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Why cattle producers should early pregnancy check replacement heifers?

This is approximately the time of year when you would early pregnancy check fall calving replacement heifers. Whether you develop replacement heifers for your cattle operation or to sell, early pregnancy checking these heifers is very beneficial to your cattle operation.

Before we discuss the benefits, what is meant by early pregnancy checking replacement heifers? In the Missouri Show-Me Select Replacement Heifer Program, pregnancy checks on heifers are required within 90 days of the start of the breeding season. Pregnancy checking at this time allows the veterinarian to get a very accurate age of the fetus in days before it falls over the pelvic rim. Once the fetus falls over the pelvic rim, it is much harder to get an accurate age of the fetus in days. An accurate fetal age leads to an accurate calving date, which benefits you if heifers are retained or the buyer that purchases the heifers. This knowledge will allow proper preparation in case the heifer has calving issues. Furthermore, some buyers will purchase heifers based on calving date. If you are able to provide that information, it will improve the chances of selling your heifers.

Fetal sex determination can also be done during early pregnancy checks. A veterinarian can do fetal sex determination at a fetal age between 60 and 90 days (Stroud, 2005) using ultrasound technology. At this time, the veterinarian can determine with a high accuracy if the fetus is male or female. If you are retaining the replacement heifers, this is helpful because you can group heifers by fetal sex. In addition, since heifers having male calves are more likely to have dystocia problems, you can pay closer attention to those heifers. If you sell replacement heifers, the buyer may be more interested in your heifers based on the sex of their calf, which means fetal sex information could improve the chances of selling your heifers.

Pregnancy checking replacement heifers approximately 60 days (Selk, 2018) after the breeding season allows open heifers to be culled, improving the profit potential of those heifers. Culling these heifers reduces resource waste, such as feed, resulting in less cattle operation cost. Also by culling these heifers early, they can be marketed to feedlots to possibly make the choice grade, which means buyers are willing to pay more money for them. By reducing resource cost and buyer willingness to pay more for cull heifers, you improved their potential return, which improves profit potential of the cattle operation.

There are various benefits to early pregnancy checking replacement heifers. These benefits lead to improved profit potential in the sale of bred replacement heifers or open cull heifers. Furthermore, these tools can help you better manage your retained bred replacement heifers. Better management and better profit potential of the heifer development enterprise will improve the profit potential of your entire cattle operation.

Source: *Patrick Davis, Livestock Field Specialist*

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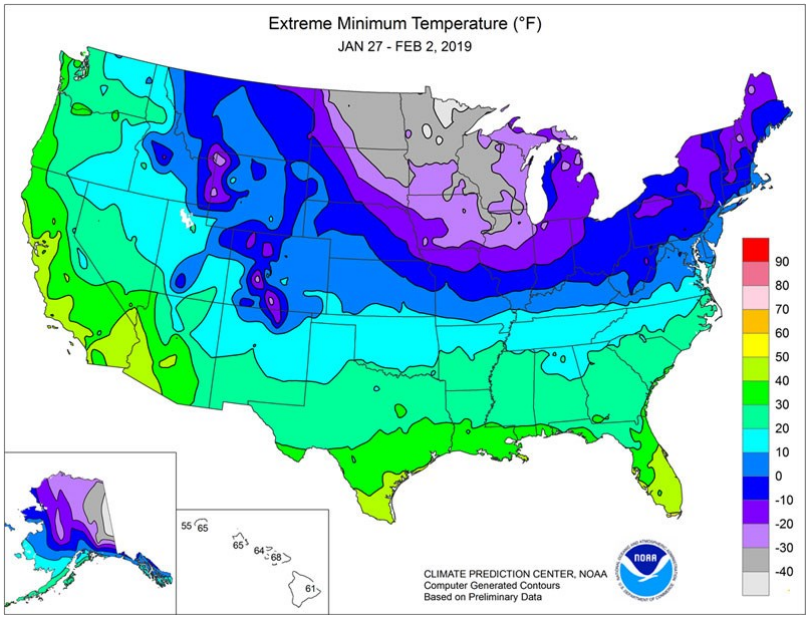
Polar Vortex Whirls through Missouri Affecting Trees and Shrubs

