Module 11
Livestock Welfare Assessment (Part 2)
Student Activities

Questions

1. The Welfare Quality® project framework provides us with an evidence-based approach to assessing the welfare of animals within certain farming systems. Identify the four main welfare areas and their 12 criteria within this assessment framework.

(8 marks)

1. The area of good feeding, with the two criteria of:

   - free from prolonged hunger

   - free from prolonged thirst

2. The area of good housing, with the three criteria of:

   - comfort around resting

   - ease of movement

   - thermal comfort

3. The area of good health, with the three criteria of:

   - free of physical injuries

   - free of disease

   - should not suffer pain caused by procedures

4. The area of appropriate behaviour, with the four criteria of:

   - positive emotional state

   - expression of normal social behaviours

   - expression of species-typical behaviours

   - promotion of good human–animal relationships.

2. **Using the Welfare Quality® project framework area of appropriate behaviour, identify and describe the welfare issues which may exist for sows housed in any given system.**

    (4 marks)

    The restriction of important species-typical behaviours for pigs in any given system can lead to a range of negative emotions. Being unable to avoid aggression (from sows in adjacent stalls, from dominant sows in a loose-housed system, or from the stockperson) causes fear. The lack of substrate in some high-production systems means that pigs are unable to root around or build a nest prior to parturition, and this causes frustration.

3. **The types of welfare issues that pigs experience can vary in accordance with the types of system in which they are being managed. Identify the three main husbandry systems in which pigs are typically kept and, for each, list one welfare issue.**

    (3 marks)

    1. Stalls and tethers – stereotypic behaviour such as bar biting, discomfort, boredom, infections and system injuries.

    2. Loose housed – aggression/fear, discomfort and boredom if on concrete floors without straw bedding.

    3. Free-range/outdoor systems – heat/cold stress, sunburn, feet injuries and nose rings.

4. **Sows kept in stalls or in some loose-housing systems are typically moved into farrowing crates about one week prior to parturition and generally remain in this system until the piglets are weaned at three to four weeks of age.**

    a) **Explain why farrowing crates are used.**

    (2 marks)

    Sows have been selectively bred over many generations to give birth to large litters. The sows are large and can have leg weaknesses and foot disorders as a result of previously being confined in stalls. Farrowing crates are used to prevent piglets from being crushed by the sow during their first few weeks of life. The crates ensure that the piglets can move away from the sow into a safe area in which they are physically protected from being crushed.

    b) **Describe the main welfare issues that arise for sows when housed in farrowing crates.**

    (4 marks)

    The welfare problems for sows in farrowing crates mainly occur in areas 2 (Good housing), 3 (Good health) and 4 (Appropriate behaviour) of the Welfare Quality® project framework. Housing comfort is restricted as sows have little room to move, they cannot turn around, and inadequate bedding substrate may be provided in the crates. Health is also a problem with the farrowing crate because restricting sows' movement can increase the likelihood

of dystocia. Sows in farrowing crates are also at greater risk of developing urinary tract infections. In terms of appropriate behaviour, there is strong scientific evidence that sows are as motivated to build a nest as to eat in the 36 hours prior to farrowing. However, nesting behaviour is not possible in farrowing crates because of the lack of space and the lack of substrate for nesting. A further negative welfare aspect is that sows in a farrowing crate may be unable to bond normally with their piglets.

5. **Piglets are generally weaned from the sow aged three to four weeks, and in some cases as early as two weeks old in particularly high-production systems. Describe the synergistic/interdependent welfare issues that may arise at the time of weaning in terms of the health and positive emotional state of piglets in relation to their diet, physical and social environments.**

(3 marks)

Weaning piglets from the sow early may reduce the risk of piglets contracting diseases from the sow. However, weaning pigs at a relatively early age involves them undergoing a sudden shift in their diet from suckling to solid food, so diarrhoea is a common welfare issue in high-production systems. At the same time piglets may experience negative emotional states in association with the abrupt loss of maternal contact and mixing with other pigs in new and barren environments, which may in turn increase their susceptibility to enteric disease.

6. **Piglets may undergo various procedures that are considered to be necessary but painful. Identify three painful procedures and explain the purpose and the associated welfare issues of each.**

(6 marks)

Painful procedures that piglets may undergo include teeth clipping, tail docking and castration, all of which are typically performed without anaesthetic or analgesia.

