Animal Production
Level-III

Based on March 2018, Version 3 OS and June 2021, V1 Curriculum

Module Title: Complying with Animal Welfare Requirements

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LG #26	LO #1- Participate in animal welfare practices

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Determining elements of the industry animal welfare requirements
- Identifying hazards to animal welfare for work area.
- Determining critical control points for work area.
- Completing record keeping on animal welfare and quality products

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Determine elements of the industry animal welfare requirements
- Identify hazards to animal welfare for work area.
- Determine critical control points for work area.
- Complete record keeping on animal welfare and quality products

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the “Information Sheets”. Try to understand what are being discussed. Ask your trainer for assistance if you have hard time understanding them.
4. Accomplish the “Self-checks” which are placed following all information sheets.
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Information Sheet 1- Determining elements of the industry animal welfare requirements

1.1. Introduction

Welfare is the physical and mental well-being of an animal and can be influenced by the building in which it is kept.

Animal welfare means how an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if it is

- healthy,
- comfortable,
- well nourished,
- safe,
- able to express innate behaviour, and
- not suffering from unpleasant states such as pain, fear, and distress.

Good animal welfare requires disease prevention and veterinary treatment, appropriate shelter, management and nutrition, humane handling and humane slaughter or killing. Animal welfare refers to the state of the animal; the treatment that an animal receives is covered by other terms such as animal care, animal husbandry, and humane treatment.

1.2. Welfare requirements

Building design, construction and maintenance should all address the five freedoms that have come to define the ability of a system to provide good welfare.

The five freedoms are:

- Freedom from hunger and thirst – by ready access to fresh water and a healthy diet
- Freedom from discomfort – providing an appropriate environment that includes shelter and a comfortable resting area
- Freedom from pain, injury and disease – by prevention or rapid diagnosis and treatment

- Freedom to express normal behavior – by providing sufficient space, facilities and company of the animals' own kind
- Freedom from fear and distress – by ensuring conditions and treatment that avoid suffering

Good design will support good health and welfare to the financial benefit of the farm business. Adequate stocking densities for feeding, drinking, loafing or lying down will all impact on positive health and performance. Surfaces and materials that provide adequate drainage, control wind speed, minimize sharp edges, provide non-slip floors, and are easy to clean, will all contribute.

The five freedoms can be applied to assess current and planned buildings to see where improvements can be made.

1.3. Principles of Hazard Analysis Critical control point (HACCP)

HACCP focuses on preventing hazards in the livestock production, not on catching them when it's too late

The seven principles of HACCP adapted to livestock production are as follows (Cullor, 1997):

- Draw detailed descriptions of the production process using flow charts. (Figure 1)
- Identify and evaluate potential hazards and risks related to the hazards during the production process.
- Determine critical control points (CCPs) in the production process where such risks can be controlled.
- Specify when the CCPs are under control by setting standards, criteria, and tolerances (limits).
- Design an on-farm monitoring system involving CCPs to check whether all specifications are being met.
- Determine corrective actions for events where CCPs exceed their tolerances (limits).

- Verify the plan using additional information or actions.

1.4. Work instruction

Work instructions are an important component of an effective management system. Work instruction:

- provide detailed written task instructions,
- reduce risk and serve as an effective training tool,
- leading to improved animal welfare outcomes, product quality and operator safety.

The methodology adopted in the development of the work instructions was based on identifying and addressing the critical components of the standard operating procedures (SOPs).

Work instructions that include the use of pictures with fewer words provide a very effective solution to potential problems with language and lead to more consistent training and assessment. The agreed format was a series of pictures used to depict a specific task, with documented steps listed alongside

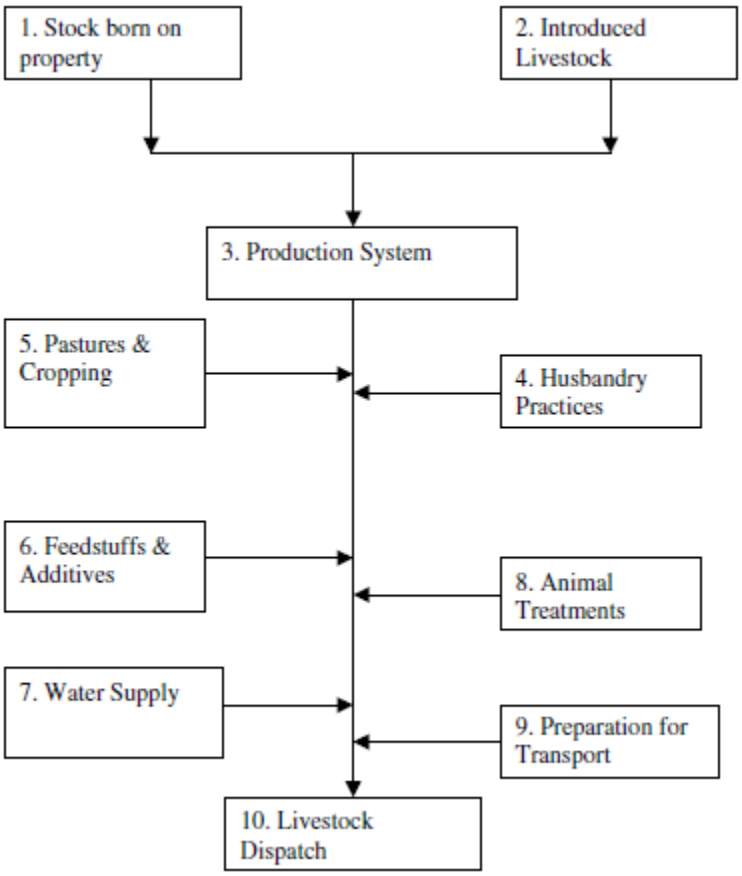

Figure 1: Overview of livestock production processes chart

1.5. Good management practices in animal welfare

The following provides on the good management practices, including:

- Genetics and breed selection,
- Animal husbandry, and
- Housing systems.

1.5.1. Genetics and breed selection

- Breeds should be selected for good skeletal and cardiovascular health, low aggression, and suitability for both the environment/ climate and the system in which they are bred.
- Breeding objectives should be assessed not only by production characteristics, but also by rates of injury, disease, and mortality in both breeding stock and

offspring. It remains important to discourage breeding selection targets dominated by production traits.

- Animal breeds or strains chosen should be adapted to the local climate, diseases, parasites, and nutrition

Animal Health

- Animals must be maintained in good body condition and remedial action (veterinary attention, improved nutrition, or husbandry) taken when in poor condition, or when there are signs of significant distress, ill-health, disease, or injury.

Signs of ill health in livestock may include:

- ✓ reduced food and water intake,
- ✓ reduced production,
- ✓ changes in the nature and level of their activity,
- ✓ abnormal condition, or
- ✓ changed physical features (such as lameness).

- Animals should be periodically checked for the presence of parasites, and any corrective treatment deemed necessary to prevent distress and suffering should be administered as soon as possible.
- Any sick or injured animals should be treated or cared for to alleviate pain and distress as soon as practically possible, including being isolated or humanely destroyed if necessary.
- Animals should be confirmed dead before disposal, and any still alive should be euthanized immediately. Dead animals should be removed promptly and disposed of appropriately.
- Veterinary care should be available at all times and medications and treatments given in accordance with advice and instructions. Good record keeping will assist with managing health and disease problems. A preventative health program should be established in consultation with a veterinarian. External audits on animal health are encouraged

1.5.2. Husbandry practices

- Animals should be handled using low-stress methods, equipment, and facilities that facilitate calm animal movement.
- Alternatives should be used to routine management practices that cause pain (e.g., dehorning/disbudding, branding, castration, tail-docking, beak trimming), or effective pain relief should be provided. Successful alternatives to painful procedures include, for example, providing straw or other manipulable materials to fattening pigs to reduce tail biting. Where painful procedures cannot be avoided, they should be carried out by a competent and trained operator.

