



# Ag Connection

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## Summer Annual Forages

**Test for nitrate toxicity and prussic acid before feeding**

As the temperatures continue to climb, one might be finding themselves wanting to Cool season grasses slow down growth during summer months. Annual warm-season grasses can be grown as part of a year-round grazing system throughout Missouri. Sorghum-sudangrass, pearl millet and crabgrass are the most common warm season annual forages grown in Missouri. Production of these forages occurs from June to August.

### Nitrate toxicity

Heavy nitrogen fertilization followed by adverse environmental conditions that restrict plant growth such as drought, shading and cool or cloudy weather causes nitrate accumulation in these summer annual forages. This is because growth is limited while nitrate uptake from soil is continued. Nitrate is typically concentrated in the lower portion of the stem. So, care should be taken to keep animals from consuming large amounts of the lower portion of the stalk where nitrate concentration may be high. In cattle, nitrates are reduced to nitrite in the rumen. Nitrites are toxic to livestock because they interfere with the ability of blood to carry oxygen.

If nitrate accumulation is suspected, forage should be tested before feeding. If plants contain more than 1.5 percent nitrate (15,000 parts per million), they are considered toxic to livestock. Nitrates will persist in harvested hay since they do not break down during the curing process. Pregnant and young animals are particularly sensitive to nitrate toxicity. Care should be taken when feeding forages containing greater than 0.25 percent nitrate (2,500 ppm) as a percentage of dry matter to these animals. Forages containing 0.25 to 0.5 percent of dry matter as nitrate should make up no more than half of the total ration (Table 1). Forages with 0.5 to 1.5 percent nitrate should make up no more than one-fourth of the total ration, and livestock should receive supplemental energy, minerals and vitamin A.

**Table 1: Warning levels of forage nitrate content**

Nitrate concentration		Forage status	Comments
0 to 0.25 percent	0 to 2,500 ppm	SAFE	Forage is generally safe to feed at these levels to all classes of livestock
0.25 to 0.5 Percent	2,500 to 5,000 ppm	CAUTION	Forage with this nitrate content can cause a problem with pregnant and young animals. Do not feed forage with nitrate levels this high in combination with nonprotein nitrogen supplements, and limit forage with nitrate levels this high to one-half of total ration.
0.5 to 1.5 percent	5,000 to 15,000 ppm	DANGER	Limit forage with this nitrate level to one-fourth of total ration. Should supplement forage of this type with energy, minerals and vitamin A.
Over 1.5 percent	More than 15,000 ppm	TOXIC	Forage with this nitrate level or higher is toxic and should not be fed under any circumstance. If forage with this nitrate concentration must be fed, it should be mixed with other feed and make up no more than 15 percent of the total ration.

It is advised to delay grazing for at least two weeks after frost or drought stress to avoid nitrate poisoning. For the hay production, cut sorghum-sudangrass only when it reaches 30 to 36 inches. Do not cut or graze below 10 inches to avoid nitrate poisoning.

#### **Prussic acid poisoning in sorghum-sudangrass**

Prussic acid or cyanide poisoning may be a problem if sorghum-sudangrass plants are injured or stressed by drought or frost. If sorghum-sudangrass is under drought stress, avoid grazing until the plants have recovered and exhibit at least 24 inches of regrowth. Following a severe frost, avoid grazing sorghum-sudangrass for 14 days or until the leaves turn brown, whichever is longer.

Prussic acid level is highest in young, leafy tissue during initial growth after planting or regrowth after clipping. Avoid grazing until the plant reaches a height of at least 24 inches. Unlike nitrate, which is persistent, prussic acid disappears during the hay curing or ensiling process and can be fed 14 days after harvest without problems.

Plant samples can be testing for nitrate and prussic acid concentration by the MU Veterinary Diagnostic Lab <https://vmdl.missouri.edu/>. More information about warm-season annual forage crops is available on MU Extension guide sheet G4661 at <https://extension.missouri.edu/publications/g4661>.

