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All brains and brawn. 1000-pound capacity, mid-size, powered by a 36-volt high efficiency electric motor. Perfect for hospitals and campuses, wherever quiet efficiency is as important as durability.



The GXT-300

This tough gas-powered three-wheel vehicle is perfect for light to medium-sized loads. A two-cycle, oil injected, 244cc engine keeps it running efficiently. It has a 1000-pound capacity, and is engineered especially for easy maneuverability.



The PC4GX

E-Z-GO's gas-powered, 4-passenger personnel carrier is your best bet for moving staff and clients around resorts, hotels and worksites quickly, efficiently, and economically. Headlights, taillights, brake lights, horn, oil-injected engine are only a few of the standards.



The PC4X

Where quiet is key, our efficient electric-powered personnel carrier is the answer, complete with an onboard charger, retractable AC cord and stainless steel battery racks.

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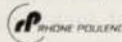
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CHIPCO 26019

Taking care of business.

Winter injury

Understanding the causes of winter injury of landscape plants will help you avoid the effects, says a *Weeds Trees & Turf* technical advisor.

by Douglas J. Chapman

To consider protection against winter injury for landscape plant material, you have got to understand the causes of winter injury: low temperature, rapid temperature fluctuation, degree of dormancy, desiccation, and physical injury.

Low temperature injury is generally accepted as the critical temperature at which the plant tissue is killed.

Frequently, the temperature differs for flower buds, vegetative buds, stems, and roots. Plants native to northern areas—the Great Lakes region (Michigan, Wisconsin) and the Northeast—are generally capable of withstanding low temperatures of minus 25 to 35 degrees Fahrenheit before cell freezing and tissue death occur.

The ability to withstand a low cardinal temperature is controlled genetically and is affected by the amount of carbohydrates accumulated within the plant.

Generally, the higher the plant's accumulated carbohydrates, the lower the temperatures it will tolerate.

Temperature fluctuation

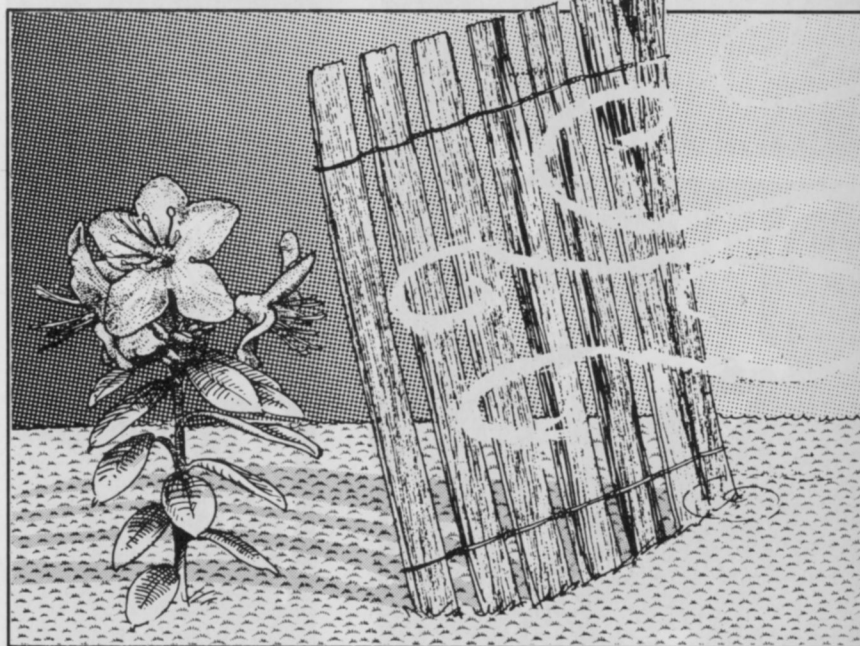
Rapid temperature fluctuation is frequently a more important factor in winter injury. When the temperature drops rapidly after several warm days, some injury may occur.

This type of winter injury occurs during February and March when the temperature may drop 30 degrees or more in one day.

Frequently, hardy plants are damaged. Often heavy mulching of the root system with organic matter (bark, compost, peat moss) is used to protect these plants.

Mulch acts as does the insulation in our homes to modify temperature fluctuation.

