

Swine Facility Costs in Iowa

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Summary and Implications

Surveys were sent to over 500 producers around Iowa that had been identified as building facilities since 1990. Responses were received from 144 producers, many with information on multiple buildings. The results of the survey show that there are trends in the types of buildings being constructed but there is still a wide variety in cost and construction type. According to this survey, finishing building cost has actually dropped over the last two years, perhaps indicating changes in market pressure and construction techniques. Manures storage costs were also compared, with earth storage showing the lowest cost. For planning purposes, estimate costs that are higher than the average for each type building.

Introduction

Total confinement facilities for swine are a major expense in budgeting production costs of swine. This cost is usually second only to feed cost in the contribution that it makes toward production costs. It is important for a producer to know what typical buildings cost in order to evaluate how the building cost will affect the bottom line of the operation.

The objective of this study was to determine typical building costs and the types of buildings that are being constructed in Iowa.

Materials and Methods

A survey form was developed to collect information on the types of swine buildings being constructed, the type of ventilation, cooling, manure handling system, and the approximate cost per head of the buildings. This form was sent to over 500 producers that were known to have completed construction since 1990.

Results and Discussion

Results were broken down by the function of the building. These will appear in the following sections including: finishing, nursery, farrowing, gestation and breeding, and outdoor manure storage facilities.

Finishing Facilities

Surveys were received on 135 different finishing buildings. The pertinent cost information appears in table 1.

Table 1. Average cost per head for swine finishing facilities.

	Cost Per Head
Average	\$ 148
Median	\$ 150
Minimum	\$ 96
Maximum	\$ 208
Standard Deviation	\$ 30

Figure 1 illustrates the types of ventilation systems that were used in construction of new finishers. Mechanical refers to ventilation by fans., natural refers to ventilation without fans and hybrid refers to systems that use curtain sides for summer ventilation and fans during the winter. It should be noted that the hybrid system is by far the most popular and a relatively new development in the industry. Tunnel ventilation has limited usage in finishing facilities.

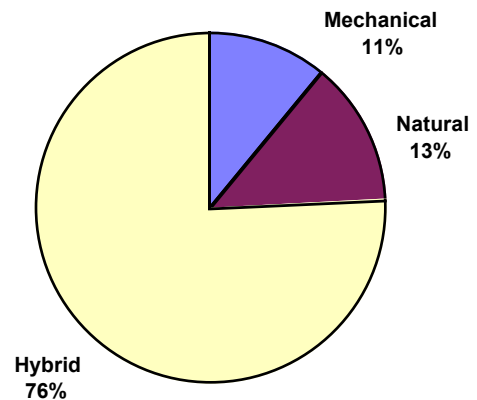


Figure 1. Ventilation systems for finishing.

Figure 2 shows cooling methods. Drip refers to drippers, spray to cyclic spraying and tunnel to tunnel ventilation. Sprayer systems appear to be the most popular but nearly as many use no cooling system at all.

Figure 3 shows the manure systems that were chosen by survey respondents. Deep pits appear to be the most popular. This trend, while not the best from an air quality standpoint, has been the best mode of avoiding state permit requirements and has therefore made a resurgence.

In addition to compiling the average costs across the entire survey, averages were done by type of manure

handling method and by the year of construction. The average by type of manure handling system, table 2, shows that deep pit buildings are more expensive than other types. This relates to the fact that other systems have outdoor storage which is an additional cost and not always factored into the price of the building. The trend by year is in table 3 and may indicate market demands, competition for projects or building technique advancements.

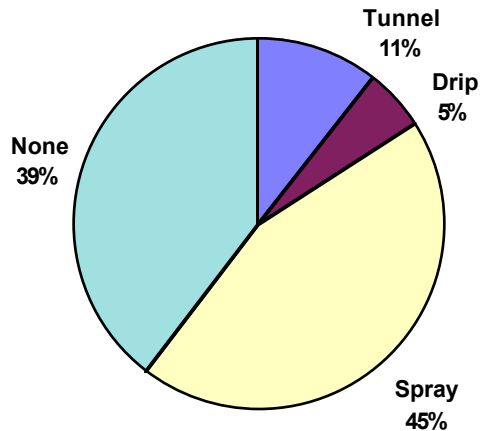


Figure 2. Cooling methods for finishing.

