

## PREPARATION AND BASIC TIPS FOR USING CORN COBS FOR ANIMAL FEEDING

I. Dudarev, S. Uminsky, N. Maslych , L. Knaub

*Odesa State Agrarian University*

*The materials of the article are aimed at reviewing the problems and basic principles of preparing corn cobs to increase the efficiency of the use of fodder during animal fattening. In the work performed, it was established that the effective use of corn stalks in feed mixtures requires appropriate preparation of the raw material, namely its grinding to achieve a granulometric composition with the provision of reducing energy consumption for the grinding process. The materials of the article provide data on general recommendations for the preparation of raw materials. The preparation of raw materials involves several technological operations, but the most responsible is the operation of achieving the size of feed particles. This is because there are two opposing views on their use: on the one hand, a finer grind improves digestibility, and on the other hand, coarse ingredients are necessary for the natural functioning of the gastrointestinal tract (GI). As in most animal experiments with feed, the effect of feed particle size is measured on such parameters of live animal performance as feed intake and digestion time, body weight and specific feed utilization. However, a possible change in particle size should also take into account aspects of the manufacturer, such as plant efficiency (eg energy consumption and productivity), as well as changes in feed quality parameters (eg pellet quality) and classification of feed ingredients.*

**Key words:** *fodder, preparation, animals, grinding, composition.*

**Formulation of the problem.** From evaluation of raw materials, preparation for use in feed formulations and solutions to increase productivity - we can increase profitability and product quality, as well as achieve positive animal weight gain.

**Analysis of recent research and publications.** There are some discrepancies in the recommendations on the degree of crushing of the ZSS (grain-rod mixture). Thus, modern research proves that the ground product should contain approximately 80%-81% pieces with a size of 2 mm, and the rest should be with particles of 2...5 mm. Modern studies [1,3] recommend the presence of particles up to 2 mm in size - at least 60%, and in accordance with zootechnical requirements, the grain-stem mixture must be ground so that particles up to 2 mm (for pigs) and 4 mm (for cattle livestock) was at least 70%. The results of researchers [1,3,4,5] show that the presence of hard, sharp pieces of rods larger than 2.0 mm in the ZSS causes damage to the walls of the gastrointestinal tract in animals, therefore, when fattening pigs, the size of crushed particles is recommended within 0.6...1.3 mm. The technology of preparation of a grain-stem mixture from cobs with wrappers (ZSSO) is also used, in which the cobs are taken and preserved with the wrapper in a crushed form. It was established [3,5] that silage from crushed cobs with wrappers has a high feed value - about 720 feed

units (7.4 MJ of net energy) per 1 kg of dry matter. In terms of energy, 1.5 kg of such silage with the addition of 0.2 kg of soybean meal can replace 1 kg of compound feed for high-performance feeds. In fodder production, leaf-stem mixture (ZSSL) is also used, which is obtained by mowing the upper part of the corn plant in the phase of waxy grain maturity at the height of the cob attachment, followed by grinding. The preparation of such fodder requires grinding the corn mass into particles of 5...7 mm in size, and the nutritional value of 1 kg of dry matter of ZSSL is 1.5...1.10 fodder unit for ruminants, animals [3]. It has been established that when harvesting corn for cattle feed, the largest output of fodder units from a unit of area can be obtained when harvesting the biological mass of corn in the phase of waxy ripeness with its finer grinding than for conventional ensiling. Along with the wide use of rods in a mixture with other components of the corn plant, they are also used separately to obtain coarse fodder [3,5]. Only good-quality, mold- and rot-free corn stalks should be used for feeding animals. Usually they have a moisture content of 14...16%, they are well stored under canopies and in other light-type rooms. Rods with higher humidity are also suitable for fattening, but they quickly mold and rot when stored. It is recommended [2,3] to enrich the rods with urea before feeding, while one part of powdered urea is dissolved in 9...10 parts of molasses and diluted with water (one part of the solution is 2...3 parts of water). Rods prepared in this way are used for 6...8 kg of dairy cows, 8...10 kg for fattening cattle, 4...5 kg for young cattle over one year old, 3... .4 kg, for sheep - 0.5. 1.0 kg per head per day. For wide application, it is possible to recommend the technology of preparation and feeding of corn cob rods, when the rods are crushed on a crusher, moistened with a solution of molasses (four parts of water with urea are taken for one part of molasses), thoroughly mixed and moistened for several hours, during which the particles of the rods with high hygroscopicity, are saturated with the solution [2,3]. Before feeding livestock, crushed sugar beet is added to the mixture. Cobs of corn in their natural form and coarsely ground are poorly eaten by animals due to the presence of a wooden cylinder, so they should be ground into flour before use. Due to the fact that in dry form flour from corn cobs is eaten reluctantly by animals, before feeding cattle it is recommended to moisten it with a 15-20% solution of molasses at the rate of 50 kg of solution per hundredweight of flour, adding the necessary amount of table salt, cobalt and urea. In the absence of molasses, the flour from the rods is flavored with a solution of table salt in water at the rate of 30. 50 g per head per day [3].

