



Feed Management of Swine

Proper feed management is important to all U.S. swine operations. Feed procurement, safe storage, optimum diet preparation, and timely distribution are management decisions that strongly influence the financial health of operations. On modern swine operations, feed management is used not only to optimize pig performance, but also to prevent and treat swine disease, reduce nutrient excretions and objectionable odors, and reduce the risk of *Salmonella* in the final pork product.

The USDA's National Animal Health Monitoring System (NAHMS) collected data on swine health and management practices from a random sample of swine production sites in 17 States¹ as part of the Swine 2000 study. These sites represented 94 percent of the U.S. pig inventory and 92 percent of U.S. pork producers with 100 or more pigs. Overall, 2,499 swine production sites participated in the first interview from June 1, 2000, through July 14, 2000. A second interview was completed by 895 of these sites between August 21, 2000, and November 3, 2000. A final interview was completed by 799 of these sites between December 1, 2000, and February 28, 2001. For estimates in this report, small, medium, and large sites refer to sites with less than 2,000, 2,000 to 9,999, and 10,000 or more pigs in total inventory, respectively. Some comparisons in this report are made to findings from the NAHMS Swine '95 study conducted five years previously.

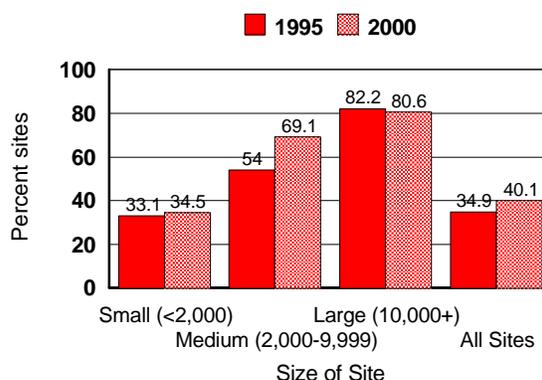
Phase Feeding

To optimize growth and efficiency, swine producers change diet contents frequently during the grower/finisher phase. In this report, phase feeding is defined as the feeding of four or more different diets during the grower/finisher phase. The Swine 2000 study indicated that 24.0 percent of sites fed two different diets during the grower/finisher period, while 26.2 percent fed three, and 40.1 percent fed four or more. The percentage of sites using phase feeding in 2000 (40.1 percent) increased slightly since 1995 (34.9 percent). In both 1995 and

2000, the percentage of sites using phase feeding increased as site size increased (Figure 1).

Figure 1.

Percent of Sites Using Phase Feeding (in 1995 and 2000) by Size of Site



Generally, as site size increased so did the number of diets. Small sites, on average, fed 3.3 diets during the grower/finisher period, whereas medium and large sites, on average, fed 4.7 and 5.0 diets, respectively. More large (73.7 percent) and medium (76.0 percent) sites kept records on feed intake than did small sites (50.0 percent).

Split-Sex Feeding

Split-sex feeding is a common management practice where different diets are fed to gilts and barrows. The study showed that more large (45.6 percent) and medium (56.0 percent) sites practiced split-sex feeding than did small sites (15.2 percent). While the percentage of small and medium sites using split-sex feeding has remained fairly constant since 1995 (14.0 percent and 55.4 percent, respectively), the percentage of large sites using split-sex feeding has greatly decreased from 78.2 percent of sites in 1995 to 45.6 percent of sites in 2000. This decrease may be due to leaner genetics, the logistics of implementation on large sites, or a lack of economic benefit. In 2000, pigs, on average, were 9.0 weeks of age when split-sex feeding was initiated. This age did not vary significantly among the different sized sites.

¹Arkansas, Colorado, Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Carolina, Ohio, Oklahoma, Pennsylvania, South Dakota, Texas, Wisconsin

Feed Additives

Antibiotics, dewormers, and parasiticides are added frequently to pigs' diets, primarily to control disease and promote growth. During the 6 months prior to the Swine 2000 survey, antibiotics were included in grower/finisher diets (for any reason) on 88.5 percent of sites with grower/finisher pigs. Antibiotics were administered in grower/finisher feed to treat respiratory diseases on 27.4 percent of sites, enteric diseases on 15.2 percent of sites, and for growth promotion on 63.7 percent of sites. Dewormers were administered in grower/finisher feed on 39.7 percent of sites.

Odor Control Through Diet Manipulation

Producers were asked about the various diet manipulation strategies they used to control odor. Half (50.2 percent) reported using some sort of diet manipulation to reduce odor. The most common methods were: finely-ground grain; vegetable oil or fat (to control dust); and synthetic amino acids. Each of the previous was practiced more commonly on large sites than small sites. While use of low-phytate corn is rare, more than 10 percent of sites used phytase in feed.

Table 1. Feed-Related Odor Reducing Strategies

Diet Manipulation Strategy	Percent Sites
Finely-ground grain	27.3
Vegetable oil or fat to control dust	24.0
Synthetic amino acids and/or low crude protein	19.8
Pelleting	15.3
Phytase	11.0
Other feed additives for odor control (e.g., Microaid)	10.1
Add 10-percent fiber	8.5
Low phytate corn	0.4
Other diet manipulations	1.4

Protein and Fat Sources in the Diet

Several ingredients are available as protein and fat sources for grower/finisher diets. Soybean meal or other vegetable proteins were by far the most common protein sources used (97.6 percent of sites) regardless of site size. Animal and/or vegetable fat were the most common fat sources used (35.6 percent of sites). Large sites were much more likely to add animal and/or vegetable fats to

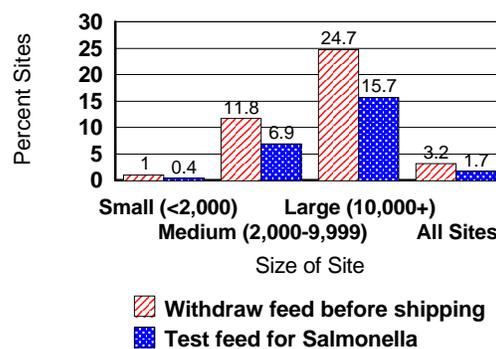
grower/finisher diets than small sites (71.1 percent compared to 30.0 percent, respectively).

Salmonella Reduction

There are several feed-related intervention strategies that may be used to reduce *Salmonella* shedding by grower/finisher pigs. These include withdrawal of feed before shipping to slaughter (3.2 percent of sites) and testing feed for *Salmonella* (1.7 percent of sites). Both of these intervention strategies were used more commonly as site size increased (Figure 2).

Figure 2.

Feed-Related Salmonella Reducing Strategies for Grower/Finisher Pigs



Only 1.0 percent of all sites fed probiotics, and 0.5 percent of sites fed a competitive exclusion product to reduce shedding of *Salmonella* by grower/finisher pigs.

For more information, contact:

USDA:APHIS:VS:CEAH

NRRC Building B., Mail Stop 2E7
2150 Centre Avenue
Fort Collins, CO 80526-8117
970.494.7000

E-mail: NAHMSweb@aphis.usda.gov
www.aphis.usda.gov/vs/ceah/cahm

N353.0902