Shade reduces cattle heat stress

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Cattle will naturally seek shade when the temperature and humidity rise. In many parts of the U.S., shade is a necessity for grazing animals to maintain optimal performance. Heat stress can greatly impact cattle performance through decreased milk production and subsequent calf growth, decreased reproductive performance in cows and bulls, and decreased stocker and feeder calf performance.

The ideal temperature range for beef cattle is between 41 degrees Fahrenheit and 77 degrees Fahrenheit. When temperatures exceed this range, cattle are at risk of heat stress. Many environmental factors affect the potential for heat stress, including relative humidity, wind speed, solar radiation, ground cover, access to water, diet, shade and nighttime temperatures. In addition, individual animal characteristics can contribute to heat stress. These include hide color, breed, health, adaptation, hair coat length and disposition. When a combination of these factors and ambient temperature cause an animal’s heat load to exceed its ability to dissipate that heat, heat stress occurs.

Adequate shade can be effective at reducing the effects of heat stress. The minimum amount of shade required is 30 to 40 square feet for mature cattle, 20 to 25 square feet for feeder cattle and 15 to 20 square feet for stockers. If shade is limited, heat stress can be compounded by animals crowding together.

Portable or Permanent
Many times, there is natural shade available in pastures. However, if natural shade is inadequate, consider constructing permanent or portable shade structures. Permanent structures are more suitable for feeding pens and receiving or weaning traps but can be placed in pastures as well. The initial cost of constructing a permanent structure is about $1 per square foot of shade but can vary depending on material costs in your area. Portable structures are more expensive to construct but can be moved with the cattle, decreasing the number of units needed. Other advantages to a portable structure include more uniform grazing, less
pasture damage in the shaded area and better manure distribution.

**Location**

Be sure to locate shade structures to take advantage of prevailing winds during summer. Select areas with minimal slope to prevent erosion that can result from concentrated animal traffic. Also, manure will be concentrated in this area and can contaminate ponds and streams. It is important to leave an adequate buffer along drainages to prevent nutrient runoff. If possible, design shade structures in a long rectangle oriented north to south. A long rectangle, as opposed to a large square, spreads animals out and facilitates drying.

**Design Considerations**

Both permanent and portable structures should be a minimum of 10 feet tall to allow adequate air flow. In heavy use situations, permanent structures will require manure removal and should be designed to allow easy access based on the size of your equipment. Shade cloth makes a good covering because it is relatively inexpensive, easily replaced and allows for good air flow. Use a UV-resistant cloth that blocks at least 80 percent of light, and expect to replace it every five to eight years. Solid coverings are more expensive and last longer but are more susceptible to wind damage. Consider a taller structure if a solid covering is used.

Every operation is different, and each pasture will have a unique need for shade. The decision to construct shade structures should be based on animal welfare and economics. The cheapest option may be to plant more trees. If natural shade is limited, animals will benefit from shade structures and, if well built, they should last many years.