**Table 1. Content of fodder mixtures for cattle, %.**

Components,%	Receipt			
	1	2	3	4
straw	42	-	-	-
The rods are chopped	40	80	80	88,5
Bran, grain waste	5	8,5	13,5	-
meal	5	5	5	-
molasses	5	5	-	9
urea	1,5	-	-	1,5
chalk	1	1	1	1
salt	0,5	0,5	0,5	0,5

Recommended for cattle recipes, 1 2...1 5 months, the following proportions of the mixture (Table 2) using corn cob rods. The lack of protein is recommended to be filled with the use of urea. When fattening steers, full-fledged fodder mixtures are also used, the composition of which includes corn stalks in the amount of 1..2% of the total mass of the mixtures. When fattening cattle, corn bran is sometimes used, obtained by grinding food corn, which also partially includes flour from ground cobs.

Table 2. **Proportions of feed mixtures for cattle, using crushed corn cobs, kg.**

Component	in cities,%		
	silage	pulpy	bard
cob rods	4	5	6
corn silage	18	6	-
beet pulp	-	35	-
the bard	-	-	50
sugar beet	5	-	5
concentrates	1,5	1,0	1,0
salt is cooked	0,08...0,10	0,1	0,1
tricalcium phosphate	0,06...0,08	0,08...0,10	-
chalk	-	-	0,08
feed molasses	-	1, 0	-

The analysis of the obtained data made it possible to establish that the crushed rods of corn cobs with a thickness of 1-5 mm can be used in the production of the mixture. The expediency of their use is due to the fact that with the current shortage of fodder, the use of corn cob rods allows to additionally obtain 350...380 fodder. unit from 1 hectare of corn sowing, which significantly increases the reserve of coarse fodder in the country's fodder balance. Along with this, the main condition for the effective use of rods when feeding animals is their high-quality grinding. Based on the data available at this time, the necessary degree of crushing of rods for the purpose of animal fattening can be recommended within 1...5 mm with the content of the fraction of particles up to 4 mm in size at least 70% and with the necessary observance of the condition of rational consumption.

**Conclusions.** It was established that when using crushed corn stalks with a thickness of 1-5 mm, and introducing them into the diet of cattle, an increase in the weight of cattle is observed.

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## ПІДГОТОВКА ТА ОСНОВНІ ПРИЦИПИ ВИКОРИСТАННЯ КУКУРУДЗЯНИХ КОЧАНІВ ДЛЯ ВІДГОДІВЛІ ТВАРИН

І.Дударев ,С. Уминський ,Н. Маслич ,Л. Кнауб

*Матеріали статті спрямовані на огляд проблем та основних принципів підготовки кукурудзяних початків для підвищення ефективності використання кормів під час відгодівлі тварин. У виконаній роботі встановлено, що ефективно використання стрижнів кукурудзи у складі кормових сумішей потребує відповідної підготовки сировини, а саме її подрібнення для досягнення гранулометричного складу з забезпеченням зменшення енерговитрат для здійснення процесу подрібнення. У матеріалах статті наведено дані щодо загальних рекомендацій з підготовки сировини. Підготовка сировини передбачає декілька технологічних операцій, але найбільш відповідальною є операція досягнення розміру частинок кормів. Це пояснюється тим, що існує два протилежні погляди на їх використання: з одного боку, більш дрібний помел покращує засвоюваність, а з іншого боку, грубі інгредієнти необхідні для природного функціонування шлунково-кишкового тракту (ШКТ). Як і в більшості експериментів на тваринах з кормами, вплив розміру частинок корму вимірюється на такі параметри продуктивності живої тварини, як споживання корму і час перетравлення, маса тіла і питомий використання корму. Однак можлива зміна розміру часток має також враховувати аспекти виробника, такі як ефективність установки (наприклад, споживання енергії і продуктивність), а також зміни параметрів якості комбікорму (наприклад, якості гранул) і класифікації кормових інгредієнтів.*

**Ключові слова:** корм, підготовка, тварини, подрібнення, склад.