Missouri Environment & Garden

August 2012 Volume 18, Number 8

Play ball…

The 60's was a great time for a young boy growing up in St. Louis. Sunday afternoons where filled with the voice of Harry Carey doing play-by-play of Cardinal baseball. I remember lying in bed at night as my brother and I would fall to sleep to a late night Cardinal broadcast and 1964 was no exception when Harry Carey went wild with, "The Cardinals won the pennant, the Cardinals won the pennant, Holy Cow, the Cardinals won the pennant!" Sportsman's Park at Grand and Dodier and the smell of hot dogs, popcorn and cotton candy are still in my memory. We often took the Cherokee bus to Grand and with a transfer ticket for the Grand Avenue bus; we could be at Sportsman's Park for $0.25. A few dollars could get you a great seat for any ballgame. In fact, a 1964 World Series ticket was only $8.00! We played baseball, we went to baseball games, we collected baseball cards and as all young boys dream – to play professional baseball. I wish I still had some of those Steve Carlton rookie cards we used in our bike spokes to make that loud fluttering sound.

My brother and I were a little more realistic. I did have a liking for hunting, fishing and the great outdoors so a career in wildlife management was my ticket away from home. However, my brother always talked about being a sports caster and he was the true baseball fanatic. As life went on, my brother became an accountant and I started with studying wildlife management but ended up with a career in Plant Sciences. Nowhere in my career trek did I ever expect to make it to the show in an unsuspecting way – through the education of Sports Field Managers.

In 1999, Jerad Minnick and Gabe Craighead went to Kansas City to intern with the Royals. Jerad Minnick then started working there full-time in 2002 becoming the first Mizzou grad to work for the Royals as an Assistant Groundskeeper. Who knew at the time that this relationship would continue to grow? Several students who began their sports field careers as interns for the University of Missouri Athletic Department, would also find their way to the Kansas City Royals - Justin Scott, Curt Mayes, Zane Patton, Casey Montgomery and most recently Craig Barry. Justin Scott moved on and started as the Head Groundskeeper for the Milwaukee Brewers this spring and Curt Mayes moved into a Co-Assistant position for the Royals. Trevor Vance, Head Groundskeeper for the Royals, seems to have provided an educational stepping stone for a number of our graduating

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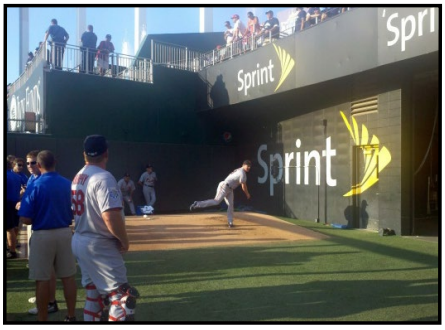

students wishing to pursue a life-long career in sports field management. Trevor trains and teaches with loose reins and only steps in when necessary. The best way to learn is to do the work and perhaps by an occasional mistake that Trevor will point out in a teaching moment. It is obvious how much hard work and pride that goes into the maintenance of this ball field at Kauffman Stadium. You can see it as you walk this field. It is amazing!

This year's MLB All-Star game was scheduled for Kansas City. Trevor Vance and Curt Mayes made a weekend trip to Columbia as Trevor's Little League team was playing here. Trevor asked Josh McPherson for a tour of Faurot Field and small talk led to an invite to be on this year's grounds crew for the All-Star game. Well I tell you, it did not take much thinking on this one! After pinching myself several times in disbelief, I even made a phone call to Curt Mayes to ask if Trevor was serious about the offer. I told Curt on that call, "Count me in."

Most folks do not understand the 'Art of Groundskeeping.' It's not the most glamorous job to many, but these guys do it because they love it. It is an art and a science combined. Fans see the infield being dragged, lines going down and water being applied; but it's much, much more than that. For a three-day All-Star event, it's organized chaos.

Over three days, there is a "Futures Game" between the USA and World teams and a celebrity softball game on Sunday. All-Star Monday is the Concert and Home Run Derby. Tuesday evening is finally the All-Star game. What you do not see are the countless rehearsals for the stage entering and exiting the field with setup, service men and women carrying and unfolding the flag in the outfield and countless media personnel moving equipment, tents, and stages throughout each day. All providing wear and tear to the grass before the main event even begins.

