

# WHITE-BARKED BIRCHES, BORERS AND ALTERNATIVES

by Michael A. Dirr., Director University of Georgia Botanical Garden, Athens, GA.

When I worked at a garden center during my undergraduate days at Ohio State, it was a standard joke to bet whether the customer could get his white-barked (usually *Betula pendula*) birch home and in the ground before the borers found it. Sometimes I think the borers found the tree before it ever arrived at the garden center. Whatever the case, little has changed for the old-standard, borer-susceptible white birch. Some nurserymen have started to grow other white-barked birches that supposedly offer bronze-birch borer resistance. Before we progress too far, let's eliminate *B. pendula*, European white birch, and *B. populifolia*, grey birch, from consideration. Although grey birch is somewhat resistant to the borer, it suffers terribly from leaf miner and is short-lived—not exactly endearing traits for a landscape specimen.

Growing up in Cincinnati, Ohio, matriculating at Ohio State and the University of Massachusetts, and serving as a faculty member for seven years at the University of Illinois allowed me the opportunity to view white-barked birches in many states of disrepair. I will never forget a European white birch (dead) in one gentleman's yard that had the branches cut back to within two feet of the main trunk with a morning glory trained on the trunk. Looked great in summer but left a visual blight in winter.

In Champaign-Urbana, IL, virtually every yard had one white-barked birch, sometimes a grove. I had one in my yard that I planned to cut down, much to the dismay of my wife. Unfortunately, the tree was ravaged by the borer before I could afford a chain saw. In fact, I observed trees dying all over the Midwest. I would present the case of the borer-infested birch to my students who soon realized that there was one in their parent's yard.

The question that came up was "What are the alternatives?" I remember Dr. Ed Hasselkus showing me a group of three, white-barked birch trees at the University of Wisconsin Arboretum. He commented that these lived while *Betula pendula* and cultivars were exterminated by the borer. Their name: *B. platphylla* var. *japonica*. More on this later.

Next on the scene was a mystery birch termed *B. maximowicziana*, monarch birch. Articles appeared in popular and trade magazines. Nurseries started to sell it. It was touted as the savior of ornamental white-barked birches. There was one problem with all this: the birch being promoted and sold was not monarch. I had seen plants of so-called monarch at the Holden and Dawes Arboretum in Ohio and they had good white bark and leaves that looked like *B. papyrifera*. Unfortunately, people failed to check the taxonomic descriptions of *B. maximowicziana*. Had this been done I doubt if the confusion would have developed. Drs. Frank Santamour and Frederick Meyer resolved some of the taxonomic confusion concerning the species (see *American Nurseryman* 145(12):7. True monarch birch has large leaves (up to six inches) with deeply cordate bases, large female catkins, and grayish to orangish brown bark.



**Birch borers** took their toll on *Betula pendula* (insert) but have not succeeded in defoliating a *Betula nigra* 'Heritage'.

At about the same time (1976-78) two additional white-barked, borer-free birches appeared on the scene. *Betula platyphylla* var. *japonica* (formerly *B. mandshurica* var. *japonica*) and *B. p.* var. *szechuanica* (formerly *B. mandshurica* var. *szechuanica*) appeared to have possibilities for general landscape use. Variety *japonica* is more refined and more reminiscent of *B. pendula*. Variety *szechuanica* has stouter stems and more leathery, wavy leaves; their underside densely glandular dotted. Dr. Frank Santamour and Dr. Knud Clausen described the testing with *B. p.* var. *japonica* that is being conducted at the National Arboretum (see *American Nurseryman* 149(1):15).

