

高床水簾肉豬舍之空舍背景值分析

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Analysis of the background value of the empty house in the high-bed water curtain pig house

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The purpose of this study is to test the ventilation rate of the high-bed water curtain pig house in the empty house and the cooling effect of the water curtain. Wind speed, temperature and humidity background value measurement configuration: from a top view, horizontally 1 meter behind the water curtain, 1.25 meters in front of the empty sewage washing and filtering facility, and 0.5 meters in front of every two columns are set as measurement points; the longitudinal distance is two The side wall of 1.5 meters and the middle aisle are set as measurement points, and the outside measurement point is a position beside the pig house where the sun is not directly exposed. The measurement height is set to 1 meter on the bed surface and the weather during the measurement is sunny in the hot season. The measurement results show that the wind speed increases from 20% to 80% when the fan is running, and the wind speed is 0.02 m/s when the fan is running 20%, which is close to the fan's non-running state. When the water curtain is closed, the difference between the temperature inside the house and the temperature outside the house under different fan operating percentages is small. After the water curtain is opened, the temperature in the fan room will drop by about 1 degree Celsius when the fan is running 20%; the temperature in the fan room by 40%, 60%, and 80% will be reduced by about 2 degrees Celsius.

Key Words: High-bed, Water curtain, Wind speed, Temperature and humidity

前言

本所建置之標準化高床水簾肉豬舍，業納入節水減廢與廢污臭味處理、剩餘資材再利用及豬隻批次精準管理等建置原則，相較於開放式實地地面豬舍，應具改善豬隻生長性能，以及節水、減廢、降溫與廢污臭味處理改善等優點，以作為後續推廣國內豬農新（修）建豬舍之參據。

材料與方法

保育結束（25-30公斤）的LYD小豬500頭，平均分飼於20欄、每欄飼養25頭，提供每頭豬1.17m²的地面積（每欄長×寬=5.4m × 5.4m），飼養至平均體重115kg結束生長試驗。飼糧以玉米—大豆粕為主要原料，飼糧以自動供料系統任食，飲用水充分供應。調查試驗期間豬隻生長性能及腳蹄健康情形。

表1. 風扇運轉不同程度於高床水簾肉豬舍內的風速及通風量

Power of the fan	Wind speed (m/s)	Ventilation volume ¹ (m ³ /min)
20%	0.02 ± 0.00 ²	29.67 ± 11.55
40%	0.30 ± 0.00	572.51 ± 90.36
60%	0.54 ± 0.00	1036.34 ± 41.32
80%	0.94 ± 0.00	1803.19 ± 75.28

¹ Ventilation volume = Cross section area of the pig house × Wind speed.

² Mean ± SD, n = 6.

結果與討論

開啟及關閉水簾於風扇運轉不同百分比時豬舍內外的溫度：測量結果顯示，水簾關閉的狀態下，不同風扇運轉百分比下的舍內溫度與舍外溫度間的差距小，風扇高速運轉的舍內溫度較低運轉高，原因為記錄時間不同，後續將以亂數分配記錄的時間點。水簾開啟後，風扇運轉20%下舍內溫度降低約攝氏1度；風扇運轉40%、60%、80%下舍內溫度皆降低約攝氏2度。水簾片為塑膠材質，後續將於豬舍正式運作後，再行測量降溫效果。

結論

有關水簾降溫效果，本舍水簾為塑膠材質，相較於紙質水簾，使用年限較長。而降溫效果於新舍狀態下，持續運轉一段時間後應可進一步提升，故於豬舍正式運作後，尚有提升的空間。

表2. 風扇運轉不同程度於高床水簾肉豬舍內的風速及通風量

Power of the fan	temperature(°C)		
	Water curtain off	Water curtain on	Outdoor
20%	32.10 ± 0.43	31.02 ± 0.70	
40%	32.58 ± 0.71	30.37 ± 0.67	
60%	32.84 ± 0.15	30.12 ± 0.52	32.25 ± 0.93
80%	33.00 ± 0.29	30.19 ± 0.32	



圖1. 本所標準化高床水簾肉豬舍