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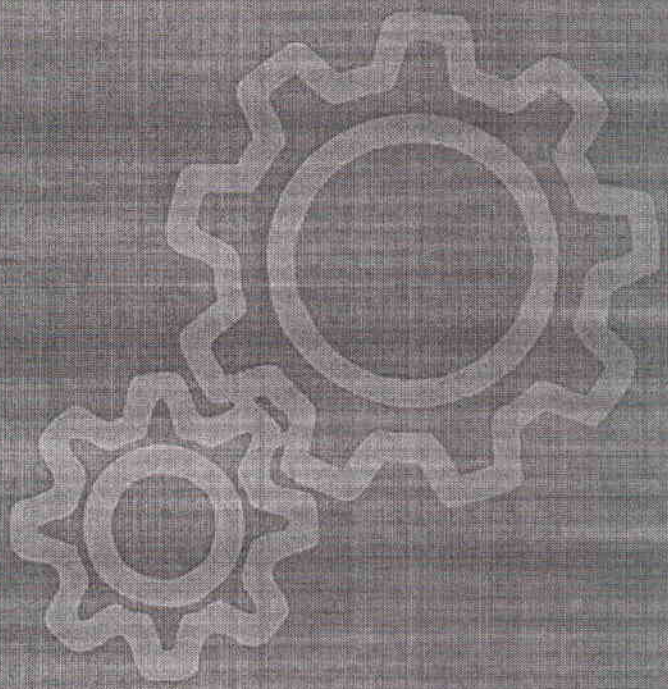

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CATTLE FEED ON THE BASIS OF NON-TRADITIONAL RAW MATERIALS

Abstract. Researched and developed a cattle feed on the basis of non-traditional raw materials. Scientifically justified recipe and received positive qualitative characteristics.

Keywords: Food, cattle, recipe, quality characteristics, nutritional value, non-traditional raw materials, production.

Introduction

Great importance takes the extension of production and full involvement of available raw materials for animal feeds, extension of production and exchange of grain and other raw materials for production of animal feeds, full use in production of animal feeds and expansion of production, using of new feed resources, development of production of feed ingredients from food industry wastes and vegetable wastes [1], and also using of mineral raw materials [2].

Increasing of feed unit and exchange energy of compound feeds, saving of grain resources, increasing of microbiological quality of food are pressing problems.

For feed unit adopted the general nutritional value of 1 kg of good quality oats, in kind 450 ... 480 g/l and moisture content about 13% [3]. Known feeds containing, in particular, wheat bran to 32%, barley to 72.5% and dry brewer's grain – 2.5% [4].

It is known the feed, which describes the technology of feed concentrate production by using yeast strains, cultivated on the basis of cheap plant wastes [5].

It is known the method of preparing a feed and/ or feed additive for livestock, poultry and fish, wherein using wastes of flour and/ or grain production in an amount of less than 1% [6].

It is known the feed additive, the main compound of which is bentonite clay (61–69%) [7]

It is known the feed containing oats, barley, wheat, corn, wheat bran, soybean meal, sunflower basket, monocalcium phosphate, salt and premix [8].

More nearest to present invention is a feed for cattle containing oats, barley, wheat, wheat bran, monocalcium phosphate, salt, premix, corn, soybean meal, potato, Jerusalem artichoke, pumpkin and sunflower basket [9].

The object of present invention is reducing the cost of feed, with norm preservation of fodder and mineral values, saving of barley grain resources, increasing microbiological quality of feed, improvement of environment through using of secondary

resources and also improving the quality and safety of livestock products.

Main aim is achieved by preparing of feed for cattle.

Essence of present invention is in reducing the cost of feed through using of non-traditional secondary raw materials, reduction of valuable grain raw materials content in feed with norm preservation of nutritional value, increasing microbiological quality of feed, improving environment and, consequently creation of non-waste technology, improving the quality and safety of livestock products.

Results and their discussions

Prepared feed is intended for feeding of cattle aged near 18–24 months.

