

THE EFFECTS OF SEASON, SEX AND BREED ON PIG FOOD INTAKE AND PERFORMANCE

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INTRODUCTION

There is a strong positive relationship between the food intake and the performance of pigs. However, the food intake of pigs can be influenced by many factors. The reduction of food intake of growing and finishing pigs under high environmental temperature is a familiar phenomenon (Heitman, Kelly and Bond, 1958; Hazen and Mangold, 1960; Mangold, Hazen and Hays, 1967; Hsia and Lu, 1987a and b; 1988a and b). Hsia and Lu (1987a and b) reported that the food intake of pigs can differ proportionately by about 0.25 to 0.35 between the warm and cold seasons. Food intake variation between sexes has also been reported (Fuller, 1984). Other reports have also shown that the food intake of pigs of selected lines fell below that of the control line (Brandt, 1987). The present experiment was designed to investigate the extent to which the food intake of different breeds or different sexes varies under different seasons.

MATERIAL AND METHODS

A total of 192 growing and finishing pigs of four breeds, Duroc (D), Danish Landrace (L), Yorkshire (Y) and three-way-crossed pigs (LYD) were used in this experiment. The test was conducted once in summer and once in winter with an equal number of pigs (half castrated boars and half gilts) of each breed. Six pigs

were kept in each pen. The average initial body weight was 20.1 kg and the average final body weight was 95.9 kg. The crude protein content of the food was 160 g/kg and the digestible energy content was 14.15 MJ/kg. Food was provided *ad libitum* and replenished once daily and the residue of food was collected and weighed the next morning. Pigs were weighed once weekly and water was provided *ad libitum*.

RESULTS AND DISCUSSION

There were significant differences in food intake among breeds ($P < 0.01$; Table 1); that is, the LYD pigs had higher food intakes than the other three breeds and the L had the lowest food intakes. The LYD pigs had the highest weight gains and the L had the lowest weight gains among the four breeds. There was no significant difference in food conversion efficiency among the four breeds ($P > 0.05$).

The pigs ate significantly more food in the cold season than in the warm season ($P < 0.01$). Weight gain of pigs was also significantly higher in the cold season than in the warm season ($P < 0.05$). However, the food conversion efficiency was significantly better in the warm season than in the cold season ($P < 0.01$; Table 1).

The castrated boars had significantly higher food intakes and weight gains than the gilts ($P < 0.05$). There was no significant difference in food conversion efficiency, between the two sexes (Table 1). There was no

TABLE 1
The effect of season, sex and breed on pig food intake and performance

	Breed				Significance	Sex		Season	
	Duroc (D)	Landrace (L)	Yorkshire (Y)	LYD		Castrated male	Female	Cold	Warm
Weight gain (kg/day)	0.635	0.549	0.612	0.666	***	0.648	0.583***	0.633	0.598***
Food intake (kg/day)	2.004	1.893	1.995	2.155	*	2.145	1.879***	2.141	1.882***
Food conversion rate (kg/kg)	3.194	3.404	3.284	3.220		3.294	3.258	3.398	3.153***

significant interaction among breeds, seasons or sex treatments.

Those results suggest that all breeds used in the present experiment showed similar responses to the high environmental temperature. It seems that no breed is especially resistant to high environmental temperature.

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