5. ANIMAL HUSBANDRY

5.1. INTRODUCTION

Animal husbandry is a sector of agriculture that covers breeding of cattle, poultry and fur-bearing animals, their genetic improvement, growing and use to receive animal production. The animals should be grown using ecologically clean, producing little waste or no waste, energy saving, cheap and most environmental friendly technologies.

Nutrient cycling in animals differs depending on fodder, animal species and keeping conditions. Annual nutrient metabolism in a cow that produces 5000 kg of milk per year is shown in Figure 5.1.

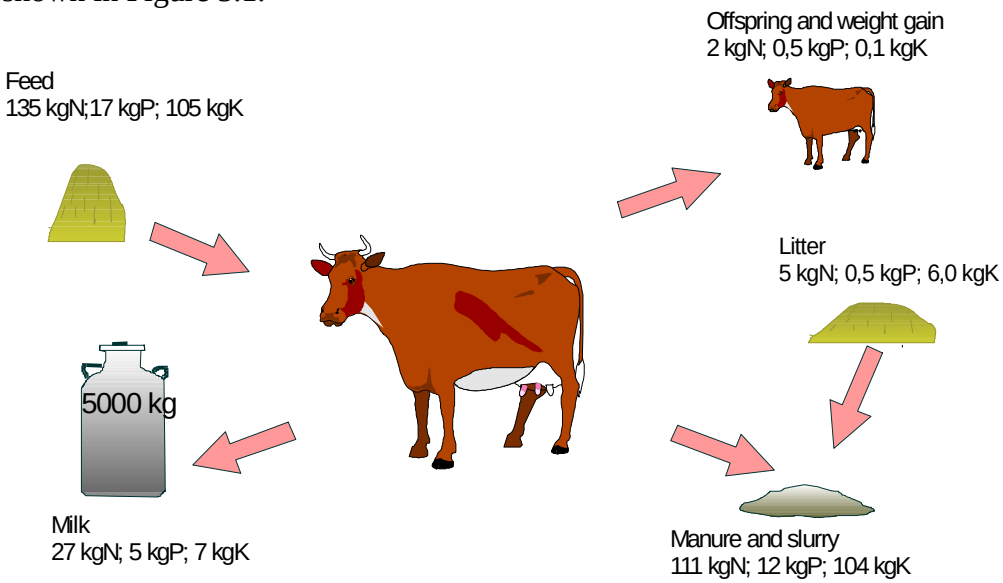

Fig. 5.1. Annual metabolism of nutrients in a cow that produces 5000 kg of milk per year.

In a good farm the determined highest animal density per farm should not be exceeded, and the barn has to be established so that a healthy environment would be provided for the animals. In order to preserve fertilizing value of manure and to reduce nitrogen losses from manure, feeding of animals has to be well balanced, manure storage established, fields properly fertilised and ploughed as soon as possible after spreading of manure.

5.2. HIGHEST RECOMMENDED ANIMAL DENSITY

The highest recommended animal density in a farm is determined according to the amount of manure nitrogen. The amount of livestock manure applied to the land of a farm each year, including manure left on fields after grazing, should not exceed the equivalent of 170 kg of nitrogen per hectare of utilised agricultural area on average.

In order to simplify calculations of the amount of nitrogen accumulated in livestock manure, it is agreed to use the term **animal unit (AU)**.

One animal unit is equivalent to 100 kg of nitrogen ex storage in manure per year including nitrogen left on pastures during grazing period.

Approximately such amount of nitrogen reaches the soil from one cow that produces 5000 kg of milk per year. Annual amount of nitrogen applied on farmland per year from one animal including nitrogen left on pastures during grazing period is given in Annex 5.1.

Coefficients for calculation of animal units, based on the amount of nitrogen applied on farmland (Annex 5.1), are shown in Annex 5.2.

5.1
Animal density in a farm should not exceed 1.7 animal units per hectare of utilised agricultural land.[1]

The animal density on a farm is determined by dividing the number of animal unit on the farm by the area of agricultural land. An example of animal density calculation is given in Annex 5.3. If there are more animals on farm than allowed according to manure, then the farmer has to purchase extra land or to sell manure surplus for other farmer who has too few animals.

5.3. ANIMAL WELFARE AND HEALTH STATUS

5.2
Every animal shall be kept, fed and treated according to its species, age, physiology and behaviour. The owner of animals must constantly take care about their health, feeding, adequate care and appropriate environment. Animals shall be protected from suffering, cruel behaviour and other negative impact.[2, 3]

Stockmen have to consult veterinary specialists about the questions of animal health and to follow their recommendations and instructions. It is needed to render veterinary assistance to sick or injured animals. Only veterinary surgeons and persons with special training have the right to treat animals and perform operations. In order to avoid spreading of infectious diseases, stockmen must allow and help veterinary specialists to apply all needed preventive measures.

