SWINE UPDATE

Kansas State University Agricultural Experiment Station
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UPCOMING EVENTS

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KSU Swine Industry Day
Manhattan, KS
November 19

Recording Sow Lactation Feed Intake

Steve Dritz,
Food Animal Health and Management Center

As summer approaches, increasing temperatures often result in decreased feed intake. This is especially important in the farrowing house where lactation feed intake is a critical factor in weaning heavy litters and decreasing the effects of seasonal infertility. For many years, producers have used individual sow feed intake cards and actually recorded the amount of feed offered to a sow at each feeding.

These individual feed intake cards require extra labor to fill out, and their accuracy may vary based on the effort put in by the employees. Other means are available for estimating sow feed intake by using information provided by computerized record keeping programs. The first method estimates lactation feed intake by dividing the amount of feed delivered by the number of litters weaned × lactation length (Method 1). This method will slightly overestimate lactation feed intake because it adds the 4 to 6 pounds fed per day just prior to farrowing to actual lactation intake. The second method uses the tons of feed delivered divided by the number of crates × days in the recording period (Method 2). This method underestimates lactation feed intake because the days before farrowing and their intake are considered as part of the lactation feed intake. Because the number of days before farrowing and the feed a sow eats during this time is included in both calculations, these calculations become more accurate the fewer days a sow is in a farrowing crate, but not lactating. By comparing the two methods, it is safe to estimate actual lactation feed intake somewhere in between the two values. Below is an example of how to estimate lactation feed intake using the two methods.

By use of these two methods a producer can determine that their average lactation feed intake is somewhere between 9 and 11 pounds For producers who do not use individual feed intake cards, this may be a viable means of estimating sow lactation feed intake. For producers who use individual sow feed intake cards, these two calculations can offer a comparison of the accuracy of the individual record keeping cards.

Data: 30 tons of lactation feed delivered over a 90-day period.
18-day lactation length.
300 litters weaned over the 90-day period
75 farrowing crates

Method 1:

$$\frac{\text{60,000 lb feed}}{\text{300 litters weaned} \times \text{18 day lacation}} \quad \frac{60{,}000}{5{,}400} = \text{11.1 lb feed intake}$$

Method 2:

$$\frac{\text{60,000 lb feed}}{\text{75 crates} \times \text{90 days}} \quad \frac{60{,}000}{6{,}750} = \text{8.9 lb feed intake}$$

New Swine Nursery Facilities Handbook Available

Tim W. McAlavy
Communications Specialist

Hog producers who plan to update their facilities should take a look at a new publication from Midwest Plan Service (MWPS), said a K-State Research and Extension engineer.

"The equipment and buildings used in hog operations are an expensive, long-term investment," said Pat Murphy, Kansas State University Agricultural Engineer. "Producers can examine some of the better design and building options for swine nurseries in the *Swine Nursery Facilities Handbook,* MWPS-41."

"This handbook is just one in a series. Others focus on other phases of swine production, such as farrowing, growing–finishing, breeding, and gestation. The nursery facilities handbook provides guidelines and descriptions of systems and components that meet modern design goals for housing pigs from weaning to 12 weeks old."

Each chapter in the handbook covers a different topic, including housing and management options, building layout and equipment, manure-handling systems, environment control systems, utilities, and safety. The book has more than 50 drawings and photographs of building layouts, equipment, and manure-handling and environment control systems. The text incorporates more than a dozen tables with data on topics ranging from recommended pen space to mechanical ventilation and air exchange rates.

"The handbook recommends building nurseries that can accommodate an all-in, all-out pig management strategy," Murphy said. "The designs can help producers meet their pigs' environmental needs; minimize the time and labor invested in handling manure, feeding, watering and moving pigs; and minimize stress on pigs when they are moved.

"It also can help producers minimize building maintenance requirements; provide for the operator's and pigs' health, safety and comfort; and make the nursery compatible with the producer's preferred production schedule."

MWPS is a regional cooperative research and extension organization representing the 12 land-grant universities in the north central United States, Murphy explained. Each copy of the *Swine Nursery Facilities Handbook* costs $15, plus postage. Kansans can order the book by calling K-State's Department of Biological and Agricultural Engineering at 785-532-5813 or by contacting their county research and extension office.

How Much Synthetic Lysine Can I Add to Grow–Finish Diets?

Last summer the price of synthetic lysine (L-lysine HCl; 78% lysine) fell from approximately $2.00/lb to $.75/lb. With this dramatic drop in price, many producers would see a decrease in diet costs if they increased the amount of L-lysine HCl added to their grow–finish diets by more than the typically recommended 3 lb/ton. While adding increasing amounts of synthetic lysine may decrease diet costs, there is a potential that deficiencies of other amino acids will decrease pig performance. To try to resolve this issue, we undertook two experiments designed to determine the amount of L-lysine HCl that can be added to a sorghum- or corn-soybean meal finishing pig diet before other amino acids become limiting and affect performance.

