

H1585 (Revised)

*Horticulture*  
**In North Dakota:**  
*Seasonal*  
*Tidbits*  
*and Tips*

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# Winter Problems

## Causes of Winter Injury to Landscape Plants

**M**ost landscape plants grown in North Dakota are hardy enough to withstand all but the lowest temperatures. Winter death to what are considered hardy landscape plants basically has two causes:

- **Desiccation** – This frequently happens to evergreens when the sunlight intensity is high, causing the plant tissue to become physiologically active. Water is lost at this time and cannot be replaced because the soil water is frozen.
- **Freeze-thaw cycles** – These are common on herbaceous plantings that were not given mulch protection before winter. Freeze-thaw cycles occur during our typical February/March thaws and refreezes. The crown of the plant is heaved, causing roots to be exposed to air temperature fluctuations. The root system has a lower tolerance to temperature extremes and may be killed by a lethal low temperature.

Other causes for physical damage to woody plants are wet, heavy snows, or freezing rains and sleet. Expect this to show up on soft-wooded trees such as silver maples. The weight borne by the branches causes rip and tear breaks. The best action is to clean up broken branches im-

mediately by cutting them back to a crotch or healthy branch.

To minimize winter desiccation, plant sensitive species in sheltered locations, provide companion plantings that are more resistant to winter desiccation, or screen plantings with burlap, evergreen boughs or discarded Christmas trees. All of these measures will slow the loss of water from the valued plant material.

Spraying commercially available anti-desiccants on the plant foliage in late fall and again in late winter will provide adequate protection. The clear, protective film slows water loss from plant tissue exposed to the elements. Be sure to check the label for sensitive plants.

The common term “sunscald” is a poor one because it leads to misunderstanding in many beginning gardeners. This is desiccation that is confined to specific locations on newly planted, thin-barked trees. Wrap landscape plants with paper, burlap or PVC tubing before the onset of winter, then remove the wrapping the following spring once the frost is out of the soil.

Checking the herbaceous plantings as winter grinds to a close to see if resetting or remulching is needed will cut down on loss. Covering the plants prone to heaving (mostly new transplants) with a light organic mulch once the soil has frozen initially will help minimize this type of loss.

## Rabbit and Mice Damage



Prolonged snow cover throughout North Dakota can cause rabbits to damage trees and shrubs through the winter months. The severity of damage can vary from slight to total girdling of the stems or trunk. In some cases, as with single-trunk trees, a complete girdle almost always results in the death of the tree. With shrubs such as raspberries, the season's crop is lost, but the plants are not. Cut the girdled branches back to ground level; new growth will surge forth in the spring.

When a tree has been completely girdled and the plant has high value to the owner, try bridge grafting. For an explanation of bridge grafting, see publication H-1257, “Home Propagation Techniques,” at [www.ag.ndsu.edu/pubs/plantsci/landscap/h1257.pdf](http://www.ag.ndsu.edu/pubs/plantsci/landscap/h1257.pdf). Generally, if the tree is just one or two seasons old, replacing it is better than attempting a patch-up job.

Take preventive measures before winter arrives and provide proper protection.

Mice or voles also will cause heavy damage during extensive snow cover, with the evidence not showing until snowmelt the following spring. The treatment and prevention are the same as for dealing with rabbits and mice.

## DEICING SALTS



Deicing salts are used throughout our region in an attempt to control ice buildup on paved surfaces. The most economical material for cities and counties to use is sodium chloride, which is mixed with sand. As the spray drifts onto plant tissue, it can cause plant tissue dehydration to accelerate, sometimes to the point of death. Screens of burlap will help protect the nontolerant species: evergreens, both broad-leaved and needle. On turf areas, a good wash-off with a garden hose spray will keep the grass from suffering salt stress. Subsequent rains will leach the salts from the soil.

## *The Proper Time to Prune*

A major portion of the landscape can be pruned during the late winter or early spring months. Doing it on a mild winter's day often will help chase away the blahs and blues of this long season and get the juices flowing for spring planting. Besides, it is great exercise, waking up (or rediscovering) unused muscles.

**Grapes:** Anytime in March or early April.

**Fruit Trees:** Anytime from March to early April.

**Shrubs:** Spring-flowering shrubs should be pruned right after flowering if you want to appreciate the flowers that spring. Otherwise, prune them while they are dormant. Avoid pruning in late summer because this may result in a flush of growth that would not harden off in time to prevent winter injury.

