

MASTER GARDENER TRAINING—SEVENTH WEEK

March 4 through March 9, 2010

By *Peter Longley*

TURF GRASS MANAGEMENT

On March 4 the topic was *Turf Grass Management for Master Gardeners* presented by Brad Fresenburg, Turfgrass Specialist, Division of Plant Sciences, University of Missouri-Columbia.

Labeling and Blends

Brad Fresenburg started by drawing our attention to the labeling of seed. A good label will tell us the name of the variety and the species of grass. A packet that just tells us it is Kentucky Bluegrass does not tell us if this is a good variety for Missouri conditions, but many chain stores sell such packages across the nation in many different growing conditions. The label should record the variety as well: Limousine Kentucky Bluegrass. Always look at the test date on the label, too. For best results we should be looking at a test date within twelve months so we know we are getting the previous year's seed. Missouri is in a transition zone. We can grow many grasses both cool season and warm season, but there is no particular grass that is good year round. We, therefore, need blends of both cool weather and warm weather seed when sowing a lawn. The label will tell us what is in a blend. A blend of one species such as Tall Fescue might include four varieties. This helps with disease as only one blend might be attacked in a lawn allowing the other three to keep the lawn going. Mixtures might include two species, of which one might be a blend. This can be a cool season and warm season mix and really help mask diseases. Beware, however, of the Contractor's mix. This is often a high percentage of annual Ryegrass, as Ryegrass establishes fast and will help to anchor the soil on a new homesite. If the percentage of annual Ryegrass is too much, as in these contractor mixes, the permanent grasses such as Fescues will be too thin. It should not be more than 20% of a good mix. Cool season grasses include tall Fescue, Kentucky Bluegrass, perennial Ryegrass, fine Fescue and creeping Bentgrass (Putting Greens). They have a 9-10 month growing season and have best root growth in soil at 50 to 65 degrees, but will grow until soil freezes. The best shoot growth is at 60 -75 degrees, giving their strongest cover in spring and fall. Warm season grasses that in Missouri could be blended with the cool season grasses, include Zoysiagrass, Bermuda grass, and Buffalo Grass. They have only a six-month growing season from May to October, but have their best root growth at soil temperatures of 75-85 degrees, although they will start greening up at 55 degrees. Their best shoot growth is at 80-95 degrees.

Cool Season Grasses

Tall Fescue has the best cool-season heat and drought tolerance, but has Brown Patch disease problems. It does not recover well from heavy wear, so periodic overseeding is necessary to maintain uniformity. It is a bunch grass. Kentucky Bluegrass is less drought resistant than Tall Fescue, but has an appealing color and can spread into worn lawn or playing field areas. So, it is useful in a mix with Tall Fescue, but should not be more than 10% as the seed is much smaller than Fescue seed and therefore has a greater volume through the spreader. You can tell Bluegrass by its boat shaped leaf tip and translucent mid-vein. Both Fescue and Bluegrass survive better in stress than Perennial Ryegrass, which is good for quick repair to sports fields as it germinates in 5-10 days. It has good wear potential, but poor stress tolerance in heat. Ryegrass has a darker red base than Tall Fescue and its leaf blades are much finer and very shiny on the back. Fine Fescues are good for shady lawns, especially Creeping Red Fescue. Its leaves are needle-like.

Warm Season Grasses

Among the warm season grasses 'Meyer' Zoysia is recommended for use in Missouri, but it can not be seeded, so is best for a small area that can be sodded, sprigged, or plugged. It requires 6-8 hours of full sun daily. It competes well with weeds, requires little water, but it is dormant in winter. It is often used for golf course fairways and can be mown lower than Fescues. In the home garden, however, it can be invasive like Bermuda grass. Bermuda grass is good for sports fields because of its density and growth habit, but it is not

recommended for lawns because of its invasive nature. Buffalo grass is our native grass, but is not a dark green, being almost silvery. It is very deep rooted, which makes it survive our harsh dry summers well. It is great for prairie gardens, and can be used as a no-mow grass, as it has a maximum height of 8 inches. Its disadvantage is its low density, which allows weed growth, especially in its dormant cool season when winter annuals take over in the spring like HenBit and Chickweed.

