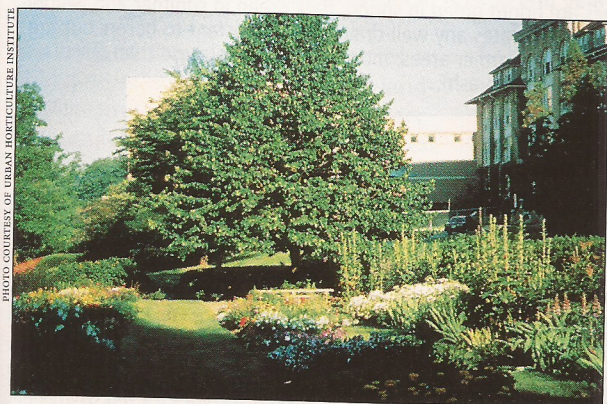


# Same TREES, Fewer PESTS

**F**or years I've been watching my neighbor treat his towering white birch for leaf miners in the spring. He warns my children to stay away, then does a kind of rain dance around the tree, shaking his can of granular insecticide. Despite his efforts, halfway through the season the birch turns into a skeleton. Last year it finally succumbed to insect damage, and my neighbor sawed off its branches. It now stands as a monument to popular trees with pest problems — including a birch in my own back yard. Neither of us realized when we first planted the trees that we could have chosen pest-resistant species that would grow strong and beautiful with minimal care.



*Corylus colurna* is drought resistant once established and has no serious insect and disease problems.

Casey, an entomologist and extension specialist for the New York State Integrated Pest Management Program at Cornell University, Ithaca, NY, sees many alternatives to common trees. "There are so many quality plants available that have pest resistance," says Casey. "It's a shame they're not being used more."

Although some landscape architects are being educated about pest-resistant trees and shrubs, many still place a higher priority on other factors such as longevity and aesthetics (form, color and flowering). Critical to a landscaper's decision is plant hardiness and the qualities of the site, which include soil type, moisture conditions, and sun and wind exposure. Pest resistance often takes a backseat.

The slightly higher cost of pest-resistant trees and a lack of availability are additional considerations. Nurseries and propagators have not always carried an inventory of alternatives to commonly used species. Yet, public interest in a greater variety

CHOOSING PEST-RESISTANT  
ALTERNATIVES TO COMMON  
TREE SPECIES CAN RESULT  
IN A LOW-MAINTENANCE,  
HEALTHY LANDSCAPE.

Choosing plants for a landscape is like ordering an entree at a restaurant: If you're feeling adventurous you might try something new, but more likely you'll order a meal that you are familiar with. Most people are unfamiliar with the alternatives to today's most popular trees, and they're reluctant to try something they haven't seen. Christine