**Evergreens:** Arborvitae, yews (eastern part of the state) and junipers are best pruned before new growth begins in early spring (April or May). A follow-up pruning can be carried out in June or early July to shape the new growth.

**Shade and Ornamental Trees:** Like fruit trees, the best time for pruning most of these trees is late winter or early spring while they still are dormant. Maple, elm, black walnut and birch bleed heavily when pruned in the spring. This doesn't cause a problem for the tree as much as it does for the pruner, who worries about the excess sap flow. A good option is to wait until these trees have leafed completely later in the spring before pruning.

## *A Few Words About Fruit Flies*

**M**any calls come during the winter months about small bugs flying around in the kitchen. When they can be captured and not crushed with a good smack, they inevitably turn out to be the red-eyed characters we studied in entomology classes known as fruit flies. While their presence is an annoyance, they cause no harm.

These little pests originate from fresh fruit sources, where decay and fermentation are taking place. Other than overripe bananas or apples sitting out in a basket too long, other most likely breeding spots are the above-water line in a slow-moving drain or dirty garbage containers. Finding the breeding area often is difficult and requires a good detective's mind.

Techniques to eliminate the breeding sites vary: Use a stiff brush or stick to scrub the slime from inside the drain pipe; a chlorine bleach soak and scrub will eliminate them from garbage containers. Anywhere slimy water collects, a potential problem exists.

In most instances, the fly population is just a temporary annoyance, with the flies disappearing on their own without a source ever being determined.

## Starting Garden Transplants

**L**ate winter is the time most nervous gardeners, both beginners and experienced, begin or at least contemplate growing transplants for their gardens. Many fall into the trap of starting too early only to end up with weak, spindly seedlings, which are the result of too much heat and too little light. Seedlings like this should not be moved into the garden. Instead, dispose of them and begin again with a fresh planting.

Before sowing seeds for garden transplants, make sure you have a constant source of light, controlled heat source (bottom heat is best) and the ability to control watering. The light source is most important and can be met easily with cool and warm white fluorescent lamps or "grow lamps." Seedlings develop best under a 12-hour lighting regime, with night temperatures 10 degrees cooler than daytime temperatures, which should be between 65 and 75 F.

Most seed packets and seed catalogs provide good information on germinating seeds and growing them on to transplants. Some plants, such as petunias, require light and

should not be covered; the ones that require darkness, such as Calendula, should be covered enough to exclude light. The seeds can be germinated in any container that is clean, but the soil or medium should be well-drained, pasteurized material from a commercial source, not backyard garden soil.

Back up four to 10 weeks from the last expected killing frost date to arrive at the date you should sow seeds. For example, Calendula should be sown around the April 15 to 20; petunias, needing 10 to 12 weeks to develop after germinating, should be sown around the end of February or first part of March.

Most home gardeners are better off buying bedding plants at a local retailer than attempting to grow their own seedlings. People always start with good intentions but are unable to maintain the commitment to produce decent transplants for their garden.

## Some Suggested Companies for Seed and General Garden Purposes

**Burpee**, Warminster, Pa.; (800) 888-1447, [www.burpee.com](http://www.burpee.com)

**Johnny's Selected Seeds**, Winslow, Maine; (877) 564-6697, [www.johnnyseeds.com](http://www.johnnyseeds.com)

**Seeds of Change**, El Gulque, N.M.; (888) 762-7333, [www.seedsofchange.com](http://www.seedsofchange.com)

**Territorial Seed Co.**, Cottage Grove, Ore.; (800) 626-0866, [www.territorialseed.com](http://www.territorialseed.com)

**Vermont Bean Seed Co.**, Randolph, Wis.; (800) 349-1071, [www.vermontbean.com](http://www.vermontbean.com)

## BANDING AND HORTICULTURAL OILS

**C**ankerworms are plant defoliators that emerge in the spring shortly after the trees leaf out. They commonly are found feeding on the foliage of fruit and elm trees. These larvae are among the most easily recognized, commonly being called inch worms, loopers or measuring worms. The larvae are a striped light green, brown or black, with only two pairs of abdominal prolegs (as compared with three pairs of prolegs on the fall larvae, which will be hatching and feeding at the same time). The wingless adult female moths hatch from the soil around the base of the trees and begin crawling up the trunk in April to lay eggs.