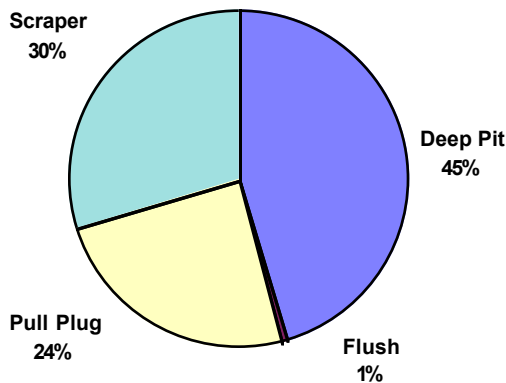


Figure 3. Manure systems for finishing.

Table 2. Average cost of finishing by manure handling system.

Type of Manure Handling	Average Cost per Head
Deep Pit	\$ 166
Scrapers	\$ 118
Pull Plug	\$ 149

Table 3. Average cost of finishing by year constructed.

Year Built	Average Cost per Head
1991	\$ 119
1992	\$ 144
1993	\$ 147
1994	\$ 158
1995	\$ 151
1996	\$ 139

Nursery Facilities

Surveys were received on 27 nursery facilities. Cost statistics of the 27 buildings are listed in table 4. Because of the smaller sample size, statistics by year and manure handling system was not done. Preheat hallways were used in 18 of the nurseries or 67%. Manure systems that were used appear in figure 4. There were no deep pit systems, which was somewhat expected. Pull plug systems appeared to be by far the most popular.

Table 4. Average cost per head for swine nurseries.

	Cost Per Head
Average	\$ 115
Median	\$ 110
Minimum	\$ 78
Maximum	\$ 200
Standard Deviation	\$ 30

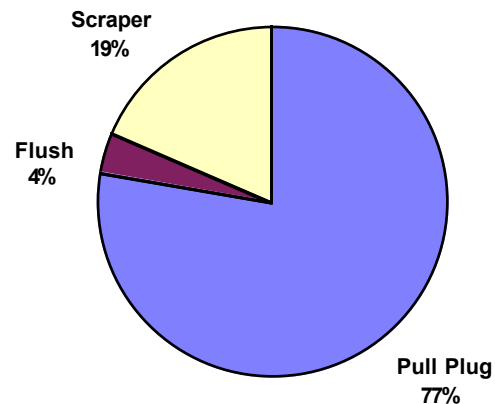


Figure 4. Manure systems for nurseries.

Farrowing Facilities

There were only eight farrowing facility responses and so few conclusions can be drawn from the statistics. The cost statistics are in table 5. There was a very broad range in prices and so the standard deviation of the sample is quite high. Of the eight responses, three (38%) used preheat hallways, and five (63 %) used drippers for cooling sows. Pull plug manure systems appeared to be the most popular but little confidence can be placed in these results.

Table 5. Average cost per crate of farrowing facilities.

	Cost Per Head
Average	\$1,664
Median	\$ 1,695
Minimum	\$ 650
Maximum	\$ 2,917
Standard Deviation	\$ 683

Breeding and Gestation Facilities

There were 20 responses on breeding and gestation facilities. Cost varied, dependent upon whether crates or pens were used for animals. Because of this, costs were broken into three categories and appear in table 6.

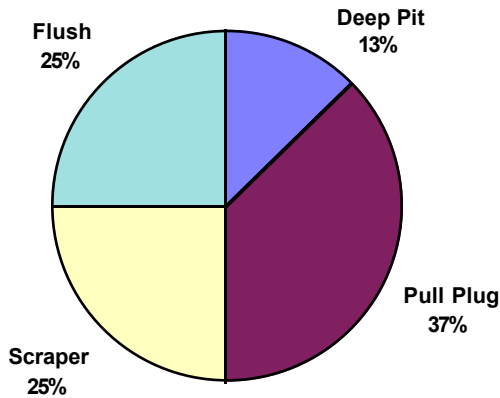


Figure 5. Manure handling systems for farrowing facilities.

Table 6. Average cost per head of breeding/gestation facilities.

