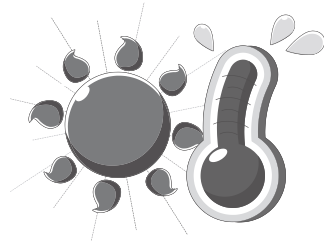


Heat Stress Indicators in Beef Cattle

Researchers at the U.S. Meat Animal Research Center (MARC) at Clay Center, NE have been conducting research and developing heat stress forecast maps to predict times of heat stress in beef cattle. While most of their research has been conducted with feedlot cattle, some of their findings do relate to cow-calf and stocker operators in Missouri.

The MARC researchers have identified factors from four different areas that influence a particular animal's response to heat stress. These are genetics, health, production status and previous exposure to heat. In feedlots, lighter colored cattle have shown less heat stress indicators than darker colored cattle. Calmer animals have also been shown to be more heat tolerant than more excitable animals.

Of particular interest to cow-calf and stocker producers is the impact of health and previous illness on heat stress. MARC research has shown that feedlot animals which have been treated for pneumonia any time between birth and harvest averaged 10.5% higher respiration rates under stressful conditions than untreated animals. This increase in respiration rate is evident at temperatures above 72 degrees Fahrenheit (F). Respiration rate is an excellent indicator of heat stress in cattle, since this is one of the primary ways they dissipate body heat.



Environmental risk factors contributing to heat stress include: high overnight lows (above 70 degrees F), minimal cloud cover, low or no air movement, high relative humidity and danger or extreme categories on the Temperature Humidity Index (THI) for two or more consecutive days. Feedlot pens absorb and retain a lot of heat. Ground temperatures in High Plains feedlots are typically 20 to 50 degrees warmer than air temperature. Factor that in if you are dry lot backgrounding or finishing cattle in Missouri.

To deal with heat stress situations, make sure water supplies are adequate. This includes having adequate tank recharge rates and providing at least 1.5 inches of water tank perimeter per head. Minimize animal handling and movement and give them access to areas with air movement. Access to shade is also important, but make sure these shaded areas do not become mud holes.

The MARC researchers have developed heat stress forecast maps using the seven day forecasts of four parameters (temperature, wind speed, humidity and solar radiation data) from the National Oceanic and Atmospheric Administration and the National Weather Service. The prediction of animal stress is based on an equation that combines weather forecast data to estimate cattle heat stress response. The maps are to be used as an estimate of general trends of stress level over the forecast period. The maps are also designed to forecast the anticipated peak heat stress category for each day.

The heat stress forecast maps can be accessed at www.ars.usda.gov. At this site, click on "Find a

Continued on next page

How's the Weather??????

For real-time weather on-line go to:

<http://agebb.missouri.edu/weather/stations/index.htm>

Or

Sign-up for Horizon Point

Horizon Point is an educational program of the MU Commercial Agriculture Program that is designed to make precise weather information available to Missouri farmers in a way that assists them in managing their business. Site-specific weather reports and advisories are sent to participating farmers via quickly downloaded emails.

For more information, call 573-884-6311 or e-mail: HorizonPoint@missouri.edu

location” and then click on “Clay Center, NE” on the map that appears. This takes you to the MARC website. Once there, click on “Cattle Heat Stress” for the forecast maps and other information relating to heat stress in beef cattle.

Source: Gene Schmitz, Livestock Specialist

Taxation Tidbit: Asset Transfers to Your Spouse

In the estate planning process it is frequently desirable to balance or unbalance an estate by shifting the ownership of some assets between the husband and wife during life, and/or at the death of the first spouse to die. A tax provision known as the marital deduction, generally, allows for the unlimited transfer of assets to your spouse during life or at death without any income, gift, or estate tax liability.

Occasionally, people want to put stipulations or attach “strings” on these spousal transfers. These strings can disqualify the transfer from being treated as a marital deduction. For example, assets transferred to a spouse “for as long as he or she does not remarry” would not qualify for the marital deduction. This type of transfer is said to have a terminable interest – disqualifying the transfer for the marital deduction.

However, Congress has provided a few exceptions (or safe harbors) to this terminable interest rule which allows the utilization of the marital deduction with certain restrictions. One example is a transfer of assets to a trust that provides income to the surviving spouse, while preserving the trust’s assets for later distribution to children or other heirs per directives of the first spouse to die – is a permitted arrangement. This transfer restriction can be particularly important in protecting assets for children of a prior marriage. One of the more frequently utilized terminable interest exceptions is known as the QTIP trust. QTIP stands for qualifying terminable interest property. A key to qualifying property for this type of trust is that the surviving spouse must be given the right to receive all

income from the trust property, payable at least annually for life, whether or not he or she remarries.

