

Transport of slaughter animals

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Slaughter animals require transport facilities to the abattoir that ensure that:

- soiling and cross-contamination with faecal material is minimized;
- new hazards are not introduced during transport;
- animal identification as to the place of origin is maintained; and
- consideration is given to avoiding undue stress.

Transport vehicles should be designed and maintained so that:

- animals can be loaded, unloaded and transported easily and with minimal risk of injury;
- animals of different species, and animals of the same species likely to cause injury to one another, are physically separated during transport;
- use of floor gratings, crates or similar devices limits soiling and cross-contamination with faecal material;
- where the vehicle has more than one deck, animals are protected from cross-contamination as appropriate;
- ventilation is adequate; and
- cleaning and sanitizing is readily achieved.

Source: FAO/WHO, 2004.

INTRODUCTION

The transport process is part of the series of events required to get the animal from farm to slaughter, which is usually referred to as pre-slaughter or ante-mortem handling. Pre-slaughter handling may be very stressful to animals and can lead to significant losses in the quality of the final product if carried out without the necessary care. Under very poor conditions animals may die. This can occur through overheating as a result of poor ventilation, particularly in poultry and pigs; through stress leading to heart failure; or through trampling and suffocation, especially in large cattle. Animals may suffer dehydration through lack of adequate water provision. They may suffer exhaustion or fatigue through prolonged food deprivation and the rigours of keeping their foothold. Slips, falls and bumping into sharp projections on the walls of pens, races or vehicles can lead to bruising and other kinds of trauma such as internal haemorrhages and broken bones. Trauma may also be caused by fighting between unfamiliar or non-compatible animals. This is especially a problem in pigs and adult cattle. The presence of horns can make the injuries considerably worse. Animals may suffer from the heat if they are not protected from strong sunlight. Pigs with white skins may suffer sunburn. Trauma leads to poor welfare and reduced carcass value, and can also damage hides and skins.

Stress can lead to the production of poor-quality lean meat. In pigs, relatively short-term stress may produce pale, soft, exudative (PSE) pork. As its name suggests, this is pale and unattractive in colour, and loses a large amount of water as drip or exudate. In all species, longer-term stress may produce dark, firm, dry (DFD) meat. This is particularly a problem in cattle, where it is often referred to as dark cutting beef (DCB). As well as having an unattractive appearance, it is more prone to bacterial spoilage than normal meat.

INSPECTION OF ANIMALS FOR FITNESS TO TRAVEL

For reasons of hygiene and welfare, animals must be fit to travel and to this end, they must be inspected by a competent person

immediately before loading. Animals suffering from contagious diseases can spread infection widely if transported. Animals that are ill or injured are not fit. Unfit animals include those that:

- are in pain, or would suffer pain if transported;
- cannot walk normally;
- are lame;
- have broken bones, or large or deep wounds;
- have prolapses of the rectum or uterus;
- are pregnant females near to the time of giving birth;
- have given birth in the previous 48 hours;
- are newborn or very young animals.

Preparation for transport or movement

Before transport, animals should be held in appropriate facilities where they have easy access to potable water and are protected from adverse weather. These facilities need to be well designed and carefully maintained to facilitate ease of movement and prevent injury to both animals and stock handlers. All facilities should have roofs to provide protection from rain, wind and sun. Outer walls should be solid in cold climates, but in hot climates may beneficially be constructed of open metal, wood or concrete rails to assist ventilation. The rails must be close enough to prevent animals getting their heads or legs trapped between them. For handling and moving pigs, solid-sided walls to a height of about 0.9 m are needed. The sides of cattle pens should be 1.6 m high. Floors must allow cleaning and be non-slip, for example by using textured concrete. Good drainage is essential to prevent pools of standing water that can distract animals, and so make them difficult to move, and can compromise hygiene.

Animals need enough space to rest.

Appropriate floor area allowances per animal are:

- cattle 3 m²
- sheep and goats 0.7 m²
- slaughter pigs (weighing up to 100 kg) 0.6 m²
- adult sows 1–1.5 m²

Adult bulls and boars should be individually penned. Individually penned animals must have enough space to turn around and lie down comfortably. The time for which animals are held and without food should be kept to a minimum commensurate with hygiene and welfare requirements. However, pigs should not be fed within four hours of loading since full

stomachs can make them travel sick and may increase the chance of them dying during the journey. Feed must be sufficient and provided in suitable mangers or troughs as appropriate. Incompatible animals must be kept in separate pens.

