

**Ontario**Ministry of Agriculture,
Food and Rural Affairs

AVOIDING HEAT AND COLD STRESS IN TRANSPORTED SHEEP

C. Richardson

Heat and cold stress can be avoided in transported sheep by planning ahead. Check on the weather before leaving. At anytime during the trip, know what you can do to reduce the effects of severe weather on the sheep. Change the timing of the trip if necessary.

The following are extracts from the Canadian Agri-Food Research Council's (CARC) *Recommended Codes of Practice for the Care and Handling of Farm Animals* — the Sheep and Transportation Codes.

BEST PRACTICES IN ANY WEATHER

- Ensure that all animals intended for transport are fit to be transported.
- Stop and check on the sheep after the first hour of the trip and every 2–3 hours afterwards.
- Sheep must be protected during transit to prevent suffering caused by exposure to severe weather conditions.
- Sufficient ventilation must be available at all times while the sheep are in the vehicle. Aerodynamic airfoils installed on truck tractors to enhance fuel efficiency must not restrict the airflow into the trailer necessary for ventilation and cooling.
- Appropriate measures must be taken to prevent engine exhaust from entering the area occupied by the sheep.
- Ventilation should be adjustable from the outside of the vehicle. As the temperature changes during a trip, adjustments can be made without unloading the sheep. The use of adjustable weather panels is an effective way to achieve this.
- Reduce loading density to 85% of maximum for trips in excess of 24 hours to allow room for sheep to lie down.

PRECAUTIONS IN COLD WEATHER

- Sheep need to be protected from freezing rain and wind blowing into the sides of the truck because it increases their loss of heat and can cause death from hypothermia, even at temperatures above freezing.
- Young and recently shorn sheep are particularly susceptible to frostbite and loss of body heat during transportation.
- Remove wet bedding after each trip to prevent it from freezing onto the truck.

Signs of Animal Discomfort (Cold Stress) During Transportation

- Wet sheep
- Eating of available bedding
- Fluids frozen to the face or nostrils

During Winter Travel

- Increased bedding or insulation is necessary in cold weather.
- Increased loading density beyond recommendations can predispose to frostbite in individual animals because it prevents them from repositioning in the truck.
- Cover openings to protect sheep from cold winds caused by movement. Wind chill lowers the effective environmental temperature and can cause frostbite.
- Protect sheep on the side of the truck that is exposed to a cold crosswind.
- Replace bottom slats in vehicles to protect from the cold and road splash.
- Adjust openings to balance the need for protection from wind chill with the need for adequate ventilation.
- Close nose vents.

- Take precautions to protect lambs. They must be kept dry and provided with an adequate supply of bedding.

PRECAUTIONS IN HOT / HUMID WEATHER

- Take precautions to avoid stress, suffering and possibly death caused by the combination of high temperature and high humidity.
- Sheep require sufficient floor space to allow for adequate ventilation and a reasonable level of comfort.
- Severe heat build-up may result from overcrowding. Reduce loading density to 85% of maximum in hot/humid weather.
- Keep frequency and length of stops where sheep are not off-loaded to a minimum during transit to prevent rapid build-up of heat inside the vehicle.
- Protect shorn sheep from prolonged exposure to direct sunlight to prevent sunburn.

Signs of Animal Discomfort (Heat Stress/Overcrowding) During Transportation

- Overcrowded load will not “settle”; sheep continue to scramble for footing and the load continues to be noisy for prolonged periods of time. Sheep involuntarily lie down and are unable to get up.

- Sheep pant when overheated; animals standing with neck extended and with open-mouthed breathing are in a dangerous situation.

During Summer Travel

- Handle sheep carefully because exertion in hot/humid weather is particularly stressful and increases the chances of heat stroke.
- Allow every animal to rest when over-exerted.
- Sufficient ventilation must be available at all times while the sheep are in the vehicle.
- Whenever possible, avoid trips during hot/humid periods.
- When high heat and humidity are forecast, schedule transportation at night and in the early morning.
- Avoid periods of intense traffic congestion.
- Do not park loaded vehicle in direct sunlight.
- When necessary to stop, minimize the duration of the stop to prevent the buildup of heat inside the vehicle.
- Sheep can be cooled by watering the floor of the vehicle or by using a fine mist spray. If you have an overheated sheep, **gently** run cold water over the back of the head.

WIND CHILL FACTORS

Select the Actual Air Temperature (°C) column and Wind Speed (km/h) row. The figure where these intersect represents the Wind Chill Factor.

Actual Air Temperature (°C)	10	4	-1	-7	-12	-18	-23
Wind Speed (km/h)	Wind Chill Factor						
8	9	2	-3	-8	-15	-21	-26
16	4	-2	-8	-15	-22	-29	-34
24	2	-5	-12	-21	-28	-34	-41
32	0	-8	-16	-23	-31	-37	-45
40	-1	-9	-18	-26	-33	-39	-48
48	-2	-11	-21	-28	-36	-42	-51
56	-3	-12	-21	-29	-37	-44	-54
64	-3	-12	-22	-29	-38	-47	-56
72	-4	-13	-22	-30	-39	-48	-57
80	-4	-13	-23	-31	-40	-48	-58