Mulch should be put on just prior to soil freezing to limit not only the effect of cold temperatures but also to help keep the soil cool longer in the spring, therefore delaying premature



commencement of growth.

Plants with a rather tender top—roses, for example—can be protected by mulching the crown and the upper portion of the plant with straw or similar material.

This crown mulch is designed to slow the rate of temperature fluctuation, thereby protecting the plant's flower and vegetative buds from damage.

Dormancy and desiccation

Degree of dormancy also impacts whether a plant will be injured by low temperatures.

Plants that go dormant due to the photoperiod include many of the more northern native species (sugar maple, red maple, red oak, *Viburnum prunifolium*). They are slow to break dormancy and are most often tolerant of early spring temperature thaw.

Plants that go dormant due to cold temperature can lose dormancy quickly (forsythia, hydrangea) and can be dramatically injured during January or March thaws.

Desiccation is a particularly severe

problem on narrow and broad leaf evergreens, occurring in late February or March when the soil is still frozen, air temperature is high, and the sun is shining.

The foliage starts transpiring, or losing water. Yet the soil is frozen and the roots are unable to absorb water.

To protect against this type of winter injury, one should consider either companion plantings or shielding the individual plants.

A fine example of companion planting is planting rhododendron with pine, allowing the rhododendron to be understory to the pine tree.

A good rule of thumb is the smaller the leaf of the rhododendron (*R. carolinianum*, *R. laetivirens*), the more tolerant it is of sunlight. Conversely, the large leaf rhododendrons (*R. catawbiense* or *R. maximum* cultivars) are less tolerant, thus requiring more shading.

Wind protection

Shielding is nothing more than placing wind breaks on the windward side of the plant.

continued on page 56

“Let **Blazon**™ take the guesswork out of spraying!”



That's right! All of us have seen it before — that unacceptable area in our fairways or lawn. Just as important, an area where chemicals have been over-applied and a burned condition exists, and that can mean extra work for you. ❑ It's difficult to spray accurately and consistently on golf courses because every golf course is made up of countless slopes, contours, and bends. But with Blazon™ Spray Pattern Indicator you can take the **guesswork** out of spraying, **forever**. ❑ All you do is add Blazon™ right to your spray tank; it's totally compatible with the chemicals you use. It reduces lost time by quickly identifying a clogged nozzle, untreated or overlapped areas. In addition, Blazon™ is temporary and non-staining. ❑ Blazon™ Spray Pattern Indicator is the **new solution** to a never-ending problem. So contact the distributor nearest you for the product that has taken an art and turned it into a science—“**The Professional Solution for Professionals**”...



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Shielding can be made of snow fence, burlap, or branches of discarded Christmas trees. You can use anything that decreases the velocity of drying winds or provides shade from the bright late February or early March sun.

A list of plants you may consider protecting includes rhododendron, andromeda, mahonia, holly, yew, and upright juniper.

Physical injury

Physical or mechanical injury may be the result of snow, ice, or rodents.

Many plants, such as yew and spruce, can be damaged due to the weight of heavy, wet snow. This causes discontinuity in the vascular tissue and renders the plant susceptible to injury during the following growing season.

Ice injury (which may be simply broken branches or a bent over plant), in contrast to heavy, wet snows, is hard to control.

The heavy, wet snow can be knocked off the plant within 24 hours but the injury caused by ice can be catastrophic as there is little or no pro-

tection you can offer.

Rodent injury can be devastating. They prefer a few favorite plants including the rose family (roses, apples, pears), cherry trees, *Euonymus alatus*, and yews.

Rapid temperature fluctuation is frequently a more important factor in winter injury.

A resident cat may be the best control for this type of injury.

Another solution is wrapping the lower 18 inches of the plant with 1/2-inch hardware cloth.

Furthermore, putting out poison baits can reduce populations to where injury is essentially non-existent.

Other alternatives

Plants, especially broad leaf and narrow leaf evergreens, should be deeply watered just prior to the freezing of the soil.

This deep watering helps supply

sufficient moisture to plants that continue to transpire, enabling the plant to replenish some lost moisture that has transpired during the cold winter months.

Furthermore, mulching the plant just prior to soil freezing allows an opportunity for the roots to function, thus surviving long cold/dry periods.

