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ASSESSMENT OF NUTRIENTS IN MAIZE AND THEIR USE IN A RECIPE FOR ANIMAL FEEDS

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The main objective of feed production is to saturate the feed market with appropriate products in order to provide feed for the livestock sector of the agro-industrial complex, as well as help to adapt to increasingly complex demands in consumer markets and encourage farmers to make the most of feed to increase animal productivity. Providing feed with cheaper, more efficient and more rational technology is the goal of modern feed manufacturers for all animals. It is necessary to provide the best food for the better condition of animals of different groups and conditions. Innovative and well-grounded technologies have been introduced into the production, it is a constant work on improving the equipment that is used as part of the technological line to achieve high quality feeds. Engineering works every day to improve performance and nutritional performance for quality feeding of all major animal species. This is due to the nutritional characteristics of corn, namely, the rationale for the use of rods in the composition of feed.

Key words: *feed, structure, use, composition, rods.*

Formulation of the problem. The most effective use of feed components using the distribution of components of the prescription composition. From raw material evaluation to compound feed preparation and productivity solutions, we can increase profitability and product quality. The main components of the corn plant, which is represented by the grain part, wrappers, stems, and rod are characterized by the fact that these components have not only different structure and also differ in fodder value which varies depending on the period of plant development and have different indicators not only for specific dry weight but also have different chemical components. The fruit part of the plant looks like a longitudinal axis, and the rod in the form of a cone and has the properties of a conductor for feeding to the developing part of the grain, nutrients and moisture necessary for the formation of a developed fruit. The conductor parts can be unraveled as a cylinder in a cylinder which are divided into external and internal conductive systems, while the inner looks like concentric rings with bundles, and the outer system is placed outside. Corn grain contains endosperm, shield, germ (which occupies 15% of the grain), as well as shells. Grains are covered with membranes of fruit (pericarp) and seed (spermoderma) which are subject to change during plant development [3].

Analysis of recent research and publications. According to existing data, the ratio of parts of the non-root mass of corn are: - stem part - 26%; - sheet part - 30%; - core part - 10%; - grain part - 34%.

The middle of the corn rod, which has a parenchyma which is represented by 2% of its total mass, is a porous, white, hygroscopic substance. In the presence of significant moisture, the core absorbs it and swells, and after drying it increases in size several times in contrast to the initial state. The physical characteristics include the elasticity of both the middle part and the scales of the rods. Studies show that the action of pressure at the level of 0.05 MPa soft tissue, which consists of thin-walled cells did not regain its original shape, but reaching a humidity of 20%, the middle part swelled and established the original size. The scales of the rod behave differently, which at a pressure of 0.7 MPa and a humidity of 25%, with the removal of the load scales are able to take their original form, with a decrease in moisture to 18%, there is a loss of elasticity, and with a humidity of 9% they became brittle . According to the analysis of the chemical composition of corn, it is generally known that the early period of development is characterized by a significant moisture content, contains about 85% water, which indicates a low energy cost and high protein. The most important data on the fruit part is the comparison of the content of the grain part and the rods, and the difference in their properties significantly affects the removal of physiological processes of cobs during storage. Studies have shown that this ratio for corn cobs of different growing areas, the yield of grain was about 77.3%, and the rod 22.7%, which in terms of dry matter will be 80.7% and 19.3% [1]. It is shown that the specific weight of the rod is variable from 10.5

... 40.0% of the total weight of the cob, with an average yield of rods of about 25%. The chemical composition of corn by phase of development are presented in table 1.

Table 1. Chemical composition of corn by phase of development.

