# Missouri Ag News

A Publication of University of Missouri Extension - Southeast Region

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# Preparing for Hot Weather to Minimize Heat Stress

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Your livestock will be looking for relief from the heat as well. Heat stress in livestock can cause reduced feed intake and efficiency, reduced milk production, increased disease, decreased reproductive performance, and decreased fetal growth and colostrum quality in pregnant animals. The following practices can help you minimize heat related stress and identify susceptible animals.

## Susceptible animals

Feedlot animals the closest to finishing are most at risk. They experience radiant heat from the dirt or concrete pens and have the least amount of lung capacity relative to body weight to help dissipate heat. Young and old animals are next in line because they do not have the body reserves to withstand long periods of heat. Dark hided animals are at a higher risk of heat stress and some incidences of death have been reported when black-hided animals were on pasture with no shade and limited water resources.

There are six stages of heat stress and being able to recognize heat stressed animals becomes important in hot summer months. Stages 5 and 6 are at risk of death if not relieved.

## Managing stress

Having an action plan to reduce the heat load on animals can help lower the negative impacts of hot weather.

Water needs increase during hot weather because cattle have increased water loss through breathing and sweating. Drinking water is the fastest way for cattle to reduce their core body temperature. Be sure there is adequate access to cool, clean water. Extra water tanks may be needed in periods of extreme heat.

Move feeding time to late afternoon or evening. Body heat reaches maximum a few hours after eating so avoid morning feeding when body heat would reach max at the hottest part of the day. If two feedings are required consider a smaller meal in the morning and larger portion in the evening.

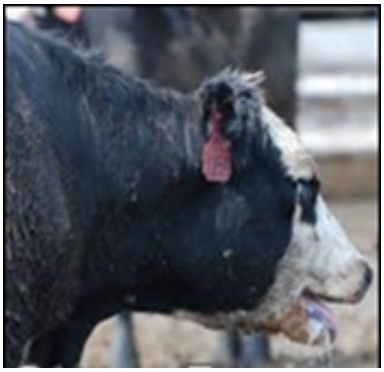
Air movement improves animal cooling and having mounds in pens gives cattle more elevation

# cont…. Minimize Heat Stress

| | |
|---|---|
| 1) | Elevated breathing rate, restless attitude, increased time standing |
| 2) | Cattle may begin to drool and group together |
| 3) | Respiratory rate increases, excessive drooling/foaming |
| 4) | Open mouth breathing begins and drooling decreases |
| 5) | Protruding of the tongue |
| 6) | Labored breathing with head down, isolation from the herd |

and access to more wind. Provide shade for animals and if shade is not practical such as a feed yard, consider turning out temporarily to shade especially in the mid-day heat. Wetting the ground or adding bedding to the ground can reduce the ground temperature where cattle lay.

Fly control is important during hot weather because flies will add to the stress of the hot days.



Summer heat have you panting?

Left stage 3 heat stress (USDA); above stage 5 heat stress

Lastly, do not work cattle during temperature extremes. If working the animals is absolutely necessary, keep it short, calm, run smaller groups, make sure water is available in holding pens and work them as the sun comes up. Do not work cattle in the evening after a heat stressed day.

The risk of summer heat stress is another reason to have a defined calving season. Cows which have been heat stressed in late gestation have calves with lighter birth weights and produce lower quality colostrum. This can lead to decreased calf vigor and increased disease susceptibility in calves. As mentioned earlier, young animals are at increased risk to heat stress because they do not have reserves to handle the heat. Trying to get females bred in periods of extreme heat can be difficult as bulls may not want to perform and female reproductive performance is hindered. Heat stressed cows may not show heat, follicles may develop incorrectly, estrous cycles may be irregular, and more embryonic death can occur.

Know when livestock are at risk by paying close attention to weather and the Livestock Weather Hazard Guide: http://www.noble.org/Ag/Livestock/Heat/

*Dewell, G. 2014. "Heat Stress in Feedlot Cattle." Iowa State University, Extension and Outreach.*

*Dahlen, C.R. and C.L. Stoltenow. 2012. "Dealing with Heat Stress in Beef Cattle Operations." North Dakota State University, NDSU Extension Service. <www.ag.ndsu.edu>.*

Erin Larimore, Livestock Specialist, University of Missouri, Jackson, MO

# Soggy Bottom Blues Killing the Green

COLUMBIA, Mo. – Rain continues to reign in Missouri's corn and soybean fields.

The type and location of flooding determines damage to planted crops, says University of Missouri Extension Agronomy Specialist Bill Wiebold. An understanding of flooding can help farmers consider options and risks.

