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# Swine 2006

## Part I: Reference of Swine Health and Management Practices in the United States, 2006

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# Introduction

In 1983, promoters of the concept that would become the USDA's National Animal Health Monitoring System (NAHMS) envisioned a program that would monitor changes and trends in national animal health and management, thereby providing periodic snapshots of the U.S. food-animal industries. With these industry overviews, members could identify opportunities for improvement, provide changing foundations for research and special studies, and detect emerging problems.

NAHMS first national study of the swine industry, the 1990 National Swine Survey, provided a snapshot of animal health and management that would serve as a baseline from which to measure industry changes in animal health and management. NAHMS conducted the 1990 National Swine Survey in 18 States, with a target population of operations with at least one sow. The sample represented 95 percent of the U.S. swine population. National estimates generated from this study are reported in Morbidity/Mortality and Health Management of Swine in the United States (November 1991).

NAHMS second national swine study, Swine '95, was conducted in the top 16 swine States, which represented 91 percent of the U.S. swine population. The target population for the first phase of Swine '95 was producers with at least one pig. National estimates generated from this study are reported in Swine '95 Part I: Reference of 1995 Swine Management Practices (October 1995). The second phase of Swine '95 was conducted on sites with at least 300 market pigs. National estimates generated from this study are reported in Part II: Reference of 1995 Grower/Finisher Health and Management Practices (May 1996).

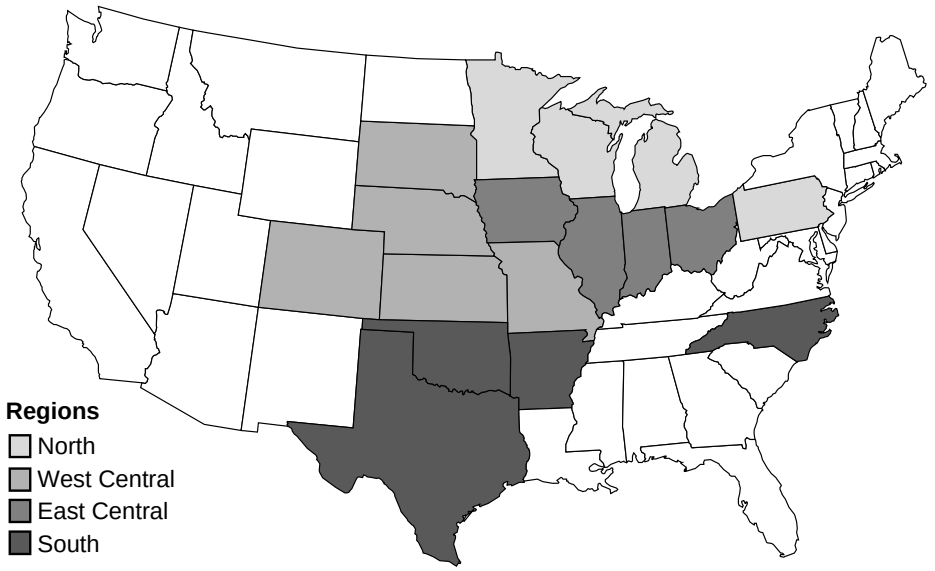
Swine 2000, NAHMS third national swine study, was designed to provide both participants and the industry with information on the U.S. swine herd on operations with 100 or more pigs. The National Agricultural Statistics Service (NASS) collaborated with Veterinary Services to select a producer sample statistically designed to provide inferences to the Nation's swine populations on operations with 100 or more pigs. Included in the study were 17 of the major pork-producing States, which accounted for 94 percent of the U.S. pig inventory and 92 percent of U.S. pork producers with 100 or more pigs. Results from this study are reported in Part I: Reference of Swine Health and Management in the United States, 2000 (August 2001); Part II: Reference of Swine Health and Management in the United States, 2000 (March 2002); Part III: Reference of Swine Health and Environmental Management in the United States, 2000 (September 2002); and Part IV: Changes in the U.S. Pork Industry, 1990-2000 (April 2005).

The Swine 2006 study is NAHMS' fourth national study of the U.S. swine industry. Seventeen States participated in the Swine 2006 study (see map). These States accounted for 94 percent of swine operations and inventory on operations with 100

or more pigs. A random sample of 5,000 swine producers was selected to be visited by representatives from NASS between July 17 and September 15, 2006. An on-site questionnaire was administered by NASS enumerators during this visit. Producers that chose to continue in the study were visited twice by veterinary medical officers (VMOs) who administered questionnaires and took biological/ environmental samples. VMOs made their initial visits between September 5, 2006, and March 15, 2007, and follow-up visits between December 4, 2006, and March 15, 2007. Results from the first data collection period of this study are presented in this report—Swine 2006 Part I: Reference of Swine Health and Management Practices in the United States, 2006.

All NAHMS swine study reports are accessible online at http:// nahms.aphis.usda.gov.

**Swine 2006 Participating States**




## Terms Used in This Report

**All in, all out:** A management approach in which the animals are moved as a whole group, allowing a facility to be completely empty for a time. Usually, all-in, all-out management also includes completely cleaning and disinfecting the facility before refilling it with animals. All-in, all-out management can be done at any level: pen area, room, building, or entire facility.

**Average:** For ***site average—***a single value for each operation summed over all operations reporting divided by the number of operations reporting (see average number of days quarantine p 16). For a ***pig-level average —***a single operation value multiplied by the number of animals on that operation; then values are summed across operations and divided by total number of animals on all operations (see average age at weaning p. 22).

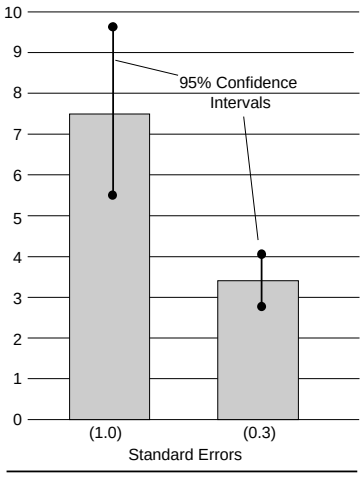
**Hand-mating:** Term used when females are selected individually to be bred with a specific boar. Both sow and boar are placed in the same pen, and a stockperson might have to help with the physical aspects of mating.

**Operation:** The overall business and top-level management unit for a swine-rearing facility, which might consist of one or more sites. An operation can encompass all production phases of swine rearing (i.e., gestation, farrowing, nursery, and grower/finisher) on one or more sites (geographic locations), each devoted to a different production phase or combination of phases (see also “Site”).

**Percent animals:** The number of animals on sites with a certain attribute divided by the total number of animals on all sites. In some cases, it is assumed that the attribute applies to all animals on the site. The animal type is defined in each table and may include total inventory, sow inventory, number of pigs that entered the nursery, or other specific pig groups. The “percent animals” estimates primarily reflect the larger sites, which have the majority of pigs.

**Percent sites:** The number of sites with a certain attribute divided by the total number of sites. Percentages will sum to 100 where the attributes are mutually exclusive (i.e., percentage of sites located within each region). Percentages will not sum to 100 where the attributes are not mutually exclusive (i.e., the percentage of sites using treatment methods where sites may have used more than one method). The “percent sites” estimates primarily reflect the smaller producers, since they make up the majority of sites.

**Examples of a 95% Confidence Interval**




**Population estimates:** Estimates in this report are provided with a measure of precision called the standard error. A 95-percent confidence interval can be approximated with bounds equal to the estimate, plus or minus two standard errors. If the only error is sampling error, the confidence intervals created in this manner will contain the true population mean 95 out of 100 times. In the example to the left, an estimate of 7.5 with a standard error of 1.0 results in limits of 5.5 to 9.5 (two times the standard error above and below the estimate). The second estimate of 3.4 shows a standard error of 0.3 and results in limits of 2.8 and 4.0. Alternatively, the 90-percent confidence interval would be created by multiplying the standard error by 1.65 instead of 2. Most estimates in this report are rounded to the nearest tenth. If rounded to 0, the standard error was reported (0.0). If there were no reports of the event, no standard error was reported (—).

**Pen-mating:** One or more boars are introduced to a group of females for natural breeding.

**Regions:**
**North:** Michigan, Minnesota, Pennsylvania, and Wisconsin
**West Central:** Colorado, Kansas, Missouri, Nebraska, South Dakota
**East Central:** Illinois, Indiana, Iowa, and Ohio
**South:** Arkansas, North Carolina, Oklahoma, and Texas

**Sample profile:** Information that describes characteristics of the operations from which Swine 2006 data were collected.

**Separate site:** This term can mean that a facility is at a completely separate geographic location or in the same location but physically separated (no livestock runways or paths joining to other production facilities). It also might be managed as its own site, with separate procedures, biosecurity measures, and workers.

**Size of site:** Size groupings were based on total number of swine present on June 1, 2006. Size of site was categorized as small (fewer than 2,000), medium, (2,000-4,999), and large (5,000 or more). For tables relating to sow and gilt management as well as farrowing and weaning productivity, size of site was based on the number of sows and gilts on-site: small (fewer than 250), medium (250 to 499), and large (500 or more).

**Site:** One geographic location or address that functions as a unit to produce one or more production phases in swine rearing. Examples would be a gestation/farrowing site or a nursery site. A site can encompass more than one production phase, such as a “farrow to finish” site, which has gestation, farrowing, nursery, and grower/finisher hogs all at one location. A site can be a part of an operation or it can be the whole operation, if the operation has only one site. (See also “Operation.”)

**Total Inventory:** All swine present on the site on June 1, 2006.

# Section I: Population Estimates

## A. Sow and Gilt Management

### 1. Production phases

A pregnant sow or gilt not yet ready to give birth is considered to be in the gestation phase. The farrowing phase refers to the short time before a sow or gilt gives birth, the birthing process (farrowing), and subsequent time when the newborn piglets are nursing. Nearly 40 percent of sites had gestation and farrowing production phases. A smaller percentage of medium sites had these production phases than their small and large counterparts.

a. Percentage of sites by production phase and by size of site:

**Percent Sites**

**Size of Site** (Total Inventory)

| | **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|---|
| **Production Phase** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Gestation | 47.3 | (1.7) | 19.0 | (1.8) | 32.4 | (2.9) | 39.8 | (1.2) |
| Farrowing | 46.1 | (1.7) | 18.9 | (1.8) | 32.2 | (2.9) | 39.0 | (1.2) |

A higher percentage of sites in the West Central region had gestation and farrowing production phases (48.8 and 47.4 percent of sites, respectively) compared to sites in the East Central and South regions.

b. Percentage of sites by production phase and by region:

**Percent Sites**

**Region**

| | **North** | | **West Central** | | **East Central** | | **South** | |
|---|---|---|---|---|---|---|---|---|
| **Production Phase** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Gestation | 39.3 | (2.6) | 48.8 | (2.8) | 38.0 | (1.9) | 33.9 | (2.7) |
| Farrowing | 37.7 | (2.7) | 47.4 | (2.8) | 37.6 | (1.9) | 33.7 | (2.7) |

## 2. Mating techniques

A service consists of one or more matings done in the same heat/estrus period. A mating may be by artificial insemination or involve contact with a boar (e.g., pen-mating). Nearly 80 percent of sows on all sites were mated two or more times per service. Small sites had a substantially higher percentage of pen-mating (62.5 percent of sows) than medium and large sites (23.4 and 1.9 percent of sows, respectively).

a. Percentage of sows serviced from March through May 2006, by number of matings per service and by size of site:

**Percent Sows**

**Size of Site** (Sow and Gilt Inventory)

| | **Small** (Fewer than 250) | | **Medium** (250-499) | | **Large** (500 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|---|
| **Number Matings** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Pen-mating only | 62.5 | (4.0) | 23.4 | (5.0) | 1.9 | (0.6) | 9.3 | (1.1) |
| 1 | 6.6 | (1.4) | 7.0 | (1.7) | 12.4 | (3.4) | 11.5 | (2.9) |
| 2 | 26.7 | (3.8) | 61.0 | (5.2) | 63.8 | (4.8) | 59.9 | (4.1) |
| 3 or more | 4.2 | (1.6) | 8.6 | (2.7) | 21.9 | (4.0) | 19.3 | (3.3) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

Note: the following table excludes sites that only used pen-mating. Artificial insemination was the predominant method of mating sows during first, second, and third or more matings (91.6, 90.0, and 51.0 percent of sows, respectively). Individual hand-mating with a boar or pen-mating with multiple females appear to be used on few sows during any mating.

b. For sites that did not use pen-mating exclusively, percentage of sows serviced, by predominant mating technique used for first, second, and third or more matings:

| | Percent Sows | | | | | |
|---|---|---|---|---|---|---|
| | First Mating | | Second Mating | | Third or More Mating | |
| Mating Technique | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error |
| Artificial insemination | 91.6 | (5.1) | 90.0 | (5.1) | 51.0 | (5.8) |
| Individual hand-mating naturally | 2.4 | (0.5) | 7.5 | (5.2) | 0.2 | (0.1) |
| Pen-mating with multiple females and one or more boars | 6.0 | (5.2) | 1.2 | (0.5) | 1.5 | (1.0) |
| No second mating | N/A | | 1.3 | (0.5) | N/A | |
| No third mating | N/A | | N/A | | 47.3 | (5.8) |
| Total | 100.0 | | 100.0 | | 100.0 | |

For sites that used a second mating for sows, the majority (76.1 percent) used artificial insemination during both matings, which accounted for the majority of sows serviced two or more times (89.8 percent). However, the remaining 10.2 percent of sows were bred using either hand-mating or pen-mating during any mating.

c. For sites that used a second mating for sows, percentage of sites and percentage of sows serviced, by predominant mating technique used for first and second matings:

| Mating Technique | | Percent Sites | | Percent Sows | |
|---|---|---|---|---|---|
| 1st Mating | 2nd Mating | Percent | Std. Error | Percent | Std. Error |
| Artificial insemination | Artificial insemination | 76.1 | (3.0) | 89.8 | (5.1) |
| Artificial insemination | Hand-mating | 2.5 | (1.2) | 0.7 | (0.3) |
| Artificial insemination | Pen-mating | 3.6 | (1.1) | 1.1 | (0.4) |
| Hand-mating | Artificial insemination | 2.1 | (0.7) | 0.8 | (0.3) |
| Hand-mating | Hand-mating | 11.2 | (2.2) | 1.3 | (0.3) |
| Hand-mating | Pen-mating | 1.1 | (0.9) | 0.2 | (0.2) |
| Pen-mating | Any other technique | 3.4 | (1.7) | 6.1 | (5.3) |
| Total | | 100.0 | | 100.0 | |

A higher percentage of large and medium sites sites used artificial insemination as a predominant technique of mating sows than did small sites.

d. Percentage of sites that used artificial insemination as a predominant mating technique for sows during at least one mating, by size of site:

**Percent Sites**

**Size of Site** (Sow and Gilt Inventory)

| **Small** (Fewer than 250) | | **Medium** (250-499) | | **Large** (500 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|
| **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| 20.8 | (2.3) | 65.7 | (5.9) | 91.6 | (2.4) | 40.1 | (2.1) |

Nearly three of four gilts (70.7 percent) were mated two or more times per service.

e. Percentage of gilts serviced from March through May 2006, by number of matings per service and by size of site:

**Percent Gilts**

**Size of Site** (Sow and Gilt Inventory)

| | **Small** (Fewer than 250) | | **Medium** (250-499) | | **Large** (500 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|---|
| **Number Matings** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Pen-mating only | 75.4 | (3.7) | 43.1 | (10.8) | 4.2 | (1.2) | 14.8 | (2.1) |
| 1 | 6.3 | (1.6) | 7.3 | (2.2) | 16.1 | (5.4) | 14.5 | (4.6) |
| 2 | 14.5 | (2.6) | 43.4 | (9.0) | 64.5 | (5.8) | 57.3 | (4.8) |
| 3 or more | 3.8 | (2.2) | 6.2 | (2.8) | 15.2 | (4.0) | 13.4 | (3.4) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

As with sows, artificial insemination was the predominant method used for gilts during first, second, and third or more matings.

f. For sites that did not use pen-mating exclusively, percentage of gilts serviced, by predominant mating technique used for first, second, and third or more matings:

| | Percent Gilts | | | | | |
|---|---|---|---|---|---|---|
| | First Mating | | Second Mating | | Third or More Mating | |
| Mating Technique | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error |
| Artificial insemination | 92.8 | (2.9) | 90.2 | (3.2) | 47.1 | (6.5) |
| Individual hand-mating naturally | 4.1 | (0.8) | 6.1 | (2.9) | 0.6 | (0.3) |
| Pen-mating with multiple females and one or more boars | 3.1 | (2.8) | 0.9 | (0.4) | 2.9 | (1.8) |
| No second mating | N/A | | 2.8 | (1.3) | N/A | |
| No third mating | N/A | | N/A | | 49.4 | (6.3) |
| Total | 100.0 | | 100.0 | | 100.0 | |

As was the case with sows, the majority of sites that used a second mating for gilts used artificial insemination during both matings (71.9 percent of sites), which accounted for the majority of gilts serviced two or more times (91.2 percent).

g. For sites that used a second mating for gilts, percentage of sites and percentage of gilts serviced, by predominant mating technique used during first and second matings:

| **Mating Technique** | | **Percent Sites** | | **Percent Gilts** | |
|---|---|---|---|---|---|
| **1st Mating** | **2nd Mating** | **Percent** | **Std. Error** | **Percent** | **Std. Error** |
| Artificial insemination | Artificial insemination | 71.9 | (3.4) | 91.2 | (3.1) |
| Artificial insemination | Hand-mating | 1.2 | (0.6) | 1.0 | (0.6) |
| Artificial insemination | Pen-mating | 2.0 | (0.8) | 0.5 | (0.3) |
| Hand-mating | Artificial insemination | 4.2 | (1.2) | 1.4 | (0.5) |
| Hand-mating | Hand-mating | 15.7 | (2.8) | 2.4 | (0.6) |
| Hand-mating | Pen-mating | 1.5 | (1.2) | 0.3 | (0.3) |
| Pen-mating | Any other technique | 3.5 | (1.8) | 3.2 | (2.9) |
| Total | | 100.0 | | 100.0 | |

A higher percentage of large and medium sites used artificial insemination as a predominant method of mating gilts than did small sites.

h. Percentage of sites that used artificial insemination as a predominant mating technique for gilts during at least one mating, by size of site:

| **Percent Sites** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Size of Site** (Sow and Gilt Inventory) | | | | | | | |
| **Small** (Fewer than 250) | | **Medium** (250-499) | | **Large** (500 or More) | | **All Sites** | |
| **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| 17.6 | (2.6) | 57.9 | (6.8) | 89.1 | (2.8) | 41.8 | (2.5) |

Nearly four of five sites (79.0 percent) purchased semen for artificial insemination. Purchasing semen eliminates the need to keep boars on-site.

i. Of those sites using artificial insemination, percentage of sites by source of semen:

| Semen Source | Percent Sites | Std. Error |
|---|---|---|
| Purchased | 79.0 | (2.5) |
| Collected and processed on-site | 16.8 | (2.2) |
| Collected and processed off-site, but not purchased | 15.9 | (2.6) |

**3. Culling and death loss**

The number of breeding-age females that died or were culled from December 2005 through May 2006 was calculated as a percentage of the June 1, 2006, sow and gilt inventory in the breeding herd. A higher percentage of breeding-age females (21.1 percent) were culled on large sites compared to medium and small sites (12.7 and 12.4 percent, respectively). Overall, 19.5 percent were culled and 4.3 percent died.

a. Breeding-age females that died or were culled from December 2005 through May 2006 as a percentage of June 1, 2006, sow and gilt inventory,* by size of site:

**Percent Breeding-Age Females**

**Size of Site** (Sow and Gilt Inventory)

| | **Small** (Fewer than 250) | | **Medium** (250-499) | | **Large** (500 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|---|
| **Reason Removed** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Died | 2.9 | (0.3) | 2.5 | (0.3) | 4.7 | (0.3) | 4.3 | (0.3) |
| Culled | 12.4 | (0.8) | 12.7 | (1.2) | 21.1 | (1.0) | 19.5 | (0.9) |

*Sows and bred gilts for breeding plus unmated gilts in the breeding herd.