Tom Pinney, Jr., Evergreen Nursery Co., Sturgeon Bay, Wisconsin has been as close to the subject as anyone in the country and may be the only nurseryman who has the true monarch birch. He noted that reports of borer infestations on both varieties, *japonica* and *szechuanica*, have surfaced. However, there have been no reported borer infestation on plants grown from the University of Wisconsin Arboretum seed source. An interesting aside was his comment relative to the excellent performance of *B. papyrifera*. In Min-

*Continues on page 54*



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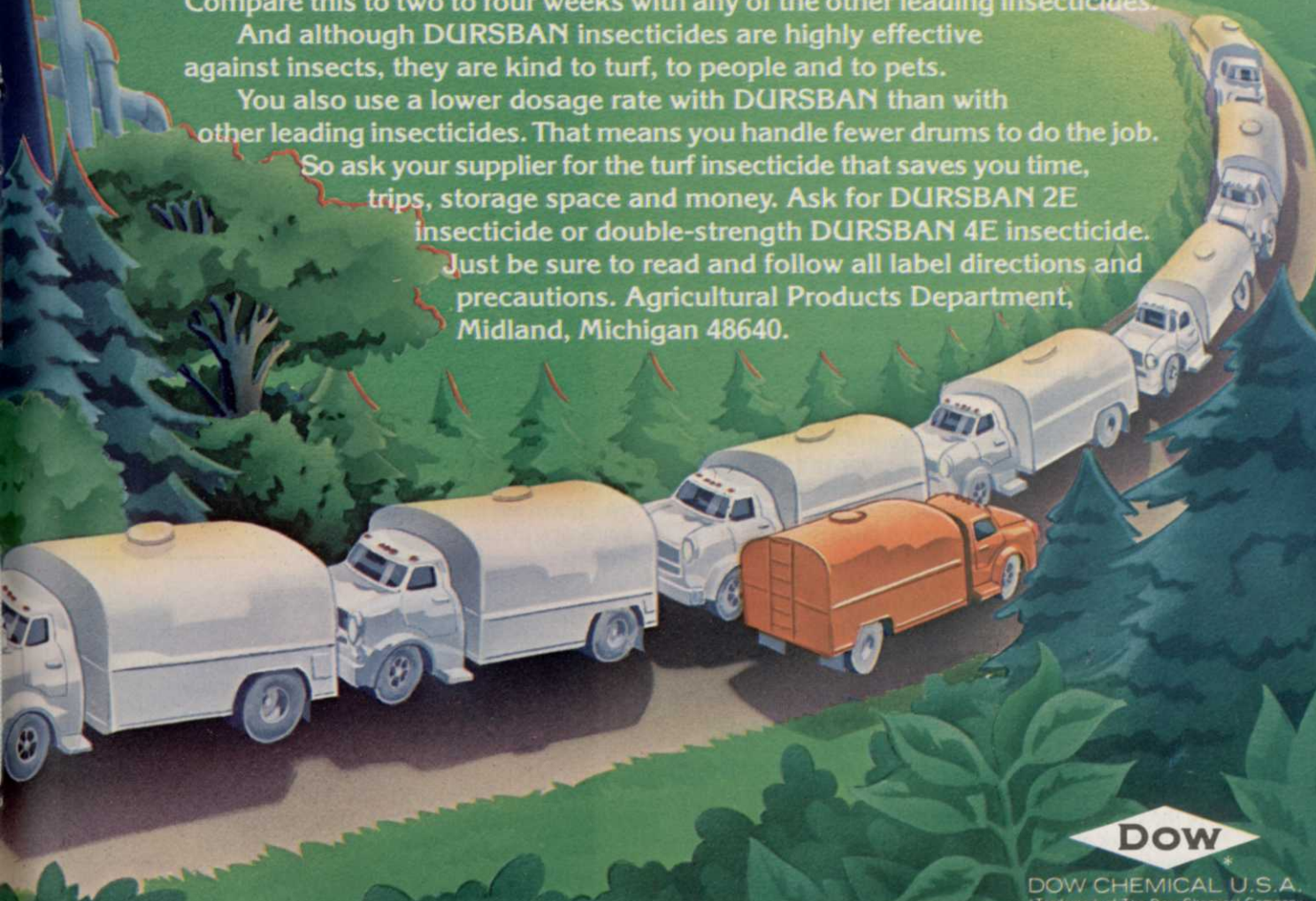
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nesota (Landscape Arboretum) tests, only one tree out of 104 *B. papyrifera* was borer infested. Although this tree has been maligned for years, I wonder if it should not be given a long second look. It is certainly one of the handsomest of all white-barked species. I would also like to raise the question whether all the *B. papyrifera* that were described in the past as borer infested were, in fact, the true species. Birch identification is fraught with difficulty and monarch exemplifies the problem.