Many folks have commented how great to be right there, see all the stars, the derby, the game, etc. What many do not realize, our view was always from the right field bullpen; however we were right there when Cain was warming up pre game.

Our time on the field was to do a job and get off. We were not supposed to "hang-out" and gawk. So while you do your assigned job you could catch a glimpse of Mark McGuire, Ricky Henderson, The OZ, Jennie Finch, and even Mizzou's own Ian Kinsler.

One example of our assigned jobs was the construction of an outfield fence for the celebrity softball game. Eight of us (2 groups of 4) were told to start laying down metal base plates to hold the fence (that had to have each panel setup in order) and then topped with the yellow foam pad. We had seven minutes to, "Get 'er done." This was completed immediately following the Futures Game. Everything was regimented by the clock to the minute.

Field maintenance was throughout the day. Working the dirt, watering, raking, dragging, mowing and lines were the routine chores. Set up for batting practice (BP) and most other chores took little time and then the waiting game sets in. Everyone hangs out until the next change out on the field – breakdown of BP to game prep, etc.

Watering the dirt as most of you know is important for traction and playability. However, during the course of a three day event such as this, grass on the aprons take a huge beating and require additional care, which includes watering and raking of the grass blades to try and keep them standing. Grass savers and traffic would mat the grass blades and it's amazing how well the grass held up throughout the event. Most groundskeepers would say it looked terrible. To the average fan in the seats, such details go un-noticed.

The most extensive work was always at the end of the day. When the day's events were over, field repairs to

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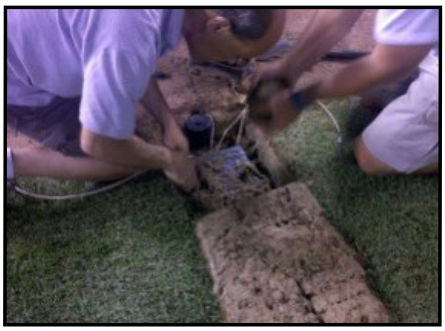


the mound and batter's boxes were first on the list. Brooming all edges and sifting field conditioner for buckshot clay and trash were done simultaneously. The infield was dragged with the infield pro and then hand dragged several times in different directions. It was easy to understand why and how the details of this field were sharp and crisp. Leaf rakes were used again to stand grass blades up along both aprons. Everything was watered again and covers were put in place on the mound and home plate dish. When all was done, it was time to go home for the start of another day. Twelve to 14 hour days was the norm for most, while some folks had even longer days.

Scott Parker, with the St. Louis Rams, painted the All-Star logos on the field as well as logos around the Kansas City area. After the derby Scott started his touch up painting and made these logos jump out of the field. The man is the "Picasso" of field painting. It was pure pleasure to watch Scott's steady hand and talent.

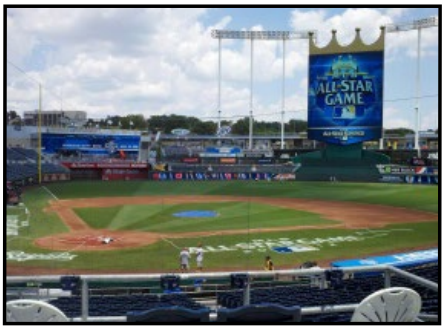
His crew would stay ahead of him with edging boards for the straight lines of the logo and wipe boards clean as they go. It was; however the curved edges that really showed that steady and gifted hand.

When The St. Louis Cardinals hosted the 2009 All-Star game, I remember Bill Findley commenting about the installation of field cameras. Well, this year was no different. Directly in front of the home plate dish, on the edge of the grass, a camera and transmitter needed to be buried with the camera eye fractionally above the dirt. The sod needed to be cut and laid back, root-zone removed, and the camera installed. Sand was packed back around the transmitter and the sod was laid back over the top. Findley was given the shovel on this one as the experienced man on this job. At the end of this night, the only thing remaining was the game itself – All-Star Tuesday.