When considering winter protection, you should remember that you are trying to:

- minimize temperature fluctuation;
- reduce water loss due to transpiring—be it by use of anti-transpirants applied to the foliage or shielding the plants;
- provide moisture during periods of stress by deep watering plants.

As it has been aptly said, "Winter protection is nothing more than modifying the extremes that plants will be subjected to, therefore, minimizing the chance of winter injury and allowing us to grow plants farther north than their range would indicate and adaption allows."

Understanding the plant's requirements and why winter injury occurs gives the grounds manager a course of action to minimize the impact of winter's extremes. **WT&T**

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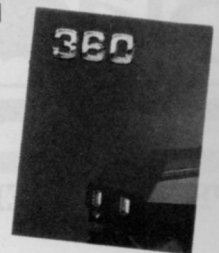
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Direct mail

Some firms make the mistake of using it as their lone marketing tool. It should be just a part of an overall marketing plan.

by Rudd McGary and Ed Wandtke

Is direct mail still a cost-effective method of reaching the consumer?

Judging by the number of green industry companies which have used direct mail in the past decade, you would guess that it is.

But the real answer to that question is twofold:

● **If direct mail is your only method of reaching the consumer, you're in trouble.**

● **Direct mail as a part of a coordinated marketing plan can be valuable—but not as much as it once was.**

Making your point

The company wanting to attract new customers has to use a more sophisticated marketing effort than simply mailing brochures to everyone in a ZIP Code.

The major reason direct mail is less effective today is stated in the second paragraph: everyone is doing it.

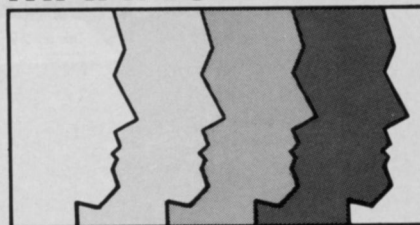
As the consumer is bombarded with direct mail pieces, he either ignores them or becomes confused as to company name or brand identification.

A second problem is lack of originality. Most companies in the green industries produce brochures similar



Wandtke and McGary are owners of All-Green Management Associates, Columbus, OH

MANAGEMENT



IN BUSINESS

to that of their competitors.

You know the style. Pick one. They have a truck, male worker (always smiling), and a child or family on a green lawn.

We have 60 brochures from a wide variety of companies, and if you cover the company name you can't tell the difference.

This benefits the firms that can afford television advertising. If you can't afford TV's steep rates, you should alter your marketing plan to help build a larger customer base.

The following four steps could make you a more effective marketer:

- Coordinate telemarketing with the mailing dates of your brochures.
- Maintain a personal selling force that excels at closing.
- Alter your brochures.
- Know the final objective for using the brochures: to allow a salesperson to make a one-on-one sales effort with the possibility of closing the sale in that time period.

One step further

Before you begin to physically alter your printed pieces, consider these changes.

- 1) Stay away from the industry norm of featuring a happy family or technician in your brochure.
- 2) Consider using drawings as opposed to photos, and make sure your

name is the most prominent feature of the piece.

3) For the sake of readability, don't attempt to explain agronomics to the consumer. Technical reading will turn him off.

4) Try using colors other than green. Dare to be different.

In the past, brochures netted a 2 to 3 percent response rate, even higher in some cases. No more. Now it's below 1 percent in certain markets, and start-up companies are experiencing return rates of below one-half of a percent.

Their direct mail will look different, be coupled with other marketing efforts, and performed in a systematic manner.

We know of one company that mailed 30,000 brochures and received 16 responses. With intelligent marketing techniques, you can prevent these results.

Direct mail can still be an integral part of your overall marketing, but coordinating it with your other marketing tools is the key to attracting new business.