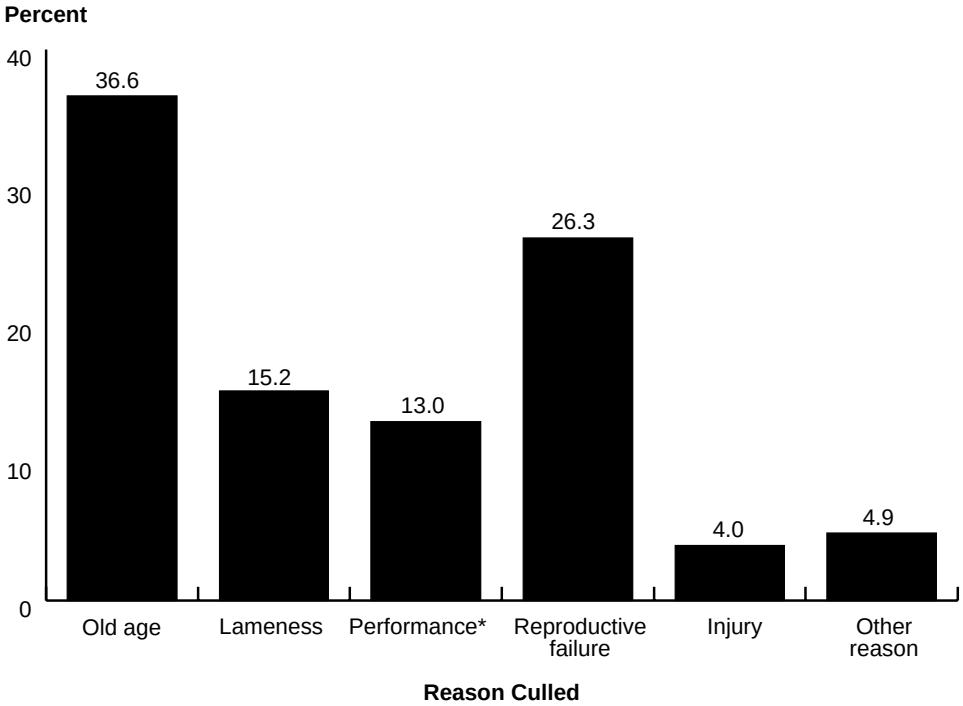
Age and reproductive failure were the two most common reasons breeding-age females were culled (36.6 and 26.3 percent, respectively). Age, reproductive failure, and performance accounted for over three-fourths (75.9 percent) of all culled females.

b. Percentage of culled breeding-age females from December 2005 through May 2006, by reason culled:

| Reason Culled | Percent Culled Females | Standard Error |
|---|---|---|
| Old age | 36.6 | (2.6) |
| Lameness | 15.2 | (2.3) |
| Performance* | 13.0 | (1.1) |
| Reproductive failure | 26.3 | (1.9) |
| Injury | 4.0 | (0.6) |
| Other reason | 4.9 | (0.8) |
| Total | 100.0 | |

*Small litter size, high preweaning mortality, or low birth weight.

**Percentage of Culled Breeding-Age Females From December 2005 Through May 2006, by Reason Culled**




*Small litter size, high preweaning mortality, or low birth weight.

**4. Introduction of breeding animals**

New gilts, and in some cases new sows, may require initial isolation before entering the breeding herd to prevent the introduction of new pathogens. Initial isolation is one method used by producers to prevent disease transmission when animals come from another site or a different health management system. The percentage of sites that always isolated new breeding females ranged from 61.1 percent of large sites to 26.5 percent of small sites. However, a higher percentage of small sites (51.0 percent) typically had no new arrivals compared to large sites (21.4 percent).

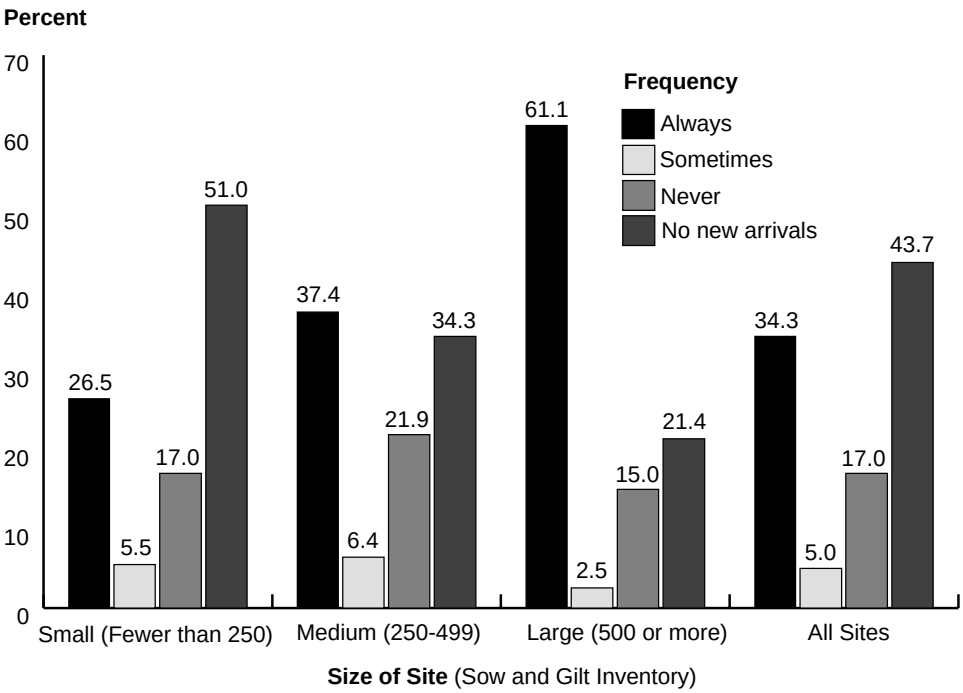
a. Percentage of sites by frequency new breeding ***females*** were typically isolated or quarantined, and by size of site:

**Percent Sites**

**Size of Site** (Sow and Gilt Inventory)

| | **Small** (Fewer than 250) | | **Medium** (250-499) | | **Large** (500 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|---|
| **Frequency** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Always | 26.5 | (2.4) | 37.4 | (5.9) | 61.1 | (3.8) | 34.3 | (2.0) |
| Sometimes | 5.5 | (1.2) | 6.4 | (3.5) | 2.5 | (1.1) | 5.0 | (0.9) |
| Never | 17.0 | (2.1) | 21.9 | (5.4) | 15.0 | (2.7) | 17.0 | (1.6) |
| No new arrivals | 51.0 | (2.8) | 34.3 | (6.0) | 21.4 | (3.0) | 43.7 | (2.2) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

**Percentage of Sites by Frequency New Breeding Females were Typically Isolated or Quarantined, and by Size of Site**



New breeding males may carry a variety of pathogens which may affect the reproductive success of a breeding herd. The percentages of sites that always isolated new breeding males did not differ substantially by size of site. However, a higher percentage of large sites (32.3 percent) closed their herds to new breeding males compared to small sites (16.7 percent).

b. Percentage of sites by frequency new breeding ***males*** were typically isolated or quarantined, and by size of site:

**Percent Sites**

**Size of Site** (Sow and Gilt Inventory)

| | **Small** (Fewer than 250) | | **Medium** (250-499) | | **Large** (500 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|---|
| **Frequency** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Always | 49.5 | (2.8) | 43.9 | (6.2) | 47.7 | (4.1) | 48.6 | (2.2) |
| Sometimes | 12.3 | (1.8) | 2.5 | (2.0) | 5.5 | (2.5) | 10.1 | (1.4) |
| Never | 21.5 | (2.3) | 22.7 | (5.6) | 14.5 | (2.5) | 20.2 | (1.8) |
| No new arrivals | 16.7 | (2.0) | 30.9 | (5.6) | 32.3 | (3.6) | 21.1 | (1.7) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

On average, for sites that isolated new breeding females or males, large sites isolated both breeding females and breeding males for more days than small sites. There were no substantial differences by gender within each size category in the average number of days animals were isolated.

c. For sites that isolated or quarantined new arrivals, site average number of days new arrivals were isolated or quarantined, by gender and by size of site:

**Site Average Number of Days**

**Size of Site** (Sow and Gilt Inventory)

| | **Small** (Fewer than 250) | | **Medium** (250-499) | | **Large** (500 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|---|
| **Gender** | **Avg.** | **Std. Error** | **Avg.** | **Std. Error** | **Avg.** | **Std. Error** | **Avg.** | **Std. Error** |
| Breeding females | 30.3 | (1.5) | 36.1 | (3.0) | 49.7 | (1.9) | 37.0 | (1.3) |
| Breeding males | 28.3 | (1.1) | 41.1 | (3.5) | 47.1 | (2.4) | 32.6 | (1.1) |

For large sites, 35.1 percent tested at least *some* new breeding females for disease exposure, while 5 of 10 (50.3 percent) tested *all* new breeding females. For medium sites, 8.3 percent tested at least *some* new breeding females for disease exposure, while 29.4 percent tested *all* new breeding females. For small sites, 15.3 percent tested at least *some* new breeding females, while 34.9 percent tested *all* new breeding females. Similar patterns were seen for breeding males.

d. For sites with newly arriving breeding females, percentage of sites that typically tested new breeding ***females*** for disease exposure before introduction to the breeding herd, by proportion of animals tested and by size of site:

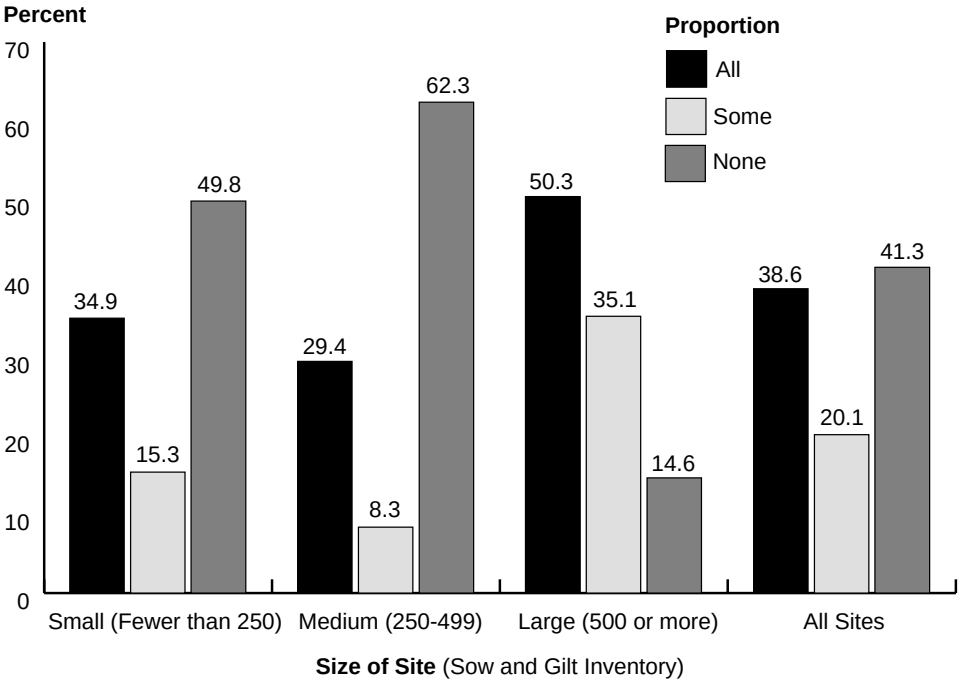
**Percent Sites**

**Size of Site** (Sow and Gilt Inventory)

| | **Small** (Fewer than 250) | | **Medium** (250-499) | | **Large** (500 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|---|
| **Proportion** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| All | 34.9 | (3.6) | 29.4 | (6.0) | 50.3 | (4.7) | 38.6 | (2.7) |
| Some | 15.3 | (2.8) | 8.3 | (3.1) | 35.1 | (4.6) | 20.1 | (2.3) |
| None | 49.8 | (3.8) | 62.3 | (6.7) | 14.6 | (2.7) | 41.3 | (2.8) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

Photo courtesy of National Pork Board

**For Sites with Newly Arriving Breeding Females, Percentage of Sites that Typically Tested New Breeding *Females* for Disease Exposure Before Introduction to the Breeding Herd, by Proportion of Animals Tested and by Size of Site**




e. For sites with newly arriving breeding males, percentage of sites that typically tested new breeding ***males*** for disease exposure before introduction to the breeding herd, by proportion of animals tested and by size of site:

**Percent Sites**

**Size of Site** (Sow and Gilt Inventory)

| | **Small** (Fewer than 250) | | **Medium** (250-499) | | **Large** (500 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|---|
| **Proportion** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| All | 37.4 | (2.9) | 38.2 | (7.6) | 58.2 | (5.2) | 41.0 | (2.4) |
| Some | 12.9 | (2.1) | 2.7 | (1.4) | 21.5 | (4.8) | 13.6 | (1.8) |
| None | 49.7 | (3.0) | 59.1 | (7.6) | 20.3 | (4.0) | 45.4 | (2.5) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

Approximately 9 of 10 large sites (90.5 percent), 7 of 10 medium sites (74.8 percent), and 6 of 10 small sites (59.7 percent) administered vaccinations as a way of acclimating new arrivals to on-site pathogens. Vaccines used may not exactly match specific strains of disease present on-site but may enhance the animals' general immunity to them. Many sites relied on some sort of exposure of new breeding stock to pigs present as a way of acclimating new arrivals.

f. For sites with newly arriving breeding stock, percentage of sites by method used to acclimate new arrivals and by size of site:

**Percent Sites**

**Size of Site** (Sow and Gilt Inventory)

| | **Small** (Fewer than 250) | | **Medium** (250-499) | | **Large** (500 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|---|
| **Method** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Feedback of feces from other swine | 12.6 | (2.0) | 34.1 | (6.8) | 44.7 | (4.6) | 20.8 | (1.9) |
| Feedback of mummies, placentas, or stillborn pigs | 4.6 | (1.2) | 10.9 | (3.9) | 23.0 | (4.5) | 8.8 | (1.4) |
| Exposure to cull females (gilts and sows) | 29.0 | (2.6) | 59.6 | (6.8) | 50.9 | (4.5) | 35.8 | (2.2) |
| Exposure to sick pigs | 4.5 | (1.3) | 9.6 | (4.4) | 9.9 | (3.3) | 6.0 | (1.2) |
| Give vaccinations | 59.7 | (3.0) | 74.8 | (6.7) | 90.5 | (2.2) | 67.1 | (2.3) |
| Other | 6.8 | (1.6) | 2.9 | (1.4) | 2.0 | (1.0) | 5.5 | (1.2) |

## B. Farrowing and Weaning Productivity

### 1. Farrowing productivity and death loss

The total number of piglets born or born alive per litter is a measure of reproductive performance. Overall, 11.5 piglets were born per litter, of which 10.5 were born alive and 9.4 were weaned.

a. Average per litter productivity from December 2005 through May 2006:

| | Average Per Litter Productivity | | | |
|---|---|---|---|---|
| **Measure** (Per Litter) | **Number** | **Std. Error** | **Percent** | **Std. Error** |
| Stillbirths and mummies | 1.0 | (0.0) | 8.4 | (0.3) |
| Born alive | 10.5 | (0.1) | 91.6 | (0.3) |
| Total born | 11.5 | (0.1) | 100.0 | |
| Preweaning deaths | 1.1 | (0.0) | 10.9 | (0.4) |
| Weaned | 9.4 | (0.1) | 89.1 | (0.4) |
| Total born alive | 10.5 | (0.1) | 100.0 | |

On average, large and medium sites had approximately one more piglet born alive per litter than small sites. Large sites also averaged about one more weaned piglet per litter than small sites.

b. Average per litter productivity from December 2005 through May 2006, by size of site:

**Average Per Litter Productivity**

**Size of Site** (Sow and Gilt Inventory)

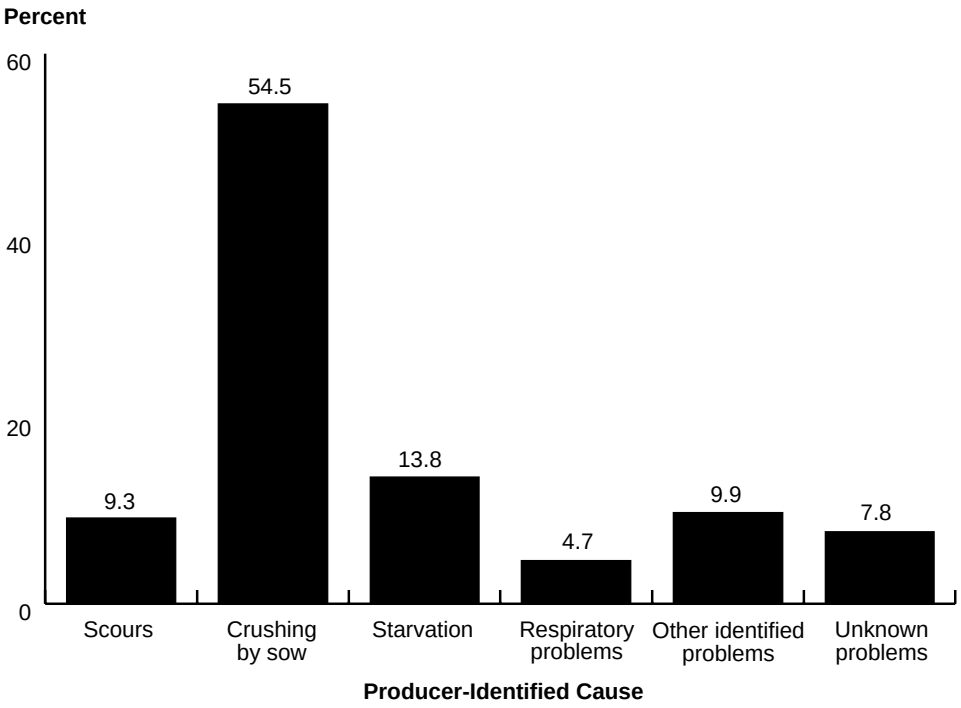
| | **Small** (Fewer than 250) | | | | **Medium** (250-499) | | | | **Large** (500 or More) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Measure** (Per Litter) | **No.** | **Std. Err.** | **Pct.** | **Std. Err.** | **No.** | **Std. Err.** | **Pct.** | **Std. Err.** | **No.** | **Std. Err.** | **Pct.** | **Std. Err.** |
| Stillbirths and mummies | 0.9 | (0.1) | 9.2 | (0.8) | 0.9 | (0.0) | 7.9 | (0.4) | 1.0 | (0.0) | 8.4 | (0.3) |
| Born alive | 9.3 | (0.1) | 90.8 | (0.8) | 10.2 | (0.1) | 92.1 | (0.4) | 10.7 | (0.1) | 91.6 | (0.3) |
| Total born | 10.2 | (0.1) | 100.0 | | 11.1 | (0.1) | 100.0 | | 11.7 | (0.1) | 100.0 | |
| Preweaning deaths | 0.8 | (0.0) | 8.5 | (0.4) | 1.0 | (0.1) | 9.8 | (0.6) | 1.2 | (0.1) | 11.3 | (0.5) |
| Weaned | 8.5 | (0.1) | 91.5 | (0.4) | 9.2 | (0.1) | 90.2 | (0.6) | 9.5 | (0.1) | 88.7 | (0.5) |
| Total born alive | 9.3 | (0.1) | 100.0 | | 10.2 | (0.1) | 100.0 | | 10.7 | (0.1) | 100.0 | |

Crushing by sow accounted for over half of preweaning deaths (54.5 percent) from December 2005 through May 2006. Disease-related problems such as scours and respiratory problems led to 14.0 percent of preweaning deaths. Low viability was the most common other identified problem.

c. Percentage of preweaning deaths from December 2005 through May 2006, by producer-identified cause:

| **Producer-Identified Cause** | **Percent Preweaning Deaths** | **Standard Error** |
|---|---|---|
| Scours | 9.3 | (1.1) |
| Crushing by sow (laid on) | 54.5 | (1.9) |
| Starvation | 13.8 | (1.2) |
| Respiratory problems | 4.7 | (1.3) |
| Other identified problems | 9.9 | (1.7) |
| Unknown problems | 7.8 | (1.1) |
| Total | 100.0 | |

**Percentage of Preweaning Deaths From December 2005 Through May 2006, by Producer-Identified Cause**




## 2. Weaning

The average piglet-weaning age of 19.4 days was influenced by medium and large sites, which tend to wean piglets earlier (16-20 days) than small sites and account for a relatively large number of pigs.

a. Average age of piglets at weaning from December 2006 through May 2006:

| **Average Age** (Days) | **Standard Error** |
|---|---|
| 19.4 | (0.2) |

Over 9 of 10 large sites (93.2 percent) and nearly 9 of 10 medium sites (86.7 percent) weaned piglets at 16 to 27 days of age, compared to 4 of 10 small sites (40.5 percent). More than half of small sites (57.6 percent) weaned at 28 or more days, compared to 12.0 and 0.7 percent of medium and large sites, respectively.

