

## Impact of horn flies on cattle during heat stress

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The current hot, dry weather that Oklahoma is experiencing is contributing to severe heat stress on cattle all across the state (Figure 1). Not to add another coal to the fire for Oklahoma cattlemen this year but horn flies will increase physiological stress to the animals. The main physiological stress that horn flies cause is an increase in overall body temperature when horn fly numbers are as few as 100 per animal. Research (Schwinghammer et al., 1986) has indicated that when horn flies are present rectal temperatures of steers increase from 101.8°F with no horn fly infestation to 102.2°F when 100 horn flies are present and finally 102.4°F when 500 horn flies are on the animals. This slight increase can be compensated under normal conditions but with the added heat stress, this slight increase can be the difference between a productive animal and one that is drinking away valuable water just to become open due to stress. Another point that this research demonstrated was that with increased numbers of horn flies water intake increases significantly. In fact, water consumption went from 4.4 gallons/day with no horn flies to 6.6 gallons/day with 500 horn flies and this was under laboratory conditions not heat stress conditions. Considering a normal cow weighing 1200 lbs. will consume around 24 gallons per day under 90°F conditions (Selk, 2010) you can reasonably add another 6 gallons when horn flies are present plus the added amount for temperatures at 100°F or above. There is also a correlation to the impact of horn fly densities on animals and forage quality. It is theorized that a reduction in average daily gain in growing beef animals becomes more linear (i.e. more of a direct relationship) for every 100 horn flies increase on the animal when forage quality becomes moderate to poor. Considering that most forage conditions in Oklahoma at this time are at the lower end of the quality spectrum the impact of horn flies on the animals can become more significant. Below is a table that list relevant physiological effects of horn flies feeding on beef animals:

**Table 1: Influence of horn fly infestations on physiological measurements of beef steers.<sup>a</sup>**

Item	Horn flies /animal		
	0	100	500
Heart rate /min <sup>b</sup>	76.6	89.1	101.1
Respiration rate / min <sup>b</sup>	44.6	52.7	62.1
Rectal Temp., °F <sup>b</sup>	101.8	102.2	102.4
Water intake, gal./day	4.4 <sup>c</sup>	4.3 <sup>c</sup>	6.6 <sup>d</sup>
Urine output, gal./day	1.0 <sup>c</sup>	1.1 <sup>c</sup>	3.2 <sup>d</sup>
Feed intake, lbs. DM/day	12.4	12.4	12.4
Nitrogen intake, grams/day	119.1	118.0	119.1
Fecal nitrogen, grams/day	30.9	34.5	34.8
Urine nitrogen, grams/day	24.6 <sup>c</sup>	31.1 <sup>cd</sup>	34.7 <sup>d</sup>
Nitrogen retained, grams/day	63.6 <sup>c</sup>	50.2 <sup>d</sup>	49.5 <sup>d</sup>

<sup>a</sup> Byford et al., 1992 and Schwinghammer et al., 1986

<sup>b</sup> Row values differ (P = 0.05)

<sup>c,d</sup> Row values differ with different superscript (P = 0.05)

If horn flies are affecting your cattle then some simple control methods can be applied such as dust bags or backrubber/oiler but these have to be placed in areas where every animal is required to go under them. Ear tags are also effective at controlling horn flies but a limiting factor especially during this extreme heat is gathering the animals and working them through a chute system. If cattle come up to a feed truck fairly easily then spraying them will aide in reducing the amount of horn flies on the animals. Every producer will have different infestation levels of horn flies on his/her herds and it will be up to the producer to determine if their cattle are being further stressed by horn flies but there are still significant amounts of horn flies present on Oklahoma cattle even in this dry climate (Fig. 2). If you have concerns about horn flies on your cattle please contact your local county extension educator and they can provide further information.

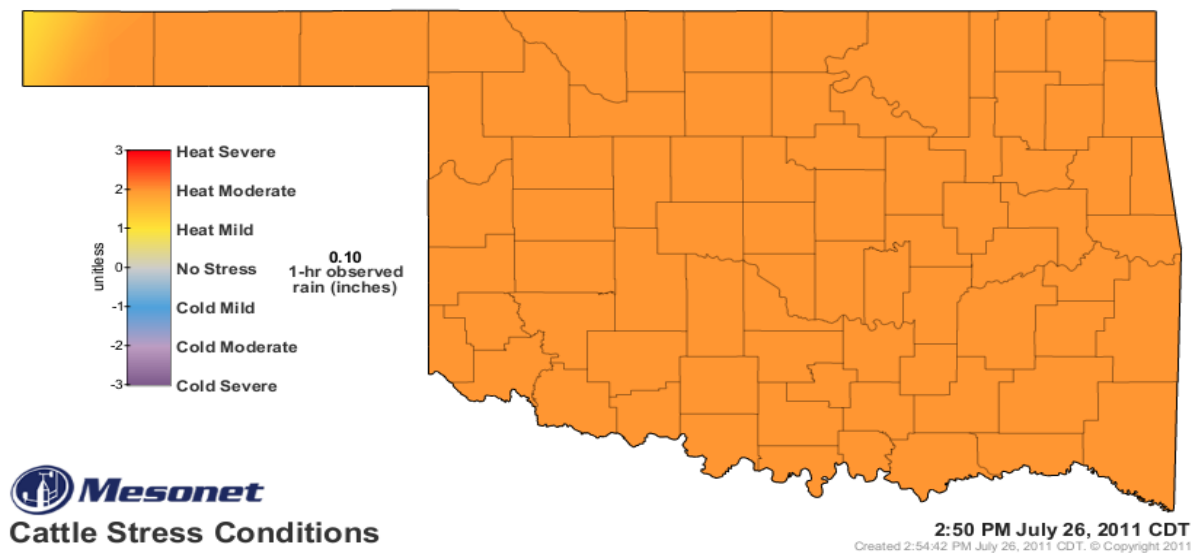


Figure 1: Current heat stress monitor for cattle. (Source:<http://agweather.mesonet.org/index.php/data/section/livestock>)



Figure 2: Horn flies on a set of 7 wt. stocker steers. This picture was taken on 7/22/11 near Bartlesville, OK.



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