

Integrated Pest & Crop Management



Missouri New Herbicide Update for 2008

By Kevin Bradley

New Herbicides and Systems

Corn

Halex GT is a new premix from Syngenta for use only in Roundup Ready corn. Halex GT contains mesotrione (Callisto), S-metolachlor (Dual Magnum), and the potassium salt of glyphosate (Touchdown). Halex GT can be applied postemergence at 3.6 to 4 pints per acre to corn that is up to 30-inches tall or has eight leaves. The addition of a non-ionic surfactant and ammonium sulfate is required with applications of Halex GT. Atrazine can be applied with Halex GT and will likely increase the residual activity of the product in a one-pass weed control system.

Laudis (tembotrione) is a new herbicide from Bayer CropSciences that is a HPPD-inhibiting "bleacher" herbicide like Callisto and Impact. It will be available for the first time in the 2008 growing season. Laudis also contains a proprietary safener unlike Callisto or Impact. Laudis can be applied postemergence in corn at 3 fluid ounces per acre up to the V8 growth stage of corn. In the comparison trials we have conducted with Laudis, Impact, and Callisto, we have observed very similar levels of broadleaf weed control with all three products, but slightly higher levels of grass control from Impact compared to Laudis and Callisto. All products are enhanced and will likely perform similarly with the addition of atrazine.

Require Q (mp) is a new premix from DuPont that contains rimsulfuron (Resolve), dicamba (Banvel, Clarity, etc.), and a safener. Require Q will be sold as a multi-pack in 2008 and can be applied at 4 ounces per acre on corn that ranges from V2 or 4-inches tall up to V7 or 20-inches tall, whichever is more restrictive.

Resolve Q (mp) is a new premix from DuPont that contains rimsulfuron (Resolve), thifensulfuron (Harmony GT), and a safener. Resolve Q will be sold as a multi-pack in 2008 and can be applied at 1 ¼ ounces per acre on corn up to the V7 stage or 20-inches in height, whichever is more restrictive.

SelectMax is expected to receive a federal label in January of 2008 for the elimination of poor or frost-damaged Roundup Ready corn stands and replanting of corn back into these areas. This use was granted as a Section 18 label in many states in 2007, but not

in Missouri. The label, if approved would allow for application of SelectMax at 4 ounces per acre to damaged corn stands up to 4-inches tall, and then will allow either a 4- or 5-day replant interval between application and replanting. This is a use that could have been very helpful to many farmers with the spring-planting conditions experienced in 2007.

Surestart is a new premix from Dow AgroSciences that contains acetochlor (Harness, Degree, etc.), flumetsulam (Python), and clopyralid (Stinger). Surestart can only be applied on Roundup Ready or Liberty Link corn from 30 days prior to planting up to 11-inch tall corn. Surestart may be applied at 1 ½ to 2 pints per acre.

Soybean

Authority Assist is a new premix from FMC that is expected to be registered in the spring of 2008. Authority Assist contains sulfentrazone (Spartan) and imazethapyr (Pursuit) and can be applied at a rate of 4 to 12 ounces per acre. The standard "set-up" rate in Roundup Ready soybeans is likely to be 6 ounces per

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New Department of Homeland Security Rules Can Affect Crop Farmers

By John Lory, Division of Plant Science and Commercial Agriculture Program

On November 20 Department of Homeland Security (DHS) released the final part of a rule that requires a facility that possesses significant quantities of “chemicals of interest” to register with the government by January 22, 2008. The rule includes a list of regulated chemicals and the “threshold quantity” above which an entity is required to register. The rule also requires any operation that obtains more than the threshold quantity of any chemical of interest to register with the government within 60 days of possession. The intent of the rule is to manage terrorism risk associated with chemical facilities. DHS has authority to impose fines of up to \$25,000 per day for non-compliance.

The chemical of interest most likely to affect crop farmers is ammonium nitrate. The rule requires anyone possessing more than one ton of any material that contains 23% or more as nitrogen in the form of ammonium nitrate must register in the program. The rules do not differentiate based on the time of possession so a person handling more than one ton of ammonium nitrate containing

material for a couple of hours or for a couple of months is equally affected.