Soil and Fertilizers

That soil test is as important for grasses as all other plantings, when it comes to deciding fertilizer needs. pH for grasses should be between 6.4 and 6.8. This will determine whether we need to add lime. Phosphorus and Potassium are vital. Nitrogen is needed, but often overdone. Too much nitrogen, especially in the spring, can lead to Brown Patch disease in the summer, especially in Tall Fescue. Nitrogen should be applied mostly in the fall, September through November. It should not be applied in spring with a pre-emergent, and only should be applied lightly in the summer (Half the rate of the fall). For starter lawns Quick release Nitrogen is good, but for established lawns always use slow release Nitrogen. There are some good organic fertilizer sources: Organica 8-1-1 Corn Gluten is good for pre-emergent activity, but not good for overseeding as it will kill the seeds. Bradfield 3-1-5 is recommended as a slow release organic fertilizer, as is Milorganite 6-2-0 w/5% Fe (actually human waste product from Milwaukee). All organics take time, allow two years for real results. The Phosphorous (P) is required for good seedling growth and root formation. The Potassium (K) also enhances root growth, improves heat and drought tolerance, increases cold tolerance, and enhances disease resistance. When spreading fertilizers use low calibration and run over the lawn in opposing directions to get an even cover. When overseeding, you must scratch the seedbed. It is always best to grass seed in the fall, giving six months of root growth before summer stress. Spring seeding and crabgrass control should be done as early as possible in March/April. Core aeration is excellent in spring or fall for cool season grasses allowing passage to roots for air, water, and nutrients. Leave the cores for natural breakdown.

Mowing

Good mowing maintenance is vital. Higher mowing heights encourage greater root growth of grasses and better competition against weeds. Ideal height for Fescues should be 4 inches. This will reduce weeds 80%. If there is Bluegrass, 3 inches might be better. Fine Fescues in shady lawns should definitely be mown at 4 inches. Only Zoysiagrass should be cut low. Don't bag clippings if possible, as they are excellent lawn mulch. Mow frequently enough to avoid any clumping of grass waste, as this will attract disease. Keep blades sharp so as not to tear grass. Torn grass browns and harbors disease.

Watering

Do not over water. When there are footprints or wheel marks on the lawn, it is time to water. Don't water because of brown spotting in lawns. The brown spotting is usually disease caused by fungi and excess of spring rainwater. Warm temperatures and water cause disease. It is best to water in early morning from 4:00 am to 8 am. Evaporative losses are then minimized, there is better distribution as usually there is less wind, and it knocks dew off leaf blades and decreases the leaf wetness period compared to evening watering. Wetness overnight can lead to fungal growth and infection.

Weed Maintenance

Annual weeds and perennial weeds are best eliminated by higher mowing, but herbicides can be applied in spring a month after growth begins. It is best to attack dandelions in the fall. Summer annual grassy weeds like Crabgrass, Foxtails, and Goosegrass are best controlled by pre-emergent treatment usually granular. Corn gluten can be used as a non-chemical. Again, good mowing habits will strengthen the good grasses against these annual grassy weeds, especially height of cut. Perennial grassy weeds like Bermuda grass (as an invader), or Nimbleweed are best spot treated with non-selective herbicides such as glyphosate products. Corsair is good for control of Tall Fescue and perennial Ryegrass in Kentucky bluegrass and Zoysiagrass. Ornamec is good for control of Bermuda grass in Tall Fescue and Zoysiagrass. Wild garlic is best

eliminated by mowing at height high enough for dense good grasses to crowd it out. Yellow nutsedge can be spot treated with Sedge Hammer (halosulfuron) or Basagran T & O (bentazon). Prostrate Knotweed likes compacted soil, so aeration will help control this. Purslane likes bare soils, so overseeding will help reduce this weed. Dandelions indicate a low calcium soil. Plantains will tell us our pH is too high. Violets occur in thinned out lawns in shade, so thicken up by cutting high. Perennial broadleaf weeds like these can be treated with selective herbicides—most a mixture of 2,4-D, dicamba and MCPP. A new product is Weed-b-Gon MAX. Look for grass seeds that are disease resistant cultivars, mow high, little and often, and most of these problems will go away.

