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Behavioral needs of swine

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Introduction

Presently, one of the most controversial issues of conventional pig production is the individual housing of gestating sows. Individual housing of gestating sows is by far the most commonly used method. In Europe, 70% of gestating sows are individually housed (Hendricks et al., 1998). In Australia and New Zealand, 63% and 50% of sows are housed individually (Patterson et al., 1997; Gregory and Devine, 1999). In the USA, Barnett et al. (2001) estimated that 60-70% of sows are housed in stalls throughout gestation.

Although conventional gestation stalls allow for easy management, individual feeding, and are thought to be the most economically viable means of housing gestating swine, they are perceived to negatively impact sow welfare. In gestation stalls, sows are prevented from performing many of the behavior patterns that pigs would perform in more natural or less restricted conditions. The barren environment, the restriction of movement, and the limited social interactions characteristic of gestation stall housing are all thought to negatively impact sow welfare. Understanding the relationship between animal behavior and animal welfare is key to understanding these criticisms.

Animal welfare, needs, and behavior

It is important that a wide range of indicators be used when trying to assess animal welfare. Indicators used to evaluate animal welfare often include behavior, physiology, health, growth, reproduction, and life expectancy.

Animal needs are dictated by the basic biology of the animal. The term “need” refers to those requirements which are essential for survival or significantly important to the animal. Needs vary in their importance and in the urgency with which they should be satisfied. Certain needs can arise only at specific times in an animal’s life, such as the need to build a nest prior to farrowing. Needs exist in the both the short and long term.

Behavior can be defined as the aggregate of the responses, reactions, and movements made by an organism in any situation. Behavior is among the first detectable responses of an animal to perceived changes in its environment and

can provide excellent cues about the preferences, needs, and internal states of animals. A wide variety of behavioral measurements have been used to assess the needs and welfare of farm animals. Scientists have focused on the following:

- behaviors that indicate pain
- behaviors that indicate stress
- behaviors that indicate sickness
- behaviors that indicate a disturbance
- behavioral suppression
- displacement behaviors
- abnormal behaviors: stereotypes
- abnormal behaviors in appearance

Swine behavior: Origins

The first step in understanding the needs of an animal is to understand its natural behavior. It is important to recognize that swine may not exhibit all behaviors in commercial systems. For domesticated farm animals, a proper understanding of the animal must include knowledge of the animal in production systems, natural settings, and the behavior of the wild or free-living relative. Information acquired of the normal behavior of animals in these conditions can provide insights into understanding swine welfare.

It is often reported that pigs were originally domesticated approximately 10,000 years ago with two different domestic forms occurring, an Asian and a European pig. Recent genetic evidence suggests that pigs diverge from common ancestor approximately 500,000 years ago, and the European and Asian pigs were independently domesticated (Giuffra, 2000). In approximately the 18th and 19th century, Asian pigs were introduced into Europe.

The natural behaviors of wild boar include the following:

- social groups made up of two to four related adult females with offspring (Boars only join the group during the mating season.)
- social hierarchy (Subordinates avoid dominant sows.)

- large home ranges (200-500 acres)
- highly variable activity patterns which peak at dawn and dusk
- omnivory with a significant amount of time spent foraging

In a number of studies (e.g., Jensen, 1988) on feral pigs and domesticated pigs placed in a natural setting, researchers demonstrated clearly that domesticated pigs behave a great deal like their wild ancestors. Domesticated pigs will form small core groups of associated females. Within these groups aggression is rare and activity levels are highest at dawn and dusk.

Commercial conditions

Commercial conditions are very different from the natural situation outlined above. Gestating sows tend to be housed individually in very restricted spaces. These animals tend to be much less active than animals in nature, as food is provided in concentrated meals. When animals are kept in groups, the groups tend to be very large and relatively unstable. Animals are often mixed in and out of groups, leading to problems in forming a stable social structure.

Although it is clear that the commercial is different from natural, this alone is inadequate to determine that commercial conditions automatically lead to problems in animal welfare. The key question is how important are these differences to the sow? Do these differences lead to health problems? Do these differences prevent the sow from performing behaviors that are important to her? Are the commercial conditions preventing the performance of specific behavioral needs?

Measuring motivation

A study on the welfare of sows in various housing systems has resulted in a rather unclear picture. Behavioral, physiological, and production parameters vary greatly or in contradiction with each other. A new approach may be to determine the animal's own motivation for these various housing systems. For example, an investigation of the strength of sows' motivation to live in a group would reveal how the sow feels on balance about living in a group pen as opposed to a stall. Factors such as aggression and behavioral restriction will contribute to the sow's preferences. Animals may remain motivated to perform certain behaviors even if they are prevented from doing so by their physical environment. The inability of animals to perform such behavior may result in frustration and suffering. A strong motivation to gain access to an environment generally indicates that welfare is better in that environment (Dawkins 1988).

Various techniques have been developed to determine how motivated animals are to acquire certain resources or perform specific behaviors. Studies have attempted to ascertain if sows are highly motivated for social interactions or for additional space. However, each approach brings in serious conceptual challenges. For example, does social status affect the motivation for social interactions? Is additional space all that matters? How does the quality of the space available alter the sow's motivation for additional space?

Conclusions

Assessing behavioral needs are essential to understanding the potential welfare concerns of various housing systems. Understanding the natural behavior of swine is the first step in understanding their behavior. Although commercial systems differ from natural environments, commercial systems could adequately address welfare if behavioral needs are met. Research on sow housing systems suggests that various systems are equivocal in terms of animal welfare. Measuring the sow's motivation for a specific housing system provides a new type of information about sow housing and reflects the animal's perspective.

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