Other chemicals common on crop farms are on the list including propane and anhydrous ammonia. These chemicals have threshold amounts that will make it unlikely that farmers are affected. Still, farmers should be aware of the limits: propane, 60,000 lbs (material in containers less than 10,000 pounds do not count towards the total); anhydrous ammonia, 10,000 pounds. These quantities may be an issue at distribution centers but most farms will not possess this much of these materials at any one time. Potassium nitrate and sodium nitrate are both chemicals of interest and have the low threshold of 400 pounds. These are infrequently used on conventional row crop farms but may be found on some farms.

Farmers who expect to exceed the possession limit for any one of these chemicals are required to register at a government website and undergo a preliminary screening process using the Chemical Security Assessment Tool (CSAT) called “Top Screen” for short. Based on the Top Screen review the government will determine

if the operation “presents a high level security risk” that requires a more detailed assessment and other actions to meet the requirements of the rule.

To learn more about Top Screen and register to gain access to the Top Screen assessment process visit the Homeland Security Web site (http://www.dhs.gov/xprevprot/programs/gc_1169503302924.shtm). The registration process and review process are a multi-step process that cannot be completed in one sitting. Do not wait until the last minute to start this process if you are affected. See the full list of chemicals in the report in the Federal Register at <http://a257.g.akamaitech.net/7/257/2422/01jan20071800/edocket.access.gpo.gov/2007/pdf/07-5585.pdf>. The chemical list starts on page 65421. Another resource for information may be your fertilizer dealer who should have some experience dealing with these regulations.

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A Review of Nitrogen Fertilizer Reactions

By John Lory, Division of Plant Science and Commercial Agriculture Program

High nitrogen fertilizer prices have farmers looking for anyway to get more out of their fertilizer dollar. A brief primer on nitrogen fertilizer biochemistry may help you make nitrogen fertilizer decisions that increase nitrogen use efficiency.

Nitrogen basics:

Nitrate nitrogen is typically the form of nitrogen used by plants. It is highly mobile in the soil so is prone to being leached out of the soil profile. In warm water-logged soil nitrate can be lost as a gas through a process called denitrification.

Ammonium nitrogen is another form of nitrogen that plants can use. Ammonium nitrogen is resistant to leaching losses and cannot be lost via denitrification.

During the growing season soil microbes rapidly convert ammonium to nitrate. This process can be delayed by cold temperatures, high or low pH and the addition of chemicals that delay the nitrification process.

A primary objective of good nitrogen management is to delay conversion of nitrogen to nitrate until the plant needs it as a way of minimizing potential losses of applied nitrogen.

Anhydrous ammonia:

The first key to success with anhydrous ammonia is being sure the soil seals around the injectors so no ammonia gas is lost during application.

The ammonia gas quickly reacts with the soil to form ammonium. This reaction temporarily raises soil pH in the anhydrous ammonia band. High pH and high ammonium concentrations in the anhydrous band initially slow the conversion of ammonium to nitrate.

Over time soil microbes move into the band and convert the ammonium to nitrate. This process can happen in a

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acre. Authority Assist will be labeled for preemergence applications in soybean and will likely expand the spectrum of grass weeds controlled as compared to the other Authority premix products.

Authority MTZ is a new premix from FMC that contain sulfentrazone (Spartan) and metribuzin (Sencor). Authority MTZ can be applied in the fall or spring up to three days after soybean planting at 8 to 14 ounces per acre. The generally recommended rate is likely to be 10 ounces per acre in a Roundup Ready soybean system, with higher rates recommended for use in conventional soybeans. Authority MTZ should provide good control of a wide spectrum of broadleaf weeds like waterhemp, marestail, nightshade, lambsquarters, and cocklebur, but is overall weak on grass weed species.

Enlite is a new premix from DuPont that contains flumioxazin (Valor), chlorimuron (Classic), and thifensulfuron (Harmony). A state registration for Enlite is currently pending in Missouri. Enlite will be labeled for fall or spring applications up to the 3 days after planting but before soybean emergence at 2 to 4 ounces per acre. The standard rate for use in most Roundup Ready soybean systems is likely to be 2.8 ounces per acre. Enlite should provide good control of a variety of broadleaf weeds like waterhemp, marestail, and nightshade, but is overall weak on grass weed species.

