Horticulture Hints



Fall 2011

Landscape Gardening and Ornamentals

Louisiana Super Plants Selections

Last fall, the LSU AgCenter introduced a new ornamental plant education, promotion and marketing program called Louisiana Super Plants. The Louisiana Super Plants program highlights reliable and beautiful plants that perform well in Louisiana landscapes. Plant selections are announced each spring and fall.

Once a plant is named a Louisiana Super Plant, it will always be considered a Louisiana Super Plant. To see information on past selections, go to the Louisiana Super Plants website at www.lsuagcenter.com/superplants.

Here are the Louisiana Super Plants selections for fall 2011:

Redbor Kale



Redbor kale is an incredible multiuse annual for the cool-season flower or vegetable garden. It is perfectly edible, but it is so attractive in appearance is it also popular in flowerbeds. Plant in well prepared sunny beds anytime from October through February. Redbor kale produces striking dark red-purple, finely curled foliage on plants that will eventually grow to be about 30 inches tall by early summer. Plants stay attractive until May when they should be replaced with summer bedding plants.



Swan Series Columbine

Columbines (*Aquilegia*) have not been commonly used by Louisiana gardeners in the past. But these very beautiful short-lived perennials grown as cool-season annuals deserve a place in every flower garden. Swan series columbines produce larger flowers than other columbines and in a wide range of colors. Plant transplants in the fall or late winter in full sun to part shade for blooms from March to May. The attractive blue-green foliage adds interest and texture to the winter flower garden even when the plants are not in bloom. Varieties in the Swan series are blue white, burgundy white, pink yellow, red white, rose white, violet white, white and yellow.



Belinda's Dream Rose

A landscape rose with an attractive shrubby growth habit, excellent disease resistance and fragrant flowers that are larger than most landscape roses, Belinda's Dream is one of the best roses for Louisiana landscapes. The flowers are medium pink and fully double with the form of hybrid tea roses. Bushes reach heights of 5-6 feet with an equal spread, but can be easily maintained at 4 feet. Fall is a great time for rose planting.



Southern Sugar Maple

The Southern sugar maple is a great deciduous tree for Louisiana landscape. This shade tree goes by the scientific name of *Acer barbatum* or *Acer saccharum* var. *floridanum*. Plants reach a height of 20-40 feet after 20 years. Reliable fall color ranges from yellow to orange-red.

Spring Flowering Bulbs

Spring flowering bulbs are those that generally bloom in our climate between February and April. These bulbs are planted, however, in October, November and early December.

When buying bulbs, try to purchase the highest quality your budget will allow. Overall, the price you pay for color from bulbs is higher than for longer flowering cool-season bedding plants like pansies and dianthus. So, spring bulbs are typically used more for embellishment than for providing the primary floral display (for that, it's best to rely on bedding plants, such as pansies, violas, snapdragons and dianthus).

Good drainage, part to full sun and moderately fertile soil are all that are needed for bulbs to do well. About six hours of direct sun a day will produce the best plants and is especially important for those bulbs that you expect to rebloom in future years.

A rule of thumb is to plant bulbs at a depth equal to twice their height – generally, about 1 inch deep for small bulbs and 5 inches deep for larger bulbs. Once the bulbs are planted, you can plant over them with low-growing cool-season annuals such as alyssum, violas or pansies. Be careful not to disturb the bulbs. The annuals cover the bare soil and provide color before, during and after the bulbs bloom.

Tulips and hyacinths will perform much better if they are refrigerated at least six weeks in the vegetable bin of your refrigerator prior to planting (storing longer than six weeks is fine). Store them in paper or net bags (well-labeled) away from apples and other fruit. Plant them in late December or early January when the soil has had a chance to get cold.