Insects and Pests

Insects like stressed lawns, white grubs of beetles in particular, including the Japanese Beetle. A healthy lawn is far less likely to attract these white grubs than a stressed lawn. Grub insecticides can be used if caught early enough. Sod Webworms and Fall Armyworms, and Chinch bugs are the major turfgrass insects. Moles are a major problem, especially in wet summers. They feed on earthworms. Earthworms are great for the lawn, but in wet weather they come close to the surface causing the moles to burrow just under the surface to feed. In Missouri, if our summers are normal and dry, moles will go away as the earthworms will burrow deeper in drought conditions. Mole traps are a good solution, but messy, and can often be ineffective if not placed properly in the runs. Castor Bean pellets will work as a mole repellent, sending the moles to your neighbor's lawn! Gel baits can be effective if properly applied to the runways, but wear rubber gloves whenever handling or placing baits in tunnels. You must know which tunnels are active. If you make several holes in a tunnel and they plug up again in two to three hours, you have an active run. Poison Peanuts are a wasted effort, as moles are carnivores, not herbivores, feeding only on worms and insects. Don't waste money on Sonics—they have not been proven to work effectively. A dog in the yard is actually the best way to keep down the moles.

FRUITS

Our final class titled *Fruits* was conducted on March 9 by Patrick Byers, Regional Horticultural Specialist, University of Missouri Extension. Missouri is far enough north for hardy varieties of fruits to grow, but also far enough south for experiment with less hardy varieties, so fruit is an attractive opportunity for Missouri gardeners, but we should ask ourselves if we have the place for fruit on our property? What fruit do we like, and how long will it take to produce? Some fruits are one year; others take two, three, or four years to produce. Is it difficult to grow? That depends on the species and variety. Blackberries and strawberries are easy. Blueberries are difficult, and grapes rather specialist. Peaches, plums, and apples are at the mercy of our sometimes severe late frosts in the spring. Blueberries and blackberries don't need spraying which is an advantage. Almost all other fruits will need spraying. Finally, it should be noted that many fruits could also be an attractive part of our landscaping. Apples, pears, cherries, and peaches all produce wonderful blossom, and strawberries and blueberries can greatly enhance a border or even be produced in patio pots. Pawpaw can give a tropical feel in the right setting. However, the great advantage of growing our own fruits must be the ability to harvest at exactly the right time when the fruit is at its juiciest best. This is particularly true of peaches and pears that commercial growers have to harvest earlier than the home grower, because of the delicacy of the fruit in transportation. At full maturity, bruising will easily occur in transport.

Fruit is healthy. It provided vitamins and minerals. It is good fiber. It has antioxidants and certain anti-cancer properties, and provides us with ellagic acid. These are all good for us and in turn we can say fruit is good for our soul!

Selection

We need to be sure we select the right cultivars for our needs. There are showy blossom peaches and cherries and non-showy cultivars. The fruit is as good either way, but is the blossom important for your landscape? Fireblight is common in Apples and Pears, but there are many disease and insect resistant cultivars now—so pick apples and pears that are fireblight resistant. The easiest strawberries are June

strawberries with a three-week harvest. This is great for jam making, but if you want breakfast strawberries throughout the summer, think about Day Neutral and everbearing cultivars. For grapes, are you thinking wine or dessert?

