Effect of conventional and deep litter housing on pig growth performance and carcass characteristics

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Anecdotal observations suggest that pigs raised in deep litter systems are fatter than pigs raised in conventional systems. To manage fat deposition in pigs, some producers wean pigs into deep litter and then at about 13 weeks of age move the animals into conventional facilities for finishing. Differences in growth and carcass quality have been reported between pigs raised outdoors and conventionally (Gentry *et al.,* 2002). We would expect the physical and thermal differences between conventional and deep litter housing systems to affect the partitioning of energy for lean and fat deposition during growth. In this study we hypothesised that growth performance and carcass composition would differ for pigs housed conventionally or on deep litter.

Conventional housing consisted of commercial, partially slatted pens for weaner and grower-finisher pigs within an insulated building. The deep litter housing consisted of two shelters, which were divided into four pens and bedded with cereal straw. One hundred and sixty female pigs were stratified by live weight (LW) at weaning and allocated randomly to four treatments. The treatments were: C: conventional housing 3-24 weeks of age; DL: deep litter housing 3-24 weeks; DL-C: deep litter housing 3-13 weeks followed by conventional housing 13-24 weeks; and C-DL: conventional housing 3-13 weeks followed by deep litter housing for 13-24 weeks. There were 10 pigs per pen and four pens per treatment. At 13 weeks all groups of pigs moved pens. The same commercial, cereal-based diets were phase-fed to all treatments. At 24 weeks of age pigs were slaughtered at a commercial abattoir. Twenty-four hours after slaughter, one side of the carcass from 12 pigs per treatment, was collected and analysed for fat and lean content (dual energy X-ray absorptiometry). Data were analysed by ANOVA using Genstat v6.

Table 1. Growth performance and carcass characteristics of pigs raised in different housing treatments.

	C	C-DL	DL	DL-C	lsd[1]	P
LW (kg) 3 Weeks	5.5	5.6	5.5	5.5	0.224	0.967
LW (kg) 11 weeks	34.6	34.1	36.3	35.8	1.23	0.007
LW (kg) 13 weeks	46.6	45.9	48.5	48.4	2.06	0.043
LW (kg) 16 weeks	69.3	64.9	69.8	66.2	2.93	0.009
LW (kg) 24 weeks	123.3	117.2	122.8	117.0	4.43	0.016
Carcass weight (kg)	84.5	82.2	85.2	81.0	3.98	0.074
Dressing %	68.5	70.1	69.4	69.2	2.31	0.434
P2 (mm)[2]	19.2	18.8	21.7	18.7	2.62	0.639
Fat % (side)	29.5	21.0	25.3	25.4	6.27	0.074
Lean % (side)	58.8	63.4	60.7	61.1	3.49	0.091

[1]lsd = least significant difference; [2]carcass weight used as co-variate in analysis

Differences in LW were evident by 11 weeks of age (P=0.007) with pigs housed in deep litter being about 2 kg heavier than pigs housed conventionally. After changing pens at 13 weeks of age, LW was higher for pigs that had remained within the same housing system (P<0.05), than pigs moved into the alternate housing treatment. At 24 weeks, C and DL pigs had higher LW at slaughter (P=0.01) and the trend for carcass weight was similar to LW (P= 0.07). There was a trend for C pigs to have higher percent fat (P=0.07) and lower percent lean (P=0.09) than pigs in the other housing treatments.

There were no treatment differences for carcass weight or P2, suggesting that moving pigs from deep litter housing into conventional housing for finishing is not a valid management strategy for reducing carcass fatness. The results indicate that the reduction in growth that occurs when pigs move into a different housing system is evident at slaughter. Under the current carcass payment system based on P2 and carcass weight, one type of housing treatment did not offer an advantage over other treatments. Contrary to the perception that pigs raised in deep litter are fatter, our results indicate that pigs raised entirely on deep litter have lower percent carcass fat than pigs raised entirely in conventional housing. We conclude that pigs raised in deep litter for the entire growing-finishing period produce a similar carcass to pigs weaned into deep litter and finished in conventional housing.

References

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