Although many commonly available spring flowering bulbs don't bloom well after their first spring, several spring bulbs tend to be reliably long-lived even in South Louisiana. One group includes the narcissus cultivars, such as paperwhites, Chinese sacred lily, Soleil d'Or, Grand Primo, Cheerfulness, jonquils, Sweetness, Trevethian, Peeping Tom, February Gold, Thalia, Ice Wings and Petrel. Another group includes larger flowered daffodil cultivars, such as Ice Follies, Unsurpassable, Carlton and Fortune. Other re-blooming bulbs include snowflake (*Leucojum aestivum*), some flowering onions (*Allium neapolitanum*, *A. drummondii*), ground orchid (*Bletilla striata*), amaryllis (*Hippeastrum* species and hybrids), Spanish bluebells (*Hyacinthoides hispanica*), spring star flower (*Ipheion uniflorum*), Dutch iris (*Iris* x *hollandica*) and Easter lily (*Lilium longiflorum*).



Creating Bird Friendly Landscapes

Birds add interest, movement, color and even beautiful sounds to our gardens. Many bird species feed on insects, and this can help hold down populations of pests that may damage plants in landscapes or gardens. So, what can we do to encourage birds to live in our landscapes? The primary features the environment must provide to invite birds into the landscape include shelter, nesting sites, water and food.

Although people often provide food and water for birds, shelter and nesting sites should not be overlooked. Difficulty in finding natural shelter near the food and water sources you supply may tempt birds to look elsewhere for a more promising environment. If you can provide a place for birds to nest, you'll have the pleasure of seeing them frequently at close range and the advantage of allies in the control of insects. Adding levels to a plant community increases surface area by creating more leaves, stems, nooks and crannies on which birds can nest, feed and sing. The use of various size shrubs and small as well as larger trees planted in masses or groups will achieve this in a landscape design.

Shelter for nesting may also be provided with birdhouses or bird boxes. These human-made structures, if properly done to specific dimensions and located in the right spot, can provide nesting sites for birds that would rarely find suitable sites in urban areas. If birds ignore the houses you've installed for them, make sure you have done everything correctly on the dimensions and location of the house – and then be patient. Decorative bird houses meant more for show than to provide a home for birds will rarely be utilized.

Include plants in your landscape that produce fruit that birds will eat such as native hollies, cherry laurel and hawthorns (*Crataegus* species) wherever possible. However, putting out bird feeders is another option becoming increasingly popular as a means of attracting birds into the landscape. When setting up a feeding station, be sure you are willing to make a commitment to maintain a dependable food supply and to keep the health and safety of the birds in mind.

Water is not food, but it can make a feeding station more attractive. By providing water (which birds use for both drinking and bathing) you may encourage birds to stay in your yard. Several commercial watering trays are available, but you can use almost any shallow container so they can drink and/or bathe. Make sure you regularly add fresh water to the bird bath and clean it as needed.

It is true that birds are often included on lists of common garden pests. Vegetable and fruit gardeners, in particular, are often frustrated by birds eating newly planted seeds or pecking at or feeding on fruit or vegetables they are growing. Despite these occasional problems, the presence of birds is almost universally welcome among gardeners.

Trees and Shrubs for Fall and Winter Color

You can include many trees and shrubs in your landscape that will provide significant color in fall and winter year after year.

Although decidedly less than spectacular this far south, late November/early December is when the leaves of some deciduous trees turn various colors as they get ready to drop. A few of the trees that reliably color up well in Louisiana include: ginkgo (*Ginkgo biloba*); sweet gum (*Liquidambar styraciflua*); Chinese pistachio (*Pistachia chinensis*); Callery pears (*Pyrus calleryana*); black gum (*Nyssa sylvatica*); crape myrtle (*Lagerstroemia indica*); dogwood (*Cornus florida*); Japanese maple (*Acer palmatum*); southern sugar maple (*Acer barbatum*); and some oaks. Generally, the farther south you live in Louisiana, the less fall color you will see.

Plants also provide color in fall and fruit in winter. Hollies, with their brilliant red berries, are notable in this regard. Excellent choices for Louisiana include the popular Savannah holly and Foster's holly (*Ilex* x *attenuata* Savannah and Fosteri), both small trees. Beautiful native hollies include the yaupon holly (*Ilex vomitoria*), deciduous holly (*Ilex decidua*) and winterberry (*Ilex verticillata*). A great thing about holly berries is that they are excellent wildlife food for birds. Shrubby hollies also produce colorful berries. Varieties include Burford, Dwarf Burford, Nellie R. Stevens, Needlepoint, Dixie Star, Dixie Flame and many others.

