

## Defining and Assessing Animal Welfare

Animal welfare is a controversial issue because good welfare does not necessarily mean high productivity. So when we improve welfare, we also have to make effort to maintain productivity.

There are different opinions on defining animal welfare. The Brambell Committee (a group of scientists from Britain) first defined animal welfare as physical and mental well-being, with emphasis on freedom of movements and positive feelings. Based on the Brambell Committee's opinion, the Farm Animal Welfare Committee (FAWC, 1993) of the United Kingdom developed the widely cited five freedoms. In other words, welfare means animals have the freedoms, which 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.

The five freedoms are the guidelines for most welfare standards. These are complicated guidelines. A simple definition of welfare is that animals function well and feel well. Function can be measured by health status and performance of the animals. However, measuring animals' feelings is still ambiguous. Currently, an ethological approach is often used to assess animals' feelings.

Many believe that natural behavior is indicative of positive feelings, and abnormal behavior is associated with negative feelings or distress. Natural behavior is adaptive behavior which has evolved to enhance survival of the species during their evolution or domestication. Pig's natural behavior can be divided into: maintenance behavior such as eating, drinking, defecation, urination, and resting; social behavior such as dominancy, bonding, learning, and maternal behavior; and affective behavior such as playing, explorative behavior, rooting, foraging, and nest building. Our conventional housing systems usually can only meet the minimum behavioral requirements, such as requirements for maintenance behavior. Most affective behavior is restricted in conventional production systems. For example, sows can not perform nest building in farrowing crates. With restriction of affective behavior, animals usually develop abnormal behavior, which is the behavior that is not seen under natural conditions, but only can be seen under commercial production conditions. Some examples of abnormal behavior in pigs are tail-biting, belly nosing, and stereotypic (repetitive, non-function behavior, such as vacuum chewing or bar-biting) behavior. There is evidence that tail-biting is associated with crowding; belly nosing is related to stress of early weaning; and stereotypic behavior in gestating sows is associated with hunger and restriction of foraging behavior.

To ensure animal welfare, we need to enhance positive feelings and minimize negative feelings of animals. Animal production systems should provide animals opportunities to perform natural behavior, especially affective behavior. To encourage pigs performing affective behavior, two things are important. One is freedom of

movement, and another is environmental enrichment. With gestation stalls, freedom of movement becomes an issue. In contrast to gestation stalls, group housing provides gestating sows freedom of movement, which reduces frustration of the animals. Sows in group housing can choose the micro-environment to meet their individual needs, have less stereotypies, and usually maintain better physical conditions, such as stronger legs, and less lameness. As environmental enrichment, straw-bedding provides a comfortable bed for pigs to lie on, which reduces lameness, injuries and abrasions. Straw can also stimulate pigs to perform affective behavior. With straw bedding, pigs increases straw-directed behaviors such as rooting, explorative and playing behavior, and reduces abnormal behavior such as tail-biting. For farrowing sows, straw allows the sows to build nest. However, straw bedding may be not applicable to every farm, depending on manure handling system, availability and cost of straw.

In summary, animal welfare means function well and feeling well. Animal's feelings can be assessed by behavior, especially affective behavior. Restriction of affective behavior is associated with development of abnormal behavior, which compromises welfare. As freedom of movement and environmental enrichment encourage animals performing affective behavior, they should be considered in the design of production systems to ensure welfare.

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