The search for the illusive, borer-free, white-barked birch continues but why not back up a step and consider a native species, as a possible alternative. The river birch, *Betula nigra*, has many significant advantages over the white-barked species. One is the resistance to bronze birch borer; the other relates to the excellent heat and cold tolerance. Dr. Harold Pellett, University of Minnesota Landscape Arboretum, and the author have been testing the cold hardiness of plants that have extended North/South distributions. In laboratory test, river birch collected from the wild near Athens, Georgia, proved as cold hardy as plants collected from Minnesota sources. In fact, young stems from both sources were not injured when exposed to temperatures of -50°F. In addition, river birch can withstand flooding for long periods of time.

River birch is native to areas along streams and rivers from southern Minnesota south to Northern Florida and from Delaware west to Kansas. I have seen beautiful stands along the Illinois river and along the banks and flood plain of the Oconee River in the UGA Botanical Garden. It occurs in association with hackberry, American sycamore, boxelder, sweetgum, green ash, tulip-tree, red maple, American hornbeam, water oak, willow and cottonwood in the UGA Botanical Garden floodplain.

It is interesting to note that in upland sites, river birch is seldom found. Apparently it cannot compete with the oak, hickory, maple, and beech. The reason is not related to soil moisture alone because landscape specimens on the Illinois and Georgia campuses are performing well on sites that never witnessed anything but normal rainfall. The most obvious aspect of river birch is the tremendous variation among progeny. I walk along the river trail in the UGA Garden and see barks of different hues and degrees of exfoliation.

River birch, as a landscape tree, forms a graceful pyramidal to oval outline that with maturity becomes rounded. The average landscape size ranges from 40 to 60 feet with the largest living river birch recorded at 80 feet high and 90 feet wide. I prefer the multiple stemmed or low-branched appearance but single-stemmed specimens are also effective. A few of the places I have observed the species being used in landscape situations include planters, court yards, front yards, groupings and screens.

The foliage is lustrous dark green above, gray-green beneath, and triangular to diamond shaped in outline. Leafspot can be a significant problem in wet weather. Fall color is seldom good; in fact, I can never remember, observing excellent fall color on the species. The trees in the UGA Garden dropped green or yellow-green.

The bark of river birch is fantastic, varies from gray-brown to cinnamon-brown, and exfoliates in papery curls and flakes. This exfoliating character develops

on branches above one inch in diameter. The leafless branches of river birch framed against a winter sky are a gorgeous sight. The young branches are a rich red-brown and grade to the exfoliating character that becomes more pronounced toward the center of the tree. Large diameter branches become more ridged-and-furrowed and do not show the exfoliation. I much prefer the more subtle bark characteristics of river birch over the obtrusive white-barked species. As mentioned, there is tremendous variation in bark color and one enterprising nurseryman has selected a superior form that exhibits almost white bark. The first named cultivar of river birch has been called 'Heritage' and may, with time, supersede the white-barked birches in the landscape trades. The bark actually varies from white to a bloomy salmon pink and is striking in the winter landscape. The leaves are about 1½ to 2 times as large as the species and are more resistant to leaf spot. It also displays excellent bronze birch borer resistance. I have seen large plants of 'Heritage' and would label it a "can't miss" landscape plant of the future. Several nursery firms are offering it as rooted cuttings.

River birch sheds its seed in spring which is opposite that of most birches. In late spring, the high water is receding and silty shore lines are exposed which offer the best possible place for the wind-blown or water-borne seeds to germinate. It is best transplanted in spring and prefers a moist, acid soil for best growth. In alkaline soils, chlorosis can be a problem. During the extreme drought of 1980, trees in landscape settings dropped many leaves. Supplemental watering is necessary under these conditions. If properly watered and fertilized, river birch will easily make three feet of growth per year. I see no reason why it could not be handled as a container plant.