The polar vortex, a swirling mass of arctic air, dipped deep into the central U.S. at end of January, bringing record cold to the area. It was a short-lived excursion, however, retreating back into Canada by early February. In its path, nearly 1,400 temperature records were broken, mostly in the Midwest. Temperatures dropped to as low as -20°F in areas of northern Missouri and -11°F in the central part of the state on January 29.



(map showing the Extreme cold temperatures in early 2019.)

These frigid temperatures likely injured the buds of some woody plants that are only marginally winter-hardy at our latitude. Some of the less hardy woody plants that tend to suffer from low temperatures in Missouri include crapemyrtle, Southern magnolia, mimosa, rhododendron, holly, red buckeye, Japanese maple, and boxwood. For fruit trees, it is difficult to predict the severity of low temperature injury in mid-winter. Apple floral buds generally tolerate temperatures as low as -25°F. Plum and cherry floral buds are less cold-tolerant with injury likely at -20°F. For peach floral buds, some injury may occur at -10°F with severe bud loss at -20°F.

Fortunately, many landscape plants were fully dormant (in endodormancy) with a low water content in their buds, which makes these tissues cold-tolerant. Also, woody plants were generally well acclimated when the polar vortex whorled into Missouri since temperatures during the two weeks preceding the bitter cold were relatively low.

There are many factors that influence low temperature survival of woody plants. Tree species or cultivars vary in their ability to withstand cold temperatures. The newest growth, especially on young plants, is more susceptible to low temperature injury than more mature branches on older plants. Generally plant buds attain their maximum cold hardiness in mid-winter, but can rapidly deacclimate when temperatures rise above 58°F. For fruit trees, once the trees have accumulated sufficient hours of chilling temperatures usually in late January in Missouri, fruit buds deacclimate rapidly when warm temperature episodes occur, but are then slow to reacclimate when temperatures fall. Trees and shrubs that entered the winter in a healthy state are more likely to survive winter injury than those previously injured by insects or diseases.

As always, prune fruit trees, in late winter, removing any dead branches. Also, remove overlapping branches that compete for sunlight and maintain the natural form of ornamental trees and shrubs. In early spring, fertilize woody plants, provide adequate moisture before stress occurs, and minimize pest damage, especially for those that suffered limb dieback or bud injury. Healthy plants tend to survive the year-round stresses of Missouri weather better than weakened ones.

Authors: *Dr. Patrick E. Guina, Associate Extension Professor in Climatology and Dr. Michele Warmund, State Fruit Specialist*

Fine-tuning Planter Performance

With today's planter monitors, keeping tabs on planter performance is easier than ever before. Though physically double-checking planter operation during the season can maximize performance, the following is a list of items to be checked.

Planter Levelness

An improperly-leveled planter can inhibit the action of the row unit's parallel-bar linkage, potentially leading to non-uniform seeding depth. Check this while the planter is stopped and engaged in the soil. The planter's tongue and the row units' parallel-bar linkages should be nearly level (parallel) with the ground. Symptoms of an unlevel planter can include inconsistent seed spacing and depth. A severely unlevel planter may also have difficulty closing the seed furrow.

Down force

Many planters have springs or air bags in the parallel-bar linkage. These devices transfer weight from the planter's frame to the row unit to help disk opener and residue clearing/cutting coulter (if equipped) penetrate the soil and minimize unit bounce in rough conditions. Row unit down force should be adjusted when adding or removing row unit attachments, if there is a significant change in soil conditions (texture, moisture, tillage) or if the row units are bouncing when planting. Pay particular attention to row units following tractor tire tracks as they may require additional down force. Too little down force can result in row unit bounce and, subsequently, shallow seed placement. However, too much down force could accelerate wear on the row units' ground-engaging components and could negatively affect early plant development.