For flowers in the fall and early winter, choose sasanquas (*Camellia sasanqua*). Sasanquas are one of those indispensable shrubs for Louisiana landscapes and bloom from October well into December. Camellias (*Camellia japonica*) will begin to bloom in November and continue through the winter until spring.

Roses are also important for fall and early winter color. Everblooming roses put on a wonderful show in October and November and will often continue to bloom through mid December and beyond, weather permitting.

Although generally not known for their fall blooming, azaleas that bloom during seasons other than spring are becoming more popular. The Encore azalea series is well known for fall bloom. Also notable are some of the Robin Hill azaleas such as Watchet and Conversation Piece and the popular Glen Dale cultivar called Fashion.

Tips for Maintaining Your Most Important Gardening Tool – Your Body



Fall is one of the busiest times in the garden, even though many gardeners do not realize it. Even spring, the season when most people get "planting fever," doesn't measure up to the amount of planting we can and should do now.

Fall is the prime planting season for hardy trees, shrubs, ground covers and vines. We are also preparing beds and planting fall and winter vegetables and herbs. On top of this, we are changing out flowerbeds, replacing warm-season bedding plants with cool-season bedding plants that will provide color from now until next spring.

With all of this gardening activity, we need to remember not to overdo it and to take care of ourselves as we work in our gardens. Gardening is a well-documented and beneficial form of exercise. It contributes to a healthy lifestyle. But the more strenuous gardening activities can also cause problems as well. Sore muscles, aching backs, blisters and even sprains are common complaints of the weekend gardener.

- Before you begin gardening, take a few minutes to stretch, which will help minimize muscle soreness and the risk of tendonitis.
- Even if you do not feel fatigued, take a break for a few minutes every half hour.
- Change gardening tasks frequently. For example, if you are weeding and using the small muscles of your hands, rotate this task with watering, or hoeing or trimming shrubs where you are using larger muscles in a standing position.
- Bend at the knees and hips, not your back, to lift and hold objects. Maintain a firm grip with both hands.
- Use an erect body posture when working with long-handled garden tools, such as hoes, spades and rakes.
- When it is necessary to work above shoulder level, perform the task for five minutes or less, then take a break or perform another activity before continuing.
- Keep the elbows partially bent while gardening, especially when doing resistive activities requiring elbow strength, like pushing.
- Use lightweight yet sturdy tools. The handles should be covered with rubber to minimize friction. If your existing tools have wooden or metal handles, consider adding padded tape, such as "Wrap N Grip" or pipe insulation foam.
- Gloves protect hands from hazardous chemicals, sharp items and blisters. They help minimize the effects of vibration. On the other hand, gloves decrease the feeling in the hand and decrease hand strength by as much as 30 percent.
- Gloves should be form-fitting without being restrictive. Thin gloves are preferable even though they will generally not last as long.
- Gloves should be made of material appropriate for the specific task, such as rubber gloves for mixing chemicals, leather gloves for pruning and cloth gloves for digging in the soil.

Think as much about taking care of yourself as you do taking care of your garden. After all, we only have one body, and it needs to last us as long as we have gardens to tend.

Moving Houseplants Summered Outside Indoors

Container grown tropical plants are commonly placed outside for the summer where they provide a beautiful addition to decks, patios and porches. But, these plants will not withstand freezing temperatures and must be brought back inside the house for the winter.

About four weeks before you intend to bring them inside, move outdoor tropicals in containers to very shaded locations outside. Acclimating them to lower light conditions helps them adjust to the reduced light available in most homes when you bring them inside.

Houseplants that spent the summer outside should also be groomed so they will look their best, and you will be less likely to bring pests inside with the plants.