Source: *Dhruba Dhakal, agronomy specialist*

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### **Resource for Farm Labor Compensation**

A common challenge faced by many farmers is determining fair compensation for employees, including seasonal labor and full-time employees. Compensation depends on many things including: responsibilities, capabilities, reliability and experience.

USDA National Ag Statistics Service (NASS) releases reports several times a year concerning farm labor over the past year including rates paid by region. NASS collects data periodically (typically quarterly) throughout the year. Missouri and Iowa make up the region called Cornbelt II. Each report is over 20 pages in length and includes many tables and charts that can be skimmed quickly. The content includes some information that can be helpful in trying to determine fair wages.

The most recent report was released May 2021. The

data in the report is broken down into various weeks, with the most recent week of April 11-17, 2021. The NASS survey showed gross wages in the Cornbelt II region averaged \$15.61 per hour for field work and \$16.05 per hour for livestock work. The report includes a harvest time period of October 11-17, 2020 showing gross average wages were \$15.86 per hour for field work and \$14.81 per hour for livestock work.

Another interesting feature of the report is the wages paid based on gross value of sales. For example, farms with gross sales between \$50,000 and \$99,000 averaged wages of \$16.57, while farms with sales of \$250,000 to \$499,000 averaged \$15.31 and farms with sales in excess of \$1 million averaged \$17.27.

The next report is scheduled to be released on November 24, 2021. The reports are free to browse or download at <https://tinyurl.com/USDA-NASS-farmlabor>.

Source: *Mary Sobba, ag business specialist*

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### **2021 Fall Calving Show-Me-Select Heifer Sale**

The Northeast Missouri Show-Me-Select Replacement heifer program held a fall calving heifer sale where 165 heifers averaged \$1,851. The sale was held on Saturday, June 5th at F & T Livestock Auction in Palmyra.

The 15 producers/sellers were enrolled in the University of Missouri Extension's educational heifer management program. The heifers were bred to sires with both calving-ease and growth genetics. The top selling lot, consigned by Galaxy Beef brought \$2,600.

The highest consigner average was \$2,168 on 12 head from Galaxy Beef, Macon. Other high averaging consignors were Brickhouse Farms, Tina, \$2,125 on six head; University of Missouri Greenley Research Center, Novelty, \$2,109 on 11 head; Prairie View Farms, Monroe City, \$2,059 on 11 head.

Twenty-nine buyers purchased over \$305,000 worth of bred heifers. Calving surveys returned by buyers provide important information that is given back to consignors to guide improvements in future years.

The Show-Me-Select heifer development program takes nearly a year to complete. Pre-breeding exams are completed on heifers usually four to eight weeks before being bred. These exams include a pelvic measurement, reproductive tract score, and weight record. Heifers may be bred artificially or be exposed

to natural service, however; the service sires must meet specific calving ease EPD requirements based on breed. This year 108 head, or 65 percent, of the heifers in the sale were synchronized and bred AI. In this sale, the choice to AI, showed a \$62 price advantage over those bred naturally.

All Heifers must be pregnancy tested within 90 days of breeding by a veterinarian to determine expected calving date. The use of ultrasound has helped many of the veterinarians improve their accuracies on calving dates. During the development period the heifers undergo an extensive health program and are vaccinated at weaning, pre-breeding, and pregnancy examination, as well as treated several times for internal and external parasites. Heifers are also screened for blemishes, condition, muscling and structural soundness by MU Extension livestock specialists and Missouri Department of Agriculture graders.

This is the 25<sup>th</sup> year for the Show-Me-Select heifer sale in Palmyra. During that time, over 50,000 heifers have been enrolled in the program, and 7,358 head have been sold. If you are interested in participating, contact an MU Extension Livestock Specialist.

Source: *Daniel Mallory, livestock specialist*

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## Preventing Mower and Weed Eater Damage to Trees

Each year thousands of trees are damaged or killed from damage caused by hitting the trunk with a mower or string trimmer. This damage can be avoided when lawn mowing equipment is operated responsibly around trees.

