

# Successful Gardener

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Investment &  
Protect the  
Environment

## JC Raulston Arboretum Plant Focus

### *Abies firma*, a Heat-Tolerant Fir for North Carolina

Firs are striking, spire-like trees that we often associate with the mountains and northern climates. Southern landscapes are seldom graced with trees in the genus *Abies* because they cannot tolerate the heat and soils with poor drainage. However, one species, the Japanese fir, *Abies firma*, will thrive even in our hot, wet climate.

This fir is a native of Japan where it is known to grow to 150 feet. This conical-shaped tree has open branches and light emerald green foliage. *Abies firma* is an excellent way to introduce the beauty of a fir to a Southern garden. It is a slow grower but can achieve heights of 20 to 50 feet and a width of 40 feet with age. One of the unusual features of the tree is the 5-inch, yellow-green cones that are borne upright on the branches.

The name *firma* means strong, and indeed this is a tough plant. It performs well in heavy clay soils and is tolerant of a range of moisture conditions. It requires full sun to prosper. This tree will continue to thrive through the worst of hot, wet Southern summers. Specimen trees are reported doing well in arboreta in Alabama, Georgia and North Carolina, including the JC Raulston Arboretum and The Sarah P. Duke Gardens.

Experimentation using *A. firma* as rootstock has provided some interesting results. *Abies pinsapo* 'Glauca', blue Spanish fir, *A. koreana*, Korean fir and Fraser fir grafted to *A. firma* rootstock have proven to be outstanding specimens. These plants withstand the heat and bright sunlight while the roots carrying the characteristics of the Japanese fir were able to thrive in the heavy clay soils with resistance to Phytophthora root rot.

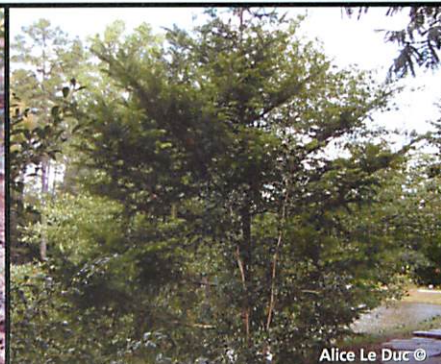
*Abies firma* will make an excellent evergreen specimen with a relaxed yet formal silhouette. Since it is irregular in form, it complements the appearance of other species and blends into mixed borders. Its stately elegance and good adaptability make it an excellent choice for North Carolina gardens.

Carl Matyac

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## Controlling Pests in Fruit Trees

Planting a fruit tree is one of the most exciting activities a gardener can do, especially when children are involved in the process. Visions of bushel baskets full of crunchy apples or steaming peach cobbler coming out of the oven add to the anticipation of all those involved. But there is an unfortunate downside to an otherwise joyful enterprise. Insects and fungi enjoy feasting on the tasty fruit as much as we do, and they often beat us to the harvest.

Sure, I could go into vivid descriptions of disgusting pests and plagues like scab, brown rot, sooty blotch and black knot, but for all I know you've just sat down to breakfast. Suffice it to say that none of them is pleasant, and you wouldn't dream of inviting them to your backyard orchard. But in this age of increasing concern about the environmental and health effects of pesticides, what is a responsible gardener to do?

Well, I hate to break the news, but if you're trying to grow a quality crop, one that will produce consistently year after year when it comes to growing apples, pears, peaches and nectarines, chemical sprays are a fact of life. If that's completely unappealing, then you have two options: either accept inconsistent yields and low quality fruit (be prepared to cut out lots of brown spots) or switch to pest-free crops like blueberries, muscadine grapes and figs.

But if you are willing to make the commitment to a quality crop, there are ways to maximize quality while minimizing the risk to you and your family. The first is to use every cultural practice at your disposal to keep the trees healthy. This means soil sampling and proper fertility, regular pruning and rigorous sanitation practices. Pick fruit before overripe. Promptly clean up fallen fruit and debris, and regularly remove dead limbs. Next is to make a dormant season application with one of the horticultural oils. This pesticide is acceptable even for organic gardeners, and does a fine job of controlling scale insects. Apply in mid-March, or just before the buds begin to swell. Thorough coverage of all limbs and trunks is important. For peaches, dormant season care should include a second application of oil, plus an application of copper fungicide to help control leaf curl disease.