by **CARRIE KOPLINKA-LOEHR**



# Tried-and-True Pest-Resistant Trees

## Small Trees (less than 30 feet tall)

Botanical Name	Common Name	Zones	Notes
<i>Acer campestre</i>	hedge maple	4 to 8	Dark green summer leaves become yellow-green or yellow in fall; tolerates alkaline soil and drought; insect and disease resistant.
<i>Amelanchier</i> spp.	serviceberry, shadbush	4 to 9	Showy white blooms in spring; needs moist soils; especially insect- and disease-resistant cultivars are <i>A. × grandiflora</i> 'Cumulus' and <i>A. × g.</i> 'Robin Hill'.
<i>Cercidiphyllum japonicum</i>	Katsura tree	4 to 8	Heart-shaped leaves turn apricot in fall; needs moisture; no serious insect and disease problems, but leaves may get sunscald and bark may split.
<i>Chionanthus virginicus</i>	white fringe tree, old-man's-beard	4 to 9	White fragrant flowers; medium to dark green leaves turn yellowish-brown in fall; likes moist, fertile acid soils; no serious pest and disease problems; occasionally falls victim to canker, leaf spot, scale and powdery mildew.
<i>C. retusus</i>	Chinese fringe tree	6 to 8	Leathery leaves and white flowers; tolerates a variety of habitats. Tolerates air pollution.
<i>Cornus kousa</i>	Kousa dogwood	5 to 8	Creamy-white flowers bloom in late spring; prefers well-drained, acid soil; resists anthracnose.
<i>Maackia amurensis</i>	Amur maackia	3 to 8	White summer flowers; tolerant of alkaline soil; fixes nitrogen; no serious insect and disease problems.
<i>Magnolia</i> 'Galaxy'	'Galaxy' magnolia	5 to 9	Deep pink flowers open late, avoiding most frosts.
<i>Magnolia virginiana</i>	sweet bay magnolia	5 to 9	Creamy-white flowers in June; needs acid, moist soil; generally free of insects and diseases.
<i>Malus</i> spp.	flowering crabapple	4 to 7	Flowers are white to pink or reddish to rose; tolerates a variety of soils but prefers heavy, well-drained loam soil; resistant cultivars include 'Dolgo', 'David', 'Ormiston Roy' and 'White Cascade'.
<i>Oxydendrum arboreum</i>	sourwood, lily-of-the-valley tree	6 to 9	White flowers in spring; yellow, red and purple fall foliage; grayish-black bark retains interest during winter. Needs moist, acid soil; susceptible to leaf spot and twig blight, but neither condition is serious.
<i>Syringa reticulata</i>	Japanese tree lilac	4 to 7	White, fragrant blooms; resistant to lilac borer and powdery mildew; try 'Ivory Silk' or 'Summer Snow'.

## Medium Trees (30 feet to 50 feet tall)

Botanical Name	Common Name	Zones	Notes
<i>Corylus columna</i>	Turkish filbert, Turkish hazel	4 to 7	Dark green summer leaves turn yellow-green in fall; very drought resistant once established; no serious insect and disease problems.
<i>Halesia carolina</i>	Carolina silverbell	4 to 8	Graceful habit; white or pink flowers; needs moist, acid soil, preferably in semishade; highly pest resistant.
<i>Koelreuteria paniculata</i>	panicked golden-rain tree, varnish tree	5 to 9	Midsummer yellow flowers; tolerates heat, drought, alkaline soil, salt; no serious insect and disease problems.
<i>Nyssa sylvatica</i>	black gum, tupelo, sour gum	3 to 9	Dark green summer leaves turn orange to red in fall; difficult to transplant because of taproot; no serious pest problems.
<i>Sorbus alnifolia</i>	Korean mountain ash	4 to 7	White flowers; leaves are bright green in spring, dark green in summer and yellow-golden to orange in fall; tolerates any well-drained soil; resistant to borers but fire blight may be a problem in warmer areas; more resistant to disease than <i>Sorbus aucuparia</i> (European mountain ash).