Envive is a new premix from DuPont that contains flumioxazin (Valor), chlorimuron (Classic), and thifensulfuron (Harmony). A state registration for Envive is currently pending in Missouri. Envive will be labeled for fall or spring applications up to the 3 days after planting but before soybean emergence at 2 ½ to 5 ¼ ounces per acre. The standard rate for use in most Roundup Ready soybean systems is likely to be 3.5 ounces per acre. Envive should provide good control of a variety of broadleaf weeds like waterhemp, marestail, and nightshade, but is overall weak on grass weed species.

Prefix is a new premix from Syngenta that contains S-metolachlor (Dual II Magnum) and fomesafen (Reflex or Flexstar). In 2007, this product was previously sold as a co-pack but is now available as a premix. Prefix will be labeled for use at 2 pints per acre with will deliver 1 pint per acre of Dual II Magnum and 1 pint per acre of Reflex. Prefix can be applied preemergence up to 15 days before planting. Prefix will control a variety of broadleaf weeds like waterhemp, lambsquarters, nightshades, etc. as well as some grasses like crabgrass and giant foxtail. However, this product will only provide suppression of larger-seeded broadleaf weeds like cocklebur and giant ragweed.

Sonic and **Authority First** are identical products from Dow AgroSciences and FMC, respectively, that were available for the first time in the 2007 growing season. They both contain the active ingredients sulfentrazone (Spartan) and cloransulam (Firstrate) and are registered for fall or spring applications up to three days after soybean planting. Sonic and Authority First can be applied from 3 to 8 ounces per acre, with the standard set-up rate in Roundup Ready soybeans being 3.22 ounces per acre. Higher rates are recommended for use in conventional soybean systems. In our research, these products have provided good control of a wide spectrum of broadleaf weeds including waterhemp, lambsquarters, marestail, nightshades, and others but are overall weak on grass weed species.

Valor XLT is a new premix from Valent that was available during the 2007 growing season. Valor XLT contains flumioxazin (Valor) and chlorimuron (Classic) and can be applied in the fall or spring up to three days after soybean planting at 3 to 5 ounces per acre. The standard rate recommended in most Roundup Ready soybean systems will be 3 ounces per acre. Valor XLT should provide good control of a variety of broadleaf weeds like waterhemp, marestail, and nightshade, but is overall weak on grass weed species.

Wheat

There are new formulations of both Harmony GT XP and Harmony Extra XP available from DuPont. The new products will be sold as **Harmony Extra with TotalSol** and **Harmony SG w/TotalSol**. Both of the new products are formulated differently and contain 50 percent active ingredients per pound of product in comparison to the former products which contained 75 percent active ingredients per pound of product. This will require careful attention to the label and product name, as the newly named products will be applied at higher rates than Harmony Extra XP or Harmony GT XP.

Prowl H2O is now labeled for use in wheat for the control of certain winter annual broadleaf and grass weeds like henbit and mustard species. Prowl H2O can be applied in wheat from the first leaf up to the flag leaf stage at a rate of 1 ½ to 3 pints per acre. Prowl HO will not control of emerged weeds but can be tank-mixed with other postemergence wheat herbicides. In our research, Prowl H2O has also provided high levels of chickweed and Italian ryegrass suppression with winter application timings, but much lower control with timings made in the spring.

Alfalfa

Prowl H2O is now labeled for use in alfalfa for the control of certain winter and summer annual broadleaf and grass weeds like crabgrass, lambsquarters, and pigweed. Prowl H2O can be applied in alfalfa from the second trifoliolate up to the 6-inch stage of growth. Prowl H2O can be applied on seedling stands, between cuttings, or as a fall or spring dormant stage treatment. Prowl HO will not control of emerged weeds but can be tank-mixed with other postemergence alfalfa herbicides to provide residual control of later-emerging species.