	Crated	Penned	Both
Number	14	2	4
Average	\$469	\$242	\$512
Median	\$458	\$242	\$524
Minimum	\$314	\$200	\$407
Maximum	\$616	\$283	\$591
Standard Deviation	\$86	\$59	\$89

Methods of ventilating were split between mechanical with nine (45%), the hybrid system with nine (45%) and the remainder were naturally ventilated (10%). This is probably due to the fact the many breeding buildings use tunnel

ventilation. Methods of keeping animals cool, figure 6, indicated that one quarter of the buildings had no means of keeping animals cool. In actuality, these may have used stirring fans but the survey did not ask that particular question. Tunnel ventilation was used in 45% of the buildings in some mode.

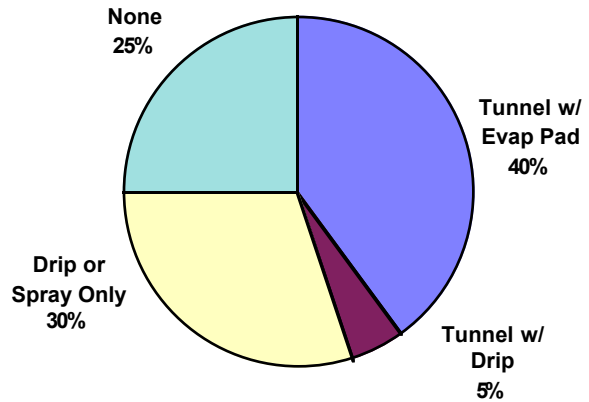


Figure 6. Cooling methods being used for breeding/gestation buildings.

Manure handling systems for breeding/gestation buildings appears in figure 7.

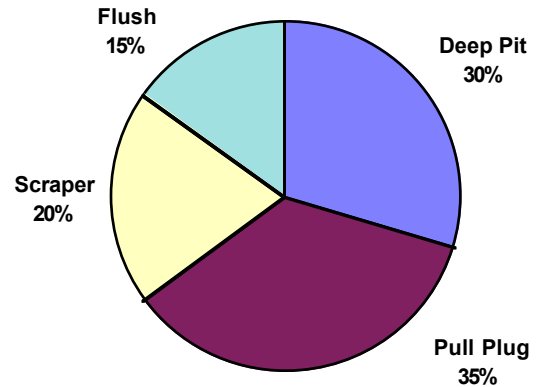


Figure 7. Manure handling systems for breeding/gestation buildings.

Outdoor Manure Storage

Manure was stored outdoors for 55 of the respondents. Of these 55 responses the majority were earthen storage with the remaining being split relatively equal between circular formed and square formed storage and anaerobic lagoons, figure 8.

The cost statistics for each type may be seen in table 7. Anaerobic lagoons, unlike the other types of storage, is actually a type of treatment rather than being a slurry storage. Because of this the required size is much greater due to required dilution water to make the lagoon work. Lagoons require seven or eight gallons of dilution per gallon of slurry. Therefore, the cost per gallon for a lagoon needs to be multiplied by seven or eight times to compare lagoon cost directly to other types.

Table 7. Outdoor manure storage cost per gallon (cents per gallon).

	Formed Circular	Formed Square	Anaerobic Lagoon	Earthen Storage
Number	7	4	7	37
Average	6.8	14	0.99	1.8
Median	5.5	14	1.0	1.1
Minimum	4.5	12	0.62	0.3
Maximum	14	15	1.4	6.8
Standard Deviation	3.3	1.4	0.37	1.7

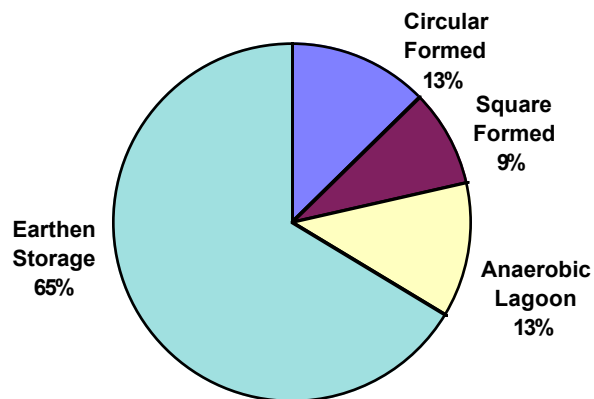


Figure 8. Types of outdoor manure storage used by respondents.