Procedures

One hundred and sixty PIC (L326 × C22) finishing pigs were used in each experiment with an initial average weight of 124 lb (Exp. 1) and 138 lb (Exp. 2). Pigs were randomly allotted on the basis of initial weight to one of the four dietary treatments in a randomized complete block design. There were four pens per treatment (two of gilts and two of barrows). Gilts and barrows were penned separately with ten pigs per pen. Diets were fed in a grower (120 to 180 lb) and finisher (180 to 240 lb) phase. Grower diets were formulated to contain .70% lysine and finisher diets to contain .55% lysine. The lysine levels used were estimated to be as close as possible to the pig's requirements for these weight ranges. If we overestimated the lysine requirement for these pigs, it could potentially confound our data by providing high levels of the other amino acids and overestimate the amount of L-lysine HCl that could be added to the diet. Treatments included increasing L-lysine HCl (0, 3, 4.5 and 6 lb/ton) replacing the lysine provided by soybean meal. Procedures and methods used in both experiments were the same except Exp. 1 used milo-soybean meal based diets (Table 1) and Exp. 2 used corn-soybean meal based diets (Table 2).

Results and Discussion

Increasing L-lysine HCl from 0 or 3 lb/ton in a milo-soybean meal based diet (Table 1) had no effect on ADG, F/G, and percentage lean ($P > .05$). However, pigs fed diets containing 4.5 or 6.0 lb/ton L-lysine HCl had decreased ADG and poorer F/G ($P < .05$). Backfat depth was lowest ($P < .05$) for pigs fed no added L-lysine HCl, intermediate for pigs fed either 3 or 4.5 lb/ton, and greatest for those fed 6.0 lb/ton L-lysine HCl. Increasing L-lysine HCl from 0 to 4.5 or 6.0 lb/ton decreased ($P < .05$) percentage lean and fat free lean index.

In Exp. 2, pigs fed 0 or 3 lb/ton L-lysine in a corn-based diet (Table 2) had similar ADG and F/G; however, pigs fed 4.5 or 6.0 lb/ton had decreased ADG and poorer F/G ($P < .05$). Unlike Exp. 1, carcass characteristics were not affected by increasing L-lysine HCl additions. However, it is important to point out that although not statistically significant, pigs fed either 4.5 or 6.0 lb/ton L-lysine tended to have poorer carcass characteristics than those fed either 0 or 3 lb/ton. These results indicate that no more than 3 lb/ton of L-lysine HCl should be added to sorghum- and corn-soybean meal finishing diets. If replacing soybean meal with greater than 3 lb/ton L-lysine HCl in sorghum- or corn-soybean meal based diets, other amino acids likely will be limiting growth performance and will need to be added to the diet. *Manual De La Llata, Graduate Research Assistant.*

Table 1. Effects of Increasing Synthetic Lysine Additions in Milo-Based Diets on Growth Performance and Carcass Characteristics of Finishing Pigs (Exp 1)[d]

	L-lysine HCl				
	0	3	4.5	6	CV, %
ADG, lb	2.01[a]	2.01[a]	1.77[b]	1.73[b]	4.4
ADFI, lb	7.01[a]	7.34[bc]	7.18[ac]	7.24[ac]	2.8
F/G	3.49[a]	3.65[a]	4.07[b]	4.21[b]	5.1
Live weight, lb[e]	261.3[a]	261.2[a]	246.5[b]	242.1[b]	2.4
Backfat, in	.566[a]	.633[a]	.681[b]	.737[c]	4.6
Loin depth, in	2.08[a]	2.11[a]	2.04[a]	2.05[a]	5.5
Lean percentage	56.60[a]	55.70[ab]	54.59[ab]	53.51[b]	1.23
Fat free lean index, %	51.10[a]	50.34[b]	49.66[b]	48.83[c]	.83

[a, b, c] Means in a row with different superscripts differ (P < .05).
[d] One hundred and sixty PIC (L326 ×C15) finishing pigs with an initial weight 124 lb.
[e] Live weight was used as a covariate to analyze the packing plant data.

Table 2. Effect of Increasing Synthetic Lysine Additions in Corn-Based Diets on Growth Performance and Carcass Characteristics of Growing Pigs (Exp 2)[d]

	L-lysine HCl				
	0	3	4.5	6	CV, %
ADG, lb	2.08[a]	2.01[a]	1.88[b]	1.59[c]	4.38
ADFI, lb	6.92[a]	6.81[a]	6.77[a]	6.16[b]	2.83
F/G	3.32[a]	3.39[a]	3.61[b]	3.87[b]	5.11
Live weight, lb[e]	251.9[a]	246.8[ab]	239.6[b]	224.1[c]	2.23
Backfat, in	.612	.589	.591	.677	12.38
Loin depth, in	2.38	2.32	2.30	2.29	4.89
Lean percentage	56.63	56.81	56.69	55.37	1.98
Fat free lean index, %	50.06	50.25	50.52	49.79	1.81

[a, b, c] Means in a row with different superscripts differ (P < .05).
[d] One hundred and sixty PIC (L326 ×C15) finishing pigs with an initial weight 138 lb.
[e] Live weight was used as a covariate to analyze the packing plant data.

Department of Animal Sciences & Industry
213 Weber Hall
MANHATTAN, KANSAS 66506

SWINE UPDATE

Jim L. Nelssen
Extension Specialist
Swine

Robert D. Goodband
Extension Specialist
Swine

Mike D. Tokach
Extension Specialist
Livestock Production
& Management, NE

Kansas State University
Cooperative Extension Service
Department of Animal Sciences & Industry
Weber Hall, Room 213
Kansas State University
Manhattan, Kansas 66506