



Chapter 5: Procedures for Loading, Transporting, and Unloading Cattle and Swine



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1.0 Purpose

The purpose of this document is to provide University faculty and staff guidelines for the safe and humane transport of cattle and swine.

2.0 Preparation of Personnel and Vehicles for Animal Transport

2.1 Sanitation procedures for personnel

- All staff must wear designated footwear (e.g., facility dedicated footwear rubber boots over their shoes/boots or wear plastic disposable boots) provided by each facility before entering any UW animal facility, when transporting any livestock, or hauling manure. Any footwear used at multiple locations must be thoroughly disinfected before entering another UW animal facility.
- All staff transporting animals to a non-university livestock facility must clean and disinfect footwear with a disinfectant (e.g., bleach, Nolvasan, greensoap, Synphenol, or iodine solution). Disinfectant must be mixed to appropriate dilution recommended by product label. If using bleach, 1 tablespoon of bleach/gallon of water or 2 cups in 30 gallons. Footwear must be disinfected before entering truck cab to return to UW facilities.
- Backup protection includes use of plastic disposable boots if bleach solution is not available. Plastic boots must be placed over boots before leaving truck and removed and disposed of properly (in plastic garbage bag provided in truck) before entering truck after each visit to a non-university livestock facility.
- A box of plastic boots, small garbage bags, a scrub brush, and bleach solution will be carried in the truck used for livestock transport.
- When transporting non-university animals, contact with those animals should be minimized as much as possible. Care should be taken not to enter yards or buildings where any non-university animals are housed.

2.2 Sanitation procedures for equipment

- Livestock trucks or trailers used to transport any livestock must be sanitized at the end of each day. Sanitization procedures must include the use of a solution specifically designed for elimination of pathogens carried by livestock following a pre-wash using a high-pressure washer to remove organic matter.
- See West Madison ARS Standard Operating Procedures for Trailer Cleaning and Disinfecting. (*Appendix A*)

2.3 Bedding

- Trucks, trailers and chutes must be bedded to prevent animals from slipping. Livestock also tend to be easier to handle when they are on bedded surfaces. Exceptions may be swine in housing systems without bedding. The use of bedding in chutes may inhibit loading efforts, so surfaces should be maintained clean and dry to avoid slippage, with bedding used within the trailer.

- Only use bedding that is clean (e.g. free of manure, urine, blood, or packing waste). Sanitation is essential to deter spread of pests and diseases, especially during export shipment.
- Preferred bedding materials are sawdust, wood shavings, straw, and sand.
- Generally, sawdust and wood shavings should be about 2 in (5 cm) deep, straw 3-4 in (8-10 cm) deep, and sand at least 1 in (3 cm) deep. Deciding how much bedding to put in a truck requires judgment based on factors such as the amount of time animals will be in transport, species, and weather conditions especially temperature. See attached weather guide for additional information.
- Bedding must be removed and properly disposed of before trailers or trucks are sanitized.

2.4 Preventing Injury to Stock While Loading: Inspection Prior to Loading

- Inspect holding pens, gates, chutes and interiors of transport vehicles to ensure that there are no sharp edges or protrusions, such as nails, bolts, and hinges which might cause injuries to animals.
- Make certain that truck floors and ramps have non-slip surfaces or are covered with bedding material to prevent animals from slipping.
- Ensure that floors, chutes and ramps have no holes or loose planks which animals may step through.
- Loading chutes should be as short as possible, so that a handler can get to both ends quickly.
- Cover loading chutes, especially new ones, with hay or straw, so that animals will be more willing to walk on them. An exception for swine is noted above under "Bedding."
- Use gates made of mesh or bars in loading facilities, so that cattle can see through them. Cattle tend to turn back when they see no avenue of escape. However, sides of ramps, alleyways, crowd pens used to assemble stock immediately before loading, etc., should be solid and high enough to prevent animals from seeing people and other distractions that may cause them to balk. Crowd gates (gates to crowd animals) should also be solid to prevent animals from turning back.
- Provide lighting in loading facilities that is even and diffused. Avoid sharp contrasts, such as those caused by slatted shades. Also, avoid harsh light that shines in the animals' eyes. Cover lights with diffuser screens to avoid this.
- When loading livestock at night, light alleyways and loading chutes with increasing intensity toward the truck. This takes advantage of cattle and swine's natural tendency to move toward light. Illuminating truck interiors will induce animals to enter. Livestock are often reluctant to move into a dark area. Persuading animals to enter a dark single-file chute can be difficult.
- Loading chutes that are used during daylight should be oriented north or south, so that animals will not have to look directly into the sun.