New Glyphosate Offerings

Roundup PowerMax is a new potassium salt of glyphosate from Monsanto that contains 4.5 pounds of

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couple weeks in a warm soil and can be delayed months in a frozen soil.

The nitrification process lowers soil pH so the net effect of anhydrous ammonia is to lower soil pH.

Nitrification inhibitors such as N-serve® can be used with anhydrous ammonia to further delay conversion of ammonium to nitrate.

Urea and UAN (UAN is 50 percent urea):

Urea is an organic form of nitrogen that is converted to ammonium by the enzyme urease. Urease is naturally present in high concentrations in most soils so conversion of urea to ammonium is rapid after the urea prill dissolves.

The conversion of urea to ammonium raises soil pH. High pH will lead to loss of nitrogen as ammonia from urea on the soil surface.

This loss of ammonia can be prevented by incorporating urea into the soil. Urea is an uncharged molecule so can be carried into the soil with enough rainfall, typically 0.5 to 1 inch.

After urea converts to ammonium microbes in the soil will convert the ammonium to nitrate. This process

lowers soil pH so the net effect of urea is to lower soil pH.

There are two types of additives to delay conversion of urea to nitrate. Urease inhibitors such as Agrotain® will delay the conversion of urea to ammonium. Nitrification inhibitors will delay the conversion of ammonium to nitrate.

Agrium Inc. has a product, ESN, that delays nitrogen release from urea by encapsulating it in a polymer, slowing its release to the soil.

Ammonium sulfate and ammonium nitrate:

These forms of nitrogen do not raise soil pH when applied to the soil surface. On our acidic soils (pH<7) they do not volatilize to the atmosphere when surface applied.

They share with other nitrogen fertilizer sources that their net effect is to lower soil pH.

Nitrification inhibitors can be used to slow the conversion of ammonium to nitrate in these materials.

In summary, delaying conversion of ammonium to nitrate helps increase nitrogen use efficiency. Anhydrous

ammonia is the slowest to convert to nitrate followed by urea, and UAN solutions, with ammonium sulfate and ammonium nitrate the most rapid. In contrast with anhydrous ammonia and urea, ammonium sulfate and ammonium nitrate are not prone to volatilization losses when surface applied on Missouri soils. Farmers can use their knowledge of nitrogen fertilizer characteristics, urease inhibitors and nitrification inhibitors to reduce the risk of nitrogen loss.

For more information on managing nitrogen efficiently see the following MU guides:

Best management practices for nitrogen management in Missouri. IPM1027. <http://extension.missouri.edu/explore/agguides/pests/ipm1027.htm>.

Managing nitrogen to protect water quality. G9208. <http://extension.missouri.edu/explore/agguides/soils/g09218.htm>.

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Commercial Pesticide Applicator Training Coming January 2008

Pesticide applicator training helps reduce the harmful effects of improper pesticide use. The University of Missouri Extension Commercial Pesticide Program provides educational outreach for individuals who wish to become licensed commercial pesticide applicators. Licensed applicators must pass an exam and participate in continuing education courses on environmentally sound uses of pesticides.

For more information on training dates and registration, visit us on the Web at <http://ppp.missouri.edu/pat>

Extension Plant Diagnostic Clinic Report—2007

By Simeon Wright

The Plant Diagnostic Clinic is part of the Soil Testing and Plant Diagnostic Service Laboratories at the University of Missouri and handles samples submitted for disease, insect, and weed identifications, as well as management recommendations. A majority of clinic samples, approximately 75 percent of samples received, came directly from various agencies, businesses, and private citizens throughout the state. The clinic also supports regional extension specialists, who submitted 25 percent of the samples received. Most clinic operations are handled by clinic staff, however other Division of Plant Science Agronomy, Entomology, Horticulture, and Plant Microbiology and Pathology extension faculty handle insect and weed identification and assist when needed.

The 2007 growing season represented an increase in sample submissions over the past few years. Most samples were submitted through the mail while some

were personally delivered to the clinic. A few digital photos were also submitted by email. Samples were submitted from 81 Missouri counties with 22 percent of those submissions from Boone County. Nearly 90 percent of the samples were received between May and September.

