

Growth performance and dietary economics of pigs raised in multiple-site, segregated rearing systems. S. S. Dritz\*, M. D. Tokach, R. D. Goodband, and J. L. Nissen. Kansas State University, Manhattan.

Two extension demonstrations were conducted to illustrate the benefits of multiple-site production systems to Kansas swine producers. The first demonstration compared the growth of off-site early-weaned pigs (7 to 10 d of age) to that of conventionally-weaned (17 d of age) littermates raised on the existing farm. Neither group was given any antibiotics for bacterial elimination. At 50 d of age, the early-weaned pigs weighed an average of  $23.7 \pm 2.3$  kg compared to  $12.5 \pm 2.3$  kg for the farm-raised pigs. More infectious pathogens were detected in the farm-raised pigs than the off-site reared pigs. The demonstration illustrated that the concept of off-site segregated rearing can prevent the vertical transmission of most pathogenic organisms without the use of medication. This demonstration also illustrated the tremendous biologic potential that was not being realized in this commercial production system. The second demonstration was performed on a larger scale to further evaluate the economics of multiple-site, segregated rearing production systems. Due to the early weaning ages being used in many segregated production systems, nursery pig performance and diet cost will be critical factor for the wide scale implementation of segregated early-weaning production systems. Therefore, three phase-feeding regimens ranging widely in diet complexity (High, Med, and Low) and two weaning ages (9 and 19 d of age) were examined to determine feed cost per kg of gain and age at 109 kg. A total of 180 pigs was obtained from a high health status herd and moved off-site. Pigs were fed the various diet complexity regimens from weaning to 18 kg. All pigs were fed common corn-soybean meal-based diets from 18 to 109 kg. Ingredient prices for feed costs were obtained from a commercial farm in northeast Kansas in February 1994. From weaning to 18 kg, pigs weaned at 9 d of age had a higher ( $P < .05$ ) feed cost per kg of gain than pigs weaned at 19 d of age. The high complexity regimen also resulted in a higher ( $P < .05$ ) feed cost per kg of gain from weaning to 109 kg compared to the medium and low complexity regimens. However, when comparing the medium and low complexity regimens, feed cost per kg of gain from weaning to 109 kg was similar across weaning ages. Diet economics coupled with the fewest days to market indicate that the medium complexity regimens were the most economical. Producers involved in this demonstration learned that excellent growth performance can be obtained in a segregated early weaning system without requiring excessive feed cost. In conclusion, these demonstrations revealed a feed cost saving of \$3.20 and facility cost reduction of \$4.09 per pig compared to the producers' existing systems. Swine producers were shown the importance of implementing multiple-site segregated rearing technology for their swine businesses to remain competitive into the 21<sup>st</sup> century.

Item	Wean Age:	9 d			19 d			CV
		Diet:	High	Med	Low	High	Med	
Feed Cost								
to 18 kg, \$/kg		.578 <sup>a</sup>	.356 <sup>a</sup>	.302 <sup>d</sup>	.442 <sup>b</sup>	.306 <sup>d</sup>	.261 <sup>a</sup>	4.9
to 109 kg, \$/kg		.413 <sup>a</sup>	.371 <sup>ad</sup>	.365 <sup>d</sup>	.387 <sup>b</sup>	.377 <sup>a</sup>	.375 <sup>a</sup>	1.4
Age at 109 kg, d		148.0 <sup>ab</sup>	144.5 <sup>ab</sup>	149.2 <sup>ab</sup>	147.5 <sup>ab</sup>	144.0 <sup>b</sup>	149.8 <sup>a</sup>	3.2

Means within row with the same letter are not significantly different ( $P < .05$ )

Key words: Pigs, Growth, Segregated Rearing

64 Comparison of three methods to analyze nutritional quality of alfalfa: A field study. G.A. Brown, University of Missouri Extension System, Maysville.

The purpose of this study was to compare 3 different methods of analyzing varieties of alfalfa. Nutritional value comparisons were done on a percentage of Neutral Detergent Fiber (NDF), Acid Detergent Fiber (ADF) and Crude Protein (CP). The methods used were Prediction Equations for Alfalfa Quality (PEAQ), Near Infrared Reflectance Spectroscopy (NIR) and a commercial chemical lab (WET). Three separate cuttings of 10 different varieties of alfalfa were taken ( $n = 30$ ). Cuttings were done on May 27, June 28 and August 16. Statistical analyses comparing each method to cutting and nutritional values were done by an ANOVA test. The table below shows the results.