2.5 Cattle Chutes

- Cattle loading chutes should be narrow so that animals can move single file into a truck or trailer. Chutes should not be made wider than necessary. If chutes are too wide, two animals can wedge if one tries to turn.

2.6 Swine Chutes

- Swine loading chutes should be constructed so that animals can walk single file into a truck, or two abreast. Swine vary greatly in size, so chutes must be the appropriate width for the animals to be loaded. Do not use chutes that have the width of 1-1/2 animals. This will cause animals to wedge in the chute and increase the likelihood that animals will turn back.

3.0 Transporting and Unloading Cattle and Swine

3.1 Loading Procedures: *Minimize Stress While Loading*

- Pre-plan livestock shipments. Transport vehicles should arrive on schedule to minimize time animals must be held in loading facilities.
- To avoid fighting, do not mix animals that are unfamiliar with each other.
- Always keep handling time to a minimum.
- Sort animals before loading. Group them by size, species, origin, etc., prior to loading the truck.
- Move animals with minimal excitement. Exciting animals more than necessary will not only result in increased stress levels but will increase susceptibility to bruise or other injury.
- Always move slowly and quietly around livestock. Handling animals in an easy and friendly manner will minimize stress.
- Do not rush animals. Let animals follow the leader at their own pace.
- When moving animals, be aware of their flight zone. This is the area around an animal in which it feels secure. When a handler enters the flight zone, the animal moves away and will stop when the handler leaves the flight zone. The size of the flight zone depends on the tameness of the animal.
- Use either a wide canvas slapper or beaded paddle to drive animals. Cattle can also be driven with a plastic bag on a stick. They will quickly move away from the sound of the plastic. **Never strike animals with such objects as sticks, pipes, canes, or forks.**
- **Use electric prods sparingly. Use of prods on more than 5% (1 out of 20) animals during loading is unacceptable.** Some livestock industry personnel prefer not to use electric prods. Excessive use of prods can drive animals into a frenzy. This is an especially important consideration when handling swine. If prodded several times in rapid succession, swine may have a heart attack. **Caution: Never continue to prod a pig that lies down. Give the animal time to rest and recover.**
- After loading, let animals settle for a few minutes before moving the truck.

3.2 Use of Electric Prods When Handling Livestock

- Use of electric prods when handling livestock is a practice that should be minimized. However, situations arise where livestock will refuse to move from a trailer, alley or chute. Often other means of encouraging the animal to move (pushing or pulling) are hazardous to the personnel working with the livestock. Therefore, there are certain situations that occur when use of an electric prod is necessary to improve handler safety. The scope of this program is to provide conditions of acceptable use as well as define situations when use is unacceptable.
- It is unacceptable to use an electric prod on livestock when their movement is restricted due to lameness, injury, pain or sickness. If an animal is exhibiting signs of injury or illness, then veterinary assistance should be sought. However, use of an electric prod is acceptable on healthy uncooperative animals that only have one direction of movement afforded them and other measures of motivation have failed (presence in flight zone, slappers and vocalizations). This would include animals in trailers, chutes, and alleys.
- It is accepted that design of chutes and loading docks impact the willingness of an animal to move through these facilities. If use of an electric prod is excessive in a University of Wisconsin CALS facility, then the facility manager should be notified, and she/he should consult with the attending veterinarian on ways to improve animal handling at the facility.
- All personnel caring for and handling livestock must meet with the CALS attending veterinarian and discuss this policy. It is reasonable to have all personnel affected by this policy to meet with the attending veterinarian within three months of adoption of this SOP. After the initial training period, facility supervisors should discuss this policy with all new employees handling livestock.