- Clean the outside of containers using a brush and a mild solution of dishwashing liquid and water. Add a little bleach to the solution to kill algae growing on the pot sides. Do not get this solution in the soil.
- Hose down the plants and wipe the foliage clean with a soft damp cloth to remove dust and debris from the foliage.
- Remove all dead or yellow foliage, old flower stalks and dead or injured branches and stems.
- If you discover insect infestations, spray the plants with the appropriate insecticides to control the problem before you bring them indoors.







Checklist for September, October, November

1. Begin preparing beds for fall planting.
2. Take soil samples from landscape beds and submit to the LSU AgCenter Soil Testing Laboratory for analysis. The cost is $10 per sample.
3. Fall is a great time to plant trees. If room is available in your landscape, plant a few native trees.
4. Plant spring-flowering bulbs in your gardens from late October through early December. Exceptions are tulips and hyacinths, which must be refrigerated and planted in late December or early January.
5. Garden mums make a great addition for fall color. Check at your local retail garden center for availability.
6. Watch azalea plantings for early fall infestations of lace bugs. Control with Orthene, horticultural oil sprays and other recommended insecticides.
7. Build a compost pile out of leaves, grass clippings and remains from your vegetable garden.
8. Divide Louisiana irises in September.
9. Many of the summer-blooming perennials are finished or finishing up their floral display for the year. Cut back the flower stalks and old faded flowers to keep the plants looking attractive.
10. October weather can be dry. Water plantings as needed. Pay special attention to any newly planted areas. It generally is best to water direct-seeded beds of flowers or vegetables lightly every day to make sure the seeds do not dry out.
11. Prune everblooming roses by early September.
12. Fall is an excellent time to plant many herbs in the garden. A few herb plants provide a lot of harvest, so don't plant more than you can use. Herbs to plant now include parsley, sage, thyme, dill, cilantro, rosemary, oregano, borage, fennel, nasturtium, French tarragon, chives, mint and catnip.

Dan Gill, Consumer Horticulturist

Fall Lawns in Louisiana

Should I fertilize my lawn during the fall?

Louisiana usually stays warm well into the fall, and lawns continue to grow until nighttime temperatures dip into the 50s. Mow and water your lawn as needed to keep lawns healthy.

More than likely, however, it is time to put up your fertilizer spreader. Fertilizing warm-season grasses during the fall with high nitrogen (summer-type) fertilizers or winterizers containing nitrogen are not recommended for southern lawns. Stimulating fall growth of our warm-season turf with nitrogen leads to increased brown patch disease and winter kill.

If you need extra color on home lawns this fall, apply foliar iron spray or spreadable granules. The only other fertilizer that can be applied in the fall is muriate of potash. Muriate of potash (0-0-60) may be applied in September or October to provide increased disease and cold tolerance. Most garden centers and feed stores have this form of potash. Get a soil test before applying potash to your soil. There is no advantage to applying excessive amounts.

Get Soil Tested

Fall is the best time of the year to get your soil tested by the LSU AgCenter. Soil testing really is the first step to a beautiful lawn next spring and is the best way to determine exactly what your lawn needs to become thick and healthy. If you haven't tested your soil in the past several years, do it now.

To test your soil, submit a pint of soil to the LSU AgCenter Extension Service office in your parish. The pint should be a composite of soil samples collected from several different areas in the lawn. You will only need to go about 4 inches deep. In order to simplify the soil sampling and submitting process, there are new pre-addressed submission boxes with sampling instructions at several garden centers throughout the state.

The sample results will be sent to your home mailbox and/or email in about two weeks. An LSU AgCenter extension agent can help you interpret the results of the soil sample. Sample results may indicate that lime is needed to increase soil pH. Fall/winter is a good time to apply lime since it takes several months to activate in the soil.



Weed Management

Granular pre-emergence herbicides can help manage winter weeds when applied prior to weed germination. These are the same herbicides used for pre-emergence crabgrass control in late winter and early spring. Pre-emergence herbicides containing pendimethalin (Scotts Halts), dithiopyr, (Hi-Yield Weed Stopper), and benefin plus trifluralin (Green Light Crabgrass Preventer) provide good control of annual bluegrass, common chickweed and various other winter annuals prior to their emergence. Isoxaben (Green Light Portrait) provides good control of winter annual broadleaves. Isoxaben has no activity on germinating grasses, however, so consider applying one of the previously mentioned herbicides on the same lawn for a complete broad-spectrum, pre-emergence weed control program.