## Large Trees (more than 50 feet tall)

Botanical Name	Common Name	Zones	Notes
<i>Betula nigra</i> 'Culley'	Heritage™ river birch	4 to 9	Dark green leaves and white bark; fast growing; does well in hot conditions; resists birch leaf miner and bronze birch borer.
<i>Gymnocladus dioica</i>	Kentucky coffee tree	3 to 8	Leaves emerge late in spring and are dark green; drought tolerant; males have no pods in summer; pest free.
<i>Liriodendron tulipifera</i>	tulip tree	5 to 9	Bright green summer foliage turns golden-yellow in fall; performs best on evenly moist soils with adequate space; can be pestered by aphids, but they are not a major problem unless honeydew is heavy.
<i>Magnolia acuminata</i>	cucumbertree magnolia	3 to 8	Large leaves are dark green in summer and brownish in fall; likes well-drained, moist, slightly acid soil; free from insect and disease problems.
<i>Metasequoia glyptostroboides</i>	dawn redwood	5 to 9	Looks evergreen, but loses its needles in cold weather; bright green needles change to brown in fall; prefers well-drained, moist, slightly acid soil; generally pest resistant but some problems with Japanese beetles and canker.
<i>Quercus rubra</i>	red oak	4 to 8	Dark green summer leaves turn reddish in fall; tolerates salt and water stress; trouble-free, fast growing; generally pest resistant.
<i>Tilia tomentosa</i>	silver linden	5 to 8	Dark green leaves, yellow-white fragrant flowers; likes moist, well-drained soil; adapts to a variety of soil pHs; resists Japanese beetle.
<i>Ulmus americana</i>	American elm	3	Dark green summer leaves that turn yellow in fall; likes moist soils, but is tolerant of a variety of soil conditions; cultivars that tolerate or resist Dutch elm disease include 'New Harmony', 'Valley Forge' and 'American Liberty'.
<i>Ulmus</i> hybrids	hybrid elms	4 to 7	Hybrids resistant to Dutch elm disease and elm leaf beetle include <i>U. carpinifolia</i> × <i>U. parvifolia</i> ( <i>U.</i> 'Frontier'), and <i>U.</i> 'Urban' × <i>U. wilsoniana</i> 'Prospector' ( <i>U.</i> 'Patriot').
<i>Ulmus parvifolia</i>	Chinese elm, lacebark elm	5 to 9	Fast-growing species; dark green summer leaves turn yellow in fall; tolerates poor sites (soils that are compacted or have low nutrient content); resistant cultivars include 'Drake', 'Sempervirens', 'True Green' and 'Dynasty'.
<i>Zelkova serrata</i>	Japanese zelkova	5 to 8	Orange-bronze-red fall color; resists Dutch elm disease but can be heavily defoliated by elm leaf beetle. Look for 'Halka', 'Green Vase' (Green Vase® Japanese zelkova) and 'Village Green' (Village Green™ Japanese zelkova).





*Oxydendron arboreum* boasts colorful fall foliage and year-round interest.

of plants is causing some nurseries to offer a more diverse selection. And landscapers must be able to trust that recommended trees will indeed be pest resistant. Although information in the past was largely based on observation, formal research on susceptible and resistant species is now being conducted.

**BENEFITS OF PEST-RESISTANT PLANTS.** Robert Mower, professor of horticulture at Cornell University, says there certainly isn't as much use of pest-resistant plantings as there should be. "I haven't seen major changes in the choice of landscape plants in 50 years, but we need to convince the rest of the world that it's a good idea," he says. "Many of our traditional plants now have disease and insect problems they didn't have 20 years ago."

Finding pest-resistant species and varieties is, indeed, a good idea since it saves the nursery professional and consumer the headache of controlling pests. The Sustainable Landscape at the University of Rhode Island in Kingston is a showcase for pest-resistant ornamentals. Students,

homeowners, landscapers and other visitors can walk among 180 cultivars that do not require pesticides or excessive maintenance. Entomologist Dick Casagrande coordinates the state's IPM program and takes pride in the Sustainable Landscape. "We've seen no insect or disease damage in our demonstration planting this year," says Casagrande. "Our only pests have been rabbits chewing the plants and humans trampling them." One of Casagrande's favorite pest-resistant species is Heritage™ river birch (*Betula nigra* 'Culley').

The greatest advantage to using pest-resistant trees is that plants stay healthy without needing pesticides. For example, treating susceptible birches for leaf miners and bronze birch borers could require up to three pesticide applications a year, whereas a resistant cultivar would not require any insecticides. Many species of ornamental crabapple are susceptible to apple scab and cedar apple rust, which can cause defoliation or tree death. Keeping those trees healthy would require two or more well-timed fungicide applications a year,

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compared to resistant crabapples that don't require any. Flowering dogwood (*Cornus florida*) is susceptible to anthracnose and dogwood borers. Planting the less susceptible Kousa dogwood (*Cornus kousa*) can save two or more pesticide applications a year.