Agronomic crop samples were a large portion of the samples submitted to the diagnostic clinic this year (fig. 1). Soybean, corn and wheat were the primary agronomic crop samples we received (fig. 2). Significant numbers of the following agronomic samples were received and are described below:

The most common soybean sample submissions to the diagnostic clinic this year included charcoal rot, Fusarium root rot, and herbicide injury issues. We also received several samples that tested positive for Phytophthora using ELISA testing. A few of these had typical symptoms of Phytophthora root and stem rot while Fusarium root rot was the primary problem in many of

these samples. We confirmed soybean rust on soybean samples using PCR and examined several samples morphologically for soybean rust. The ipmPIPE sentinel plot program and rust detection from sentinel plots was under the direction of Dr. Laura Sweets and was separate from the plant diagnostic clinic activities. Anthracnose, bean pod mottle virus, Cercospora blight, downy mildew, frogeye leaf spot, Rhizoctonia root and stem rot, Septoria brown

spot, soybean aphid and sooty molds were also common but less frequent soybean submissions to the plant diagnostic clinic this year.

A variety of corn samples were submitted to the diagnostic clinic this year. The most frequent submission was a disorder that we believe to be a genetic problem called a “disease lesion mimic”, causing lesions in long streaks on corn leaves. More information on this disorder can be found at <http://www.apsnet.org/online/feature/mimics/>. We also had several samples submitted with Gibberella and Fusarium stalk and ear rots, as well as herbicide injury issues. Other corn sample submissions included anthracnose, charcoal rot, common rust, corn leaf aphid, Fusarium and Pythium root rots, gray leaf spot, and southwestern corn borer.

Many of the submitted wheat samples had environmental injuries related to the late spring freeze. Several samples were submitted for ELISA virus testing. Wheat soilborne mosaic and wheat streak mosaic were found more frequently than the barley yellow dwarf viruses in the submitted samples this year. Some other less frequent wheat submissions this year included herbicide injuries, leaf rust, loose smut, powdery mildew, scab, sooty molds and stem rust.

We hope to continue to serve your plant diagnostic needs in 2008 and look forward to any samples you wish to send. The more samples we receive, the more information we have about the plant problems occurring in Missouri. This information can help you protect and improve the health of your plantings. Please see our website at <http://soilplantlab.missouri.edu/plant/index.htm> for more information about the plant diagnostic clinic, fees, and sample submission. You can also contact the lab at plantclinic@missouri.edu or 573-882-0623

Simeon Wright, Coordinator, Plant Diagnostic Clinic

Figure 1: Plant sample submissions in 2007

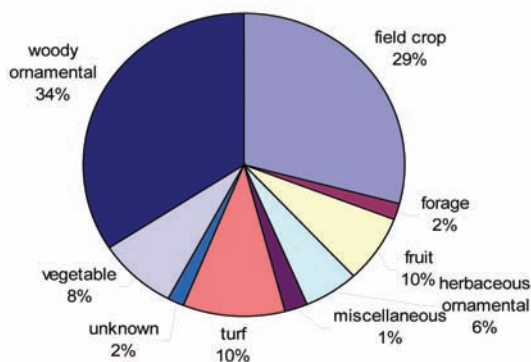
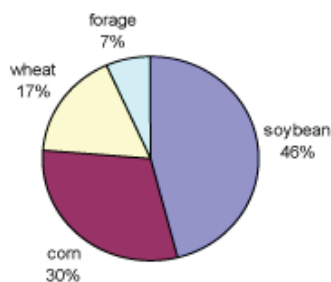


Figure 2: Field crop samples submitted in 2007



Investment in Public Agricultural Research: What's the Payoff?

By Marc Linit, Associate Dean, Research and Extension

My office is always quick to brag about the success of CAFNR researchers and their ability to leverage the federal and state base funding that we receive through extramural grants, gifts and contracts. Our faculty attracted \$33.6M in extramural funding in FY06, and they have consistently led all campus divisions in that regard. While we are rightly proud of this success, we are under increasing pressure to justify the investment made in public research institutions. A recent publication from the USDA-Economic Research Service* (ERS) presents an interesting analysis of the economic returns to public agricultural research.