Tuesday morning started as the previous two mornings. The early crew was there by 6 am to get the mowing completed as well as touching up the mowing pattern of the Royal crown in center field and running irrigation.

Throughout Tuesday, rehearsals for the National Anthem and God Bless America were heard several times. As you looked over the field, it was just time for things to happen. The only things remaining were lines, dirt work on the infield, watering, and setup/breakdown for BP. The stage was basically set for Tuesday night's big event.

The game itself was no one of the most exciting games with the National League breaking out on top 5-0 in the first inning. I couldn't be too celebratory in an American League stadium; you know, growing up in St. Louis and all, but I was pleased with the outcome. Our view of the game was from that right field bullpen. Several benches were set along the fence and since there were so many on the grounds crew, we had to rotate time spent in the bullpen watching the game. Regardless, the experience was still unbelievable.



Following the All-Star game, the grounds crew went into action again with no breaks in sight. The field was be used for a "Fantasy" baseball game to start at 8:30 am on Wednesday morning. So field repairs were made and new lines went down that night in preparation for that game. Thursday would be a day off as far as activities on the field; however, the grounds crew was preparing for a 10 game home stand following the All-Star break. You can see it never ends.

On the final day, All-Star Tuesday, it became known to all why this white panel was painted on the wall of the Maintenance area. This became a signature board for all who worked on the field to sign their name. By the end of the day, it was filled with signatures - of course all know

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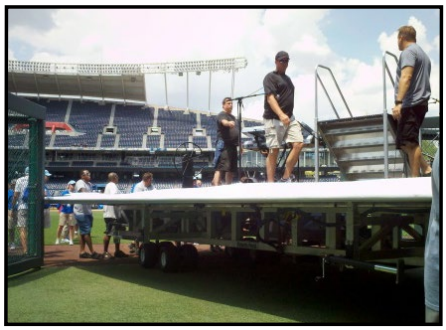
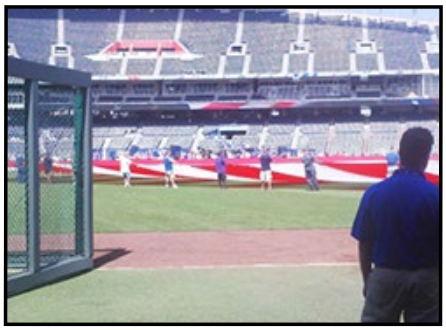


the man in the photo, George Toma. George had been the groundskeeper for the Royals and is a member of the NFL Hall-of-Fame. It was announced prior to the Home Run Derby that he is being inducted into the KC Royals Hall-of-Fame.

It was amazing how well the field held up over Sunday and Monday. On the day of the game, trained eyes could see the effects; however to most fans, it would look great. While there was a need for extra people to be on board for the ground crew, it did become apparent that you were one of many and the extended invitation to participate was truly an honor. On the night of the derby, there were 62 people on the crew – approximately 3 times more than a regular season game. Trevor, Rob and Curt had each one of these folks providing the detail needed to shine and it did shine.



What a great experience this was and probably one of the most memorable work experiences for me. The 'Art of Groundskeeping' is often overlooked and seldom rewarded, but these guys do it because they love it, they have a passion for it. Don't let anyone of them tell you differently. This is the job that allows those very familiar words to be said countless times in a season, "Play Ball!"

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Hot Weather Tomato Problems

It's now official; July, 2012 was the hottest July in U.S. history. Somehow I doubt this revelation comes as a surprise to anyone reading this article. The brutal, hot weather of this summer is a vivid reminder of how helpless we are when it comes to the weather. It also brought with it a number of problems for our garden plants. Since tomato remains the most popular home garden vegetable in the U.S., it is timely to review some of the problems of tomato production associated with hot weather.

Poor fruit set. The metamorphosis of a tomato flower into a fruit is contingent upon its pollination followed by the fertilization of its ovules. The latter ultimately will develop into seeds as the fruit matures. This remarkable series of events is sensitive to several environmental factors, with temperature playing an important role.

High temperatures, especially if accompanied by low humidity, hinder fruit set through failure of viable pollen to form and/or fertilization to occur. Temperatures above 90°F during the day and above 70°F at night usually result in poor flowering and reduced fruit set. Research indicates that night temperature likely is more critical than day temperature, with the optimal range for the former being 59 to 68°F.