For better animal health and welfare it is needed:

- to feed animals with feed of high quality only;
- to protect animals from big stresses, e.g. not to transport them over long distances for a long time;
- to allow animals to be outside at least few hours every day;
- the means of transport used for the transportation of animals shall be suitable for the purpose and protect the animals from shocks and abrasions. During long transportation animals shall be given food and water. Different type, sick or injured animals shall be transported separately;
- for animal identification only official tags shall be used, but no docking of ears, branding and other methods that cause pain;
- cattle can be dehorned, but only under an anaesthetic;
- male pigs under the age of two weeks may be castrated by person other than veterinarian if he has special training. The castration of elder pigs should be performed only under an anaesthetic and only by veterinarian specialist;
- in slaughterhouses prior to slaughter animals shall be treated in such a way as to cause rapid unconsciousness and slaughtered according to the methods approved by the State Veterinary Service and using instruments adopted for particular animal species;

[1] EU Council Directive concerning the protection of waters against pollution caused by nitrates from agricultural sector (91/676/EEC).
[2] Republic of Lithuania. Veterinary law. 1991 12 17 LRAT No. I-2110. V.
[3] Republic of Lithuania. Law on animal care, housing and use. 1997 11 6 LRAT No. VIII-500. V.

- animal owners and stock-keepers shall be constantly checked by medical doctors; they should regularly attend seminars or training courses where they would learn how to behave with animals.

Always remember - man is god for domestic animals !

5.3
It shall be prohibited to feed stimulating substances to animals in order to improve their productivity, capacity for work and sport results, except for those substances that are allowed by the Government and its authorised service.[4]

Some of the stimulating substances used for longer time may harm animal health and reach human organism by the way of livestock products. Veterinary surgeons and animal care inspectors provide information about the use of such substances. Intensive use of growth promoters and antibiotics may cause serious health problems for animals and humans.

Antibiotics are not always necessary if the proper management is applied, like improved livestock breeding, keeping animals under optimal conditions and feeding with high quality feed that is balanced according to animal needs. Growth promoters including hormonal preparations should not be used.

5.4. DISPOSAL OF ANIMAL CARCASSES

An animal owner has to report to a veterinary surgeon after an animal has died. The carrion shall be isolated from people, other animals and insects. The skin shall not be removed and carcass shall not be cut. An animal owner shall **inform without delay** the State Veterinary Service about sudden animal diseases and deaths of great extent.

5.4
With regard to the instruction of state veterinary surgeon the animal carcasses, aborted embryos, damaged skins and furs, waste of slaughtered animals and other animal waste have to be fired, buried or brought (according to veterinary requirements) to animal waste processing companies.[5]

The state veterinary surgeon having evaluated circumstances will specify the most appropriate way of processing or disposing carrion. If an animal has died not of a contagious disease the waste processing company shall be informed or a permit to process the waste in another way shall be obtained.

5.5
As animal carcasses could be used as raw material for processing companies producing feeds, pharmaceutical or special purpose products, persons having such waste shall inform the processing company and keep it before the collection under veterinary sanitation requirements.[6,7]

[4] Republic of Lithuania. Veterinary law. 1991 12 17 LRAT No. I-2110. V.
[5] Republic of Lithuania. Veterinary law. 1991 12 17 LRAT No. I-2110. V.
[6] Veterinary rules on annihilation and processing of animal waste and placing produced products on the market (Project).
[7] EU Council Directive concerning the disposal and processing of animal waste and its placing on the market (90/667/EEC).

There are two state companies in Lithuania (Kaisiadorys Utilisation State Company and state company 'Rietavas veterinary sanitation') that process majority of animal carcasses and wastes from slaughterhouses. Waste processing company shall collect the waste as soon as possible upon information of it. Collected, kept or transported animal carcasses are marked according the procedure established of the State Veterinary Service. After the animal carcasses have been collected the place where they have been kept shall be cleaned and disinfected.

In exceptional cases the State Veterinary Service can issue a permit to bury or to burn the carcasses, as follows:

- upon establishment or suspecting spreading of an infectious disease;
- if carcasses or other animal waste are in place which is difficult to reach;
- if a waste processing company can not take this waste temporarily;
- if it is too expensive to transport this waste to a processing company.

