Summary of Sow Housing Reviews

1. **Research Review:** A number of animal welfare-related research projects show that hogs can be raised humanely in a variety of production systems. Three published papers are:
   A. **J.L. Barnett, et al., A review of the welfare issues for sows and piglets in relation to housing. *Australian Journal of Ag Research,* 2001, 52, 1-28.** This paper contains a review of the scientific literature regarding gestation sow housing. Some points from the paper:
      I. "The above physiological data on both tethers and stalls have challenged some conventional thoughts on individual housing and one reasonable conclusion is that it is the design of the housing system that is important to welfare rather than the housing system *per se*."
      II. "On balance, it would appear that both individual and group housing can meet the welfare requirements of pigs. However, while public perceptions may result in difficulties with the concept of confinement housing, this will vary in different cultures. The issue of public perception should not be confused with welfare; this is an important message that needs to be disseminated. In fact, the focus on housing systems may have been to the detriment of recognizing the relative importance of another feature of the commercial pig's environment, that is the stockperson."
      III. Table 2 of the paper contains a summary of the information on different sow housing types.

   B. **J.J. McGlone, et al., Compilation of the Scientific Literature Comparing Housing Systems for Gestating Sows and Gilts Using Measures of Physiology, Behavior, Performance, and Health. *The Professional Animal Scientist,* 2004, 20, 105-117.** This paper is a meta-analyses review of over 800 peer-reviewed scientific papers related to sow housing systems. The authors are animal welfare experts from the U.S., Germany, France and The Netherlands.
      I. The authors' main conclusions were:
         1) Individual housing limits social contact but minimizes social stress compared to group housing systems.
         2) Sows showed oral-nasal-facial (ONF) stereotyped behaviors such as chewing and biting in all housing systems evaluated.
         3) There are no published reports of chronic physiological signs of stress for sows in properly managed gestation stalls. Some work indicated that submissive sows might show physiological signs of stress when in a social group.
      II. Specifically, results showed:
         1) "the average levels of productivity, oral-nasal-facial behaviors, and blood cortisol were statistically similar for sows in group pens and stalls."
         2) Sows housed in individual stalls had farrowing rates that were "equal to or superior to sows in other systems" while sows in group housing systems "had injury scores greater than sows in stalls".
         3) "In conclusion, although individual studies found significant housing system effects, subjected to the overall evidence from adequately designed studies meta-analyses revealed that gestation stalls or well-managed pens generally produced similar states of welfare for pregnant gilts or sows in terms of physiology, behavior, performance, and health."

C. **R.T. Rhodes, et al., A Comprehensive Review of Housing for Pregnant Sows. *Journal of the American Veterinary Medical Association,* 2005, 227, 1580-1590.** Over 1,500 pages of peer-reviewed science were reviewed for scientific evidence relating to the impact on the health and welfare of keeping breeding sows in gestation stalls. Researchers thoroughly examined and summarized research results for physiological, behavioral, health, and production performance components of a sow's response in addition to economics.

I. "When evaluating how housing affects the welfare of pregnant sows, it is important to be clear about what is meant by animal welfare. Commonly expressed concerns include the following: 1) animals should function well in the sense of being healthy and thriving; 2) animals should feel well, especially by prevention of serious pain, hunger, fear, and other forms of suffering; and 3) animals should be able to live in a manner consistent with the nature of their species."

II. "Considering all factors, all sow housing systems in current use have advantages and disadvantages for animal welfare. Current group systems allow freedom of movement and social interaction. However, these same systems, when they fail to work well, lead to problems, especially in the areas of aggression, injury, and uneven body condition."

III. "Current stall systems minimize aggression and injury, reduce competition, allow individual feeding, and assist in control of body condition. Stalls, however, also restrict movement, exercise, foraging behavior, and social interaction."

IV. "Because the advantages and disadvantages of housing systems are qualitatively different, there is no simple or objective way to rank systems for overall welfare. In such cases, science can identify problems and find solutions but cannot calculate and compare overall welfare in very different systems."

V. "Sow housing systems should do the following:
   1) Minimize aggression and competition among sows.
   2) Protect sows from detrimental effects associated with environmental extremes, particularly temperature extremes.
   3) Reduce exposure to hazards that result in injuries, pain, or disease.
   4) Provide every animal with daily access to appropriate amounts and types of food and water.
   5) Facilitate observation of individual sow appetite, respiratory rate, urination and defecation, and reproductive status by caretakers.
   6) Allow sows to express most normal patterns of behavior.