Pre-emergence herbicides should be applied mid- to late September and reapplied by mid-November. Water the herbicides into the lawn or apply just prior to rainfall. Make sure you use pre-emergence herbicides that do not contain nitrogen fertilizer because of potential for increased occurrence of brown patch disease.

Fall is Brown Patch Disease Season

Brown patch disease starts to appear in lawns as nighttime temperatures cool down below 70 F.

This fungal disease is very common in St. Augustine grass and centipede grass and appears as circular browned-out areas in various locations of the lawn. Brown patch disease can come and go all winter if weather is mild.

Lawns treated with fungicides labeled for brown patch will minimize the damage caused by the disease. Usually two to three preventive applications work best when applied a couple of weeks apart starting in mid- to late September. Look for fungicides containing active ingredients such as azoxystrobin, propiconazole, thiophanate, triadimefon or myclobutanil.

Ron Strahan, Weed Scientist/Turfgrass Specialist

Vegetable Gardening

Vegetables to Plant in

September

Beets, broccoli (transplants or seeds through September), Brussels sprouts (transplants or seeds), cabbage (transplants or seeds), Chinese cabbage (transplants or seeds), cauliflower (transplants or seeds), collards (transplants or seeds), endive, carrots, English peas, snow peas, garlic (late September), kohlrabi, lettuce, mustard, onions (seeds, late September), parsley, snap beans (early September), radishes, rutabaga, shallots, spinach, Swiss chard, turnips and kale.

October...

Cabbage, broccoli (transplants), mustard,* turnips, collards, kale, parsley, shallots, radishes, beets, spinach,* leaf lettuce, Chinese cabbage,* celery, onions, Swiss chard, garlic, carrots and endive.*

November...

Beets,* shallots, garlic,* Swiss chard, spinach, kale, radishes, mustard, carrots and turnips.

*Plant first part of the month.



August in Louisiana is when many of us think of sitting by the pool with a tall glass of lemonade and a slice of watermelon. The heat is usually intolerable. Even though an air-conditioned room may sound like the best plan of action, the LSU AgCenter recommends getting the ground ready for your fall garden.

A few tips for a successful fall garden are:

Remove all existing weeds (even the roots) before you plant vegetables. This can be tough especially if you neglected your spring garden once the heat set in. It is essential to remove all weeds, especially perennial grasses from the garden. If you simply till the grasses in and then irrigate, you'll end up with a relatively nice lawn. Use herbicides if you must; till and pull out all vegetation.

Till or work the top 6-8 inches of soil.

Plan for irrigation or make sure a hose will reach the garden. Irrigation is a must.

Purchase fresh seed or transplants. Pick transplants that have roots reaching the edge of the container. You should easily be able to pull the plant out of the container with the soil intact. You don't want the roots wrapping around in circles. This indicates that the plant has been left in the container too long and will not do as well once planted in the garden.

Crop Highlights

Onions (bulbing): Onion seed may be planted for transplants from mid-September until mid-October. Keep the soil moist because seed coats are hard. It may take two weeks for onion seed to germinate to a stand.

Onions can be transplanted into the garden from mid-December through January. You also may sow directly in the row where they mature in October.

Several drills of seed may be planted on one row. Leave 6 to 8 inches between drills. Pay special attention to weed control in direct-seeded onions. Control winter weeds before the onset of wet soils and cool weather. Consider planting onion plants in black plastic mulch. The mulch controls weeds, enhances growth and keeps the onion bulbs cleaner.

Short-day varieties to plant:

- Red: Red Creole C5 or Red Burgundy
- White: Super Star Hybrid (AAS), Candy (golden) or Georgia Boy
- Yellow: Granex 33, Texas Grano 1015Y, Nirvana, Savannah Sweet or Sweet Melody

Fertilize plants sparingly prior to planting in the ground. This will prevent excessive growth, premature seed stalk development, and bolting. About two to three pounds of 0-20-20, 7-21-21 or 8-24-24 per 100 feet of row are sufficient. Side-dress onions in the spring just before they bulb. Side dress two additional times at two- to three- week intervals. (Follow the same schedule for bulbing shallots).