Stockmanship

- There should be a sufficient number of trained and well- motivated personnel proficient in good stockmanship to maintain animal health and welfare, and ensure that the physical, health, and behavioral needs of animals are met. Stock personnel should not be cruel and should at all times endeavor to avoid causing pain, suffering, or distress to animals.
- Stock personnel should be skilled at handling, preventing, and treating illnesses and diseases, and caring for affected animals, including minimizing aggression. Knowledge of the normal behavior and function of stock is essential and individuals should be able to recognize early signs of ill-health, injury, disease, or distress requiring prompt remedial action
- Staff should be properly trained in humane destruction methods and when to apply them, and should be supplied with the required equipment.
- Animals in intensive systems should be inspected at least daily, or more regularly under circumstances that could affect welfare (e.g., dietary changes, disease outbreaks).
- On-farm surveillance needs particular attention. Its adequacy should be assessed by reviewing the frequency and duration of the checks performed, as well as the level of attention given to individual animals.

- Ongoing professional training programs should be available to stock personnel, and the development of such programs should be encouraged so that a culture of caring and responsible planning and management is developed.
- Stock managers and handlers should have access to a disaster response and recovery plan (e.g., failure of feed or water supply, electricity supply, structural damage, fire or flood).

Feed and water

- Animals should receive a daily diet adequate in composition and quantity, and containing appropriate nutrients to maintain good health, meet their physiological requirements, and avoid metabolic and nutritional disorders. Feed should be palatable and free of contaminants, molds, and toxins.
- Food and water requirements vary with feed composition, physiological state, stage of growth, size and body condition, pregnancy, lactation, exercise and activity, and climate. Access to feed should be at intervals appropriate to the physiological needs of the animals, and at least once daily. Animals should have an adequate daily supply of water that is palatable and not harmful to their health.
- Food and water, including automated feeding and watering systems, should be provided in such a way that all animals have an opportunity to feed or drink without undue competition (including intimidation, bullying, and aggression) likely to cause injury or distress. Feeding and watering systems should be designed, constructed, placed, and maintained to prevent contamination or spoiling, and to minimize spillage.
- Animals on highly concentrated diets may also require access to bulky or high fiber feed to satisfy hunger. Medicated or enriched food and water should only be used on professional advice.
- Reserves of food and water should be maintained to allow for interruption to supply

1.5.3. Housing systems

- Animal accommodation should be designed, constructed, and maintained to allow all animals space to stand, stretch, turn around, sit, and/or lie down comfortably at the same time.
- Accommodation should allow all animals to directly interact with herd or flock mates, unless isolated for veterinary or nursing reasons.
- Stocking densities should be low enough to prevent excessive temperatures and humidity; competition, stress, aggression between animals, and abnormal behavior; and to enable good litter management.
- Each operation should have strategies to prevent overheating and excessive
- cooling.
- Animals should be protected from abrupt temperature fluctuations and cold drafts.
- All animals should have access to a clean and dry place within the confinement
- area. Floor litter must be kept free of excessive moisture and be loose and
- friable in the case of broiler chickens.
- All surfaces and flooring should be non-slip, without sharp projections or
- edges likely to cause injury, and provide for the animal to bear weight on
- the entire sole of the foot.
- Housing should be constructed of fire-resistant materials, and electrical
- and fuel installations planned and fitted to minimize fire risk. Firefighting
- equipment and smoke detectors should be installed with sufficient exits
- to enable evacuation of the building in an emergency. There should be
- sufficient drainage to protect animals from flooding.
- All automated systems supplying food and water, removing waste, and controlling temperature, lighting, and ventilation should be checked and maintained regularly, and backup systems should be available in case of failure.
- Natural or artificial light (of an intensity of at least 20 lux) should be available in all buildings for a minimum of eight hours daily, and there should be a period of darkness sufficient to allow proper rest.

- Air quality should be maintained by minimizing transmission of airborne infectious agents and preventing the buildup of noxious or harmful waste gases, and minimize dust particles.
- Effluent and waste should not be allowed to build up to the extent that accumulation leads to discomfort and compromised welfare.
- Animals should be protected from predators, vermin, and excessive noise.
- Animals with access to, or living outdoors should have access to shade and shelter.

Transport

- Facilities for loading, transporting, and unloading should be designed, constructed, and maintained to permit proper handling of animals and minimize risk of injury.
- Catching, handling, and loading should be carried out quietly and confidently by trained and competent personnel, and animals should not be inverted when handled.
- Electric goads or prods should not be used when catching, loading, unloading, or moving pigs. Pigs should be moved with a flat “pig board” rather than with a stick.

Slaughter

- Prior to slaughter, proper handling techniques, and lighting, space, and ventilation should be used to keep the animals calm.
- Holding facilities should protect animals from adverse weather, have adequate and uniform lighting, sufficient space to allow animals to stand up and lie down, be well ventilated and drained, and be free from smooth floor surfaces and sharp protrusions

Self-check 1	Written test

Directions: Answer all the questions listed below.

1. Explain animal welfare? (10 points)
2. List the five animal freedoms? (10 points)
3. List the seven HACCP principles adapted to livestock production (7 points)
4. Explain work instruction (6points)

Note: Satisfactory rating - 33 points Unsatisfactory - below 33 points

You can ask you teacher for the copy of the correct answers.

Information Sheet 2- Identifying hazards to animal welfare for work area

Many aspects of animal production are at risk from biological, chemical (including radionuclide) and physical agents. These agents may enter food-producing animals or animal products through a wide variety of exposure points in the food chain, with consequent potential risks for consumers.

Hazards are categorized as:

- physical,
- chemical, and
- biohazards

Physical hazards

Physical hazards are physical objects introduced into livestock production that may cause injury, but seldom death.

Chemical hazards

A wide variety of chemicals may be used in livestock production. On the farm, chemicals of concern are:

- organophosphate pesticides,
- growth-promoting hormones,
- antibiotic residues, additives, and
- naturally occurring toxins (i.e., aflatoxins).

Biohazards

Biohazards include:

- pathogenic bacteria,
- fungi,
- viruses,
- parasitic agents, and
- infectious materials

Self-check 2	Written test

Directions: Answer all the questions listed below.

1. What are physical hazards (2 points)

2. What are the chemical hazards (2 points)

3. What are the biological hazards (2 points)

Note: Satisfactory rating - 6 points Unsatisfactory - below 6 points

You can ask you teacher for the copy of the correct answers.

Information Sheet 3- Determining critical control points for work area.

Grandin (2004) has outlined some of the CCPs that may be used in monitoring animal welfare in the development of an HACCP-based animal-welfare auditing scheme that includes, for example:

- type of housing;
- quality and functionality of euthanasia equipment; and
- access to functional and well-maintained water and feeding equipment.

Critical control points, CCP's, are the pivot of the HACCP-plan. They refer to the hazard of concern, should be measurable in the production process and ascertain that control of the hazard is feasible. It should also be coupled with standards and tolerance levels, while control should lead to elimination or reduction of the risk. An example of a CCP is the temperature of the rinsing water for the milking machine with the objective of cleaning the milking equipment without leaving risks for contamination of the system: standard level 80° Celsius with tolerance of 2 degrees.

For example, the CCP for purchasing cattle:

- do not purchase cattle with an unknown origin and unknown health status;
- purchase a cow ask for a health certificate or
- do a pre-test before entry into the herd.