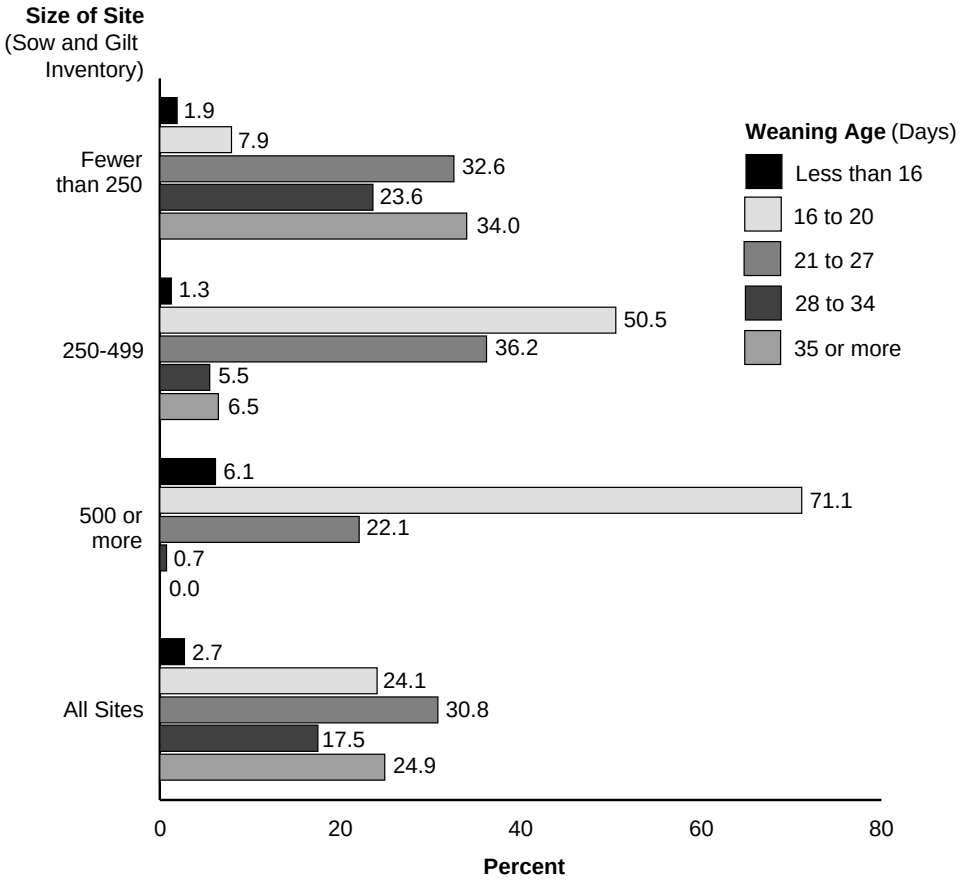
b. Percentage of sites by age piglets were weaned and by size of site:

**Percent Sites**

**Size of Site** (Sow and Gilt Inventory)

| **Weaning Age** (Days) | **Small** (Fewer than 250) | | **Medium** (250-499) | | **Large** (500 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|---|
| | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Less than 16 | 1.9 | (0.8) | 1.3 | (0.8) | 6.1 | (1.7) | 2.7 | (0.7) |
| 16 to 20 | 7.9 | (1.4) | 50.5 | (6.2) | 71.1 | (3.8) | 24.1 | (1.7) |
| 21 to 27 | 32.6 | (2.6) | 36.2 | (6.0) | 22.1 | (3.6) | 30.8 | (2.1) |
| 28 to 34 | 23.6 | (2.4) | 5.5 | (2.8) | 0.7 | (0.6) | 17.5 | (1.8) |
| 35 or more | 34.0 | (2.6) | 6.5 | (3.6) | 0.0 | (--) | 24.9 | (2.0) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

**Percentage of Sites by Age Piglets were Weaned and by Size of Site**




Nearly 7 of 10 weaned pigs were on sites that weaned at 16 to 20 days.

c. Percentage of weaned pigs* on operations that weaned pigs at the following ages:

| **Weaning Age** (Days) | **Percent Pigs** | **Std. Error** |
|---|---|---|
| Less than 16 | 6.3 | (2.6) |
| 16 to 20 | 69.4 | (4.1) |
| 21 to 27 | 20.1 | (3.6) |
| 28 to 34 | 2.2 | (0.4) |
| 35 or more | 2.0 | (0.3) |
| Total | 100.0 | |

*As a percentage of pigs weaned from December 2005 through May 2006.

## C. Nursery Productivity

### 1. Production phase

About half of all sites (53.3 percent) had a nursery phase. Approximately one-third of sites in the South region (33.5 percent) had a nursery phase, the lowest percentage of any region. The relatively low percentage in the South region may reflect the infrastructure that has developed in the other regions, which grow out pigs transported from the South.

Percentage of sites with a nursery phase, by region:

**Percent Sites**

**Region**

| North | | West Central | | East Central | | South | | All Sites | |
|---|---|---|---|---|---|---|---|---|---|
| Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error |
| 51.3 | (2.7) | 57.0 | (3.0) | 56.8 | (1.9) | 33.5 | (2.9) | 53.3 | (1.3) |

### 2. Nursery death loss

There was no substantial difference in the percentages of nursery pig deaths across the three size groups.

a. Percentage of nursery pigs that died in the nursery phase* from December 2005 through May 2006, by size of site:

**Percent Nursery Pigs**

**Size of Site** (Total Inventory)

| Small (Fewer than 2,000) | | Medium (2,000-4,999) | | Large (5,000 or More) | | All Sites | |
|---|---|---|---|---|---|---|---|
| Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error |
| 3.3 | (0.5) | 2.9 | (0.2) | 2.9 | (0.2) | 2.9 | (0.1) |

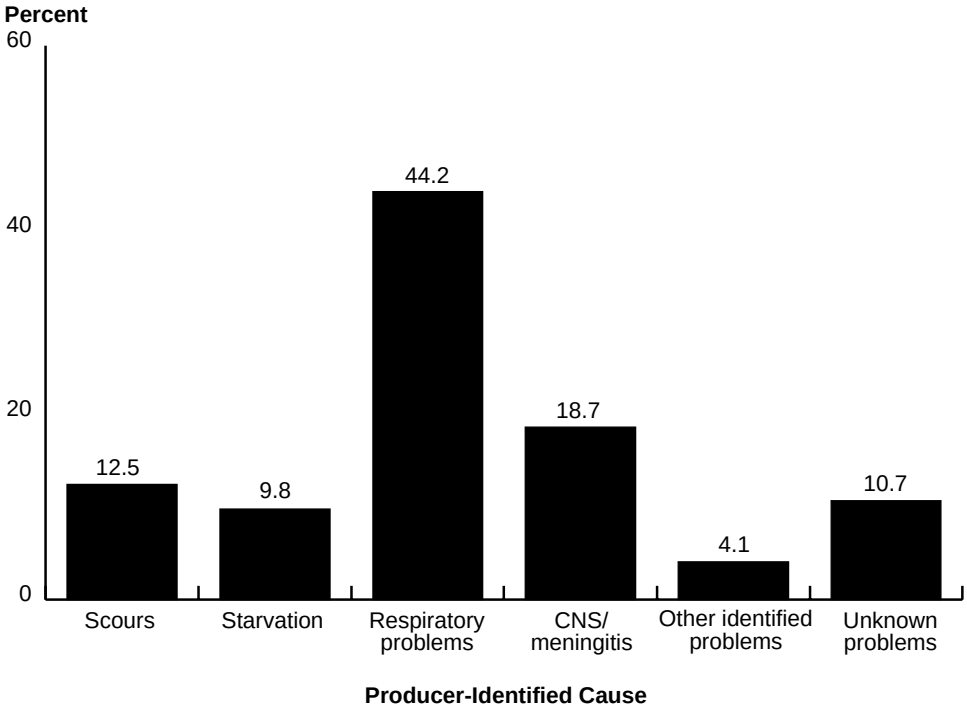
*As a percentage of pigs that entered the nursery phase

The percentages of deaths by producer-identified cause did not differ substantially across the three size groups. Respiratory problems accounted for the highest percentage of all nursery deaths (44.2 percent). Of the 4.1 percent of all nursery deaths ascribed to other identified problems, nearly half were caused by injury or trauma.

b. Percentage of nursery-phase deaths from December 2005 through May 2006, by producer-identified cause and by size of site:

| | **Percent Deaths** | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Size of Site** (Total Inventory) | | | | | | | |
| | **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
| **Producer-Identified Cause** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Scours | 12.7 | (1.8) | 12.9 | (1.6) | 12.2 | (1.9) | 12.5 | (1.1) |
| Starvation | 10.2 | (1.3) | 10.6 | (1.3) | 9.3 | (1.5) | 9.8 | (0.9) |
| Respiratory problems | 49.8 | (6.8) | 44.5 | (2.6) | 41.9 | (2.8) | 44.2 | (2.3) |
| CNS/meningitis | 12.2 | (2.7) | 17.8 | (1.8) | 21.6 | (3.1) | 18.7 | (1.9) |
| Other identified problems | 3.8 | (1.1) | 4.5 | (1.3) | 4.0 | (1.4) | 4.1 | (0.8) |
| Unknown problems | 11.3 | (2.1) | 9.7 | (1.1) | 11.0 | (1.9) | 10.7 | (1.1) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

**Percentage of Nursery-Phase Deaths From December 2005 Through May 2006, by Producer-Identified Cause**




### 3. Age entering and leaving the nursery

The average age of pigs entering the nursery was younger for large and medium sites compared to small sites, which relates to the earlier weaning age on large and medium sites (table b, p 23).

a. Average age of pigs entering the nursery, by size of site:

| **Average Age** (Days) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Size of Site** (Total Inventory) | | | | | | | |
| **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
| **Avg.** | **Std. Error** | **Avg.** | **Std. Error** | **Avg.** | **Std. Error** | **Avg.** | **Std. Error** |
| 22.1 | (0.4) | 18.6 | (0.2) | 18.7 | (0.2) | 19.3 | (0.1) |

There were no substantial differences across size groups in the average age that pigs left the nursery.

b. Average age of pigs leaving the nursery, by size of site:

| **Average Age** (Days) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Size of Site** (Total Inventory) | | | | | | | |
| **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
| **Avg.** | **Std. Error** | **Avg.** | **Std. Error** | **Avg.** | **Std. Error** | **Avg.** | **Std. Error** |
| 65.7 | (0.7) | 65.6 | (0.6) | 64.2 | (0.8) | 64.8 | (0.5) |

There was a small difference between small and medium sites in the average number of days pigs spent in the nursery.

c. Average number of days pigs spent in the nursery, by size of site:

| **Average Days** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Size of Site** (Total Inventory) | | | | | | | |
| **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
| **Avg.** | **Std. Error** | **Avg.** | **Std. Error** | **Avg.** | **Std. Error** | **Avg.** | **Std. Error** |
| 43.6 | (0.7) | 47.0 | (0.6) | 45.5 | (0.8) | 45.5 | (0.5) |

## D. Grower/Finisher Productivity

### 1. Production phase

Eight of 10 sites had a grower/finisher phase. As was the case with the nursery phase (table 1. p 25), the South region had the lowest percentage of sites with a grower/finisher phase than any other region.

Percentage of sites with a grower/finisher phase, by region:

**Percent Sites**

**Region**

| North | | West Central | | East Central | | South | | All Sites | |
|---|---|---|---|---|---|---|---|---|---|
| Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error |
| 85.5 | (2.0) | 79.8 | (2.7) | 82.7 | (1.5) | 55.2 | (3.0) | 80.0 | (1.0) |

### 2. Grower/finisher death loss

As with nursery pig deaths, there were no substantial differences by size of site in the percentages of deaths during the grower/finisher phase.

a. Percentage of grower/finisher pigs that died during the grower/finisher phase* from December 2005 through May 2006, by size of site:

**Percent Grower/Finisher Pigs**

**Size of Site** (Total Inventory)

| **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | All Sites | |
|---|---|---|---|---|---|---|---|
| Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error |
| 3.4 | (0.2) | 3.7 | (0.2) | 4.4 | (0.4) | 3.9 | (0.2) |

*As a percentage of pigs that entered the grower/finisher phase.

For all producer-identified causes of grower/finisher deaths, the percentages of grower/finisher deaths did not differ substantially by size of site. The majority of grower/finisher deaths (61.1 percent) were due to respiratory problems. Most producer-identified deaths attributed to other identified problems were caused by gastrointestinal problems, such as hemorrhagic bowel syndrome or ileitis-related diseases.

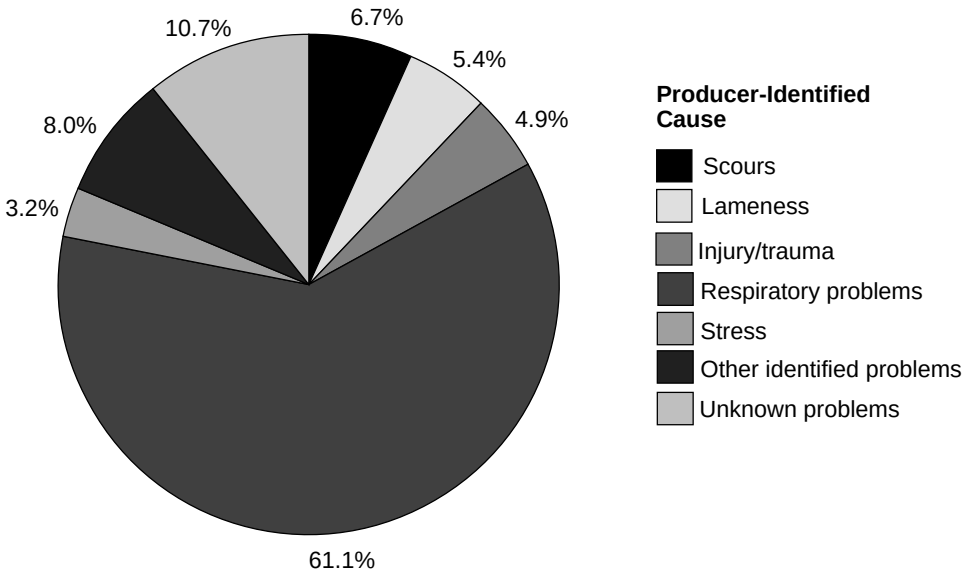
b. Percentage of grower/finisher pig deaths from December 2005 through May 2006, by producer-identified cause and by size of site:

**Percent Deaths**

**Size of Site** (Total Inventory)

| Producer-Identified Cause | **Small** (Fewer than 2,000) Pct. | Std. Error | **Medium** (2,000-4,999) Pct. | Std. Error | **Large** (5,000 or More) Pct. | Std. Error | **All Sites** Pct. | Std. Error |
|---|---|---|---|---|---|---|---|---|
| Scours | 7.4 | (1.1) | 6.3 | (0.7) | 6.7 | (1.1) | 6.7 | (0.6) |
| Lameness | 5.8 | (0.6) | 4.9 | (0.5) | 5.5 | (0.6) | 5.4 | (0.3) |
| Injury/trauma | 5.8 | (0.6) | 5.2 | (0.6) | 4.3 | (0.7) | 4.9 | (0.4) |
| Respiratory problems | 59.4 | (2.5) | 64.3 | (2.1) | 59.8 | (4.2) | 61.1 | (2.3) |
| Stress | 5.6 | (0.7) | 2.9 | (0.3) | 2.3 | (0.4) | 3.2 | (0.3) |
| Other identified problems | 4.3 | (0.7) | 6.4 | (1.0) | 10.6 | (6.7) | 8.0 | (3.4) |
| Unknown problems | 11.7 | (1.1) | 10.0 | (1.0) | 10.8 | (1.9) | 10.7 | (1.0) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

**Percentage of Grower/Finisher Pig Deaths From December 2005 through May 2006, by Producer-Identified Cause**




**3. Days to market**

The were no substantial differences across site sizes in the average age of pigs entering the grower/finisher phase.

a. Average age of pigs entering the grower/finisher unit from December 2005 through May 2006, by size of site:

**Average Age** (Days)

**Size of Site** (Total Inventory)

| **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|
| **Avg.** | **Std. Error** | **Avg.** | **Std. Error** | **Avg.** | **Std. Error** | **Avg.** | **Std. Error** |
| 66.1 | (0.7) | 64.2 | (0.6) | 65.1 | (0.6) | 65.1 | (0.4) |

There was a slight difference in the average age of pigs leaving the grower/finisher unit between large sites versus medium and small sites (184.3 days versus 175.5 and 176.3 days, respectively). This difference can be partially explained by the high percentage of pigs (41.7 percent) that left at 181 or more days of age (table c).

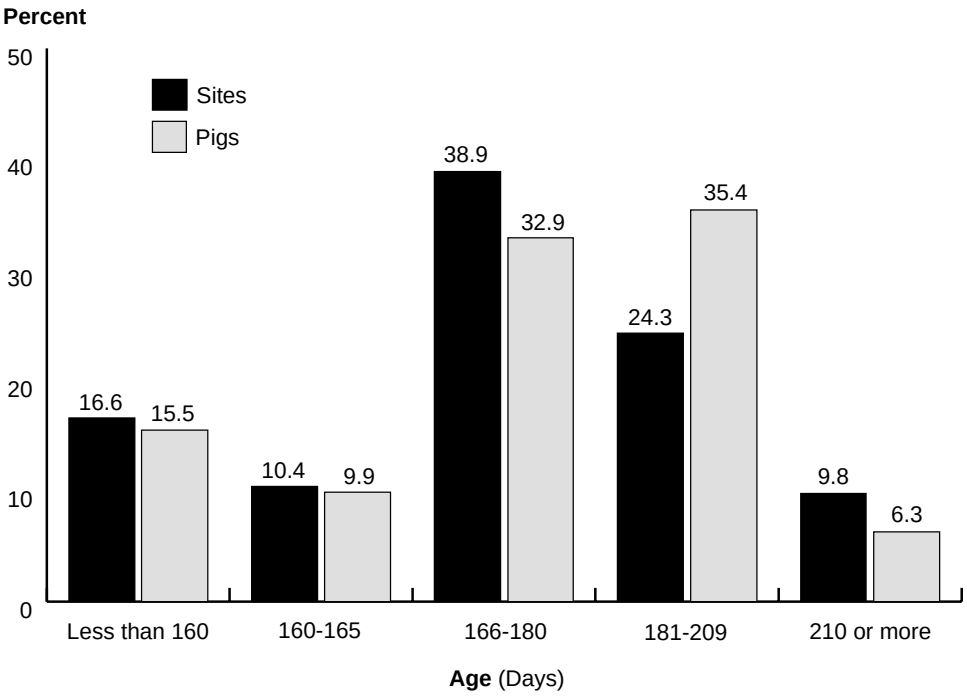
b. Average age of pigs leaving the grower/finisher unit, by size of site:

| **Average Age** (Days) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Size of Site** (Total Inventory) | | | | | | | |
| **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
| **Avg.** | **Std. Error** | **Avg.** | **Std. Error** | **Avg.** | **Std. Error** | **Avg.** | **Std. Error** |
| 176.3 | (1.5) | 175.5 | (1.5) | 184.3 | (2.3) | 179.7 | (1.3) |

c. Percentage of sites, and percentage of grower/finisher pigs on these sites, by age of pigs leaving the grower/finisher unit:

| **Age** (Days) | **Percent Sites** | **Std. Error** | **Percent Pigs** | **Std. Error** |
|---|---|---|---|---|
| Less than 160 | 16.6 | (1.2) | 15.5 | (1.4) |
| 160 to 165 | 10.4 | (0.9) | 9.9 | (1.1) |
| 166 to 180 | 38.9 | (1.5) | 32.9 | (2.1) |
| 181 to 209 | 24.3 | (1.3) | 35.4 | (2.7) |
| 210 or more | 9.8 | (1.0) | 6.3 | (1.0) |
| Total | 100.0 | | 100.0 | |

**Percentage of Sites, and Percentage of Grower/Finisher Pigs on These Sites, by Age of Pigs Leaving the Grower/Finisher Unit**



Pigs on large sites had a significantly longer grower/finisher phase (119.2 days) than pigs on medium and small sites (111.3 and 110.2 days, respectively).

d. Average number of days pigs spent in the grower/finisher phase, by size of site:

**Average Number of Days**

**Size of Site** (Total Inventory)

| **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|
| **Avg.** | **Std. Error** | **Avg.** | **Std. Error** | **Avg.** | **Std. Error** | **Avg.** | **Std. Error** |
| 110.2 | (1.3) | 111.3 | (1.4) | 119.2 | (2.2) | 114.6 | (1.2) |

