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Poppy: A Remembrance of Fallen Heroes

"In Flanders fields the poppies blow, Between the crosses row on row"

These opening lines from the poem 'Flanders Fields' were written in 1914 by Canadian physician and Lieutenant Colonel John McCrae. The hauntingly beautiful words of McCrae immortalized poppy as one of the most recognized memorial symbols to honor soldiers who died in combat. Nearly a century later the poppy still symbolizes Memorial Day and is used to honor our fallen military heros. May is an appropriate month to take a closer look at this colorful flower steeped with symbolism.

The poppy referred to by McCrae is known today as the Corn poppy or Flanders poppy (*Papaver rhoeas*). It is a common flower native to Europe that grew wild in the cemeteries of Europe used to bury fallen soldiers of World War I. It is from this poppy that the garden poppies we know as Shirley poppies were developed.

Poppies belong to the Papaveraceae (or poppy) family which contains 30 genera and about 600 species. There are both annual and perennial species of poppies. Most are cold tolerant and prefer locations with relatively cool summers. The Oriental poppy and Iceland poppy are two of the most familiar perennial types. Among the annual poppies (in addition to Flanders poppy) is the more notorious opium poppy (*Papaver somniferum*). Although it bears a flower that is quite attractive, the opium poppy is illegal to grow in Missouri.

The Oriental poppy (*Papaver orientale*) has the distinction of being the most popular garden poppy. It produces large orange-red flowers that are spectacular. Its flowers are from 3½ to 4 inches in diameter and have petal with a crepe-paper texture. Borne singly on wiry stems, they are held well-above the foliage. The latter is low-growing and sharply toothed, with a bristly feel. Broken stems and leaves yield a white, milky sap. Like most poppies, the Oriental poppy is not suited for extremely hot summers and usually responds by going dormant when warm temperatures arrive. In Missouri, it flowers in the spring (usually April) and will seemingly disappear from the landscape by July because of the heat.

Oriental poppy prefers well-drained soil and a sunny exposure. Care should be taken not to overwater it during its dormant period which, in many cases, extends throughout the winter. It can be planted with other species of annuals and perennials that will provide color in the area once the poppies go dormant. Oriental poppy can be started from seeds but will not flower until the second (or third) year. In addition to the orange-red mentioned above, other flower colors include rose, salmon, pink and white.

Established plants of Oriental poppy can be divided after they have developed significant size. This usually requires about five years. Division should be done after flowering occurs and while the plants are dormant. Dividing early in the spring usually eliminates flowering that season and may encourage crown rot, especially during a wet spring.

Iceland poppy (*Papaver nudicaule*) prefers cool climates and tends to be short-lived in Missouri. Because of this, gardeners in our state probably should treat it as

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an annual or biennial. Iceland poppy has flowers that are very colorful and distinctive; some of the more durable varieties (e.g. 'Champagne Bubbles') are rewarding even though their bloom-period is short-lived.

If annual poppies interest you, then (previously mentioned) Shirley poppy is hard to beat. The term 'Shirley' poppy is given to any cultivar of *Papaver rhoeas*. Some cultivars are quite colorful, have flowers that have been likened in texture to tissue paper, and are fairly easy to grow from seed. As a general rule, poppies do not transplant well; therefore, annual types should be seeded directly into the garden where they are to grow. If started indoors, do so in a cool location and seed them in peat pots or other biodegradable containers that can be planted along with the plant into the ground. This practice will minimize root disturbance and maximize transplanting success. Poppies tend to reseed themselves very readily and can become somewhat of a weed in the annual flower garden. To prevent this from happening, simply remove seed pods before they mature and shed seed.

A second type of poppy treated as an annual in Missouri actually was developed from the opium poppy. Unlike opium poppy, it is legal to grow in Missouri. Peony-flowered poppy (*Papaver somniferum* var. *paeoniflorum*) bears spectacular, fully double flowers up to five inches in diameter that are tightly packed with lacey petals. It is available in shades of red, pink, purple, and white and requires much the same care as Shirley poppy.

David Trinklein,
Associate Professor
Division of Plant Sciences
TrinkleinD@missouri.edu

My Zoysiagrass Lawn was Beautiful – Now What Should I Do?

Homeowners who have zoysiagrass lawns have greatly appreciated the density and color of these lawns for their competition against weeds and that carpet-like feel. Zoysiagrass is the warm-season grass of choice for lawns and it has proven to be a good one for the hot and humid summers of Missouri. Until recently there were no major complaints, other than the usual invasiveness of this grass species.

