

THE HYGIENE CONDITION TO INCREASE MILK QUALITY**V. I. Gritsayenko, N. V. Cherny, L. V. Gusinja****Summary**

The proposed technology allows complete utilization of organic waste. It provides environmental protection and allows to obtain the valuable organic fertilizer (biogumus), protein feed (worm and green feed) and energy (biogas). Technology of bioconversion of agricultural wastes into fuel, fertilizers, feed and original technology of milking machine to improve milk quality was practically shown.

Key words: ecology, manure, worm, milking machine, technological, milk quality.

Introduction

Stock-breeding of Ukraine accumulates about 60 million tons of dry organic waste. Because of accumulation of organic waste products (manure, feed remnants, litter) or cattle enterprises the ecological condition changes for the worse that influences house microclimate and air which directly enters milking machine and makes milk quality worse.

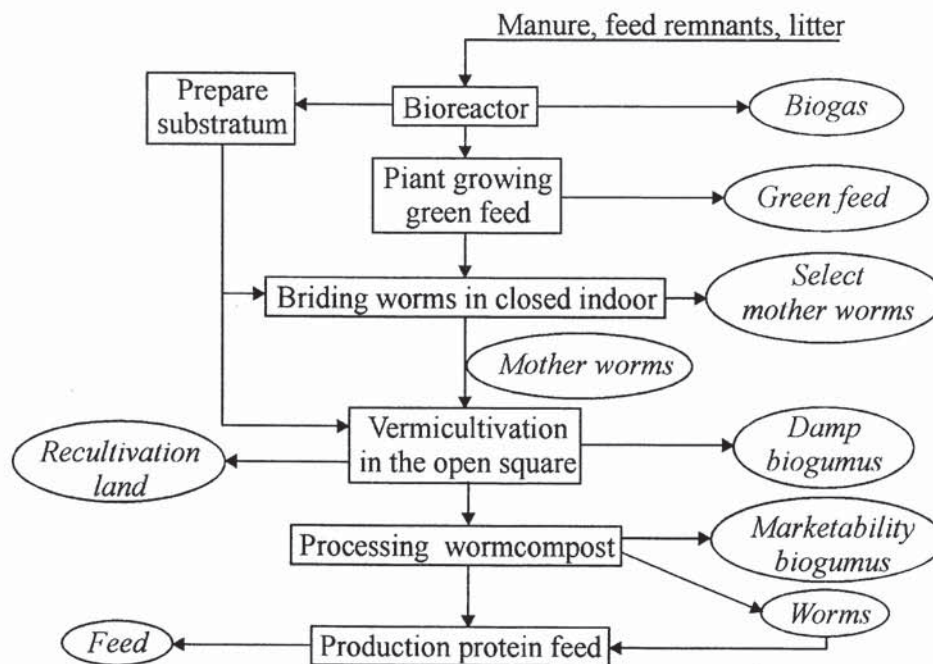
Material and Methods

Data on housing conditions, microclimate and zoecology of animal farms in cattle houses for 100 and 200 heads with branching vacuum system from the used existing milking machines with experimental pulsator are given. The main idea of this technological process consists in the use of bioconversion of organic waste (Fig.1).

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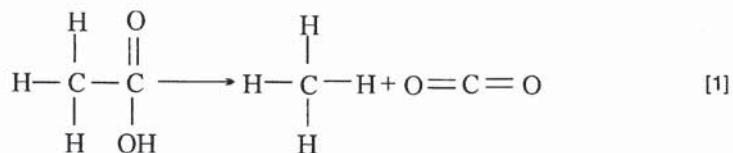
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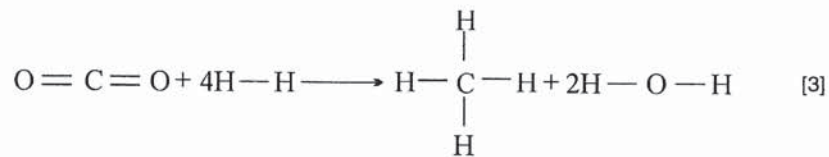
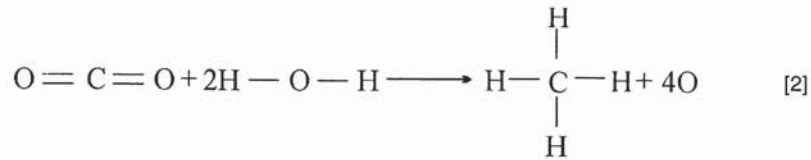
Fig.1. - SCHEME BIOCONVERSION OF ORGANIC WASTE



Results and discussion

Therefore the construction of bioreactor for anaerobic fermentation of cattle waste products and getting biogas has been proposed [1, 2, 3]. In compact mechanical bioreactor two stages of anaerobic fermentation of waste take place: first, in the central tube and then in the cylindrical volume of the reactor, surrounded by a heat-exchanger. As a result of biochemical breaking up, due to methane bacteria hydrolysis gas has been formed. During the second phase methane is formed between the central tube and inner surface of the fermentation chamber by methane bacteria from hydrolysis gas:

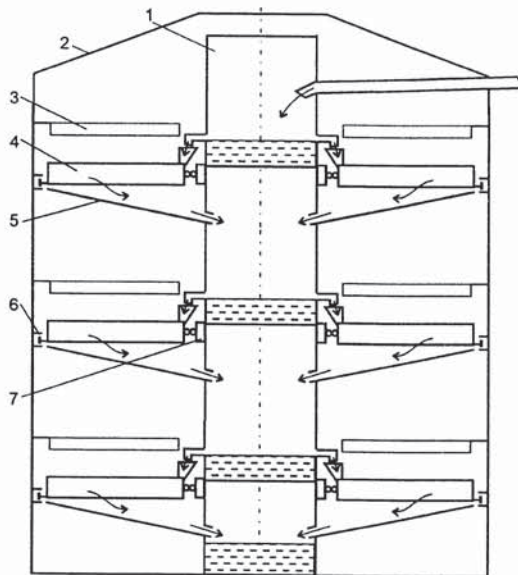




Liquid fermented manure mass and flowing of the farms are used in the equipment for cleaning (Fig.2). On the vertical column vegetative vessels are shown. They are used to grow plants, under which tray-aerariums are situated and phyto-irradiation lamps are situated over them.