## E. Facility Management —All Phases

### 1. Production phases

Compared to the other regions, the South region had the lowest percentage of sites with nursery and grower/finisher phases (33.5 and 55.2 percent of sites, respectively).

a. Percentage of sites by production phase and by region:

**Percent Sites**

**Region**

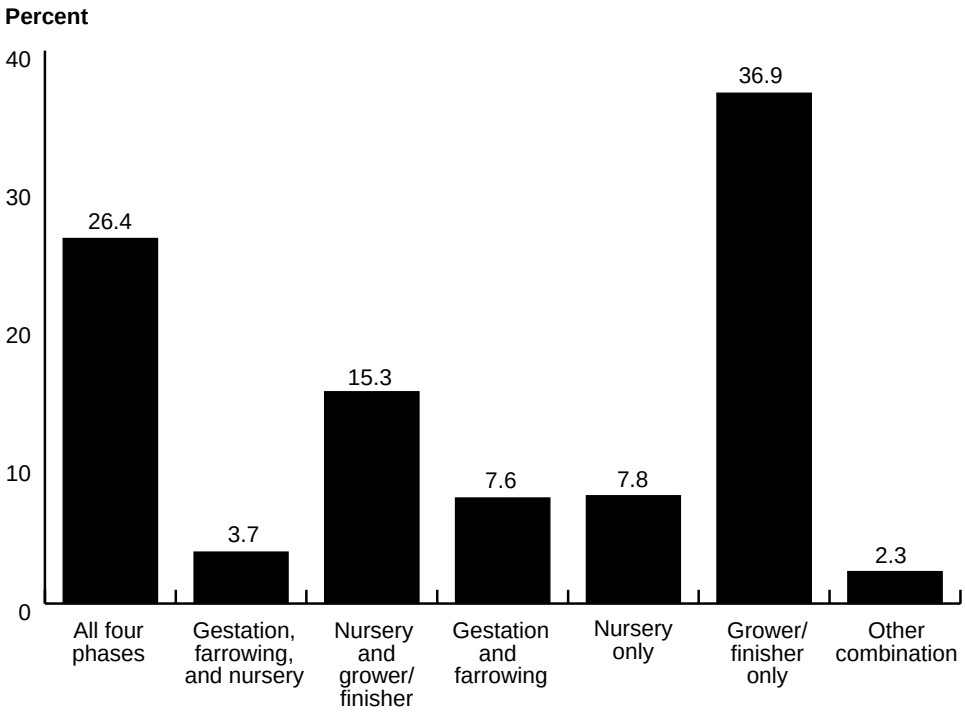
| | **North** | | **West Central** | | **East Central** | | **South** | | **All Sites** | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Production Phase** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Gestation | 39.3 | (2.6) | 48.8 | (2.8) | 38.0 | (1.9) | 33.9 | (2.7) | 39.8 | (1.2) |
| Farrowing | 37.7 | (2.7) | 47.4 | (2.8) | 37.6 | (1.9) | 33.7 | (2.7) | 39.0 | (1.2) |
| Nursery | 51.3 | (2.7) | 57.0 | (3.0) | 56.8 | (1.9) | 33.5 | (2.9) | 53.3 | (1.3) |
| Grower/finisher | 85.5 | (2.0) | 79.8 | (2.7) | 82.7 | (1.5) | 55.2 | (3.0) | 80.0 | (1.0) |

Slightly more than one-quarter of all sites (26.4 percent) had all four production phases (gestation, farrowing, nursery, and grower/finisher). When sites in each region were broken out by combinations of production phases, only 8.0 percent of sites in the South region had all four phases on one site. However, compared to sites in the other three regions, a substantially higher percentage of sites in the South region (20.6 percent) specialized in the nursery phase.

b. Percentage of sites by combination of production phases and by region:

| | Percent Sites | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Region | | | | | | | | | |
| | North | | West Central | | East Central | | South | | All Sites | |
| Production Phase Combination | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error |
| All four phases | 30.2 | (2.7) | 33.4 | (2.9) | 25.8 | (1.8) | 8.0 | (1.6) | 26.4 | (1.2) |
| Gestation, farrowing, and nursery | 2.4 | (0.8) | 4.1 | (1.1) | 4.2 | (0.9) | 3.3 | (0.4) | 3.7 | (0.5) |
| Nursery and grower/finisher | 11.8 | (1.6) | 11.9 | (1.9) | 21.0 | (1.5) | 1.6 | (1.0) | 15.3 | (0.9) |
| Gestation and farrowing | 3.8 | (0.9) | 7.1 | (1.7) | 6.9 | (1.0) | 20.7 | (2.5) | 7.6 | (0.7) |
| Nursery only | 6.9 | (1.3) | 7.3 | (1.6) | 5.8 | (0.8) | 20.6 | (2.4) | 7.8 | (0.6) |
| Grower/finisher only | 42.0 | (2.7) | 31.6 | (2.9) | 35.1 | (1.8) | 43.9 | (3.1) | 36.9 | (1.2) |
| Other combination | 2.9 | (1.2) | 4.6 | (1.3) | 1.2 | (0.5) | 1.9 | (1.0) | 2.3 | (0.4) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

**Percentage of Sites by Combination of Production Phases**



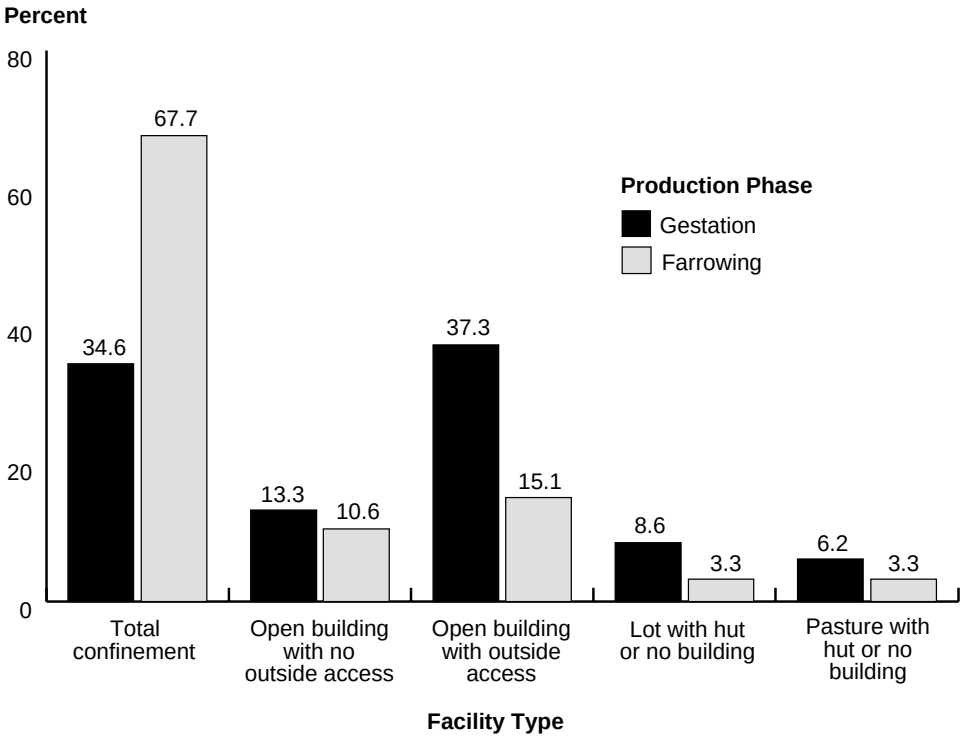

### 2. Facility type

Total confinement was the most common type of facility for all phases, except gestation. Over half of grower/finisher sites (53.2 percent) had total confinement, and nearly three-fourths of sites (74.0 percent) with a nursery had total confinement. Most *pigs* were kept in total confinement housing for all four phases (table b). Although a similar percentage of *sites* had their gestation phase in either total confinement (34.6 percent) or in an open building with outside access (37.3 percent) [table a], the highest percentage of breeding *pigs* in the gestation phase (79.7 percent) were kept in total confinement (table b).

a. For sites with the specified production phases, percentage of ***sites*** by facility type used most:

| | Percent Sites | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Production Phase | | | | | | | |
| | Gestation | | Farrowing | | Nursery | | Grower/ Finisher | |
| Facility Type | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error |
| Total confinement | 34.6 | (1.9) | 67.7 | (2.1) | 74.0 | (1.7) | 53.2 | (1.4) |
| Open building with no outside access | 13.3 | (1.5) | 10.6 | (1.4) | 10.7 | (1.2) | 20.4 | (1.2) |
| Open building with outside access | 37.3 | (2.2) | 15.1 | (1.7) | 11.3 | (1.3) | 23.3 | (1.4) |
| Lot with hut or no building | 8.6 | (1.2) | 3.3 | (0.7) | 1.8 | (0.5) | 1.8 | (0.4) |
| Pasture with hut or no building | 6.2 | (1.0) | 3.3 | (0.8) | 2.2 | (0.6) | 1.3 | (0.3) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

**For Sites with the Specified Production Phases, Percentage of Sites by Facilty Type Used Most**



b. For sites with the specified production phases, percentage of ***pigs*** on these sites by facility type used most:

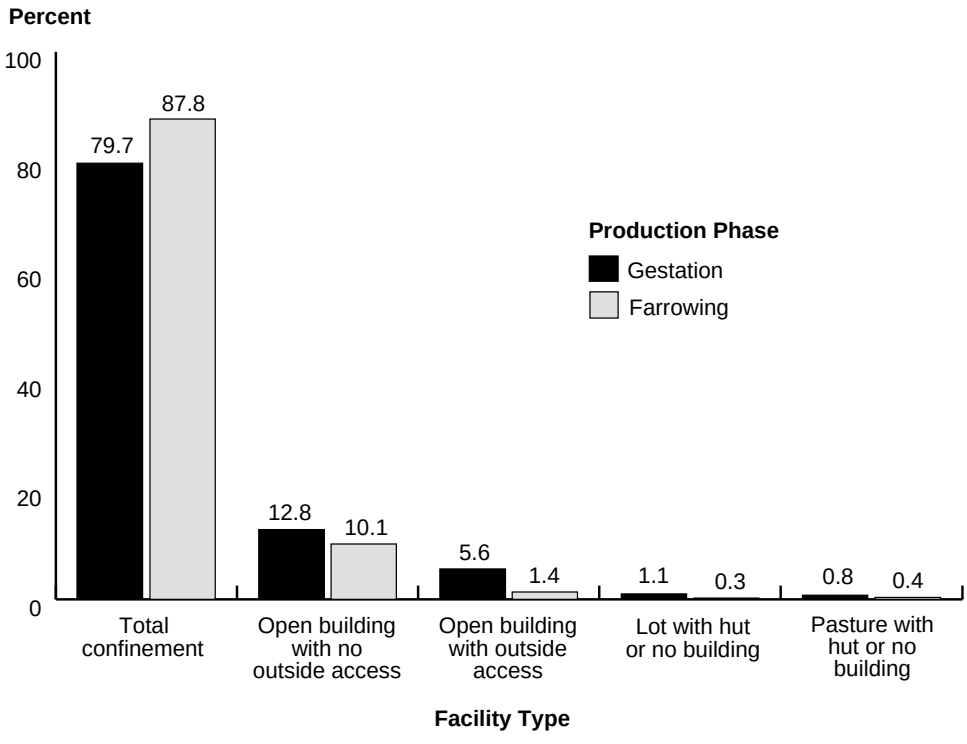
**Percent Pigs**

**Production Phase**

| Facility Type | Gestation[1] Pct. | Gestation[1] Std. Error | Farrowing[1] Pct. | Farrowing[1] Std. Error | Nursery[2] Pct. | Nursery[2] Std. Error | Grower/ Finisher[3] Pct. | Grower/ Finisher[3] Std. Error |
|---|---|---|---|---|---|---|---|---|
| Total confinement | 79.7 | (2.9) | 87.8 | (2.6) | 90.4 | (1.6) | 81.0 | (1.3) |
| Open building with no outside access | 12.8 | (2.7) | 10.1 | (2.6) | 8.0 | (1.6) | 13.5 | (1.1) |
| Open building with outside access | 5.6 | (0.7) | 1.4 | (0.2) | 1.0 | (0.2) | 5.1 | (0.5) |
| Lot with hut or no building | 1.1 | (0.2) | 0.3 | (0.1) | 0.1 | (0.0) | 0.2 | (0.1) |
| Pasture with hut or no building | 0.8 | (0.2) | 0.4 | (0.1) | 0.5 | (0.2) | 0.2 | (0.0) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

[1]As a percentage of sows and gilts that farrowed.
[2]As a percentage of pigs entering the nursery phase.
[3]As a percentage of pigs entering the grower/finisher phase.

**For Sites with the Specified Production Phases, Percentage of Pigs on These Sites by Facility Type Used Most**



The highest percentage of sites with farrowing, nursery, or grower/finisher phases (54.0, 65.5, and 42.3 percent of sites, respectively) used completely slatted flooring. For sites with a gestation phase, the highest percentage used solid surface flooring, followed by dirt, and partial slats (mixed flooring of solid and slats).

c. For sites with the specified production phases, percentage of ***sites*** by flooring type used most:

**Percent Sites**

**Production Phase**

| | Gestation | | Farrowing | | Nursery | | Grower/ Finisher | |
|---|---|---|---|---|---|---|---|---|
| **Flooring Type** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Solid surface | 35.6 | (2.2) | 23.2 | (2.0) | 16.7 | (1.5) | 28.0 | (1.4) |
| Partial slats | 23.5 | (1.7) | 13.3 | (1.4) | 12.4 | (1.2) | 23.1 | (1.3) |
| Completely slatted | 14.9 | (1.4) | 54.0 | (2.1) | 65.5 | (1.8) | 42.3 | (1.3) |
| Dirt | 26.0 | (1.9) | 9.5 | (1.2) | 5.4 | (0.8) | 6.6 | (0.7) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

While 26.0 percent of sites had dirt flooring in the gestation phase (table c), these sites accounted for only 3.7 percent of pigs (table d).

d. For sites with the specified production phases, percentage of ***pigs*** by flooring type used most:

**Percent Pigs**

**Production Phase**

| | Gestation[1] | | Farrowing[1] | | Nursery[2] | | Grower/ Finisher[3] | |
|---|---|---|---|---|---|---|---|---|
| **Flooring Type** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Solid surface | 10.8 | (3.0) | 2.3 | (0.3) | 2.5 | (0.5) | 7.8 | (0.7) |
| Partial slats | 48.4 | (4.2) | 13.2 | (3.0) | 8.8 | (1.5) | 16.8 | (1.3) |
| Completely slatted | 37.1 | (4.2) | 83.1 | (3.1) | 87.9 | (1.6) | 74.5 | (1.6) |
| Dirt | 3.7 | (0.5) | 1.4 | (0.5) | 0.8 | (0.3) | 0.9 | (0.1) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

[1]As a percentage of sows and gilts that farrowed.
[2]As a percentage of pigs entering the nursery phase.
[3]As a percentage of pigs entering the grower/finisher phase.

For sites with slatted flooring (partial slats or completely slatted), the highest percentage of sites with a gestation or grower/finisher phase used concrete slats (87.1 and 95.6 percent of sites, respectively). Most sites with slatted flooring that had a farrowing or nursery phase used metal slats (73.3 and 47.0 percent of sites, respectively).

e. For sites with the specified production phases and slatted flooring, percentage of ***sites*** by flooring material used most:

**Percent Sites**

**Production Phase**

| | Gestation | | Farrowing | | Nursery | | Grower/ Finisher | |
|---|---|---|---|---|---|---|---|---|
| **Flooring Material** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Concrete | 87.1 | (2.0) | 13.0 | (1.7) | 20.1 | (1.6) | 95.6 | (0.7) |
| Metal | 11.1 | (1.9) | 73.3 | (2.2) | 47.0 | (2.0) | 3.1 | (0.6) |
| Plastic | 1.8 | (0.7) | 12.5 | (1.7) | 29.5 | (1.8) | 1.1 | (0.4) |
| Other | 0.0 | (--) | 1.2 | (0.4) | 3.4 | (0.6) | 0.2 | (0.1) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

f. For sites with the specified production phases and slatted flooring, percentage of ***pigs*** by flooring material used most:

**Percent Pigs**

**Production Phase**

| | Gestation[1] | | Farrowing[1] | | Nursery[2] | | Grower/ Finisher[3] | |
|---|---|---|---|---|---|---|---|---|
| **Flooring Material** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Concrete | 94.4 | (1.5) | 19.0 | (4.1) | 19.1 | (3.1) | 97.5 | (0.5) |
| Metal | 4.7 | (1.4) | 70.5 | (4.5) | 38.2 | (3.4) | 1.6 | (0.4) |
| Plastic | 0.9 | (0.4) | 7.3 | (1.4) | 31.7 | (2.8) | 0.8 | (0.3) |
| Other | 0.0 | (--) | 3.2 | (2.0) | 11.0 | (2.5) | 0.1 | (0.1) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

[1]As a percentage of sows and gilts that farrowed.
[2]As a percentage of pigs entering the nursery phase.
[3]As a percentage of pigs entering the grower/finisher phase.

### 3. Pig flow

Continuous flow was the management style used in the gestation phase by the highest percentage of sites and for the highest percentage of pigs (61.5 percent and 77.0 percent, respectively) [tables a and b]. Although for the farrowing phase similar percentages of sites used continuous flow and all-in/all-out management by room, the highest percentage of farrowing sows (73.4 percent) were managed all-in/all-out by room (table b). The highest percentage of sites with a grower/finisher phase used all-in/all-out by building (35.0 percent of sites), and the highest percentage of pigs in grower/finisher phase were managed all-in/all-out by building (52.6 percent of pigs) [tables a and b].

a. For sites with the specified production phases, percentage of ***sites*** by pig-flow management style:

**Percent Sites**

**Production Phase**

| | Gestation | | Farrowing | | Nursery | | Grower/ Finisher | |
|---|---|---|---|---|---|---|---|---|
| **Management Style** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Continuous flow | 61.5 | (2.1) | 33.5 | (2.1) | 25.0 | (1.7) | 26.1 | (1.3) |
| All swine removed without cleaning and disinfecting | 4.6 | (1.0) | 4.7 | (1.1) | 3.6 | (0.8) | 6.2 | (0.8) |
| All-in/all-out by room, with room cleaned and disinfected | 10.0 | (1.3) | 37.1 | (2.0) | 30.5 | (1.6) | 17.5 | (1.2) |
| All-in/all-out by building, with building cleaned and disinfected | 7.7 | (1.2) | 16.1 | (1.6) | 29.8 | (1.6) | 35.0 | (1.3) |
| All-in/all-out by site, with site cleaned and disinfected | 1.4 | (0.5) | 1.9 | (0.6) | 7.1 | (1.0) | 12.1 | (1.0) |
| Not applicable (no housing) | 14.8 | (1.5) | 6.7 | (1.0) | 4.0 | (0.7) | 3.1 | (0.5) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

b. For sites with the specified production phases, percentage of ***pigs*** on these sites by pig- flow management style:

| | Percent Pigs | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Production Phase | | | | | | | |
| | Gestation[1] | | Farrowing[1] | | Nursery[2] | | Grower/ Finisher[3] | |
| Management Style | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error |
| Continuous flow | 77.0 | (3.7) | 15.1 | (2.5) | 8.4 | (1.4) | 10.9 | (1.2) |
| All swine removed without cleaning and disinfecting | 1.2 | (0.4) | 0.8 | (0.4) | 0.7 | (0.2) | 1.8 | (0.3) |
| All-in/all-out by room, with room cleaned and disinfected | 14.9 | (2.9) | 73.4 | (3.5) | 38.3 | (3.0) | 18.1 | (1.7) |
| All-in/all-out by building, with building cleaned and disinfected | 4.6 | (2.6) | 8.3 | (2.6) | 38.3 | (3.4) | 52.6 | (2.2) |
| All-in/all-out by site, with site cleaned and disinfected | 0.4 | (0.1) | 1.7 | (1.3) | 13.7 | (3.0) | 16.2 | (1.7) |
| Not applicable (no housing) | 1.9 | (0.3) | 0.7 | (0.1) | 0.6 | (0.2) | 0.4 | (0.1) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

[1]As a percentage of sows and gilts that farrowed.
[2]As a percentage of pigs entering the nursery phase.
[3]As a percentage of pigs entering the grower/finisher phase.