5.6
The carcasses of game birds and animals as well as carcasses of dogs, cats, piglets, rabbits, sheep or goats, lambs under four weeks and other small animals or their parts can be buried in the places established for this purpose and permitted by the State Veterinary Service or in private plots.[8]

In such a case carcasses shall be buried deep enough to prevent carnivorous and birds from digging them up and to avoid the danger of contaminating ground waters or polluting nature. Before the carcasses are buried they shall be sprayed with disinfectant. Other requirements for burial site:

- be at least 500 m apart from settlement;
- be at least 250 m apart from any well, borehole or spring that supplies water for human and animal needs;
- burial pit has to be of such depth that after burying of the carcass there would be at least 1 m of soil layer above it;
- when first dug, the bottom of the hole must be dry and free of standing water;
- it is not allowed to throw dead animals to rubbish-clamps, dung-yards and compost sites.

In exceptional cases and under supervision of responsible institution carcasses can be used for research purpose, fed to the zoo and circus animals, fur animals and hunting dogs.

Body of animals that died because of dangerous for humans and animals infectious diseases can be buried with all skin and internal organs according to indication and supervision of the State Veterinary Service.

5.5. SELECTION OF PLACE FOR BARN AND DESIGNING

5.7
Place for construction of livestock-farm (barn) is selected according to sanitary, zooveterinarian, environmental and fire-prevention norm requirements.[9,10]

[8] Veterinary rules on annihilation and processing of animal waste and placing produced products on the market (Project).

[9] Special conditions of forest and land use. GR 1992 05 12 resolution No. 343. V.

[10] Rules on design of agricultural buildings, confirmed by LRAF and LRBU ministries 1997 07 11 order No. 640/247.

Western wind is dominant in our country; therefore, it is suggested to build barns to the east of dwelling house or settlement. Sanitary distance from the barn to dwelling house is 30 m when herd is up to 50 cows or 100 pigs, and 50 m when more livestock is stored. The sanitary distances may be reduced during reconstruction or expansion of the existing barns if it is co-ordinated with Public Health Service.

5.8
Designing barns in farmsteads within settlements or small towns the shortest sanitary distances to dwelling house and between farmstead buildings and neighbouring constructions are determined under guidance of construction norms regulating design of farmsteads in towns and settlements.[11]

Territory of livestock-farm has to be compact and location of the buildings has to be determined by technological processes. The typical placement of barn, feed and manure storage in a farm is shown in the Figure 5.2 and Figure 5.3.

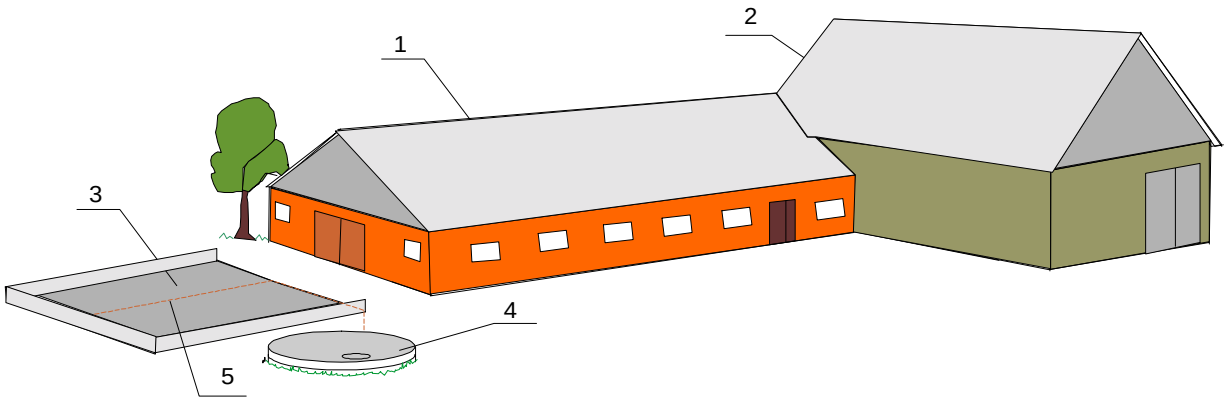

Fig. 5.2. Littered barn with feed storage, manure pad and urine reservoir: 1- barn; 2- feed storage; 3- manure pad; 4- urine reservoir; 5- gutters for urine outflow.