Teeth clipping is done because piglets have sharp canine teeth that can damage the faces of litter-mates and the teats of the sow. Tail docking is done to prevent tail biting as the piglets get older, as that behaviour can cause infection and spinal abscesses. Tails may be 'tipped', where just the tip is removed, or 'short docked', leaving a short stump. Various aspects of pig husbandry are suspected to contribute to an outbreak of tail biting, including barren environments (fully or partly slatted floors with no substrate) and high stocking densities, although tail biting may occasionally occur even in straw yards at low stocking densities.

Castration is typically performed to prevent 'boar taint', a strong characteristic flavour and odour that is caused by sexual hormones present in the meat of male pigs at slaughter. Not only do all of these procedures cause pain at the time and for some days after the procedure, but piglets may also find the handling and restraint associated with these procedures unpleasant.

7. **Growing pigs in high-production systems may be housed indoors on slatted floors or on a solid floor area with or without bedding substrates. Various welfare issues may arise in such a system.**

   a) **List the primary welfare issues for each of the areas of good feeding, good housing, good health and appropriate behaviour.**

   (9 marks)

   Potential welfare issues in the area of good feeding, with the two criteria of:

   - prolonged hunger if pigs compete for food

   - prolonged thirst if electronic watering systems fail.

   Potential welfare issues in the area of good housing:

   - high stocking density limits movement and causes a build-up of ammonia levels

   - high stocking density can lead to increased temperatures

   Potential welfare issues in the area of good health:

   - injuries associated with tail biting and/or fighting

   - disease in terms of respiratory health due to ammonia levels

   - joint/lameness problems and muscle weakness due to high growth rates and lack of bedding

   Potential welfare issues in the area of appropriate behaviour:

   - negative emotional states due to fear and/or anxiety associated with aggression between conspecifics or interaction with humans

   - opportunities for rooting behaviour may be limited where bedding substrates are not provided, and pigs may therefore experience behavioural frustration.

   b) **Briefly suggest how the occurrence of these welfare issues may be reduced by manipulating the husbandry system.**

   (3 marks)

   These welfare issues may be reduced by husbandry adjustments such as managing group size, ensuring there is a good alarm system on the water supply, and providing bedding that the pigs can root in.

8. **Laying hens may be housed in battery (or 'furnished') cages, barns, free-range or organic systems. Identify five primary welfare issues for laying hens, indicating the husbandry system in which these usually occur and why.**

   (5 marks)

   Any five of the following:

   - Force-moulting at the end of the laying cycle in order to maximise egg production per bird can take place in various high-production systems, though it is illegal in several countries.

   - Little ease of movement in battery systems due to lack of space or uncomfortable flooring.

   - Osteoporosis in all systems, due to genetic selection for high production.

   - Poor air quality in indoor systems.

   - Extreme of temperature in outdoor systems, leading to respiratory disease.

   - Pain associated with beak trimming, carried out in all except broiler systems.

   - Cannibalism is found in all systems, although it tends to occur less in caged systems than in barn or free-range systems.

   - Injuries associated with feather pecking in various systems due to large groups and thwarted opportunities for foraging behaviour.

   - Severe restriction of normal behaviour in battery cages, due to high stocking rates and barren cages.

   - Aggressive feather pecking, fear, stress and high mortality, failure to range in free-range and organic systems, due to large flock sizes or lack of cover on the range.

   - Restriction of perching, dust bathing and nesting behaviour in traditional battery cage systems.

9. **Describe the possible reasons for the occurrence of feather pecking in chickens.**

   (2 marks)

   No husbandry system accurately represents chickens' natural social structure, which allows chickens to be free to forage without being crowded. Hens would not normally live in very small, crowded groups as found in cages; and some free-range systems fail to provide adequate tree cover or representative group sizes. Therefore one of the reasons for feather pecking in any system may be lack of sufficient opportunity to forage. The birds may tend to redirect their foraging behaviour at each other or one bird in particular, by pecking, and group learning may in part explain an outbreak of this behaviour. This pecking can progress to cannibalism, with high levels of injury or death.

10.Identify the welfare inputs that can be changed in order to underpin the improvement of welfare within any given livestock system.

(3 marks)

The first welfare input that can be addressed is the husbandry system.

The second welfare input that can provide better animal welfare is the animal's genetics.

The third welfare input is the stockperson or farmer in terms of his/her knowledge, understanding and attitude.

In-class activity

Discussion

This discussion will focus on assessing and improving the welfare of livestock within a specific system of your choice (suggested time: 45 minutes).