It must be noted, however, that temperature cannot always be blamed for poor fruit set. A heavy fruit load combined with inadequate nutrition can reduce fruit set on flower clusters located on the middle-to-upper part of a tomato plant.

Delay in ripening. Typically, it requires between six and seven weeks following the pollination/fertilization of a flower for a tomato fruit to mature fully. During that period, the fruit goes through a number of developmental stages that ultimately result in a red (pink, yellow, orange, etc.) fruit that is ripe and ready to harvest. Mature green tomatoes ripen most rapidly at temperatures between 68 and 77°F. The greater the deviation from that temperature range, the slower the ripening process will be. Extremely stressful temperatures can virtually halt the process entirely.

Pigment (color) development in tomato fruit occurs in the very final stages of ripening and is temperature-

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sensitive. The red pigment lycopene and yellow pigment carotene are the two pigments that give a tomato fruit its color. Temperatures above 85°F tend to slow or even halt the production of these two pigments. Since 37% of the lycopene of a tomato fruit is contained by its skin, it is no wonder why tomatoes growing in excessively hot conditions produce poorly-colored fruit.

Yellow-shouldered fruit. "Yellow shoulder" is a physiological disorder characterized by areas at the top (shoulder) of the fruit remaining yellow and as the remainder of the fruit ripens and turns red. These yellow areas never ripen properly and the tissue below them is tough and poorly flavored. Tomato varieties that are green shouldered when immature are more likely to show the trait than varieties that have uniformly-green immature fruit. It appears that both temperature and nutrition are involved in the development of yellow shoulder.

As previously mentioned, high temperatures retard (or prevent) the production of the red pigment lycopene. Since the shoulder of a tomato fruit most often is exposed to the direct, warming rays of the sun, lycopene deficiency appears there first resulting in yellowish coloration. Additionally, it has been found that tomatoes exhibiting yellow shoulder most often are deficient in potassium. When plant tissue potassium levels drop from adequate (4-6%) to low (2-3%), yellow shoulder often ensues, especially if temperatures are high.

Therefore, choosing varieties with the uniform ripening trait, maintaining good foliage cover of the fruit and (especially) supply plans with ample amounts of potassium can greatly reduce or eliminate the incidence of yellow shoulder.

White core. Under stressful conditions, tomato fruit often develop a tough, white core in their center. The white tissue might be expressed only in the area of the fruit just beneath the calyx or, in extreme cases, through the entire depth of the fruit. The internal walls of the fruit may also appear pale in color and "corky". Older varieties with five distinct cavities (locules) filled with seeds are especially prone to this disorder. Newer, "beef steak" types have multiple locules and tend to show white core less often.

Once again, excessive heat and improper fertility seem to be related to the formation of white core. Malnourished plants with poor foliage cover tend to bear fruit exposed to the sun, thus adding to the problem of temperature stress of the fruit. As was the case with yellow shoulder, insufficient tissue potassium levels have been associated with white core development.

Choosing newer varieties less prone to white core development, maintaining a fertility program that encourages good foliage cover and supplying ample amounts of potassium are best management practices for preventing the disorder.

Blossom-end rot. Blossom-end rot of tomatoes is a physiological disorder caused by a lack of calcium in the blossom end of the fruit. This disorder results in tomato fruit with brown or tan areas on their blossom end. These areas start as small lesions and gradually develop to cover nearly the entire end of the fruit.

Although blossom-end rot is caused by a lack of calcium, it is a lack of water that is most often responsible for its development. Since hot weather increases water loss (transpiration) from tomato plants, the incidence of blossom-end rot usually is greatest when temperatures are hot. Maintaining the proper soil pH, supplying tomato plants with adequate amounts of calcium and irrigating on a timely basis can prevent this tomato problem entirely.

In closing, Mark Twain once stated, "Everyone talks about the weather but no one does anything about it." Unfortunately for gardeners that statement still holds true and there is little we can do other than to keep our tomato plant vigorous, well watered and adequately fertilized. If foliage is sparse covering tomato plants with a material that partially blocks the sun such as cheese cloth or shade fabric is a tactic worth trying. As summer transitions into fall and temperatures start to moderate, a return to normal ripening for those fruit that our tomato plants did manage to set should occur.