Trees do not regenerate new tissue like humans when a wound occurs. Most tree injuries occur when mower operators attempt to closely trim grass around trunks with a push or riding mower. Prevent this from happening by removing the grass around the tree, or by hand trimming. Grass and weeds should be removed from around tree trunks and beneath trees if maximum growth is expected. Grass and weeds compete for the same nutrients and water that the tree needs. During the summer when rainfall is low and less than adequate watering occurs, the competition for water imposed by weeds or grass turf can substantially reduce tree growth. When competition from grass is eliminated, tree roots are more evenly distributed, root numbers are higher and they utilize a larger volume of soil. Effective utilization of soil by a larger root system will mean fertilizer will be utilized

more fully.

Spreading mulch such as leaves, grass clippings or straw under and around trees will effectively control grass and weeds and provide an attractive appearance around the base of the tree. Not only will mulching with organic materials prevent grass competition, it will also conserve moisture for use by the tree roots and stabilize soil temperatures, since roots don't like extremely hot or cold soils. Young trees should be surrounded with a three-foot diameter, thick mulch (three to four inches deep) that is maintained throughout the growing season. A loose fitting, white corrugated tube can be placed around the tree trunks for added protection.

Injury and infection started by lawnmower wounds can often be the most serious threat to tree health. Tree wounds caused by lawn maintenance equipment are often the cause of internal decay and rot found in older trees that survived initial damage years ago. Decay fungi becomes active on the wound surface and structural deterioration of the woody tissues beneath the wound will often occur. Wounded trees may eventually break off at the stem or root collar due to internal decay.

For more information about mulches see MU Extension Guide G6960: <https://extension.missouri.edu/publications/g6960>.

Source: *Jennifer Schutter, horticulture specialist*

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## August Gardening Tips

### *Ornamentals*

- Continue spraying roses that are susceptible to black spot and other fungus diseases.
- Annuals may appear leggy and worn now. These can be cut back hard and fertilized to produce a new flush of bloom.
- Deadhead annuals and perennials as needed.
- Divide oriental poppies now.
- Feed mums, asters and other fall-blooming perennials for the last time.
- Roses should receive no further nitrogen fertilizer after August 15<sup>th</sup>.
- Powdery mildew on lilacs is unsightly, but causes no harm and rarely warrants control, though common rose fungicides will prove effective.
- Divide bearded iris now. Discard old center sections and borer damaged parts. Replant so tops of rhizomes are just above ground level.
- Prune to shape hedges for the last time this season.
- Order bulbs now for fall planting

- Evergreens can be planted or transplanted now to ensure good rooting before winter arrives. Water both the plant and the planting site several days before moving.
- If you want to grow big dahlia flowers, keep side shoots pinched off and plants watered and fertilized regularly.

### ***Vegetables***

- Compost or till under residues from harvested crops
- Sow seeds of beans, beets, spinach and turnips now for the fall garden.
- Spinach may germinate better if seeds are refrigerated for one week before planting.
- Cure onions in a warm, dry place for 2 weeks before storing.
- Broccoli, cabbage and cauliflowers transplants should be set out now for the fall garden.
- Begin planting lettuce and radishes for fall now.

- Pinch the growing tips of gourds once adequate fruit set is achieved. This directs energy into ripening fruits, rather than vine production.

### ***Fruit***

- Prop up branches of fruit trees that are threatening to break under the weights of a heavy crop.
- Protect ripening fruits from birds by covering plants with a netting.
- Continue to spray ripening fruits to prevent brown rot fungus
- Cultivate strawberries. Weed preventers can be applied immediately after fertilizing.
- Spray peach and other stone fruits now to protect against peach tree borers.
- Fall-bearing red raspberries are ripening now.
- Sprays will be necessary to protect late peaches from oriental fruit moth damage.

**Resource:** *Missouri Botanical Garden*