

CHARACTERISTICS OF COOKING OF "UZBEKISTAN-83" AND "HOSILDOR" VARIETIES

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Abstract

Nutritional beet tubers have different physical and mechanical properties and are suitable for specific working parts of each type of feed grinders with the required level of grinding. Production of hashaki beet tubers using heat treatment in Belarus, Germany, Poland, Australia and other countries is very common. Feed steamers, stirrers, and feed vaporizers are often used to heat Nutritional beet tubers.

Keywords: Cooking, softness, roughness, digestion, absorption, bioelements, container, grinding.

Introduction

Beetroot is important in livestock, especially in the diet of dairy cattle, because it is characterized by a large amount of carbohydrates. Its nutritional value is determined by the carbohydrates, nitrogen-free extracts, mineral salts and vitamins. Beetroot is one of the main juicy feeds in livestock farming in the autumn-winter season. In addition, by adding beets to the diet of livestock, their digestion of coarse and concentrated feed is improved. So, beet roots are very important in improving milk production in cattle.

Nutritional beet is more common in the Mediterranean region, Asia, the Caucasus, India, France, Great Britain, and Scandinavian countries.

Analysis of literature on the topic (Literature review) . Forage carbohydrates play an important role in the digestion and utilization of nutrients and minerals by dairy cows. NV Kurilov in many scientific studies. RTAyrepetov, ASSolun et al., APKrotov, AVKniga, IAZimnovich, Ye.S. Vorobev et al. .Mandebvu, C. Ballard et al., LMTrevaskis, WJFulkerson, Hall, C. Larson et al., R. Nekrasov, M. Varenikov et al. effects of carbohydrates on productivity of livestock, quality of products, absorption and digestion of nutrients are highlighted.

Research methodology (Research Methodology). During the period of scientific research, research was carried out as follows:

- measuring the nutrients and their residues given during two days of the need for food;
- milking of cows - measuring the amount of milk produced by each cow by carrying out control milking every 10 days;



- study of milk quality indicators at the beginning, middle and end of the experiments, fat, density, dry matter, skimmed dry milk residue, sugar in the milk of 10 cows of the groups based on the standard requirements of LLC "Zamona Rano" LLC laboratory and "Laktan" milk analyzer;

Analysis and results (Analysis and result)

Of cooking beets of " Uzbekistan -83 " and " H osildor " varieties

Nutritional beet is one of the most effective agricultural plants for feeding animals not only in industrial complexes, but also in private farms. Nutritional beet is an excellent source of vitamins and important bioelements for animals and poultry both in winter and summer. For these reasons, hashaki beet is included in the diet of dairy cows to maintain and increase milk yield, its protein and fat content, as well as to compensate for the lack of useful nutrients in the body. In the preparation of feed for feeding, especially in the preparation of complete mixtures, the components are crushed according to the requirements for complete assimilation by animals, the possibility of performing mechanical operations (transportation, loading and unloading from containers, dosing, mixing). , as well as minimum loss conditions during storage. A decision is made on a case-by-case basis depending on the relevant requirements or their combinations. The place of grinding in the general technological process of feed processing and preparation from the field to the feeder is mainly determined by the minimum conditions.

Total nutrient loss and energy expenditure. Thus, before feeding hashaki beet tubers to cattle, cooking and feeding them using special methods will be even more effective, and the indicators of assimilation of the feed by animals will be high.

Devices for heat treatment are divided into several groups: according to the purpose - for processing tubers, food waste and feed rich in fiber; according to the type of heat source - steam and electricity; technological purposes - steaming, cooking, drying; according to the method

Implementation of the heat process to root fruits - periodic and continuous; according to the created pressure - low and high; according to the method of operation - stationary and mobile. Studies show that continuous steamers are the most economical.

Steaming and cooking is necessary in cases of violations of storage or initial preparation regimes of hashaki beet tubers under farm conditions. Nutritional beets are most effective when steamed and mixed with other feeds to provide 85% of their nutritional value. When feeding steamed beets, weight gain is 15-17% higher than when feeding raw beets.

Nutritional beets are steamed in special stationary and mobile devices. These steamers can work continuously, but also in cyclic mode; equipped with conveyors, mechanical beet cleaning and washing devices, unloading screw conveyors and steaming tanks with a chopper. After steaming, nutritional beets are softened and crushed; when working in cyclic mode and steam pressure 0.04...0.07 MPa, steaming time 40...45 minutes; Steam consumption for 1 ton of roots is about 200 kg. Research results show that heating above 105 °C deteriorates the nutritional value of steamed products.

Thermal, chemical and biological processing of food requires heat sources and machinery. Therefore, a number of technological processes are carried out using heated water and steam.

