Title: Beef Cattle Heat Stress Prevention
SOP Number: 069
Purpose: Heat stress is a common problem faced by producers in the United States, especially in the warmer summer months of the year. In a feedlot setting cattle are kept in pens that confine them to an area that can reach elevated temperatures and without proper management cattle can become over heated. Heat stress in beef cattle can lead to health issues and in extreme cases possibly death. Heat stress may occur in cattle given their inability to sweat and cool themselves adequately without proper shade or adequate ventilation.

ANIMAL HEALTH MONITORING

Cattle that exhibit heat stress symptoms may display the following symptoms:

1. Eat and ruminate less
2. Bunching (in the shade if it's available)
3. Agitation and restlessness
4. High respiratory rates (panting)
    a. Panting Score
        1 = elevated respiration rate
        2 = drool/saliva present on sides of mouth
        3 = open mouthed breathing
        4 = tongue and neck extended with open mouth breathing
5. Splash water
6. Thirst is increased (drinking water intake increases markedly)
7. Crowding over the water troughs
8. Decreased activity
9. Slobbering
10. Increased urination
11. Open mouth breathing
12. Trembling
13. Lethargic movement
14. Refusal to lie down
15. Coordination loss
16. Extreme cases cattle become non ambulatory

METHODS OF CONTROL

Located near the office will be a thermometer that will show the temperature and humidity percentage (readings from Lubbock International Airport may also be used). In addition to the methods of ambient measurement, the following graph will be consulted in order to recognize when action must be taken to reduce heat stress. Utilizing the varying degrees of Relative Humidity in relation to Temperature will determine when action is necessary.

Temperature (°F)	Relative Humidity (%)											
	10	15	20	25	30	35	40	45	50	55	60	65
106	83	85	86	88	89	90	92	93	94	96	97	98
104	81	83	84	85	85	88	89	90	91	93	94	95
102	82	83	84	85	86	87	89	90	91	92	94	95
100	79	81	82	83	84	85	86	87	90	90	91	92
98	78	79	80	81	83	84	85	86	87	88	89	90
96	77	78	79	80	81	82	83	85	86	87	88	89
94	76	77	78	79	80	81	82	83	84	85	86	87
92	75	76	77	78	79	80	81	82	83	84	85	85
90	74	75	76	77	78	79	79	80	81	82	83	84
88	73	74	75	76	76	77	78	79	80	81	81	82
86	72	73	74	74	75	76	77	78	78	79	80	81
84	71	72	73	73	74	75	75	76	77	78	78	79
82	70	71	71	72	73	73	74	75	75	76	77	77
80	69	70	70	71	72	72	73	73	74	75	75	76
	Temperature Humidity Index (THI)											

Normal < 75	Alert 75-78	Danger 79-83	Extreme > 84

Maintainence Procedures

1. Identify forecast periods that can potentially trigger Danger/Extreme Heat Stress, which will allow for planning to mitigate the stress condition.
2. If forecasts indicate the potential for Danger/Extreme Heat Stress, best practices are to adjust confined feeding schedules to have animals feed prior to 10 AM. These practices will help to reduce the amount of physiological (ruminal fermentation) heat generated that adds to the heat stress during the hottest portion of the day.
3. Identify relative ambient temperature and humidity values and confer with Heat Index Chart
4. If the Heat Index confirms ambient THI Alert stage or above will be reached then cattle need to be cooled throughout the day. This will be accomplished by turning on the sprinklers for a 30 minute period beginning between 10-11 am, and every 3 hours as needed through the heat of day. The goal is to wet the ground for evaporative cooling, rather than wetting cattle.

5. For confined cattle on concrete, spriklers will be used once temperatures reach the Alert stage of the THI, for approximately 7 minutes once per hour. The goal for cattle on concrete is to drench the skin for evaporative cooling.

Intervention Procedures

1. For animals that are specifically or individually identified as showing signs of heat stress, they will be sprayed until the ground is semi saturated
    a. Over saturation of the ground coupled with poor ventilation may lead to excess humidity due to evaporation and may worsen the conditions.
2. Utilizing the portable 1000 gallon water tank and pump, or similar apparatus, spray the affected cattle and pens
3. Repeat process as needed throughout the PM hours of the day, if ambient conditions and heat stress symptoms in cattle are not reduced.

HEALTH CARE

Everyone with access to the animal facility is responsible for informing the Animal Care Services Veterinarian staff when an animal becomes ill or a change in behavior is noted. Seriously ill animals should be reported **IMMEDIATELY** to the veterinarian. When an investigator, technician, or animal care personnel requires veterinary assistance, they should:

A. Complete the “Animal Treatment Record” in the Notebook. Indicate the date, room number/ pen number/animal number/cage or animal ID, the problem observed, and ensure that the name (or initials) of the person making the report is recorded.

B. Contact the ACS Veterinary Staff and/or the Facility Manager at:

Michael Looney, Beef Center Facility Manager
806-742-2805 Office
806-778-2585 Cell Phone

Jeff Manahan, Burnett Center Facility Manager
806-746-5097 Office

Dr. Paul Stonum, Clinical Veterinarian, Animal Care Services
806-834-7373 Office
660-562-4425 Cell Phone

Dr. Tiffanie Brooks, Attending Veterinarian, Animal Care Services.
806-834-8588 Office
806-239-2120 Cell Phone

C. Provide all the above information to the individual contacted above, who will give advice and authorization for the action(s) that should be taken.