3.3 Special Considerations for Swine

- Movement of swine through loading facilities can cause excessive exertion, which can increase the possibility of heart attacks due to overexertion. When a swine's heart starts to race, it will lie down to bring its heart rate to a safe level. **Caution: An overexerted swine must always be allowed to rest.**
- If a swine collapses from overexertion, do not douse with cold water. This will shock the pig's system and may cause further harm. Instead, wet the ground around the swine to provide evaporative cooling.
- Porcine Stress Syndrome (PSS, or malignant hyperthermia) is the leading cause of swine deaths during transport. Swine with PSS will suddenly lie down, pant, and tremble. The skin of white swine may have a red, splotchy appearance. Swine showing these symptoms must not be shipped and allowed to rest. If in transportation, check their condition periodically and provide care as described.
- When the temperature is over 80° F (27° C) sprinkle the swine with water before loading to prevent them from becoming overheated. **Caution: Never put a large amount of cold water on overheated swine. This may cause shock resulting in death.**

3.4 Loading Practices with Regard to Stocking Density

- Always decide before shipment how many animals to put in a transport vehicle. (*Appendix B*)
- Avoid overcrowding. Overcrowded loads increase the incidence of downed animals at destination. Animals that are loaded too densely become uneasy and perspire and urinate heavily, particularly during hot weather. When floors become wet, animals may fall and have difficulty getting up and may be trampled resulting in injury or death. Cattle that are loaded too densely may also jam at the truck door during unloading. Overly tight loading should be avoided even for very short hauls.
- Use partition trailers if less than a full load is to be shipped. When animals are loaded too loosely, they may not have enough support and fall frequently during transport. Partitions in large trailers will also serve as baffles against excess movement during acceleration and braking and are especially important during emergency stops.
- Distribute weight evenly throughout the transport vehicle to maintain proper weight on the vehicle pulling the trailer. If the load consists of different size animals, use partitions to distribute animals so the load will be balanced. This will also protect smaller animals from being trampled.

3.5 Care During Transit: *Good Practices for Drivers*

- Make sure load partitions are in place and secure, trailer doors are securely closed, and bedding is sufficient.
- Start out slowly and avoid fast stops. Fast starts and stops, making curves too fast, etc., will knock animals down.
- Keep loaded livestock trucks moving, especially during hot weather. This will maintain a constant air flow that will help keep animals cool and prevent buildup of gases from animal wastes.
- Plan to make periodic stops during transport to check welfare of stock. Welfare checks should be made within the first half-hour as most injuries occur at the outset. (Are there any downers? Do any appear ill? Are they too cold or overheated?) After the initial check, animals should be checked every two hours. Also, make vehicle security inspections when checking animals during a stop. (Are doors and partitions secured? Are tires fully inflated? Is bedding evenly distributed?)

3.6 What to Do During Adverse Weather

Hot Weather

- Use the *Livestock Weather Safety Index* as a guide when transporting animals during hot weather (*Appendix C*). Never transport animals if the temperature is expected to be in the Danger or Emergency zone during the transport. If the temperature is expected to be in the Alert zone during transport, consider the following options.
 - Reschedule the trip to a date when the weather is milder.
 - Transport the animals during the morning or night.
 - Make sure animals have access to clean water before the trip. If the trip is longer than two hours, provide drinking water to animals.
 - If transporting swine, you may consider bedding the trailer with six inches of wet sand.

Cold Weather

- Protect livestock from wind chill during cold weather. Swine are especially sensitive to chill cross winds. Air movement through trucks can be restricted by using side covers or plastic plugs to partially block air movement through trailers. Be careful to maintain adequate ventilation.
- Swine hauled in cold weather tend to huddle together in piles. This sometimes results in death of swine at the bottom of the pile. Death occurs because as ambient temperature rises, swine on the top are still chilled and will not move, but rising temperatures result in excessive heat buildup toward the bottom and center of the pile. Bedding heavily with straw (>6 inches) which will insulate the animals and conserve body heat and use of partitions to separate animals into small groups will help prevent this.
- Keep animals as dry as possible during cold weather.
- Protect animals from exposure to freezing rain and sleet.