Zoysiagrass lawns have not been looking well over the past couple of years. Most complaints have been received in the St. Louis area; however we are getting calls from Jefferson City and many other outlying communities. In a 2012 article, three possible scenarios were discussed for the demise of zoysiagrass lawns. These include: Large Patch disease, Hunting Billbug, and Chinch Bug.

Large patch is the number one biotic problem that affects zoysiagrass on an annual basis. It is indiscriminate in its occurrence, and will damage lawns or golf courses with similar intensity. The disease is caused by the fungal pathogen, Rhizoctonia solani, and is a close relative to the identically named pathogen that causes brown patch on tall fescue. Large patch symptoms can occur in the fall but are most severe now in the spring, when zoysiagrass is slow growing due to the cool temperatures we have been experiencing.

Large Patch in Zoysiagrass. Note: Brilliant orange Firing on patch parimeter.

In addition, large patch is particularly severe and spreads quickly in saturated or flooded soils, which have been spurred by our numerous rainfall events. In active outbreaks, leaves on the outer margins of patches will "fire" and turn a brilliant orange color that is most vivid in the morning or after a rain event. As the name implies, large patch symptoms can be quite grand in nature, with patches ranging from 6 inches to many, many feet in diameter. Some extreme outbreaks can even be observed with satellite imagery!

Large patch is not easy to control, and researchers are still learning important aspects of the disease cycle in order to develop more effective management practices. It is critical that timing of fertilization and other cul-

Satellite imagery of a zoysiagrass lawn infected with Large Patch.

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tural practices is done in accordance with when zoysiagrass is actively growing. Nitrogen fertilization in the fall or spring when zoysia growth is slow may tip the scales squarely in favor of the large patch pathogen and result in severe outbreaks. Similarly, aerification and thatch removal practices should be limited to the hot summer months. So, in other words, don't do anything to zoysia unless you are actively sweating while doing it. As noted above, the pathogen also depends on moisture to infect, so over-irrigation and poor drainage will also result in more severe large patch outbreaks.

Chemical control of large patch should be limited to areas that have a history of the disease. If fungicide control is necessary, the application must be timed preventively when infection is taking place not when symptoms occur. Actual infection of the fungal pathogen occurs in early fall when the fungus dives down to the base of the plant inside the leaf sheath. Therefore, fungicide applications should be made in the fall. Recent research suggests earlier may be better in early to mid-September when soil temperatures first dip to below 70°F. To minimize fungicide use, it is possible to map out the diseased areas on lawns now, and specifically apply fungicide to these areas this fall. Fungicide applications made to lawns in spring will protect your healthy grass from large patch expansion, but will not magically cure zoysia that has already been infected. Fungicides marketed for homeowner application may not be as effective as those marketed to commercial lawn care operators. Additionally, specialized spray equipment used by commercial lawn care operators may make these fungicide applications more effective.

Chinch bug and **hunting billbug** outbreaks were also noted on several lawns in the St. Louis and Jefferson City area in the past two years.

Chinch bugs (*Blissus* spp.) are the most damaging insect pest in zoysiagrass. Unlike large patch, chinch bug damage occurs in the hot, dry summer months and most closely resembles drought damage. Affected areas are solid, not patchy, and will usually start on one side of the lawn and progress throughout as the chinch bug population builds and moves. Damage is most severe along lawn boundaries, particularly along concrete driveways and sidewalks. The easiest method to detect chinch bug damage is to pull up damaged zoysia along these boundaries and look for the scattering fast, small 3/16-inch black bugs. If chinch bugs are occurring, there is no recourse but the use of a curative insecticide to eliminate the problem. Because occurrence is sporadic from year to year, preventive insecticide applications targeted for chinch bugs are not recommended in this area.

Hunting billbugs (*Sphenophorus venatus vestitus*) have also been found sporadically in Missouri over the last two years. Unlike chinch bugs, hunting billbugs are more anonymous and elusive. Because of this little is known of hunting billbug biology. Adults are reddish brown-black, 1/2-inch long, have a curved snout, and are most active during the night and early morning hours. Billbugs are thought to overwinter as adults, and lay eggs in grass stems/leaf sheaths in mid-late spring. Billbug larvae, which unlike annual white grubs are legless, hatch and feed by boring into lower leaf stems. Larvae become larger and also feed on stolons, which are left characteristically hollowed out in early summer. At this point, zoysia will easily pull away from the soil, and symptoms will occur as yellow areas that eventually brown and die out, resembling drought damage. Monitoring both adult and larval hunting billbug activity is difficult. The most effective method for detection of adult activity (which should be occurring soon) is creating several pitfall traps in the lawn by digging a few holes and placing plastic cups level to the soil surface. Adults will fall into the cup overnight and can be counted over a few days period. Early larval stages are small and difficult to detect, but larger larvae in July can be observed by pulling zoysia away from the soil. In areas where hunting billbug damage has been identified, a preventive long lasting insecticide application should be applied in late May – early June (same time frame for annual white grubs) to target both adults and larvae.