Most sites with nursery or grower/finisher phases that did not use continuous-flow management had only one age group of nursery or grower/finisher pigs at one time.

c. For sites with nursery or grower/finisher phases not managed by continuous flow, percentage of sites by number of distinct age groups on-site at one time:

| | Percent Sites | | | |
|---|---|---|---|---|
| | Production Phase | | | |
| | Nursery | | Grower/Finisher | |
| Number of Age Groups | Percent | Std. Error | Percent | Std. Error |
| 1 | 66.0 | (1.9) | 63.1 | (1.6) |
| 2 | 17.2 | (1.6) | 15.5 | (1.2) |
| 3 or more | 16.8 | (1.4) | 21.4 | (1.4) |
| Total | 100.0 | | 100.0 | |

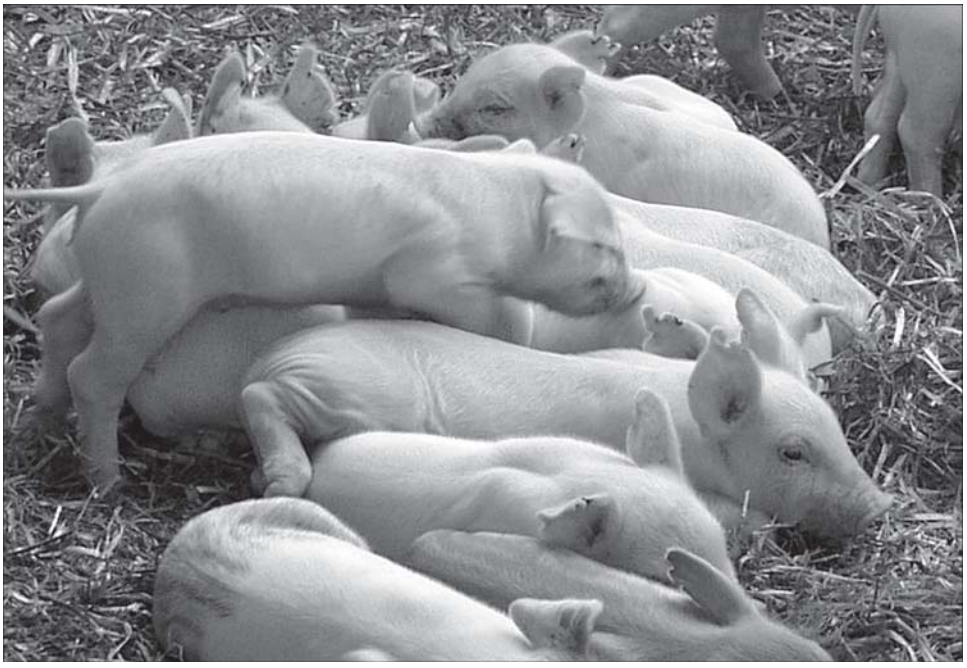


Photo courtesy of National Pork Board

**4. Multiple-site production**

Multiple-site production involves moving pigs to a separate site/location between phases of production. Just over 4 of 10 sites (41.3 percent) moved pigs from the farrowing site to a separate nursery site, and nearly 5 of 10 sites (48.2 percent) moved pigs from the nursery site to a separate grower/finisher site. Use of separate sites from farrowing to nursery increased as size of site increased.

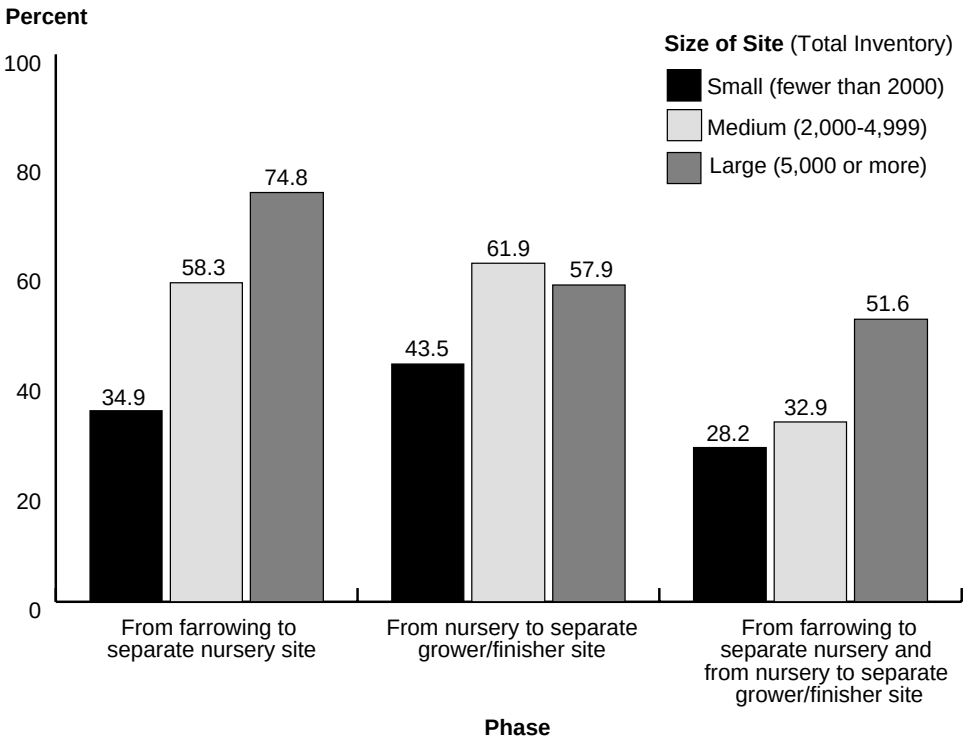
a. For sites with the specified production phases, percentage of sites that moved pigs from one site to a separate site as pigs changed production phases, by size of site:

**Percent Sites**

**Size of Site** (Total Inventory)

| Moved from . . . | **Small** (Fewer than 2,000) Pct. | Std. Error | **Medium** (2,000-4,999) Pct. | Std. Error | **Large** (5,000 or More) Pct. | Std. Error | **All Sites** Pct. | Std. Error |
|---|---|---|---|---|---|---|---|---|
| Farrowing to separate nursery site | 34.9 | (2.4) | 58.3 | (5.2) | 74.8 | (3.6) | 41.3 | (2.1) |
| Nursery to separate grower/finisher site | 43.5 | (2.3) | 61.9 | (2.9) | 57.9 | (4.2) | 48.2 | (1.8) |
| Farrowing to separate nursery and from nursery to separate grower/finisher site | 28.2 | (2.6) | 32.9 | (5.0) | 51.6 | (5.2) | 30.2 | (2.3) |

**For Sites with the Specified Production Phases, Percentage of Sites that Moved Pigs from One Site to a Separate Site as Pigs Changed Production Phases, by Size of Site:**




Large sites were more likely to wean piglets at an average of 20 days or less and move pigs to a separate nursery site compared to small sites.

b. For sites with a farrowing phase, percentage of sites that weaned pigs at an average age of 20 days or less, removed pigs to a separate nursery site, or did both, by size of site:

**Percent Sites**

**Size of Site** (Total Inventory)

| Measure | Small (Fewer than 2,000) Pct. | Std. Error | Medium (2,000-4,999) Pct. | Std. Error | Large (5,000 or More) Pct. | Std. Error | All Sites Pct. | Std. Error |
|---|---|---|---|---|---|---|---|---|
| Weaned pigs at average age of 20 days or less | 15.9 | (1.8) | 65.0 | (5.4) | 75.3 | (5.0) | 26.8 | (1.8) |
| Removed pigs to separate nursery site | 34.9 | (2.4) | 58.3 | (5.2) | 74.8 | (3.6) | 41.3 | (2.1) |
| Both | 8.4 | (1.3) | 37.6 | (5.7) | 57.9 | (5.3) | 16.3 | (1.4) |

A higher percentage of piglets on large sites were weaned at an average of 20 days or less and removed to a separate nursery site compared to piglets on small sites.

c. For sites with a farrowing phase, percentage of piglets weaned on sites that weaned at an average age of 20 days or less, removed to a separate-site nursery, or both, by size of site:

| | Percent Pigs | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Size of Site** (Total Inventory) | | | | | | | |
| | **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
| **Measure** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Weaned pigs at average age of 20 days or less | 49.5 | (3.9) | 72.1 | (10.1) | 85.6 | (4.2) | 75.7 | (3.6) |
| Removed pigs to separate site nursery | 56.0 | (3.7) | 70.1 | (8.9) | 83.8 | (3.0) | 75.3 | (3.0) |
| Both | 35.7 | (4.2) | 44.5 | (9.4) | 72.3 | (5.0) | 59.0 | (4.2) |

**5. Source of sows and gilts**

From December 2005 through May 2006, 93.7 percent of small sites with a gestation phase brought sows and gilts already on their sites into their gestation phase. A higher percentage of medium and large sites (19.4 and 19.7 percent, respectively) introduced sows and gilts obtained from other pig producers compared to small sites (8.2 percent). The percentage of sows and gilts entering the gestation phase followed a similar pattern (table b).

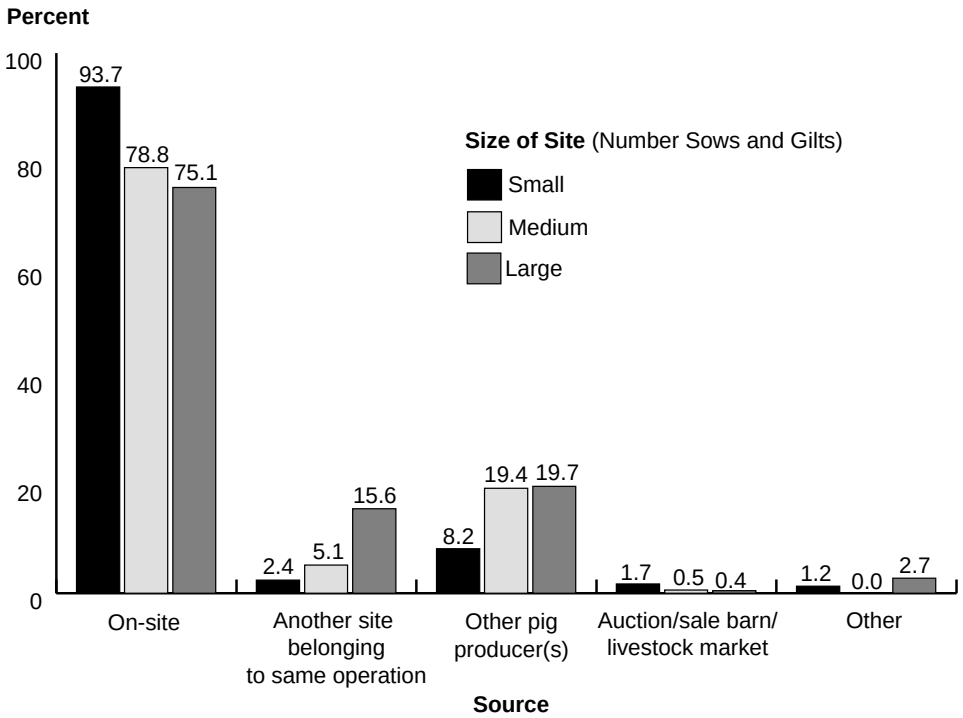
a. For sites with a gestation phase, percentage of sites that brought or placed any sows and gilts into the gestation phase from December 2005 through May 2006, by source of sows and gilts and by size of site:

**Percent Sites**

**Size of Site** (Number Sows and Gilts)

| Source | Small (Fewer than 250) Pct. | Std. Error | Medium (250-499) Pct. | Std. Error | Large (500 or More) Pct. | Std. Error | All Sites Pct. | Std. Error |
|---|---|---|---|---|---|---|---|---|
| On-site | 93.7 | (1.5) | 78.8 | (5.5) | 75.1 | (4.0) | 89.2 | (1.4) |
| Another site belonging to same operation | 2.4 | (1.0) | 5.1 | (4.2) | 15.6 | (4.2) | 4.8 | (1.1) |
| Other pig producer(s) | 8.2 | (1.5) | 19.4 | (4.5) | 19.7 | (3.4) | 11.1 | (1.4) |
| Auction/sale barn/livestock market | 1.7 | (0.7) | 0.5 | (0.4) | 0.4 | (0.4) | 1.4 | (0.5) |
| Other | 1.2 | (0.7) | 0.0 | (--) | 2.7 | (1.2) | 1.3 | (0.6) |

**For Sites with a Gestation Phase, Percentage of Sites that Brought or Placed Any Sows and Gilts Into the Gestation Phase from December 2005 through May 2006, by Source of Sows and Gilts and by Size of Site**



b. For sites with a gestation phase, percentage of sows and gilts entering the gestation phase from December 2005 through May 2006, by source of sows and gilts and by size of site:

**Percent Sows and Gilts**

**Size of Site** (Number Sows and Gilts)

| Source | Small (Fewer than 250) Pct. | Std. Error | Medium (250-499) Pct. | Std. Error | Large (500 or More) Pct. | Std. Error | All Sites Pct. | Std. Error |
|---|---|---|---|---|---|---|---|---|
| On-site | 88.6 | (3.0) | 76.0 | (5.7) | 74.2 | (5.2) | 76.0 | (4.3) |
| Another site belonging to same operation | 2.5 | (1.6) | 6.0 | (4.8) | 11.3 | (4.9) | 9.9 | (4.1) |
| Other pig producer(s) | 6.3 | (2.1) | 17.3 | (4.1) | 12.1 | (2.9) | 11.8 | (2.4) |
| Auction/sale barn/livestock market | 0.4 | (0.2) | 0.7 | (0.6) | 0.2 | (0.1) | 0.2 | (0.1) |
| Other | 2.2 | (1.8) | 0.0 | (--) | 2.2 | (1.1) | 2.1 | (0.9) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

The majority of sites with a farrowing phase (92.7 percent) obtained sows on-site.

c. For sites with a farrowing phase, percentage of sites that brought or placed any sows and gilts into the farrowing phase from December 2005 through May 2006, by source of sows and gilts and by size of site:

**Percent Sites**

**Size of Site** (Number Sows and Gilts)

| Source | Small (Fewer than 250) Pct. | Std. Error | Medium (250-499) Pct. | Std. Error | Large (500 or More) Pct. | Std. Error | All Sites Pct. | Std. Error |
|---|---|---|---|---|---|---|---|---|
| On-site | 95.1 | (1.3) | 85.0 | (4.3) | 86.5 | (3.4) | 92.7 | (1.2) |
| Another site belonging to same operation | 1.6 | (0.9) | 0.0 | (--) | 10.1 | (4.0) | 3.0 | (1.0) |
| Other pig producer(s) | 5.6 | (1.3) | 17.7 | (4.5) | 10.2 | (2.5) | 7.5 | (1.1) |
| Auction/sale barn/livestock market | 0.9 | (0.4) | 0.0 | (--) | 0.4 | (0.4) | 0.8 | (0.3) |
| Other | 0.8 | (0.6) | 0.0 | (--) | 1.3 | (0.7) | 0.8 | (0.5) |

The majority of sows and gilts entering the farrowing phase (84.6 percent) were obtained on-site.

d. Percentage of sows and gilts entering the farrowing phase from December 2005 through May 2006, by source of sows and gilts and by size of site:

**Percent Sows and Gilts**

**Size of Site** (Number Sows and Gilts)

| | **Small** (Fewer than 250) | | **Medium** (250-499) | | **Large** (500 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|---|
| **Source** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| On-site | 93.2 | (2.2) | 82.7 | (4.3) | 83.6 | (4.8) | 84.6 | (4.0) |
| Another site belonging to same operation | 0.6 | (0.3) | 0.0 | (--) | 8.2 | (4.7) | 6.8 | (3.9) |
| Other pig producer(s) | 3.5 | (1.0) | 17.3 | (4.3) | 6.5 | (2.0) | 6.8 | (1.7) |
| Auction/sale barn/livestock market | 0.4 | (0.3) | 0.0 | (--) | 0.1 | (0.1) | 0.2 | (0.1) |
| Other | 2.3 | (2.0) | 0.0 | (--) | 1.6 | (1.0) | 1.6 | (0.9) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

**6. Source of nursery pigs**

From December 2005 through May 2006, a higher percentage of small sites (69.3 percent) brought pigs into the nursery phase from their own farrowing or nursery units than medium and large sites (22.9 and 33.8 percent, respectively). Over 6 of 10 medium sites (65.8 percent) and five of 10 large sites (52.1 percent) obtained pigs for the nursery phase from another producer, while less than 3 of 10 small sites did so (25.0 percent).

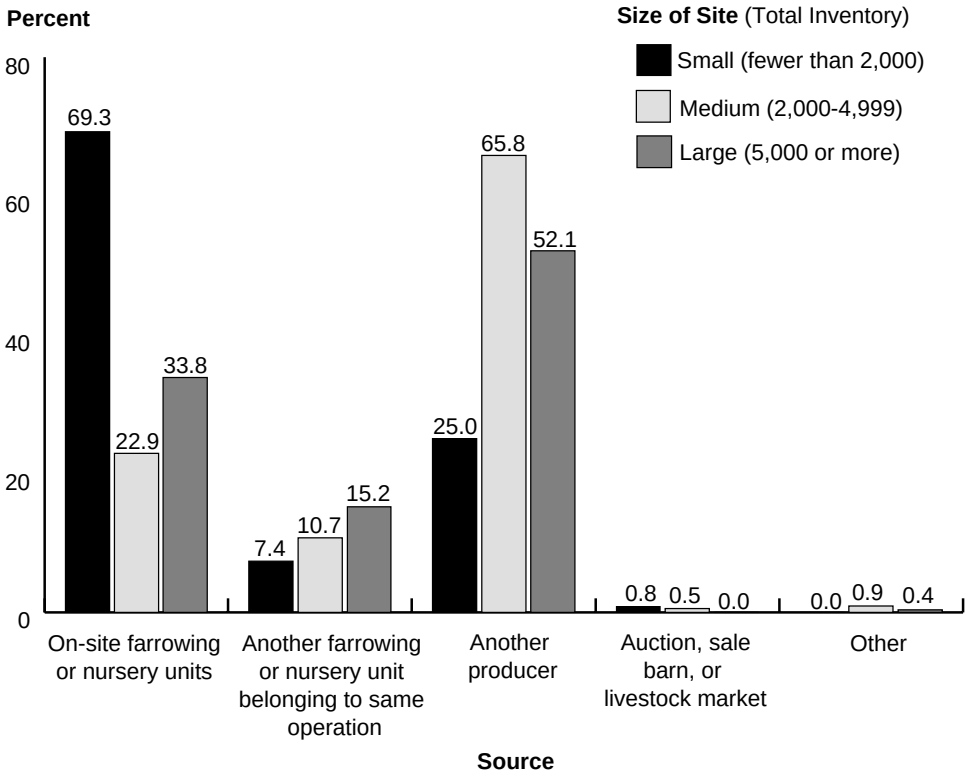
a. For sites with a nursery phase, percentage of ***sites*** that brought or placed any pigs into the nursery phase from December 2005 through May 2006, by source of pigs and by size of site:

**Percent Sites**

**Size of Site** (Total Inventory)

| Source | **Small** (Fewer than 2,000) Pct. | Std. Error | **Medium** (2,000-4,999) Pct. | Std. Error | **Large** (5,000 or More) Pct. | Std. Error | **All Sites** Pct. | Std. Error |
|---|---|---|---|---|---|---|---|---|
| On-site farrowing or nursery units | 69.3 | (2.1) | 22.9 | (2.3) | 33.8 | (3.4) | 56.9 | (1.7) |
| Another farrowing or nursery unit belonging to same operation | 7.4 | (1.4) | 10.7 | (2.1) | 15.2 | (4.5) | 8.9 | (1.2) |
| Another producer | 25.0 | (1.9) | 65.8 | (2.8) | 52.1 | (4.2) | 35.4 | (1.6) |
| Auction, sale barn, or livestock market | 0.8 | (0.4) | 0.5 | (0.5) | 0.0 | (--) | 0.7 | (0.3) |
| Other | 0.0 | (0.0) | 0.9 | (0.3) | 0.4 | (0.3) | 0.2 | (0.1) |

**For Sites With a Nursery Phase, Percentage of Sites that Brought or Placed any Pigs Into the Nursery Phase from December 2005 through May 2006, by Source of Pigs and by Size of Site:**



Although the highest percentage of sites obtained nursery pigs from on-site farrowing or nursery units (table a), the highest percentage of pigs (57.0 percent) came from another producer.

b. Percentage of ***pigs*** that entered the nursery phase from December 2005 through May 2006, by source of pigs and by size of site:

**Percent Pigs**

**Size of Site** (Total Inventory)

| Source | **Small** (Fewer than 2,000) Pct. | Std. Error | **Medium** (2,000-4,999) Pct. | Std. Error | **Large** (5,000 or More) Pct. | Std. Error | **All Pigs** Pct. | Std. Error |
|---|---|---|---|---|---|---|---|---|
| On-site farrowing or nursery units | 40.5 | (2.8) | 13.3 | (1.7) | 28.5 | (4.2) | 26.7 | (2.4) |
| Another farrowing or nursery unit belonging to same operation | 13.9 | (3.0) | 12.6 | (2.2) | 17.8 | (6.2) | 15.7 | (3.5) |
| Another producer | 44.9 | (3.1) | 73.0 | (2.6) | 53.4 | (5.5) | 57.0 | (3.2) |
| Auction, sale barn, or livestock market | 0.7 | (0.3) | 0.3 | (0.3) | 0.0 | (--) | 0.2 | (0.1) |
| Other | 0.0 | (0.0) | 0.8 | (0.4) | 0.3 | (0.2) | 0.4 | (0.2) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

The percentage of sites that obtained nursery pigs off-site and used just one source ranged from 66.0 percent of large sites to 88.5 percent of small sites. The percentage of sites using three or more sources to obtain nursery pigs ranged from 25.4 percent of large sites to 4.4 percent of small sites.

c. For sites that obtained any nursery pigs from off-site, percentage of sites by number of different sources and by size of site:

**Percent Sites**

**Size of Site** (Total Inventory)

| | **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|---|
| **Number of Sources** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| 1 | 88.5 | (2.5) | 80.6 | (2.4) | 66.0 | (6.3) | 81.9 | (2.0) |
| 2 | 7.1 | (2.2) | 9.5 | (1.8) | 9.5 | (3.3) | 8.3 | (1.4) |
| 3 | 2.1 | (1.0) | 4.5 | (1.3) | 12.1 | (4.3) | 4.7 | (1.1) |
| 4 to 5 | 1.3 | (0.6) | 2.6 | (1.1) | 2.3 | (1.0) | 1.9 | (0.5) |
| 6 or more | 1.0 | (0.8) | 2.8 | (0.7) | 10.1 | (5.7) | 3.2 | (1.2) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

Only 13.6 percent of sites with off-site sources immediately placed new nursery pigs with existing pigs. The percentages were similar across size groups.

d. For sites that obtained any nursery pigs from off-site, percentage of sites that immediately placed these pigs in the same building or area as existing pigs, by size of site.