Planting Space

Select the right planting space. Most fruits like full sun, except raspberries. They also like to be close to a water source. Most fruits need 1.5 to 2 inches of water per week. Trickle hoses and drip irrigation is best to control this. Mulch also helps. Fruits need air movement. Raised beds can help with this. Good air movement leads to fewer disease problems. Soil needs to be well drained, slightly acid, and moderately fertile. Organic matter is important. So, get that soil test! Fruit trees are an investment in the future, so take care in planting. Plant at the same depth as the trees were planted in the nursery. See that grafts are 2" to 4" above the soil. It is best to plant apples, grapes, and blackberries in the fall. Be sure to keep stock moist when received from nurseries by mail order. Keep moist when healed in before planting.

Pruning

Pruning is an important annual job. A useful tip—purchase hand pruners with red handles. Green handle pruners are more likely to get lost when put down. Pruning shapes plants, gives them a strong framework, and corrects problems like diseased limbs. When removing diseased limbs take enough off below diseased area as disease can be held within the branch below the obvious area. For fruit trees there are basically two pruning patterns—Open Center pruning and Central Leader pruning. This is essential in the first year to establish the right growth pattern of the tree. Open Center pruning means selecting three or four scaffles or new branches about 18" up the trunk that have a wide angle to the trunk of 45 to 60 degrees and then remove the leader. This gives an open growth pattern in the future for Peaches and Nectarines or Japanese Plums. Central Leader pruning keeps the leader and the scaffles that are at 45 to 60 degrees, but eliminates the other scaffles. This is the growth pattern for Apples and Pears. This must be established in first year pruning. Many fruit trees, despite good pruning and husbandry will not fruit for three years, so be patient. Spring frost might kill fruit buds, and poor pollination effected by weather at blossom time might also effect fruit production. The bees will not be out in numbers if it is too cold. One flower in a cluster of blossoms on apples and pears is the major fruit—the King flower. When the fruit forms in early May, it is best to remove the other fruit from the cluster. This thinning will result in the remaining fruit being larger at harvest and prevent biennial bearing.

Apples and Pears

Apples and pears require cross-pollination. They need two trees of different cultivars reasonably close to each other. Some trees now have multiple cultivars on one graft, but it seems with these that eventually one cultivar dominates. For apples, note that flowering crab apples can provide the necessary cross-pollination, which is another pointer to know where you are going to plant in your landscape. 60 ft to 100 ft is about the best range for bees to cause pollination. Some good disease resistant apple cultivars for Missouri include Redfree, Pristine for early fruit; Liberty, Goldrush, Enterprise, and Jonafree for mid-season; and Arkansas Black for late season, although this is less disease resistant. Among pears, Moonglow, Starkling Delicious, Maxine, Magness and Kieffer do well, also, for something different, Asian Pears do well in Missouri.

Diseases

Diseases among apples and pears include Apple scab, Fireblight, and Cedar apple rust. Apple scab shows brown spots on the foliage before such leaves fall off, and will show up in scabs and spots on the fruit. Eventually, scabs often crack and fungi enter. It is best to solve this at the time of purchase by seeking out scab resistant cultivars. Fireblight is caused by bacteria. It can be pruned out, but remember to take back further than the visible infected area, as bacteria will be creeping down the branch. Fireblight looks bad, but does not harm the fruit. Cedar apple rust is spread from galls on red cedars that open and produce spores spread by wind to neighboring fruit trees. So, here is a classic example of planting fruit trees in the right place. Do not plant near or downwind of natural red cedars. Cedar apple rust is unsightly on leaves and can

cause bumps on fruit, but it does not kill the trees. Some apples and pears will be attacked by worms, borers, and other insect pests. This is where spraying will help in April, May, and early June. Vole damage is often overlooked. Voles can eat away the base of the trunk. The best solution with first year trees is to use trunk protectors or circular cage guards. In later years, watch the trunk girth with these. They will cut into the trunk as it thickens, so before that happens it is time to remove guards. Voles can then be controlled by mowing or mulching. When mowing, however, watch out for mechanical damage. Apple and pear bark is not thick and will wound easily. Mechanical damage can kill trees.

