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Measuring and monitoring welfare : irritation, housing and management

Dr. Yuzhi Li

West Central Research and Outreach Center, University of Minnesota, Morris 56267

Introduction

Animal welfare is a controversial issue because good welfare does not necessarily mean good performance, and therefore, is not easily measured. Gonyou (1993; 1996) described different opinions on defining and assessing animal welfare. Brambell Committee (Command Paper 2836, 1965) defines welfare as physical and mental well-being, with emphasis on freedom of movements and positive feelings. Based on the Brambell Committee report, the Farm Animal Welfare Committee (FAWC, 1993) of the United Kingdom developed the widely cited five freedoms. These freedoms are:

- 1 Freedom from thirst, hunger and malnutrition by ready access to fresh water and a diet to maintain full health and vigor.
- 2 Freedom from discomfort by providing a suitable environment, including shelter and a comfortable resting area.
- 3 Freedom from pain, injury and disease by prevention or rapid diagnosis and treatment.
- 4 Freedom to express normal behavior by providing sufficient space, proper facilities, and company of the animal's own kind.
- 5 Freedom from fear and distress by ensuring conditions that avoid mental suffering.

Some scientists (Webster 1993) divided these freedoms into production traits (Freedoms 1-3) and ethological issues (Freedoms 4-5). This implies that a behavioral approach is critical to assessing animal welfare, in terms of accommodating normal behavior and avoiding mental suffering. This paper will discuss how to apply ethological approaches to assess animal welfare in production systems.

Normal behavior

Based on the five freedoms, production systems should provide animals an opportunity to perform normal behavior which is defined as animal behavior that is observed under natural conditions. To accommodate normal behavior within swine production systems, we need to know what normal behavior is for pigs. To do this, scientists

have studied pig behavior under semi-natural conditions (Graves, 1984; Jensen, 1986; Stolba and Wood-Gush, 1989). These studies have provided information used in designing housing and management systems for pigs. Graves (1984) noted that sows formed groups of three to six adults with their offspring. A group of similar size was selected for group housing of gestating sows (Morris and Hurnik, 1990). A loose farrowing system, developed in Sweden, and adopted by some small-scale farmers in the United States, was based on studies of Jensen (1986). In this farrowing system, a group of six to eight sows farrow in individual boxes and their litters are commingled at approximately 10 days after birth. These systems are designed based on the idea of "fitting farms to animals, not animals to farms". In practice, these types of systems may need appropriate management systems, more space and resources (such as bedding). It is generally accepted that animals that can perform normal behavior are more likely to achieve better welfare than those that cannot (Spinka, 2006). However, poor welfare may be not claimed until animals develop abnormal behaviors.

Abnormal behaviors

In contrast to normal behaviors, abnormal behaviors are those behaviors that animals do not perform under natural condition but do perform under commercial conditions. Such behaviors usually indicate poor welfare. Some examples of these behaviors in pigs are aggression, stereotypies and belly nosing. These abnormal behaviors can be caused by either housing or management.

Under natural condition, pigs usually do not mix with unfamiliar conspecifics. On commercial farms, however, pigs are routinely mixed which induces aggression, and consequently causes injuries and reduces performance. Aggression is one aspect of social behavior. It is believed that by increasing our understanding of the social behavior in pigs, we may be able to reduce aggression through management (Gonyou, 1994). There is evidence that aggression at mixing varies depending on age, familiarity, and space allowance. Pigs are less aggressive when commingled at early ages (Davis et al., 2006). Familiar sows (sows that spent last gestation in the same group) tend to remember the identity of a group member and have less aggressive interactions when regrouped (Arey, 1999). When provided

more space to group-housed gestating sows, aggression level was reduced, and consequently conception rate was increased (Gonyou, personal communication). Group size is usually considered to be a factor affecting aggression since social structure changes with group sizes. However, when group size was increased from 20 to 80 pigs per pen, aggression among pigs at mixing was not affected (Schmolke et al., 2003). In comparison with pigs in a conventional group (typically 10-30 pigs), pigs in large groups usually have similar aggressive interactions when expressed on a per pig basis (Turner and Edward, 2004).

Stereotypies have been suggested as an indicator of poor welfare (Broom, 1993). They are most common in gestating sows housed in confinement facilities. Restraint, boredom, lack of environmental enrichment, and hunger (as in gestating sows) are possible causes of stereotypies in pigs (Cronin and Wiepkema, 1984; Lawrence and Terlouw, 1993). Stereotypies in gestating sows can be reduced by feeding bulky feed (Robert et al., 1997), loose housing (Vieuille-Thomas et al., 1995), and providing straw bedding (Tuytens, 2005).

Belly nosing is another abnormal behavior that is not observed under natural conditions. Since belly nosing is most common in early weaned pigs (Li and Gonyou, 2002), it is considered as poor welfare caused by early weaning. It was believed that belly nosing was associated with suckling motivation or nutritional needs (Torrey and Widowski, 2006). However, belly nosing does not occur immediately post weaning when the piglets are most hungry with lowest feed intake. The behavior usually develops at four to seven days post-weaning and peaks at around two weeks and then wanes. The real motivation for belly nosing is not clear. Presumably, belly nosing is encouraged by the negative experience or distress at early weaning.

Summary

It is generally accepted that welfare is better in a production system which accommodates normal behavior of the species. Some swine production systems have been designed based on behavioral studies under semi-natural conditions. Under commercial conditions, abnormal behaviors are an indicator of poor welfare which is caused either by housing or management. Welfare will be improved when these problematic behaviors are limited.

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