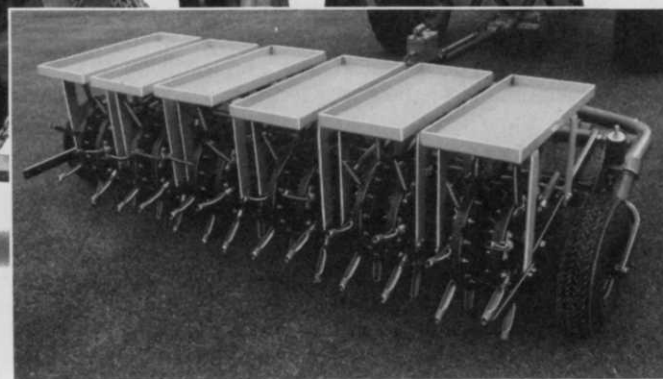
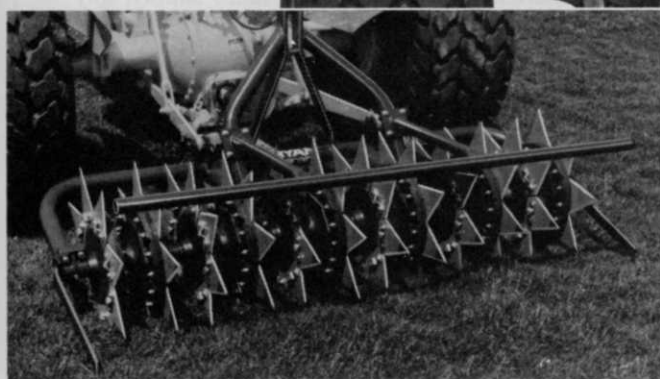
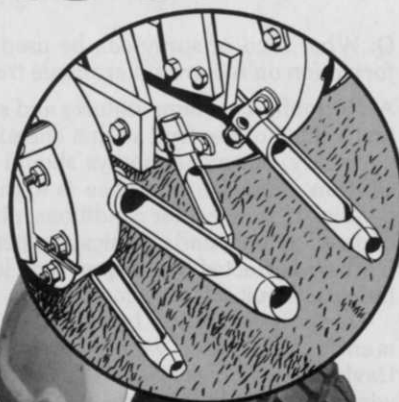
Cuttings can successfully be rooted under mist. They should be taken during June and July, treated with a hormone (we have used 1000ppm IBA/alcohol; quick dip), and placed in a suitable medium under mist. Seeds can be sown in the spring as soon as they are collected. Due to the light sensitive nature of birch seed, it should be barely covered or sown uncovered and kept moist. Percent germination is usually low.

River birch is a great tree and many authorities have often raised the question relative to its scarcity in the landscape. As plantsmen, nurserymen, landscape architects and homeowners become more aware of this tree, it will assume a rightful place in the forefront of landscape plants. **WTT**



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# VEGETATION MANAGEMENT

By Roger Funk, Ph.D., Davey Tree Expert Co., Kent, Ohio

**Q:** What kind of spray can be used to prevent seed formation on mature silver maple trees?

**A:** Normally, cool temperatures and spring frosts eliminate much of the fruit so that chemical control is not necessary. Hormonal sprays should be applied with caution since the response is highly variable, depending upon weather conditions, plant species, stage of development, and chemical concentration. Fruit set is often unaffected by the spray, and leaf distortion and increased fruit set are common.

The only reference I could find that specifically mentioned maples was an article written by Dr. Davidson (Michigan State) in 1972, entitled, "Preventing Fruiting of Ornamental Trees." His suggested application for maples was naphthyleneacetic acid (NAA) at a concentration of 40-60 ppm sprayed at full bloom. The results were listed as poor to fair. You should check with your local extension agent to see if NAA, or any other materials, are presently labelled for prevention of seeds on maples.

