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Издание представляет интерес для широкого круга специалистов сферы образования, аспирантов, студентов.

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MULTIDIRECTIONAL USE OF STRAW

Introduction. Feed for ruminants has always been a cereal straw. Limited use of cereal straws in livestock feeding is due to their low voluntary intake, low protein contents and low digestibility. In recent years, researchers are looking for the golden mean by use for improving the digestibility of cereal straw by use of urea or ammonia (Dolberg 1992). Cereal straw contains quite a lot of nutrients, because of the large proportion of the ligneous fibers, to a small extent are used by animals. Ruminants digest no more than 40 to 50% of cereal straw (Chriyaa et al. 1997).

Carbohydrates (sugars or saccharides) are widespread in nature group of polyhydric aldehyde or ketone and their derivatives. It occurs as simple sugars and their polymers, oligosaccharides and polysaccharides. In many cellular structures of carbohydrates are present as fragments of sugars with a different structure and size, often in combination with proteins (glycoproteins) and lipids (glycolipids).

Straw for feeding. Fiber is the most difficult part of digestible carbohydrates and generally the most difficult to pull a fraction of all organic ingredients feed. The main components are digestible fibers: cellulose, lignin, hemicellulose and pectins. Cellulose is the most common structural component of plants. This represents an average of 32-47% of the dry weight of the feed. Cellulose, a linear polymer of glucose (α -1,4-glucan), containing 3000 or more units of sugar linked β -glycosidic bond (β -isomer of starch) (Kendo et al. 1994). Hemicellulose in the cell walls of plants are very closely related to the cellulose material and serve as a matrix and sticking together. There are many different types of hemicelluloses, all of which consist linked by beta-glycosidic different sugars forming a branched chain. Moreover, pectin is classified as a separate group are polymers of galacturonic acid, which exhibit the ability to bind water, swelling and gelling, depending on the extent of methylation..

According to Shaver et al. (1988) between fiber content of the feed and its digestibility, there negative correlation. The higher fiber content, influence the lower the value of the feed. The animal has a limited capacity to collect food. If you receive a feed of significant fiber content, and so inferior digestibility, intake, even despite a large number of components included in the dose is not sufficient to cover the demand tract. For this reason, feed high fiber may be only part of a dose comprising a higher digestibility of ingredients and better nutritional value.

Feed containing a lot of fiber are common and cheap, and because ruminants utilize this component relatively well, giving feed fiber is economically justified. It was also found experimentally that if dairy cows decreased in a dose of about half the contents of roughage dry, replacing them concentrates feed, followed by a marked decline in milk fat. This is explained by the fact that in the absence of the fibers, and more specifically cellulose in the rumen, only little acetic acid. This acid is the main raw material from which arises fat milk in ruminants. Due to the absence of acetic acid, thus lowering the fat content in milk. A suitable amount of fiber in the feed is needed for the proper functioning of the rumen of ruminants and salivation. Large quantities of saliva buffering works and lower pH of stomach acid, which rumen microorganisms can develop. In ruminal fiber digestion involves a variety of microorganisms (bacteria, protozoa, and fungi). The rumen develops mainly anaerobic bacteria which digest plant cell walls (cellulose) simple sugars (glucose). During the fermentation, the glucose formed as the final product volatile fatty acids (VFA). They are a source of energy for ruminants. In contrast, the bacteria use ammonia or urea formed in this process as a nitrogen source for the construction of amino acids. No bacterial conversion of ammonia and urea would be useless to ruminants. Synthesized proteins are digested in the rumen of the small intestine and provide a source of aminoacids (www.extension.unh.edu).

The suitability of straw for feeding purposes depends on many factors: the species of plant, the size of organo-mineral fertilization, the degree of contamination with weeds, the way of harvesting and weather at harvest time. The best straw straw feed is spring cereals due to its smaller woodiness, and thus greater bioavailability. Physiological properties of straw, however, depend on the species of plant. Straw earmarked for fodder purposes may not be moldy, dirty, stale, overly moist, infected with fungal infection. Each of these factors greatly reduces its nutritional value and can be the cause of disease of animals. Depending on the situation fodder farm, straw as a component in the ration may be a smaller or larger part.

Use of monogastric animals crude fiber is mainly dependent on the food habits of the animal to a particular source of fiber. Importance are also the age, weight, breed and individual animal variability. Considering those factors that play a fundamental role in the distribution of crude fiber in monogastric animals, one can say that its use is in the range 0—97%, but usually it is 35—40%.

Straw as a fertilizer. Straw addition to use as a feed is used for other purposes.. Currently in farms produce large surpluses of straw mainly caused by the increased participation of cereals in the crop structure. Otherwise it can be exploited to avoid incurring necessary costs of harvesting, transport and storage. The straw have a high value fertilizer and as a fertilizer is still undervalued, as evidenced by often seen burning in the fields after harvest crops. The Polish soils are poor in humus, and important is the development of any quantity of organic matter that is not used for fodder purposes. In the area of 1 ha produces around 4-6 t straw cereals. In such an amount of straw is on average 30 kg of nitrogen , 12 kg phosphorus , 62 kg of potassium , 7 kg magnesium , 17 kg calcium and trace elements. But the most important component of the straw is an organic substance, which formed in the soil humus and soil fertility index. Five tons of dry matter straw contains about 4.8 t of organic matter. However, using straw as a fertilizer, we must remember by the high C:N ratio, which is an average of 80:1, whereas, the fodder in plants is in the range 20:1 to 10:1 and in the soil. The introduction of organic matter to the soil deficient of in nitrogen causes of nitrogen biological immobilization microbial biomass. After plowing straw soil microorganisms proliferate intensively using to build his body easily available at the moment nitrogen, coming from under-utilized mineral fertilizers, and then fold soil organic matter. This process leads to periodic immobilization of nitrogen. To ease the process, it is necessary to use with the straw of mineral nitrogen in the amount of 7 - 10 kg N per 1 t of straw ploughing (eg, 100 kg of urea per 1 ha). Condition for the effective distribution of straw as a fertilizer is appropriate its fragmentation (about 10 cm) and uniform scattering in the field and mix it with the soil. Straw should be cut into sections of a length of about 10 cm. Important is also the depth of plowing straw. Decomposition processes proceed preferably straw when the straw is plowed shallow depth of about 10 - 12 cm. It is important especially on soils compaction and humid (kpodr.pl).

Conclusion. Processing methods of straw can be physical, chemical and biological. Physical treatment of feed components as drying, grinding, hydrothermal treatment, the operation of the various chemical compounds, including ensiling forage, the addition of acids, bases or organic compounds, affects the physical and chemical properties of the fiber. Change the structure of the building crude fiber and its use by livestock. Such a method of treating feed also influences its overall digestibility. Examples include granulation, expanding, grinding and extrusion. As a result of these processes resulting in improved digestibility of the feed, and thus the utilization of nutrients by the animal, which is of great importance in particular when the increase (kpodr.pl). Straw as organic fertilizer directly comminuted crop at harvest or after the knives to be successfully applied. However, one should remember to keep balance the C:N in straw. In countries with high overproduction of straw, also still looking for other methods of management. In addition to these uses can be used in the energy industry as a renewable energy source (Kosciak, 2003).

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DENSIFICATION OF PLANT MATERIAL WASTE WITH POTATO PULP CONTENT

Introduction. A big source of energy from biomass is the post-production waste (e.g. buckwheat hulls, oat bran, fruit pomace, rapeseed pomace, herbal waste, agriculture waste e.g. straw). These types of waste are only utilised to a small extent and they often constitute a serious problem to particular processing plants.