Source: Kansas State University and Livestock Conservation Institute
 Precautions and warning signs of cold stress and wind chill chart courtesy of Canadian Agri-Food Research Council, Recommended Code of Practice for the Care and Handling of Farm Animals — Transportation.
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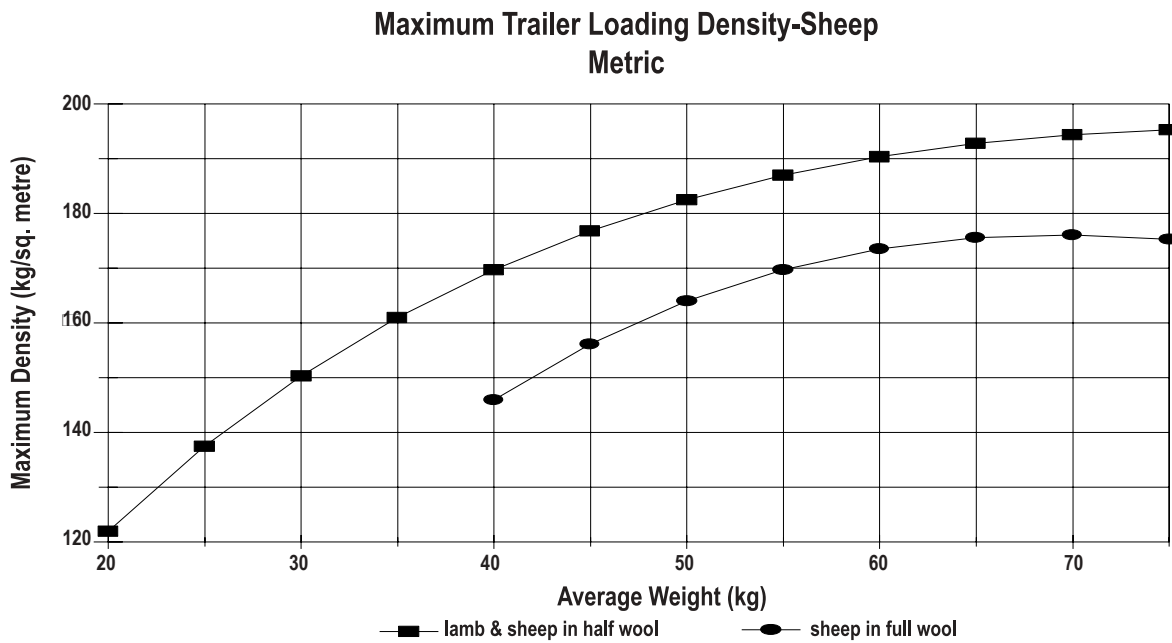


FIGURE 1. Maximum trailer capacity for sheep transported standing based on average individual animal weight. A 35 kg lamb at 160 kg/m² has .22 m² of floor space. Reduce loading density to 85% of maximum in hot humid weather and for trips in excess of 24 hours to allow room for sheep to lie down.

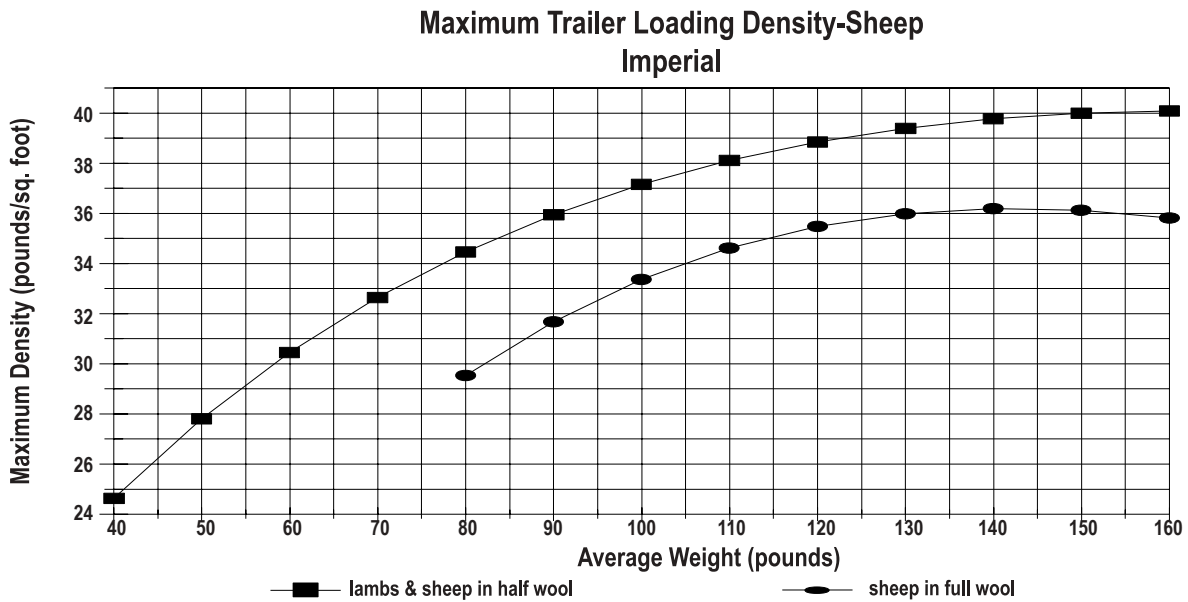


FIGURE 2. Maximum trailer capacity for sheep transported standing based on average individual animal weight. A 70 pound lamb at 32 lbs/ft² has 2.2 square feet of floor space. Reduce loading density to 85% of maximum in hot humid weather and for trips in excess of 24 hours to allow room for sheep to lie down.

Source: Graphs courtesy of Canadian Agri-Food Research Council
 Recommended Code of Practice for the Care and Handling of Farm Animals — Transportation.
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