A table listing the main agents (hazards) that may have an adverse effect on a farming system and indicating the corresponding control points is presented in table 1

Table 1: Livestock welfare hazards and their control points

Hazards	**Control points**
Biohazards	
	• Sources of animals (horizontal and vertical transmission) • Sourcing of breeding stock • Breeding procedures • Semen and embryo quality

Introduction of pathogens and contaminants	• Bedding • Feed and water • Records of acquisitions and animal movements • Health and hygiene of visitors and personnel • Contact with other animals • (including wildlife/rodents/insects, etc.) • Vehicles/clothing/instruments/equipment • Infected/contaminated carcasses, tissues or secretions
Microbial and parasitic infections on pastures and paddocks	• Pasture management • Microbial/parasite diagnosis
Airborne infections and contaminations	• Farm location • Animal housing and ventilation • Population density
Waterborne infections and infestations	• Water quality • Effluent management • Watering equipment
Chemical hazards	
Chemical contamination of environment, feed and water	• Farm location • Animal movement • Use of agricultural chemicals • Feed and water quality • Equipment and building materials • Hygiene practices
Toxins of biological origin (plants, fungi, algae)	• Feed, pasture and water quality • Farm location • Animal movements • Feed production, storage and transport
Residues of veterinary medicines and biologicals (incl. medicated feed and	• Treatment of animals • Sales and prescription control

water)	• Record keeping • Residue control • Quality of feed and water
Physical hazards	
Broken needles and other penetrating objects.	• Treatment of animals
Injuries	• Farm location • Infrastructure • Population density • Animal handling • Construction and equipment
Ingestion of dangerous/harmful objects	• Farm location • Source of feeds and water • Record keeping • Construction and equipment • Infrastructure

Self-check 3	Written test

Directions: Answer all the questions listed below.

1. List some of the CCPs that may be used in monitoring animal welfare in the development of an HACCP-based animal-welfare auditing scheme (6 points)
2. List the CCP for purchasing cattle (6 points)
3. List the control points for microbial and parasitic infections on pastures and paddocks (4 points)

Note: Satisfactory rating - 16 points Unsatisfactory - below 16 points

You can ask you teacher for the copy of the correct answers.

Information Sheet 4- Completing record keeping on animal welfare and quality products

Records must be kept to demonstrate that the HACCP system is operating under control and that appropriate corrective action has been taken for any deviations from critical limits. This will provide evidence of safe product manufacture.

When a problem arises in an enterprise, be it a disease, a chemical hazard issue or a physical safety matter, record keeping is central to any effort to trace the source of the problem and eliminate it. Hence, as far as is practicable, farmers should keep records of:

- All animal populations on the farm (groups or individuals as relevant).
- All animal arrivals, including their identification marks or devices, origin and date of arrival, to ensure that movements of incoming animals are traceable to their source.
- Movements of animals around the enterprise.
- Changes to feeding or health regimes, and any other management changes that may occur.
- Origin and use of all feeds, drugs, disinfectants, herbicides and other consumable items used on the farm.
- Known diseases/infections, diseased/infected animals and mortalities, as far as possible giving details such as dates, diagnoses (where known), animals affected, treatments and results

Self-check 4	Written test

Directions: Answer all the questions listed below.

1. Why you keep records? (2 points)

2. List the records the farmers should keep (5 points)

Note: Satisfactory rating - 7 points Unsatisfactory - below 7 points

You can ask you teacher for the copy of the correct answers.

LG #27	LO #2- Follow standard operating procedures

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Implementing standard operating procedures.
- Reporting non-conformance to supervisor.
- Taking corrective action.

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Implement standard operating procedures.
- Report non-conformance to supervisor.
- Take corrective action.

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
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back to “Operation sheets”.

Information Sheet 1- Implementing standard operating procedures

1.1. Introduction

Standard operating procedures or SOP's are written guidelines that specifically describe how to complete various tasks on the farm. They make it possible for different people to always complete the same tasks consistently and safely. In addition, they make for better future decision-making or investigation into how to improve the processes on the farm. SOPs should be developed based on fundamental principles of good management.

1.2. Benefits of SOPs

- A guide for relief workers filling in for vacations, illness or turnover.
- A reference for employee training, cross-training and retraining.
- Less chaos and confusion when employees leave.
- Consistency. A job is performed correctly every time.
- Approved procedures that reduce the risk of job failures and interruptions.
- A basis for effective performance evaluation.
- Improved acceptance of practices because people support what they help create.
- A means for everyone to think through the whole process of a task.
- A statement of who does what, where, when, why and how.
- Legal protection since a detailed process is documented in print.
- Reference document in accident investigations.
- An opportunity to build unity around attainable standards and goals with procedures to achieve them.
- An evaluation of labor efficiency and procedural correctness.
- A checklist for co-workers to observe performance and reinforce it if it's correct.
- An aid in writing job descriptions and identifying skill requirements

Procedures for which you might need sops and protocols:

- Tagging Branding

- Castration
- Vaccination
- Feeding
- Breeding
- Restraint
- Calving Management
- Dehorning
- Treatments
- Implanting
- Transporting
- Moving & Handling

See the example below:

Squeeze Chute Safety Standard Operating Procedures

SOP number ___1____

Written by __The Processing Team

Date effective__7/1/2008_____

Last modified__6/15/2008_____

Task description

Location: Covered cattle working area.

No. of employees: _2_____.

Skill level: Only employees trained on squeeze-chute safety may operate the chute. They may require assistance from other. The following employees are qualified:

Dusty, Lefty, Seamus.

Equipment and supplies: Chute, movable panels, toolbox, power cord.

Result expected:

- Work cattle through chute quickly, effectively, safely
- Prevent injuries to people and cattle: contusions, cuts, abrasions, and broken bones
- Identify chute malfunctions before using

Protocols:

- Prior to using the chute, establish a communication system to safely coordinate employee actions for loading and unloading livestock into the chute with employee operation of chute hydraulics and mechanics.
- Prior to use, inspect the hydraulic hoses and fittings for defects or leaks and assure they are securely attached at connection points. Examine and test levers, latches, and
- moveable chute parts to assure they are not damaged and are functioning properly. Tighten loose bolts and nuts.
- If the chute fails the pre-use inspection, notify your supervisor and remove the chute from service by attaching a red tag that states “DO NOT USE.”
- Do not wear loose clothing or jewelry in the vicinity of the squeeze chute. Tie back long hair or wear under cap or hat.
- As necessary, wear boots, gloves, long pants, and eye and head protection when using the chute.
- Keep the work area clean and free of trip hazards.
- Avoid spooking livestock during handling operations.
- Be alert and aware of potential sudden changes in conditions when handling livestock.
- Keep feet, arms, hands, and fingers clear of gates and other moving hydraulic squeeze chute parts

Self-check 1	Written test

Directions: Answer all the questions listed below.

1. Define SOPs? (2 points)
2. List the benefits of SOPs? (15 points)
3. List the procedures for which you might need sops and protocols (13 points)
4. List the five essential components in a well-designed handling facility (5pts)

Note: Satisfactory rating - 30 points Unsatisfactory - below 30 points

You can ask you teacher for the copy of the correct answers.

Information Sheet 2- Reporting non-conformance to supervisor

2.1. Meaning of non-conformance

Nonconformance is an activity, attribute or document that fails to comply with established requirements and may lead to a condition having an adverse effect on quality, food safety, environment, operations or integrity.

2.2. Types of non-conformance

If nonconformances are identified during the audits, they are documented and corrective actions implemented immediately. Minor nonconformances must be addressed within 30 days from the receipt of the notice or within the time frame set by the farm manager. Major nonconformances must be addressed within 15 days from the receipt of the notice or within the time frame set by the farm manager.

