

# Haskell County Animal Hospital

## Animal Health Update

Bill Hessman DVM  
P. O. Box 876  
Sublette, Ks. 67877  
620-675-8180

---

### UNDERSTANDING HEAT STRESS

We have always known that heat is stressful, but several new studies have shown just how much stress extreme heat can cause. Cattle are much more sensitive to heat than humans are. Cattle cool themselves primarily by panting alone although some breeds do sweat to some degree. Cattle have an upper critical temperature approximately 20 degrees F. lower than humans. When humans are uncomfortable at 80 degrees F. and feel hot at 90 F., cattle may be close to death. Humidity is an additional key element to heat tolerance. This is greatly compounded when you consider a calf's lungs are his radiator and any amount of pneumonia will have a great affect on its ability to cool itself. The greater the lung damage the less efficient they will be at cooling themselves. Cattle color is also very important. Black cattle are at a 6.4 times greater risk of heat stroke than other colors.

At what point should you anticipate a problem? In the spring and early summer it can happen easier as the cattle are not acclimated to the higher temperatures. Cattle can acclimate at a rate of approximately 1 degree/24 hrs. Drastic, sudden increases in the temperature during the spring may not allow cattle to acclimate. Two other indicators are Heat Index (HI) and Temperature Humidity Index (THI). Both are formulas involve just the ambient temperature and relative humidity, but calculated in different ways. See the attached tables. The shaded areas of the tables indicate emergency conditions in which heat deaths are likely. You must know both the ambient temp. and relative humidity to find the stress index. In our area of western Kansas with a usually low relative humidity you can add about 2-3 degrees to temperature and you will be close to the Heat Index (HI). Wind is also a large factor. Naturally the greater the wind speed the lower the HI.

We need to be concerned any time the HI exceeds 100 degrees. An additional factor to consider is the nightly lows. Cattle cannot return to their normal temps unless the lows get to 70 degrees at night. Cattle will accumulate heat without a low of 70 degrees. If they exceed emergency heat levels without recovery from low temps at night for 72 hrs. you will see heat deads!

#### Managing the Heat

Insure cattle have ample water. According to Dr. Jerry Stokka, under normal conditions cattle will consume 1.25 gal/lb DM consumption. When the Heat Index gets critical cattle can consume up to 2gal./lb DM consumption. Dr. Dee Griffin claims cattle may need as much as 2 gal./100 lb BW/hr. during critical times!!! Although few feedyards allow it, 3 inches of linear water space per head may be required with a high HI.

Water pressure is important for recovery rate. Engineers tell us that when placing water lines it is best to lay the supply lines as straight as possible. Every 90-degree turn will decrease water pressure 25%.

Avoid handling cattle after 10 AM if possible when heat indexes are critical. Cattle that must be handled during the day should spend no more than 30 min. in the handling facility (processing or hospital), i.e. only put 30 minutes worth of cattle in the tub, snake, etc. Avoiding cattle bunching is equally important. Most cattle working facilities have very poor wind movement. Cattle will gain heat each minute they are in these areas. A 30-minute time limit minimizes the heat gain and allows the body core temperature to return to normal quicker, so the calf can deal successfully with heat stress. Placing misters in holding areas, tubs and snakes can be of great value. Spraying cattle before they enter the tub can also provide relief for them if you do not have misters or sprinklers.

Changing your feeding patterns and backing down the energy level of the ration may help. Feeding a higher percentage of the ration later in the day may help hold cattle on feed and even out the consumption patterns. Moving to a late day feeding schedule may also minimize the sub-clinical acidosis that contributes to the problems seen in times of heat stress.

Mounds in the pens are beneficial. According to Dr. Dee Griffin, linear mounds can actually decrease airflow but "mountain mounds" can increase airflow. Dr. Griffin prefers mounds where cattle require oxygen when they get to the top! This may be beneficial for airflow but it also makes it more difficult for cowboys to pull sick cattle.

Shades can provide substantial relief from heat stress but is impractical for the whole yard. Providing shades in the sick and recovery pens have shown to be very beneficial. The surface temperature of black cattle can be as high as 145 degrees in direct sunlight. The surface temperature of the same animal under a shade can be reduced by 30-40 degrees.

If you provide shade it should have a north-south orientation. This will allow complete drying under the shade during the day.

Misters or sprinklers in sick and recovery pens will also help. When using sprinklers use ones that have the smallest gallons per minute flow as possible. This will help prevent muddy conditions from developing in these pens. Turn sprinklers on about 1 pm and off before you leave the yard or about 6 pm.

Control biting flies as best as possible. Stable flies cause cattle to bunch and disrupt animal cooling. Removing weeds and brush within 150 ft. of pens and spraying the shaded areas of buildings with a residual insecticide will help control stable flies.

Do not forget about your employees working outside for extended periods when heat indexes are high. Heat exhaustion or heat stroke are medical emergencies and can be fatal. Ensure that employees drink plenty of water and take frequent breaks during the heat of the day.

Doc

TEMPERATURE HUMIDITY INDEX																	
THI	TEMP																
RH	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98
90	81	82	83	84	84	85	86	87	88	89	90	91	92	93	94	95	96
85	80	81	82	83	84	85	86	86	87	88	89	90	91	92	93	94	95
80	79	80	81	82	83	84	85	86	86	87	88	89	90	91	92	93	94
75	79	80	80	81	82	83	84	85	86	86	87	88	89	90	91	92	93
70	78	79	80	81	81	82	83	84	85	86	86	87	88	89	90	91	91
65	77	78	79	80	81	81	82	83	84	85	85	86	87	88	89	89	90
60	77	78	78	79	80	81	81	82	83	84	85	85	86	87	88	88	89
55	76	77	78	78	79	80	81	81	82	83	84	84	85	86	87	87	88
50	75	76	77	78	78	79	80	80	81	82	83	83	84	85	86	86	87
45	75	75	76	77	78	78	79	80	80	81	82	82	83	84	85	85	86
40	74	75	75	76	77	77	78	79	79	80	81	81	82	83	83	84	85
35	73	74	75	75	76	77	77	78	79	79	80	80	81	82	82	83	84
30	73	73	74	75	75	76	76	77	78	78	79	80	80	81	81	82	83
25	72	73	73	74	74	75	76	76	77	77	78	79	79	80	80	81	82
	THI > 84 = EMERGENCY																
HEAT INDEX																	
HI	TEMP																
RH	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98
90	91	95	98	102	105	109	113	117	122	126	131	136	141	147	152	158	164
85	90	93	96	99	102	106	110	113	117	122	126	130	135	140	145	150	155
80	89	91	94	97	100	103	106	110	113	117	121	125	129	134	138	143	147
75	88	90	92	95	97	100	103	106	109	113	116	120	124	128	132	136	141
70	86	88	90	93	95	98	100	103	106	109	112	116	119	123	126	130	134
65	85	87	89	91	93	95	98	100	103	105	108	111	114	118	121	125	128
60	84	86	88	89	91	93	95	97	100	102	105	107	110	113	116	119	123
55	84	85	86	88	89	91	93	95	97	99	101	104	106	109	112	114	117
50	83	84	85	86	88	89	91	93	95	97	99	101	103	105	108	110	113
45	82	83	84	85	87	88	89	91	92	94	96	98	100	102	104	106	109
40	81	82	83	84	85	87	88	89	91	92	94	95	97	99	101	103	105
35	81	82	83	84	85	86	87	88	89	90	92	93	95	96	98	100	102
30	80	81	82	83	84	85	86	87	88	89	90	92	93	94	96	97	99
25	80	81	82	82	83	84	85	86	87	88	89	90	91	93	94	95	97