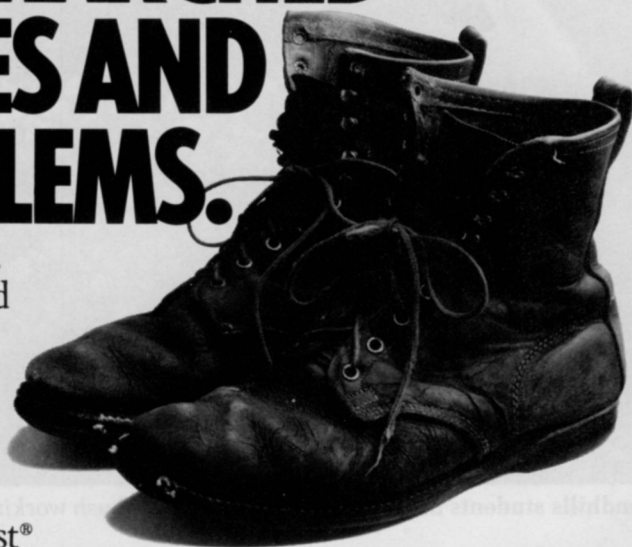
Believing direct mail is the key to attracting new business will lead to disaster.

Aggressive, far-sighted companies are coordinating all marketing efforts in a systematic fashion.

Their direct mail will look different, be coupled with other marketing efforts, and performed in a systematic manner.

They'll be around next year. How about you? **WT&T**

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The result is a complete line of Medalist® turfgrass formulas that meet the demands of the professional turf manager.

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Landscape Pro Mix	School grounds, cemeteries, golf course roughs, home lawns.	Establishes fast. Adapts to broad range of conditions and management levels. Low to moderate fertility needs.
Overseeder II Mix	Fairways, tees, athletic fields.	Rapid germination and establishment. Withstands heavy traffic and resists diseases. Penetrates compacted soils.
Medalist North Mix	Fairways, tees, cart paths, wear areas.	Quality turf for high traffic areas. Clean mowing and disease resistant.
Premium Sod Blend	Commercial sod production.	Exceptional dark green color. Tolerates light shade. Superior disease resistance. Rapid sod producer.
Renovator Pro Mix	Problem solver for heavy traffic areas (athletic fields, golf tees, and fairways).	Penetrates compacted soils and combats <i>Poa annua</i> . Adaptable to most geographic regions.
Medalist Brand Overseeding Products	Winter overseeding of dormant bermudagrass.	Establishes rapidly and evenly. Tolerates traffic while providing a superior putting surface. Smooth spring transition.

Ask your Northrup King distributor about Medalist Turf Products to solve your turf problems.
Or write Northrup King Medalist Turf Products, P.O. Box 959, Minneapolis, MN 55440.



Sandhills students Linda Anderson and Dan Gobush working on the college's annual garden, which they co-designed.

Hands-on experience

Graduates of the two-year horticultural program at Sandhills Community College now work at the White House and Monticello. Others have started their own businesses.

by Sandra Ladendorf

Hands-on experience. That's what the two-year Landscape Gardening program at Sandhills Community College in Carthage, N.C., emphasizes.

Jeff Etheridge, who already has a business degree, came to learn how to design his own supply nursery.

David Ingram intends to become a golf course architect.

Scott McCullough decided horticulture was the field for him while building a greenhouse in California.

Cathy Blair used to be a manager at McDonalds.

Linda Daniel, a Duke University grad, worked as a journalist and in hortitherapy.

Sandra Ladendorf is a freelance writer based in Chapel Hill, N.C.

Linda Anderson, with a degree in botany from the University of North Carolina, has been working in the landscape industry.

They chose Sandhills to receive practical, marketable, landscape gardening experience, leading to a career in the field.

Some came right out of high school. Many have college experience, including advanced degrees.

The educator

The pragmatic program at Sandhills College was developed in 1968 by Fred Garrett, a graduate of the University of Florida and Virginia Polytechnic Institute and State University (master's degree in horticulture, 1966).

His first job was at the Norfolk Bo-

tanian Garden, which Garrett describes as a lovely city park, but not a botanical garden. As headmaster of the school of horticulture, Garrett found a new niche.

"I had never considered myself an educator," he says, "but I found I enjoyed telling others what I knew."

He has spent the next 20 years as an educator.

While at Norfolk, he befriended Fred Heutte, the recently-retired director of parks in that city. Heutte had ties to the Sandhills area of North Carolina and was working with Sandhills Community College to initiate a horticultural program there.

In 1968 Fred Garrett was offered the job of developing a two-year horticultural curriculum for the college.

After accepting, Garrett paid visits