	PEAQ			NIR			WET		
	NDF	ADF	CP	NDF	ADF	CP	NDF	ADF	CP
1ST CUTTING	38.7 <sup>a</sup>	27.8 <sup>a</sup>	20.1 <sup>a</sup>	45.2 <sup>a</sup>	30.2 <sup>a</sup>	20.7 <sup>a</sup>	37.3 <sup>a</sup>	27.0 <sup>a</sup>	20.2 <sup>a</sup>
2ND CUTTING	31.2 <sup>a</sup>	24.4 <sup>a</sup>	23.8 <sup>a</sup>	40.6 <sup>a</sup>	31.1 <sup>a</sup>	19.7 <sup>a</sup>	37.7 <sup>a</sup>	30.2 <sup>a</sup>	21.0 <sup>a</sup>
3RD CUTTING	34.3 <sup>a</sup>	26.2 <sup>a</sup>	21.0 <sup>a</sup>	48.2 <sup>a</sup>	37.8 <sup>a</sup>	15.2 <sup>a</sup>	47.9 <sup>a</sup>	36.2 <sup>a</sup>	15.0 <sup>a</sup>

<sup>a</sup> Difference between means is significant ( $P < .05$ ).

<sup>b</sup> No difference between means ( $P < .05$ ).

Results showed that there was no significant difference at the .05 level between methods of analyses with the 2nd cutting, and 3rd cutting NDF. There was significant difference ( $P < .05$ ) between the means of method of analysis in the 1st cutting, and ADF and CP in the 3rd cutting.

Key Words: NIR, Alfalfa quality

Survey of particle length and metabolic disorders on commercial dairies. I.R. Possin\*, C. DeCorte, R.D. Shaver and R.T. Schuler. Fond du Lac County Extension, Fond du Lac, WI and Departments of Dairy Science and Agricultural Engineering, University of Wisconsin, Madison, WI.

Objectives of this project were to evaluate forage mean particle length (MPL), effect of mixing total mixed rations (TMR) on large particle breakdown, and the relationship between MPL and metabolic disorders on commercial dairies. Samples taken from upright, bunker, and bag silos and TMR mixers were analyzed for MPL and percent particles on screens 1 and 2 (particles  $>5.0$  cm) with an oscillating screen particle separator (ANSI/ASAE, 1988). Samples of corn silage ( $n=37$ ), hay crop silage ( $n=66$ ), and TMR ( $n=32$ ) from 49 commercial dairies were analyzed for particle length. A survey was used to record incidence of displaced abomasum (DA), ketosis, and laminitis in primiparous and multiparous cows. Nutrient (DM, CP, ADF, NDF) analyses of high group rations were obtained. As MPL increased, rolling herd average increased ( $r = .44$ ;  $P < .01$ ). As percent particles on screens 1 and 2 decreased, turnover percent increased in multiparous cows in TMR herds ( $r = -.31$ ;  $P < .08$ ). As percent particles on screens 1 and 2 decreased, laminitis increased in primiparous cows in non-TMR herds ( $r = -.51$ ;  $P < .05$ ) and multiparous cows in TMR herds ( $r = -.30$ ;  $P < .09$ ). No association was found between DA and MPL in TMR herds. Relationships between length of cut, number of knives, and moisture content and particle length will be presented.

particle length, metabolic disorders

Key Words:

65 Aptitude tests - a practical experience for junior exhibitors at the state fair. D. B. Gerber\* and A. D. Sherman, The Ohio State University, Columbus.

In addition to the standard showmanship classes and competition for the Champion animal, an additional experience has been made available for youth to participate in while at the fair. The computer aptitude tests provide an opportunity for junior exhibitors with market swine, sheep, and beef to express their knowledge as well as an opportunity to gain computer experience. Some test topics include nutrition, reproduction, management, meats, and marketing. The computer test base in each species consisted of over 400 questions.

All Ohio State Fair junior market exhibitors were eligible to participate on a voluntary basis in each of the three species. Exhibitors were entered in one of three classes based on age: Seniors (age 16 and over) - 50 questions, Intermediate (age 13-15) - 30 questions, and Junior (age 9-12) - 20 questions.

Participation was as follows: Pork Aptitude Test (4 years), 191 (1991), 244 (1992), 253 (1993), 259 (1994); Sheep Aptitude Test (2 years), 143 (1993), 146 (1994); Beef Aptitude Test (1 year), 30 (1994).

A Pork Aptitude Test example summary of Junior (age 9-12) participation in 1991 included 72 individuals tested; 46 males with an average score of 48.41%, 26 females with an average score of 48.08%. In 1994 with 85 individuals tested; 47 males had an average score of 49.47% and 38 females with an average score of 52.82%. Previous computer experience varied with Juniors (age 9-12). In 1991, 41.7% were first time users while in 1994, 28.2% were first time users.

The Ohio State Fair provided banners, ribbons, and cash premiums for each class. Industry supported this activity with a participation item for each participant and a trophy for the overall champion.

Key Words: Aptitude Test, Computer, Youth