METHODS OF CATTLE TRANSPORTATION

The most appropriate methods of moving cattle are on hoof (Photo 5.1), by road motor vehicle (Photo 5.2) or by rail wagon (Photo 5.3). Moving cattle on the hoof (trekking) is suitable only where road and rail infrastructure does not exist, or when distances from farm to destination are short. This method is slow and fraught with risks to the welfare and value of the animals. Rail transport is useful for short-haul journeys where loading ramps are available at railheads and transportation is direct to the

PHOTO 5.1
Moving cattle on the hoof



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PHOTO 5.2
Large trucks for transporting cattle

destination. Road motor transport is by far the most versatile method of first choice and the most user-friendly. The remainder of this section primarily addresses road and rail transportation.

Journey lengths

Because transport is generally stressful to animals, transport times and journey lengths should be kept to a minimum and meat animals should be slaughtered as close to where they have been produced as possible. If the journey is prolonged, animals should be rested and watered, and if necessary fed, at intervals. Maximum appropriate journey times for every species are not well established. However, rest and water stops should be allowed at least every nine hours. This time may need to be reduced for young animals. Animals should be offered appropriate and sufficient feed at least twice a day and allowed sufficient time to digest it before the journey is continued. In very hot conditions, animals that are especially susceptible to heat stress, such as pigs, should be transported at night or in the cooler parts of the day. Vehicles need to be driven carefully, anticipating hazards and with gentle braking and acceleration, particularly on winding or poorly surfaced roads, to prevent the animals being thrown about, with the danger of injuries.

Loading and unloading

People handling animals should be skilled and conscientious stock handlers with an understanding of how to move animals using the principles of animal behaviour. Appropriate facilities should be available to avoid causing distress, injury or suffering to the animals and to protect human safety. Ideally, animals should not have to walk up or down ramps with slopes greater than 20° to the horizontal (1 in 2.75, or 4 in 11). It is better to use level loading docks, hydraulic loading platforms or hydraulically operated lifting decks on vehicles.

Pre-transport handling

Animals should be handled in such a way that they are subjected to minimum stress prior to transportation and are thus fit to travel with minimum risk of injuries. A rest period after mustering and handling before transportation is therefore essential. If mustering caused considerable physical exertion, it is desirable to feed, water and rest cattle close to the loading



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PHOTO 5.3
Rail trucks for transporting cattle

facility. Cattle that were exposed to unusual levels of contact with humans, dogs and motor vehicles should be provided with feed, water and rest for even longer periods.

Water and feed requirements

Deprivation of feed and water will compound the stress associated with transportation. However, if hungry and thirsty cattle consume large amounts of water and/or feed prior to travelling, then further stress may be caused. Some suggested feeding, watering and resting periods prior to loading are shown in Figure 5.1.

Shelter

Cattle should be protected from extremes of heat, cold and wind. In determining the need for shelter, environmental conditions, geographic location, breed and type, body condition and degree of acclimatization of cattle should be taken into account. Appropriate cattle shelter and handling facilities are discussed in Section 2.

Special cases

Injured or weak animals may be transported on veterinary advice. Where veterinary advice is not readily available, the decision may be made by an experienced person. It is preferable that cattle should not be allowed to become so weak that they are not fit for travel (Box 5.1). Animals that go down after limited exercise are not fit to travel.

Weakened cattle should be transported to their destination by the quickest, least stressful route. They should be given special protection against the extremes of weather. They should only be transported with cattle in a similar condition.

Supervision

The people responsible for the transport of cattle have legal responsibility for their care and welfare. Injuries and stress are most likely to occur during loading and unloading where facilities and handling practices are unsatisfactory. The loading procedure should be planned to allow adequate time for livestock to be loaded quietly and without causing them injury. Loading should be supervised by competent stock handlers who have a basic knowledge of the behavioural and physical needs of cattle. Supervisors should ensure that spectators or untrained assistants do not impede the smooth loading of animals. Unnecessary noise, harassment and force should be avoided.