3.7 Unloading Swine and Cattle

- Position trucks so that they line up properly with chutes.
- Cover chutes with bedding when unloading swine. This will help entice them out of the truck. The bedding will also help cover the unique smell of the chute.
- Use wide chutes for unloading, as animals will move more readily into a wide area. Chutes used only for unloading should be 8 feet wide. This type of chute should not be used for loading.
- Construct unloading chutes with a non-slip, level landing at the top. Animals will exit a truck if they can step onto a level surface, as opposed to an immediate downward slope. This is especially important for swine.
- Be certain that chutes provide good footing. They should be constructed of rough surface concrete, have cleats, stair steps with deep groves, or other non-slip surfaces. Distance between cleats and dimensions of steps should match the stride of the animals being unloaded.

- Illuminate chutes and unloading areas during night unloading. Livestock feel more comfortable moving into a lighted area.

3.8 Handling Downed Animals

- Any animals that arrive sick or injured should be tended to as soon as possible. The herdsman or veterinarian should determine how the animal should be treated.
- Be aware that entering a truck loaded with cattle or other large stock to care for a downed animal can be dangerous. Animals may panic and trample handlers.
- Avoid hauling sick, lame or injured animals unless the animals are being hauled to receive treatment. If possible, allow sick, lame or injured animals to fully recover before transporting.

3.9 Helping Downed Animals Up

- If possible, help downed cattle to get up. If an animal is lying on its side, lift its head to the vertical position. If the animal's legs are underneath it, push up on its shoulders. These techniques will often enable an animal to get up. Several attempts to get the animal up should be made and the animal should be allowed to rest briefly between each attempt.
- Help unsteady cattle to walk. Holding an animal's tail will help it maintain its balance.
- Downed-swine can be assisted by lifting on the tail or flanks. Dry surfaces will help steady the animal.

3.10 Handling Animals that Cannot Get Up

Use any of the following methods or a combination of methods to handle downed animals:

- Gently roll downed animals to move them. Do not drag or lift animals by their limbs unless there is no other alternative. If the animal can be saved and there is no alternative to dragging, it should be dragged the minimum distance to where a more suitable moving method can be used.
- If the animal must be lifted by its limbs, use the uninjured limbs and place pads where any chains or cables will be attached.
- Do not drag animals by the neck. Use a rope around the animal's shoulders or pull it by uninjured limbs, if there is no other alternative.
- Use a heavy duty, two-wheeled cart made for moving downed swine and other smaller livestock. The cart should be equipped with a large platform. Push the platform under the animal and tilt the cart back to move the animal onto the platform. A second person should be available to steady the animal on the platform.
- Use a wide board or piece of conveyer belt to move downed livestock. When a conveyer belt is used, the end that is pulled should be reinforced with a metal strip to prevent buckling. Gently roll the animal onto the board or conveyer belt.

The board or belt can then be carried or dragged. Once the animal is on the board or conveyer belt, the animal can be pulled by a tractor.

- Use a front-end loader to move downed animals in holding facilities. One person operates the loader and one or two others roll the animal into the bucket. Moving downed animals with a loader is easier and more humane if the standard bucket is replaced with a larger, specially designed bucket with a hinged lid that will prevent the animal from falling out.
- Use a forklift equipped with a platform, with the front edge angled down to facilitate rolling the animal. Bare forks should never be used on a downed animal. The platform can also be equipped with straps to prevent the animal from falling off. **Caution: Never push an animal against a wall or fence to get it into a loader bucket or onto a forklift platform.**
- Consider using a frame on four wheels with slings that is manufactured especially for moving downed animals. It can fit into tight spaces and has large wheels that allow easy movement over rough surfaces.
- If a hoist is needed to load an animal onto a truck, be certain to use the appropriate size sling.
- Separate downed animals from other stock if they must be carried on the same truck.
- Tie downed animals if they must be carried on a truck. The animals' movement during transport, especially involuntary movement, may cause unnecessary pain and further injury.
- Consider using a livestock trailer with side doors, as they greatly facilitate handling of downed animals.

