

IMPROVEMENT POSIBILITIES FOR ENVIRONMENTAL MANAGEMENT IN MILK PROCESSING UNITS

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Abstract: Due to accelerated economic development and to the growing number of people worldwide, in our days we are faced with environmental problems of the most diverse. Pollution surrounds us, and challenges to maintain a healthy environment forcing us to take a stand to protect the environment in all areas.

Animal husbandry represents a sector in which it can relatively easily implement policies to protect the environment. Through the adoption of an eco-conscious environmental management can easily highlight the nature-animal relationship. It is necessary promotion of the technologies which are not producing waste, or mixing technology that produces waste with actions that can capitalize them. In this case should be considered recycling manure through treatment stations and later to be spread on farmland.

Key words: *manure, cows for milk, efficient management, environmental management, animals*

INTRODUCTION

Horned cow is part from the category of the large horns and occupies an important place in the economy of animal production due to the supply of various products: milk, dairy products, meat and can also be used for field work.

Due to the growth of living standards, people have become major consumers of protein, thus increasing the demand for meat, especially beef [3,4,9]. From the economic point of view, cattle are the most important species, their flesh being consumed almost everywhere in the world [2,6,8].

Regardless of the number of heads that has a firm must be taken account of the soil condition, witch to be fertile. To get a good fertility to improve soil quality are used products of vegetal and animal nature, thereby helping to avoid soil erosion and to increase the level of organic matter. Very important in this respect become the manure.

Manure is collected from shelters (either manually or mechanically) and then stored on platforms or collecting basins.

Capitalization of droppings as manure, as natural fertilizer, can be made after a prior fermentation, in this regard are arranged platforms (1.5 to 2 m²/per head of animal) or collecting basins from where distributes in field in solid or fluid form (using an drain).

Daily fecal emission represents 6-7% from the body weight of the animal. On average, adults defecate daily 40-45 Kg and urinate between 15-25 liters in 24 hours.

The total amount of manure discharged is estimated as follows:

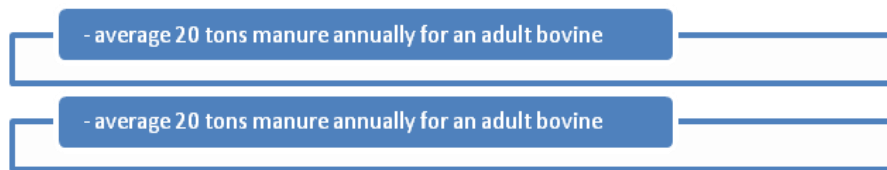


Figure 1 - The total amount of manure discharged

Example

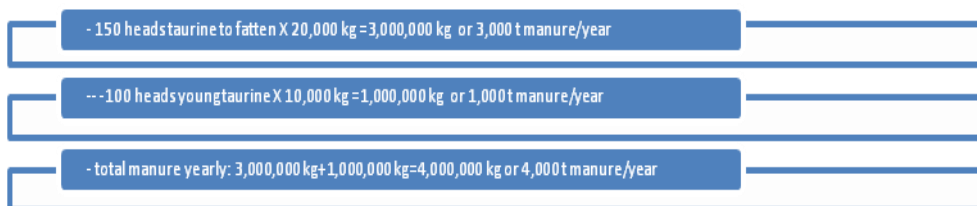


Figure 2 - The structure of total amount of manure discharged

In the industrial system collection and disposal of the manure is made on a water cushion and through discharge, taking into account the technology to increase the number of animals, the storage capacity.

Manure from cattle, can be used as natural fertilizer for agricultural lands, after a preliminary processing.

MATERIALS AND METHODS

To achieve this scientific paper we used the information taken directly from the cows' farm. I did made the research at the place to see how are managed the manure from a dairy farm with about 120 heads.

Managing manure from dairy farms Lacto West Curtici is done in a responsible way towards the environment and is intended to protect the environment at the highest standards.

RESEARCH RESULTS

Lacto West Farm pursues their activity in the locality Curtici; it has three entrances, one primary, one secondary and one of feeding is fenced all around with a wire fence [11]. At the main entrance is located an on a road disinfector and a personal filter.

Lacto West Farm Curtici is modernized and has a capacity of 120 heads, but has the possibility of extending for the cows for milk, for youth being necessary the construction of a separate shelter.

For cow comfort are mounted individual berths rests (model TEXAS FLEX) with sheet on the sand. We opted for the cattle group of 12-17 months and for heifers up to 8 months gestation on the same idea, bunks with sand.

After eight months heifers are moved to individual pens with straw bedding, where they remain until 1 week after birth, where, during that time are gradually prepared for the ratio from Group I (cows with high productions).

Dairy cows are weaned at seven months (suddenly, but through administration of intramammary injections that stop the lactation) and goes through the same stages as heifers.