- **Major nonconformance**: An activity or document that fails to comply with the livestock farm standard that affects product integrity. Examples include:
  - ✓ No state environmental permit
  - ✓ Not conducting internal and third-party audits annually
  - ✓ Willful abuse or neglect of an animal
  - ✓ Not giving vaccine or pharmaceutical injections in an approved location
- **Minor nonconformance:** An activity or document that fails to comply with the livestock standard that affects process integrity. Examples include:
  - ✓ Not correctly filling out logs
  - ✓ No documentation of completed training
  - ✓ No livestock quality assurance certification for employees

Self-check 2	Written test

Directions: Answer all the questions listed below.

1. What is mean non-conformance? (2 points)
2. List the types of non-conformance? (4 points)
3. Explain the major and minor non-conformances activities in livestock farm (8 points)

Note: Satisfactory rating - 14 points Unsatisfactory - below 14 points

You can ask you teacher for the copy of the correct answers.

Information Sheet 3- Taking corrective action

Establish the corrective actions to be taken when monitoring indicates that a particular CCP is not under control

Corrective action procedures and responsibilities for their implementation need to be specified. This will include action to bring the process back under control and action to deal with product manufactured while the process was out of control

In organic sow herds an important animal welfare problem like piglet mortality has to be controlled by preventative measures. A major cause of pre-weaning mortality in organic piglets is crushing by the sow, and risk factors for this are related to the design and dimensions of the farrowing hut, the quality of the bedding, disturbances from predators and other animals, sow condition as well as litter condition. Potential control points targeting piglet mortality could be related to the straw type and amount provided for bedding, timing of the introduction of the sow into the farrowing facility, litter size, and disease in the sow. Corrective actions could be related to:

- the provision of more high-quality bedding material,
- increased surveillance of sows with late introduction to the farrowing pen, and extra care to large litters and litters from sows with health problems.

Often CCP's are physical in nature, for which standards and tolerances can be defined, while in other cases such CCPs are more biological or managerial in nature for which strict standards and tolerances have not or hardly been defined. An example approach for the latter may be the CCP for purchasing cattle: do not purchase cattle with an unknown origin and unknown health status; if one desires to purchase a cow ask for a health certificate or do a pre-test before entry into the herd. The corrective action will be when the cow appears to be infected with disease X, either to treat the animal or to cull her.

Self-check 3	Written test

Directions: Answer all the questions listed below.

1. Why you take corrective action? (2 points)
2. What are corrective action taken in organic sow herd (4 points)

Note: Satisfactory rating - 6 points Unsatisfactory - below 6 points

You can ask you teacher for the copy of the correct answers.

LG #28	LO #3- Report problems that affect animal

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Recognizing potential or existing animal welfare.
- Identifying instances of problems of animal welfare.
- Reporting variation and potential problems

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Recognize potential or existing animal welfare.
- Identify instances of problems of animal welfare.
- Report variation and potential problems

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
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Information Sheet 1- Recognizing potential or existing animal welfare

1.1. Animal welfare assessments and audits

An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behavior, and if it is not suffering from unpleasant states such as pain, fear, and distress.

Welfare assessments and audits are:

- Programs developed to help assure the public that farm animals are well cared for.
- Used in the dairy, swine, beef and poultry industries etc.
- Catered to measure specific animal welfare concerns for each species

1.1.1. Audit vs. Assessment

Audit = Often associated with certification and stricter criteria. Catered to niche markets.

Assessment = Not usually associated with certification and less strict criteria.

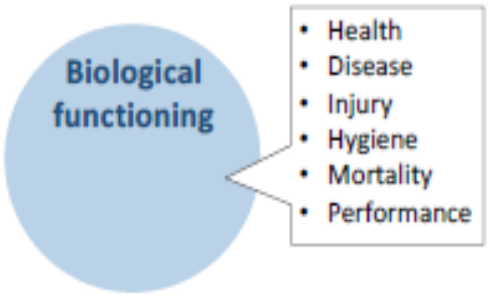


Figure 2. Biological function

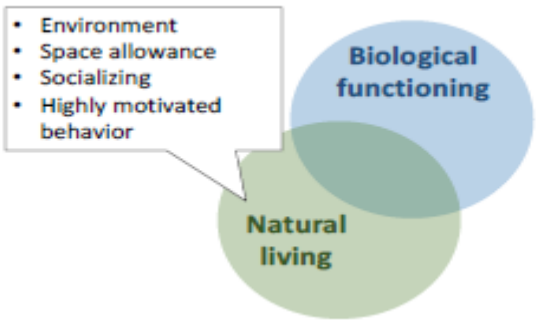


Figure 3. Natural living

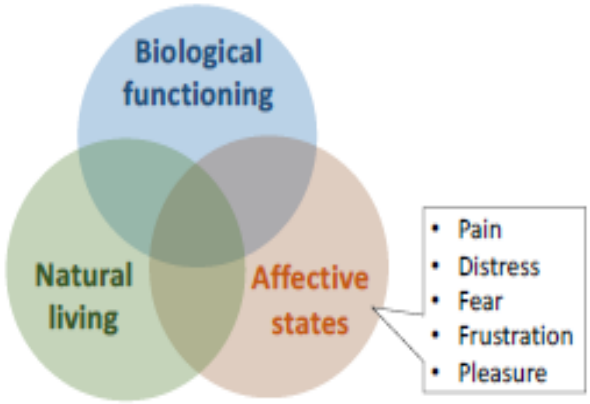


Figure 4. Affective states

1.1.2. Work flow chart

The animal welfare assessments and audits work flow process is depicted in Figure 5

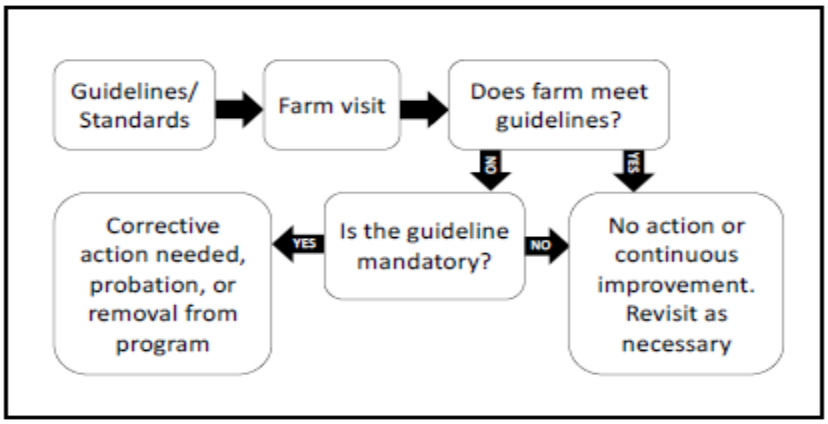


Figure 5: Animal welfare assessment and audit flow chart

Animal welfare assessment and audit team members include;

- Producers
- Veterinarians
- Industry reps
- Scientists
- Animal advocacy groups

The team will undertake the following measures in livestock farm:

