Cornell University Cooperative Extension

Heat Stress - Impact on Lactating Cattle

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Summer has finally arrived in Northern New York! The local beaches and pools are open, kids are enjoying school break and everyone is capitalizing the excuse to eat more ice cream…ok maybe that's just me…Farmers are capitalizing on the warm weather to get hay mowed and harvested in a timely manner. While it's important to take advantage of summer days to get crops done, we can't forget about the bovine beauties that provide us with a high quality product every day. Heat stress is a challenge on dairy farms across the United States, including northern New York. It is estimated that over $800 million dollars are lost for the dairy industry in the US due to heat stress.

When do cows experience heat stress?

In order to understand when a cow experience heat stress, it's important to know her optimal environmental temperature zone. Lactating cattle perform best when the temperature is between 40^0 to 60^0 F. When the temperature is above or below this zone, cattle experience heat or cold stress. It is estimated that dairy cows are exposed to 14.1% of all annual hours to conditions of heat stress.

Heat stress is a product of temperature and humidity, when the temperature-humidity index (THI) gets too high, we observe negative impacts on production and reproduction in lactating cattle.

- 65^0F – the THI threshold for reproduction
- 72^0F – the THI threshold for milk production

Impacts of heat stress on lactating cattle

- **Decreased dry matter intake**
- **Lower production**
- **Milk fat depression**
- **Rumen acidosis**
- **Weakened immune system = increased risk of infection, including mastitis**
- **Reduced reproductive efficiencies**

Impacts of Heat Stress

Nutrition – The nutritional needs of dairy cattle change during heat stress. During bouts of heat stress, dry matter intake decrease thus leading to decreased nutrient density and potential alterations in rumen function.

Milk Production – It has been estimated that in NY, at least 306 pounds of milk/cow/year is lost due to heat stress, with a range from 150 to 4,568 pounds/cow/year across the country, based on the level of heat stress experience. It has been demonstrated that only 50% of milk production loss during heat stress is due to decreased feed intake. Milk fat depression is also observed in cattle suffering from heat stress. Incidences of mastitis increase due to weakening of the immune system. Thus farmers have the potential to see a smaller milk check due to decreased milk yield, decrease components and higher somatic cell counts.

Reproduction **-**Heat stress, is one more factor that reduces reproductive efficiencies on dairy farms. During bouts of heat stress, fewer standing heats are observed, leading to decreases in pregnancy rate. Body temperatures greater than 102.2^0F, may have a negative impact on the developing embryo from day one to day six and lead to loss of pregnancy. Heat stress during late gestation, may lead to cows calving 10 to 14 days before their due date.