EPZ, SAZS, SAOS, VEP and other types of electric water heaters are used for water heating; For solid fuel for steam production - KT-F-300, KS-F-500, KT500A, KT-100, for liquid fuel - KV-300L, KZh-F-500, D-721A, D900 steam generating boilers are used. , for gas - KTG-300, KG-



500, D-721G, KG-1500 GB type block burners and GTG type turbine burners.

VKS-3M steam mixer is designed for boiling tubers or food waste and mixing them with other components. It consists of a frame, a boiler, a mixer and a drive. The boiler is made of metal and has a wooden lining on the outside for thermal insulation. At the top of the boiler is mounted on the axis of rotation, which is installed under the load when loading the boiler.

Inside the boiler, along its entire length, there is a stirring shaft that rotates on cast iron bearings. The boiler is equipped with a steam line, which allows you to prepare some types of feed. While the mixer is running, the feed is loaded into the boiler through the funnel and top hatch, then the neck is closed and steam is supplied. During cooking, the mass is mixed with mixer blades. At the end of cooking, the loading hatch is opened and other nutritional components that do not require cooking are added. The whole mass is intensively mixed for 5...20 minutes and then it is discharged from the machine through the lower hatch. The feed rate is controlled by the gate. To mix the feed in the boiler, the bladed shaft is closed by the feeding device.

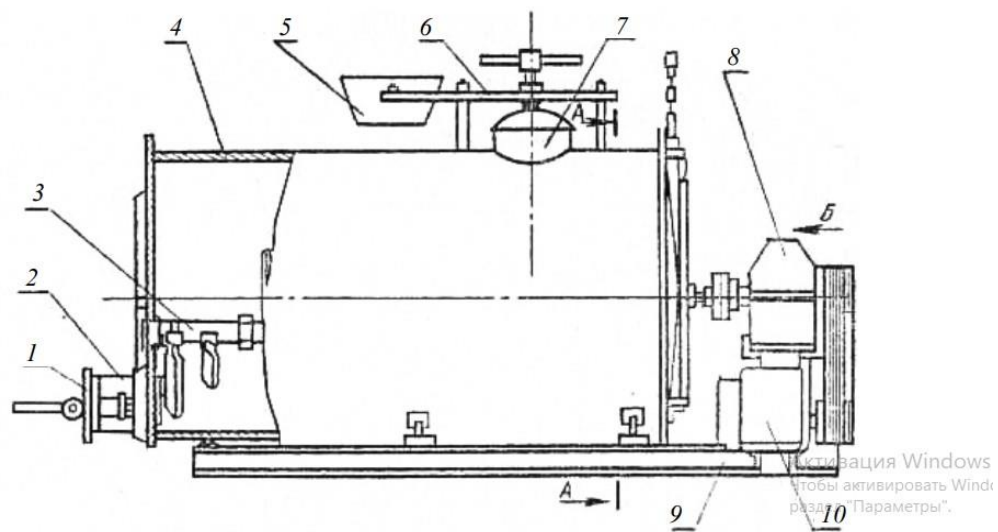
The steam mixer is driven by an AO-52-4 electric motor with a voltage of 380/220 through a RM-40-1-1 gearbox. The AZK-3 unit is designed for washing and steaming hashaki beets. The main assembly units of the equipment: washing 1, sludge discharge conveyor 2, drum 3, loading screw 4, steam tank 5, steam distribution device 6, level sensor 7, steam transfer 8, pressure reducing valve 9, unloading auger 10, grinder 11, drill for pulp unloading 12. All working parts are mounted on a common frame. The sink consists of a body, a conveyor with a bucket for unloading.

At the bottom of the bucket conveyor there is a window for draining dirty water. The conveyor is driven by an electric motor through a V-belt drive and a worm gearbox, and the drum is driven by the conveyor buckets. At the lower end of the loading auger there is a washing disc, which, as it rotates, creates a circular flow of water in the washing chamber.

The upper end of the screw has a loading and locking mechanism. The diameter of the screw is 320 mm, the pitch of turns is 200 mm. The drive is made from an electric motor using a V-belt transmission. Hashaki is placed in beets.

Boiler with conveyors type TK-3 or TK-5. A safety valve is installed on the boiler to prevent excess pressure and vacuum.