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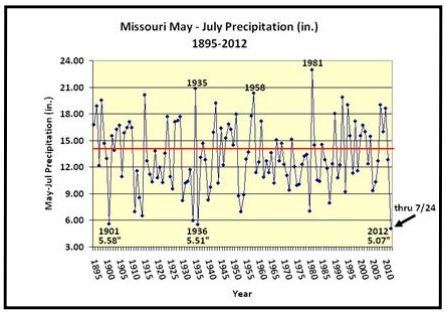
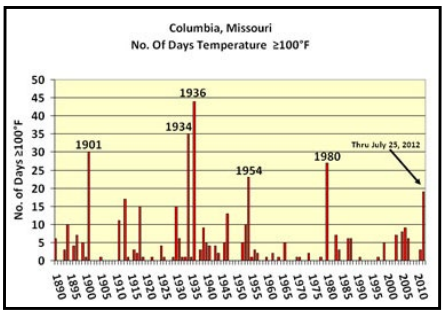
What to do, what to do, about fall seeding….

The spring of 2012 was about six weeks ahead of itself compared to most years. Most folks felt we never had a winter this year, moisture been looking good to excessive in many areas early on, and we had one of the most beautiful springs in years. Our final heavy rainfall in Columbia in late April was the hardest seen at my home place ever. The small creek that runs through my property went out of its banks higher than I have ever seen in 35 years. Trees were eroded out of its banks and a sizable foot bridge over that creek was swept away, disappearing forever. After that, someone turned the switch off and one of the driest seasons ever began to change the appearance of Missouri's landscapes.

You may not realize how precious a resource like water can be until you experience a year of weather like the one we are having. Records have been broken since 1895 in many cases. If we look at the May-June precipitation chart from 1895 to present, we can see that 2012 is right there with 1936 and 1901 for the lowest precipitation total over the months that normally provide the highest precipitation totals. It's no wonder that things look as they do.



If you couple this with the high temperature data (Number of days above ≥ 100°F), we truly begin to see how precious water can be; not only for plants, but for human consumption as well. For those of you keeping track, the number of days above 100 for Columbia, MO was approaching the 1954 mark in late July; however as of August 7th that count sits at 19 days.



Along with the lack of precipitation and high temperatures, another factor in the 2012 season that played a huge role in the demise of turfgrasses is the **evapotranspiration (ET)** rate. This is the amount of water loss on a daily basis due to evaporation from the soil and transpiration from the plant. Who would have thought that ET rates during May of 2012 would rival ET rates typically seen in late July or early August? Warm temperatures, low humidity, and sunny/breezy days have provided daily ET rates between 0.2 and 0.3 inches. A more impressive way to think about this is to consider that 2 to 3 inches of water was being loss every 10 days resulting in dormancy of our turfgrasses and lawns. We were just not able to keep up with standard recommendations of applying 1 to 1.5 inches of irrigation per week. We generally have no concerns about lawns remaining dormant for four to five weeks; however this year lawns have remained dormant now for eight to ten weeks. My mower has sat in my garage for most of the summer without use.

Many homeowners can expect to have severe thinning or total loss of their lawns. Many will be very surprised on how much will come back once sufficient rainfall occurs. With Isaac moving up through the Gulf and now pushing through New Orleans, our next best opportunity for that slow, steady rainfall comes to us on Labor Day weekend. Let's hope.

So now, we are facing that time of the year when lawns need to be renovated or over-seeded. The questions have been: When should we start? Should we aerate? What about the continued drought and warm weather? What about all the weeds? How do we go about it?

The remainder of this article will try to answer these questions and perhaps any questions you may have as well.

As you look across your lawn, you can quickly decide just how much damage has occurred. Individual plants can be pulled from the soil and inspected to see if any green plant tissue remains in the center or crown of the plant. Any amount of green tissue means that plant has the potential to regrow with sufficient water or rainfall. Some areas of the lawn will look totally brown and crispy and dead (usually full sun areas, hilltops or berms), but there is always potential for regrowth if viable plants remain. Other areas will be more obvious for regrowth. You can still see some green tissue in the canopy and these areas exist more so in the shaded areas of a lawn.