Vegetation phase	Dry substance	Content in dry matter, %			
		Starch-units	Crude protein	Trawler-leg protein	Cage guilt
1	2	3	4	5	6
flowering	17	60,5	9,41	5,20	27,05
dairy	20	58,5	7,30	5,00	26,75
milk-wax	25	60,0	8,84	6,00	22,40
wax	30	61,7	8,00	5,30	21,00
full	40	62,0	7,40	4,45	22,00

The dry matter of corn contains 9.4% of protein before flowering and as the plant grows, the amount of dry matter increases, but the protein content decreases to 7.4% at the stage of full maturity. Corn contains two main types of carbohydrates: - structural; - non-structural (contain starch and sugar, which are easily digested and are of great importance in animal nutrition). With development, the carbohydrate content increases, and the amount of fiber decreases from 27.05% (flowering period) to 22.00% (full maturity) (Table I). Lignin, which is bound to cellulose and hemicellulose [3] and which determines the strength of the plant, increases from 2.18% to 3.67%. Over time, the amount of fat changes from 2.5% in the initial period to 3.1% in the final phase of development [2]. There are changes in the amount of minerals. Thus, in I kg of green mass of corn in different periods of development, the calcium content varies from 1.28; 1.33; 1.43; 1.45 and 1.69 g, and phosphorus 0.53; 0.6 3; 0.6 7; 073 and 0.82 g [3]. That is, during the development of the plant, the use of only green mass for fattening is irrational, so it is necessary to add phosphorus-calcium components to feed rations. Analysis of the chemical composition shows that the final period of plant development, ie full maturity are the most useful for fodder production, and corn cobs are sufficiently rich in nutrients. In a number of works [1,2]. Also the general chemical structure of cores of corn is resulted and it is specified that on fodder units (from 0,2 to 0,4 fodder units in I kg) they surpass straw of good quality.

Table 2. Chemical composition of maize rods by period of development (% on absolute dry matter).

vegetation phase	ox guest,%	with m and c t					
		protein	Protein	fat	Cage guilt	nitrogen-free extractives	ashes
grain							
dairy	76,88	14,88	13,44	4,49	4,14	73,41	3,08
milk-wax and	58,54	11,38	11,13	5,24	3,55	77,42	2,41
wax and	45,09	12,19	11,50	6,00	3,05	76,05	1,81
full	35,02	11,31	10,94	5,66	2,23	79,06	1,74
rods							
dairy	77,85	6,56	5,63	1,39	23,60	66,03	2,42
milk-wax and	67,98	4,00	3,50	0,70	28,15	65,15	2,00
wax and	62,51	3,31	2,81	0,89	31,69	62,50	1,62
full	57,97	2,56	2,06	0,50	32,82	62,71	1,41
stems							
dairy	80,66	6,31	3,50	1,54	31,90	53,64	6,61
milk-wax and	81,45	4,94	2,75	1,38	30,41	56,16	7,11
wax and	79,90	4,75	2,81	0,86	27,57	59,47	7,35
full	78,11	4,94	3,25	0,89	31,20	56,13	6,84

The purpose of the article. Analysis of the constituent nutrients of corn rods as an additional material components for use in the prescription composition of animal feed. Presenting main material. Analysis of the total chemical composition of the individual components of the maize rods at different stages of development (table 2) shows the dynamics of changes in the constituent substances.

Analysis of data on the phase of full maturity revealed that the content of nutrient urea of rods is inferior to other components, but the content of fiber is almost the same at higher NFE (nitrogen-free extractives) and contain an average of 4.5 times less ash. It was also found that in all periods of development, the rods are enriched in large quantities, while the acid number of grains and rods for milk, wax and full ripeness, respectively, is 43.92 for grain; 10.24 for rods; 8.94 for grain and 120.7 for rods; 76.06 for grain; 47.12 for rods mg KOH on I g.

Conclusions. Thus, the analysis and research on the chemical parameters of the composition of the rods and comparison with other components of corn allow us to recommend the use, after some processing, corn rods as additional components in relation to the prescription composition of animal feed.

REFERENCEC

1. Dudarev I. Shredding of corn cobs / Dudarev I // Agrarian Bulletin of the Black Sea region. Collection of scientific works. Technical sciences.- Odessa: 2015 Issue. 78. - C. 164-169.

2. Dudarev I. Feed base and fattening of animals / Dudarev I // Agrarian Bulletin of the Black Sea region. Collection of scientific works. Technical sciences.- Odessa: 2012 Issue. 63.