Green Shallots: Shallot sets can be planted any time in the fall or winter. Replant bulbs as you harvest by separating plants and transplanting some of them again. By doing this, you can have shallots through spring. The largest shallot bulbs for sets are made by transplanting from mid-November to December.

Garlic: Separate garlic bulbs into individual cloves before planting in October. Tahiti and elephant garlic are the largest and mildest of the recommended garlic varieties. The Italian and Creole varieties are smaller and stronger. Check the Louisiana Department of Agriculture and Forestry Market Bulletin's website (http://www.ldaf.state.la.us/portal/News/MarketBulletinCurrent/tabid/165/Default.aspx) for possible sources of sets.

Plant cloves about 1 inch deep and 4 to 6 inches apart in the row. Several drills may be planted on one row. Allow 6 to 8 inches between drills. Fertilize before planting with four to five pounds of 8-24-24 per 100 feet of row. Side-dress with nitrogen after garlic is up and again in February and March just before the bulbs swell.

Lettuce: September is the best month to plant lettuce. Head and semi-head lettuce should be planted so that it is harvested before a hard frost. Side-dress three to four weeks after transplanting and repeat side-dressing two to three weeks later. Recommended lettuce varieties include:

- Semi-head: Green Forest, Green Towers, Buttercrunch (AAS), Oak Leaf or Parris
- Leaf: Simpson Elite, Red Fire, Red Salad Bowl, Nevada or Sierra
- Head: Great Lakes, Ithaca, Maverick, Summertime or Mighty Joe

Lightly cover lettuce seed for best germination. For endive or escarole, choose Ruffle, Salad King or Full Heart.

Greens: Keep the soil moist. Avoid thick plantings of greens. A 3- to 4-inch spacing between plants is recommended. For weed control, Treflan can be incorporated before planting. Double drills may be planted on one row, allowing 10 to 12 inches between drills.

Broccoli and Cauliflower: Direct-seed or transplant in September. Space cauliflower about 12 to 18 inches apart and broccoli 9 to 12 inches apart. Both shallow-rooted crops respond to fairly high rates of fertilizer, four to six pounds of 8-8-8 or three to four pounds of 8-24-24 per 100 feet of row. Side-dress with about a pint of ammonium nitrate per 100 feet of row about two to four weeks after transplanting. Side dress again in two-week intervals two to three more times. This will increase yield.

Recommended broccoli varieties include Packman, Windsor, Diplomat, Patron and Gypsy.

Recommended early cauliflower hybrids are Snow Crown (A.A.S.), Majestic, Freedom and Cumberland. Candid Charm is a large-head, early hybrid that self-wraps. Good open-pollinated varieties include White Rock and Self Blanch (fall only).

Cabbage: Recommended varieties for fall and winter production are Bravo, Rio Verde, Silver Dynasty, Thunderhead, Emblem, Blue Vantage, Cheers and Vantage Point.

Chinese Cabbage: Chinese cabbage is an excellent crop for fall gardens. Seeds are planted in September. Solid heads form 55 to 60 days after seeding.

English Peas and Snow Peas: Plant English peas, snow peas and other peas with edible pods in September. The key to success is to plant early enough so they bloom before frost and late enough so they aren't blooming when temperatures are too high. Space peas 1 to 2 inches apart. About two to four ounces of seed will plant a 100-foot row. Between 70 and 80 days are required from planting until harvest. Staking or trellising peas, even the bush types, will help to increase the chance of success.

Spinach: Spinach requires a fertile, well-drained soil with a pH of 6.0 to 7.0. Apply four to five pounds of a complete fertilizer per 100 feet of row about two weeks before planting. Side-dress spinach with one pound of ammonium nitrate per 100 feet of row. Start side-dressing about one month after seeding. This will keep it growing quickly, making it tender and improving quality. An additional side-dressing after harvest will improve yields on second cuttings.