Table 1.– recipes of proposed feed and feed composition according to MNA (more nearest analog)

Compounds	Recipes of proposed feed		MNA
	Sample no 1	Sample no 2	
Barley	5,0	2,0	12
Grain mixes	10,0	2,0	–
By-product of flour-grinding production containing up to 70% of wheat grain	5	4	–
Grain wastes containing up to 50% of wheat grain	3	3	–
Wheat bran	57	60	39
Feed limestone	2	2	–
Bentonies' flour	1	1	–
Rice flour	2	2	–
Brewer's grain flour	5	8	–
Grape pomace flour	5	8	–
Sunflower baskets flour	3.75	6	2
Oats	–	–	10
Wheat	–	–	22
Corn	–	–	2
Soy meal	–	–	5
Potatoes	–	–	2
Jerusalem artichoke	–	–	1
Pumpkin	–	–	1
Monocalcium phosphate	–	–	2
Salt	–	–	1
Premix	–	–	1

As can be seen from Table 1, reducing the cost of product in comparison with MNA is achieved by reducing the amount of valuable expensive raw materials – barley, wheat and vegetable crops, and by introduction of secondary cheap raw materials – feed by-product of flour-grinding industry (waste product) and wastes of food production – grape pomace, brewer's grain, baskets and stalks of sunflower, which are typically utilized. All this greatly reduces the cost of finished product with compliance with feed and mineral values in accordance with approved standards.

Table 2. – Chemical composition of received feed mix,%

Indicators	Sample No. 1	Sample No. 2	MNA
K\E on 100kg	75	71	95
Moisture content, %	11.0	9.8	11.0
Crude protein, %	14.5	13.0	15.0
Crude cellular tissue, %	13.5	14	14.1
Ash insoluble in HCl, %	3.65	3.7	3.4
Solids, %	89.0	90.2	89.0
Fats, %	3.1	3.5	3.6
Calcium (Ca), %	0.81	0.84	1.1
Phosphorus (P), %	0.78	0.77	0.84
Sodium (Na), %	0.09	0.08	0.12
Metallomagnetic impurities, kg/mg	0.28	0.28	0.3

As can be seen from (Table 2), in terms of nutrients, our offering formulation of feed is not inferior to the control. With adding a 5% non-traditional materials and non-peeled barley (Sample number 2, recipe number CS-1 for cattle), determined the best nutritional indicator of feed for cattle, and in control recipe respectively below.

Thus, the study of chemical composition of feed mixture obtained from primary and alternative raw materials with addition of non-peeled barley, gave the highest rates. Table 3 shows quality indicators of proposed feed and feed by MNA.

Table 3. – Quality indicators of proposed feed and feed by MNA

Indicators	Sample No. 1	MNA
K\E on 100kg	75	95
Moisture content,%	11.0	11.0
Crude protein,%	14.5	15.0
Crude cellular tissue,%	13.5	14.1
Ash insoluble in HCl,%	3.65	3.4
Solids,%	89.0	89.0
Fats,%	3.1	3.6
Calcium (Ca),%	0.81	1.1
Phosphorus (P),%	0.78	0.84
Sodium (Na),%	0.09	0.12
Metallomagnetic impurities, kg/mg	0.28	0.3

Table 4. – Comparison of microbiological indicators of proposed feed and feed by MNA

Object of research	Quantity of microorganisms, CFU/g	
	Moulds, 10^3	Bacteria, 10^5
Beginning of storage		
Sample No. 1	3	8
MNA	6	11
After 30 days of storage		
Sample No. 1	1	7
MNA	8	12

As can be seen from Table 4, in the MNA feed, within 1 month of storage was increased total number of microorganisms. During study the effect of meal fodder on microbiological activity has been found, that addition of it in composition reduces intensity of mold and bacterial microflora development compared to MNA, which improves the environment through using of secondary resources and, therefore, creation of non-waste technology, improving the quality and safety of animal products.

Conclusions:

Thus, proposed feed can reduce content of toxic elements in final product and thereby improve the safety of meat and meat-dairy products [10].

Using the proposed composition reduces the input of grain into a feed composition. Entering meal fodder from non-traditional raw materials instead of grain and mineral compounds allows significantly reduce the cost of feed while maintaining the norms of nutritional value. Feed enriched with complete proteins, fats, micro-elements, pectin, vitamins, amino acids, which increases its feed and microbiological value, also have positive effect on animal body, and clears the body of toxic elements, pesticides and residues of harmful elements, thereby improving the quality and safety of meat – dairy products. Using of recycled resources improves the environment and brings economic benefit as it increases the production of finished products and reduces the cost of feed.

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