After inspection of the lawn, homeowners can get a feel for how much work lies ahead. Determine the square footage that needs to be renovated. This number then determines the amount of seed and fertilizer needed to do the job. Once all of this is known, then we can address the other questions that may arise. Recommendations are being made to purchase seed as soon as possible due to shortages and higher prices.

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When should we start: Traditionally, cool-season lawn renovations should occur in the first two weeks of September. Labor Day weekend has always been a good starting date. Seeding in the fall is usually best when we have some soil moisture in place; however this year soil moisture in the top ¼ to ½ inch of soil is very scarce. Some areas of the state have received some spotty showers and may be OK to get started. Others may not. If irrigation is an option, then this time frame is still excellent timing for renovation and over-seeding. Just keep in mind that seed requires light and frequent watering for germination and growth. If the fall continues to be dry, then watering will become hard work to keep that lawn alive. If irrigation is not an option, then seeding may need to be delayed two to three weeks in hopes of receiving some regular rainfalls. Seeding lawns can occur up to October 10th for Missouri, but again the optimum timing is the first two weeks of September.

Should we aerate: Aeration has always been an accepted method prior to over-seeding. Aeration in several directions helps to alleviate soil compaction and provides passages for air, water and nutrients to enter the root zone. Applications of fertilizer after aeration will move nutrients immediately into the root zone of your lawn. It also provides better seed/soil contact for over-seeding by dragging and crumbling soil plugs, spreading soil over seed. Here's the problem. Aeration requires soil moisture in order to pull a nice soil plug from the soil. Lack of rainfall will make aeration impossible. Dry, compacted soils will not allow the hollow tines of the aerator to penetrate the soil surface. One option is to irrigate prior to aeration and over-seeding. But once again, keep in mind that once the seed is down, irrigation will be required for germination and growth. If irrigation is not an option, then aeration will need to be delayed until later in the fall or spring. The benefits of aeration will be well worth the effort when this practice can be provided. Aeration equipment can be found at local rental stores or garden centers. Machines that pull a ½ inch diameter plug three to four inches deep on four inch centers do an excellent job.

Power rakes or de-thatching machines are also pieces of equipment to prepare seedbeds prior to over-seeding. This equipment can also be rented and provides an excellent means of breaking up soil cores from aeration. This creates a perfect situation for dropping seed into a lawn, therefore improving seed/soil contact. Some power rakes have a seed hopper on top of the unit dropping and working seed into the soil surface all in one pass.

In extreme situations where the entire lawn needs to be renovated, tilling may be the best means of starting over and preparing a seedbed. This provides the best seed/soil contact and breaks up any compacted soils up to the tillage depth. A four-inch tillage depth is sufficient.

What about continued drought and warm weather: As already stated, once seed is down, irrigation will need to be provided on a light and frequent schedule for at least the first 7 to 10 days for seed germination. The weather will then determine if irrigation will continue to maintain grow-in. Tall fescue requires 7 to 10 days for germination, while Kentucky bluegrass requires 10 to 14 days. These are the critical time frames for these species to germinate. Warm weather during germination is usually not a factor other than drying out soil surfaces. Therefore the light and frequent watering will keep the surface moist, but not overly wet. Wet conditions with warm weather will promote turfgrass diseases during establishment. Dark soils indicate sufficient moisture, shiny soils indicate too much water.

What about all the weeds: Many weeds are considered warm season weeds and when turfgrasses are dormant, weeds still prevail and grow. Many summer annual weeds such as crabgrass, goosegrass, and spurge are not a major concern since they are annuals. Practices such as aeration and power raking will damage annual weeds sufficiently to reduce competition. There is usually no need to spray weeds this late in the season since they are annuals and October

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What to do, what to do, about fall seeding....

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frost is just around the corner. Perennials, like dandelion, can be sprayed but will require a 3 to 4 week wait before seeding turfgrasses can take place. Sometimes it is best to wait on weed control and take advantage of planting grasses during that optimum time frame.