The conical part of the pipe is equipped with a device for draining condensate. The pressure reducing valve maintains a pressure of 0.003 MPa in the steam boiler. The milling machine consists of a body, a valve, blades and a cover. Steamed hashaki beets are crushed by pressing the auger through the gaps between the blades. The unloading auger is driven by an electric motor through a variator, a worm gearbox and a chain drive. The device is equipped with a control panel and works with a D-721A type steam generator. It can work in both cyclic and continuous modes. When working under the influence of a rotating washing disk, beetroot is washed from dirt, caught by the turns of the auger, in its shell they are additionally washed by a stream of water. Heavy dirt settles on the wash disc and is reflected



The plate is thrown from the window into the chamber of the bucket conveyor and removed from washing. Floating light mixes are also discharged by the drum into the bucket conveyor. When the loading auger rotates under the influence of centrifugal forces, the loading locking mechanism rises to the upper position and opens the boiler window, which puts the hashaki beets into the steamer. After loading for 10 minutes, steam is supplied to the lower part of the boiler, and after loading is completed, steam is supplied to the upper part. The device is automated. After the boiler is completely filled, all conveyors and the washing machine are turned off using a high-level sensor. Productivity of the unit during continuous rotation is 2...3 t/h. Steam consumption for steaming hashaki beets is 190 kg per ton, and water consumption for washing hashaki beets is 480 kg.

Hashaki beet particles after grinding: up to 10 mm in size - 70%, particles from 10 to 20 mm - 30%. ZPK-4 feed steamer is designed for washing, removing stones, steaming and making puree from beets.

It consists of a steam boiler; sinks with stone holders; a vertical loading auger with an activator at the lower end for feeding washed beets to steaming; evaporator, including outlet pipe and pipe manifold; a six-bladed chopper at the lower end; unloading auger with an unloading height of 2050 mm; starting and protection equipment, electric drive and frame cabinet. First, water is poured into the mixer through a preset water supply to obtain a feed mixture of a given moisture content. Grinded feed components according to the given ration are loaded into the mixer from the feed preparation machines through the loading hatch. It is recommended to load the mixer to 2/3 of its volume.

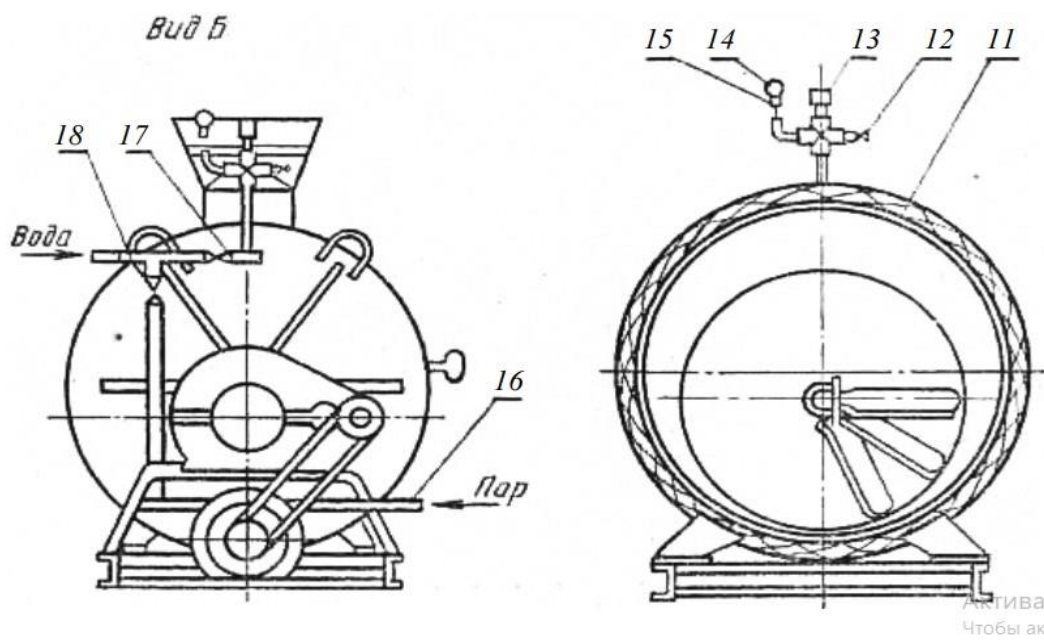
Feed mixture components can be loaded simultaneously. Mixers are turned on when the mixer is about 30% full.

When the mixer motor is turned on, the blades of one mixer start mixing the feed in one direction, and the blades of the other one.

Mixers in the other direction, ie. Two opposite currents are created, as a result of which the feed components are mixed. In order to improve the operation of the S-12 mixer in coarse feed, it is recommended to remove some brackets from it along with the blades, as well as the blades from the remaining brackets. At the same time, it is necessary to strengthen.