Once new growth begins, it's time to make regular applications with both a fungicide and insecticide. The easiest route – and most convenient

for the backyard orchardist with only a couple of trees – is to buy a "combination" product. This will have the insecticide and fungicide pre-mixed in the same bottle. The instructions tell you how much to mix in each gallon of water. The typical mix will contain malathion as an insecticide and captan as the fungicide. Note, however, that captan is not registered for use on pears, so check the label carefully to see which crops are listed. You will need to apply the fungicide/pesticide spray about every two weeks through the growing season. However, avoid spraying during bloom time or you risk killing the beneficial insect pollinators. Also check the label for the pre-harvest interval. This is the minimum time between the last application and harvest.

For larger numbers of trees, it may be more economical to buy the insecticide and fungicide separately and mix them yourself. Organic gardeners could try using a copper-based fungicide, plus insecticidal soap or neem oil, but fruit quality will be markedly lower. Also note that copper fungicides will injure the foliage of peaches and nectarines.

Following these practices will eliminate the majority of your pest problems, but there are a couple of other serious pests to consider. Fireblight can be a serious problem in apples and pears, causing the tips of limbs to die. Aggressively prune out infected limbs, taking care to sterilize clippers between cuts to avoid spreading disease. For severe infestations, an application of streptomycin during bloom will provide good control.

In peaches, nectarines and plums, the peach tree borer can cause enough damage to kill the tree. Apply a preventative spray every year in late August or early September. Contact your local Cooperative Extension Center for a specific recommendation. Finally, remember that thorough coverage of the foliage is important, including undersides of leaves. And for safety's sake, read the label and wear your chemical resistant gloves, plus any other safety equipment indicated on the label.

For more details on insect and disease control, download "Disease and Insect Management in the Home Orchard" at <http://www.ces.ncsu.edu/depp/notes/Fruit/fdin002/fdin002.htm> or request a copy from your local Cooperative Extension Center.

**Paul McKenzie**

### gardentalk

*"A garden is half-made when it is well planned. The best gardener is the one who does the most gardening by the winter fire."*

**Liberty Hyde Bailey**







## Why do plants' leaves turn yellow?

Leaves of deciduous plants occasionally lose their normal green color. The key reason that plants turn yellow is that they are not able to maintain adequate levels of the green pigment, chlorophyll. When this vital substance is absent, yellow pigments that are also present take over and the leaves fade. Yellowing of plant parts that are normally green is called chlorosis. Diseases, insects and changes in the plant's environment cause leaves to become chlorotic. Determining which is to blame is not always easy.

Many environmental factors cause a plant to yellow. The most basic is a lack of adequate light. When plants become shaded by other plants or by branches higher up on the same plant, the chlorophyll fades away and the leaves yellow.

Nutrient deficiencies also cause chlorosis. Nitrogen is a vital component of chlorophyll so inadequate levels of this element make leaves turn yellow. Too much or too little water can cause yellowing. Under water stress, plants shut down internally and cannot transport nutrients to the leaves.

Sucking insects such as aphids, mealybugs and scale remove nutrient laden sap from the plants, restricting their ability to make more chlorophyll, leaving plants yellow. Fungal diseases and some viruses also cause the loss of chlorophyll in a mottled pattern on leaves and stems. Herbicides (weed killers) may also cause yellowing. Some of these chemicals, including the widely used Roundup, work by stopping photosynthesis in the plant. Often, they do this by blocking the production of chlorophyll. *Karen Neill*

## Holiday Plant Care

How long your holiday plants remain attractive depends on how well you care for them. The care of the plants begins at the time of purchase. Look for healthy, well-cared-for plants. Purchase plants from a reputable garden center, greenhouse, florist or nursery. Beware of any store displaying holiday plants outdoors or in a parking lot. Do not subject your plants to cold temperatures or adverse conditions between the point of purchase and its final destination. Do not leave holiday plants in a car while shopping.