How do we go about it: First, pull a representative soil sample and obtain a soil test for fertilizer recommendations.

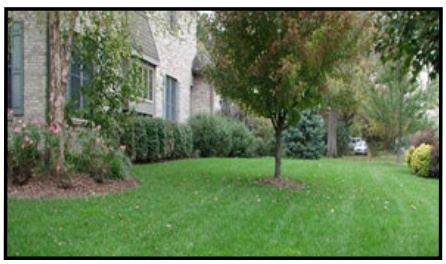
Knowing which nutrients are sufficient and which ones are deficient will determine optimum fertilizer needs. Soil pH is also important to know and a pH range of 6.5 to 6.8 is excellent for turf establishment. Any lime requirements to raise pH will be specified on the soil test results. Having this information in hand prior to seeding can save you time and money when trying to establish a lawn. Fertilizer and lime can be applied prior to any seedbed preparation. Starter fertilizers (e.g. 10-24-18) have always been recommended at a rate of 1 lb of nitrogen per 1,000 square feet at time of seeding; but more recently, starter fertilizer applications have proven best when applied 10 to 14 days after seeding or when the grass is at that seedling stage. All fertilizer and lime requirements should be based on a soil test.

Preparation of the site includes the removal of any debris such as rocks and a visual inspection to make sure the grade or slope of your landscape is adequate for good surface drainage. Holes from rock removal or low water holding pockets need to be filled in to insure proper drainage. Poorly drained areas are detrimental to maintaining healthy turf.

When seeding, it is important to have good seed/soil contact to improve seed germination. Aeration, power raking or tillage is the means to prepare a good seedbed as already discussed. When tilling the soil, straw will be needed to prevent erosion and mulch the soil at a rate of one bale per 1,000 square feet. Aeration and power raking do not require straw or mulch.

Turf-type tall fescues can be seeded around 6 to 7 pounds per 1,000 square feet. Seeding rates for Kentucky bluegrass should be about 2 to 3 pounds per 1,000 square feet. Mixtures of tall fescue with Kentucky bluegrass should be seeded at 6 to 8 pounds per 1,000 square feet. Seed applications following tillage or power raking should be raked in lightly to help cover the seed with soil. Use of a light roller will also improve seed/soil contact and germination.

The final step to a successful lawn renovation is proper watering. The first two weeks after seeding are the most critical. Until the seed germinates and starts to put down a root, seed can wash away very easily. You should keep the soil surface moist, not wet. Do not let seed dry out once it starts to germinate. On warm, windy days with lower humidity, it may require several light waters a day to keep the surface moist. Always avoid puddles and runoff.



In a season such as this one, successful renovation and over-seeding are important to provide the competition needed against many weeds. If you can get started in early September, you should be mowing your new lawn by late fall. Additional fertilizer applications can be made one month following the application of the starter fertilizer. These fertilizer applications can be made with something similar to an 18-5-9 and applied at a rate of 1 lb of nitrogen per 1,000 square feet.

One final question you probably have is, "what do we plant?" Several blends and mixtures do exist for homeowners to select from. Farm co-ops, garden centers at the major box stores, and some local seed house can be excellent sources for grass seed. Some of those recommended for Missouri include the following:

Turf-type Tall Fescue Blends

Revolution	Ace Hardware, Williams Lawn Seed
Winning Colors	Lebanon Turf, Hummert's International
Independence	Hummert's International
All-Pro	MFA
Pennington Ultimate Tall Fescue Blend	Lowe's, Wal-mart
The Rebels Blend	Lowe's, Wal-mart
Scott's Classic Tall Fescue Blend	Lowe's, Home Depot
Strawberries	Mid Aug.

Tall Fescue/Kentucky Bluegrass Mixtures

Fescue Blue Mix	Hummert's International
Revolution Plus	Williams Lawn Seed
Winning Colors Plus	Lebanon Turf
Tournament Quality Ultra-Premium Fescue Plus Lawn Mixture	Lowe's
Pennington Fescue/Bluegrass Lawn Seed Mixture	Lowe's, Wal-mart
Master Turf Ultimate Blue Lawn Seed Mixture	Wal-Mart

With this you should be well on your way to a full lawn recovery and back to mowing that lawn again. Hopefully, cooler temperatures and rainfall will come sooner than later and let's hope Isaac brings Missouri some much needed relief.