Peaches and Stone Fruits

Stone fruits like peaches and cherries grow fast and have early blossom and early fruit in June. Their disadvantage is spring frost, likely at their height of blossom, effecting fruit production, and they are more subject to disease and insect problems. Sweet cherries, Japanese and American plums require cross pollination, but peaches, tart cherries, damson plums, and apricots are all self fruitful. There are many hardy cultivars that are disease free and grow well in the Ozarks if they survive that spring frost. Genetic dwarf peaches make great patio landscaping; another area where these fruit trees can become an integral part of the landscape plan. Only 10% of the flowers are needed to set fruit for a full crop load, so thin out the fruit, especially peaches when fruit is ½ inch diameter. Fruit should then be spaced about 8” to 12” along the limb. Peaches are subject to leaf curl and brown rot. Leaf curl is a fungal disease that forms in the very early spring and can be offset by a single fungicide spraying in the fall. Brown rot is also fungal, occurring when the fruit is green and hard. The fruit shrivels and rots forming ‘mummies’. Some drop off and some stay on the tree, but they should all be removed, as they are the foundation for the next year’s disease. Correct fungicide spraying can help with this. Bacterial leaf spot is harder to control, so the best solution is to plant high resistant cultivars. Borers and worms are best reduced through spraying the trunk with insecticides. Yates Persimmons, Shenandoah Pawpaws, Figs and Mulberries are interesting to grow, but can be challenging, especially figs. They need to be sheltered in the winter here. Persimmons need male and female trees, and Pawpaws need two cultivars for cross-pollination.

Strawberries

Strawberries are easy to grow, fruit well, and can enhance landscaping, especially patio landscaping, but their main drawback is that they are not competitive with weeds. They can be subject to winter injury and frost damage, too. Weed management is the key with strawberries. Strawberries have a crown mother plant that creates several daughters along stolons or runners, so: “This year’s daughter plants are next year’s fruiting plants.” They are self-fruitful. When planting the mother plants make sure that the soil level is half way between the roots and the crown. Do not plant too deep so foliage is at earth level, or too shallow, so roots are exposed. Plants can die if not at the correct planting level. If you want your first year crown plant to produce lots of daughters, remove the flowers. Plant the crowns 18” apart and in rows about 42” apart. Position the runners to fill the rows. Keep weeding, fertilize in August, and mulch in late fall (November and early December when the ground is cold). Use about 4” of clean straw or use spunbonded row covers. Remove the mulch in March-April the second year. Fruit should be ready in late May/June of the second year. Keep weed-free at all times. Fertilize each August (not in the spring), and mulch in late fall. Periodically remove old mother plants as daughters become second year plants. Don’t uncover too early each year. If there is frost damage it will show in the center of the flower, which is the fruit and will be black instead of cream colored. Strawberry diseases include gray mold on fruit and leaf diseases. Both can be caused by insufficient air movement. Raised beds can help with this, creating more air movement. Diseased leaves should be removed.

Brambles

Brambles such as raspberries and blackberries, are quick growers, pest resistant, and easy to grow. They can be effected by very cold winters and excessively hot summers, especially raspberries. They are self-fruitful. They come as primocanes, floricanes, and uprights. Blackberries do better in Missouri than raspberries. Primocanes produce first year fruit, whereas floricanes produce second year fruit. For Blackberries, Navaho, Apache, and Arapaho are good Missouri varieties and thornless. Good thorny erect

blackberries include Kiowa and Chickasaw. Planted rows of brambles should be 10 ft to 12 ft apart. In planting, red raspberry canes should be 18" to 2ft apart; erect blackberries 2ft to 4ft apart; and semi-erect blackberries (supported by trellis) about 6 ft apart. Red raspberry primocanes can be pruned to the ground in late winter. Floricanes should be thinned removing old canes. Black raspberries and erect blackberries should be thinned to 3 to 6 canes per plant with all dead floricanes removed in winter. The laterals should be shortened to 12" to 18". Dead canes will be gray and live shoots orange to dark green. For semi-erect blackberries, select 8-10 strong canes and tie them to the trellis in winter or early spring. Remove remaining canes and prune the laterals 18" to 2 ft. Brambles can be effected by orange rust on leaves. If so, remove the plant. Cut out any shoots that show galls. Beetles can attack brambles, especially Japanese Beetles and June Green Beetles. Pick off the scouts in June for minimum damage. If there is cold temperature injury, floricanes may die, but they will still shoot out new primocanes. If there is heat stress it will show in a bubbling appearance to the fruit.