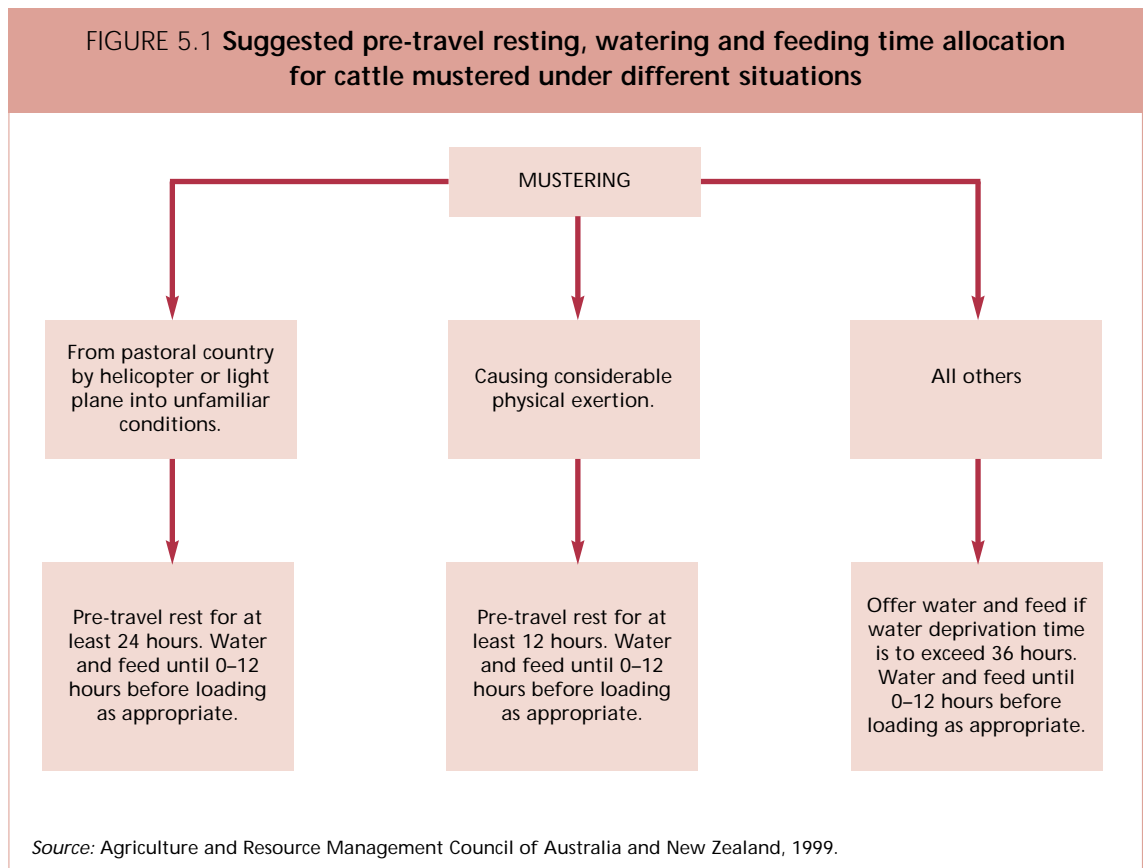
Cleanliness

Cattle should be loaded on to vehicles or railway wagons with dry floors or floors that have been cleaned before loading. Appropriate construction methods should be used to prevent the soiling of animals on the lower deck of double-deck or multi-deck transport vehicles (see Section 2).

Handling facilities

Cattle will tend to follow each other unless they are distracted, and this behaviour should be exploited in the design of facilities (see Section 10). Sufficient area should be provided in forcing/receiving yards during loading and unloading to allow them to move freely in the desired direction. Movement can be helped by using curved races and fully covering the sides of ramps to provide visual barriers (Photo 5.4). Movement of cattle is also improved by providing clearly visible passageways and gateways (Photo 5.5). Cattle will behave defensively when confronted by visually contrasting surfaces such as shadows, gratings and surfaces that are uneven or steeply sloping (Photo 5.6).

Loading should take place from a properly constructed ramp or loading bay suitable for cattle, or an appropriate portable facility where a permanent loading ramp is not available. Yards should be constructed to avoid sudden changes in levels, steep slopes, dim and uneven lighting, narrow passages and sharp turns. Ideally, the area of the forcing yard should be sufficient to hold the transport pen size.



There should be no protrusions or sharp edges on the fences or gateways of the loading and handling facilities that are likely to cause injury to animals. Hinges and latches must not project into the pathway of animals. Gates should operate smoothly, retract fully from the pathway of animals, and not be susceptible to jamming. Gates should also be made clearly visible to animals when shut by providing, where necessary, a “sight board” to improve visibility.