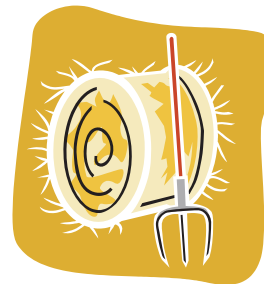
In estate planning for married individuals the marital deduction and QTIP trusts are two of the most useful and powerful tools in your estate planning tool kit.

Source: Parman R. Green, Ag Business Specialist

Reducing Winter Feed Costs Starts This Summer

Minimizing hay waste is one important and effective method of reducing cow herd feed costs. Many storage management practices will not increase costs, for example place bales tightly end to end oriented in rows running north and south on a slope. Orienting hay this way minimizes the exposed bale face and allows the sun to pass over and dry the entire bale. A minimum of three to four feet of space between rows allows adequate air flow and sun exposure to permit drying. If bale rows touch each other, water runs off one bale into the middle of another and reduces drying on the bottom half of the bales. Proper bale yard location can also minimize hay waste without increasing storage costs. Do not store bales in waterways, low lying areas, under tree lines or in shaded areas since these areas either concentrate water into the bale or minimize drying after rain.

Breaking ground contact with hay is important to minimize waste since bales will wick moisture from the ground. Use a gravel pad, pallets, pipe or ties to break ground contact and minimize hay and nutrient loss.



Making dense bales that maintain shape minimizes the percent of the bale in contact with the ground. In addition to making dense bales, make bales as large as your equipment can handle in order to concentrate more hay in the center of the bale.

Once hay is baled, forage quality will decline due to storage and weathering. Storage losses make poor quality forage more expensive due to dry matter and water soluble nutrient losses. As hay quality increases the cost of storage losses will also increase. To determine if reducing hay storage losses will offset alternative hay storage methods divide the value of the hay by the percent fed after losses. So \$50 per ton hay becomes \$59 per ton hay of poorer quality if 15% is lost in storage. Barn storage will average 2-3% storage losses, while uncovered hay stored on the ground can result in 15-17% storage losses. In addition to storage losses, cattle waste greater percentages of poorly stored hay during the feeding period.

Source: Dr. Justin Sexten, MU Extension Beef Nutrition Specialist

Common Plant Diseases of the Cucurbit Vegetables

The vegetables in the cucumber family, called Cucurbits, include melons, squash, cucumbers, & pumpkins. There are a number of diseases which can afflict them; their descriptions and suggested control measures are provided in the table below (MU Guide ‘Common Diseases of the Home Garden’). Two diseases that are either particularly problematic for home gardeners, or almost always occur, are reviewed below—bacterial wilt and powdery mildew. However, for home gardeners in commercial fields of Cucurbits, the incidence of some of the other diseases covered in the table below may be commonplace as well.

Bacterial wilt is difficult because one has to control the vector of the disease, cucumber beetles. Once the bacterial wilt is in the plant, there is no way to cure it (DO NOT spray the infected plant with a fungicide or insecticide). One should immediately pull up and dispose of any infected plant, preferably by burning. Then spray all other Cucurbits in the garden with an insecticide; permethrin is a widely available & effective active ingredient for home gardeners. Symptoms are often seen about 2 wks after cucumber beetles arrive in the garden. (Cucumber beetles became active in MO at the end of May) Bacterial wilt can be transmitted to a plant very quickly; even if a plant was promptly treated after seeing the pest, some plants may succumb to the disease. In late June & July another insect pest may give a similar wilting symptom, but not followed by quick death. This is caused by the squash vine borer, which has a caterpillar stage that tunnels inside the base of the plant, and then upwards. (Squash vine borer moths become active in mid to late June in MO.) Inspect the base of the plant. If a small hole about the size of a pencil can be noted, with a sawdust like substance coming out (called frass), then a borer is inside. Insecticides applied to the plant (as a root drench or the foliage) are not considered effective against the borer when inside. You can try some ‘surgery’, carefully

splitting the stem until you find the offender, and then stabbing it. With or without intervention, sometimes a plant recovers, but its vigor is reduced.