3. Braginets S.V. Effective method of compound feed production with the addition of green mass of fodder grasses / S.V. Braginets, A.S. Bakhchevnikov // Agrotechnics and energy supply. 2015. №4 (8). Pp. 32-39.

4. Rasby, Rick J.; Drevnoski, Mary E.; and Stalker, Aaron. "Remains of pastures with beef cattle" (2014). University of Nebraska – Lincoln.

5. K. D. Havekes, 1 T. F. Duffield, 2 A. J. Carpenter, 1 and T. J. De Vries Influence of the length of grinding of wheat straw in the diets of dry cows with high straw content on the consumption, health and productivity of dairy cows in transition period 1 Department of Biological Sciences, Animal University of Guelph, Guelph, Ontario, N1G 2W1, Canada 2 Department of Folk Medicine, University Guelph, Guelph, Онтарio, N1G 2W1, Canada. http://www.gcmec.com/faqs/corn-stalk-cattle-feed-pellet-machine.html

6.https://www.researchgate.net/publication/228715667_Nutritional_properties_of_the_leaf_and_stem_of_rice_straw

7.http://www.fao.org/3/X6553E04.htm

8.https://edepot.wur.nl/333326

9.https://soft-agro.com/krs-na-otkorme/tri-sistemy-ocenki-struktury-korma- adl.html

ОЦЕНКА ПИТАТЕЛЬНЫХ ВЕЩЕСТВ СОСТАВЛЯЮЩИХ КУКУРУЗЫ И ИХ ИСПОЛЬЗОВАНИЕ В РЕЦЕПТЕ КОМБИКОРМА ДЛЯ ЖИВОТНЫХ

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Основная задача кормопроизводства это насыщение рынка кормов соответствующей продукцией для того, чтобы обеспечить кормами животноводческий сектор агропромышленного комплекса, а также оказывать помощь в адаптации к все более сложных требований на потребительских рынках и поощрения фермеров к максимально полезного использования кормов для повышения продуктивности животных. Обеспечение кормами более дешевой, эффективной и при более рациональной технологией, это цель современных производителей кормов для всех животных. Необходимо предоставить лучший корм для лучшего состояния животных разных групп и причнаення. Инновационные и обоснованные технологии внедрены в втробництво, это постоянная работа над совершенствованием оборудования, которое используется в составе технологической линии для достижения высоких показателей качества кормов. Инжениринг работает ежедневно, стремясь улучшить эксплуатационные и пищевые показатели для осуществления качественной откорма всех основных видов животных.

Это объясняется пищевыми показателями кукурузы а именно обоснованием возможности использования стержней в составе кормов.

Ключевые слова: *корм, строение, использование, состав, стержни.*

ОЦІНКА ЖИВИЛЬНИХ РЕЧОВИН СКЛАДОВИХ КУКУРУДЗИ ТА ЇХ ВИКОРИСТАННЯ В РЕЦЕПТАХ КОМБІКОРМІВ ДЛЯ ТВАРИН

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Основна задача кормовиробництва це насичення ринку кормів відповідною продукцією для того, щоб забезпечити кормами тваринницький сектор агропромислового комплексу, а також здійснювати допомогу в адаптації до все більш складних вимог на споживчих ринках і заохочення фермерів до максимально корисного використання кормів для підвищення продуктивності тварин.

Забезпечення кормами більш дешевою, ефективною та за більш раціональною технологією, це мета сучасних виробників кормів для всіх тварин. Необхідно надати кращий корм для найліпшого стану тварин різних груп та причнаення. Інноваційні та обґрунтовані технології впроваджені у втробництво, це постійна робота над удосконаленням обладнання яке використовується в складі технологічної лінії для досягнення високих показників якості кормів. Інженирінг працює щодня, прагнучи поліпшити експлуатаційні та харчові показники для здійснення якісної відгодівлі всіх основних видів тварин. Це обумовлюється харчовими показниками кукурудзи а саме обгрунтуванням можливості використання стрижнів у складі кормів.

Ключові слова: *корм, будова, використання, склад, стрижні.*