# Microclimatic conditions in milking parlour during winter period

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## Summary

The aim of this study was to find out and to compare microclimatic conditions in milking parlours built in dairy stable (B) and in milking parlours detached out of stable (A) and exterior (E) in winter period. Air temperature showed statistically significant differences ($P<0.05$) between milking parlours A vs. B and A vs. E and B vs. E. Air flow showed significant differences ($P<0.05$) between A vs. E and B vs. E. The differences in relative humidity were not found out to be significant. The higher air temperature in milking parlour A was caused by heating all day long. This heating was not invoked in milking parlours B and air temperature was found out to be lower than recommended value (minimum 10°C) for milking parlours in winter period. It is concluded that milking parlours built in stable do not provide adequate thermal comfort for milkers in winter period and can worsen the milking process.

***Key words:*** *Milking parlours, air temperature, relative humidity, air flow*

## Introduction

Milking parlours are an integral part of dairy farms. A quality of working environment in milking parlour significantly affects a comfort of milkers and procedure of milking (Dolezal, 2000). The microclimatic conditions are a very important element of working environment and significantly influence of thermal comfort of milkers (Mathauserová, 2003).

## Materials and methods

Six milking parlours detached out of stable (A) and seven milking parlours built in dairy stable (B) and exterior (E) were tested. During three winter months (January – March), air temperature, relative humidity (by digital

thermometer TESTO 615) and air flow (by digital anemometer TESTO 415) were measured in operating zone of milkers. The measurements were provided monthly three times during day in every tested milking parlour. The obtained values were processed by Statistica.cz (ANOVA).

## Results and discussion

Results are showed in Table 1.

*Table 1. The average air temperature, relative humidity and air flow of milking palours A,B and exterior E in winter period.*

| | Air temperature (°C) | Relative humidity (%) | Air flow ($m.s^{-1}$) |
|---|---|---|---|
| Milking parlours A | 10,51 ± 2,74 $^{a,A}$ | 79,79 ± 13,68 | 0,1 ± 0,07 $^{A}$ |
| Milking parlours B | 8,37 ± 4,29 $^{a,B}$ | 77,88 ± 10,65 | 0,09 ± 0,06 $^{B}$ |
| Exterior E | -1,20 ± 6,21 $^{A,B}$ | 73,84 ± 16,03 | 1,58 ± 1,18 $^{A,B}$ |

Air temperature showed statistically significant differences ($P<0.05$) between milking parlours A vs. B and A vs. E and B vs. E. Air flow showed significant differences ($P<0.05$) between A vs. E and B vs. E. The differences in relative humidity were not found out to be significant.
Air temperature in milking parlours B did not accord with recommended air temperatures. Luymes (1990) recommends minimal air temperature 10°C but Romaniuk, Overby (2003) mention minimal air temperature 14°C in milking parlours. The higher air temperature in milking parlour A was caused by heating all day long. This heating was not invoked in milking parlours B and air temperature was found out to be lower than recommended value in winter period. The values of air flow were found out according to recommended values (Mathauserová, 2000; Tuure 2003). It is concluded that milking parlours built in stable do not provide adequate thermal comfort for milkers in winter period and can worsen the milking process.

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