

Feed Intake and Growth Rate in Purebred Berkshire Pigs Housed in Hoop Buildings in Iowa

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Summary and Implications

Niche marketing continues to grow in Iowa and the United States as the demand for high quality pork increases for both in home and out of home consumption. The majority of pigs in demand for these markets are Berkshires, with many raised in bedded hoop barns. Berkshires have been shown to have significant advantages in meat eating quality, with significantly poorer feed conversion and higher feed costs. However very little information exists as to how these pigs grow and the nutritional needs to optimize both growth and feed efficiency. Producers have little production data to evaluate and adjust feeding programs. These trials were initiated to help characterize these parameters and allow Berkshire producers a means to be more effective within their production and marketing system. This trial demonstrated that Berkshire pigs grow as fast but consume more feed than expected from traditional commodity genetic lines, resulting in a challenging feed conversion ratio. Barrows grow faster, consumed more feed than gilts, but gilts were more efficient converting feed to gain. Although seasonal feed intakes differ for both sexes, growth rates were similar within gilts and barrows. This information can perhaps be used in designing rations and feed budgeting systems that can lower the feed costs for production of Berkshire pork.

Introduction

Previous research on meat quality of pork has demonstrated that purebred Berkshires have advantages over most commodity based pork. Therefore a Certified Berkshire Pork program has developed and is a vital niche market in Iowa and the United States that provides economic opportunity for a growing number of producers. However, Berkshires have a reputation of being fatter and less efficient in feed conversion, and therefore these purebred Berkshires are not commonly raised in modern day pig production systems due to this higher cost of production.

Many Berkshire Pork niche markets require access to bedding and limit the use of antibiotics and feeding of animal-proteins. In Iowa, producers of Berkshire Pork often raise their pigs in bedded hoop barns because this type of system matches with the housing requirements of their

market. Housing influences the thermal environment that pigs experience and thus influences growth rate and nutritional requirements of growing pigs.

Better understanding feed intake levels, growth rates and lean and fat deposition are needed in order to develop the most cost effective feeding programs for these purebred pigs. Accurate knowledge of this information would enable nutritionists to more closely match diet formulations with needs of growing pigs. Precisely matching the nutrient profile of diets with nutritional needs of growing pigs is needed to reduce excretion of nutrients into the environment. Delivering the correct nutrient profile to support growth and development while avoiding delivery of excess nutrients will also help minimize feed costs. The starting point for developing a precise nutrition program for Berkshire Pork is to accurately know the feed intake and growth rate of purebred Berkshire pigs from weaning until market weight. Better characterizing how purebred Berkshire pigs grow in bedded hoop barns will enable more accurate feed formulation for this type of pig raised in bedded systems. The purpose of this project is to characterize typical growth of purebred Berkshire pigs in bedded hoop barns in Iowa.

Materials and Methods

This study was conducted at the Iowa State University Western Research Farm, Castana, IA. Two distinct trials, summer and winter, were conducted in order to include the environmental extremes of Iowa's climate. In each trial 36 Berkshire feeder pigs (18 gilts; 18 barrows) were purchased and housed in bedded mini-hoop barns.

The targeted weight range to evaluate feed intake and growth rate was from 50 to 270 pounds of live weight. Due to the variation in size and weight, pigs were allotted by sex and weight (light, medium, and heavy) to six pigs per pen; two pens per hoop, across three hoops. Pigs were fed ad libitum utilizing a six phase feeding program of corn-soybean meal based diets that met or exceeded amino acid requirements. Weight breaks for diet changes were 90, 135, 180, and 225 lb average pen weight. At 21 day intervals pigs were weighed and feed consumption recorded until pens averaged 270 +/- 5 lb to characterize growth and intakes. Indoor and outdoor temperatures were recorded during each trial period.

Results and Discussion

Table 1 summarizes the growth performance of the two trials (1-winter; 2-summer) and weight by sex pen grouping. Barrows ate more feed than gilts (6.73 lbs vs 5.70 lbs) across the two trials. Barrows grew faster (108 versus 119 days to market weight) and were heavier at the end of test

Iowa State University Animal Industry Report 2013

than gilts in both trials averaging 275 versus 265 lb, barrows and gilts respectively. Gilts were more efficient in converting feed to gain (3.20 vs 3.31). Growth rates were similar for between seasons for both barrow and gilts; however, more feed was consumed during the winter than the summer period by both sexes.

Although not presented in table 1, growth rates were the same between weight classes within sex, but feed disappearance was increased as the weight allotment

increased for both trials. In comparison of this performance data with the previous work (Lean Growth Trial, NPPC, 2000), these Berkshires grew considerably faster and were marketed at heavier weights.

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Table 1. Growth performance of Berkshire.

Trial	Wt-Sex*	Initial Wt	Final wt	Days	ADFI	ADG	F:G
1	Lt-G	41	262	127	5.75	1.74	3.30
	Lt-B	47	273	112	6.57	2.02	3.26
	Md-G	56	265	118	6.05	1.77	3.41
	Md-B	55	277	112	7.22	1.99	3.63
	Hy-G	66	273	118	6.12	1.76	3.49
	Hy-B	69	278	104	7.33	2.01	3.65
2	Lt-G	46	258	117	5.18	1.81	2.86
	Lt-B	43	270	111	6.31	2.05	3.08
	Md-G	52	261	117	5.40	1.79	3.02
	Md-B	53	278	111	6.41	2.02	3.17
	Hy-G	60	272	117	5.68	1.82	3.13
	Hy-B	64	271	97	6.54	2.13	3.06
1	G	54	267	121	5.97	1.76	3.40
	B	57	276	109	7.04	2.00	3.51
2	G	52	264	117	5.42	1.81	3.00
	B	53	273	106	6.42	2.07	3.10
Overall	Trial 1	56	271	115	6.51	1.88	3.46
	Trial 2	53	268	112	5.92	1.94	3.05
	Gilts	53	265	119	5.70	1.78	3.20
	Barrows	55	275	108	6.73	2.04	3.31
	All pigs	54	270	113	6.21	1.91	3.26

* Lt= light, Md= medium, Hy = heavy weight; G = gilts; B = barrows;