Because of the wingless, crawling characteristic of the female moth, she is vulnerable to being trapped with a sticky material known as "Tanglefoot." These bands should be in place before April 1 to maximize their effectiveness in trapping. The bands must be at least 2 inches wide to be effective.

Should a tree or trees become heavily infested with cankerworm larvae, a spray program with Dipel or BT will very quickly kill the larvae and not affect other active predators working in the area.

Horticultural oils are one way to control scale, aphids and mites. It's often mistakenly sold as "Dormant Oil." Through improvements in refining, these so-called dormant oils can be used safely on most woody plant species to control many insects.

These oils work by three modes of action: asphyxiation, or the blocking of oxygen diffusion to eggs or scale adults; interaction with fatty acids in the insect cells that lead to disruption of cellular metabolism and eventual death; and disrupting the normal feeding patterns of aphids and leafhoppers.

The only possible disadvantage of using horticultural oils is the slight risk of phytotoxicity. If they are used between 40 and 95 F and when the foliage is dry, and they aren't used when bud elongation is taking place, toxicity should not be a problem for plants. However, some plants are sensitive and never should have horticultural oils sprayed on them. These would include **sugar maples, beech, hickory and Douglas fir**. The oil sprays are not toxic to Colorado blue spruce, but they will cause the spruce to lose their blue color.

## Disease Management – Late Winter or Early Spring

**T**he purpose behind disease management of year is to reduce the amount of inoculum that has overwintered, thus reducing the potential for problems during the current year.

### Apple

**Fire blight** – Prune out all blighted twigs and branches. Make cuts in dry weather 8 or more inches below the visible canker. On trees with fire blight the previous season, a spray of a Bordeaux mixture or copper sulfate will cut down on the survival of the remaining bacteria. Sprays of streptomycin or terramycin during bloom are advisable on susceptible cultivars.

**Apple Scab** – Select scab-resistant cultivars. On scab-susceptible plants, spray before bloom, during bloom and after bloom at set intervals. Start with lime sulfur when the tree is dormant, then move into **Captan** and **Benomyl** when the tree begins leafing out and in later treatments.

**Cedar-Apple Rust** – This is an alternate-host fungus. Remove junipers (commonly and incorrectly called cedars), or at least monitor them closely to remove the fruiting bodies of the fungus to interrupt the life cycle. Fungicides for rust control are **Ferbam** and **Immunox**.

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**Sooty-Blotch and Fly Speck** – These are very descriptive terms for topical diseases that show up on fruit during cool, wet growing seasons. While the aesthetics of the fruit are reduced, the eating quality is not. **Captan** or **Orthocide** can be used as a preventive, starting in early July and ending 30 days before fruit harvest.

**Cherry and Plum Black Knot** – Survey and prune out all diseased branches while still dormant in late winter or early spring. The use of lime sulfur spray at this time also will help control the disease.

**Brown Rot – Captan, Benomyl** and **sulfur** all can be used according to label instructions for control. While good sanitation is a good measure for all disease control, it is especially so for this one. Be sure to rake up and destroy all infected fruit.

**Plum Pockets – Lime sulfur** is a good mixture to use for the control of this disease when the trees are dormant.

**Raspberry Anthracnose – Lime sulfur** or **Orthorix** just before bud break is effective.

**Strawberries Gray Mold and Leaf Spot** – Use **Benomyl** and **Captan** as new growth begins and again when the plants begin flowering.

## Crabgrass and Other Annual Weed Control in Lawns

**L**et's first identify why spring treatments of turf weed problems fail:

- **Misidentification of the weed:** Annual weeds in North Dakota include, but are not limited to, crabgrass, annual bluegrass, barnyard grass, wild buckwheat, shepherd's purse, the green and yellow foxtails and lambsquarters. Often these weeds are seen and a pre-emergent is applied to no avail. Perennial weeds (dandelion and broadleaf plantain) are difficult to control in the spring because of the surge of growth taking place.
- **Waiting too long:** Weeds are most vulnerable when they are beginning active growth, and that's precisely when the pre-emergent herbicides work. As the weed seeds begin to germinate, the herbicide is effective; once established, the effectiveness is reduced or eliminated, depending on the herbicide.
- **Failing to repeat applications:** Seed germination is a progressive phenomenon, not a sprint out of the starting block. A repeat application two weeks later will provide more satisfactory control than any single one will. Crabgrass seed germinates from May until August, thus assuring survival as a pest.
- **Impatience:** This relates to timing. Mature, toughened plants getting through the midsummer heat will not respond to herbicides nearly as well as well-nourished, lushly growing weeds. Get the weeds growing well, then zap them.

