

Macdonald Campus Farm Cattle Complex
Standard Operating Procedure # DC-131

ENVIRONMENTAL MONITORING AND MAINTENANCE

Table 1: Many factors influence the risk of occurrence of heat and cold stress.

* Insufficient literature, but as thermoregulation in calves is similar to cows the same factors if relevant, apply.

	Heat Stress	Cold Stress
Cows	Increasing Respiration Rate (>60 bpm) Panting Drinking Sweating Reduced feed intake Reduced milk production Increased standing Shade seeking Decreased activity	Bunching Orientation facing sun/away from wind Reduced milk production Increased intake
Calves	Increased respiration rate Reduced feed intake Increased water intake Decreased activity Increased standing time	Shivering Nesting Bunching Increased feed intake

Table 2: Physiological and Behavioral Coping Mechanisms to Environmental Stress

4.5

. An increase in temperature can increase water intake by 1.2L/°C. Diets higher in salts, buffers, dry matter, and crude protein will also increase water consumption.

5. PROCEDURE

5.1 TEMPERATURE AND HUMIDITY

5.1.1 Before the spring season, ensure the air intakes in the ceiling have been closed.

5.1.2 Temperature and humidity sensors are checked in each area: main barn, calf barn, heifer barn, and hydro room, twice daily, at the beginning of the morning and afternoon shifts.

5.1.3 Readings are recorded on the log sheet located in the respective area.

5.1.4 In warmer months (temperature >22°C):

5.1.4.1 Readings are checked against the “Temperature-Humidity Index Table” (Figure 1) and the Heat Stress Score (1-5) is recorded.

5.1.4.2 If the score is >1, corrective action must be recorded on the log sheet and carried out.

5.1.4.3 If the score is 3 or above, a technician or the farm manager must be consulted, and corrective action must be recorded on the log sheet and carried out.

5.1.5 In cooler months (temperature <10°C):

- 5.1.5.1 A low-temperature threshold will be indicated on the log sheet.
- 5.1.5.2 If the temperature is below the threshold a corrective action must be recorded on the log sheet and carried out.

5.2 WATER

- 5.2.1 Check water bowls daily for cleanliness and function.
 - 5.2.1.1 Check the last bowl of each row of stalls and each box stall for functionality and appropriate flow rate.
- 5.2.2 Any water bowl that is not functioning or functioning poorly must be reported to a technician immediately.
- 5.2.3 Water bowls in the main barn must be cleaned and individually tested for function on a regular basis.

6. CORRECTIVE ACTIONS

6.1 COOLING

6.1.1 MAIN BARN

- 6.1.1.1 Ensure all ventilation (wall) fans are on and working.
- 6.1.1.2 Ensure ceiling vents are closed.
- 6.1.1.3 Ensure the garage door in the handling area is closed.
- 6.1.1.4 Ensure all ceiling fans are on and working.
- 6.1.1.5 Place floor fans at the end of feed rows or in front of individual animals displaying signs of heat stress.
- 6.1.1.6 Bring the animal to the handling area and gently hose it down for 15-20 minutes.
- 6.1.1.7 Ensure water bowls are clean and flow is good to encourage drinking.
- 6.1.1.8 Ensure reflective window film is intact.

6.1.2 CALF BARN

- 6.1.2.1 Open calf barn doors to handling area and outside.
- 6.1.2.2 Ensure heating units are off.
- 6.1.2.3 Place floor fans in calf barn directed at pens.
- 6.1.2.4 Offer Calf-Lyte in room temperature water to calves exhibiting signs of heat stress.
- 6.1.2.5 Ensure water bowls are clean to encourage drinking.

6.1.3 HEIFER BARN

6.1.4 HYDRO ROOM



Figure 1:

7. REFERENCES

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Document Status and Revision History