- Animal based measures
- Resources based measures

- Protocol based measures

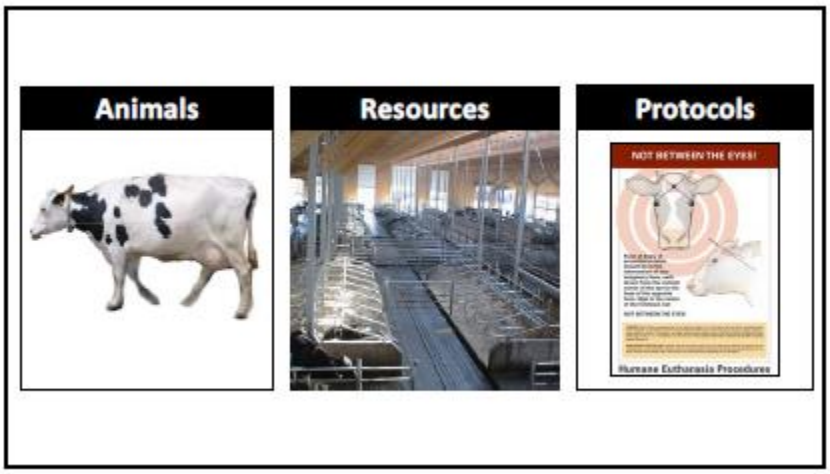


Figure 6: Welfare assessment and audit measures

- Animal-based measures for welfare assessment and audit**:**
  - ✓ Lameness/locomotion score
  - ✓ Body condition score
  - ✓ Hock/knee lesion score
  - ✓ Hygiene score
- Resource-based measures for welfare assessment and audit**:**
  - ✓ Access to feed and water
  - ✓ Protection from heat and cold
  - ✓ Comfort and cleanliness
  - ✓ Special needs housing
- Protocol-based measures for welfare assessment and audit:
  - ✓ Evidence of a Vet-Client-Patient-Relationship (VCPR)
  - ✓ Evidence of stockmanship training
  - ✓ Zero-tolerance policy for animal abuse
  - ✓ Written herd health protocols

Self-check 1	Written test

Directions: Answer all the questions listed below.

1. What is welfare assessment and audit? (3 points)
2. what are welfare assessment and audit measures (3 points)
3. list animal-based measures for welfare assessments and audits (4 points)
4. list resource-based measures for welfare assessments and audits (4 points)
5. list protocol-based measures for welfare assessments and audits (4 points)

Note: Satisfactory rating - 18 points Unsatisfactory - below 18 points

You can ask you teacher for the copy of the correct answers

Information Sheet 2- Identifying instances of problems of animal welfare.

2.1. Animal based welfare problems

The following animal-based measures indicate the problem of animal welfare

- Body condition score
- Lameness/locomotion score
- Hock/knee lesion score
- Hygiene score

2.1.1. Body condition score

2.1.1.1. Body condition score for dairy cattle

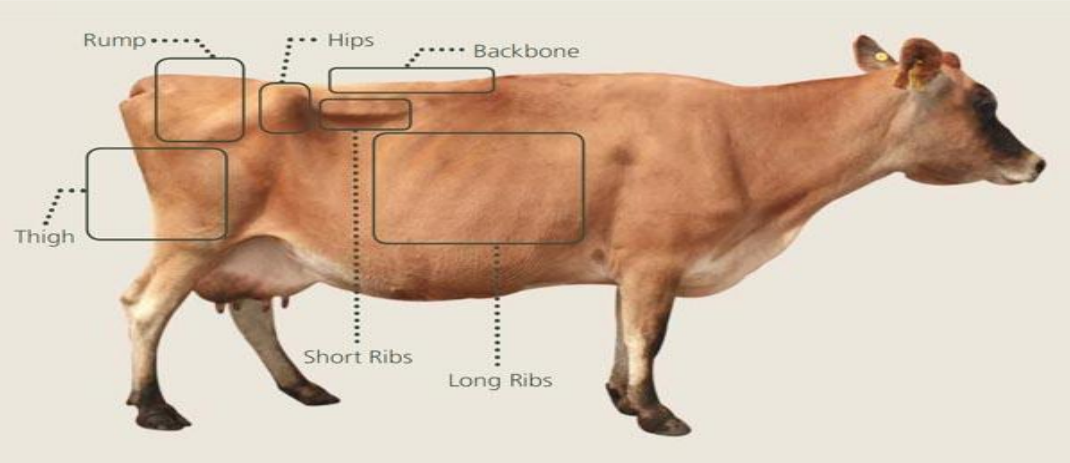


Figure 7(a): Labelled illustration of a dairy cow

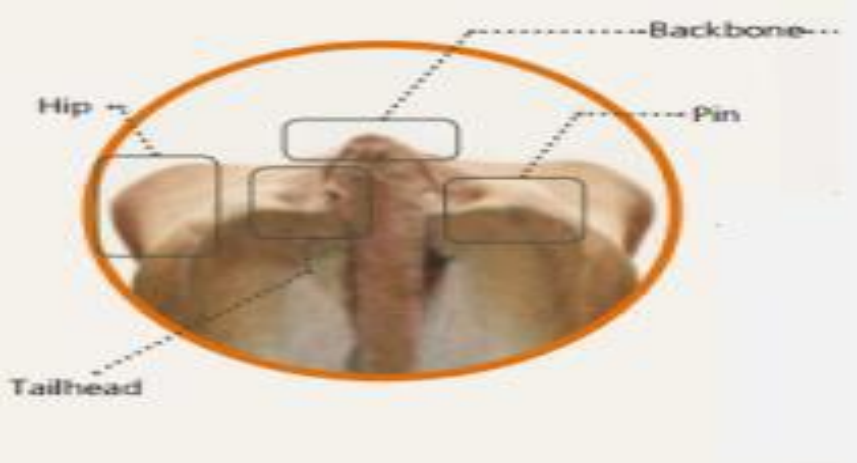


Figure 7(b): Labelled illustration of a dairy cow

BCS 1: (Emaciated- Red Zone)

Short ribs:

• Ends sharp to touch

• Loin prominent, shelf-like appearance

• Obvious scalloping over top and ends

Backbone:

• Vertebrae prominent in chine, loin and rump area

• Individual bones easily visible

Hook and pin bones:

• Sharply defined, very angular in appearance

• No discernable fat pad

Thurl (area over pelvis):

• Severe “V shaped” depression without fat cover

Tail head:

• Sunken and hollow on either side of tail head with obvious folds of skin

• Ligaments connecting pin bones to spine are sharply defined

• Vulva prominent.

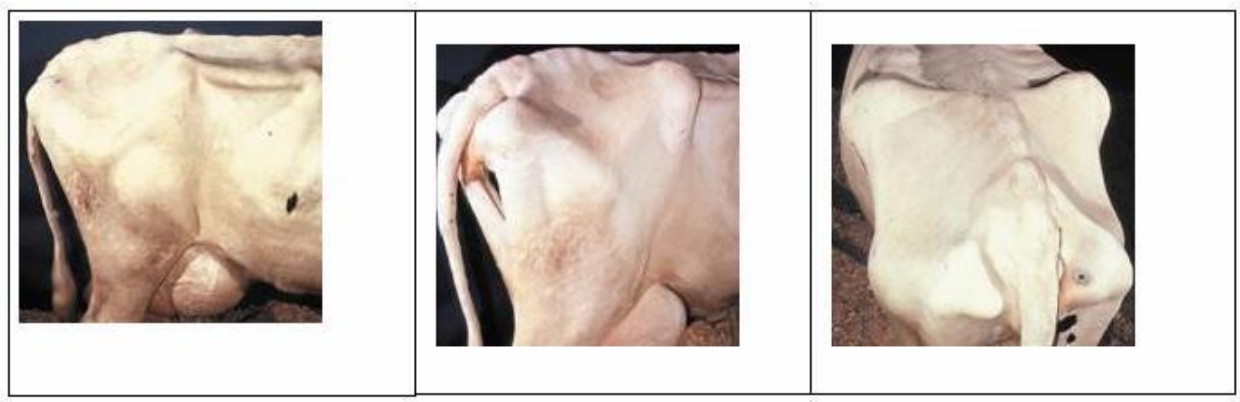


Figure 8: Dairy cow with body condition score #1

BCS 2: (Thin-Yellow Zone)

