



UNIVERSITY
OF WYOMING

Extension Beef Team



BEEF BRIEF



Preventing Heat Stress to Maintain Livestock Performance in Hot Weather

Sustained summer heat can severely impact livestock health, growth, and reproduction—especially in places like the intermountain West, where sudden shifts in weather are common. Understanding how heat stress develops and taking early action ensures animals stay productive and ranchers stay on track with their goals.

Understanding Heat Stress: More than Just Hot Days

Heat stress occurs when livestock cannot dissipate the body heat they generate through normal metabolism and environmental exposure. Radiation from the sun, combined with high temperatures and heat-absorbing surfaces (like concrete or bare ground), compounds the challenge.

- Dark-colored animals and breeds less adapted to heat are more vulnerable
- Air temperatures over 80°F can trigger stress symptoms
- Heat stress risk increases when humidity limits cooling by evaporation

Related Tools

• Barnyards & Backyards:

www.uwyo.edu/barnbackyard/_file/s/documents/magazine/2018/summer/0718heatstress.pdf

• Nebraska BeefWatch:

<https://newsroom.unl.edu/announce/beef/8200/47172>

How to Measure Risk: The Temperature-Humidity Index (THI)

The Temperature-Humidity Index (THI) is a tool to evaluate environmental heat stress risk. It combines air temperature and humidity to assess how stressful conditions are for livestock.

- For beef cattle:
 - Normal: THI < 75
 - Alert: THI 75–78
 - Danger: THI 79–83
 - Emergency: THI > 84

*refer to the Nebraska Beef Quality Assurance Humidity Index Chart on Page 3

Recognizing the Signs: What Heat-Stressed Animals Look Like

When livestock begin to overheat, their nervous systems trigger a range of behavioral and physiological changes to help cool the body. Cattle will start sweating, and if that isn't enough, they begin to pant in an effort to release more heat.

Affected animals often reduce the time they spend lying down, as contact with the warm ground adds to their heat load, and they tend to shift grazing activity to the cooler hours of early morning or late evening.

One of the first physiological responses to heat stress is a drop in feed intake, which limits the heat generated during digestion but also leads to slower growth and potential loss of body condition. Reproductive processes are also disrupted—heat stress can impair sperm and egg viability and suppress estrus. In pregnant animals, these effects may extend to the unborn offspring, reducing muscle development, impairing metabolism, and ultimately lowering their future market value.

Preventive Actions: Managing Heat Stress Before It Hurts

The best defense is proactive management. Wyoming's typically dry heat may not always trigger emergency levels, but heat stress can still occur—especially during weather shifts or after moving animals to new elevations.

Steps you can Take:

- **Provide unlimited access to clean, cool water:**

Daily intake increases in hot weather. Monitor tank levels and consider backup sources if your system falls behind demand.

- **Ensure access to shade:**

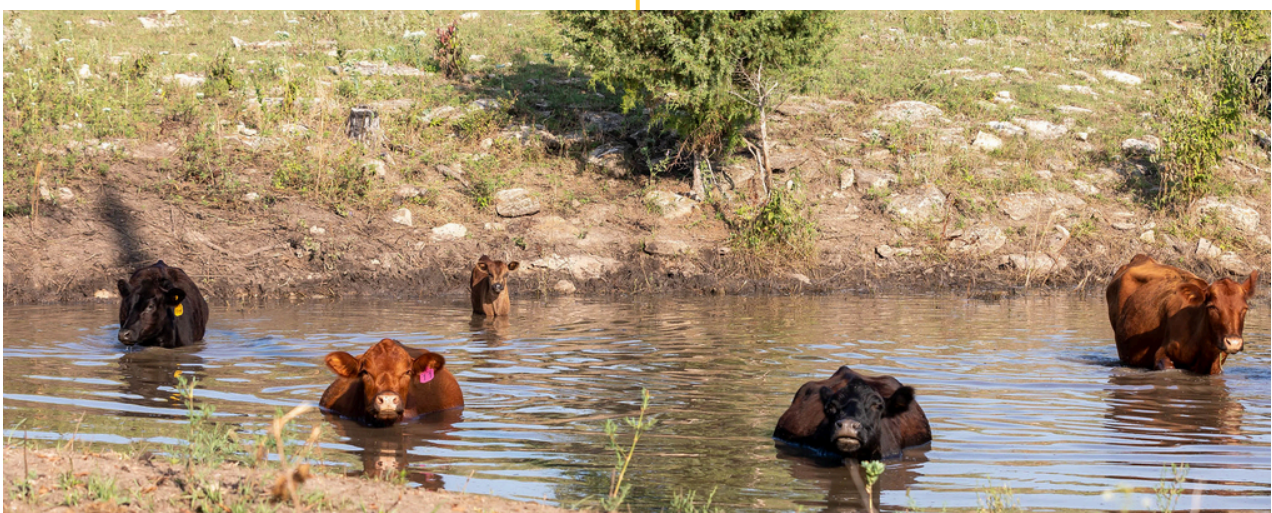
- Trees offer natural shade and cooler microclimates
- Barns or sheds should be well-ventilated
- Even partial shelter can reduce exposure to direct solar radiation