According to Wiebold, three factors determine how flooding affects plants: water temperature, water motion and flood duration.

First, temperature is related to the speed of respiration. Warm water speeds respiration, so oxygen is depleted sooner.

Second, fast-moving water creates turbulence, which oxygenates the water slightly. This decreases the impact of flooding, but only slightly.

Third, duration of the flood is important because many of the effects of low oxygen on plants are reversible to a point. Plants generally tolerate flooding for two to three days, Wiebold says, but that's not to say they go undamaged.

Corn tolerates flooding better than soybean, except when plants are young. In young corn plants, the growing point is near the soil surface, making it likely to be submersed longer. The growing point of the soybean plant is at the tip of the stem and may remain above water.

Flood effects may last long after the water recedes. Soybean plants may turn yellow because nitrogen fixation stops. Corn may show signs of nitrogen deficiency. Sometimes floodwaters deposit silt and residue on leaves. Photosynthesis is reduced until soil and residue are washed from the leaves by a subsequent rain.

Thick claypan soils in northeastern Missouri face the worst drainage problems. The high clay content restricts or prevents the water from moving through the soil, Wiebold says. Only dry days move the water out of the soil.

Prolonged heavy rainfall can cause rivers to rise and block runoff from fields. Rivers and backed-up streams remain above flood stage until water drains through the system. Low areas in fields with slow or poor drainage experience ponding, even if separated from rivers and streams, he says. Ponding usually lasts longer than flash floods because ponded water moves slowly or not at all.

Most damage to plants from flooding or ponding comes from oxygen deprivation. Water in soil (waterlogging) or above the soil surface (flooding) means there is less oxygen for plants to use. Without enough oxygen, the plant grows poorly or dies. In oxygen-deprived crops, changes in respiration can produce several chemicals harmful to the plants.

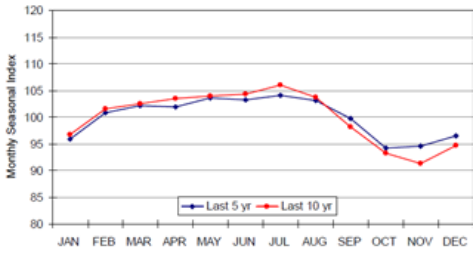
A soybean crop planted after floodwaters recede can still be profitable, although yields will be lower, Wiebold says. Farmers who plant in July are gambling on a late frost this year. If frosted early, soybeans remain green rather than turn a normal yellow. Buyers dock green soybean.

The MU Extension guide "Flood Effects on Grain Crops" (AGW1014) is available at http://extension.missouri.edu/p/AGW1014.

William Wiebold, Agronomy Professor, University of Missouri Extension, Columbia, MO

# Early Pregnancy Detection

For spring-calving cows (January – April) pregnancy detection usually occurs in the fall. Cull prices are generally 5–10% higher in August than October. Identifying cull cows early allows producers flexibility in their marketing to optimize revenue. Marketing open cows in August also allows producers to sell more weight because cows nursing a calf typically lose weight from August to weaning time. Producers that use early pregnancy detection on heifers have the advantage to market that open female as soon as they are identified or put weight on her and market at a later time, both allowing that female to maintain a maturity class A for carcass quality.




Early detection and marketing of open cows reduces the expense to maintain those females. Maintenance cost can vary greatly depending on the time of year and forage availability. To maintain a 1250 lb. bred cow during the winter requires approximately $1.30 per day.

There are several methods of pregnancy detection available to producers. Pregnancy can be detected in cows as early as 30 days using ultrasound and blood tests. Palpation requires cows be at least 35-50 days pregnant and the experience of the person palpating makes a big difference in the ability to detect early pregnancies. Stressing cows early in pregnancy can result in a slight pregnancy loss. Anywhere from 1-3.5% loss has been reported when palpation or ultrasound have been used between days 40 and 75 of gestation.

The blood pregnancy tests use a diagnostic technique which measure specific proteins secreted by the fetus. These tests are 99% accurate in determining an open cow. It is important to know that these tests must be performed a minimum number of days post calving. This is to prevent interference of the proteins from the previous calf. Therefore it is important to keep accurate calving records and know the post-partum interval of cows before conducting a blood pregnancy test.

*Amundson, O.L. and G.A. Perry. 2014. "Importance of Pregnancy Detection." South Dakota State University, Department of Animal Science.* http://igrow.org/livestock/beef

*Berger, A. 2013. "Early Pregnancy Detection: A Tool for Managing and Marketing in the Cowherd. University of Nebraska-Lincoln, Panhandle Research and Extension Center.* http://beef.unl.edu/cattleproduction/early-pregnancy-detection

Erin Larimore, Livestock Specialist, University of Missouri, Jackson, MO.