Row cleaners (if equipped)

Row cleaners, trash wheels, or trash whippers are designed to sweep residue out of the path of the opener and, as such, must be adjusted to just touch the ground. Row cleaners adjusted too high will not rotate and will leave residue in the path of the opener. Adjusted too low and they may move too much soil which could affect seeding depth and cause the seed to be planted in cool, damp soil. Long residue can wrap around the row cleaners. In this case, a lead coulter may be needed to cut the residue before it can be moved out of the way by the row cleaner.

Tire Pressure

On planters ground-driven by pneumatic tires, tire pressure should be checked daily. The tires need to be properly inflated to ensure an accurate seeding rate. An under-inflated tire will reduce the gear reduction of the drive leading to a higher seeding rate. The opposite is true for an over-inflated tire.

Checking Seed Population

To check population, pick a couple of row units to monitor for a repeated measurement. Release the closing wheel down force and use a chain or strap to restrain the closing wheels so they do not touch the ground. Plant long enough so the planter is at operating speed and allows a distance to ensure the observed population will be representative of the rest of the field.

Next, measure the length of the row representing 1/1000th of an acre. Use the table below to determine how far to measure for a specific planter setup. After measuring the correct distance corresponding to 1/1000th of an acre, count the number of seeds found in that distance. To find your population, simply multiply the number of seeds counted by 1000. For example, if planting 30-inch rows and 32 seeds are counted in 17 ft. 5 in., then the seed population will be 32,000 seeds per acre. Since seeds can be difficult to see in the furrow, it is recommended to do this test over a couple of rows to get a good idea of the actual seed population.

Planting speed

The effect of planting speed on planter performance is well known. Manufacturers have worked to design planters to operate at higher speeds, but seed singulation and depth control still become more difficult at higher planting speeds. Keep in mind, slowing down may improve planter performance.

Checking these items may be time consuming, but can ensure one's planter is operating at its maximum performance.

Source: *Kent Shannon, Ag Engineer*

Planting distance needed to cover 1/1000th of an acre for each row. First measure the correct distance for your planter setup, then count the number of seeds in the furrow and multiply by 1000 to convert to seeds/acre.

Planting width (in)	Distance
15*	34 ft. 10 in.
20	26 ft. 1 in.
30	17 ft. 5 in.

* This number can also be used for twin-row planted on 30-inch centers.

New Horticulture Specialist

Ramón Arancibia is a new MU Extension West Central Region Horticulture Specialist housed in Butler, Missouri. He will be serving primarily Bates, Benton, Cass, Cedar, Camden, Cooper, Dallas, Henry, Hickory, Laclede, Johnson, Moniteau, Morgan, Pettis, Polk, St Clair and Vernon counties but with additional coverage as needed. As the regional specialist, he will provide collaborative leadership and subject-matter expertise through educational opportunities that enable businesses, farms, families and communities to strengthen the economy and enhance the quality of life in Missouri.

Ramón has more than 30 years of experience in research and production of horticultural crops at six universities and as a grower back in Chile, where he is from. He graduated as an Agricultural Engineer with a major in fruit trees and berries at the University of Chile before coming to the U.S. as a visiting scientist to work on postharvest physiology/pathology at the University of California-Davis. He then went to Louisiana State University to obtain the M.S. and Ph.D. degrees while working as a Research Associate in vegetable crops. After graduation, he became a Research Specialist at the University of the Virgin Islands to lead their horticulture research program. He went back to the South to conduct sweet potato research and outreach at Mississippi State University before becoming a faculty member at the Dept. of Horticulture, Virginia Tech.

He is enthusiastic on his move to Missouri and the opportunities MU Extension offers. His areas of expertise include sustainable/organic production systems, plasticulture/protected production systems, irrigation management and plant diseases.

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