



Your local link to MU for ag extension and research information
<http://agebb.missouri.edu/agconnection>

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Ag Weather Tools

There are several agricultural weather resources available from University of Missouri Extension, which can be useful during the planting and growing season. Some of these resources include: Integrated Pest Management (IPM) frost free guide, Missouri Mesonet and Horizon Point.

IPM Frost Free Guide

The frost free guide includes information about spring and fall frost and freeze dates can be found on the IPM website at: ipm.missouri.edu/frostfreeguide/. Typically, the last spring frost occurs over northern and central Missouri by the third and second week of April, respectively. Minimum temperatures can vary over a short distance, for example, the bottom of a valley to a nearby hilltop may differ by 10°F or more. Cool air, being denser than warm air, moves down the slopes of hills, accumulating in the valleys. This is why low lying areas, such as river bottoms, will likely be colder than higher elevations on clear, calm nights. Therefore, while referring to the data and maps throughout the site, consider the local landscape when determining average frost date.

The median date point maps provide the last spring and first fall median frost/freeze dates for various temperature thresholds. Median date is the date where there is a 50% chance the frost/freeze temperature will occur before or after the designated date. The median date contour maps use the same data as the median date point maps, but with contoured regions of the state. Other information available includes: maps with latest spring and earliest fall frost/freeze dates on record and detailed information at weather stations.

Missouri Mesonet

Weather data is collected every five minutes from stations throughout the state. Collected data includes the soil temperature at two and four inch depths, air temperature, relative humidity, and temperature inversion potential. This information is important when making management decisions. More detailed information about a location can be accessed from the site by selecting the Real-Time Weather Station link at the top left of the page. <http://agebb.missouri.edu/weather/realTime/maps/index.php>

Horizon Point

Horizon Point <http://agebb.missouri.edu/horizonpoint/> is a custom weather analysis system for Missouri farmers. The weather information comes either from the National Weather Service or the Missouri Commercial Agriculture Automated Weather Station Network. The advisories process this weather information through research-based models to provide the best available, site-specific management information to farmers. Weather reports and advisories are sent to participants via email.

Site-specific weather information contained in Horizon Point reports include precipitation, temperature and wind forecasts. User-selected advisories are sent only in the seasons when appropriate. For example, soil temperatures are important in the spring for planting and the fall for fall applied fertilizer management. Soil temperature advisories are not sent during the summer when they are not critical to any management decision. Current advisories include planting depth soil temperature, weed scouting aid, stored grain management, design storm report, rainfall index monitor, insect scouting aids, fall nitrogen application chart, rainfall runoff estimator, and animal comfort indices. Subscribers provide an email address where reports are sent based on their precise location and frequency selected. The emailed reports contain hyperlinks to management information such as weed seedling pictures and how to use equilibrium moisture content to maintain stored grain quality.

Source: Valerie Tate, agronomy specialist

Planting and Caring for the Spring Garden

Cool-season vegetables, like lettuce, spinach, kale, peas, radishes, carrots, potatoes, onion, broccoli, cabbage, Brussels sprouts, cauliflower should be planted by the first week of April. These crops can be planted 2-4 weeks before the last spring frost. Planting later in the month does not allow these vegetable plants enough time to grow and produce a crop before hot weather sets in. Cool-season crops can be planted when the soil and air temperatures are at least 40° F. Many of these crops will tolerate a light to moderate frost. Expect to harvest most of these vegetables through late May. Cool-season crops usually stop producing when daytime temperatures reach 80°F or higher.

By late April, watch for the imported cabbageworm butterfly larvae on cruciferous vegetables like broccoli, cabbage and cauliflower. The adults are small, white butterflies and the larvae are green caterpillars, often found on the underside of the leaves. The body of a full-grown caterpillar is a little over one inch long and uniformly green with a velvet-like texture. On the top of the body in the center and running lengthwise is a thin yellow line. Cabbage looper larvae can also be a pest of cruciferous vegetables. Full-grown caterpillars are about 1.5 inches long and uniformly green. They move in a looping motion. Rye flour, which can be purchased from a grocery store, can be used as an organic control for the larvae. They ingest the flour and it

causes compaction and death. *Bacillus thuringiensis* (Bt) can also be used, and can be found at local farm supply stores or garden centers under the brand name Dipel.

Plant strawberry plants to start a new bed. Bundles of 10 plants are often available at garden centers, or plants can be purchased in containers. Dormant bundles grow quickly after planting. Asparagus and rhubarb plants should be planted at this time. Spring is also a good time to plant fruit trees and small fruit plants. Learn the culture requirements for fruit before planting. Most require well-drained soil. Some fruit plants require winter protection. Most require yearly pruning and fertilization, and some require sprays to keep away insects and disease.



In a rainy spring, plants are more susceptible to disease. Monitor plants regularly for insects and disease. Common springtime diseases include Peach Leaf Curl on peaches and nectarines; anthracnose on shade trees; fireblight on apples, pears and some ornamental pears; tar spot on maples; and cedar-apple rust on crabapples and apple trees.

Bagworms can be a problem on many plants, but most troublesome on needled evergreens like spruce, juniper and arborvitae. Remove any bags found on trees and shrubs. Control of bagworms is best in late May and early June while the larvae are small.



Mow lawn grass at a height of 3 inches. Never scalp a lawn. A lawn mowed high will be better able to shade out weeds creating a thicker, denser lawn. If weeds have taken over a lawn, take a soil test and apply recommended nutrients. A weedy lawn is often an indication of a low soil pH. By raising the pH level, the soil will become less desirable for weed growth. Ground covers are good choice for an area with dense shade. Small areas can be reseeded, but large areas are best reseeded in the fall. If crabgrass has been a problem, apply crabgrass preventer by April 15. Cool-season flowers like pansies, violas, dianthus and snapdragons can be planted now for early spring color in the landscape.

