

## USE OF ALTERNATIVE SOURCES OF COMPONENTS IN COMPOUND FEED FOR POULTRY

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*Saturation of feed rations for different age groups of birds should ensure the ability of animals to perform their industrial functions. The main task is to increase the effectiveness of the use of components in the diet and make the best quality feed. When substantiating the principle of compound feed production during its manufacture and the formation of feed for birds, it is necessary to take into account the mutual influence of many structural, kinematic and nutritional indicators, taking into account the needs of birds and the physical and mechanical properties of the processed material in the manufacture of feed. Currently, the use of corn stalks in the manufacture of feed for different types of animals occurs in two main areas: - preservation of either whole or crushed rods, requiring the introduction of several methods of preliminary preparation, which should include drying, ensiling, chemical preservation, active ventilation, as well as natural or artificial air cooling, and others; - production of crushed grain - core mixture from pre-threshed raw materials.*

**Key words:** corn, feed, chopping, birds, rod.

**Formulation of the problem.** As an object of research, both grain and constituent parts of corn were chosen, which after processing can be used both independently and as part of the prepared feed mixtures. High-quality preparation of raw materials for the formation of fodder mixture requires the use of shredders for grinding both parts and grain of corn. Taking into account the properties of the plant and the technological parameters of the equipment is a problem that needs to be solved.

**Analysis of recent research and publications.** According to anatomical features, a corn kernel consists of an endosperm, a shield, an embryo and a shell, while it is characterized by a different consistency. The germ makes up about 15% of the grain. The covering of the kernel contains fruit (pericarp) and seed (spermoderm) shells, which change significantly during ripening [3].

The rod is made up of 3 parts:

- core;
- trunk;
- scales.

The names differ both in structure and technological properties. The outer part of the studied sample is covered with a layer of scales, which are cells for corn kernels that resemble honeycombs. With the anatomical structure, the vascular bundles of the lignified parenchyma contain two cylinders that fit into each other and are the

basis of the trunk under consideration. At the same time, the outer part and the trunk make up about 98% of the indicators of the total mass of the raw material under consideration [2].

The core of the rod is 2% of its mass and is characterized by a porous, macroscopic substance of white color. When moistened with water, the core swells and after the drying process, its volume increases by several times, compared to the original state, they are characterized by elastic properties. The conducted studies [1] established that at a pressure of 0.05 MPa, the parenchyma does not regain its original shape, but during a change in humidity (20%), the core swells and assumes its former dimensions. The scales are compressed at a pressure of 0.7 MPa and with a humidity of  $W = 25\%$ , and after removing the load, the scales regained their shape, at  $W = 18\%$  most of them lost their elasticity, and at  $W = 9\%$  they became fragile. Corn stalks in the early stage of development are grassy, soft and juicy, and at the end of the growing season they become strong and hard. The height of the stems ranges from 0.6 to 5.0 m with a diameter of 2 to 7 cm, and significant strength is associated with the presence of sclerenchyma rings [4].

**Presenting main material.** Corn raw material with kernels and constituent parts was chosen as the object of research. The need for use is related to the grinding of the rods and is determined by the task of obtaining linear dimensions of the crushed rods, which make it possible to provide a fodder base for fattening birds. The analysis of the obtained data shows that, in general, the raw materials contain polysaccharides up to 70%, and according to the content of this indicator, they surpass other plant raw materials or are equivalent in terms of their content, so the corn stalk can be attributed to the pentose-containing type, and its monosaccharide composition of polysaccharide hydrolysates is presented :

- Galactose;
- Glucose;
- Xylose;
- arabinose.

Thus, the expediency of using all corn components containing a significant amount of sugars for the production of bird feed is confirmed. Studies show that the main nutritional value of feed is that it contains 38.4 feed units. per 100 kg are superior to many types of feed components used for fattening animals:

- 1.6 leguminous grass and cereal grass;
- red clover at 1.9;
- alfalfa in 1.8;
- oat straw 1.2;
- spring wheat 1.8;
- clover and alfalfa hay at 1.1;
- corn silage in 1.9;
- sunflower in 2.1;
- potatoes in 1.3;
- carrots in 2.7.

They are also superior to animal feed. The obtained data on the chemical composition and nutritional value of the studied raw materials allow us to recommend the use of all components of corn in the process of fodder production, subject to compliance with the requirements for the granulometric composition of the products of their grinding.

Due to the fact that the purpose of the work is to study the possibility of using corn stalks to obtain grain of the required granulometric composition, it is necessary to analyze the initial state of the stalks. The results of experimental studies of the granulometric composition of rods characterized by length and average diameter. It was established that, according to measurements, the length of the rods ranged from  $136.9 \pm 48$  mm with a standard deviation ( $SL = 20.98$  mm), and the diameter varied from 18.34 to 27.94 mm ( $SD = 2.39$  mm). Therefore, for use in the fattening diet when solving the task, it is expected to achieve a degree of linear grinding within the range of 0.5...1.0 mm, based on the natural geometric dimensions of the rods, which provides the physiological needs of birds

**Conclusions.** On the basis of the conducted studies, it is possible to recommend the degree of grinding of corn grain and plant components for poultry feeding at the level of 0.5...1.0 mm. The recommended value for use is to include in compound feed together with the grain component of this component up to 50 percent.

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## **ВИКОРИСТАННЯ АЛЬТЕРНАТИВНИХ ДЖЕРЕЛ КОМПОНЕНТІВ В КОМБІКОРМАХ ДЛЯ ПТАХІВ**

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*Насичення раціонів кормів для різних вікових груп птахів мають бути такими, що забезпечать здатність тварин виконувати їх промислові функції. Основне завдання – це збільшити ефективність застосування компонентів в раціоні і зробити кращу якість комбікорму.*

*При обґрунтуванні принципу виготовлення комбікорму при його виготовленні та утворення корму для птахів необхідно враховувати взаємний вплив багатьох конструктивних, кінематичних та живильних показників з урахуванням потреб птахів та фізико-механічних властивостей оброблюваного матеріалу при виготовленні корму. В теперішній час використання стрижнів кукурудзи при виготовленні кормів для різних типів тварин відбувається за двома основними напрямками це:*

- консервація або цілих, або здрібнених стрижнів, яка потребує впровадження кількох способів попередньої підготовки до яких слід віднести сушіння, силосування, хімічну консервацію, активну вентиляцію, а також природне або штучне охолодження повітрям і інші;*
- виготовлення здрібненої зерно - стрижневої суміші з сировини яка попередньо обмолочується.*

**Ключові слова:** кукурудза, корм, подрібнення, птахи, стрижень.