Sticking with Zoysia

Many homeowners are asking, "What should I do?", "Should I replant zoysiagrass or should I plant something else?" There are many advantages to a zoysiagrass lawn compared to a cool-season turfgrass, which include the capability of mowing zoysiagrass shorter, and an improved tolerance to heat, drought and diseases. It is not, however, nor is any turfgrass species, maintenance free. For those who truly love their zoysiagrass lawns, replanting zoysia in early June is the best timing for re-establishing these lawns. However, if temperatures remain cool and Large Patch remains active; hold off on re-establishing zoysia until Large Patch symptoms disappear. Zoysiagrass recovery can be accomplished by seeding ('Zenith' or 'Compadre' @ 1 to 2 lbs/1,000 sqft), plugging (2 inch plugs planted on 1-foot centers), sprigging (10 to 12 bushels/1,000 sqft) or sodding.

By knowing what pests have caused the recent demise of zoysiagrass, homeowners can follow the previously outlined recommendations for control of these pests. To di-

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agnose causes of declining zoysiagrass, homeowners can utilize the turf diagnostic service at the University of Missouri (http://turfpath.missouri.edu/turfdiagnostics), or call their local extension office.

Conversion to Cool-Season

Others may choose to do something else with their lawns. Right now the most common question is how to convert these zoysia lawns to a cool-season grass like tall fescue or tall fescue/Ky. bluegrass.

If this is the route you wish to take, then your conversion to a cool-season lawn can begin now until mid-July. The first step is to spray Roundup herbicide to remove the zoysia and any weedy vegetation that may be present due to thinning of the zoysia. Following the initial Roundup application, continue to monitor any regrowth every 10 to 14 days throughout the remainder of the summer. Spot spray with Roundup to kill any re-sprouting of zoysiagrass or weeds. Your lawn will be dead and ugly throughout the summer, but this is the necessary evil to convert a warm-season lawn to a cool-season lawn.

You need to be aware of the fact that warm-season grasses such as zoysiagrass spread by rhizomes (root extension below the soil surface that will produce daughter plants) and stolons (surface runners that help this grass to spread and produce daughter plants). All nodes on these rhizomes and stolons need to be killed by Roundup in order to make a complete conversion. Conversion from warm-season grasses to cool-season grasses is the most difficult conversion to make and no guarantees can be made. There is always the possibility that some zoysia can come back and contaminate your new cool-season lawn. This contamination can be from re-sprouting of zoysia within your lawn area or encroachment from outside your lawn area (from a neighbor's lawn).

Your goal is to plan on seeding fescue or fescue/bluegrass in the first week of September. Therefore your final Roundup application should be made 7 days prior to seeding. Roundup has a 7-day reseeding interval specified on the label.

Prior to seeding, conduct a regular soil test to determine if any nutrient deficiencies are present as well as determining the soil pH (click to see **MU pub 6954** for more information on Soil Testing your Lawn). Make plans to add any fertilizer and/or lime based on the soil test at time of seeding. Also prior to seeding, select a good tall fescue blend or mixture of tall fescue & Kentucky bluegrass (90% tall fescue with 10% Ky. Bluegrass). Several seed products are available from various venders that should work well for Missouri. See selections below.

Turf-type Tall Fescue Blends	
	Vendor
Revolution	Ace Hardware, Williams Lawn Seed
Winning Colors	Lebanon Turf, Hummert International, MFA
Independence	Hummert International
All-Pro	MFA
George's "Magic Mix" Fescue Blend	R. G. Robinson
Pennington Ultimate Tall Fescue Blend	Lowe's, Wal-mart
The Rebels Blend	Lowe's, Wal-mart
Tri-Star Fescue Blend	Orscheln's Farm & Home
Lesco Fescue Blend	Home Depot
Scott's Classic Tall Fescue Blend	Lowe's, Home Depot

Tall Fescue/Bluegrass Mixtures	
	Vendor
Fescue Blue Mix	Hummert International
Revolution Plus	Williams Lawn Seed
Winning Colors Plus	Lebanon Turf
Tournament Quality Ultra Premium Fescue Plus Lawn Mixture	Lowe's
Tri-Star Low Water Lawn Seed	Orscheln's Farm & Home
Pennington Fescue/Bluegrass Lawn Seed Mixture	Lowe's, Wal-mart
Master Turf Ultimate Blue Lawn Seed Mixture	Wal-Mart