Plant seeds about a half-inch deep and thin plants to 1 to 3 inches apart in the row. Since seeds are slow to germinate, be sure to keep soil moist. Double drills may be planted on one row; allow 8 to 12 inches between drills.

Suggested varieties are Melody, Smooth-Ballet and Tiger Cat.

Pumpkins and Winter Squash: Harvest pumpkins and winter squash



after they have developed a hard rind and the appropriate color for their varieties. If the rind cannot be easily penetrated by the thumbnail, the fruit is mature. Leave about 3 inches of stem attached to the fruit. Stored in a cool, dry place (off the ground and floor, if possible), these cucurbits will keep well for several months.

Carrots: Start direct seeding carrots in September and continue to plant throughout the fall season. Form high, well-drained rows. Thin seedlings to about 2 inches apart. Choose Danvers 126, Thumbelina and Purple Haze (All-America Selection). For sandy soils, use Apache, Choctaw, Big Sur, Maverick or Navaho.

Beets: Plant beets from the fall through the winter. Choose from Ruby Queen, Scarlet Supreme, Chariot and Solo.

Collards: For good collards, plant Blue Max, Champion, Top Bunch or Top Pick.

Kathryn Fontenot, Ph.D.
LSU AgCenter Extension
Vegetable Specialist

Fruits

Weed Control in Fruit Plantings

Perhaps the single most difficult task of the fruit grower is weed control. Economic losses attributed to weeds are considered to be greater than losses caused by insect or disease damage. For strawberries alone, losses are estimated to be 25 percent of the potential crop. In addition to competing directly with crops for water, nutrients and light, weeds can serve as hosts for insects, diseases and nematodes. Flowering weeds can also compete with crops for pollinating insects. Each grower experiences a different degree and type of weed pressure, so there is no single answer to the problems created by the opportunistic behavior of weed species. It is not practical to pull weeds in large plantings by hand, nor is a complete reliance on chemicals a sound management strategy. For example, there are many weed species that are now resistant to at least one class of herbicide, and this number is expected to increase rapidly.

Weed control is especially difficult in fruit plantings for several reasons. First, fruit crops are relatively small or slow growing and are not good competitors against rapidly growing weed species. Second, the perennial nature of fruit crops excludes some very effective methods of weed control, such as annual plowing or fumigation. Third, fruits are considered minor crops of high value, so many chemical companies are not willing to label a product with high associated risk and low volume returns to the company. Although many products exist which will control weed growth, most are not available for use by the homeowner. For these reasons, the successful grower must have an integrated program that uses several strategies and tools for managing pest populations.

Types of Weeds

Weeds are classified into three general categories: annuals, biennials and perennials. Control methods will differ for the three types.

Annuals. An annual plant is one whose seed germinates and completes its life cycle during one year by producing a new crop of seed. Annual weeds are generally easy to control, but they produce many seeds and are persistent. Examples of summer annuals whose seeds normally germinate in the spring include foxtails, crabgrass, lamb's-quarter, smartweed and ragweed. A winter annual is one whose seed germinates in the fall and completes its growth by the next fall. Examples of winter annuals include annual bluegrass, shepherd's purse and chickweed.

Biennials. A biennial plant completes its life cycle during two growing seasons. Seeds of biennial plants germinate in the spring and grow vegetatively through the first summer. The following spring, after a winter chilling period, the plants flower and seeds develop and mature by the end of the second summer. This category includes weeds such as wild carrot, mullen and burdock. Biennials often have a fleshy tap root, which makes them difficult to control and often requires the use of a systemic herbicide.

Perennials. Perennial plants can live indefinitely, although the tops may die down in winter. Once established, a perennial weed will grow for many seasons and may be difficult to control. This group is most difficult to control because they may propagate by various methods, such as seeds, rhizomes, bulbs and other vegetative means. They often have good food reserves, which makes them difficult to eliminate. The use of systemic herbicides is often required. Examples of this category include quackgrass, plantain, bindweed, dandelion and nutgrass.

General Categories of Herbicides

Contact: a herbicide that causes localized injury to plant tissue where contact occurs. Examples: Gramoxone, Dinitros.