**Percent Sites**

**Size of Site** (Total Inventory)

| **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|
| **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| 13.9 | (2.9) | 10.3 | (2.0) | 18.0 | (5.8) | 13.6 | (2.0) |

**7. Source of grower/finisher pigs**

A higher percentage of small sites (54.7 percent) brought or placed new nursery pigs from their own nursery units into the grower/finisher phase from December 2005 through May 2006 than did medium and large sites (36.3 and 42.7 percent, respectively).

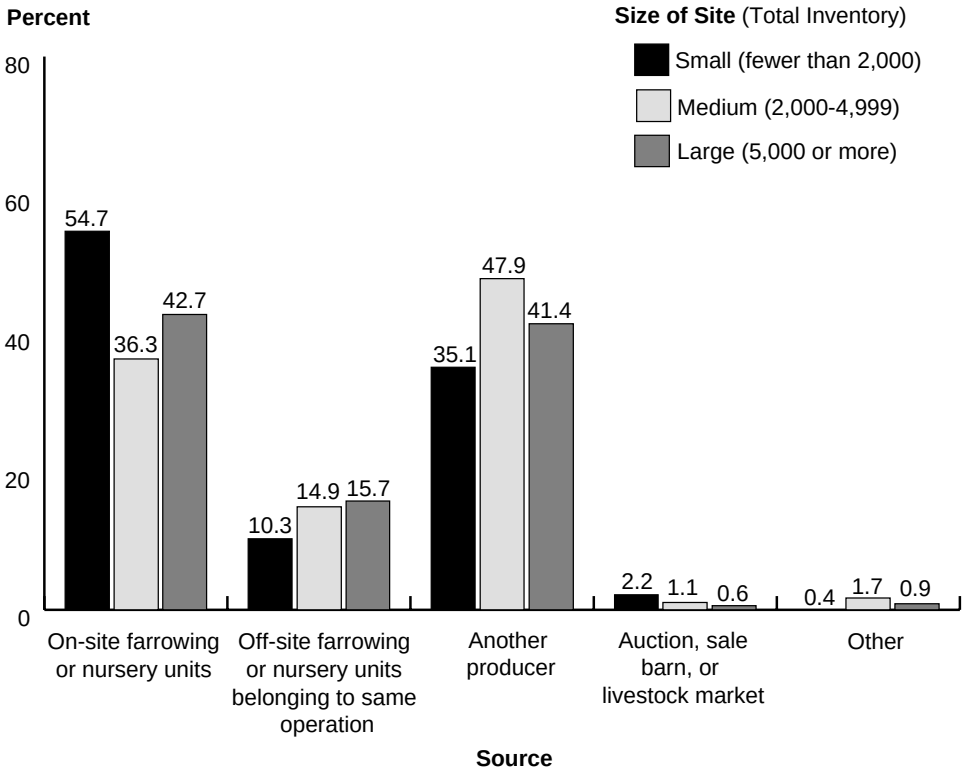
a. For sites with a grower/finisher phase, percentage of ***sites*** that brought or placed any pigs into the grower/finisher phase from December 2005 through May 2006, by source of pigs and by size of site:

**Percent Sites**

**Size of Site** (Total Inventory)

| | **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|---|
| **Source** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| On-site | 54.7 | (1.9) | 36.3 | (2.2) | 42.7 | (3.2) | 49.9 | (1.5) |
| Another site belonging to same operation | 10.3 | (1.2) | 14.9 | (1.9) | 15.7 | (3.4) | 11.8 | (1.0) |
| Other pig producer(s) | 35.1 | (1.9) | 47.9 | (2.4) | 41.4 | (3.4) | 38.2 | (1.4) |
| Auction, sale barn, or livestock market | 2.2 | (0.6) | 1.1 | (0.6) | 0.6 | (0.4) | 1.8 | (0.4) |
| Other | 0.4 | (0.3) | 1.7 | (0.6) | 0.9 | (0.6) | 0.7 | (0.3) |

**For Sites With a Grower/finisher Phase, Percentage of Sites that Brought or Placed any Pigs Into the Grower/Finisher Phase from December 2005 through May 2006, by Source of Pigs and by Size of Site:**



On small and large sites, a higher percentage of grower/finisher pigs (39.6 and 41.5 percent, respectively) came from on-site compared to medium sites (27.4 percent).

b. Percentage of ***pigs*** that entered the grower/finisher phase from December 2005 through May 2006, by source of pigs and by size of site:

**Percent Pigs**

**Size of Site** (Total Inventory)

| | **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Pigs** | |
|---|---|---|---|---|---|---|---|---|
| **Source** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| On-site | 39.6 | (2.2) | 27.4 | (2.1) | 41.5 | (4.4) | 36.5 | (2.0) |
| Another site belonging to same operation | 14.2 | (1.9) | 19.2 | (2.8) | 18.7 | (5.8) | 17.8 | (2.7) |
| Other pig producer(s) | 44.2 | (2.3) | 51.2 | (2.7) | 38.4 | (4.2) | 43.9 | (2.2) |
| Auction, sale barn, or livestock market | 1.1 | (0.3) | 0.5 | (0.2) | 0.3 | (0.2) | 0.5 | (0.1) |
| Other | 0.9 | (0.6) | 1.7 | (0.7) | 1.1 | (0.8) | 1.3 | (0.4) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

For sites that obtained grower/finisher pigs off-site, 37.3 percent of large sites, 14.3 percent of medium sites, and 5.0 percent of small sites obtained grower/finisher pigs from three or more off-site sources.

c. For sites that obtained any grower/finisher pigs from off-site, percentage of sites by number of different sources and by size of site:

**Percent Sites**

**Size of Site** (Total Inventory)

| | **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|---|
| **Number of Sources** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| 1 | 86.6 | (1.8) | 72.3 | (2.8) | 47.9 | (5.1) | 78.6 | (1.6) |
| 2 | 8.4 | (1.5) | 13.4 | (2.0) | 14.8 | (3.2) | 10.4 | (1.2) |
| 3 | 3.0 | (0.9) | 7.7 | (1.9) | 20.1 | (5.5) | 6.1 | (1.0) |
| 4 to 5 | 1.9 | (0.7) | 5.1 | (1.2) | 9.6 | (2.6) | 3.6 | (0.6) |
| 6 or more | 0.1 | (0.0) | 1.5 | (0.7) | 7.6 | (2.8) | 1.3 | (0.4) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

About 1 of 5 sites that obtained grower/finisher pigs from off-site sources (18.3 percent), immediately placed these pigs with existing pigs.

d. For sites that obtained any grower/finisher pigs from off-site, percentage of sites that immediately placed these pigs in the same building or area as existing pigs, by size of site.

**Percent Sites**

**Size of Site** (Total Inventory)

| **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|
| **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| 22.3 | (2.5) | 9.9 | (2.5) | 13.3 | (5.3) | 18.3 | (1.8) |

## F. Disease Prevention and Vaccination—All Phases

### 1. Disease prevention

Deworming was the disease preventive practice used most frequently for sows and boars from December 2005 through May 2006 (76.8 percent and 68.2 percent of sites, respectively). In preweaned piglets, administration of iron (usually given at 7 to 10 days of age) was the most common preventive practice. Approximately 8 of 10 sites (79.6 percent) used antibiotics in feed as a preventive practice for nursery pigs. Antibiotics in feed was also the most common preventive practice used for grower/finisher pigs, and it was the second most common practice used for piglets after iron shot.

a. For sites with the specified pig type, percentage of sites by disease preventive practices regularly used from December 2005 through May 2006:

| | Percent Sites | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pig Type | | | | | | | | | |
| | Sows | | Boars | | Piglets (Before or at Weaning) | | Nursery | | Grower/ Finisher | |
| Practice | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error |
| Deworm | 76.8 | (1.9) | 68.2 | (2.0) | 47.2 | (2.2) | 37.1 | (1.8) | 34.0 | (1.4) |
| Mange/lice treatment | 52.8 | (2.2) | 51.3 | (2.2) | 36.5 | (2.2) | 25.9 | (1.7) | 17.8 | (1.2) |
| Iron | N/A | | N/A | | 80.1 | (1.8) | N/A | | N/A | |
| Antibiotics in feed | 47.7 | (2.2) | 34.5 | (2.2) | 60.0 | (2.1) | 79.6 | (1.5) | 68.1 | (1.4) |
| Antibiotics in water | 3.7 | (0.9) | 3.8 | (0.9) | 13.3 | (1.5) | 36.2 | (1.7) | 29.0 | (1.3) |
| Antibiotics (oral) | 2.4 | (0.7) | 2.5 | (0.8) | 12.2 | (1.5) | 6.2 | (0.9) | 4.3 | (0.6) |
| Antibiotics (injection) | 40.8 | (2.2) | 23.2 | (1.9) | 51.4 | (2.2) | 40.4 | (1.8) | 38.8 | (1.5) |

Over two-thirds of sows and boars were on sites that regularly practiced deworming. Over half of nursery and grower/finisher pigs were on sites that routinely treated these animals with antibiotics, whether in feed, water, or by injection. Almost 90 percent of pigs were on sites that administered iron before or at weaning.

b. For sites with the specified pig type, percentage of pigs on sites by disease preventive practices regularly used from December 2005 through May 2006:

| | Percent Pigs | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Pig Type | | | | | | | | | |
| | Sows[1] | | Boars[2] | | Piglets[3] (Before or at Weaning) | | Nursery[4] | | Grower/ Finisher[5] | |
| Practice | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error |
| Deworm | 69.3 | (3.8) | 76.2 | (3.4) | 13.1 | (2.9) | 11.3 | (1.1) | 14.3 | (1.1) |
| Mange/lice treatment | 18.6 | (2.0) | 57.4 | (5.4) | 7.4 | (1.2) | 9.2 | (2.7) | 5.1 | (0.6) |
| Iron | N/A | | N/A | | 89.1 | (4.2) | N/A | | N/A | |
| Antibiotics in feed | 46.1 | (4.4) | 41.1 | (7.0) | 30.8 | (3.9) | 89.5 | (1.4) | 78.2 | (1.7) |
| Antibiotics in water | 5.6 | (2.9) | 3.4 | (1.0) | 15.0 | (3.9) | 63.1 | (2.8) | 50.6 | (2.4) |
| Antibiotics (oral) | 1.8 | (0.6) | 2.0 | (0.8) | 16.8 | (4.1) | 8.4 | (1.6) | 4.2 | (0.7) |
| Antibiotics (injection) | 51.9 | (4.2) | 32.0 | (7.9) | 68.7 | (4.6) | 64.7 | (2.7) | 52.7 | (2.4) |

[1]As a percentage of sow and bred gilt inventory on June 1, 2006.
[2]As a percentage of boar inventory on June 1, 2006.
[3]As a percentage of pigs born alive (6 months).
[4]As a percentage of pigs entering nursery (6 months).
[5]As a percentage of pigs entering grower/finisher phase (6 months).

**2. Vaccination**

From December 2005 through May 2006, over 6 of 10 sites (61.4 percent) vaccinated any pigs. The highest percentage of sites regularly vaccinated against *Mycoplasma* and erysipelas (40.4 and 39.0 percent, respectively). The most common "other" diseases sites regularly vaccinated against were ileitis and *Salmonella*.

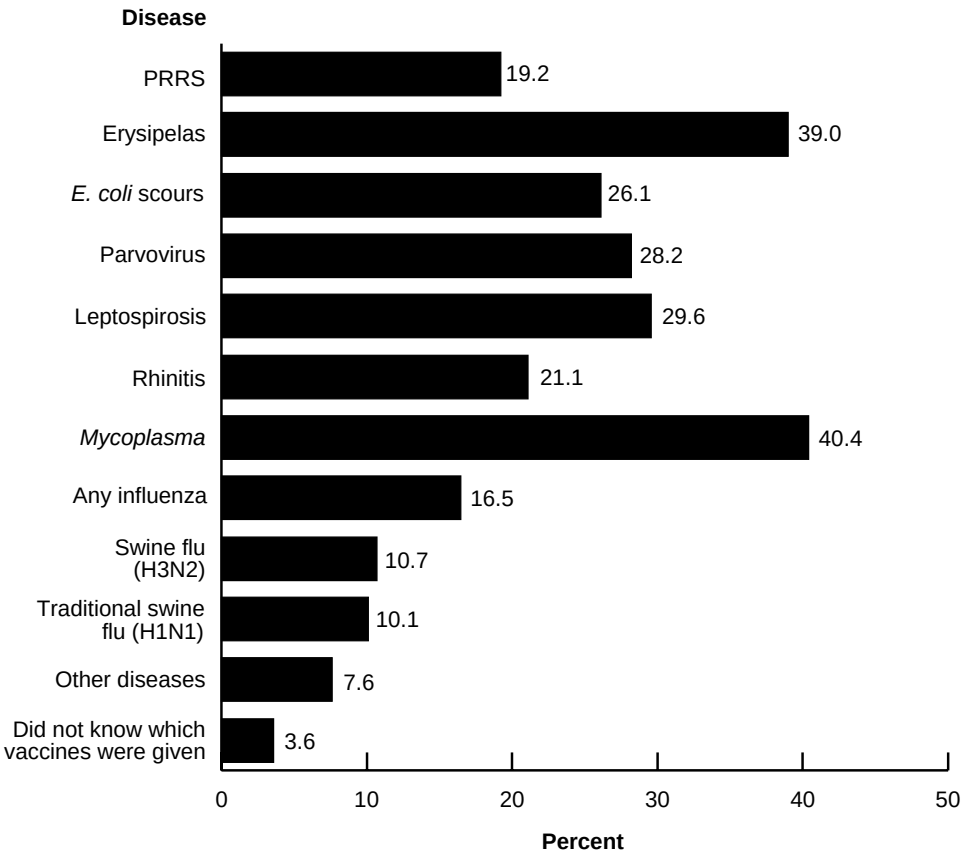
Percentage of sites by disease pigs were regularly vaccinated against—regardless of age of pigs—and by size of site:

**Percent Sites**

**Size of Site** (Total Inventory)

| Disease | Small (Fewer than 2,000) Pct. | Std. Error | Medium (2,000-4,999) Pct. | Std. Error | Large (5,000 or More) Pct. | Std. Error | All Sites Pct. | Std. Error |
|---|---|---|---|---|---|---|---|---|
| Porcine reproductive and respiratory syndrome (PRRS) | 20.6 | (1.5) | 15.0 | (1.4) | 18.5 | (2.6) | 19.2 | (1.1) |
| Erysipelas | 41.1 | (1.8) | 34.3 | (2.1) | 35.3 | (2.8) | 39.0 | (1.3) |
| *E. coli* scours | 27.0 | (1.6) | 20.9 | (1.9) | 29.9 | (3.0) | 26.1 | (1.2) |
| Parvovirus | 31.2 | (1.7) | 18.6 | (1.8) | 26.8 | (2.7) | 28.2 | (1.2) |
| Leptospirosis | 33.8 | (1.7) | 18.1 | (1.8) | 25.3 | (2.6) | 29.6 | (1.2) |
| Rhinitis (*Pasteurella, Bordetella)* | 26.3 | (1.6) | 10.8 | (1.4) | 9.2 | (1.5) | 21.1 | (1.1) |
| *Mycoplasma* (pneumonia) | 35.8 | (1.7) | 46.5 | (2.1) | 56.0 | (2.9) | 40.4 | (1.3) |
| Any influenza | 13.4 | (1.2) | 18.8 | (1.9) | 29.5 | (2.8) | 16.5 | (1.0) |
| Swine flu (H3N2) | 7.4 | (0.9) | 12.9 | (1.7) | 25.2 | (2.7) | 10.7 | (0.8) |
| Traditional swine flu (H1N1) | 7.1 | (0.9) | 11.7 | (1.7) | 23.8 | (2.7) | 10.1 | (0.7) |
| Other diseases | 5.8 | (0.9) | 9.6 | (1.1) | 14.4 | (2.3) | 7.6 | (0.7) |
| Did not know which vaccines were given | 3.4 | (0.7) | 4.9 | (0.8) | 3.1 | (1.4) | 3.6 | (0.5) |
| Any vaccination | 58.1 | (1.8) | 65.8 | (2.0) | 72.1 | (2.8) | 61.4 | (1.3) |

**Percentage of Sites by Disease Pigs were Regularly Vaccinated Against, Regardless of Age of Pigs**



### 3. Use of a veterinarian

Approximately 7 of 10 sites (69.1 percent) used a veterinarian during the previous year. A higher percentage of large and medium sites (88.1 and 85.0 percent, respectively) used a veterinarian during the previous year compared to small sites (60.8 percent). Nearly five of 10 large sites (46.8 percent) used an on-staff veterinarian. A similar percentage of large sites (42.5 percent) used a local practitioner. Overall, approximately half of sites (49.5 percent) used a local practioner during the previous 12 months.