On the day of seeding, assuming that all zoysiagrass and other vegetation remained dead; we can begin by scalping down and bagging all dead leaf tissue. Set your mower as close as possible (lowest setting without stalling mower or cutting soil) and remove dead tissue with a bagger or by raking up material. This should make soil visible and ready for power raking or tillage. Tilling with a garden tiller may create clumps and bring excess plant material to the surface that may require additional raking and removal. Power raking (in 2 or 3 directions) will create a seedbed, but may cause some need for additional raking as well. The surface should be a fine powdery seedbed with little or no trash (dead plant material) remaining.

Seed, fertilizer and lime may be added at this time. It is always recommended to apply these products at half rates

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in two directions to improve distribution. Seeding rates for tall fescue blends and fescue/bluegrass mixtures should be around 7 to 9 lbs/1,000 sqft. Fertilizer and lime rates are based on the soil test. Starter fertilizers are often recommended at time of seeding and the amounts can be figured into the recommendations from the soil test for P (phosphorus) and K (potassium). Starter fertilizers can be applied with the seed on the day of seeding or can be applied 7 to 10 days after seeding, when seedling grasses have emerged. This provides seedling grasses with nutrients when they need it the most. Starter fertilizers only need an application rate of 0.5 lb nitrogen/1,000 sqft.

Power rakes should be set to slice through the top ½ inch of soil to create a seedbed.

After spreading seed, fertilizer and/ or lime, lightly rake in all three with a garden or leaf rake. A small roller can also be used after raking to improve seed/soil contact and germination. Following this, straw can be spread for mulch at a rate of 1 bale of straw/1,000 sqft (about 70 to 80% coverage). You can also use other commercial seed mulches, making applications according to their labels.

When seed and straw are in place, the only task remaining is proper watering to ensure good germination. Light, frequent watering is the key to proper irrigation for seed establishment. Keep in mind that fescues require 7 to 10 days for seed germination, therefore light, frequent watering during this time is critical. Moist soil looks darker in color than a dry soil. Maintain moist looking conditions during this time; avoid puddles and runoff during seed establishment. Once seedlings begin to emerge, you can begin to back off on watering as seedling roots grow deeper into the soil.

Same lawn as in satellite imagery.

In three weeks, your lawn should be tall enough to mow. Begin mowing just as soon as your lawn is at a proper mowing height. Begin with a 3-inch mowing height for new fescue lawns. This should force grass plants to tiller (produce additional shoots) and increase density. In time, mowing heights can be increased to 3.5 to 4 inches high by the following spring. Mowing taller produces a shade effect to reduce weed seed germination as well as creating a plant with a deeper root system to improve heat and drought tolerance during summer months.

After three weeks, a second fertilizer application can be made with a standard 3-1-2 ratio fertilizer at a rate of 0.5 to 0.75 lbs of nitrogen/1,000 sqft. Also note, straw does not need to be raked up in this process. It will eventually be mulched by the mower and/ or decompose.

Three weeks after seeding. Note: mowing begins.

After six weeks, a final fertilizer application can be made with a standard 3-1-2 ratio fertilizer at a rate of 0.75 to 1.0 lbs of nitrogen/1,000 sqft. From this point in time on, continue mowing at a regular interval to avoid excess clippings until winter sets in. Always mow tall and let the clippings fall to return nutrients back to the soil.

Six weeks after seeding you can really begin to enjoy your new lawn.

Conversion from a warm-season lawn, like zoysiagrass, to a cool-season lawn like tall fescue is difficult. That is why the elimination of zoysia with Roundup throughout the summer is critical. While your lawn will look dead and brown for most of a summer, the rewards of a green lawn in the fall may well be worth your time and effort.

