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Big is Not Necessarily Bad for the Environment: Lessons Learned From a Swine Nutrient Management Survey

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Introduction - Large-scale intensive livestock production is receiving increased public scrutiny. Concerns about the environmental impact, odor production, and animal welfare associated with modern swine rearing threatens to erode the market viability of pork. To help identify solutions to nutrient management challenges, we conducted a survey of cropping, feeding, and manure handling practices utilized by Pennsylvania swine farmers.

Methods - The survey data base was separated by operation type (sow unit or finish floor) and then stratified by size (large sow unit > 600 head; large finish floor > 2000 head). Affirmative answers to questions about several critical aspects of different nutrient management-related practices are summarized in Table I and Figure I.

Results - The results of this study portray well-developed industry in Pennsylvania where the majority of respondents report hogs as their primary enterprise. The majority of both small and large producers utilize flush gutters in gestation barns and deep pits for manure collection from finish floors. The manure is most often stored in a liquid form in an outside storage facility. When this manure is spread, it is disseminated with surface application and then incorporated within 24 hours.

The results also depict an industry where larger producers tend to be more specialized. Larger farms are less likely to have to another enterprise on the farm, more likely to be raising hogs under contract, and more likely to utilize all-in-all-out pig flow. These large units also can be better suited to capitalize on opportunities that result from advanced nutrient

management approaches. On average, these large swine studied here are 1.5-2.0 times more likely to be implementing environmentally friendly nutrient management practices than their smaller counterparts. First, larger operations are more likely to be practicing progressive nutritional practices such as split sex feeding or phase feeding that ultimately reduce or limit the total nutrient burden generated by the pig. Second, larger operations are more aware of their manure nutrient content, and more capable of effectively utilizing these nutrients (e.g. keep records of manure application and apply manure with a calibrated spreader). This may be in part due to the increased likelihood of a large farm contracting out the manure handling responsibilities. The manure contractor may provide more ready access to the technologies that allow the swine producer to capture the advantages of an integrated nutrient management approach. Finally, it is more likely for a large swine unit to be above the number of animal units per acre that define a concentrated animal operation (>2). Thus, the environmental practices of large operations may benefit from the increased scrutiny that they were afforded by the State mandate for nutrient management plans on all farms that qualify as concentrated animal operations.

Conclusions - These findings suggest that *big is not necessarily bad* for the environment, as large producers responding to our survey utilize more environmentally-friendly management practices. However, this study also highlights the need for greater environmental awareness among all Pennsylvania swine producers, and in particular among the smaller producers. The

need for greater environmental awareness creates an opportunity for the veterinary profession to provide an additional service to

the swine producer and help ensure sustainable swine production into the next millennium.

Table I

	<u>Sow Units</u>		<u>Finish Floors</u>	
	Small	Large	Small	Large
Demographics				
Herds	76	9	102	30
Total Animals	10,501	12,225	56,223	86,540
Mean size	138	1,358	551	2,882
Median size	95	1,336	375	2,300
Contract Producer	15%	50%	31%	76%
Hogs 1 ^o Enterprise	54%	89%	40%	53%
Other Enterprise	75%	22%	78%	73%
>2 Animal Units/Acre	25%	56%	27%	68%
Management				
All-in-all-out	-	-	36%	72%
Manure Collection				
Flush gutters	40%	50%	-	-
Deep pit	-	-	65%	75%
Manure Storage				
Liquid	80%	88%	80%	97%
Outside	44%	100%	40%	40%
Manure Application				
Surface	74%	57%	74%	67%
Incorp w/in 24 hrs	42%	50%	40%	50%

Figure 1

We report on these environmentally -friendly management practices:

- A - Manure applied with a calibrated spreader.
- B - Refrain from spreading manure in winter time.
- C - Manure application handled by a contract manure spreader.
- D - Keep records of manure application before planting corn or small grains.
- E - Test your manure for its nutrient value of nitrogen.
- F - Test your manure for its nutrient value of phosphorus.
- G - Practice phase feeding (4 or more rations)?
- H - Practice split-sex feeding.