Powdery mildew becomes active in mid to late summer, more notably as it cools off with longer and cooler nights, accompanied by heavy dews. A dry leaf surface and high humidity are ideal conditions for infection and dry, windy weather ideal for spore dispersal. The fungi that cause these diseases have a white filamentous mass (mycelium) that usually grows on the upper leaf surface making it look ‘powdery’. While powdery mildew occurs on a wide variety of plants and often about the same time, it is host specific so one plant family is not infecting another. Symptoms can range 1) from virtually no effect at all, even when infection is extensive, as on lilacs, 2) to growth abnormalities when young leaves are infected, such as occurs on apple & crabapple shoots, 3) to death of affected leaves like that which occurs on Cucurbits & zinnias. For many garden plants late season infection is not worth trying to control, but for cucurbits, it may be as the loss of leaves will reduce yield. A number of fungicides are available for control of powdery mildew. Protectant fungicides must be applied often to protect emerging foliage. Sulfur is one that should NOT be used on the cucurbits because these plants are more likely than most to be damaged. Baking soda is an effective home fungicide if applied fairly frequently, about weekly (1 tablespoon per gallon of water & include ½ teaspoon of a spreader sticker). A widely used garden fungicide that is labeled for control is chlorothalonil. However, a product with the active ingredient mycobutanil is considered superior & has a home garden label as the ‘Immunox’ brand. A biologically based product is now available to home gardeners and is labeled as providing control. ‘Serenade’ and ‘Natria’ are two garden disease control products that both use the same active ingredient, QST 713 strain of *Bacillus subtilis*.

Source: James Quinn, Horticulture Specialist

Cucurbit family: cucumber, gourds, melons, pumpkin, squash Disease and symptoms	Resistant varieties	Cultural controls before planting	Cultural controls after planting	Chemical options
Alternaria leaf blight — Yellow lesions expand to dark brown necrotic (dead) areas. Eventually causes leaf death.		Rotate crops.		chlorothalonil maneb
Angular leaf spot (bacterium) — small, water-soaked spots on leaves become tan on upper surface and gummy or shiny on lower surface. Spots take angular shapes up to one-eighth of an inch. Later dry and drop off.		Use treated seed. Avoid excessive nitrogen. Rotate crops.	Limit overhead irrigation and working among wet plants.	copper hydroxide mancozeb
Anthrachnose (fungus) — brown-colored leaf spots. Elongated sunken cankers on stems. Sunken circular cankers with pink centers and brown margins on fruit.	X	Use treated seed. Rotate like crops.	Limit overhead irrigation. Avoid working among wet plants.	copper hydroxide maneb chlorothalonil mancozeb ³
Bacterial wilt — plants wilt and die. This disease is transmitted by cucumber beetles. When stems are cut, bacterial ooze strings between the cut stems. See MU publication M163, Managing Insect Pests in the Home Vegetable Garden.			Control striped and spotted cucumber beetles. Remove affected plants.	
Downy mildew (fungus) — yellowish angular spots on upper leaf surface. White to purplish downy growth on lower leaf surfaces. Leaves may curl, turn brown and die.	X		Limit overhead irrigation.	maneb chlorothalonil mancozeb
Fusarium wilt (fungus) — vines turn yellow and wilt around fruiting time. Vascular tissues of stems appear discolored and may ooze sap. This disease is more prevalent in muskmelons and watermelons.	X	Use a 3-year rotation	Sanitation. ¹	
Gummy stem blight (fungus) — plants wilt. Water-soaked lesions on leaves and stems turn dark brown. Cankers girdle stems. Cankers have brown, sticky exudate.		Rotate crops. Use disease-free seed.		maneb chlorothalonil mancozeb ³
Viruses (cucumber mosaic, watermelon mosaic, squash mosaic virus) — stunted plants with yellow and green mottling of leaves. Leaves distorted. Fruit mottled, misshapen, warty.	X		Sanitation. ¹ Control cucumber beetles and aphids. Control weeds.	

Missouri AgrAbility Project

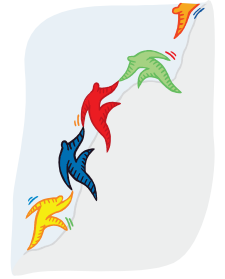
The AgrAbility Project is a national program that works to assist agricultural and agribusiness workers who have physical and mental disabilities to adapt their homes and farms in order to allow them to continue to work in agriculture.

The goal of AgrAbility is to provide assistance and resources to farmers with disabilities that allow them to continue farming. AgrAbility provides individualized services, both on and off the farm, to help create a comprehensive, individualized plan to allow the disabled farmer to continue farming. AgrAbility involves not only the farmer, but the family, community, agricultural professionals, medical professions and farm implement manufacturers.

Statewide in Missouri, the following services are available:

- Farm House Accessibility Surveys and Information
- Assistive Technology Resources
- Equipment Modification Information
- Agricultural Worksite Accessibility Surveys
- Educational Materials
- Independent Living Resources Technical Support

Disabilities that AgrAbility assists with are not limited to traumatic injuries. AgrAbility assists farmers with all types of disabilities and limitations including chronic health conditions or pain, such as arthritis, heart conditions, visual impairments, hearing impairments, respiratory diseases, and traumatic brain or spinal cord injuries. If you are interested in AgrAbility services (e.g., training, site visit, on-farm assessments, technical assistance, or information about working directly with the farmer, rancher, or farm worker), contact Karen Funkenbusch, Program Director, at **1.800.995.8503**.



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