If your holiday plant is wrapped with foil, either remove the foil or make holes in the foil so water can drain out. You may choose to place the plant in a decorative container or place a saucer under the pot. Keep the plant in bright light, not direct sunlight. Keep the plant cool and away from drafts. Keep the soil evenly moist but not soggy, as roots will become damaged if they become dry or waterlogged. As the flowers fade, remove them and clean up any damaged leaves.

Some of the most common holiday plants include poinsettia, Christmas cactus, cyclamen, amaryllis and kalanchoe. Many of these plants can be placed in the garden in the spring. Contact your local Cooperative Extension Center for information on your particular holiday plant.

*Emily Revels*

## ENVIRO-TIP

### Choosing Deicers for Walkways

Anyone who has ever slipped on ice recognizes the need to keep steps and sidewalks clear of compacted snow and ice. Unfortunately, removing ice with a shovel is not easy. Deicers sprinkled over snow or ice melt down to the hard surface and help loosen the ice for easy removal. They work by lowering the freezing point of the water in which they are dissolved, helping break the bond between ice and the pavement. Once the bond is broken, it is relatively easy to mechanically remove the remaining ice and snow. Many homeowners have the mistaken notion, however, that deicers should completely melt the ice and snow and they tend to overapply these products. This increases both the cost of the deicing product and the potential for environmental degradation.

The two most widely used chemical deicers are calcium chloride and sodium chloride (rock salt). Some deicing

products may contain potassium chloride, urea or calcium magnesium acetate (CMA.) Calcium chloride is one of the most effective deicing salts because it gives off heat as it melts and has the ability to attract moisture from its surroundings, helping the ice to dissolve more quickly. Sodium chloride is relatively inexpensive but can burn plants and corrode metal and concrete. Potassium chloride and urea are more typically used in fertilizers like 10-10-10. While these fertilizers can melt ice, the additional nitrogen and phosphorus has potential to run off and pollute nearby lakes and streams. CMA has fewer environmental risks than the above products but its greater cost reduces its utility except in environmentally sensitive areas.

Sand and cat litter can be used to provide traction in sensitive areas but by themselves have little direct effect on ice melting. *Fred Miller*







December isn't the best time to visit most gardens. But it's a great time to stay inside in a warm, cozy spot and enjoy a book filled with hundreds of beautiful color photographs of trees and shrubs. One book that certainly fills the bill is *Dirr's Trees and Shrubs for Warm Climates: An Illustrated Encyclopedia*. The author is Michael A. Dirr, a professor of horticulture at the University of Georgia. He has written numerous books, none more famous than the classic, *Manual of Woody Landscape Plants*.

*Dirr's Trees and Shrubs for Warm Climates* focuses on plants that are hardy in USDA Zones 7 to 11. Even though this includes some plants not hardy to North Carolina, this book is still a good investment for gardeners in the piedmont and coastal plain.

The pictures and accompanying text provide the reader with a great idea of what the plant looks like, its potential size and where it might be used in the landscape.

Kevin Starr

## Gardening in December

### Lawns

- Monitor moisture levels in your warm-season lawn. Occasional irrigation may be necessary if drought occurs. Cool-season lawns generally require one inch of water per week. Apply broadleaf herbicides as labeled to manage henbit, chickweed and wild onions or garlic while these weeds are actively growing this winter. Follow label directions for temperature restrictions.

### Ornamentals

- Don't forget to keep the Christmas tree watered. It can drink a gallon each day!
- If your holiday plant has decorative wrapping, make holes to allow drainage. Place the plant in indirect light away from drafts.
- Lightly prune evergreens to enhance your holiday decorations.

- Botrytis, black spot and powdery mildew still love your roses, even in cold weather. Sanitation is the key. Clean up any debris around your roses.

- Treat junipers for cool-season mites with horticultural oil if they were brown and ugly last spring.

### Edibles

- Prune grapevines. Use the vines to create spectacular wreaths.
- When ordering from catalogs, be sure to select fruit trees and small fruits that are adapted to your hardiness zone. Contact your county Cooperative Extension Center to learn which varieties perform best.
- Mulch strawberry beds with wheat straw or pine needles to protect the crowns.

### Gift Idea

- Treat your gardening friends and family to a gift subscription to *Extension's Successful Gardener*. Visit [www.successfulgardener.org](http://www.successfulgardener.org) or call (919) 513-3112. Mike Wilder



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