Source: Jennifer Schutter, horticulture specialist

Hiring Farm Labor

Hiring people to help run a business should be done objectively even if it feels personal. Establishing a process or checklist may be helpful. The process includes interviewing; conducting background checks; following up on references; verifying work eligibility; extending an offer; and filing the appropriate paperwork.

Interviewing promising applicants involves good listening skills. Engage the 80/20 rule, which means the interviewee, should talk about 80% of the time with the interviewer asking mostly open-ended questions. The same questions should be asked to all candidates. Detailed notes will assist in the decision making process. Employers should not ask questions about personal information containing: age, race, ethnicity, religious preference, political affiliation, living arrangement, sexual orientation, family, marital status, disabilities or medical conditions. These topics are irrelevant because they do not explain the person's ability to perform job tasks or duties. Questions should pertain directly to job functions. Once interviews are completed, rank the applicants, matching the business' needs to the applicants' skills.

Before deciding on a top candidate, a reference and informal background check should be conducted. The employer should contact references to determine how the candidate performed duties, and if he/she would hire the person again. For the background check, utilize public records to identify potential issues. The Missouri Highway Patrol maintains the statewide sex offender registry at <http://www.mshp.dps.missouri.gov/MSHPWeb/PatrolDivisions/CRID/SOR/SORPage.html> Users can search the registry by name or location. The Missouri court system maintains the Case.net database, which shares case history from Missouri courts. Users can search cases for individuals at <https://www.courts.mo.gov/casenet/base/welcome.do>. Also search social media - Facebook, Twitter, and LinkedIn. A formal background check is recommended (with applicant permission) if the position involves sensitive information or supervisory responsibilities; however, there is a fee. A further consideration is a drug and alcohol testing policy that includes pre-employment and continuing employment testing. Drug testing can be done on-site using a kit with quick results or an external company with results in 1 to 3 days. Costs per test usually run \$45-\$75.

Another aspect of hiring is verification of eligibility. U.S. citizens or authorized foreign citizens can work legally. Using the I-9 Employment Eligibility

Verification Form, employers must validate employee identity and work authorization status through birth certificate, passport or green card records. The I-9 form is available online at: <https://www.uscis.gov/sites/default/files/files/form/i-9.pdf>.

Employment offers are often given by phone, but a formal, written offer is suggested to clarify items such as pay, start date, work times, and any required criteria such as passing a background check or proof of work related certifications or licenses. If there is a probationary period, this should also be included in the letter. A probationary period can be beneficial to both parties and is often used as a time period before any benefits begin.

Source: *Darla Campbell, ag business specialist*

Welcome New State Extension Faculty

Welcome new Extension Faculty



Kevin Rice, an entomologist joined MU Extension in January 2018. His formal education includes degrees from Auburn University and the Ohio State University. His post-doctoral work at Penn State and USDA-ARS focused on economic damage created by invasive herbivores in field, vegetable and orchard crops. His past work experience includes working as an area extension agent for University of Arizona Extension.



Kaitlyn Bissonette, a plant pathologist joined MU Extension in October 2017. She received her doctorate degree from the University of Illinois focusing her research on the use of integrated disease management practices to manage Fusarium mycotoxins in winter wheat. She did postdoctoral research at Iowa State University on applied management of soybean cyst nematode with nematode-protectant seed treatments.



Josephine Ezeri-Mgbechi became the new Plant Diagnostics Clinic specialist in January 2018. She comes from Montana State University where her research included a statewide survey of bee diseases and research on soybean pathogens. She received her doctoral degree from Washington State University.

The MU plant diagnostic clinic (PDC) is once again open. The clinic assists county Extension specialists, commercial

businesses and private citizens with their pest problems. The PDC is capable of plant disease diagnosis, identification of unknown plants and insects. More information about submitting samples is available from your county extension center or online.



Eric Bailey, a beef nutrition specialist joined MU Extension in January 2018. He received his undergraduate degree in animal science from West Texas A&M. He went to graduate school at Kansas State University, and was named Larry H. Corah Outstanding Ph.D. student in 2013. His emphasis

was beef cattle nutrition. He grew up in New Mexico, a 5th generation rancher. Prior to joining the faculty at MU he was the West Texas A&M Department of Agricultural Sciences Endowed Chair of Cow-Calf Nutrition.



Marty Foreman, a commodity marketing specialist, joined MU extension in January 2018. His previous experience includes more than 20 years with Doane Advisory Services as an economist and a market advisor to farmers and purchasing managers as well as other firms throughout the food supply chain. Marty holds an M.S. degree

in agricultural economics from Southern Illinois University and an M.B.A. from Illinois State University. His position has both teaching and extension responsibilities.

It is so exciting to have highly qualified people back in these positions that have been open for a time. They are bringing much expertise. All of these specialists are very enthusiastic about their positions and eager to help farmers and ranchers in Missouri. These state specialists will work jointly with the regional extension specialists. If you need to reach them directly, call your local extension center for details.

Source: *Mary Sobba, ag business specialist*

MU Plant Diagnostic Clinic is Open

The clinic provides identification and management solutions in a written report for:

- Plant identification
- Plant Disease
- Turfgrass Disease
- Plant/Weed Species
- Insect/Mite Species

Pricing and submission forms are online at <http://plantclinic.missouri.edu/>