Ramps should be constructed so that they are appropriate to the transport being used. Ideally, there should be a flat platform at the top of the

ramp, level with the deck being loaded or unloaded. This should not be less than 1.5 m in length to aid the safe movement of animals. Ramps and walking surfaces should minimize the risk of animals slipping. Ideally ramp slopes should not be greater than one in five (20°). Solid extensions must be used to cover any gap between the loading ramp and the floor of the stock crate and must not dislodge when in use.

Lighting

Artificial lighting is desirable for loading at night. Such lighting should be carefully positioned to give even light over ramps, races, yards and transport vehicles. Lighting should not cause deep shadows or bright spots in areas where animals move. The stock crate of the vehicle may also have diffuse interior lighting to help cattle see where they are going.

Segregation during transport

It is preferable that the following classes of livestock be segregated and transported in separate groups:

- horned cattle;
- hornless cattle;
- adult bulls;

PHOTO 5.4
GOOD PRACTICE:
curved chute with solid sides and cattle moving in single file



PHOTO 5.5
GOOD PRACTICE:
*clearly lit raceway
 for cattle from
 pen to stunning
 area*



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- cattle greatly different in size (cows and calves may preferably be transported together under some circumstances);
- weak cattle, which should be segregated from strong cattle.

Cattle should not be mixed with other species during transport. Working dogs should not be transported in the stock crate with cattle. Dogs should be transported out of sight of livestock in a suitably designed and ventilated kennel elsewhere on the vehicle.

Assisting the loading of cattle

Cattle are difficult to move unless they can see somewhere to go. The use of force on animals

that have little or no room to move is cruel and must not occur. Electric prods should be powered only by battery and their use restricted to the amount necessary to assist the loading (Photo 5.7). “Flappers” (a length of cane with a short strap of leather or canvas attached) or “metallic rattles” are ideal in that they encourage movement in response to sound. Large sticks, lengths of metal piping, fencing wire or heavy leather belts must not be used to strike cattle. Canes or other materials used as an extension of the arm to direct cattle are a useful aid for handling.

The use of well trained dogs to help with the loading of cattle is acceptable. The number of dogs used should be the minimum necessary to complete the task. Manual lifting is permissible for young animals that may have difficulty negotiating a ramp.

Loading density

The livestock transport driver, after consultation with the owner, owner’s representative or agent, is responsible for ensuring that the loading density and penning arrangements are compatible with the welfare of the cattle and the capacity of the transport vehicle. Loading cattle either too loosely or too tightly predisposes them to injury.

For road transport, traffic density in the areas where the trucks mostly operate should determine pen lengths, for example, 3–4.5 m when mostly in heavy density traffic and 6.1 m in other areas. The density of loading should be determined by the need to minimize injury but allow fallen animals to rise without assistance. It is accepted that different types of transport vehicles are used for livestock and that the transportation system has evolved to suit the husbandry system in each area. Acceptable loading rates will vary with the following factors:

- Loading densities are determined according to the average live weight, condition, size, shape and horn status of the cattle, as well as the prevailing conditions and the distance animals are to be transported. Loading rates must be assessed for each pen or division in the stock crate.
- Five percent fewer cattle should be loaded if they are horned.
- In hilly and more populated areas where road vehicles change speed more frequently,

Box 5.1 More special cases

The cases listed below would not ordinarily be part of a slaughter consignment but deserve mention:

- Cows that are more than eight months pregnant should not be transported. Where this is unavoidable they must not be transported for periods longer than eight hours owing to the increased risk of metabolic disease and injury. They should be offered water and food upon arrival at destination.
- Cattle that have recently given birth should not be transported until at least four days after calving.
- Lactating dairy cows should be milked at intervals not exceeding 24 hours.
- Calves are especially susceptible to stress, and care is required to ensure they are strong enough to withstand transportation.



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PHOTO 5.6

Avoid: obstacles to cattle movement. Clockwise from top left: non-solid wall with a visible car through the rail; litter in the chute; a hat and coat on the fence; shadows

sufficient internal partitions must be used and numbers may have to be increased to prevent animals being thrown about.

- When fewer cattle than recommended loading densities per pen are transported, firmly fixed portable partitions should be used to prevent injuries during emergency stops.
- When more cattle than the recommended loading densities per pen are transported, fallen animals are unlikely to be able to regain their feet. The possible saving in freight from sending the extra animal, or animals, should be balanced against animal welfare considerations, potential product losses and mortalities.