Advantages and disadvantages for three methods of pregnancy testing

| | When pregnancy can be detected | Age of calf | Sex of calf | Experienced technician needed? | Cost per cow | When results are known |
|---|---|---|---|---|---|---|
| Palpation | 35-50 days | Yes | No | Yes | $3 - $10 | Immediately |
| Ultrasound | 30 days | Yes | Potentially | Yes | $5 - $15 | Immediately |
| Blood test | 28 days | No | No | No | $3 - $5 | 2 - 4 days |

# Crop Update

## Corn

Corn is across the board in development. The corn that is tasseling or close to tassel needs to be scouted for disease lesions. Foliar diseases that could be out there include northern corn leaf blight and gray leaf spot. Rust is another potential disease. Identification of these diseases can be found in IPM1001 - Corn Diseases from the University of Missouri Extension http://extension.missouri.edu/p/IPM1001.

Fungicide timing is VT to R2. The question of whether to apply or not depends on variety susceptibility, field history, presence of leaf wetness for extended hours (generally more than 8 hours is required for spore germination), and inoculum of target diseases. Target diseases include gray leaf spot, northern corn blight and in some years rust may blow in from southern locations. I have included a link from Dr. Heather Kelly who was a guest speaker at the MU Extension Corn Meeting with some research based insight on corn fungicides: http://news.utcrops.com/2014/06/considerations-for-fungicide-application-in-tasseling-corn/

The following link is from the Corn Disease Working Group for fungicide efficacy ratings, https://www.extension.purdue.edu/extmedia/BP/BP-160-W.pdf, which is also listed in the University of Missouri Extension M171 Missouri Pest Management Guide: Corn, Grain, Sorghum, Soybean, Winter Wheat, Rice, Cotton.

Overall, the ideal timing is VT. Some products will not recommend the use of adjuvants prior to VT, so read labels carefully. This comes from research several years ago concerning abnormal ear development: https://www.agry.purdue.edu/ext/corn/news/articles.08/arrestedears-1209.html

Another question this time of year is Japanese beetle feeding on silks. Threshold for corn is an average of 3 beetles per ear during active pollination with silks clipped to ¾ inch above husk. Pollen shed begins a couple of days before silk emergence and continues a couple days after pollination. Silks emerge on an ear over a 2 to 3 day period, but will continue to be receptive to pollen for up to 10 days. A uniform field will generally complete pollination in less than a week. Once pollen lands on a silk, the corn ovule is pollinated within 24 hours. Therefore the silk clipping window to cause yield loss is relatively short. However, with delayed planting this season that window could be extended. If you have threshold numbers in a field or even a portion of a field, that area can experience yield loss. Scouting is critical since in many of the cases I have looked at over the seasons, the highest concentrations of beetles are on ends and only extend a few rows into the field or clipping has occurred after pollination. Both cases would not warrant treatment. You can determine pollination by carefully peeling back corn husks, so as not to pull unpollinated silks off the ear. Once husk is removed, gently shake ear. If pollination is complete silks will fall freely from pollinated ovules.

## Milo

A recent trip to Tennessee indicated that there is a significant increase in milo acres in both SE Missouri and West Tennessee. Milo stage of development is from V6 to pre-boot. Continue to monitor fields for fall armyworm which are feeding on leaves now. There is not an

# Cont….Crop Update

established threshold for foliar feeding for this pest. A general rule would be 25% defoliation which is the recommendation for other grass crops. Other common pests to prepare to scout are midge during flowering and corn earworm and webworm during seed development. Midge threshold is 1 adult midge per head at 50% bloom. The threshold for earworm is 2 larvae per head. Webworm threshold is 5 larvae per head. The MO Pest Management Guide has recommended products for these pests.

Scouting procedures for these pests are outlined in the following University of Missouri Extension guides: G7140 - Sorghum Midge in Missouri, G7115 Management of the Armyworm Complex in Missouri Field Crops, and from Utah State Extension SP341-B Sorghum Webworm in Grain Sorghum.