Blueberries

Blueberries look great in landscaping, having multi-seasonal interest, with pink blossom, blue fruit, and vivid orange fall foliage, but birds love them. They are also long lived, but their soil requirements make them difficult to grow in Missouri. They like acid soil with a pH of 4.8 to 5.2. They need the soil to be well drained and high in organic matter. This is not natural in Missouri, so blueberries are probably best grown in raised beds. An 8 ft by 8 ft raised bed will take four blueberries planted in peat moss and require about 15% organic matter in surrounding soil. To lower pH add sulfur. Blueberries are best planted as 2-year old plants spaced between rows of 10 ft to 12 ft and individually spaced 4 ft apart. They are an exception to the rule. They require volcano mulching mounded up the stem! Old sawdust or coffee grounds will work. Begin pruning when bushes are small. Prune when dormant, thinning out and removing older canes, weak shoots, and diseased or dead wood. Try to leave an equal mix of canes of differing age from one to four years. Blueberries need water, so irrigate. They will not stand our normal summer drought conditions without irrigation. Birds are their main adversaries, however. Birds get used to scarecrows so it is best to protect blueberries with netting.

Grapes

Grapes are hardy, long lived and can have landscaping value in arbors and pergolas, but they do have disease problems, bird problems, and they are high on maintenance. French-American hybrids do best here in Missouri. We are too far north for Muscadines, and a little too far south for most American grapes. The major wine grapes are not hardy here, so we are left with those French-American hybrids like Seyval, Vidal, Vignoles, and Chambourcin. Grapes are self-fruitful. Plant one year rooted cuttings in rows 10 ft apart and space vines about every 8 ft. Grapes require heavy pruning. When pruning remove 60% to 70% of growth in the past season's clusters leaving just a spur with buds from the cordon growing lateral along the trellis wire. Grapes require a heavy support trellis. The Cordon System of growing grapes is with two main laterals on one wire either side of the trunk. The Kniffen System allows for four major laterals from the trunk along two strands of wire. The lower laterals can become too shaded to fruit well, however. Pruning should be done in early February or March, and even on Pergolas and Arbors 70% should be removed. On an arbor or Pergola, vines should be about 8 ft apart with lateral branches espaliered, but still prune away 60% of previous season's growth in February or March. Black Rot is the main disease attacking grapes. It is a fungus and starts as a little black spot on the fruit. The affected grapes in a bunch then blacken, shrivel and become raisin 'mummies'. Mummies left on the ground will effect the vines the next season, so clear them up. The best protection against Black Rot is an appropriate fungicide spray.

Elderberries

Elderberries can make wine, juice or jelly. They grow almost wild in Missouri and are considered by some to be a great health supplement. Gooseberries and currants do not do well in Missouri as they like cool summers. Our winter fluctuations in temperature are not good for Kiwis. Other small fruits we can try are Bush Cherries, Sand Plums, Chokecherries and Cranberries.

COURSE CONCLUSION

This concluded our course for becoming interns in the Master Gardeners' program. The internship requires thirty hours of appropriate volunteer work, practically and educationally, in Missouri institutions and gardens with an ongoing commitment in the years ahead. Personally, I felt much enriched by the program and thank each and every one of our instructors. I look forward to that close cooperation that I perceive in the relationship of our Master Gardeners and Friends of the Garden within the park complex of the new Springfield-Greene County Botanical Center.

Peter Longley, MA (Cantab)

Friends of the Garden, Writer and author of novels (www.PeterLongleyBooks.com)