

不同品種組成肉豬飼養於高床水簾豬舍之性能比較

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Comparison of growth performance of different breeds pigs raised in high-bed water curtain pig house

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Five hundred head LYD crossbred pigs with body weight of 25-30 kg were raised in a high-bed scraping water-pad cooling pig houses. Each pig was provided with stocking density of about 1 m². The growth experiment was completed when the weight was 115 kg, and the feed and water were supplied ad libitum. Investigation the growth performance, the cooling effect of the water-pad cooling pig house, and the reduction effect of the wastewater by the method of scraping manure and diverting manure and urine during the period. Results show that the ambient temperature was 34.2°C, the temperature in the pig house could be reduced by about 4°C after starting the water-pad cooling and the fan. The daily gain, feed intake and feed conversion ratio during the experimental period were 0.80 kg/day/pig, 2.31 kg/day/pig and 2.89, respectively. When the average weight of pigs is 60-70 kg, the average daily scraping amount of manure is 1.03 kg/pig, the moisture content is 84.4%, and the wastewater amount is 2.93 L/pig, and when the average weight of pigs is 105-115 kg, it is 1.58 kg/pig, 63.9% and 6.12 L/pig, respectively. In conclusion, the water-pad cooling system can effectively reduce the temperature in the pig house in a high temperature environment, and a manure scraping facility is installed under the high bed of the pig house to clean up the excrement of pigs, which has the effect of greatly reducing the wastewater yield.

Key Words: Hybrid pigs, High-bed pig house with cooling pad, Growth Performance

前言

高床水簾豬舍是一種結合了先進飼養管理和環境調控技術的豬舍。水簾系統安裝在豬舍的一側或多側，透過水蒸發帶走熱量，有效降低豬舍內部的溫度，適合於氣候熱的地區，維持豬隻的舒適度，進而保障其生長性能和健康狀況。這種豬舍的設計同時考慮了環境保護以及提高生產效率，體現了畜牧業向現代化、自動化發展的趨勢。

材料與方法

試驗於畜產試驗所高床水簾豬舍進行，採用2種品種組成（LD及 LYD）的保育結束仔豬（平均體重約25kg）各56頭，共使用112頭實驗動物，平均分置於8欄，每欄飼養14頭，每頭提供1.04 m²飼養面積。飼糧參照NRC（2012）推薦的生長期與肥育期豬隻營養需要量調製（表1），飼糧及飲用水皆採任食，在豬隻平均體重約110kg時結束生長試驗。

表1. 試驗飼糧組成

Item	Grower stage	Finisher stage			
Ingredients, kg			Vitamin premix ¹	1.0	1.0
Corn meal, CP 7.5%	723.8	777.8	Mineral premix ²	1.0	1.0
Soybean meal, CP 43.5%	196.0	152.0	Phytase, 5,000 U/g	0.2	0.2
Fish meal, CP 60%	30.0	-	Calculated value		
Molasses	20.0	20.0	Digestible energy, kcal/kg	3,404	3,407
Wheat bran	-	20.0	Crude protein, %	16.00	13.02
Soybean oil	6.0	5.0	Copper, mg/kg	10.00	9.90
Limestone, pulverized	6.0	8.0	Zinc, mg/kg	64.40	62.5
Dicalcium phosphate	11.0	10.0			
Choline chloride, 50%	1.0	1.0			
Salt	4.0	4.0			

¹ Vitamin premix provided per kilogram of diet as following: Vitamin A, 6000 IU; Vitamin D₃, 800 IU; Vitamin B₁₂, 0.02 mg; Vitamin E, 20 IU; Vitamin K₃, 4 mg; Vitamin B₁, 4 mg; Pantothenic acid, 16 mg; Niacin, 30 mg; Pyridoxine, 1mg; Folic acid, 0.5 mg; Biotin, 0.1 mg.

² Mineral premix provided per kilogram of diet as follows: Fe (FeSO₄·7H₂O), 140 mg; Cu (CuSO₄·5H₂O), 7 mg; Mn (MnSO₄), 20 mg; Zn (ZnO), 70 mg; I (KI), 0.45 mg.

結果

結果顯示（表2），生長期結束體重、採食量及日增重，LD閹公豬顯著地較LYD閹公豬低，而飼料轉換率2組無顯著差異。在生長期日增重及飼料轉換率的結果，日增重顯示LD肉女豬較LYD肉女豬顯著地較高，而LD肉女豬與LYD肉女豬的採食量差異不顯著，LD肉女豬的飼料轉換率顯著地較LYD肉女豬好。

表2. 品種組成與性別對豬隻生長性能之影響

Items	LYD ¹		LD ¹		SEM ²
	Barrows	Gilts	Barrows	Gilts	
No of pigs	28	28	28	28	
Initial					
Age, day	101.7 ^b	101.7 ^b	103.8 ^a	104.0 ^a	0.1
BW, kg	38.1	38.0	40.1	40.9	1.5
Grower stage					
Age, day	129.7 ^b	129.7 ^b	131.8 ^a	132.0 ^a	0.1
BW ³ , kg	62.4	61.3	65.2	63.3	2.2
ADG ³ , kg/day	0.87	0.83	0.90	0.80	0.06
ADFI ³ , kg/day	1.92 ^a	1.78 ^{bc}	1.84 ^b	1.72 ^c	0.02
FE ³ , gain/feed	0.41	0.42	0.44	0.41	0.02
Finisher stage					
Age, day	184.7 ^b	184.7 ^b	186.8 ^a	187 ^a	0.1
BW, kg	116.5 ^a	113.1 ^{ab}	113.3 ^{ab}	110.5 ^b	1.8
ADG ³ , kg/day	0.98 ^a	0.94 ^{ab}	0.87 ^{bc}	0.86 ^c	0.03
ADFI ³ , kg/day	3.05 ^a	2.94 ^b	2.98 ^{ab}	2.85 ^c	0.03
FE ³ , gain/feed	0.32 ^a	0.32 ^{ab}	0.29 ^b	0.30 ^{ab}	0.01
Overall					
ADG ³ , kg/day	0.94 ^a	0.90 ^{ab}	0.88 ^{bc}	0.84 ^c	0.02
ADFI ³ , kg/day	2.74 ^a	2.62 ^{bc}	2.66 ^b	2.54 ^d	0.03
FE ³ , gain/feed	0.34	0.34	0.33	0.33	0.01

¹ LYD: (Landrace ♀ × Yorkshire♂) ♀ × Duroc ♂; LD: Landrace ♀ × Duroc ♂.

² SEM: standard error of the mean.

³ BW: body weight; ADFI: average daily feed intake; ADG: average daily gain; FE: feed efficiency.

^{abcd} Means with in same row without the same superscripts differ (P < 0.05).