

News & Views

for New Hampshire's Green Industry

June, 2001

IRONING OUT YOUR NUTRIENT MANAGEMENT FOR GERANIUMS AND MARIGOLDS

During this spring, UNH Cooperative Extension staff visited a number of greenhouses in New Hampshire, and a common problem we have observed is iron/manganese toxicity in marigolds and geraniums.

Toxicity symptoms in seed and zonal geranium include necrotic spots and marginal burn, especially on older foliage. Marigolds tend to show necrotic flecks and a bronzed appearance. When plants are stressed to the point of dead tissue, this damage is irreversible. The best quality product that you can hope to produce will have healthy new foliage that covers up the damaged older leaves.

Iron/manganese toxicity is usually a result of a combination of factors. The first is low media-pH. As media-pH decreases (i.e. becomes more acid), iron and manganese becomes more soluble resulting in higher concentrations in the soil solution. Certain plant species, including seed and zonal geraniums, marigolds, and lisianthus, are very "iron-efficient", i.e. they rapidly take up iron and manganese into the plant tissue. It is typically when these two factors come together (low-pH and iron-efficient species) that iron and manganese toxicity occurs.

With standard fertilization practices, media-pH should be maintained between 6.0-6.6 for iron-efficient species including marigolds, seed, and zonal geraniums. Below media-pH 6.0, iron and manganese become too soluble and toxicity can occur in these plants in as little as 1-2 weeks.

Note that other species (for example calibrachoa, diascia, nemesia, and petunia) are "iron-inefficient" (i.e. cannot take up enough iron for healthy growth at high pH), and should be grown at a lower pH range of 5.4 to 6.2. For these iron-inefficient species,

iron deficiency (not enough) is more of a problem than iron toxicity (too much).

The most common cause of low media-pH here in New Hampshire is that many growers are using the incorrect type of fertilizer for our growing conditions, particularly because low alkalinity is common for our water sources. 15-15-15, 20-20-20, 15-16-17 are NOT the best fertilizers for growing geraniums in New Hampshire because they are high in ammonium or urea (which are acidic and lower media-pH), and because they are high in phosphorus (which tends to produce a lighter-green, leggier plant). Consider using a higher-nitrate fertilizer such as 15-5-15 or 13-2-13 during January to April 1. Then after April 1 alternate between 20-10-20 and one of the following: 14-0-14, 15-5-15, or 13-2-13. This fertilizer strategy will result in a more compact and healthier plant than an acidic fertilizer such as 20-20-20.

New research at UNH has led to a complete nutrient management program for iron-efficient species such as geraniums and marigolds. This "Iron-Out" program is based on pre-season preparation, regular soil monitoring, and rapid response to low media-pH or toxicity symptoms. Flowable lime or potassium bicarbonate, when correctly applied, are highly effective at raising media-pH when problems arise, but preventing low media-pH in the first place is the key.

The extension publication on "Iron Out" is available at <http://ceinfo.unh.edu/Agriculture/Documents/flora.htm>.

For more detailed information about pH-management for floricultural crops, also check out the 11-part series by William Argo and Paul Fisher in Greenhouse Grower magazine.

Paul Fisher

Safety – An Issue for Everyone!

Safety is a topic of concern for every business owner. Ornamental firms must consider the safety of not only their employees, but also customers who often roam far and wide on the property in search of that special plant or hanging basket. Questions arise such as: Are your walkways and aisles clear of overhead and foot hazards? Are pesticides stored in approved units? Are parking areas level and free of potholes? Are greenhouse trusses capable of supporting overhead loads? Perhaps it's time to do a thorough safety check of your greenhouse, nursery, or garden center complex. It's never too late to take corrective action!

NATURAL HAZARDS



Hazards come in all shapes and sizes as David Seavey learned when he encountered this snapping turtle! Are there other natural hazards on your property...poison ivy, perhaps?

PEDESTRIAN AND VEHICLE TRAFFIC



Parking areas should be level, firm, and free of large stones or potholes. Customers should be able to easily carry their items to the car without worrying about where they're stepping!

HOSE HAZARDS



Hoses pose a serious ankle-twisting threat, particularly for unaware customers. Post warning signs when watering or consider an overhead support system that will elevate the hose out of harm's way.

PESTICIDES



Pesticides need to be stored, mixed, and applied according to state and federal pesticide guidelines. Be sure pesticide labels are clean and easily readable. Follow all label safety recommendations and keep accurate records!