Average recommended loading rates are given in Table 5.1.

Numbers above or below the recommendations will be appropriate in different circumstances. For example, variables such as breed, traffic density, road conditions and travel in double-deck transports have a major effect on loading densities, either alone or in combination. However, the welfare of cattle should not be compromised.

Offloading

Similar requirements to loading apply to the offloading of cattle, but it should be noted that cattle may be tired after a journey. Cattle should be unloaded as soon as possible after arrival at the destination. Injuries will be reduced if livestock are given the opportunity to walk quietly off the vehicle.

When unloading animals from rail or road transports, unloading “banks” (earthen mounds) are recommended. If such banks are long enough, several wagons or trailers can be unloaded at once. Where rail wagons have two doors, both must be dropped and secured in place before livestock can be offloaded, unless cattle are being offloaded down a single race or being transhipped from rail to road transport. Where sufficient pens are available, cattle unloading should avoid mixing of unfamiliar animals, which often causes fighting.

All cattle must be offered water as soon as possible after arrival at the destination. There is no justification for depriving cattle of water before slaughter.

The drover or transport driver should bring to the attention of the person in charge at the

TABLE 5.1 Recommended average loading rates for cattle of various live weights

Mean live weight of cattle (kg)	Floor area (m ² /head)	Number of heads per 12.2 m deck
250	0.77	38
300	0.86	34
350	0.98	30
400	1.05	28
450	1.13	26
500	1.23	24
550	1.34	22
600	1.47	20
650	1.63	18

Source: Agriculture and Resource Management Council of Australia and New Zealand, 1999.

destination any aspect of the journey that might affect the future welfare of the animals. This includes the last feeding and watering times and full details of any treatment given. The people in charge of the consignment should notify and transfer responsibility for the livestock to a suitable person at their destination. A system should be in place for delivery of cattle to abattoir premises outside business hours.

There should be facilities for the humane offloading or slaughter of animals that are unable to walk off because of injury or exhaustion. Severely injured animals must be humanely killed without delay. This should be done by, or at the direction of, the person in charge at the time if a veterinarian is unavailable. It is unacceptable to delay the humane destruction of severely injured animals. Animals requiring emergency euthanasia should be shot, or stunned and bled, without moving

them further than is necessary. This may be on the transport vehicle.

IN TRANSIT

Behaviour of cattle

The behaviour of cattle during transportation should be taken into consideration in deciding on the mode of transportation, size of vehicle and the number and groups of cattle that will be loaded. Factors likely to influence security of balance during unsteady driving are the slipperiness of the floor surface and the availability of support from adjacent structures, including vehicle sides and partitions, and other animals. It may be advisable to withhold water during the last six hours before loading so as to reduce urination and have drier floors.

The major factors determining the well-being of cattle in road transport are vehicle design, stocking density, ventilation, the standard of driving and the quality of the roads. Resting periods with access to water are necessary when journeys exceed 24 hours.

Design of transport vehicle

Vehicles and their fittings must be strong enough to contain the animals and prevent their escape. The design of the crate must be such that cattle cannot jump out of the crate under normal circumstances.

The parts of the vehicle or wagon through which cattle move or in which they are held should be free from obstructions, projecting objects and hazards that could cause injury. Doors should be wide enough to allow easy exit

PHOTO 5.7

Avoid: electric prods (a)

GOOD PRACTICE: where possible, alternative driving aids such as flags (b), plastic paddles or a stick with plastic ribbons attached to it should be used



and entry (no less than 900 mm). The space between decks should be sufficient for the cattle, including horned cattle, to stand in a natural position without contacting overhead structures. Materials used in the construction of transport vehicles must be able to be cleaned effectively.

The inside of livestock crates should be smooth and free of protrusions to minimize pressure points and reduce bruising. Spacing of side rails, where they are used, should be adequate to prevent the heads or legs of animals from protruding. Floor surfaces should provide a good foothold. The floor should be constructed from a non-slip material that will not injure the legs or hooves of animals. Ideally, stock crates should include provision to load/unload animals directly from the upper deck.

Vehicles should be serviced and maintained regularly to minimize breakdowns. The crate should be maintained in good working order.

The exhaust system of a vehicle must not pollute the air inside the stock crate. Sufficient gaps in the sides should be present to provide adequate air flow for the comfort of animals without overexposing them in cold conditions.