On the farm are 3 groups of cows:

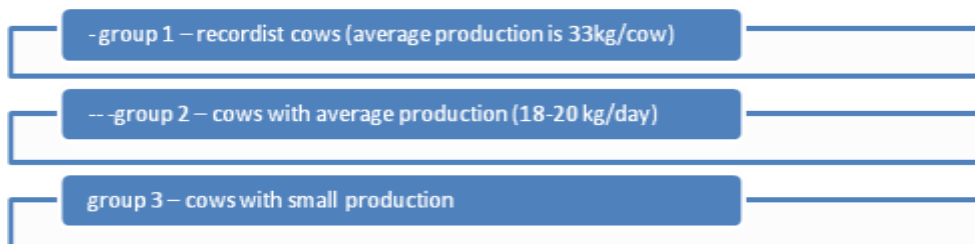


Figure 3 - The groups of cows

Also, the farm Lacto West Curtici has a milking hall of 1x5 with possibility of expansion at additional 5 positions, electronic display of milk production (kg), milking time, indicating the health stage of the udder and a StemCare allow a clear evidence on reproduction and other parameters.

At this time we find in farm the following varieties of feed that make up the cows rations and female youth:

- Corn silage
- Wheat silage
- Semi hay lucerne
- Hay lucerne
- Wheat (grits)
- Maize (grits)
- Wheat straw
- Beet pulp
- Brewers grains

Besides these varieties are used also the personalized concentrates optimized to the requirements from the farm. The results are remarkable both productively and in terms of the gestation rate.

It is realized a single feed both for dairy cows and youth, being optimized the rations according to the age category and physiological state.

The farm owns a technological trailer with cutter and weighing, having a capacity of 7.5 m³.

The manure platform is sized at a capacity that provide storage for a period of 6 months, but generally solid manure are transported directly to the platform from the field, the property of the farm, to its spreading on agricultural lands.

Manure removal: mechanized using a tractor (tillers) with blade.

The lighting is achieved natural and artificial and it is secured at optimal indexes.

The annual quantities of manure and nutrients

It has been conducted several studies that relates to annual amounts of nutrients and manure with solid and semisolid consistency and are presented the following:

The production and annual volume of manure (kg) and production of nutrients with the highest values were registered at:

- Dairy cows (11508 kg manure/year; 81 kg N, 15 kg P₂O₅ and 54 kg K₂O)
- Cattle 1-2 years (7749 kg manure/year; 55 kg N, 20 kg P₂O₅ and 43 kg K₂O)
- Calves-infant 0.3 - 1 year (4930 kg manure/year; 35 kg N, 5 kg P₂O₅ and 26 kg K₂O).

Average annual quantities of manure from cows, depending on their condition and their stage of aggregation in nutrients are presented in Table 1.

Table 1.

Average annual quantities of manure from cows, depending on their stage of aggregation of their content in nutrients

The species	Manure /year		Nutrients		
	Solid (kg)	Liquid (l)	N	P ₂ O ₅	K ₂ O
Cows	6000	2000	30.0	11.0	1.6

Source: [1,7,10]

In Table 2 are presented the concentrations of nutrients in various types of manure semi-of liquid consistency.

Table 2.

The concentrations of nutrients in various types of manure of semi-liquid consistency

Type of manure	The concentration in nutrients kg/m ³			
	N	Total N ammoniated	P ₂ O ₅	K ₂ O
Dairy cows	11-16	4-7	7-9	9-13
Cows for meat	13-18	4-11	7-13	11-16

Source: [1,7,10]

In Table 3 are presented the concentrations of nutrients in various types of manure of liquid consistency.

Table 3.

The concentrations of nutrients in various types of manure of liquid consistency

Type of manure	The concentration in nutrients kg/m ³			
	N	Total N ammoniated	P ₂ O ₅	K ₂ O
Dairy cows	1.3-2.4	0.8-1.3	0.8-1.6	1.6-3.3
Cows for meat	0.7-2.0	0.7-1.0	1.3-4.1	1.6-4.1

Source: [1,7,10]

Pollution elements of manure

In any form will be used manure, under raw form (can be dried or fresh) or as compost, must be made an analysis of substances that can be toxic. Except when these manures are not toxic occurs when manure comes from animals raised ecological.

The most common substances met in manure are hormones, pesticides and antibiotics. International regulations provide that plants should not be treated with any manure within 120 days from harvest, in order to ensure protection against diseases.

Odor emissions came from animal production systems coming from three main sources:

- storage facilities for manure
- animal shelters

- the way of spreading manure.

A large number of volatile compounds have been identified as being produced by the decomposition of animal waste. The most important gases compounds are: ammonia, methane, carbon dioxide, all having global implications in global warming and acid rain.

Although animals produce more carbon dioxide than methane, the latter have impact on the greenhouse effect of 15 times greater than the carbon dioxide.

Dust, pathogens and flies due to animal productions may be placed in air pollution emissions. Dust, which represents a combination of solids from manure, hair, feathers and fractions of feed, is very difficult to remove from animal production units.

CONCLUSIONS

Nowadays it is very important to orient ourselves to an environmental management conducted responsibly.

If we refer to the huge amounts of manures from animals, we can foresee a rational and efficient use of these by converting in natural manure, obviously after a prior processing.

It puts more emphasis on organic farming that must have at base objectives, principles and best practices.

In order to minimize the anthropization of the environment it is necessary to take account of steps such as crop rotation, the limiting of chemical fertilizers and the using of the natural ones, stopping the use of genetically modified organisms, animals growth in freedom or open shelters or usage of the practices of animal growth adapted to each breed in part.

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