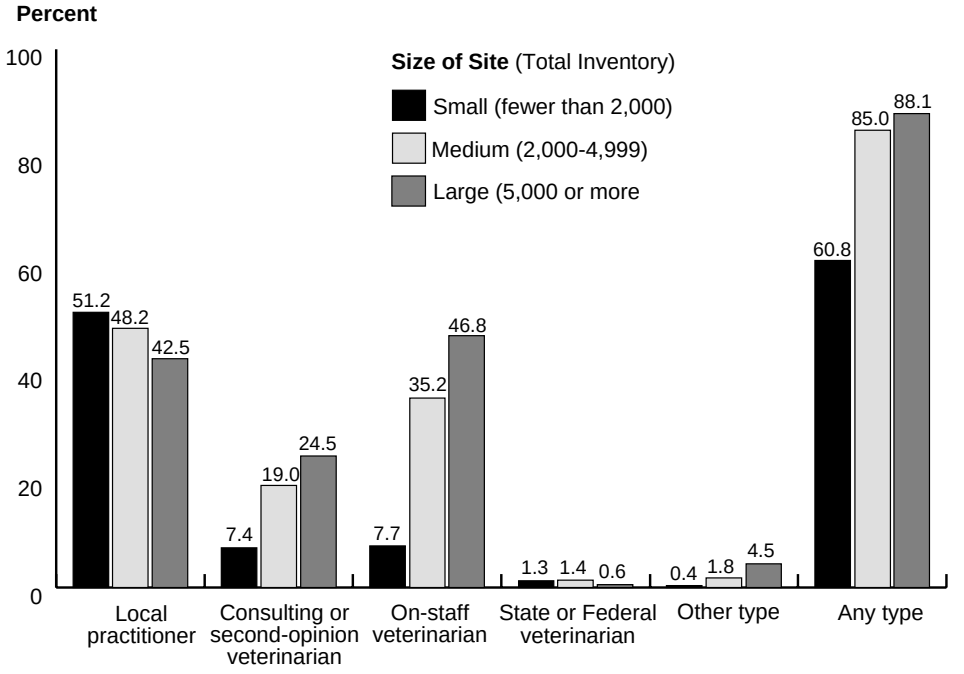
a. Percentage of sites where a veterinarian visited for any purpose during the previous 12 months, by type of veterinarian and by size of site:

**Percent Sites**

**Size of Site** (Total Inventory)

| Type of Veterinarian | **Small** (Fewer than 2,000) Pct. | Std. Error | **Medium** (2,000-4,999) Pct. | Std. Error | **Large** (5,000 or More) Pct. | Std. Error | **All Sites** Pct. | Std. Error |
|---|---|---|---|---|---|---|---|---|
| Local practitioner | 51.2 | (1.8) | 48.2 | (2.1) | 42.5 | (3.4) | 49.5 | (1.4) |
| Consulting or second-opinion | 7.4 | (0.9) | 19.0 | (2.0) | 24.5 | (3.6) | 11.9 | (1.0) |
| On-staff | 7.7 | (0.8) | 35.2 | (2.0) | 46.8 | (3.0) | 18.0 | (0.9) |
| State or Federal | 1.3 | (0.5) | 1.4 | (0.6) | 0.6 | (0.3) | 1.2 | (0.4) |
| Other type | 0.4 | (0.2) | 1.8 | (0.8) | 4.5 | (2.4) | 1.2 | (0.4) |
| Any type | 60.8 | (1.7) | 85.0 | (1.4) | 88.1 | (1.7) | 69.1 | (1.3) |

**Percentage of Sites Where a Veterinarian Visited for Any Purpose During the Previous 12 Months, by Type of Veterinarian**



About one of four sites (24.7 percent) were visited by a veterinarian five or more times.

b. Percentage of sites by number of times a veterinarian visited for any purpose during the previous 12 months, and by type of veterinarian:

| | Percent Sites | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Number Visits | | | | | | | | |
| | 0 | | 1 | | 2-4 | | 5 or more | | |
| Type of Veterinarian | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error | Total |
| Local practitioner | 50.5 | (1.4) | 13.6 | (1.0) | 19.2 | (1.1) | 16.7 | (1.0) | 100.0 |
| Consulting or second-opinion veterinarian | 88.1 | (1.0) | 3.4 | (0.5) | 6.4 | (0.8) | 2.1 | (0.3) | 100.0 |
| On-staff veterinarian | 82.0 | (0.9) | 6.7 | (0.5) | 6.4 | (0.5) | 4.9 | (0.7) | 100.0 |
| State or Federal veterinarian | 98.8 | (0.4) | 0.8 | (0.2) | 0.3 | (0.2) | 0.1 | (0.1) | 100.0 |
| Other type | 98.8 | (0.4) | 0.4 | (0.2) | 0.6 | (0.4) | 0.2 | (0.1) | 100.0 |
| Any type | 30.9 | (1.3) | 17.4 | (1.0) | 27.0 | (1.2) | 24.7 | (1.2) | 100.0 |

Producers used the services of a veterinarian for many purposes during the previous 12 months. For sites that had at least one veterinary visit during the previous 12 months, the highest percentage of sites used a veterinarian to treat individual pigs (63.8 percent) and to provide drugs or vaccines (62.6 percent). A higher percentage of large sites used a veterinarian for blood testing, production record analysis, employee education, and quality assurance compared to small sites.

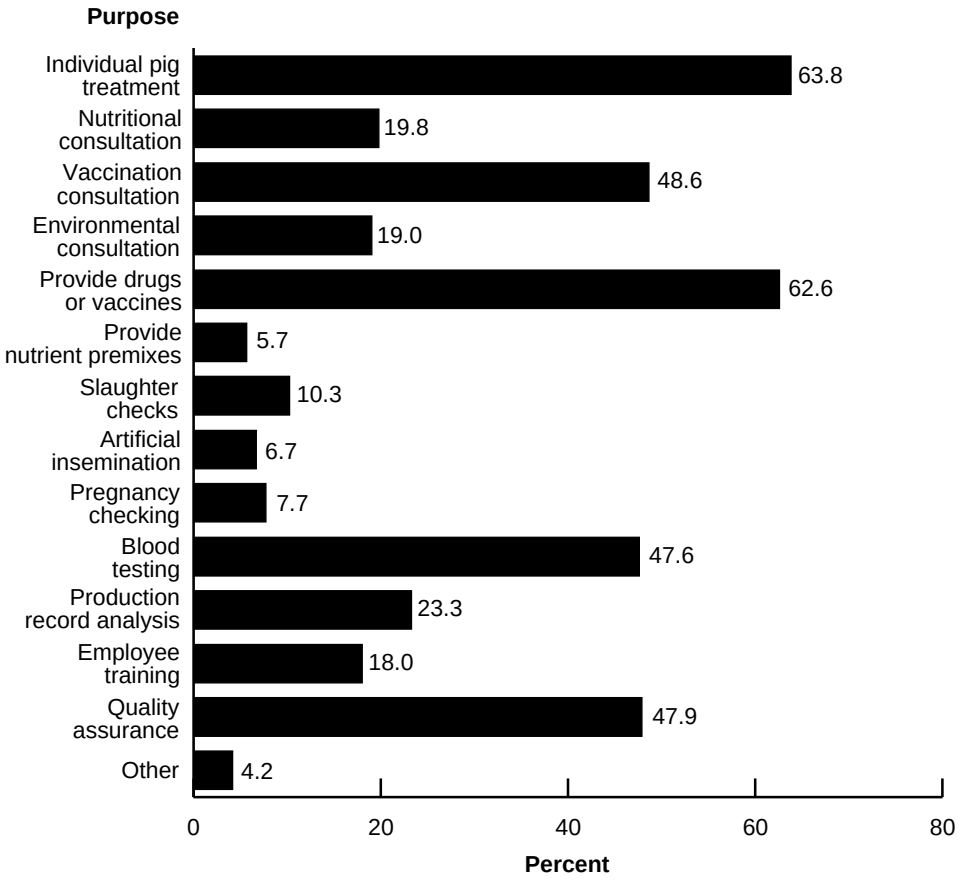
c. For sites that had at least one veterinary visit during the previous 12 months, percentage of sites by purpose of visit:

**Percent Sites**

**Size of Site** (Total Inventory)

| | **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|---|
| **Purpose** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Individual pig treatment or surgery, including diagnostic services | 62.5 | (2.2) | 65.0 | (2.2) | 66.9 | (3.6) | 63.8 | (1.6) |
| Nutritional consultation | 16.7 | (1.7) | 24.7 | (2.0) | 24.0 | (3.0) | 19.8 | (1.3) |
| Vaccination consultation | 42.7 | (2.4) | 54.0 | (2.4) | 62.5 | (3.8) | 48.6 | (1.7) |
| Environmental consultation | 13.9 | (1.6) | 27.0 | (2.3) | 26.2 | (4.1) | 19.0 | (1.4) |
| Provide drugs, medications, or vaccines | 59.0 | (2.3) | 69.8 | (2.3) | 65.4 | (4.1) | 62.6 | (1.6) |
| Provide nutrient premixes | 4.7 | (1.1) | 7.0 | (1.1) | 7.5 | (1.5) | 5.7 | (0.7) |
| Slaughter checks | 6.9 | (1.2) | 12.5 | (1.5) | 19.5 | (2.8) | 10.3 | (1.0) |
| Artificial insemination, breeding evaluations | 4.9 | (1.0) | 8.1 | (1.5) | 11.4 | (2.1) | 6.7 | (0.8) |
| Pregnancy checking | 7.3 | (1.3) | 6.8 | (1.0) | 10.6 | (2.2) | 7.7 | (0.9) |
| Blood testing | 35.3 | (2.3) | 58.2 | (2.4) | 77.3 | (2.8) | 47.6 | (1.7) |
| Production record analysis | 11.3 | (1.4) | 34.9 | (2.3) | 50.4 | (3.4) | 23.3 | (1.2) |
| Employee training/ education | 8.6 | (1.2) | 27.3 | (2.2) | 38.7 | (3.8) | 18.0 | (1.2) |
| Quality assurance | 36.7 | (2.3) | 61.3 | (2.4) | 69.6 | (3.2) | 47.9 | (1.7) |
| Other | 4.7 | (0.9) | 3.3 | (0.7) | 3.6 | (1.1) | 4.2 | (0.6) |

**For Sites That had at Least One Veterinary Visit During the Previous 12 Months, Percentage of Sites by Purpose of Visit**




## G. Biosecurity

### 1. Restrictions for entry

More than 8 of 10 sites (81.0 percent) did not allow anyone except employees to come in contact with areas where swine were housed.

a. Percentage of sites where entry to swine facilities was restricted to employees only, by size of site:

**Percent Sites**

**Size of Site** (Total Inventory)

| **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|
| **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| 78.7 | (1.5) | 87.0 | (1.4) | 84.0 | (2.1) | 81.0 | (1.1) |

For sites where nonemployees were allowed to enter swine facilities, 95.4 percent allowed business visitors (e.g., an electrician), but only 68.1 percent of sites allowed nonbusiness visitors. A higher percentage of small sites (77.6 percent) allowed nonbusiness visitors compared to medium and large sites (42.9 and 32.0 percent, respectively).

b. For sites that did not restrict entry to swine facilities to employees only, percentage of sites by type of visitor allowed and by size of site:

| | Percent Sites | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Size of Site** (Total Inventory) | | | | | | | |
| | **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
| **Type of Visitor** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Business | 94.7 | (1.7) | 97.6 | (1.3) | 97.0 | (2.8) | 95.4 | (1.3) |
| Nonbusiness | 77.6 | (3.2) | 42.9 | (5.6) | 32.0 | (6.3) | 68.1 | (2.8) |

When business visitors were allowed to enter swine facilities, about half of sites (48.4 percent) required visitors to change to clean boots and coveralls before entering.

c. For sites that allowed entry to business visitors, percentage of sites where business visitors were required to take the following preventive measures:

| **Preventive Measure** | **Percent Sites** | **Standard Error** |
|---|---|---|
| Shower before entering site | 10.3 | (1.6) |
| Change to clean boots and coveralls | 48.4 | (3.3) |
| Wait 24 hrs or longer after visiting another hog site | 29.5 | (2.8) |

Approximately one of four sites (26.5 percent) that allowed nonbusiness visitors required clean boots and coveralls before entry to swine facilities; 25.7 percent of sites required nonbusiness visitors that had visited another pig site to wait 24 hours after the visit before entering swine facilities.

d. For sites that allowed entry to nonbusiness visitors, percentage of sites by preventive measure required of nonbusiness visitors before entering swine facilities:

| Preventive Measure | Percent Sites | Standard Error |
|---|---|---|
| Shower before entering site | 4.3 | (1.3) |
| Change to clean boots and coveralls | 26.5 | (3.5) |
| Wait 24 hrs or longer after visiting another hog site | 25.7 | (3.6) |

**2. Trucking**

A livestock hauling truck can be a vector for swine pathogens. Slightly more than half of sites (51.3 percent) allowed trucks or trailers onto sites where pigs were kept. A higher percentage of large and medium sites (61.1 and 64.9 percent, respectively) allowed truck or trailers than did small sites (45.5 percent).

a. Percentage of sites that allowed trucks or trailers from commercial livestock transporters or animal haulers to enter the pig site, by size of site:

| Percent Sites | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Size of Site** (Total Inventory) | | | | | | | |
| **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
| **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| 45.5 | (1.8) | 64.9 | (2.2) | 61.1 | (3.5) | 51.3 | (1.4) |

For sites that allowed trucks to enter the pig site, large and medium sites more commonly required cleaning or disinfecting of the inside or outside of the truck than small sites.

b. For sites that allowed trucks or trailers from commercial livestock transporters or animal haulers to enter the pig site, percentage of sites by required cleaning and disinfecting practices for livestock trucks or trailers, and by size of site:

**Percent Sites**

**Size of Site** (Total Inventory)

| | **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|---|
| **Required Practice** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Animal area inside truck cleaned | 60.8 | (2.6) | 85.8 | (1.8) | 95.4 | (1.1) | 72.3 | (1.7) |
| Animal area inside truck disinfected | 49.3 | (2.6) | 71.8 | (2.2) | 86.2 | (2.1) | 60.5 | (1.8) |
| Outside of truck cleaned | 48.1 | (2.6) | 73.1 | (2.3) | 83.8 | (3.8) | 59.7 | (1.8) |
| Outside of truck disinfected | 34.4 | (2.5) | 55.0 | (2.4) | 69.4 | (4.0) | 44.8 | (1.8) |

### 3. Proximity to other swine sites

Over 80 percent of all sites were less than 3 miles from another site.

Percentage of swine sites by distance to the nearest known swine site, and by region:

| | Percent Sites | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Region | | | | | | | | | |
| | North | | West Central | | East Central | | South | | All Sites | |
| **Distance** (Miles) | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error |
| Less than 0.50 | 28.3 | (2.6) | 19.7 | (2.5) | 33.9 | (1.9) | 29.5 | (3.1) | 29.6 | (1.3) |
| 0.50 to 0.99 | 22.2 | (2.4) | 16.0 | (2.2) | 26.5 | (1.7) | 22.2 | (2.7) | 23.2 | (1.1) |
| 1.00 to 2.99 | 29.6 | (2.6) | 23.0 | (2.4) | 29.0 | (1.9) | 23.3 | (2.5) | 27.5 | (1.2) |
| 3.00 to 4.99 | 11.1 | (1.9) | 19.1 | (2.4) | 7.0 | (1.0) | 10.0 | (1.9) | 10.4 | (0.8) |
| 5.00 or more | 8.8 | (1.5) | 22.2 | (2.5) | 3.6 | (0.7) | 15.0 | (1.7) | 9.3 | (0.7) |
| Total | 100.0 | | 100.0 | | 100.0 | | 100.0 | | 100.0 | |

Photo courtesy of National Pork Board

**4. Rodent control**

Rodents are known to be host for pathogens that affect swine and can spread disease between swine areas. Nearly all sites (97.3 percent) used some manner of rodent control, and 87.9 percent used bait or poison to control rodents.

Percentage of sites by rodent control method and by size of site:

| | Percent Sites | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Size of Site** (Total Inventory) | | | | | | | |
| | **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
| **Control Method** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Cats | 63.4 | (1.7) | 32.2 | (1.9) | 15.6 | (2.0) | 51.2 | (1.3) |
| Dogs | 33.0 | (1.7) | 14.8 | (1.5) | 8.2 | (1.7) | 26.3 | (1.2) |
| Traps | 21.5 | (1.5) | 20.1 | (1.7) | 16.1 | (2.0) | 20.5 | (1.1) |
| Bait or poison | 84.4 | (1.3) | 94.6 | (1.3) | 96.2 | (1.0) | 87.9 | (0.9) |
| Professional exterminator | 4.7 | (0.7) | 6.8 | (1.0) | 6.8 | (1.2) | 5.4 | (0.5) |
| Other | 1.8 | (0.5) | 2.6 | (0.7) | 0.3 | (0.2) | 1.8 | (0.4) |
| Any | 97.0 | (0.7) | 98.1 | (1.1) | 97.9 | (0.8) | 97.3 | (0.5) |

**5. Feral swine**

When coming into contact with other swine, feral swine can transmit diseases such as brucellosis or pseudorabies. Twenty-five percent of large sites reported that feral swine were in their county.

a. Percentage of sites where feral swine were present in the county (including wild boars on hunting clubs or captive on farms), by size of site:

| Percent Sites | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Size of Site** (Total Inventory) | | | | | | | |
| **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
| **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| 6.7 | (0.8) | 12.3 | (1.3) | 25.0 | (2.6) | 10.0 | (0.7) |

Nearly 7 of 10 sites in the South region (67.9 percent) reported that feral swine were in their county.

b. Percentage of sites where feral swine were present in the county (including wild boars on hunting clubs or captive on farms), by region:

| Percent Sites | | | | | | | |
|---|---|---|---|---|---|---|---|
| Region | | | | | | | |
| North | | West Central | | East Central | | South | |
| Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error | Pct. | Std. Error |
| 2.8 | (0.8) | 6.1 | (1.5) | 4.4 | (0.9) | 67.9 | (3.4) |

Of sites in counties where feral swine were present, 15.7 percent had seen feral swine within a half mile of the site during the previous 12 months.

c. For sites in counties where feral swine were present, percentage of sites where feral swine were seen on the site or within 0.5 mile of the site during the previous 12 months:

| Percent Sites | Standard Error |
|---|---|
| 15.7 | (2.4) |

For sites where producers actually saw feral swine on-site, only 13.6 of percent of producers (sites) reported that feral swine had the potential for physical contact with their pigs.

d. For sites where feral swine were seen on-site, percentage of sites where feral swine had direct or fence-line contact with swine on-site, or entered into facilities used to house swine or store feed:

| Percent Sites | Standard Error |
|---|---|
| 13.6 | (4.7) |

## H. General Management

### 1. Carcass disposal

From December 2005 through May 2006, 35.0 percent of sites with at least one death used on-site composting as a method of carcass disposal.

a. For sites with at least one preweaned piglet or older pig death from December 2005 through May 2006, percentage of sites by method of carcass disposal:

| | Percent Sites | | | | | |
|---|---|---|---|---|---|---|
| | Sites with at Least One Preweaned Death | | Sites with at Least One Weaned and Older Death | | Sites with Any Deaths | |
| Method of Carcass Disposal | Percent | Std. Error | Percent | Std. Error | Percent | Std. Error |
| Burial on-site | 31.9 | (2.1) | 25.1 | (1.2) | 26.3 | (1.2) |
| Burning on-site | 15.2 | (1.5) | 12.2 | (0.9) | 13.7 | (0.9) |
| Renderer pickup | 16.5 | (1.7) | 37.0 | (1.3) | 35.9 | (1.3) |
| Composting on-site | 37.2 | (2.2) | 33.8 | (1.3) | 35.0 | (1.3) |
| Other | 3.1 | (0.7) | 2.3 | (0.3) | 2.7 | (0.4) |

Nearly half of carcasses (45.7 percent) were picked-up by a renderer. About one-third of carcasses (31.3 percent) were disposed of by composting on-site.

b. For sites with at least one preweaned piglet or older pig death from December 2005 through May 2006, percentage of pig deaths by method of carcass disposal:

| | Percent Pig Deaths | | | | | |
|---|---|---|---|---|---|---|
| | Sites with at Least One Preweaned Death | | Sites with at Least One Weaned and Older Death | | Sites with Any Deaths | |
| **Method of Carcass Disposal** | **Percent** | **Std. Error** | **Percent** | **Std. Error** | **Percent** | **Std. Error** |
| Burial on-site | 6.4 | (1.1) | 8.3 | (0.9) | 7.2 | (0.9) |
| Burning on-site | 16.9 | (3.0) | 9.7 | (1.3) | 14.1 | (2.0) |
| Renderer pickup | 40.6 | (5.2) | 53.7 | (2.8) | 45.7 | (3.4) |
| Composting on-site | 34.4 | (4.6) | 26.4 | (2.1) | 31.3 | (3.0) |
| Other | 1.7 | (0.6) | 1.9 | (0.4) | 1.7 | (0.5) |
| Total | 100.0 | | 100.0 | | 100.0 | |

**2. Records**

The type of records swine sites kept varied. Breeding records were the most common type of records kept (76.9 percent of sites with gestation or farrowing phases), followed by drug usage (66.2 percent of sites). In general, large and medium sites kept records on more topics than small sites.

Percentage of sites by type of records kept and by size of site:

**Percent Sites**

**Size of Site** (Total Inventory)

| Record type | **Small** (Fewer than 2,000) | | **Medium** (2,000-4,999) | | **Large** (5,000 or More) | | **All Sites** | |
|---|---|---|---|---|---|---|---|---|
| | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** | **Pct.** | **Std. Error** |
| Feed intake | 49.7 | (1.8) | 75.4 | (1.8) | 83.1 | (2.1) | 59.0 | (1.4) |
| Drug usage | 58.1 | (1.8) | 81.2 | (1.7) | 85.8 | (2.0) | 66.2 | (1.3) |
| Breeding records* | 71.6 | (2.3) | 98.8 | (0.6) | 98.7 | (1.2) | 76.9 | (1.9) |
| Waste disposal | 36.0 | (1.7) | 82.5 | (1.8) | 92.5 | (1.2) | 52.3 | (1.3) |
| Feed-equipment maintenance records | 19.0 | (1.3) | 26.0 | (1.8) | 32.7 | (3.0) | 22.1 | (1.1) |
| Rodent control | 14.6 | (1.3) | 34.6 | (2.1) | 47.7 | (3.6) | 22.7 | (1.2) |

*For sites with gestation or farrowing phases.