According to the authors, investment in public and private agricultural research combined grew from just over 3 percent to about 7 percent of agricultural GDP from 1971 through the late 1990s. In constant 2001 dollars, the investment grew from \$4.8B to \$8.8B with the private sector accounting for most of the growth. Spending (after adjusting for inflation) on public agricultural research was flat through 1998 but increased through 2004. Agricultural research in this context includes work on crop and animal productivity, food nutrition and safety, natural resources, rural development and economics.

Two studies are cited that document the return on investment in public agricultural research:

- * Huffman (Iowa State University) and Evenson (Yale University) reviewed 35 studies published from 1965-2005 that evaluated

the return of investment in agricultural research. Their conclusions implied that each dollar spent on agricultural research returned \$10 worth of benefits to the economy. While the individual studies varied in their estimates of the rate of return, all documented that the return to public agricultural research was significantly greater than the benchmark return from government securities (~3 to 4 percent per year).

- * In a separate analysis, the ERS analyzed data from 27 studies over the 20th century and found the majority showed rates of return on public agricultural research ranged from 20 percent to 60 percent.

Other interesting conclusions in the ERS report include:

- * Commodity-specific studies have shown that rates of return were high for both crops and livestock with little evidence that some commodities have benefitted more than others.
- * Current research suggests that it takes longer for basic research to produce tangible economic impacts than for applied research. On average, current public agricultural research will begin to noticeably impact agricultural productivity in as little as two years and that the impact could last as long as 30 years.

- * Much agricultural research is targeted to specific ecological conditions within a state or region; however, the results affect productivity beyond the targeted region. This spillover is greater for livestock research than for crop research because the former is less constrained by ecological factors such as soils and climate.

It is encouraging to know that the investment made in public agricultural research institutions, such as the Missouri Agricultural Experiment Station, results in a significant increase in agricultural productivity at a rate that far exceeds the benchmark return on government securities.

The knowledge that we advance enhances the quality of life of our citizens and forms the foundation upon which agriculture, the number one industry in the Missouri, is built. The AES is grateful for the support it receives from state, federal and non-public sources. We can be proud of our effective use of those funds and the strong record of economic return that our stakeholders, public and private, receive from their investment.

CAFNR Synthesis

<http://aes.missouri.edu/synthesis/>

*Fuglie, Keith O., and Paul W. Heisey. *Economic Returns To Public Agricultural Research*. EB-10, U.S. Dept. of Agriculture, Economic Research Service. September 2007.

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glyphosate acid per gallon. Roundup PowerMax contains a new proprietary blend of adjuvants and will replace Roundup OriginalMax.

Duramax and **Durango DMA** are two new glyphosate offerings from Dow AgroSciences. These are identical products that contain the dimethylamine (DMA) salt of glyphosate and contain 4 pounds of glyphosate acid per gallon as well as a surfactant. The standard rate for both products will be 24 ounces per acre. Durango DMA will replace

the Durango brand and will be priced as the no-service brand while Duramax replaces Glyphomax XRT and will be priced as the full-service brand.

Grass Pastures and Hay

Remedy Ultra and **Garlon 4 Ultra** are both new products from Dow AgroSciences that will be replacing the old products Remedy and Garlon 4 in the pasture market. All of these products have triclopyr as the single active ingredient. The difference in the new "Ultra" formulations is that these

will contain methylated seed oil rather than kerosene as the solvent or carrier. Additionally, the "Ultra" formulations are low-odor compared to the older formulations. We have not seen or heard of any significant differences in weed control as a result of this new formulation.