**RESISTANCE MECHANISMS.** Although we don't know the exact mechanisms of resistance, we do know that there are three broad categories of resistance. One type is the presence of certain chemicals in the plant tissue. For instance, chemicals in herbs such as lavender and alkaloids in potatoes protect these plants from invasion by insects. A second type of resistance is a physical barrier to pests, such as hairy leaves or spines. When the spines of holly leaves are cut off, for example, the plant becomes susceptible to insects that normally would not bother it. Finally, plants that grow despite being injured by pests show some degree of tolerance to those pests.

The term "resistance" is relative, however. Once a pest's favorite food is exhausted, the pest moves on to second and third choices, and could attack a plant that was thought to be resistant. "Resistance does not equal immunity, so you can't expect miracles. We know that stress can cause a plant to lose its resistance," says Casey. For example, certain trees, when grown with adequate moisture, have sufficient water in their cells to push out a bark beetle when it tries to invade. When that happens, the tree resists the pest. During a drought, however, turgor pressure drops and the water level in the cells is insufficient to rebuff the beetle — and the tree is invaded.

Most of the time, a tree's pest resistance and general health depend on proper siting. Nina Bassuk, professor of ornamental horticulture at Cornell University and program leader for the Urban Horticulture Institute, Ithaca, NY, subscribes to the "right plant, right place" philosophy. Bassuk, who teaches a course in proper site assessment and choice of ornamentals, says, "More than 50 percent of tree disorders are *not* insect or disease related. You'll have fewer insect and disease problems if you assess the site, choose the appropriate plant and transplant properly."

Site is not the only consideration, though. Before purchasing a tree, think about the pests inhabiting the area. "Look at the big picture," urges Deborah Smith-Fiola, a county extension agent and associate professor of agriculture pest management at Rutgers Cooperative Extension Service,

## For More Information

- *Pest Resistant Ornamental Plants*, 3rd edition, by Deborah C. Smith-Fiola. 1995. Lists cultivars and varieties documented as resistant to specific insects and diseases. Send a check for \$8.70 payable to Ocean County Board of Agriculture, Rutgers Cooperative Extension, 1623 Whitesville Road, Toms River, NJ 08755, or call (908) 349-1246.

- *Recommended Urban Trees* by Nina Bassuk. 1994. Categorizes many trees that are hardy in New York State by size. If your extension office does not have a copy, send \$3.00 to the Urban Horticulture Institute, Cornell University, 20 Plant Science Building, Ithaca, NY 14853, or call (607) 255-4586.

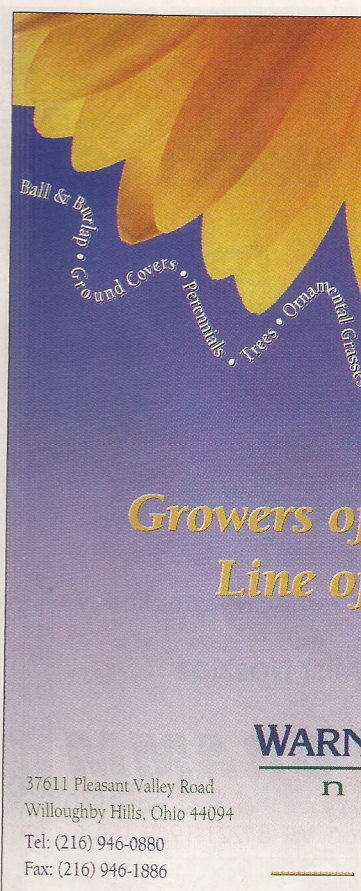
- *Source List of Plants and Seeds*, also called the "Andersen Guide." Available for \$34.95 from the Andersen Horticultural Library, Minnesota Landscape Arboretum, 3675 Arboretum Drive, Box 39, Chanhassen, MN 55317-0039. This reference details the cultivars carried by mail-order nurseries.