Brad Fresenburg
Assistant Extension Professor
Division of Plant Sciences
FresenburgB@missouri.edu

Lee Miller,
Assistant Professor
Division of Plant Sciences
turfpath@missouri.edu

June Gardening Calendar

Ornamentals

- **Week 1:** Deadhead bulbs and spring flowering perennials as blossoms fade.
- **Week 1:** Watch for bagworms feeding on many garden plants, but especially juniper and arborvitae.
- **Week 1:** Thin seedlings to proper spacings before plants crowd each other.
- **Weeks 2-4:** Plant tropical water lilies when water temperatures rise above 70 degrees.
- **Weeks 2-3:** When night temperatures stay above 50 degrees, bring houseplants outdoors for the summer.
- **Weeks 2-3:** Apply a balanced rose fertilizer after the first show of blooms is past.
- **Weeks 2-3:** Rhizomatous begonias are not just for shade. Many varieties, especially those with bronze foliage do well in full sun if given plenty of water and a well-drained site.
- **Weeks 2-3:** Most houseplants brought outside prefer a bright spot shaded from afternoon sun. Check soil moisture daily during hot weather.
- **Weeks 2-3:** Apply organic mulches as the soil warms. These will conserve moisture, discourage weeds, and enrich the soil as they decay.
- **Weeks 2-3:** Apply a second spray for borer control on hardwood trees.
- **Weeks 3-4:** Softwood cuttings can be taken from trees and shrubs as the spring flush of growth is beginning to mature.
- **Weeks 3-4:** Continue spraying roses with a fungicide to prevent black spot disease.
- **Weeks 3-4:** Tired of the same old foundation plantings? Find fresh ideas among the evergreens planted in the Dwarf Conifer collection.
- **Weeks 3-4:** Trees and shrubs may still be fertilized before July 4th.
- **Weeks 3-4:** Pruning of spring flowering trees and shrubs should be completed before the month's end.

Lawns

- **Weeks 1-4:** Water turf as needed to prevent drought stress.
- **Weeks 1-4:** Mow lawns frequently enough to remove no more than one-third the total height per mowing. There is no need to remove clippings unless excessive.
- **Weeks 1-4:** Gradually increase the mowing height of zoysia lawns throughout the summer. By September, the mowing height should be 2 to 2.5 inches.
- **Weeks 1-4:** Mow bluegrass at 2 to 3.5 inch height. Turfgrasses growing in shaded conditions should be mowed at the higher recommendations.
- **Weeks 1-2:** Zoysia can be fertilized now while actively growing. Do not exceed 2-3 pounds of actual nitrogen fertilizer per l000 sq. ft. per year.

Vegetables

- **Weeks 1-2:** Repeat plantings of corn and beans to extend the harvest season.
- **Weeks 1-2:** Plant pumpkins now to have Jack-o-lanterns for Halloween.
- **Weeks 1-2:** As soon as cucumber and squash vines start to 'run,' begin spray treatments to control cucumber beetles and squash vine borers.
- **Weeks 2-4:** Set out transplants of Brussels sprouts started last month. These will mature for a fall harvest.
- **Weeks 2-4:** Soaker hoses and drip irrigation systems make the most efficient use of water during dry times.
- **Weeks 2-4:** To minimize diseases, water with overhead irrigation early enough in the day to allow the foliage to dry before nightfall.
- **Weeks 2-3:** Start seedlings of broccoli, cabbage and cauliflower. These will provide transplants for the fall garden.
- **Week 2:** Stop harvesting asparagus when the spears become thin.

June Gardening Calendar

Vegetables *(cont'd)*

- **Weeks 3-4:** Control corn earworms. Apply several drops of mineral oil every 3 to 7 days once silks appear. Sprays of B.T. are also effective.
- **Week 3:** To maximize top growth on asparagus, apply 2 pounds of 12-12-12 fertilizer per l00 sq. ft., water well and renew mulches to conserve moisture.

Fruits

- **Week 1:** Oriental fruit moths emerge. They are most serious on peaches where the first generation attacks growing tips. Wilted shoots should be pruned out.
- **Week 1:** Thinning overloaded fruit trees will result in larger and healthier fruits at harvest time. Thinned fruits should be a hands-width apart.
- **Week 1:** Enjoy the strawberry harvest.
- **Weeks 2-3:** Renovate strawberries after harvest. Mow the rows; thin out excess plants; remove weeds; fertilize and apply a mulch for weed control.
- **Weeks 2-3:** Summer fruiting raspberries are ripening now.
- **Weeks 2-3:** Begin control for apple maggot flies. Red painted balls that have been coated with tanglefoot may be hung in apple trees to trap egg-laying females.
- **Weeks 2-3:** Spray trunks of peach trees and other stone fruits for peach tree borers.
- **Weeks 3-4:** Prune and train young fruit trees to eliminate poorly positioned branches and to establish proper crotch angles.

Miscellaneous

- **Weeks 3-4:** When using any gas powered equipment, be sure to allow the engine a few minutes to cool before refilling empty fuel tanks.
- **Weeks 3-4:** A mailbox mounted on a nearby post makes a handy place to store and keep dry any small tools, seeds, labels, etc. frequently used in the garden.

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)