Another pest to keep an eye out during boot is the white sugarcane aphid (Melananphis sacchari) not to be confused with the yellow sugarcane aphid that also can be found in milo. There is an identification slide set out of Texas: Sorghum Aphid (http://sorghumcheckoff.com/wp-content/uploads/2013/12/2014SorghumU_Robstown_MBrewerAphids.pdf). This aphid was a problem pest for the mid-South in 2014. Entomologists are not sure if the aphid can handle MO winters, so this may be a potential concern for late planted fields in our southernmost counties if aphids have to migrate north. If white sugarcane aphids are found some preliminary thresholds out of Texas and Louisiana are 50 aphids per leaf on 20% of leaves. A write-up on sugarcane aphids can be found in the June 18, 2015 issue of Delta Farm Press. The only product available is a Section 18 label for Transform. The label is at the following link: http://www.cdms.net/LDat/ldAM5011.pdf

Foliar diseases are generally not an economic concern, however, scout for disease and the ideal timing between boot and early heading. A foliar fungicide guide is available at the following link: http://www.uaex.edu/publications/pdf/mp154/grain-sorghum-foliar-diseases.pdf

**Soybean**

Flooding concerns in areas of southeast Missouri have led to questions on late replanted soybeans or planting soybeans where corn went under water. Basically, soybean planting depends on when we will get a killing frost. Soybeans will produce seed if given at least 90 days to accumulate enough growing degree days to produce a pod. If planting late consider increasing seeding rate to compensate for shortened internodes. Research conducted in Arkansas and Mississippi indicated that maturity group 4 soybeans provided highest yields when planted in July. The planting date and maturity research can be found at the following link: http://mssoy.org/wp-content/uploads/2014/07/MSSB-PLANTING-DATE-AND-MG-2014.pdf

Replant decisions for soybeans can be aided by the University of Missouri Extension G4091 Corn and Soybean Replant Decisions.

Anthony Ohmes, Agronomy Specialist, University of Missouri Extension, Jackson, MO

# Melon Production

The first melons in the area are being harvested for the season timed perfectly with the slow down in crops south of Missouri.

The wet season finally began to slow during the later portion of June although we are expecting rain for the first week of July. Now that we have some heat, the rain should boost vine growth. Keep an eye out for disease pressure.

Anthracnose and gummy stem blight are still the major diseases that have been identified to date. Brown to black spots will develop between leaf veins spreading from the center of the plant outward if gummy stem is present.

Anthracnose can attack leaf, vine or fruit. On leaves, symptoms appear as round to angular spots usually starting on the older leaves. These spots will become black and often fall from the leaf. On fruit, a dark sunken spot will develop.

Maintain your spray schedule using chemicals found in the Midwest Vegetable Production Guide for 2015. This guide can be found at https://www.btny.purdue.edu/Pubs/ID/ID-56/.

Sarah Denkler, Horticulture Specialist, University of Missouri Extension, Poplar Bluff, MO

# Solar For Farm, Home and Business

**July 16, 2015**

University of Missouri Extension Center

Jackson, MO

6:00 pm to 9:00 pm.

An informational meeting on solar energy -

- learning solar components and options
- benefits of solar energy
- net metering
- passive solar
- determining how much solar your operation needs
- applying for grants that may be available

The fee is $15 if you register by July 14, 2015 or $20 at the door. Please contact the extension office at 573-243-3581 to register.

University of Missouri Extension says farewell to Dr. A.J. Foster, Agronomy Specialist in Bloomfield, MO.

Dr. Foster has accepted the position of Assistant Professor in Agronomy with Kansas State University and will be headquartered at the Southwest Area Research-Extension Center in Garden Center, KS. His last day with us will be July 10, 2015.

While working as an extension specialist at the University of Missouri A.J. has been a welcome asset in the southeast focusing growers on nutrient management.

We wish him and his family the best. His experience and expertise will be missed.

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## Future Meetings & Events -

**Solar for Farm, Home, and Business July 16, 2015 -** MU Extension will offer an informational meeting on solar energy at the University of Missouri Extension Center in Jackson from 6:00 pm to 9:00 pm. Topics include learning solar components and options, benefits of solar energy, net metering, passive solar, determining how much solar the operation needs and applying for grants that may be available. There is a fee for this meeting of $15 if you register by July 14th or $20 at the door. Contact the extension office at 573-243-3581 to register.

**Crop Injury and Diagnostic Clinic July 28-29** Bradford Research Center featuring informational talks and field tours.

**Missouri State Fair - August 13-23, 2015.** Sedalia, MO. For more information visit www.mostatefair.com or call 1-800-422-FAIR.

**Fisher Delta Research Center Field Day September 2, 2015** - Portageville, MO.

**Commodities and markets** - http://extension.missouri.edu/scott/crop-budgets.aspx
**Farm Bill** - http://extension.missouri.edu/scott/Farm-bill.aspx