**Q:** How can you tell if a gas leak caused a tree to die?

**A:** Assuming you are referring to a natural gas line, call the gas company and have the area checked for a leak.

Damage usually occurs in a circle radiating out from the source of the leak with the most serious injury occurring over the leak. If the tree is planted in a lawn, the turfgrasses will turn brown in the affected area. Also, the soil is often abnormally dry with a sour gas smell and the roots an abnormally dark color.

**Q:** Several of our golf course fairways are lined with Australian pine trees. The shallow root system of the pines prevents the establishment of good Bermuda turf in these areas. Can Australian pines be root pruned without causing damage to the trees themselves? If so, what equipment do you recommend for this pruning? (Orlando, Florida)

**A:** Australian pine (*Casuarina equisetifolia*), also called Beefwood, is a vigorous grower and should not be injured if root pruned properly.

Starting at the dripline (the outermost tip of the branches), measure the distance to the trunk. Root pruning cuts should not be made closer to the trunk than one half the total distance from the trunk to the dripline. As a precautionary measure, you may want to root prune a few trees and observe the effects over one season.

A hydraulic spade such as used in digging trees should easily cut the roots while causing minimum disruption to turf.

**Q:** Why are white birches so hard to grow? (Ohio)

**A:** Every plant has a climatic zone of adaptation within which it grows. At the northernmost and southernmost limits of this zone, plants do not grow vigorously and

are more susceptible to stress conditions such as certain insects and diseases.

White or paper birch (*Betula papyrifera*) will grow in Ohio but the warm-season temperatures and fluctuating soil moisture predispose it to the bronze birch borer which infests weakened trees. Heavy infestations usually kill the trees.

Vertical mulching, pruning, fertilization, and watering when needed are recommended to keep the trees growing as vigorously as possible. Most trees will also require several applications of insecticide every season. A more practical solution would be to plant birches more adapted to a warm climate.

**Q:** What is an acaricide?

**A:** An acaricide is a miticide, or more simply, any chemical used to kill mites.

**Q:** How can I get rid of crowfoot in bentgrass? This is a problem on all golf courses in this area and it gets worse each year. (North Carolina)

**A:** The extension service in your area has told us that crowfoot is a common name for goosegrass (*Eleusine indica*), although it may be confused with other coarse-bladed grasses. Goosegrass is an annual grass with a prostrate, star-shaped growth pattern and distinctive seedhead. It can be controlled with pre-emergent herbicides such as bensulide applied in early May or before the soil temperature stabilizes above 75°F.

**Q:** We have been searching for a growth regulator to be used on Bermuda 419 turf around sand traps. We have been looking at Atrinal, by Maag Agrochemicals Marketing, but cannot find any information concerning turfs. Do you know of any growth regulators that will work on turfs?

**A:** At the present time, Atrinal is not labeled for turf and the cost is not competitive with mowing.

The most commonly used chemicals for turf growth retardation have been maleic hydrazide (MH-30, Retard) and chlorflurenol (Maintain CF-125). In 1978, Embark 2-S (Mefluidide) was introduced and has shown favorable results on common Bermudagrass. Although Embark 2-S appears to have overcome some of the serious disadvantages of maleic hydrazide and chlorflurenol, all growth retardants slow turf recovery from environmental and other stresses.

I would suggest that you test one or more of the products to determine how they perform under your conditions. The basic producers are:

Maleic hydrazide — Uniroyal Chemical

Chlorflurenol — U.S. Borax

Mefluidide — 3M Company

**Send your questions or comments to: Vegetation Management c/o WEEDS TREES & TURF, 757 Third Avenue, New York, NY 10017. Leave at least two months for Roger Funk's response in this column.**

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contribution to the environment through a Sesquicentennial Project. The citizens of Marshall had planted more than 16 new trees and created a self-guiding "Tree Tour" to help celebrate the city's 150th birthday.