Translocated (systemic): a herbicide that is moved within the plant. The term is frequently used in a more restrictive sense to refer to herbicides that are applied to the foliage and move downward through the plant to underground parts. Examples: Roundup, 2,4-D.

Soil active (residual): a herbicide that persists in the soil and injures or kills germinating weed seedlings over a relatively short period of time. Most of our pre-emergence herbicides are of this type. Examples: Karmex, Simazine, Surflan.

Modes of Activity of Herbicides

Pre-emergence: must be applied to the soil prior to the emergence of weeds that are to be controlled. This type of herbicide has the ability to control weeds only before or soon after they emerge.

Post-emergence: may be applied after the emergence of weeds that are to be controlled. These herbicides control established weeds to varying degrees.

Strategies for Weed Control

Eliminate all weeds before planting. A key to successful fruit growing is the elimination of perennial weeds the year before the plants are set. This can be accomplished in several ways. One could repeatedly cultivate an area for an extended period of time to force weeds to expend all their stored energy on regrowth. A heavy sheet of black plastic over the area to be planted will also eliminate most weeds if left in place for one season. A nonselective herbicide (e.g., glyphosate "Roundup") could be applied to the planting area one year before planting, causing all plants to die within three weeks of application. The area can then be tilled and a cover crop could be planted. The cover crop will help prevent weed seed germination for the remainder of the year, help to control soil erosion and add organic matter to the soil when it is plowed under the spring before planting. Systemic herbicides such as glyphosate are particularly effective because the material kills the weed root system, which then eliminates the possibility of regrowth.

Crop rotation incorporates many of these principles. Corn, for example, quickly develops a canopy that retards the growth of all but the most persistent weeds. The practice of cultivating corn periodically also destroys many young weeds. In addition, herbicides used on corn are effective against many of the broadleaf perennial weeds which are problems in fruit plantings. If crop rotation is practiced, one should test for herbicide carryover before planting fruit crops.

Soil solarization. There are no fumigants available for homeowners to use that will kill weed seeds before planting. Soil solarization can be an effective technique for reducing weeds, nematodes and soil-borne diseases prior to planting. Soil solarization is a non-chemical technique that will control many soilborne pathogens and pests. This simple technique captures radiant heat energy from the sun, thereby causing physical, chemical and biological changes in the soil. Transparent polyethylene plastic placed on moist soil during the hot summer months increases soil temperatures to levels lethal to many soilborne plant pathogens, weed seeds and seedlings, nematodes and some soil residing mites. Soil solarization also improves plant nutrition by increasing the availability of nitrogen and other essential nutrients. The plastic should be left in place four to six weeks to allow the soil to heat to the greatest depth possible.

Prevent weeds from becoming established after planting. Organic mulches not only inhibit seed germination, but gradually improve soil structure and conserve moisture. Straw is an excellent mulch for strawberries and raspberries, sawdust works well on blueberries, and wood chips or pine needles are good for grapes and tree fruits. Black plastic works for short periods but is not yet practical as long-term mulch for perennial crops.

Cover crops can be used to prevent weed establishment after planting. When managed properly, the competitive ability of the cover crop is directed against encroaching weeds, while interference with crop growth is minimized. Cover crops can also be used to regulate nutrient levels and promote the hardening process in woody plants.

One should keep surrounding areas mowed to prevent weeds from flowering and releasing seeds into the planted area. If weed seeds are present in a planted area, pre-emergent herbicides can be used. These herbicides cause mortality of germinating seedlings, and thus prevent weed establishment. If mulches or herbicides are not used, one should regularly cultivate the weed-free area around the plants no deeper than 2 inches. The root systems of fruit crops are usually very shallow and deep cultivation can cause considerable damage.

Remove established weeds when they appear. Hand weeding is unavoidable for the home fruit grower. One should regularly pull weeds that become established so that they will not develop an extensive tap root or flower. Cultivation will also help eliminate established weeds. There are a few herbicides that can be used in fruit plantings to kill or retard the growth of established weeds.

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