Fig.2. - TECHNOLOGICAL SCHEME AND EQUIPMENT FOR CLEANING FLOW:

1 - column; 2 - hull; 3 - phyto-irradiation lamp; 4 - vegetativ vessel; 5 - tray-aerarium; 6- guide lath; 7- slot



Guide laths are installed in the zone of every circle on the inner side. On the opposite side liquid mass of flowing is brought. The vegetation vessels turn round the vertical axis of the column. The duration of the whole cycle of vegetation vessel turning is 10-12 days. Chemical composition of flowing that are cleaned, proves the high efficacy of the proposed technology (Tab.1).

Tab. 1. - CHEMICAL ANALYSIS OF CLEANING FLOW ON A MILK FARM

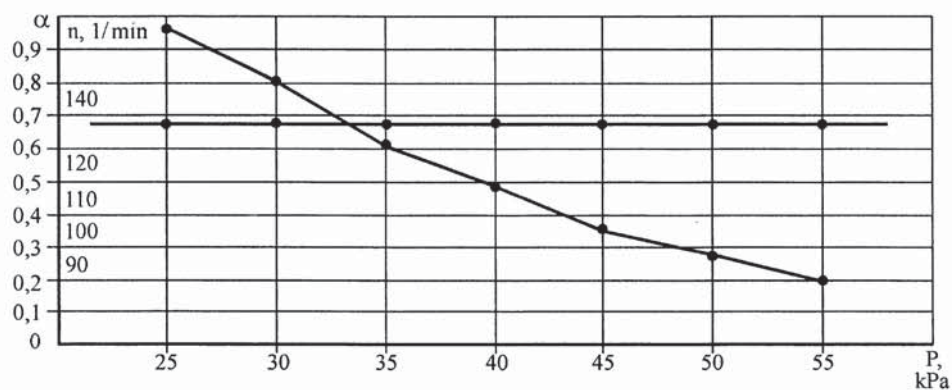
Indices	Before cleaning	After to fermentation in bioreactor	After cleaning
pH	7,3-7,5	7,5	7,2
Chemical necessity Oxygen, mg/l	15000	3500	300
Biological necessity Oxygen, mg/l	1100	970	140
Nitrogen, mg/l	900	600	20
Potassium, mg/l	176	145	90
Phosphorus, mg/l	380	360	240
Suspended particles, mg/l	10000	6000	3000
Titre bacteria diseases bacillus	10^{-3}	10^{-1}	1

The indices of the chemical use of oxygen and its biological use are reduced from 50 to 8 times. Thus, ecological condition around the farm improves (Tab.2).

Tab. 2. - SANITARY-HYGIENIC CONDITION IN AIR BASIN OF ZONE EXPLOITATION COWSHEDS

Indices	Building	
	control	research
Reject ammonia, g/hr	51,3	$9 \pm 0,05$
Dust, kg/hr	$44,48 \pm 0,07$	$10,8 \pm 0,08$
Microbiological body, mld/hr	$153 \pm 5,1$	$15,5 \pm 0,3$

Fig.3. - RESEARCH EXPERIMENTAL PULSATOR



n – pulsation, 1/min; α – ratio suction and pressing.

Besides a universal pulsator both for milking machines and pulse collectors used on farms of Ukraine has been proposed. Peculiarity of a new pulsator is an original position of easily replaced bacteriological filters for air sonation which are in direct contact with milk.

Tab. 3. - MILK QUALITY OF MACHINE MILKING

Indices	Milking machine	
	ADU-1, control	Pulse collector-experimental
Degree cleaning of standard, group	I	I
Fat, %	3,78	3,87
Acidity, °T	17,08	16,18
Bacteria sow, thousand /cm ³	385	265

It can be seen from the data received during the investigation that pulsation rate sharply falls when branch network of vacuum wires is used on the farms for 100 and 200 head at abrupt vacuum pulsation (n) increasing (Fig.3). Therefore there is throttle, that can be regulated in the above described proposed experimental pulsator is that the ratio of suction tact and pressing tact is constant ($\alpha=Const.$). The investigation shows that if the proposed pulsator is used milk is not contaminated and it is of high quality (Tab.3).

Conclusion

Use of vermicultivate makes it possible to obtain biogas, green feed, biogumus and make ecological press on biosphere lower on farms.

An universal pulsator both for milking machines and pulse collectors used on farms of Ukraine was proposed and are on original position of easily replaced bacteriological filters for air sonation which are in direct contact with milk.

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HIGIJENSKI UVJETI U POBOLJŠANJU KVALITETE MLIJEKA

Sažetak

Predložena tehnologija dozvoljava potpunu upotrebu organskog otpada. Osigurava zaštitu okoliša, a njome se dobiva vrijedno organsko gnojivo, proteinska hrana i energija (bioplion). Tehnologija biokonverzije poljoprivrednog otpada u gorivo, gnojiva, hranu kao i originalna tehnologija muznih aparata u poboljšanju kvalitete mlijeka prikazani su u praktično.

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