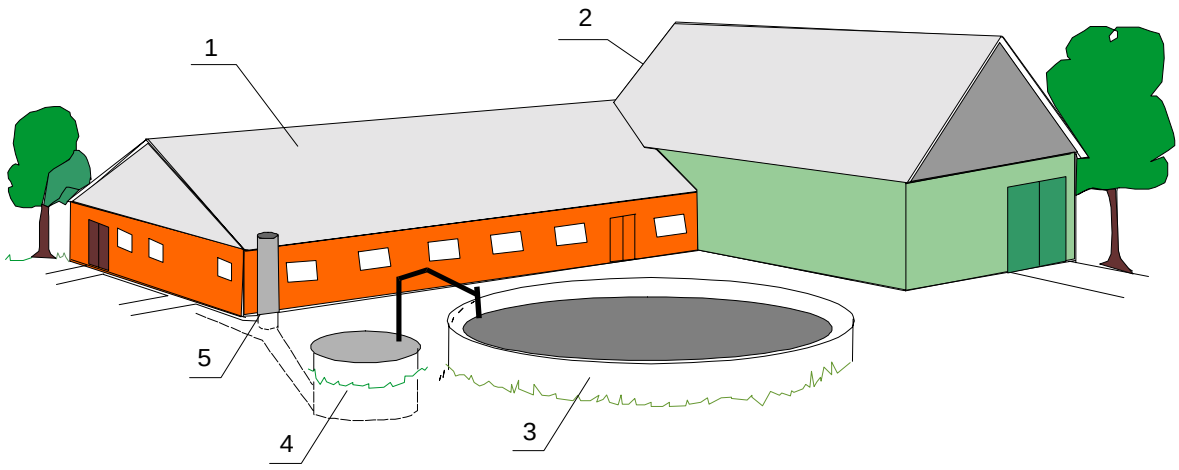

Fig. 5.3. Non-littered barn with feed storage and manure storage: 1- barn; 2- feed storage; 3- slurry reservoir; 4- pit for pumping over of slurry; 5- ventilation pipe.

Storage places that may spread pungent ant unpleasant odour (manure storage, silage trenches, etc.) should be built leeward from other buildings. Feed storage should be located in

[11] Rules on technological design of animal buildings, confirmed by LRAF and LRBU ministries 1997 07 11 order No. 640/247.

a higher place than manure storage.

Minimal zooveterinarian distances between animal farms and other buildings are given in Annex 5.4 and minimal distances of animal farms in the aquifers protective zones - in the Annex.5.5.

5.9
Lithuanian Republic normative acts do not allow building new animal husbandry buildings, manure storage and silage storage places and expanding the existing ones in the following zones:
- **protective zones of communications and electricity supply lines;**
- **sanitary protective zones of roads, railways and their facilities, and airports;**
- **protective zones of main gas and oil pipelines and their facilities, fuel supply bases, gas stations and solid fuel shops;**
- **protective zones of health resorts;**
- **zones of the territory of historical and cultural monuments, protected landscapes;**
- **sanitary protective zones of water bodies (watering places).**[12]

If the already existing animal husbandry buildings are closer than allowed then production scale can not be expanded and further exploitation should be co-ordinated with Regional Department of the Ministry of Environment, Public Health Service, local State Veterinary Service and other interested institutions. In such exceptional case exploitation is possible only if sufficient precaution measures exist that let to ensure protection of environment.

5.6. ENVIRONMENTAL MONITORING AND CONTROL ON FARMS

5.10
Farms that use more than 10 m^3 of water per day have to get License for use of nature resources. Control (monitoring) of environment is compulsory on big farms where annual production of 500 AU is planned and some times on other farms, if it is prescribed in the License for use of nature resources. Monitoring of liquid manure watering, field drainage systems and surface water is compulsory when the size of a farm is 200 AU and more.[13,14,15]

During the monitoring it is needed to evaluate and forecast impact of physical, chemical and biological factors on surface and ground water, quality of grown plants, soil and atmosphere. Regulations for environmental monitoring are determined by services of the Lithuanian Ministry of Environment. The farms themselves finance environmental monitoring. Analyses are made by laboratories that have certificate for such analyses and monitoring handed by the Lithuanian Ministry of Environment.

Data on the amount of water used, manure and slurry storage and composition (amount of DM and NPK, pH) are assembled during the monitoring. Besides that, data on household effluents, slaughter effluents and meat processing run-off quantity and quality should be assembled as well as surface and ground water quality and load should be monitored.

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[12] Special conditions of forest and land use. GR 1992 05 12 resolution No. 343. V.

[13] The order of rendering of licenses for nature resources use, for use of nature resources limits and for setting of permitted environmental pollution norms (Lithuanian). LAND 32 – 99. V., - 1999

[14] Environmental requirements for manure and sewage handling on livestock-farms (Lithuanian). LAND 33 – 99. V., - 1999.

[15] Republic of Lithuania. Law on environmental monitoring. – V., 1997.