Responsibilities

Cattle should be transported to their destination as quickly as possible within legal requirements. Advance plans should be made to minimize any delay that could be stressful to the animals.

The primary producer should be responsible for the cattle until they are on the transport vehicle. They should then become the transporter's responsibility until they are unloaded. After delivery to an abattoir (including service abattoirs), abattoir management should assume responsibility until slaughter. When at sale-yards, they should be the responsibility of the manager, superintendent or supervisor of the sale-yard complex. When at a second property, the owner/manager of that property should be responsible for the cattle unless other agreements over responsibility have been made.

The driver must ensure that he/she is provided with the name and telephone number of the owner of the cattle, owner's representative or agent (whichever is appropriate) and of the consignee. The people organizing the transport of animals must be aware of any requirements for health certification and welfare of the

animals and ensure that all legal approvals and documentation are completed before the commencement of the planned journey.

Owners' responsibilities

Primary producers have the greatest influence on handling and transport strategies. They decide which cattle are selected, how they are sorted and whether they are offered feed and water while they are in the sale-yard. They also set the rest/fast period prior to loading and the time the cattle are in the sale-yards from mustering to loading. They set the standards that affect their stock handlers' actions and also those of the transport drivers (Box 5.2).

Primary producers or their representatives have the responsibility to select and present only cattle that are fit for travel. The nature and duration of the proposed journey should be considered when determining the degree of fitness required.

The producer and transporter should ensure that those cattle most susceptible to stress or injury during transport are loaded last and unloaded first. The producer is responsible for the provision of well designed and maintained holding and loading facilities.

Livestock transporters' and drivers' responsibilities

Livestock transporters should establish effective liaison with experts on animal husbandry and welfare and consult routinely on the design, construction and maintenance of stock crates, existing or new rolling stock, livestock assembly yards and other facilities.

Responsibilities for road transportation

Drivers of road vehicles should be responsible for the care and welfare of the cattle during transport unless an attendant appointed by the owner travels with the consignment. Drivers must stop and assist a distressed or injured animal as soon as it is practically possible after they become aware of a problem. Drivers should be experienced in animal handling to ensure the welfare of cattle in their charge.

Learner-drivers should not be left to transport livestock without supervision.

Responsibility for rail transportation

The welfare of cattle is best safeguarded by a clear understanding and acceptance of the

responsibilities of the owner, owner's representative or agent and railway staff during the various phases of transportation. Stockmen employed on trains should be competent in handling cattle, be required to complete trip reports, and have authority to delay trains in order to attend to cattle.

The owner, owner's representative or agent is responsible for:

- careful selection, loading and unloading of animals;
- the provision of competent stock handlers to load the livestock;
- loading livestock to railway schedules that will best avoid climatic stress;
- dealing with injured livestock or other emergencies when notified by the railway authority;
- ensuring water and stock feed are available at cattle rest stops;
- providing a stockman or livestock care system where appropriate, to care for larger consignments of livestock, especially on journeys longer than 24 hours, or to share the care for several small consignments;
- supervision of the unloading process and the final loading on to road transport (where applicable);
- ensuring that the livestock are rested after rail transport in preparation for any further travel;
- providing contact names and phone numbers for the owner, owner's representative or agent, as well as the person responsible at the destination.

The railway authority is responsible for:

- providing well maintained wagons appropriate for cattle;

- ensuring train drivers are aware that livestock have been loaded and of their location on the train;
- provision of accredited stock care managers at regular railway stopping points to inspect livestock and provide relief to sick and injured animals;
- taking care that materials carried in other wagons on trains do not affect the welfare of cattle, e.g. wagons containing dusty material placed in front of cattle wagons.

The owner of the loading and unloading facilities, including ramps, yards and watering points, is responsible for their maintenance.

IDENTIFICATION AND TRACEABILITY

Primary producers should ensure that all the livestock destined for slaughter are appropriately identified and farm records on the disposed stock are updated. Any person who transports livestock should ensure that they have at hand all documents relating to the identification of the stock they are transporting before the start of the journey.

HOLDING FACILITIES (LAIRAGE)

Premises that slaughter animals should have suitable facilities where animals can be held on arrival. These holding facilities, or lairages, can be covered, uncovered, purpose-built or, where appropriate, an open field. The essential design and operational features of a lairage are given below.