Les Bork, Jr., governor of the Illinois chapter, gave the other award to Carriage Hill of Glenville, Illinois, for an outstanding use of living plants in its renovation of a 125-unit condominium. Flowers, shrubs, and trees for shaded walkways had been planted to give a new look to Carriage Hill.

The award, a beautifully engraved walnut plaque, is designed for individuals, companies, governmental agencies, churches, clubs, and communities which use the green gifts of nature in publicly accessible locations.

#### ASSOCIATION

### Power equipment distributors organize

The Outdoor Power Equipment Distributors Association was recently formed by leaders of the billion-dollar

industry at the GIA Show in Baltimore, Maryland. Officers and directors of the new association were elected.

Joe H. Brady, Jr., of Joe H. Brady & Associates, Inc., Birmingham, Alabama, was elected president; Wyn Eaton of Eaton Equipment Corporation, Hamburg, New York, was named vice president; Bill Niemeyer of the Niemeyer Corporation, West Chester, Pennsylvania, became secretary; and Joe Porter of Porter Brothers, Inc., Shelby, North Carolina, was voted treasurer.

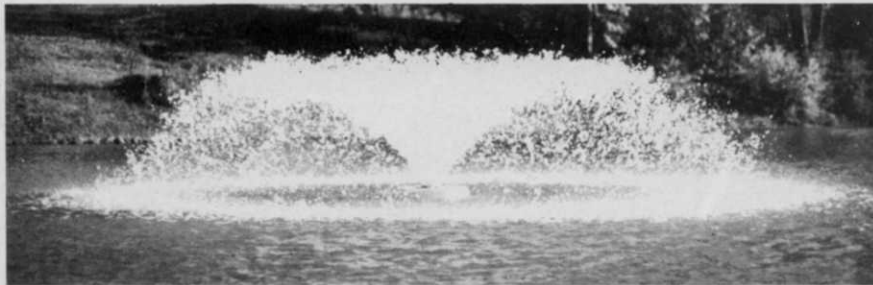
The firm of Fernley & Fernley, Inc., has been retained to provide management services for OPEDA. The Fernley & Fernley offices, at 1900 Arch Street, Philadelphia, Pennsylvania, will serve as association headquarters.

#### PLANT CONTROL

### Meeting held on aquatic plant control

The 15th annual meeting of the Aquatic Plant Control Research Planning and

*Continues on page 71*



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## News from page 58

Operations Review was held November 17-20, 1980, at the Sheraton-Savannah Inn in Savannah, Georgia. Approximately 140 engineers and scientists attended.

Reports on aquatic plant problems were presented by various district representatives, and talks were given by specialists in all areas: biological, mechanical, and chemical control.

William N. Rushing of the Waterways Experiment Station in Vicksburg, Mississippi, said, "It was one of the finest meetings we have had because of the caliber of the papers presented and the interest shown by the people there."

## CONFERENCE

### Expanded turf show draws 1,200 in Jersey

More than 1,200 people attended the New Jersey Turfgrass Expo '80, which commemorated the 10th anniversary of the New Jersey Turfgrass Association.

The conference, held at the Cherry Hill Hyatt House, presented a diversity of programs on turf and received numerous favorable comments on the speaker-topic selection, according to Dr. Henry Indyk, general chairman.

The first day's topics related to insect and weed control; the second day was divided into special sessions on golf and fine turf and lawn and utility turf; and the third day focused on lawns and sod. The golf sessions focused on the needs of bentgrass and control of annual bluegrass. A lively discussion occurred in the utility turf session concerning athletic fields, which also included baseball field care.

## GROUNDS

### Members of grounds society share ideas

An innovation at the Annual Conference of the Professional Grounds Management Society was a "Brag Night," in which members had a chance to give impromptu 15 to 20-minute talks and slide presentations about their accomplishments.

Attendance at the Conference was better than usual, with about 150 people present, according to Allan Shulder, executive director.

The Society elected new officers for 1981. John Van Vorst, who served last year as president-elect, was automati-

*Continues on page 71*