
Exchangy, MJ	1,315	1,312	1,311	1,334	1,332
Crude protein	22,82	22,91	22,97	22,99	23,02
Crude fiber	4,83	4,42	4,23	3,94	3,88
Crude fat	8,74	8,85	8,94	8,98	8,98
Calcium	1,34	1,36	1,35	1,37	1,36
Phosphorus	1,17	1,15	1,12	1,10	1,12
Natrium	0,18	0,19	0,19	0,20	0,18
Lethal protein	1,33	1,35	1,37	1,34	1,35
Methionine	0,52	0,54	0,55	0,54	0,54

Table 3

Digestibility of nutrient feed, %

Groups	Digestibility coefficient						
	dry matter	crude ash	органиор-ganic material	crude protein	crude fiber	crude fat	nitrogen-free extract
Control	75,8	46,4	79,8	91,2	28,1	85,4	77,5
1st tested (5% of sorghum)	77,3	45,5	80,5	91,3	27,5	86,8	78,4
2nd tested (15% of sorghum)	76,8	46,7	80,2	91,1	25,6	86,4	78,4
3rd tested (25% of sorghum)	78,8	48,2	82,4	91,5	27,9	87,8	80,2
4th tested (35% of sorghum)	78,0	47,8	81,8	91,4	28,2	87,8	80,6

cages, fed ad libitum, fed - according to the norms. According to the content of major nutrients (Table 2) diets conformed to the recommendations for feeding poultry (2004). Putting in place of wheat a sorghum in diets confirmed that the tested samples are not inferior to the control feed on digestibility of nutrients (Table 3).

Table 4

Productiveness of chicken-broilers and feed expenses

Indicators	Groups				
	Control	1st tested (5% of sorghum	2nd tested (15% of sorghum)	3rd tested (25% of sorghum)	4th tested(35% of sorghum)
Middle live weight of broiler, gr:At the beginning At the end	1732169	1742180	1722174	1742185	1732183
Increase of weight during experiment , gr	1998	2003	2005	2012	2010
Average increase of weight, gr	56,0	57,0	56,8	57,5	57,1
For 1 kg increase in weight there was used, kgprotein, g	1,94420	1,92418	1,93416	1,91416	1,93416

The peculiarity of the digestion of nutrients of a test feed is a high availability of nutrients, which were resulted in the effective growth of chickens - broilers (Table 4). The cost of feed and protein per 1 kg increase in body weight was almost identical in all groups.

The experimental results showed that it is possible to replace a wheat in the diets of chickens - broilers with sorghum feed grain in the amount of 25% by weight of feed.

Literature

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