Kevin Bradley
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Weather Data for the Week Ending December 12, 2007

By Pat Guinan



| Station | County | Weekly Temperature (oF) | | | | | | Monthly Precipitation (in.) | | Growing Degree Days‡ | |
|---------------------------|----------------|-------------------------|-----------|--------------|-------------|------|-------------------------------|-----------------------------|-------------------------------|----------------------|-------------------------------|
| | | Avg. Max. | Avg. Min. | Extreme High | Extreme Low | Mean | Departure from long term avg. | Dec 1-12-Dec | Departure from long term avg. | Apr. 1-Oct. 31 | Departure from long term avg. |
| Corning | Alchison | 28 | 19 | 33 | 8 | 23 | -7 | 1.24 | 0.72 | 4131 | 769 |
| St. Joseph | Buchanan | * | * | * | * | * | * | * | * | * | * |
| Brunswick | Chariton | 30 | 23 | 32 | 18 | 26 | -7 | 0.96 | 0.11 | 4037 | 539 |
| Albany | Gentry | 28 | 19 | 33 | 15 | 24 | -7 | 1.12 | 0.43 | 3885 | 490 |
| Auxvasse | Audrain | 32 | 25 | 34 | 21 | 29 | -4 | 1.24 | 0.07 | 4117 | 592 |
| Columbia | Boone | 32 | 26 | 34 | 22 | 29 | -6 | 1.53 | 0.55 | 4226 | 537 |
| Sanborn Field | Boone | 32 | 26 | 34 | 22 | 29 | -6 | 1.35 | 0.36 | 4441 | 655 |
| Williamsburg | Callaway | * | * | * | * | * | * | * | * | * | * |
| Novelty | Knox | 29 | 20 | 32 | 12 | 25 | -7 | 1.24 | 0.14 | 3782 | 346 |
| Linneus | Linn | 29 | 20 | 33 | 14 | 25 | -6 | 1.34 | 0.51 | 3889 | 556 |
| Monroe City | Monroe | 31 | 23 | 33 | 16 | 27 | -5 | 1.93 | 0.81 | 3957 | 453 |
| Versailles | Morgan | 33 | 27 | 34 | 22 | 30 | -6 | 0.82 | -0.21 | 4334 | 567 |
| Green Ridge | Pettis | 31 | 25 | 34 | 20 | 28 | -6 | 1.31 | 0.25 | 4150 | 676 |
| Lamar | Barton | 34 | 28 | 38 | 24 | 31 | -6 | 0.86 | -0.32 | 4214 | 243 |
| Cook Station | Crawford | 40 | 31 | 61 | 24 | 35 | -2 | 2.5 | 1.12 | 3965 | 155 |
| Alley Spring | Shannon | 42 | 32 | 59 | 21 | 37 | 1 | 3.69 | 2.37 | 3900 | 286 |
| Round Spring | Shannon | 42 | 33 | 57 | 23 | 37 | 1 | 2.84 | 1.52 | 3909 | 294 |
| Mountain Grove | Wright | 40 | 30 | 56 | 24 | 35 | -1 | 1.82 | 0.15 | * | * |
| Delta | Cape Girardeau | 42 | 34 | 60 | 21 | 38 | 0 | 4.29 | 2.74 | 4421 | 237 |
| Cardwell | Dunklin | 49 | 38 | 70 | 26 | 43 | 2 | 1.58 | -0.2 | 4796 | 248 |
| Clarkton | Dunklin | 47 | 36 | 68 | 24 | 41 | 2 | 3.09 | 1.65 | 4794 | 300 |
| Glennonville | Dunklin | 47 | 36 | 67 | 26 | 41 | 2 | 3.01 | 1.59 | 4769 | 306 |
| Charleston | Mississippi | 46 | 36 | 67 | 23 | 41 | 2 | 3.87 | 2.21 | 4715 | 571 |
| Portageville-Delta Center | Pemiscot | 49 | 37 | 69 | 25 | 43 | 2 | 2.01 | 0.3 | 4991 | 511 |
| Portageville-Lee Farm | Pemiscot | 50 | 38 | 70 | 26 | 43 | 2 | 2 | 0.3 | 4971 | 523 |
| Steele | Pemiscot | 50 | 38 | 69 | 26 | 44 | 3 | 2.19 | 0.21 | 5087 | 604 |



* Complete data not available for report

‡Growing degree days are calculated by subtracting a 50 degree (Fahrenheit) base temperature from the average daily temperature. Thus, if the average temperature for the day is 75 degrees, then 25 growing degree days will have been accumulated.

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