ELECTROPROCESSING CORNMEAL TO IMPROVE ITS NUTRITIONAL VALUE

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The efficiency of production of poultry products is largely dependent on the availability of good fodder, as well as modern technologies used in the production of animal feed.

The main component of feed for poultry breeding - a cornmeal, which is a disadvantage of low digestibility. In this connection, great importance is the technology of preparation of feed grain for feeding, aimed at improving their biological value, to better meet the current demand for poultry in energy, nutrients and bioactive substances. Such pre-treatment may be implemented by any of the following methods to influence the grain: mechanically, thermally, hydrothermally, thermomechanical et al. And as you can pull it off in the industrial production of feed (feed mills), and in the preparation center poultry farms.

There are currently more than two dozen different ways to prepare feed grain for feeding.

Most of the existing technologies for processing of coarse grains is based on the principles of an external energy supply, in which the penetration of heat into the material occurs by conduction and teplodiffusion. Intensification of grain handling having a low thermal conductivity, is usually carried out an increase in the temperature gradient, which leads to a decrease in the quality of food, increase energy, labor and material costs. All methods of treating the starting feed material

characterized by high consumption of electric power (120 to 300 kW • h / t) since it is consumed in heating raw materials by indirect energy supply.

The need to improve the processing of grain, the difficulties with fuel and heat agricultural production, modern trends in the development of energy-saving technologies cause the application of electro-technological methods of processing raw materials before feeding.

The purpose of research - improving the nutritional value of feed grains with the identification of the most effective modes of its electric treatment.

Materials and methods of research. Based on problem research laboratory "bioenergy research and effective electrotechnology" Volgograd GAU an experimental study of the essence of processes for electrophysical processing of feed grain to improve its nutritional value. Grain forage subjected feed treatment due to exposure to electrical pulses of high voltage and AC mains frequency. It is known that the grain mass has a high-impedance, so to increase the electrical conductivity of the grain mass, in addition to processing it in a dry form, moistened with a solution of bishofit. Being a natural mineral, it is used in the diets of animals and poultry as a clean mineral supplements that enhance the value of ongoing research. Block diagram of a research facility consisted of the following elements: a source of AC power frequency, high voltage transformer, kilovoltmeter, ammeter, rectifier, capacitor cosine controlled gap and the experimental cell. In the course of experiments on the electric pulse processing of feed wheat basic, controlled and supported parameter is the energy processing. During the experiments, the pressure between the electrodes on the weight of the grain in the experimental cell is maintained constant. The change in temperature after electroprocessing grain fixed electronic thermometer. The temperature of the treated mass was varied slightly within t = 0 ... 12 ° C.

When processing of feed grain AC power frequency controlled value of the applied voltage to the electrodes and the current flow. Block diagram of the installation is almost copied the pattern of the previous experience, only to reflect changes - were excluded from the blocks that form the electrical impulses. Temperature after treatment with wheat current industrial frequency also did not change significantly.

Stern dignity of any vegetable raw materials measured by its impact on the productivity of animals, in this case of poultry.

On the basis of laboratory and clinical housing Volgograd GAU to study the effect of feed processed electrophysical methods, the productivity of poultry were conducted scientific - economic experiments on broiler chickens and quail. The purpose of zootechnical research was to study the nutritional value of grain before and after electrophysical handling.

For the experiment on broiler chickens cross "COBB-500" was formed six groups of 35 animals each. Duration of the experiment was 39 days. Processed grain wheat electricity injected into the animal feed from the tenth day of the experiment. The control group of chickens - broilers received feed containing whole grains of wheat; The second prototype - compound feed containing wheat grain treated with current industrial frequency in dry form with specific energy processing 2.5 kJ / kg; The third prototype - compound feed containing wheat, soaked with water and treated with current industrial frequency energy density processing 2.5 kJ / kg; Four experienced - feed containing wheat grain soaked and processed bishofit current industrial frequency with specific energy processing 2.5 kJ / kg; fifth Experience - feed containing wheat grain soaked bishofit and treated with pulsed current energy density processing 40.7 kJ / kg; Six experienced - feed containing wheat grain soaked bishofit and treated with pulsed current energy density processing 65.1 kJ / kg.

For scientific and economic experience in the quail was formed five groups of 40 animals each. The control group received feed containing whole grains of wheat, barley, oats and peas, the second prototype - compound feed containing wheat, barley, oats and peas without treatment, soaked in 1.5% sodium Bishofit third pilot - feed containing corn wheat, barley, oats and peas, soaked in 1.5% sodium bishofit treated with AC contact with specific energy processing 2500 J / kg, the fourth pilot - feed containing wheat, barley, oats and peas, soaked in 1.5 % solution bishofit treated with electric pulses with energy density processing 52.65 kJ / kg, the fifth pilot - feed containing wheat, barley, oats and peas, soaked in 1.5% sodium bishofit treated with electrical impulses to specific processing energy 2.5 kJ / kg.

The results of research. Studies have shown that the best results in weight gain

in experience on broiler chickens and quail were observed in the groups that were administered in feed grain soaked bishofit and treated with pulsed current energy density processing 65.1 kJ / kg (broiler) and 2.5 kJ / kg (for quail).

For slaughter, at the age of 39 days the average live weight of broiler chickens in the top six experimental group was 2274 g, 174 g or 8.3% more than in the control group, in which the average live weight was 2100 birds. In the other groups, the increase in body weight compared with the control was at the level of 2,04-5,4%. An important indicator of meat production, as is the attitude of the edible parts of the carcass to the inedible parts. In the sixth experimental group, the figure was 1.88. The lowest rate was in the first control group - 1.52.

Evaluate the effectiveness of the use of feed, which consists of grain mixture treated electrophysical methods, and you can feed cost per unit of output. In the control group, the figure was 1.95 kg of feed per kg of live weight gain in the top six experimental group - 1.67 kg.

The average live weight of quail to the slaughter in the control group was - 250.3 g, which is 5.23% less than the best in the fifth experimental group, in which the weight of the birds was 263.4 g

Conclusions

Criterion for the correctness of poultry feeding is Compliance intensity of growth and body weight is an important indicator of growth and development, one of the main economic-useful signs of their meat productivity.

Experimental evidence suggests that best results were obtained when using in feeds for broiler chickens grain treated pulsed current and pre-wetted bishofit solution (2%) for processing specific energy 65.1 kJ / kg, thus improving the weight gain 8.3% compared to the control at a lower cost per unit of product feed. For quail best result was obtained in the fifth experimental group, where the increase was observed in 5.23% higher than in the control group. In this group of birds received feed containing wheat, barley, oats and peas, soaked 1.5% solution bishofit treated with electric pulses with energy density processing 2.5 kJ / kg.

All of the above leads to the conclusion about the prospect of putting into practice the poultry processing of feed grain part of electrophysical methods.