- **Adjust handling schedules (when possible):**

- Finish livestock work by 10 a.m.
- Avoid working animals until after 4 p.m.
- If mid-day handling is unavoidable, minimize stress and provide water at the destination

As a Rule:

Growing calves and lactating cows need roughly 2 gallons of clean water per 100 pounds of bodyweight during the summer months



ACT NOW: KEEP LIVESTOCK COOL TO PROTECT PERFORMANCE

Summer heat can sneak up—especially after spring storms or when moving animals down from higher, cooler elevations.

Evaluate your herd daily:

- Look for reduced feed intake or changes in grazing patterns
- Watch for signs of panting or labored movement
- Monitor watering points and shade availability
- Be extra cautious with young, old, or dark-hided animals

By managing heat proactively, you'll safeguard reproductive efficiency, maintain growth rates, and avoid costly setbacks in cattle performance.

Beef Cattle Temperature Humidity Chart													
Temperature (°F)		Relative Humidity (%)											
		30	35	40	45	50	55	60	65	70	75	80	85
	100	84	85	86	87	88	90	91	92	93	94	95	97
	98	83	84	85	86	87	88	89	90	91	93	94	95
	96	81	82	83	85	86	87	88	89	90	91	92	93
	94	80	81	82	83	84	85	86	87	88	89	90	91
	92	79	80	81	82	83	84	85	85	86	87	88	89
	90	78	79	79	80	81	82	83	84	85	86	86	87
	88	76	77	78	79	80	81	81	82	83	84	85	86
	86	75	76	77	78	78	79	80	81	81	82	83	84
	84	74	75	75	76	77	78	78	79	80	80	81	82
	82	73	73	74	75	75	76	77	77	78	79	79	80
	80	72	72	73	73	74	75	75	76	76	77	78	78
	78	70	71	71	72	73	73	74	74	75	78	76	76
	76	69	70	70	71	71	72	72	73	73	74	72	75
Temperature Humidity Index (THI)													
		Normal <75 Alert 75-78 Danger 79-83 Emergency >84											

Full view: <https://bqa.unl.edu/sites/unl.edu.ianr.extension.beef-quality-assurance/files/media/file/TCI%2520Chart.pdf>

This brief was created by UWyo Extension Beef Team, 2025-4

Author:

Micah Most, Johnson County Ag. and Natural Resources Extension Educator

Edited by:

UW Beef Extension Team

Sources:

Eirich, R. L., Griffin, D., Brown-Brandl, T. M., Eigenberg, R. A., Mader, T. L., Meyer, J. J. (2015, August). Feedlot Heat Stress Information and Management Guide. Nebraska Extension: Beef Quality Assurance.
<https://extensionpubs.unl.edu/publication/g2266/2015/pdf/view/g2266-2015.pdf>

Most, M. S., & Yates, D. T. (2021). Inflammatory Mediation of Heat Stress-Induced Growth Deficits in Livestock and Its Potential Role as a Target for Nutritional Interventions: A Review. *Animals*, 11(12), 3539.
<https://doi.org/10.3390/ani1123539>

Xin, H., & Harmon, J. (1998). Heat Stress Indices for Livestock. *Livestock Industry Facilities and Environment*. Retrieved July 22, 2025, from
<https://dr.lib.iastate.edu/handle/20.500.12876/33087>