

METHOD OF MANUFACTURE OF FORAGE OF SECONDARY RAW MATERIALS, PRODUCED BY THE RICE PROCESSING INDUSTRY

The invention is made in the field of the agriculture, in particular, for production of forages of non-fodder raw materials, namely, the waste products of the rice processing industry.

The method of production of a forage of vegetable origin by processing with fermented biomass («*Trichoderma lignorum* 19») under the patent 704588 («Method of forages manufacture», issued to in the name of the Institute of microbiology of the AS of the UzSSR, published in the Bulletin 47 on 25.12.79) is well-known. But a shortcoming of this well-known method is economic inexpediency of application thereof and insufficient nutrient value for bovine cattle.

Moreover, the cases of use of a waste of the rice processing industry for the fodder purposes are well-known. But in this regard, the process of their use as additives takes place.

Rice is one of the most valuable food products in the world. In the course of processing of rice grain, considerable quantity of rice peeling, which is undecayable due to presence of silicon dioxide, that is why, in most cases, it is burnt. The huge land areas are required for its dumping. Disposal of the waste product of the rice processing industry is the crucial engineering task. In this connection, disposal of the rice peeling has become the crucial risk also for Uzbekistan, in connection with rice cultivation and processing.

The purpose of this invention is expansion of the raw-material base for manufacture of forages for animal husbandry, namely, bovine cattle (hereinafter referred to as the bovine cattle), and production of a nutritious forage of secondary raw materials, produced by the rice processing industry, which were not used for these purposes in the past, which can be applied as a high-grade forage, as well as in the form of a new component for manufacture of mixed fodder for bovine cattle.

The task in view is solved in a way of use, according to the invention, of rice husks and rice bran as a basic vegetative component in the method of manufacture of forages of the waste products of the rice processing industry, which includes crushing and biofermented processing of vegetative component with active culture of *Trichoderma lignorum* 19, which is crushed into powder with grain size of 0.2-0.5 mm, then, the hydrothermal processing is carried out at the temperature of 110-120°C till humidification or to a moisture content of 50-60 % under the pressure of 1-2 atm. during 1.5-2 hours, then biofermented mass of *Trichoderma lignorum* 19 in the quantity of 5-15 % of the weight of the processed raw is added in the vegetation component, then the mix is supplied to the airtight hopper for carrying out of microbiological process of saturation and accumulation of protein mass or building up protein mass for 24-48 hours, then, the received biomass is dried at the temperature of 50-60°C till the moisture contents is 13-14.5 %. Further, it is batch packed for further application as the finished product.

By practical consideration, the authors established that quantitative content of protein in the received product is similar to wheat properties, and it can be used as a component for manufacture of various kinds of mixed fodders instead. Thanks to that the bovine cattle has belly and reticulum, they fully consume and digests this kind of a forage that allows to satisfy a need of bovine cattle in energy to ensure gain up to 30 % at the average.

The finished product can be used as forage for bovine cattle up to 30 % in a daily allowance and as a new component at manufacture of mixed fodders for bovine cattle that appears most expedient and economically sound from the point of view of this product nutrient value.

Advantage of this method is the following: this invention allows disposal of secondary raw materials, produced by the rice processing industry, as well as to receive a forage for farm animals, namely, for bovine cattle as a main kind of a forage, which has greater nutrient value due to greater contents of a digested protein.

The specified method is realised as follows:

Example 1.

For forage preparation in the weight of 1000 kg, a rice husk (as appropriate, with addition of rice bran) in the quantity of 950 kg is crushed in the crusher into powder with grain size of 0.2-0.5 mm. The received mix is hydrothermally processed in the mixer with use of the steam boiler, at the temperature of 110-120°C till humidifying or to a moisture content of 50-60 % under the pressure of 1-2 atm. within 1.5-2 hours. Then, the biofermented mass of *Trichoderma lignorum* 19 in the quantity of 50 kg is added. As appropriate, the grape and apple pomace and wastes of the sugar manufacture are added. Further, it is mixed and supplied to the airtight hopper, where, in the process of relaxation within 24-48 hours, the microbiological process of saturation and accumulation of protein mass or building up protein mass is carried out. Then, the received biomass is dried at the temperature drying agent of 50-60°C till the moisture contents is 13-14.5 %, and batch packed in the bags.

The socially useful effect of use of the invention consists in disposal of secondary raw materials, produced by the rice processing industry, and manufacture of a forage for farm animals with favourable outcomes, i.e. in more complete and rational use of the valuable, renewable vegetation product - rice peeling.

Claims

THE INVENTION FORMULA

1. A method of producing forage, the method comprising:

crushing of vegetation component and subjecting the vegetation component to biofermentation treatment using an active culture of *Trichoderma lignorum* 19, wherein the vegetation component used is rice husk and rice bran, which is crushed into powder with grain size of 0.2-0.5 mm, then, hydrothermally processed at the temperature of 110-120°C till humidifying or to a moisture content of 50-60 % under the pressure of 1-2 atm. for 1.5-2 hours, then biofermented mass of *Trichoderma lignorum* 19 in the quantity of 5-15 % of the weight of the hydrothermally-processed vegetation component is added, then, mixture of the hydrothermally-processed vegetation component and the biofermented mass of *Trichoderma lignorum* 19 is supplied to an airtight hopper for 24-48 hours so as to allow microbiological process of building up protein mass of the vegetation component is carried out, then, resulting biomass from the microbiological process is dried at the temperature of 50-60°C till the moisture contents is 13-14.5 % to produce a finished product.

2. The method of claim 1, wherein grape pomace, apple pomace and a wastes of the sugar manufacture are added in the mixture before the mixture is supplied to the airtight hopper.