- *Sustainable Trees and Shrubs for Southern New England*, 2nd edition. 1995. Cooperative Extension Systems of the University of Rhode Island and the University of Massachusetts collaborated with nursery practitioners to produce this list of 250 nursery plants without serious insect or disease problems. Send \$5.00 to Cooperative Extension, USDA, The University of Rhode Island, Kingston, RI 02281-0804, or call (401) 792-2900. Website complete with photographs: <http://www.uri.edu/research/sustland/splist.html>.

Toms River, NJ. She is also the author of *Pest Resistant Ornamental Plants*. "What might the key pests be?" she asks. "For instance, honey locust — that hardy street tree — can be devastated by mimosa webworm. If this has been a problem on your site, plant a webworm-resistant cultivar. If *Thyronectria* canker is the key site pest, choose a cultivar resistant to it."

Although native plants are often a good bet, not all natives are guaranteed to be pest resistant. Pests evolve, and new pests are continually immigrating or developing. In addition, many natural habitats can be quite different from the habitat in a front yard.

You should be able to outwit some insects and diseases when selecting birches and crabapples, in particular. The white-barked birches, notably European white birch (*Betula pendula*), are susceptible to damage from bronze birch borer and birch leaf miner, but resistant



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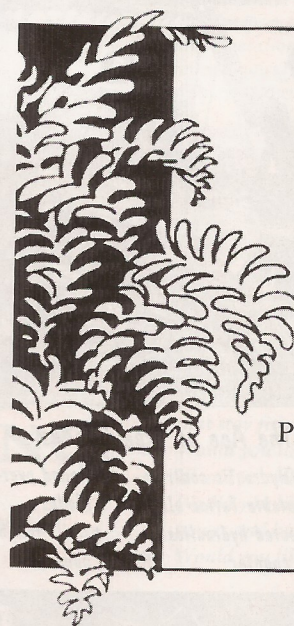
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birches are available. Many crabapple cultivars are available that resist four major diseases of apples — apple scab, fire blight, powdery mildew and cedar apple rust. You should select crabapples carefully for resistance to these. For example, the lovely 'White Candied Apple' has only fair resistance to apple scab, although it has excellent resistance to the three other diseases that plague crabapples. In addition, a recent study has shown that Japanese beetles feed less heavily on crabapple cultivars with completely green leaves than on cultivars with red or red-green leaves. (For a list of plants that are recommended for their pest resistance as well as their ornamental characteristics, see the table on page 52.)

Dennis Osika, director of the grounds department at Cornell University and an advocate of IPM, believes it's helpful to cast a wide net when selecting trees. "Most plants have an Achilles' heel of some kind," he says. "The best thing to do in the landscape is to have diversity."

So, while there's no pest-free guarantee, a landscape with a wide range of species and varieties will generally be able to resist the many insects and diseases that come its way. That means the

next time a person dances around a tree, it will likely be a dance of joy.

Carrie Koplinka-Loehr is a staff writer for the New York State Integrated Pest Management Program at Cornell University, Ithaca, NY.

#### REFERENCES

- Bassuk, Nina. *Recommended Urban Trees*. 1994. Urban Horticulture Institute, Cornell University.
- Casagrande, Richard; Brian Maynard; Roberta Clark; Susan Gordon; Kenneth Lagerquist; William Green; and Angelo Simeoni Jr. *Sustainable Trees and Shrubs for Southern New England*. 1995. University of Rhode Island and University of Massachusetts Cooperative Extension Systems.
- McArdle, Alice Jacot. "Trouble-Free Trees." *Hudson Valley Horticulture*. Cornell Cooperative Extension of the Hudson Valley. Vol. 5:8. August 1995, 1-3.
- Spicer, P.; D. Potter; and R. McNiel. "Resistance of Flowering Crabapple Cultivars to Defoliation by the Japanese Beetle (Coleoptera: Scarabacidae)." *Journal of Economic Entomology*. Vol. 88:4. 979-985.



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