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September Gardening Calendar

Ornamentals

- **Weeks 1-4:** Continue planting evergreens now.
- **Weeks 1-3:** Cuttings of annuals can be taken now to provide vigorous plants for overwintering.
- **Weeks 1-3:** Herbs such as parsley, rosemary, chives, thyme and marjoram can be dug from the garden and placed in pots now for growing indoors this winter.
- **Weeks 2-4:** Except tulips, spring bulbs may be planted as soon as they are available. Tulips should be kept in a cool, dark place and planted in late October.
- **Weeks 2-3:** Begin readying houseplants for winter indoors. Prune back rampant growth and protruding roots. Check for pests and treat if necessary. Houseplants should be brought indoors at least one month before the heat is normally turned on.
- **Weeks 3-4:** Perennials, especially spring bloomers, can be divided now. Enrich the soil with peat moss or compost before replanting.
- **Weeks 3-4:** Divide peonies now. Replant in a sunny site and avoid planting deeply.
- **Weeks 3-4:** Lift gladiolus when their leaves yellow. Cure in an airy place until dry before husking.
- **Week 3:** Poinsettias can be forced into bloom for Christmas if they are moved indoors now to a sunny windowsill. Each night, they must be kept in a cool, dark place where there is no light for 14 hours. This must continue until proper color is achieved in 6-10 weeks.

Lawns

- **Weeks 1-4:** Cool season lawns are best fertilized in fall. Make up to 3 applications between now and December. Do not exceed rates recommended by fertilizer manufacturer.
- **Weeks 1-4:** If soils become dry, established lawns should be watered thoroughly to a depth of 4-6 inches.
- **Weeks 1-4:** Begin fall seeding or sodding of cool season grasses. Seedbeds should be raked, dethatched or core-aerified, fertilized and seeded. Keep newly planted lawn areas moist, but not wet.
- **Weeks 2-4:** Lawns may be topdressed with compost or milorganite now. This is best done after aerifying.
- **Weeks 3-4:** It is not uncommon to see puffballs in lawn areas at this time.
- **Weeks 3-4:** Newly seeded lawns should not be cut until they are at least 2 or 3 inches tall.

Vegetables

- **Weeks 1-2:** Egyptian (top-setting) onions can be divided and replanted now.
- **Weeks 1-2:** Sowing seeds of radish, lettuce, spinach and other greens in a cold frame will prolong fall harvests.
- **Weeks 2-4:** Keep broccoli picked regularly to encourage additional production of side shoots.
- **Weeks 2-3:** Pinch out the top of Brussels sprout plants to plump out the developing sprouts.
- **Weeks 2-3:** Harvest herbs now to freeze or dry for winter use.
- **Weeks 2-3:** Tie leaves around cauliflower heads when they are about the size of a golf ball.
- **Weeks 3-4:** Pinch off any young tomatoes that are too small to ripen. This will channel energy into ripening the remaining full-size fruits.
- **Week 4:** Sow spinach now to overwinter under mulch for spring harvest.

Fruits

- **Week 1:** Pick pears before they are fully mature. Store in a cool, dark basement to ripen.
- **Weeks 3-4:** Bury or discard any spoiled fallen fruits.
- **Week 4:** Paw paws ripen in the woods now.
- **Week 4:** Check all along peach tree trunks to just below soil line for gummy masses caused by borers. Probe holes with thin wire to puncture borers.

Miscellaneous

- **Weeks 1-4:** Autumn is a good time to add manure, compost or leaf mold to garden soils for increasing organic matter content.
- **Weeks 1-2:** Monitor plants for spider mite activity. Reduce their numbers by hosing off with a forceful spray of water.
- **Weeks 2-4:** Seasonal loss of inner needles on conifers is normal at this time. It may be especially noticeable on pines.

Gardening Calendar supplied by the staff of the William T. Kemper Center for Home Gardening located at the Missouri Botanical Garden in St. Louis, Missouri. (www.GardeningHelp.org)