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METHODS OF PREPARATION OF LIQUID FEED THROUGH ROTARY-PULSATION MACHINE

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Substantiation method of cooking liquid feed and feed additives of high quality using rotary-pulsating machine. These advantages of this method over traditional.

Stern, rotary-pulsation device cavitation.

Development and research scientists show that the "traditional" technologies fattening animals in the litter is 40% of undigested food and feeding pigs dry fodder - 50%.

The structure of the gastrointestinal tract determines the diet of animals and their ability to digest a particular food. It is known that a complex stomach of ruminants partially digested fiber and processed in large colonies of microorganisms inhabiting the rumen. The animals with the stomach to save motility of the gastrointestinal tract of feed should be stored in the original or partially processed form, and less desirable part of cavitation split, transfer of fiber (cellulose) in starch and sugar.

The purpose of research - the study method of cooking liquid feed and feed additives of high quality, high digestibility for fattening pigs, young cattle using rotary-pulsating machine.

Materials and methods research. Existing technologies are feeding the following disadvantages:

- Insufficient quantity of grain grinding and dispersion, which prevents a more complete absorption of nutrients contained in the grain;

- Lack bactericidal effect on components prepared food and lack of combat, some of which goes in meat and other products such as milk and eggs;
- The lack of technology selection from grain starch and its transition into sugar (90 - 100%), which is absorbed in the stomach of pigs;

- Lack of destruction technologies bacterial flora, which "came off" and found in the grain.

Recommendations scientists for animals and birds with ram air gastrointestinal tract are reduced to the following:

- Feed for pigs must be liquid;

- Grains crushed to the size of 500 microns;

- During feeding must be ensured enzymatic processes of digestion of starch with its transition to digestible animal body forms, namely glucose, fructose, sarbozu, maltose, galactose and so on.

In preparing such a pig feed provides average daily gain of animals 650 - 750 g Whereas the average daily weight achieved with a significant reduction in costs, and significantly reduces the cost of feed.

Technology of the liquid belongs to the most modern and efficient. This technology will reduce the cost of feed, increasing the efficiency of their use, and hence reduce the cost of 1 kg increase in weight of the animals, reducing the time growing slaughter weight, more efficient use of space on livestock farms, hog and so on.

The process of cavitation effect on the material underlying the proposed technology cooking liquid feed that allows in terms of existing livestock farms prepare digestible, homogenized, disinfected food, animal feed passing phase preparation of feed grains (wheat, oats, barley, millet, etc.) grain processing waste (crushed grain, seeds of weeds, chaff and so on.) by-products of corn processing enterprises (meal, waste flour production); Waste beet sugar, alcohol, brewing, starch and dairy industries.

When the cavitation processing food mixtures simultaneously, the following processes:

- Cavitation crashing a dispersant (wheat, barley, oats, bran, pulp, pomace, husk and t. E.) To finely dispersed state;

- Heating the resulting slurry to 50 - 65 ° C;

- Creation of conditions for the occurrence of physical, chemical and biological processes enzymatic digestion of starch (go over 50% starch contained in food, substances that are easily digested by the animal, namely mono-, di-, and trysaharydy, ie glucose, fructose , sarbozu, maltose, galactose and so on.)

- Inhibition of bacteria trapped in feed off of grasses, reducing (eliminated) the likelihood of unwanted or non-sterile fermentation listed by bacteria that compete with intestinal flora of animals fighting for food and produce toxic substances.

When cavitation cooking liquid feed with disinfection of raw water is biological activation. Such water is a powerful solvent salt reacts hydration raw food biopolymers (biopolymer connection with water molecules), rapidly extracts (that extracts raw vitamins and other nutrients without destroying its natural structure as a normal temperature).

There are the following types of equipment for dispersion:

- Used working bodies that are directly involved in the process of grinding (ball, beaded, vibrating,);

- Devices (drum, pumps, jet);

- Explosive shredders (pressure-drop, using explosives).

Disadvantages of these types of devices: operation of working bodies, contamination of demolition material grind, high energy dispersion, low efficiency, aggregation (clumping) with increasing particle dispersion material. In recent years, a dispersion equipment with simultaneous homogenization:

- Ultrasonic devices

- Ultrasonic cavitation device;

- Electrohydraulic device;

- Rotary-pulsation device;

- Hydropercussion installation.

Ultrasonic devices are rare and specific conditions (homogenization of mayonnaise) and electrohydraulic device has not been used. The most widely used rotary-pulsation device.

In such devices is a natural transition to the means of dispersing the material in a two-phase medium (material + liquid) that allows you to combine the processes of dispersion and homogenization in one device. As liquid water may be used or any other liquid, such as oil released by grinding nuts, juice during processing tomatoes, peas and more. This makes it possible to use the physical properties of a phase (nestyslyvist based on the laws of Pascal and Bernoulli) and apply new physical effects (hydraulic shock, cavitation, pulse pressure, turbulence).

Results. In the rotary-pulsation apparatus (RPA) were conducted exploratory research on cooking liquid feed consisting of mixture (potatoes, carrots, beets - 8.3%, peas, corn, wheat, rye - 25%) and bards (waste alcohol industry - 66.7%).

The experiment was conducted in recirculation mode, ie components studied repeatedly passed through the working bodies RPA to obtain a certain level of homogenization of the feed slurry. The time of one cycle lasted about 20 seconds. (depending on the composition of the feed). With further study sample with an electron microscope revealed that the average particle size reached feed size less than 500 microns already after 20 - 25 cycles of treatment.

When analyzing samples obtained by "screens" (feed was passed through a number of mesh openings of a certain diameter) were obtained results confirmed the feasibility of using RPA for homogenized liquid feed.

Thus, as a result of feeding in the RPA achieved optimal absorption of animal feed, resulting in the largest increase their mass.

Conclusions

The method of dispersing the material in a two-phase medium without flaws dry dispersion method, since liquid "do not wear" does not pollute the material prevents aggregation by reducing the surface energy of the solid phase (this effect is enhanced by adding surface - active substances). Using liquid allows to combine the processes of homogenization and dispersion in one device. Application of RPA as cavitation homogenizer enables:

- Reduce power inputs compared to traditional devices 15 - 18%;

- To conduct decontamination of food, which contributes to its high digestibility in animals or colonies of bacteria that inhabit the stomach, without making alien bacteria toxins;

- Make feed (separation of starch in aqueous solution);

- Ensure the hydrolysis of starch, which is converted to a substance that is easily absorbed by animals such as monosaccharides, disaccharides, trysaharydy (in the form of glucose, fructose, sorbose, maltose, galactose, etc.);

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