STRUCTURAL LOAD LIMITS

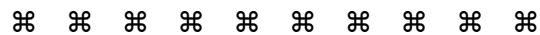


A number of businesses lost buildings this winter due to heavy, wet snow loads. As you look overhead in your greenhouse this spring, consider the weight of your hanging baskets when fully watered. Is your greenhouse designed for such a load? Will it also withstand a strong gale force wind during these months?

Additional Safety Items

- ✓ Electrical connections are secured away from public reach.
- ✓ Fans and belts are encased in a protective covering.
- ✓ Aisles and walkways are level, clean and have a non-slip surface when wet.
- ✓ Hoses are coiled or placed out of pedestrian aisles and walkways.
- ✓ Benches have no exposed, sharp metal edges.
- ✓ Hanging baskets are placed above head height.
- ✓ Entrance and exit signs are easily visible.
- ✓ Steps or changes in grade are clearly marked.
- ✓ Customers are prevented from entering employee work areas.
- ✓ First aid kit is readily available and checked periodically.
- ✓ Employees wash hands before eating.

Nancy Adams



Summer Events

- June 20 Univ. of Massachusetts Turf Research Field Day.** Turf Research Facility, South Deerfield, Mass. \$25 on-site registration. Contact Thom Griffin at (413) 545-3066.
- June 27 Twilight Meeting, New Hampshire Plant Growers Association.** Carpenter's Olde English Greenhouse, Newmarket NH. Contact Ginny Hast at 225-0653.
- June 28 Scouting for Pests and Problems of Woody Ornamentals in the Landscape.** Univ. of Massachusetts campus, Amherst. \$40. Contact UMass Extension at (413) 545-0895.
- July 25 Summer Meeting, New Hampshire Plant Growers Association.** Beans N' Greens, Gilford NH. *Flyer enclosed.*
- July 26 Mass Flower Growers Summer Field Day.** Elm Bank Reservation, Dover, MA. \$15 (dinner extra). Contact Bob Luczai at (978) 952-0116.
- Aug 7 Garden Center Critique and Merchandising Workshop.** Briggs Nursery, North Attleboro, Mass. \$40. Contact Tina Smith at (413) 545-5306.
- Aug 13 Twilight Meeting, UNH Woodman Horticultural Research Farm.** Durham, NH. Contact Cheryl Estabrooke at 862-3200.

Spring Tree and Shrub Problems

This spring, there were a couple of unusual problems on shrubs and trees that are worth noting. You have most likely noticed all the rhododendrons that are 'dead' or at least look as if they are dead. It's a widespread problem that's rather unusual. The leaves are brown and curled, and the flower buds are dead. Many of the plants look as if someone hit them with a blowtorch. The problem is severe winterburn. Not all rhododendrons are affected and even sections of large plants appear untouched, particularly the lower foot to two feet of the plant. The particularly severe winter burn evident this spring was due to the environmental conditions during the winter. We didn't get much snow until late January, so frost did penetrate the soil fairly deeply before we had the heavy snow accumulation in March. The snow remained until late April in many areas. As the days became longer, with brighter sunny days, light was reflected off the snow onto the leaves of the plants. With the additional intense light reflected off the snow, the stomata in the leaves opened, allowing for the rapid loss of water, and desiccation resulted. The leaves were not replenished with water from the roots because the roots were too cold. Even though there was a heavy layer of snow that normally kept the roots from freezing, the early frost accumulation kept the soil temperature too low for the absorption of sufficient water to replace what was lost to transpiration.

The leaf desiccation happens to some extent every year, but this is the worst I have ever seen. The least affected plants were those located on the shaded, North side of buildings. The bottom one to two feet on many plants did not show damage because that's where the snow covered the leaves and protected them from reflected light. The recommendations to growers were to delay pruning

until mid-June (to see what buds would pop). It may take a couple of years for the plants to recover (hopefully next winter won't be as damaging).

The other unusual problem was on oak trees. Many oaks, from northern Connecticut to central New Hampshire, developed brown leaves during the third week of May. Many of the leaves were shriveled and dead. The most severely affected leaves were those on the upper and outer branches. The culprit is believed to be the late frosts that occurred on May 7 and 8. Because oaks generally leaf out later than other tree species, their leaves were still 'soft' and thus more susceptible to the frost injury. Most of the trees should recover and refoliate. There is a Pest Alert titled "Oak Tatters" available from the USDA Forest Service that provides a good description of the problem (available at:

www.na.fs.fed.us, click on library, then pest alerts).

Cheryl Smith



Winter injury on rhododendron

This newsletter is a cooperative effort of the Ornamentals Extension Educators and Specialists at the University of New Hampshire. It is published quarterly. Its purpose is to inform and update industry members on issues and research relevant to the production, use and maintenance of ornamentals and turf in New Hampshire.

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