Box 5.2 The importance of humane management

Engineering and equipment is only one-third of the animal handling equation. Employee training and good management are the other two-thirds.

Observations on hundreds of ranches, feedlots and slaughter plants in the United States, Canada, Mexico, Australia, New Zealand and Europe indicate that the single most important factor which determines how animals are handled is the attitude of the manager. Operations with efficient humane handling and transport practices have a manager who is committed to animal care. Operations where abuse occurs almost always have lax management or management that does not care.

Source: Grandin, 1993.

- The design of the passageways and pens should be appropriate to the species of animal being handled.
- All structures and equipment should be well maintained, so that injury to animals is avoided.
- The holding facility should be designed to facilitate ease of handling, and all floors should be non-slip.
- Contrasts in colours and surfaces, e.g. the placement of drain covers or gullies on a concrete raceway, can make animals balk and therefore should be limited in number or disguised.
- Passageways and pens for pigs should be solid-sided and not railed, to reduce visual distractions.

There should be sufficient lairage capacity to avoid problems with animals waiting on lorries/vehicles or overstocking of available facilities. This should take into account the need for extra space during a breakdown situation. The lairage should have suitable pens, equipment and procedures for the isolation and treatment of sick, injured or at-risk animals without causing further distress. Sick, fractious or injured animals should be accommodated and, if necessary, humanely slaughtered close to the point of arrival. Isolation pens should be kept well maintained and ready for their intended use. There should be no mixing of species, unfamiliar animals, adult and young animals (except in the case of cows and calves), horned/hornless cattle, adult male pigs and adult male cattle. Fractious animals should be penned separately to prevent them from injuring themselves or other animals. Lactating cows should be milked if held within the lairage for longer than 12 hours.

Holding facilities should provide a suitable environment with adequate ventilation and space to allow animals to rest, drink and where applicable consume food. All animals should have sufficient room to stand up, lie down (simultaneously) and turn around. There should be access to a dry lying area and a constant supply of clean water. Lairage facilities should provide protection from extreme conditions if appropriate for the species/breed of animal being held.

For most animal species there seems to be very little benefit to the animals in keeping them within the lairage for longer than one or two hours.

Movement to holding pens

Handling systems and procedures should be in accordance with animal welfare and behavioural principles. Animals should be handled calmly, quietly and firmly, with care to avoid unnecessary excitement or distress.

The lighting in all parts of the lairage should be bright enough so that animals can be inspected at any time by designated and competent personnel. The lairage should have drainage facilities for faeces and urine and the design should allow cleaning to be performed between batches of animals. The faeces and urine production of animals held in field lairages should also be considered. Noise from machinery, people and equipment should be kept to a minimum. Animals must never be hit, prodded or handled in such a way as to cause them unnecessary excitement, pain or suffering when moving them within the lairage. Pressure must never be applied to any sensitive areas, e.g. genitals, and the appropriate use of benign handling aids, such as pig boards, moving gates, bags and flappers, should be encouraged where possible.

Animals must not be kicked or their tails twisted or broken and they must not be lifted or dragged by their heads, horns, feet, tail, fleece or any other part of their body, or in any way that may cause them unnecessary excitement, pain or suffering. Electric goads or prodders should only be available as a last resort (when human safety may otherwise be compromised) and must only be used on the muscles of the hindquarters of adult cattle and adult pigs if they are refusing to move forwards and the way ahead is clear. Habitual use of electric goads should be viewed as a failure on the part of the stock handler to apply "best practice" and demonstrates a need for a review of the system and/or additional training. Experienced and competent stock handlers should be responsible for the way animals are handled in the unloading and lairage areas and their contribution to animal welfare should be recognized by managers.

Considerations in transporting livestock are summarized in Box 5.3.

Risks/hazards associated with transportation are outlined in Table 5.2, along with recommendations on how the risks could be averted and of possible control points.

Box 5.3 Cattle transport tips

- Book the carrier early, providing details of loading time.
- Ensure the carrier's truck is appropriate for the job.
- Draft or mix cattle three weeks before transporting.
- Weigh and tag cattle 5–7 days before transporting in order to minimize bruising. Weigh 2–3 hours off feed.
- Yard cattle so that there is adequate time before trucking to allow time for any last-minute drafting, and also give the cattle the chance to settle down, cool down and rest.
- Load horned cattle so that they are in separate pens from polled cattle.
- Load cattle of similar weights together.
- Avoid loading cattle from different paddocks together.
- Check that all cattle identification devices are in place.
- Complete all paperwork to accompany the cattle.
- Provide the driver with any drafting details and any cattle delivery instructions that need to be passed on to the abattoir.

