



The Model Research on Constitution of Draught Free Area for Suitable Environmental Condition in Dairy Cattle Housing[#]

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Received December 27, 2008; Accepted April 15, 2009

Abstract: In this study, an alternative dairy building design was developed to keep environmental conditions optimum level for dairy cows. Adaptation to environment and constituting living area, without stress, close to natural sheltering region were aimed in this barn design. Free stall resting area has been constituted economically by designing feeding line out of closed area in free stall barn. Seasonal usage of areas for cows has been possible by constituting areas which can be used in summer and winter and has different features. Model analysis has been carried out by constituting a model of developed building. Stagnant area has been analyzed by testing the structure model in a wind tunnel. Air speed is measured within the model and in a real shelter. At the end of the studies, it was understood that, there is a significant similarity between real condition air speed values and air speed in the model. Air flow has been determined between 0.4-0.7 m/s, 0.8-1.0 m/s, and 1.0-1.2 m/s for 20 m, 24 m, and 32 m of lot width, respectively when wind speed was 3.5 m/s. Reduction of air flow in the direction of wind has been determined averaged 85 % for 20 m of yard width, 72 % for 24 m of lot width, and 66 % for 32 m of courtyard width.

Key words: *Air flow, suitable environment for dairy cattle*

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[#]This paper is presented from Ph. D. Thesis of Selda Uzal