Appendix A

Agricultural Research Station Procedures for Trailer Cleaning and Disinfecting

1. Remove all animal manure and bedding from the trailer before beginning the sanitation process. All waste should be disposed of in compost piles on the Station.
2. Trailer and truck should be power washed using industrial power washer in the WMARS shop.
3. Use hot water for all cleaning procedures.
4. Following the above procedures, a premixed solution of Nolvasan* must be sprayed on the trailer. If truck and trailer has been to a location outside of campus or research facilities, truck tires must be sprayed with Nolvasan. Keep surfaces of the trailer wet for approximately 10 minutes.
5. When sanitizing the trailer and truck, all personnel must wear the following Personal Protective Equipment (PPE): long sleeved shirt, long pants, socks, waterproof boots, and rubber gloves.
6. Record sanitation in record book located in shop office.
7. The concentrated Nolvasan solution must be stored in the parts room. The diluted spray solution in hand pump sprayer must be stored in the chain link enclosure in the shop. All containers must be marked with appropriate labels.
8. For questions on any part of the procedure or for securing additional Nolvasan concentrate, please contact the station superintendent, assistant superintendent or the college's veterinarian.

*** Nolvasan Solution Preparation: Mix 1 oz of Nolvasan concentrate in 1 gallon of water. Nolvasan has been recommended by the CALS Veterinarian for sanitizing the truck and trailer.**

Appendix B

Recommended Area Allowance in Transportation Accommodations for Groups of Animals Used in Agricultural Research and Teaching

Loading Practices with Regard to Stocking Density

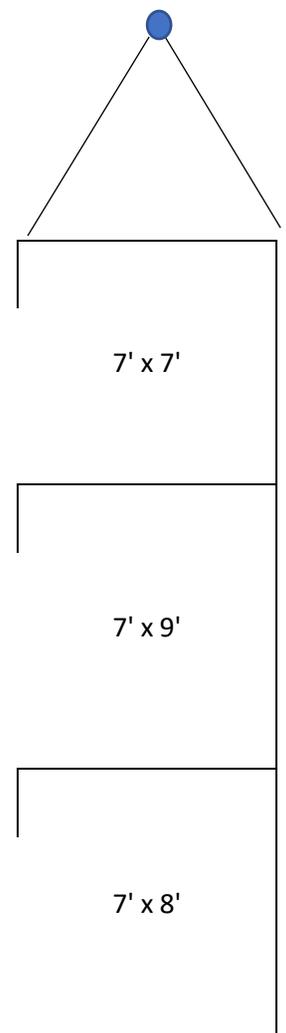
* Always decide before shipment how many animals to put in a transport vehicle. See Table 1.

Table 1. Species stocking density chart for loading/hauling

		Trailer size 24' x 7' = 168 sq ft	
Species	Average Body Weight (lbs)	Sq Ft/animal	Max number of animals in trailer
Cattle (calves)	200	3.5	48
	300	4.8	35
	400	6.4	26
	600	8.5	19
Cattle (hornless, mature fed cows and steers)	800	10.4	16
	1000	12.0	14
	1200	14.5	11
	1400	18.0	9
Swine		Summer	
	100	3.0	56
	200	4.0	42
	250	5.0	33
	300	6.0	28
	400	7.0	24
Sheep		Full Fleece	

Trailer compartments

front of trailer



rear of trailer

	60	2.2	76
	80	2.6	64
	100	3.0	56
	120	3.4	49
	dimensions (ft)		
Horses	2.3 x 8.2	18.8	8
Foals < 6 mo	3.3 x 5.4	15.1	11
Young Horses	2.0 x 6.6	12.9	13
Adults > 24 mo	3.9 x 6.6	25.8	6

Recommended Area Allowance in Transportation Accommodations for Groups of Animals Used in Agricultural Research and Teaching

Adapted from data of Grandin (1981, 1991, 1992, and 1993) and Cregier (1982)

* Avoid overcrowding. Overcrowded loads increase the incidence of downed animals at destination.

Appendix C