Source: adapted from Blackwood, 2001.

TABLE 5.2 Identification and traceability during transport

Risks/hazards and control points	Recommended practices	Suggested measures to achieve recommended practice
<p>Risks</p> <ul style="list-style-type: none"> • Stress. • Injury of animals. • Contamination of animal skins with faeces and urine. • Transmission of disease pathogens. <p>Control points</p> <ul style="list-style-type: none"> • Selection of cattle that are to be transported. • Handling during mustering, loading and offloading. • Design of handling facilities. • Design and working condition of transport vehicles. • Driver's skills. • Trip scheduling. • Training and supervision of animal handlers. • Good livestock identification and record-keeping system. 	<ul style="list-style-type: none"> • Cattle destined for slaughter should be transported to the abattoir with minimum stress, low risk of injury and of contamination. • Livestock identity should be maintained throughout in order to facilitate recall and trace-back. 	<ul style="list-style-type: none"> • Transport vehicles should be designed so that animals can be loaded, transported and offloaded easily with minimum risk of injury. • Transportation vehicles should be adequately ventilated and should be designed so that cleaning and sanitation can be readily achieved. • Only healthy animals that are fit for travel should be loaded on transport vehicles. • Animals of different species or of the same species that are likely to cause injury to one another should be physically separated during transportation. • Use of floor gratings, crates or similar devices limits soiling and cross-contamination with faecal material. • Where the vehicle has more than one deck, animals should be protected from cross-contamination as appropriate. • Ensure that animal identification is maintained and that records of dispatched animals are accurate.

Summary

- Transportation involves assembly, loading, confinement with and without motion, rest periods, unloading, penning and a new and unfamiliar environment – a series of situations that are stressful to livestock.
- Animals should be handled in such a way that they are subjected to minimum stress prior to transportation and are fit to travel with minimum risk of injuries. A rest period after mustering and handling before transportation is essential.
- Yards should be constructed to avoid sudden changes in level, steep slopes, dim and uneven lighting, narrow passages and sharp turns.
- Competent stock handlers who have a basic knowledge of animal behavioural and physical needs should supervise loading of livestock on to transport vehicles.
- Loading should take place from a properly constructed ramp or loading bay suitable for cattle, or an appropriate portable facility where a permanent loading ramp is not available.
- The loading pathway should have no protrusions or sharp edges on the fences or gateways or objects that could impede the movement of animals in any way.
- Use of electrical prods should be minimal. Animals should be encouraged to move in response to sound rather than physical coercion.
- Vehicles or rail wagons should be clean, dry and appropriately constructed to prevent cross-soiling and injury to animals.
- The following classes of livestock should be segregated and transported in separate groups:
 - horned cattle;
 - hornless cattle;
 - adult bulls;
 - cattle greatly different in size (cows and calves may preferably be transported together under some circumstances);
 - weak cattle, which should be segregated from strong cattle.Cattle should not be mixed with other species during transport.
- Loading density and penning arrangements should be compatible with the welfare of cattle and the capacity of the transport vehicle. Loading rates must be assessed for each pen or division in the stock crate, taking into account the characteristics of the animals to be loaded (i.e. size, condition, presence of horns), the traffic density and the presence of hills on the route to be used.
- The major factors determining the well-being of cattle in road transport are vehicle design, stocking density, ventilation, the standard of driving and the quality of the roads. Resting periods with access to water are necessary when journeys exceed 24 hours.
- All cattle must be offered water as soon as possible after arrival at the destination.
- The drover or transport driver should bring to the attention of the person in charge at the destination any aspect of the journey that might affect the future welfare of the animals. A system should be in place for delivery of cattle to abattoir premises outside business hours.
- There should be facilities for the humane offloading or slaughter of animals that are unable to walk off because of injury or exhaustion. Severely injured animals must be humanely killed without delay.
- Vehicles should be serviced and maintained regularly to minimize breakdowns. The crates should be maintained in good working order.

- The roles of the people involved at each stage of livestock transportation should be clearly defined.
- Animal identification should be maintained throughout transportation and all records and required documents should be appropriately completed and transmitted.
- Premises that slaughter animals should have suitable facilities where animals can be held on arrival.

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