### 3. Marketing and shipments

The majority of sites (56.0 percent) were independent operations and marketed pigs on their own. These sites accounted for 45.0 percent of total inventory.

a. Percentage of sites, and percentage of total inventory on these sites, by business and marketing arrangement:

| Business and Marketing Arrangement | Percent Sites | Std. Error | Percent Total Inventory | Std. Error |
|---|---|---|---|---|
| Contract producer | 38.3 | (1.2) | 49.8 | (2.1) |
| Independent producer—market on own | 56.0 | (1.3) | 45.0 | (2.2) |
| Independent producer—market through a cooperative | 5.1 | (0.7) | 4.4 | (0.7) |
| Other | 0.6 | (0.2) | 0.8 | (0.3) |
| Total | 100.0 | | 100.0 | |

Nearly all sites (96.7 percent) sold or shipped at least one pig from December 2005 through May 2006.

b. Percentage of sites that sold or shipped at least one pig off-site from December 2005 through May 2006:

| Percent Sites | Standard Error |
|---|---|
| 96.7 | (0.5) |

One of three sites had at least one shipment cross State lines.

c. For sites that sold or shipped at least one pig off-site from December 2005 through May 2006, percentage of sites that had any shipments cross State lines:

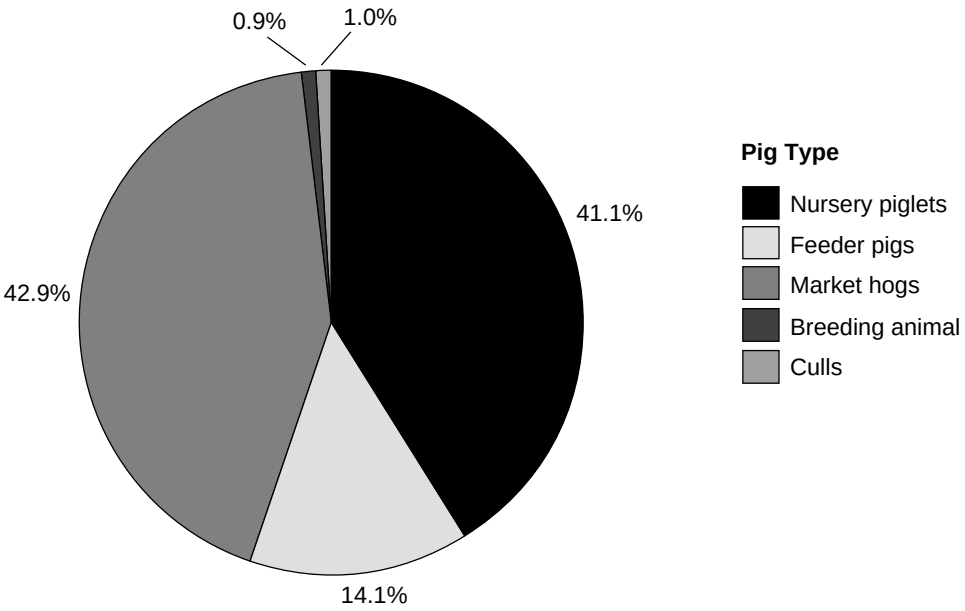
| Percent Sites | Standard Error |
|---|---|
| 31.6 | (1.3) |

Although 75.5 percent of sites sold or shipped market hogs, less than half of pigs sold or shipped (42.9 percent) were sold as market hogs.

d. For sites that sold or shipped at least one pig off-site from December 2005 through May 2006, percentage of sites, and percentage of shipments and percentage of pigs sold or shipped off-site, by type of pig sold or shipped:

| Pig Type | Pct. Sites | Std. Error | Pct. Shipments | Std. Error | Pct. Pigs Sold or Shipped | Std. Error |
|---|---|---|---|---|---|---|
| Nursery piglets less than 60 lb | 17.4 | (1.0) | 20.3 | (2.5) | 41.1 | (2.5) |
| Feeder pigs or pigs 60 to 249 lb | 14.0 | (0.9) | 9.0 | (1.1) | 14.1 | (1.5) |
| Market hogs or hogs 250 lb or more | 75.5 | (1.2) | 62.1 | (2.4) | 42.9 | (2.0) |
| Breeding animal | 3.7 | (0.5) | 2.5 | (0.5) | 0.9 | (0.1) |
| Culls | 21.8 | (1.1) | 6.1 | (0.4) | 1.0 | (0.1) |
| Total | N/A | | 100.0 | | 100.0 | |

**For Sites that Sold or Shipped at Least One Pig Off-Site from December 2005 Through May 2006, Percentage of Pigs Shipped Off-Site, by Pig Type**

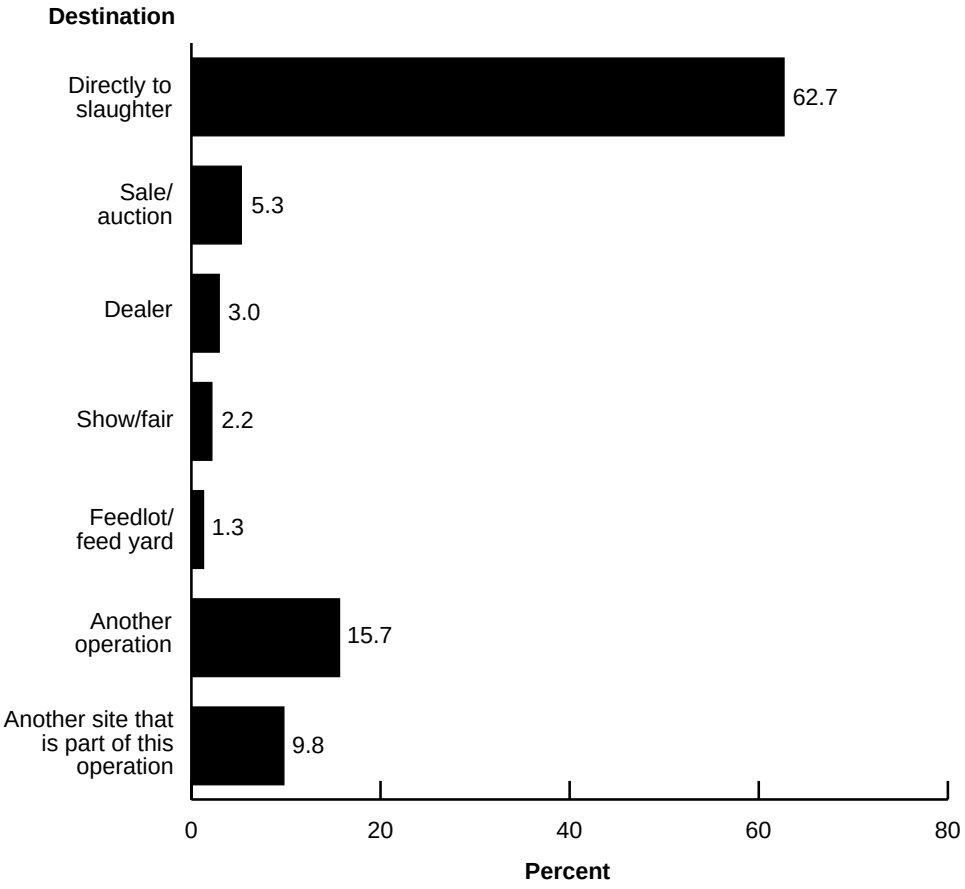


Nearly two-thirds of shipments (62.7 percent) went directly to slaughter.

e. For sites that sold or shipped at least one pig off-site from December 2005 through May 2006, percentage of shipments by destination:

| Destination | Percent Shipments | Standard Error |
|---|---|---|
| Directly to slaughter | 62.7 | (2.4) |
| Sale/auction | 5.3 | (0.6) |
| Dealer | 3.0 | (0.4) |
| Show/fair | 2.2 | (1.1) |
| Feedlot/feed yard | 1.3 | (0.2) |
| Another operation | 15.7 | (1.3) |
| Another site that is part of this operation (e.g., nursery, grower) | 9.8 | (2.7) |
| Total | 100.0 | |

**For Sites That Sold or Shipped at Least One Pig Off Site from December 2005 Through May 2006, Percentage of Shipments by Destination**



# Section II: Methodology

## A. Needs Assessment

During the Needs Assessment phase of the NAHMS Swine 2006 study, input was sought from stakeholders regarding the critical swine production and health-information needs of the swine industry. These stakeholders included producers, industry associations, researchers, and government agencies. A Needs Assessment questionnaire (available on request) was developed to facilitate input by a variety of groups. The primary sources utilized in the Needs Assessment were the National Pork Board (NPB) and the American Association of Swine Veterinarians (AASV).

The NPB Needs Assessment questionnaire for NAHMS Swine 2006 was included in the October 20, 2005, "Pork Leader Letter." This letter and questionnaire were distributed by conventional mail and by e-mail to 2,800 and 5,000 subscribers, respectively.

The AASV Needs Assessment questionnaire for NAHMS Swine 2006 was included in the November 2, 2005, AASV newsletter. This newsletter was also distributed by mail and by e-mail to approximately 440 practitioners and 700 newsletter subscribers.

In addition, between November 1 and 30, 2005, a letter of introduction and questionnaire were e-mailed to government contacts at the Centers for Disease Control; APHIS in Riverdale, MD; National Veterinary Services Laboratories; Centers for Epidemiology and Animal Health; regional epidemiologists; area veterinarians in charge; and the Food Safety Inspection Service. Overall, there were 528 responses to the Needs Assessment questionnaire.

### 1. Number of respondents, by respondent type

Nearly half respondents (46.4 percent) characterized themselves as producers.

| Respondent Type | Frequency | Percent Respondents |
|---|---|---|
| Producer | 245 | 46.4 |
| Practitioner | 206 | 39.0 |
| Researcher | 22 | 4.2 |
| Federal or State government | 16 | 3.0 |
| Other allied industry | 21 | 4.0 |
| Unknown | 18 | 3.4 |
| Total | 528 | 100.0 |

## B. Sampling and Estimation

### 1. State selection

A goal for NAHMS' national studies is to include States that represent at least 70 percent of the animal and producer population in the United States. This study focuses on operations with 100 or more hogs. Information from the National Agricultural Statistics Service (NASS) December 28, 2004, "Hog and Pig" report for numbers of hogs and pigs and the January 1, 2005, "Farms and Land in Farms" report for number of operations with 100 or more hogs was used to select States. The NASS hog and pig estimation program collects data quarterly from producers in 17 States* and annually in all States. These 17 States accounted for 94.0 percent of the December 1, 2004, U.S. swine inventory for operations with more than 100 hogs and 94.2 percent of U.S. operations with more than 100 hogs (See Appendix II for data on individual States, updated to June 1, 2006, inventory and number of operations in 2006.) An additional advantage of selecting these 17 States is that THE NASS list frame is more complete due to the more frequent contact with producers.

### 2. Operation selection

In the Swine 2000 and 2006 surveys, an evaluation of the U.S. total inventory and number of operations revealed that operations with 1 to 99 pigs accounted for 60.3 percent of pig operations in the 17 participating States but just 1.0 percent of total pig inventory. Because this segment of the industry represented such small percentage of the total U.S. inventory, it was ineligible for the study. Therefore, larger operations representing 99.0 percent of the pig inventory were selected.

NASS chose a stratified random sample of 5,006 operations selected from their list sampling frame comprised of independent and contract producers. Stratification was based on State and herd size. Larger operations were selected with a higher probability of being included in the sample in order to reduce variability. Operations with 100 or more pigs were eligible for an on-site interview. At the first interview, if operations had multiple production sites under different day-to-day management, a maximum of three sites were randomly selected (one with breeding animals and two with weaned pigs).

### 3. Population inferences

Inferences cover the population of swine operations with 100 or more total pigs in the 17 participating States. Appendix II shows that these States accounted for 93.6 percent of operations with 100 or more pigs and 94.2 percent of the U.S. pig inventory on operations with 100 or more pigs (based upon the June 1, 2006, inventory and 2006 number of operations). All respondent data were statistically weighted to allow the sample to reflect the population from which it was selected. The inverse of probability of selection for each operation was the initial selection

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

weight. This selection weight was adjusted for nonresponse within each region and size group to allow for inferences back to the original population from which the sample was selected. This weight was adjusted further for the number of separate sites each operation had, relative to the number of sites that responded to the survey.

## C. Data Collection

### 1. General Swine Farm Report, July 17–September 15, 2006

NASS enumerators administered the General Swine Farm Report questionnaire in person with each selected producer that agreed to participate in the study. The interview took approximately 1 hour. For producers that had 100 or more head on June 1, 2006, NASS enumerators asked permission for veterinary medical officers (VMOs) to contact the producer and discuss additional phases of data collection.

## D. Data Analysis

### 1. Validation and estimation

Initial data entry and validation for the General Swine Farm Report (results reported in Swine 2006, Part I) were performed in individual NASS State offices. Data were entered into a SAS data set, followed by the execution of the edit and validation program. NAHMS national staff performed additional data validation on the entire data set after data from all States were combined.

The statistical estimation was done using SUDAAN. SUDAAN uses a Taylor series expansion to estimate appropriate variances for the stratified/clustered, weighted data.

## E. Sample Evaluation

### 1. General Swine Farm Report

The purpose of this section is to provide various performance measurement parameters. Historically, the term “response rate” was used as a catch-all parameter, but there are many ways to define and calculate response rates. Therefore, the table to the right presents an evaluation based upon a number of measurement parameters, which are defined with an “x” in those categories that contribute to the measurement. Of the 5,006 operations selected, 3,071 (61.3 percent) provided usable inventory information. Note, the comparable weighted rate was calculated at 65.7 percent usable operations. There were 2,079 operations (41.5 percent) of the sample that provided “complete” information for the questionnaire. About 9 of 10 operations (87.9 percent) were actually contacted for the study.

1a. Operation level response

| Response Category | Number Operations | Percent Operations | Evaluation Parameters | |
|---|---|---|---|---|
| | | | Contacts | Usable 1/ |
| Survey complete 2/ | 2,079 | 41.5 | x | x |
| No pigs on June 1, 2006 | 696 | 13.9 | x | x |
| Out of business | 296 | 5.9 | x | x |
| Out of scope (prison and research farms, etc.) | 13 | 0.3 | | |
| Refusal of GSFR | 1,327 | 26.5 | x | |
| Office hold (NASS elected not to contact) | 315 | 6.3 | | |
| Inaccessible | 280 | 5.6 | | |
| Total | 5,006 | 100.0 | 4,398 | 3,071 |
| Percent of total operations | | | 87.9 | 61.3 |
| Percent of total operations weighted 3/ | | | 90.7 | 65.7 |

1/ Useable operation – respondent provided answers to inventory questions for the operation (either zero or positive number on hand).
2/ Survey complete operation – respondent provided answers to all or nearly all questions for at least one site.
3/ Weighted response – the rate was calculated using the initial selection weights.

Survey complete operations were subdivided if multiple production sites existed. A maximum of three sites were randomly selected. Overall, 2,230 site questionnaires were completed for essentially the entire questionnaire, and 45.1 percent of the sites agreed to be contacted by APHIS for discussion about participation in further phases of the study.

1b. Site level response

| Response Category | Number Sites1/ | Percent Sites |
|---|---|---|
| Survey complete and VMO consent | 1,005 | 45.1 |
| Survey complete and refused VMO consent | 1,225 | 54.9 |
| Total | 2,230 | 100.0 |

1/ There were 1,005 sites with survey complete and consent for the APHIS or VMO phase of the study which originated from 912 selected operations. Similarly, there were 1,225 sites that completed the survey but declined the VMO phase, which came from the rest of the original 2,079 selected operations or 1,167 selected operations.

# Appendix I: Sample Profile

## A. Responding Sites

### 1a. Total inventory

| **Size of Site** (Total Inventory) | **Number Responding Sites** |
|---|---|
| Fewer than 2,000 | 1,157 |
| 2,000 to 4,999 | 724 |
| 5,000 or more | 349 |
| Total | 2,230 |

### 1b. Sow inventory

| **Size of Site** (Total Sows and Gilts) | **Number Responding Sites** |
|---|---|
| No sows and gilts | 1,353 |
| Fewer than 250 | 468 |
| 250 to 499 | 102 |
| 500 or more | 307 |
| Total | 2,230 |

### 2. Type of site

| **Type of Site** | **Number Responding Sites** |
|---|---|
| Contract producer | 1,027 |
| Independent—market own pigs | 1,086 |
| Independent—market through cooperative | 105 |
| Other | 12 |
| Total | 2,230 |

### 3. Regions

| Region | Number Responding Sites |
|---|---|
| North | 499 |
| West Central | 456 |
| East Central | 888 |
| South | 387 |
| Total | 2,230 |

### 4. Production phase

| Production Phase Combination | Number Responding Sites |
|---|---|
| All four phases | 502 |
| Gestation, farrowing, and nursery | 81 |
| Nursery and grower/finisher | 357* |
| Gestation and farrowing | 226* |
| Nursery only | 217* |
| Grower/finisher only | 809* |
| Other combination | 38 |
| Total | 2,230 |

*Revised December 2007

# Appendix II: U.S. Swine Population and Operations

**Number of Pigs on June 1, 2006, and Number of Operations in 2006**

| | | Number Pigs (Thousand Head) | | Number Operations in 2006 | |
|---|---|---|---|---|---|
| Region | State | All Operations | Operations with 100 or More Head[1] | All Operations | Operations with 100 or More Head |
| East Central | Illinois | 4,200 | 4,179 | 2,900 | 2,080 |
| | Indiana | 3,200 | 3,171 | 2,800 | 1,500 |
| | Iowa | 16,600 | 16,550 | 8,700 | 7,670 |
| | Ohio | 1,620 | 1,539 | 4,000 | 1,300 |
| | Total | 25,620 | 25,439 | 18,400 | 12,550 |
| North | Michigan | 980 | 965 | 2,100 | 560 |
| | Minnesota | 6,800 | 6,766 | 4,800 | 3,600 |
| | Pennsylvania | 1,100 | 1,067 | 3,100 | 800 |
| | Wisconsin | 430 | 400 | 2,200 | 660 |
| | Total | 9,310 | 9,198 | 12,200 | 5,620 |
| West Central | Colorado | 840 | 834 | 750 | 60 |
| | Kansas | 1,840 | 1,827 | 1,400 | 540 |
| | Missouri | 2,700 | 2,673 | 2,000 | 1,070 |
| | Nebraska | 2,950 | 2,929 | 2,500 | 1,700 |
| | South Dakota | 1,470 | 1,455 | 1,100 | 730 |
| | Total | 9,800 | 9,718 | 7,750 | 4,100 |
| South | Arkansas | 280 | 272 | 750 | 150 |
| | North Carolina | 9,600 | 9,590 | 2,300 | 1,510 |
| | Oklahoma | 2,370 | 2,346 | 2,600 | 300 |
| | Texas | 970 | 941 | 3,700 | 168 |
| | Total | 13,220 | 13,149 | 9,350 | 2,128 |
| Total (17 States) | | 57,950 (93.9% of U.S.) | 57,504 (94.2% of U.S.) | 47,700 (72.8% of U.S.) | 24,398 (93.6% of U.S.) |
| Total U.S. (50 States) | | 61,687 | 61,070 | 65,540 | 26,058 |

[1]Derived from NASS publication Farm, Land in Farms, and Livestock Operations, February 2007

# Appendix III: Study Objectives and Related Outputs

1. Describe swine management practices used during the gestation, farrowing, nursery, and grower/finisher phases of production.

- **Part I: Reference of Swine Health and Management Practices in the United States, 2006, October 2007**
- Part II, Reference of Swine Health and Health Management in the United States, 2006, expected winter 2007
- Part III, Reference of Swine Health, Productivity and General Management, expected winter 2007
- Info sheets, expected fall and winter 2007

2. Determine the prevalence and risk factors for a variety of pathogens found in nursery and grower/finisher pigs.

- Part II, Reference of Swine Health and Health Management in the United States, 2006, expected winter 2007
- Part III, Reference of Swine Health, Productivity and General Management, expected winter 2007
- Info sheets, expected fall and winter 2007

3. Examine vaccination and antimicrobial use practices.

- Part II, Reference of Swine Health and Health Management in the United States, expected winter 2007

4. Provide an overview of the changes in U.S. swine management and health from 1990 through 2006.

- Part IV: Changes in the U.S. Pork Industry, 1990-2006, expected early 2008
- Info sheets, expected early 2008