Short ribs:

- **Ends not as prominent as BCS 1, but can be felt**
- Edges easily felt, with slight fat cover, and slightly more rounded appearance
- Overhanging shelf effect less apparent

Backbone:

- Vertebrae in chine, loin and rump area, less visually distinct
- Easily feel individual vertebrae

Hook and pin bones:

- Bones still prominent, angular
- No fat pad palpable

Thurl (area over pelvis):

- Less severe “V shaped” depression
- Little tissue cover

Tail head:

- Both sides of the tail head are sunken and hollow
- Sharply defined ligaments connecting pin bones to spine

Figure 9: Dairy cow with body condition score #2

BCS 3: (Average- Green Zone)

Short ribs:

• Ends can be felt with moderate pressure

• Ribs appear smooth without noticeable scalloping

• Overhanging shelf effect much less apparent

Backbone:

• Vertebrae in chine, loin and rump area appear rounded

• Backbone visible, but individual vertebrae not distinct

Hook and pin bones:

• Visible, but smooth, with rounded appearance

• Fat pad palpable

Thurl (area over pelvis):

• Forms “U shaped” depression

Tail head:

• Both sides of tail head somewhat hollow, but skin folds not distinct

• Ligaments connecting pin bones to spine are rounded in appearance

Figure 10: Dairy cow with body condition score #3

BCS 4: (Heavy-Yellow Zone)

Short ribs:

• Ends can be felt with moderate pressure

• Ribs appear smooth without noticeable scalloping

• Overhanging shelf effect much less apparent

Backbone:

• Vertebrae in chine, loin and rump area appear rounded

• Backbone visible, but individual vertebrae not distinct

Hook and pin bones:

• Visible, but smooth, with rounded appearance

• Fat pad palpable

Thurl (area over pelvis):

• Forms “U shaped” depression

Tail head:

• Both sides of tail head somewhat hollow, but skin folds not distinct

• Ligaments connecting pin bones to spine are rounded in appearance

Figure 11: Dairy cow with body condition score #4

BCS 5: (Fat-Red Zone)

Short ribs:

• Ends can't be seen or felt

• No overhanging shelf effect

Backbone:

• Vertebrae in chine, loin and rump not visible

• Difficult to feel individual vertebrae

Hook and pin bones:

• Very round, buried (almost disappearing) in fat tissue

Thurl (area over pelvis):

• Appears flat

• Filled in between the hooks and pins

Tail head:

• Hollow filled in

• Areas on both sides of tail head buried in fat tissue

Figure 12: Dairy cow with body condition score #5

- Goals for body condition scores by stage of lactation:

  ✓ The dairy cattle code of practice provides recommended target BCSs during various stages of lactation:

Table 3: BCS during the various stage of lactation

Dry off	3.25 - 3.75
Calving	3.00 - 3.75
Early lactation	2.50 - 3.25
Mid-lactation	2.75 - 3.25
Late lactation	3.00 - 3.50
Growing heifers	2.75 – 3.25
Heifers at calving	3.25 – 3.75

- ✓ Cows should be at an ideal BCS at dry off and should be fed to maintain this condition until calving.
- ✓ Post calving (calving to 120 days) cows can be expected to lose 0.5 to 1 unit of BCS. Cows should not lose more than 1 BCS at any time or within a very short period of time.
- ✓ BCS should remain constant or begin to increase during mid-lactation. During late lactation cows should gain back the BCS lost during the post-calving period.
- ✓ Cows that are too fat at calving (BCS>4) are more prone to reproductive and metabolic diseases (e.g., difficult calving, retained placenta, cystic ovaries, uterine infections, ketosis, displaced abomasum, milk fever).
- ✓ Cows that are too thin at calving (BCS<3.00) may not have sufficient body reserves to support high levels of milk production. Cows that lose more than 1 BCS experience reduced fertility, ketosis, particularly if the loss is too rapid.
- ✓ Keep records. Identify animals that are too thin or overweight and consult with the feed specialist and/or veterinarian to evaluate possible causes and take corrective actions to improve the BSC of those animals.

2.1.1.2. Body condition scores for sheep

Table 4: Scales for body condition scoring of sheep.

Condition	Score	Description
Starving	0	Extremely emaciated and on the point of death. It is not possible to detect any muscle or fatty tissue between the skin and the bone.
Very thin	1	The spinous process is prominent and sharp. The transverse processes are also sharp, the fingers pass easily under the ends, and it is possible to feel between each process. The eye muscle areas are shallow with no fat cover.
Thin	2	The spinous process feels prominent but smooth, and individual processes can be felt only as fine corrugations. The transverse process is smooth and rounded, and it is possible to pass the fingers under the ends with a little pressure. The eye muscle area is of moderate depth, but has little fat cover.
Moderate	3	The spinous process is detected only as a small elevation; it is smooth and rounded and individual bones can be felt only with pressure. The transverse process is smooth and well covered, and firm pressure is required to feel over the ends. The eye muscle area is full, and has a moderate degree of fat cover.
Fat	4	The spinous processes can just be detected with pressure as a hard line between the fat-covered eye muscle area. The end of the transverse process cannot be felt. The eye muscle area is full, and has a thick covering of fat.
Very fat	5	The spinous process can't be detected even with firm pressure, and there is a depression between the layers of fat in the position where the spinous process would normally be felt. The transverse process cannot be detected. The eye muscle area is very full with thick fat cover. There may be large deposits of fat over the rump and tail.

2.1.1.3. Body condition scores for donkeys and mules

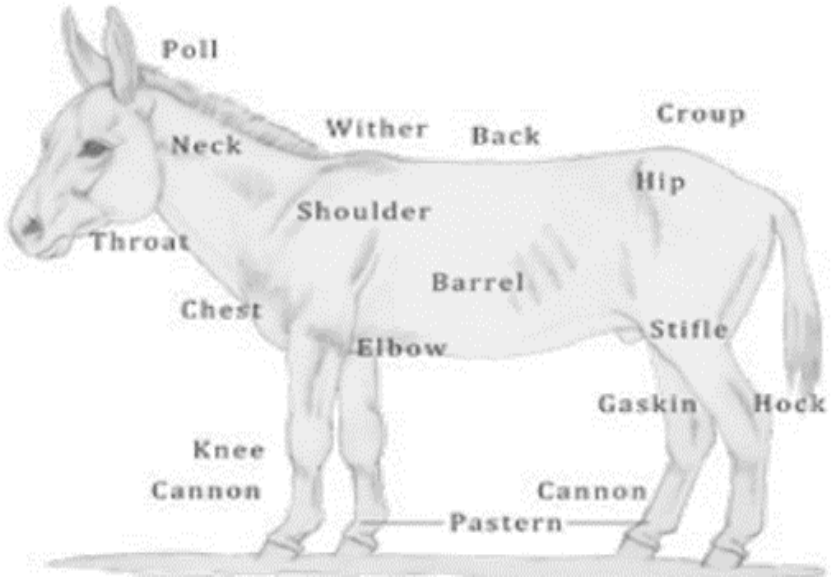


Figure 13: Labelled illustration of a donkey

Body condition score (BCS) 1:

Neck and shoulders:

• Neck thin, all bones easily felt

• Neck meets shoulder abruptly, shoulder bones easily felt, angular

Withers:

• Dorsal spine of withers prominent and easily felt

Ribs and belly:

• Ribs can be seen from a distance and felt with ease

• Belly tucked up

Back and loins

• Backbone prominent, can feel dorsal and transverse processes easily

Hindquarters:

• Hip bones visible and felt easily (hock and pin bones)

• Little muscle cover

• May be cavity under tail

Body condition score (BCs)- 2:

Neck and shoulders:

• Some muscle development overlying bones

• Slight step where neck meets shoulders

Withers:

• Some cover over dorsal withers

• Spinous processes felt but not prominent

Ribs and belly:

• Ribs not visible but can be felt with ease

Back and loins

• Dorsal and transverse processes felt with light pressure

• Poor muscle development either side midline

Hindquarters:

• Poor muscle cover on hindquarters, hip bones felt with ease

Body condition score (BCs)- 3:

Neck and shoulders:

• Good muscle development, bones felt under light cover of muscle/fat

• Neck flows smoothly into shoulder, which is rounded

Withers:

• Good cover of muscle/fat over dorsal spinous processes, withers flow smooth into back

Ribs and belly:

• Ribs just covered by light layer of fat/muscle, ribs can be felt with light pressure

• Belly firm with good muscle tone and flattish outline

Back and loins:

• Cannot feel individual spinous or transverse processes

• Muscle development either side of midline is good

Hindquarters:

• Good muscle cover in hindquarters, hip bones rounded in appearance, can be felt with light pressure

Body condition score (BCs)- 4:

Neck and shoulders:

• Neck thick, crest hard, shoulder covered in even fat layer

Withers:

• Withers broad, bones felt with firm pressure

Ribs and belly:

• Ribs dorsally only felt with firm pressure, ventral ribs may be felt more easily

• Overdeveloped belly

Back and loins:

• Can only feel dorsal and transverse processes with firm pressure

• Slight crease along midline

Hindquarters:

• Hindquarters rounded, bones felt only with firm pressure

• Fat deposits evenly placed

Body condition score (BCs)- 5:

Neck and shoulders:

• Neck thick, crest bulging with fat and may fall

to one slide

• Shoulder rounded and bulging with fat

Withers:

• Withers broad, unable to feel bones

Ribs and belly:

• Large, often uneven fat deposits covering dorsal and possible ventral aspect of ribs

• Ribs not palpable

• Belly pendulous in depth and width

Back and loins:

• Back broad, unable to feel spinous or transverse processes

• Deep crease along midline, bulging fat either side

Hindquarters:

• Cannot feel hip bones, fat may overhang either side of tail head, fat often uneven and bulging.

2.1.2. Lameness/locomotion score

Lameness scoring scale

1 = Normal gait: no limping

2 = Moderately Lame: limps, but places weight on limb

3 = Severely Lame: definite limp, does not place weight on limb

2.1.3. Hock/knee/neck lesion score and hygiene score

The injury scoring system is intended to simplify the evaluation of hock, knee and neck injuries of dairy cattle

2.1.3.1. Hock injury

Condition of the hocks can be an important indicator of the abrasiveness of the resting surface, stall design, and cow comfort.

Hock injury scoring chart:

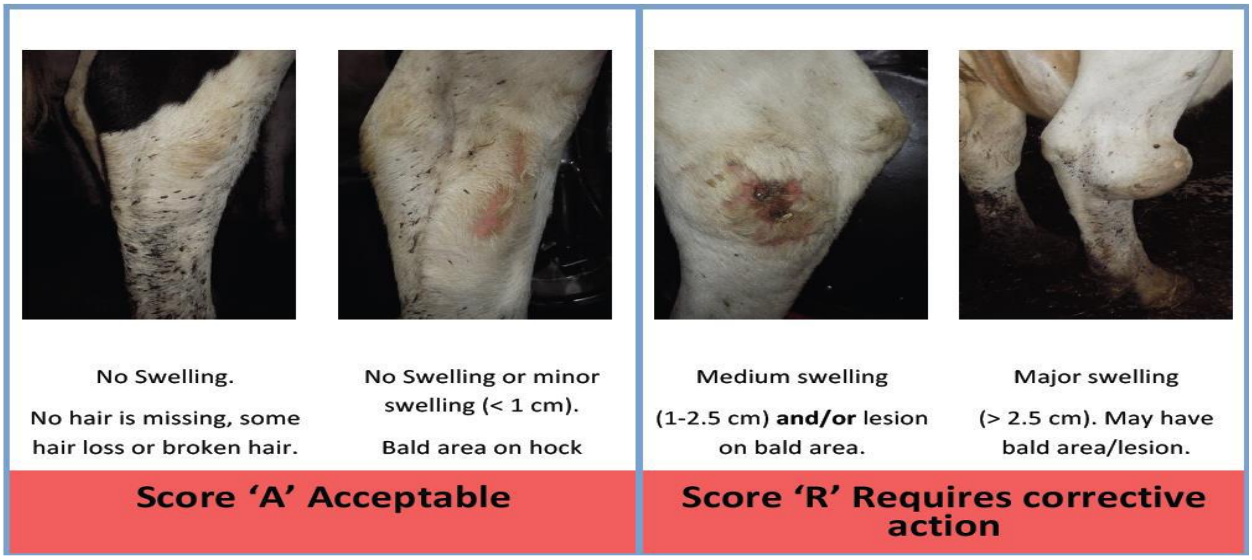


Figure 14: Hock injury

2.1.3.2. knee injury

knee health is an important indicator of cow comfort and the hardness of the resting surface floor.

Knee Injury Scoring chart:

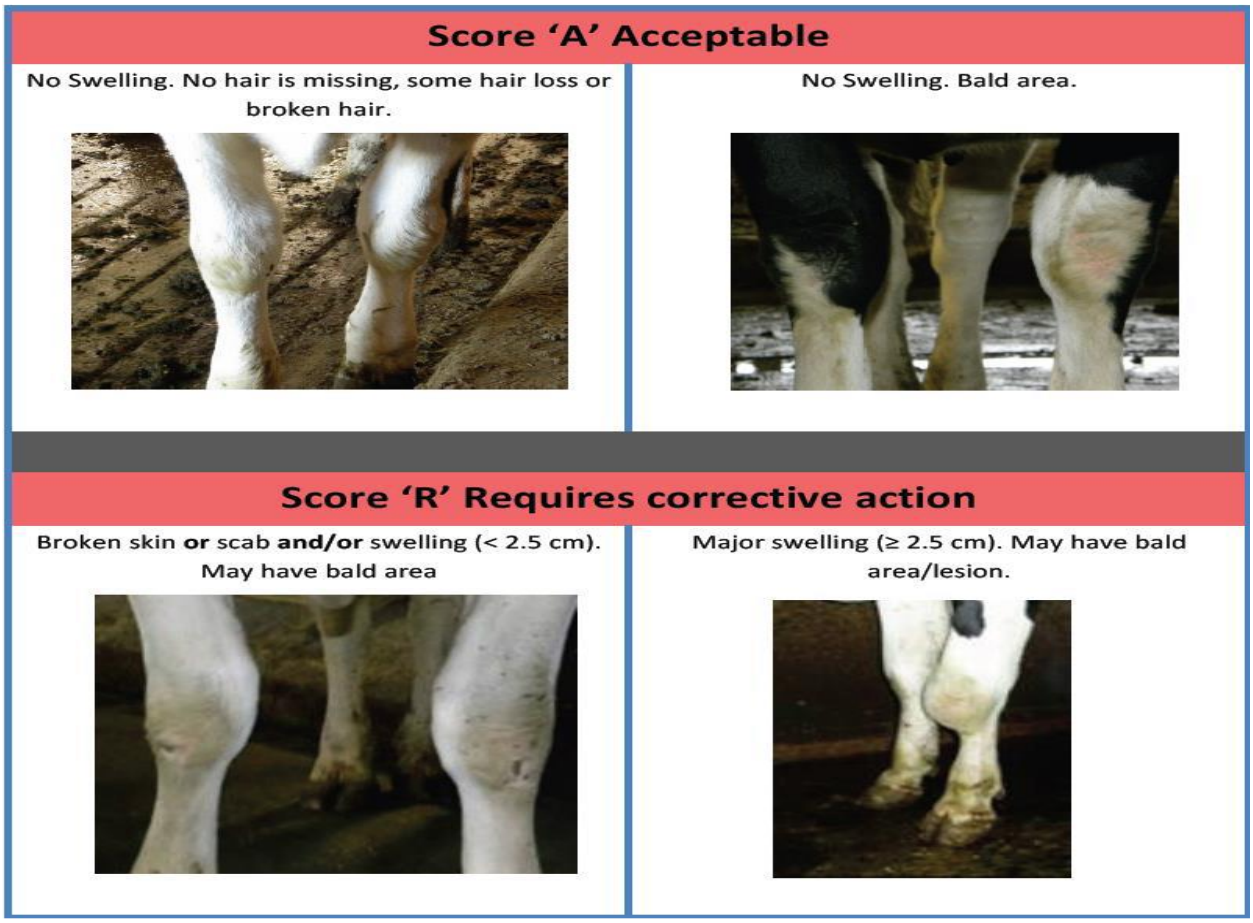


Figure 14. Knee injury

2.1.3.3. Neck injury

Neck injury is an important indicator of whether neck rail/chain is at the correct height/length and that the feed is consistently within easy reach for the animal.

Figure 15: Part of the neck in contact with neck rail or chain

Neck injury scoring chart:

Figure 16: Neck injury

Figure 17. Hygiene scoring

2.2. Resource-based animal welfare problems

The lack of following resource-based measures indicates animal welfare problems

- Lack of access to feed and water
- Exposure to heat and cold
- Lack of comfort and cleanliness
- Lack of special needs housing

Figure 18. Food and water

Figure 19. Protection from heat and cold

Figure 20. Comfort and cleanliness

Figure 21. Special needs housing

Self-check 2	Written test

Directions: Answer all the questions listed below.

1. List animal-based welfare problems (5 points)
2. List down resource-based animal welfare problems? (4 points)

Note: Satisfactory rating - 9 points Unsatisfactory - below 9 points

You can ask you teacher for the copy of the correct answers.

Information Sheet 3- Reporting variation and potential problems

3.1. Principles of good animal welfare

The four principles which are essential to safeguard and improve farm animal welfare:

- Good housing,
- Good feeding,
- Good health and
- Appropriate behaviour.

These complements and extend the so-called five freedoms and provide the solid platform needed to build the welfare quality assessment system and reporting the potential variation.

3.2. Criteria of good animal welfare

Within the above principles we highlighted twelve distinct but complementary animal welfare criteria. These underpin the welfare assessment systems that are being developed for cattle, pigs and poultry in welfare quality

- Animals should not suffer from prolonged hunger, i.e. they should have a sufficient and appropriate diet.
- Animals should not suffer from prolonged thirst, i.e. they should have a sufficient and accessible water supply.
- Animals should have comfort around resting.
- Animals should have thermal comfort, i.e. they should neither be too hot nor too cold.
- Animals should have enough space to be able to move around freely.
- Animals should be free of physical injuries.
- Animals should be free of disease, i.e. farmers should maintain high standards
- of hygiene and care.
- Animals should not suffer pain induced by inappropriate management, handling, slaughter, or surgical procedures (e.g. castration, dehorning).

- Animals should be able to express normal, non-harmful, social behaviours, e.g. grooming.
- Animals should be able to express other normal behaviours, i.e. it should be possible to express species-specific natural behaviours such as foraging.
- Animals should be handled well in all situations, i.e. handlers should promote good human-animal relationships.
- Negative emotions such as fear, distress, frustration or apathy should be avoided whereas positive emotions such as security or contentment should be promoted.

Any welfare variation from above should be reported to the supervisor

Protocol noncompliance is the failure to follow terms and conditions of an approved protocol including, but not limited to:

- Housing animals in unapproved facilities;
- Beginning research projects without concerned body approval;
- Wrongful/abusive physical or psychological treatment of an animal;
- Involvement of personnel not listed in an approved protocol;
- Changing analgesics or anesthetics without approval;
- Not following experimental timelines;
- Conducting unapproved procedures

Self-check 3	Written test

Directions: Answer all the questions listed below.

1. List the principles of good animal welfare (4 points)
2. List the criteria of good animal welfare assessment(12points)

Note: Satisfactory rating - 16 points Unsatisfactory - below 16 points

You can ask you teacher for the copy of the correct answers.

Operation Sheet 1– Undertaking body condition scoring for dairy cows

Objectives: to identify nutritional deficiencies and health problems of dairy cattle

Procedure:

1. Record the ID number of the animal on the cattle assessment record.
2. Refer to the Body Condition Scoring Chart in the information sheet Figure 8-12 to conduct the assessment.
3. Assess cows or status by tabulating scores. In particular, cows with a BCS equal to, or less than 2, are too thin. Cows with a BCS equal to or more than 4 are too fat.
4.Identify animals that are too thin or overweight. Consult with the feed specialist and/or veterinarian to evaluate possible causes and take corrective actions to improve the BSC of those animals
4. Record the results of the assessment in the herd health scoring record

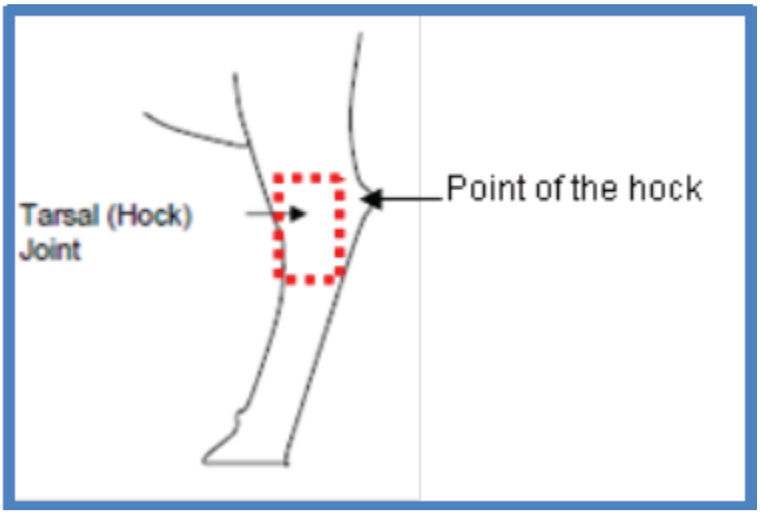
Operation Sheet 2– Conducting injury scoring for dairy cows

Objectives: to simplify the evaluation of hock, knee and neck injuries of dairy cattle

Procedure:

1. Hock injury scoring

- Score only the tarsal joint but not the point of the hock (see figure below).
- Additionally, use the Figure 13 in the information sheet



2. Knee injury scoring

- Score only the front of the knee (i.e. carpal joint). Use the figure 14 in the information sheet

3. Neck Injury Scoring

- Score only the neck crest (ears to withers). Use the figure 16 in the information sheet.

LAP TEST	Performance Test

Name…… ID…… Date……

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within **3** hours. The project is expected from each student to do it.

Task

- Undertake body condition scoring for dairy cows
- Conduct injury scoring for dairy cows.

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WEB ADDRESSES

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4. **http://www.grandin.com/welfare.audit.using.haccp.html**

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