After loading is complete, mixing will take 10-15 minutes. The finished feed mixture should be immediately removed from the mixer. It is not recommended to keep prepared food in the mixer for a long time. The S-7 mixer, like the S-12 mixer, is designed for the preparation of feed mixtures with a moisture content of 60...85% (including a large amount of crushed straw). It can also steam food at a steam pressure of 68.6 kPa. The mixer is available in two modifications: C-7-I - for use in feed mills; C-7-II - to operate as an independent unit. S-7 mixer includes steam distributor, discharge auger, boat mixers, shaft, housing, pipe, cover, locking device, faucet, distributor, grid, gear, drive frame, driver, housing, tension roller, chain, oil pipe and electric equipment. The steam distributor consists of two steam distribution pipes and eight steam lines through which steam is supplied to the mixer. Two paddle mixers each have a shaft and 6 blades (instead of 8 blades for the S-12). The electrical equipment of the S-7 steamer includes: control cabin; electric motor of the main drive AOP2-52-4XX with a power of 11 kW with a rotor speed of 24.5 s-1 ; An electric motor for driving a mixer wedge valve with a power of 0.37 kW with a rotor speed of 22.9 s-1; 2.2 kW load conveyor electric motor, 3 kW unloading conveyor electric motor; VPK-2112 limit switch located in the hatch and three VPK-2111 limit switches installed on the wedge valve lifting mechanism. On the side wall of the cabinet there is a PVMZ-60 package switch, which enables turning on and off the power supply. The cabinet door has ASL alarm devices and control posts PKE 122-2 and PKE 122-3, which are designed to start and stop individual mixer mechanisms. AE 2033-00 and AE 2033-10 automatic switches are installed on the panel to protect electric motors from short-circuit currents inside the control cabinet; magnetic starters PME-211, PME-111 and PME-071 for starting electric motors, zero protection and overload protection; PR1M fuses

UVTZ-1 device and RPU-0-122 device can be used to protect electric motors from temperature overload.



The feed is fed to the mixer using a loading conveyor while the mixers are running. The feed is enriched with yeast, molasses solution and other components, and after filling the mixer with the main product, it is moistened up to 60...85%. If you need to moisten the mixture, add water to the mixer. Coefficient for feed mixtures containing straw and silage



filling the mixer should not exceed 0.6 ... 0.7 and 0.8 for slimy mixtures.

During the operation of the mixers, the blades of the right mixer move the feed mixture to the drive, and the blades of the left mixer - to the discharge neck. In this case, the components of the feed mixture are simultaneously transferred to the rotation cavity of the blades, which ensures that they are well mixed in 10...15 minutes. For the preparation of feed mixtures by steaming, the initial components (straw, rhizomes) should be crushed to a size of 20...50 mm. After filling the container close the lids tightly and release the steam. Steam consumption is 160 ... 200 kg / h at a pressure of no more than 68.6 kPa. Steaming temperature 90...95 °C, duration 50...65 minutes.

Before starting the mixer, check and adjust the tension of the V-belt transmission and the mixer drive chain; when a force of 30 N is applied to the center of the rod, the deflection of the belt should be 15...20 mm.

Nutritional beet pellet is a natural feed for farm animals made from beetroot, dried at high temperature, ground into flour, and then made into granules (pellets).

After granulation, it can be stored in packaging for a long time, which enables a long-term supply of feed for livestock. The nutritional unit of granulated beets is 0.85, and the nutritional value is 10 times higher than that of fresh beets of the same weight. The absorption of protein and extractives of pelleted beets by animals is 75%.

To store Nutritional beets, it is more economical to reduce their size and make them suitable for transport, for which briquetting or granulation is used. So we have to solve the problem of transporting beet root, because the transportation of fresh beet root is very problematic. Granulation of rootstock reduces its transportation costs by 5 times.





In combination with other feeds, beet root can replace up to 50% of barley or oats in the cattle diet, which ensures an increase in their weight or milk yield. Granulated beet root is well digested not only by cattle, but also by other types of farm animals. In dry form, animal feeding is not recommended due to porosity and moisture absorption, which may cause some digestive problems for livestock. To avoid such problems, the granulated feed is diluted with water in a ratio of 1: 3 or used in 10% as an additive to mixed feed.

Conclusion and recommendations (Conclusion/Recommendations).

1. Quality feeds have a positive effect on the productivity of dairy cows and increase their milk yield by 1.4 kg or 8.1% per cow on average ($R>0.999$);
2. It was found that the experimental group gave 704.6 kg more product than the control group during lactation by using Hashaki beet in the diet of dairy cows.
3. It is recommended to maintain a sugar to protein ratio of 0.8:1.2 per unit of feed when feeding cows in a coordinated manner with highly nutritious substances.

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