

## INFLUENCE OF NOISE AND OBJECT NOISINESS ON ANIMAL BREEDING.

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### Abstract

Intensification of animal farming, increase of their concentration and technological equipment was a part of the industrialization process. Making animal farming more technological is an inseparable part of the increased technological equipment. In this process a new requirement appears and that is the necessity to study influence of noise intensity and noise environment on farm animals. The noise was detected according to the distance of the measurement point from the observed sources of the noise (chopper, vacuum pump, tractor) and their operational running – number of revolutions, wide range within 50 – 100 – 106 dB. In experimental conditions influence of noise on milk yield and behaviour of the cows was determined. We have tested 3 groups of cows under the influence of 80, 90 and 105 dB noise. Decrease started at 90 dB, 3,66 or 2,2%. The biggest decrease was at direct application of 105 dB – 5,27%, with individual differences, differences between animals up to 8.5 – 12%. At 90 dB food intake has been partially decreased. High reaction was at 105 dB, habituation was excluded with high level of nervousness, increase of faeces and urination.

**Key words:** noisiness of the environment, influence on behaviour, level/amount of production

### Influence of noise and environmental noise on animal breeding

The main reason for definition of noise influence on animals was an increasing intensification of their breeding, technological and technical equipment of industrialized farms and other objects. In this process we expected increasing noise as negative impact of increasing noise emission on bred animals, on their production and behaviour. At the time the issue was under experiment there was just a little exact knowledge about the influence on different breeds and categories of animals, on their productivity and behaviour. Different breeds of animals have different anatomic and physiological dispositions and depending on these also different reactions on increased noise. Animals themselves produce different level of sound, they differ how

loud and intensive this sound is. This also identifies their reaction on real or simulated noise. Very important source of noise emission has been the development of transport infrastructure, especially air transport. Introduction of reactive engines defined high hits of noise emissions and their negative impact on bred animals. These ideas have been declared especially at places with a significant junction of air transport.

### Noisiness of stable environment

In time succession before the experiments were set out we measured the noisiness of stable environment through measurement of noise sources in stables and outside them. Our measurements showed the noisiness from outside sources in the range 59 – 78 dB (A) depending on the distance between the noise source and place of measurement, or at closed doors and windows, which lowered the noise level in the objects, 3 – 10 dB (A) less.

The main source of noise in stables for cows is a tractor, in drive through objects, at feeding and taking away manure and bedding. Depending on the kind of operation the Zetor S 50 tractor noise was at high speed up to 100 dB (A), at low speed 20 dB (A) less, when using the horn the level of the noise was up to 106 dB (A).

The noise caused by air extractor was 65 – 74 dB (A), in engine room and at exhaust it was up to 92 – 98 dB (A).

When using work tools the measured level of noise was 65 – 93 dB (A), the higher levels of noise were measured when using a shovel for cleaning a chute. The results of the experiment showed that milking cows do not negatively influence each other by their sound production (50 – 60 dB).

### Influence of noise on utility

The noise level 80 dB does not have disturbing influence on cows. It was observed that the noise level 90 dB had some impact on utility (3,66 %, or 2,20 %).

Direct application of 105 dB caused final decrease up to 5,27 % with significant differences among animals (8,5 % - 12 %), it means that the reactions of different animals varied significantly.

This means that from complex point of view the impact of negative influence of noise level 105 dB was the highest on milk utility. At this level of noise feed consumption decreased and intensity of milk flow was worse.

#### **Influence of noise on cows' behaviour**

Animal behaviour has its specifics also at standard conditions. Each significant change of conditions, especially the one which disturbs them causes changes in their behaviour and regularity of their life habits. These issues were investigated by several experts from the point of view of sensitivity of cattle (Porzig, E.: 1969). Cattle is sensitive to sounds and noise. However, less harmful is the permanent noise after the cattle gets used to it than that one which is rare, though its intensity may be the same. Very harmful is the noise with high intensity even if it is produced for a short time.

#### **Results of cows' behaviour observation**

At the defined noise level it was found that the reaction of cows on noise was very high. During those days when the noise was produced, milking cows were eating and chewing food for a longer time and the time when they were lying was shorter.

At noise level 90 dB milking cows stopped eating max. for 5 minutes and on the third day they even did not notice when the noise started.

Very visible was the reaction of cows on direct application of the noise 105 dB without any preceding training. At its application the animals were very nervous and they urinated and defecated more often. Most of the animals calmed down after 5 minutes, but part of them (15%) calmed down only after about 25 minutes, one of the animals – up to one hour. Similar reaction was observed with the same animals also the following days. These were the milking cows with which the biggest decrease of yield of milk was recorded. (Kovalčík, K. and Šottník, J. 1971).

According to the authors the most important was the finding that the milking cows react to acoustic stress very individually, some of them rather negatively. One can possibly expect that these animals react sensitively also to other stresses.

#### **Conclusion**

The noise was determined according to its source and distance of its source. The intensity of the sources outside stables varied from 59 to 78dB (A).

The main source of the noise was a tractor, at high speed 100dB (A), at low speed 20 dB (A) less, the use of horn produced the noise 106 dB (A).

Noisiness of the air extractor was 65 – 74 dB (A), in engine room and at exhaust it was up to 92 – 98 dB (A). When using work tools the measured level of noise was 65 – 93 dB (A).

The noise was determined in 3 groups in the form of pair tests, during the time without noise and with production of noise. The noise levels in experimental groups were the following:

First experimental group                      80 – 90 – 105 dB (A),

Second experimental group                      90 – 105 dB (A),

Third experimental group                      105 dB (A).

The results of the experiment showed that milking cows do not negatively influence each other by their sound production (50 – 60 dB).

#### **Influence of noise on cows' utility and behaviour**

The noise level 80 dB does not have disturbing influence on cows. It was observed that the noise level 90 dB had some impact on utility (3,66 %, or 2,20 %). Direct application of 105 dB caused final decrease up to 5,27 % with significant differences among animals (8,5 % - 12 %), it means that the reactions of different animals varied significantly. The biggest impact on milk utility was at direct application of noise level 105 dB. At this level of noise feed consumption decreased and intensity of milk flow was worse.

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