PELLETED VERSUS MEAL DIETS: POTENTIAL ADVANTAGES

Feeding pelleted diets can support performance in nursery and grow/finish pigs.

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Today many producers pelletize swine feed to gain advantages in performance and on-farm management. The most prominent potential benefits of pelleting swine diets are improved rate of growth and improved feed efficiency.

A summary of eight research trials showed that on average, growth rate is increased by 6% and feed efficiency is improved by 6 to 7% by feeding pellets rather than meal.[1] Additional research has suggested these benefits can be attributed to better nutrient digestibility[2] as a result of:

- Reduced feed particle size
- Starch gelatinization, a process that ruptures the starch granules and makes them more available for enzyme digestion.[3]

However, these responses are directly related to pellet quality. Varying levels of pellet fines in diets directly influence the response. In research trials, when the diet contained higher levels of pellet fines, the beneficial response of pelleting was lost.[4]

In addition to performance benefits, other benefits that could be realized due to pelleting are:

- Better feeder adjustment/space and flow
- Less feed wastage
- Less pig sorting
- The potential for greater energy due to available starch.

A trial at Purina Animal Nutrition Center confirmed these observations of improved performance due to feeding diets in the form of pellets versus meal during the nursery period and throughout the grow-finish period. Pigs were placed in the nursery and fed the UltraCare® five-phase feeding program (see Table 1) in either pellet or meal form from day 21 to 49 post-weaning. (Note: that the first 21 days (Phases 1 and 2) all pigs received diets in the pelleted form.)

1. Hancock, J.D. and Behnke, K.C. 2001. Use of ingredients and diet processing techniques (grinding, mixing, pelleting and extrusion) to produce quality feed for pigs. Chapter 21. In: Swine Nutrition, A.J. Lewis and L.L. Southern, Eds., CRC Press LLC, Boca Raton, FL. Pp. 469-497.
2. Wonda, K.J., Hancock, J.D., Behnke, K.C., Hines, R.H. and Stark, C.R. 1995. Effect of particle size and pelleting on growth performance, nutrient digestibility and stomach morphology in finishing pigs. Animal Science, 73, 757-765.
3. Hongtrakul, K., Goodband, R.P., Behnke, K.C., Nelssen, J.L., Tokach, M.D., Bergstrom, J.R., Nessmith, W.B., Jr. and Kim, I.K. 1998. The effects of extrusion processing of carbohydrates sources on weaning pig performance. Animal Science, 76, 3034-3042.
4. Stark, C.R., Behnke, K.C., Hancock, J.D. and Hines, R. H. 1994. High quality pellets support pig efficiency. Feed Management, 45, No. 6.

The dietary treatments (feed forms) were then carried over into the grow-finish period. Pigs that received pelleted diets in the nursery continued to receive pelleted feed during grow-finish and likewise for meal-fed pigs. All were fed a base corn-soy-DDGS diet; only the form changed.

The results indicated:

- Pigs fed the UltraCare® feed program products in pelleted form during phases 3, 4 and 5 had improved average daily gain (ADG) and feed:gain efficiency compared to their counterparts fed a diet in meal form. (See Figure 1)
- Pigs fed pelleted diets were 3.1 lbs. heavier and 5.5% more efficient on average than pigs fed diets in meal form. (See Table 1)
- During the grow-finish period, pigs that continued on pelleted diets were on average 12 lbs. heavier and 10.2% more efficient at finishing (Day 83) than those continued on meal diets. (See Table 2)

Figure 1. ADG (in pounds) and feed:gain of nursery pigs fed the UltraCare® Feed Program Products in pellet or meal form

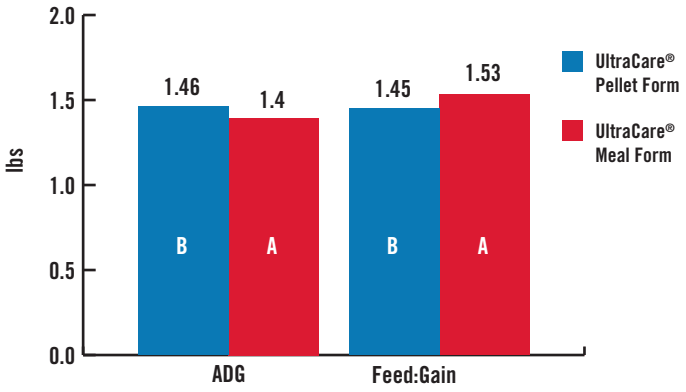

TABLE 1: WEIGHT OF NURSERY PIGS FED THE ULTRACARE® FEED PROGRAM IN PELLET OR MEAL FORM

	UltraCare® Pellet Form	UltraCare® Meal Form
Initial wt., lbs.	14.25	14.24
Day 6 wt., lbs.	15.6	15.7
Day 21 wt., lbs.	32.9	32.9
Day 33 wt., lbs.	54.5	52.7
Day 41 wt., lbs.	69.5[c]	67.3[b]
Day 49 wt., lbs.	85.8[c]	82.7[b]

[a] Values are means of 12 pens of 7 pigs each and represent a five-phase feeding program (UltraCare® 240 (6 d), 350 (15 d), 500 (12 d), 600 (8 d) & 700 (8 d)).

[bc] Means in the same row with different superscripts differ P < 0.01

TABLE 2: PERFORMANCE OF GROW-FINISH PIGS FED DIETS IN PELLETED OR MEAL FORM[6]

	Diets[a]	
	UltraCare® Pellet Form	UltraCare® Meal Form
Initial wt., lbs.	87.0[c]	84.0[b]
Final wt. (d 83), lbs.	274[c]	262[b]
Phases 2 - 5 (d 0-83)		
ADG, lbs.	2.26[c]	2.14[b]
ADFI, lbs.	5.78[e]	6.05[f]
Feed:Gain	2.56[b]	2.82[c]

[a] Values are means of 12 pens of 7 pigs each fed a corn, soy and DDGS diet.

[bc] Means in the same row with different superscripts differ P < 0.01

[ef] Means in the same row with different superscripts differ P < 0.05

5. (PS1019; 2012)
6. (PS1019; 2012)

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