Notes to lecturer:

In small groups or as a class, brief the students to identify potential welfare issues and prepare advice and guidelines for a farmer in order to help improve the welfare of his/her livestock. Choose from the following:

- sows in either single-stall, loose-housed or free-range systems

- growing pigs loose housed or in free-range systems either indoors or outdoors

- laying hens in either battery, furnished, barn, free-range or organic systems

- meat birds (broilers) in barn units.

To identify the primary welfare issues concerning the species in the system, focus on the following areas of welfare. Discuss these as a class (or, if in small groups, report back to the rest of the class).

1. The area of good feeding, with the two criteria of:

    - free from prolonged hunger

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    - ease of movement

    - thermal comfort

3. The area of good health, with the three criteria of:

    - free of physical injuries

    - free of disease

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   - promotion of good human–animal relationships.

Then, discuss the following principles in the context of how they can be used to improve the welfare of the species and system:

- farming system

- genetics

- stockperson

- incentives

- penalties.

Applied Learning Opportunity

Welfare assessment exercise (Repeated in Module 8)

Prepare a welfare assessment protocol and use it to conduct a welfare assessment for a group of animals within an animal production system that you can visit or are completing work experience with.

Students can complete this exercise individually or in groups.

Students will need to consider what they have learnt about the principles of animal welfare science and use this exercise as an opportunity to apply these principles and gain experience in-situ in assessing the welfare of animal species in the context of farming. Students will need to gain access to animals in order to complete this animal welfare assessment exercise.

The context

Students can choose to conduct their animal welfare assessment exercise by focusing on one of the following:

- One animal species in one situation or context

- One animal species in the same context in two different locations

- One animal species in two different systems

- Two animal species in one system

Notes to lecturer:

The use of animal-based measures (outcome measures) is thought to afford the clearest information about the actual welfare state of an animal in terms of their behaviour, health and physiology. However, it is also important to consider the aspect of the animal's environment (welfare inputs) that may also affect animal welfare, in terms of housing design and resources for example. Therefore students will need to evaluate the welfare of animals in each situation based on the animals' physical condition and behaviour in association with factors such as housing, nutrition, veterinary care, human-animal interactions.

The data sheet below contains an example of specific measures for use with dairy cattle. Depending on which species and context the students are assessing, they will need to adapt or develop the measures they are going to use.

Welfare assessment protocols, including that for Qualitative Behaviour Assessment(QBA), have already been developed for dairy cattle, beef cattle, veal calves, sows, fattening pigs, laying hens and broilers by the Welfare Quality® project (see the Welfare Quality® website for further details: www.welfarequality.net/everyone/43148/9/0/22)

Welfare assessment protocols are currently in development for sheep, goats, turkeys, horses and donkeys as part of the Animal Welfare Indicators (AWIN) project (see the AWIN website for further details: www.animal-welfare-indicators.net/site/index.php/work-package-1).

Welfare Principle	Welfare Criteria	*Example Measures for dairy cows*
Good feeding	Absence of prolonged hunger	*Body condition score*
	Absence of prolonged thirst	*Water supply*
Good housing	Cleanliness	*Cleanliness*
	Behaviours around resting	*Time needed to lie down % of animals colliding with housing equipment during lying down*
	Ease of movement	*Presence of tethering Access to outdoor loafing area and/ or pasture*
Good health	Absence of injuries	*Lameness score*
	Absence of disease	*Respiratory disorders Enteric disorders Reproductive disorders Other parameters*
	Absence of pain induced by management procedures	*Routine mutilations*
Appropriate behaviour	Expression of social behaviour	*Indices of agonistic behaviours*
	Expression of other behaviours	*Qualitative behaviour assessment*
	Good human-animal relationship	*Avoidance distance at the feeding place*
	Positive emotional state	*Avoidance distance in the home pen*

(from the **Welfare Quality® Assessment Protocol for cattle, available free online as a pdf from the Welfare Quality® website:** www.welfarequality.net/everyone/43148/9/0/22)

Encourage students to consider their findings and how they relate to any welfare criteria included in existing food quality assurance schemes standards or associated legislation.

During class time at a later stage of the term when the welfare assessments have been completed, try to encourage students to discuss, compare and contrast their findings (and what worked and didn't work) with other students/students groups, particularly if students have conducted welfare assessments on one animal species in a specific situation/context.