Most annual weeds can be controlled when herbicide applications are made at the seedling stage. When the weed is allowed to continue development, a chemical messenger formed in the plant tells it to go from a vegetative to a reproductive stage. Herbicide control is less effective at this stage. When the plant has completed its life cycle and the seeds are produced, the cycle is ready to be repeated, and chemical control no longer is effective on the senescing plants. Generally, herbicides will provide 100 percent control at the germination to seedling stage, 75 percent control at the vegetative stage and 30 to 40 percent control at the flowering/reproductive stage.

Although weeds cannot be eliminated from life, most homeowners create problems for themselves by poor cultural practices: mowing too short, poor watering cycles and duration, no fertilization or poor timing of fertilizer applications, and selecting the wrong grass for a particular site. The following practices should result in better weed control:

- Mow so the grass is 2.5 to 3 inches long.
- Water deeply (4- to 6-inch soil depth) two to three times/week.
- If applying a single treatment of fertilizer, do it in late August or early September; if making two applica-

tions, make one in May after the grass has begun active growth and one in late August or early September.

- Kentucky bluegrass/perennial ryegrass/fine leaf fescues are the best general combination to grow across the state. Salty, dry sites need fairway crested wheatgrass and creeping alkali grass; shaded, damp areas need fine fescue and rough bluegrass combinations.

## Chemical Control of Annual Weeds in Lawns

**Pendimethalin** - (Lesco Pre-M, Scott's, Weedgrass Control, Halts Crabgrass Preventer and others). This is one of the most visible, economical and effective products on the market.

**Dacthal** - It provides excellent control; it's often found in combination herbicides.

**Tupersan** - This one allows the overseeding of desirable grass species while providing excellent control of grassy weeds. It's not as readily available and more expensive than the other products. It is popular with landscapers in the business of installing lawns.

**Acclaim** - This is an excellent postemergent control of grassy weeds and has a low potential for turfgrass injury.

## *Spring Lawn Care for Procrastinators*

**W**ith all the other spring chores needing to be done, lawn care sometimes takes a back seat in priority. In some ways this is good because initiating lawn care too early is often the source of problems later in the season. This is especially true if the lawn needs compaction relief or dethatching. The two operations to correct these problems – aeration and power raking – are best done in the fall. However, if these problems are serious enough to prevent turfgrass cultural practices from being effective, then carrying out either or both operations in the spring, once the grass has begun active growth, usually early May, is acceptable.

Although thatch sounds like a public enemy to be eliminated, it only becomes one when it accumulates in excess – beyond ½ inch in thickness. Thick thatch may be soft and springy to walk on, but it predisposes the lawn to poor water, fertilizer and pesticide utilization, makes it vulnerable to drought, and the roots do not penetrate deeply (if at all!) into the soil below. Other problems, such as diseases and scalping when mowing, eventually will prompt the homeowner to do something about it.

Dethatching should be done when the soil is moist. You usually can rent a machine locally for that purpose. The lawn mower attachments that tout dethatching capabilities are useless and destructive to the lawn and mower. Usually fertilizer, and sometimes crabgrass control or reseeding, is carried out after the dethatching is completed.

Thatch or not, most lawns would benefit from an annual aeration. This is especially true where the turf areas are growing in clay soils. The pulled cores can remain to gradually disintegrate or be raked out or broken up with a power rake (vertical mower). Because the root zone then has an abundance of air, the grass plants will be able to more effectively take up water and nutrients. The result: a fertilization effect.

## **Transplanting Trees and Shrubs Within the Landscape**

**W**hen the need arises and the plant material is not too large for the homeowner to handle, trees and shrubs can be transplanted to better locations for aesthetics or their survivability. The best time to move plants is when they are dormant – early spring before leafout or in the fall after leaf drop.

Tie up branches to cut down on interference and possible damage while digging and moving. The soil should be moist when the digging commences, and as much soil should be moved with the roots as can be handled comfortably.

Start by digging a trench around the tree with a spade, coming out about 10 to 12 inches for each inch of caliper (diameter of the tree trunk) on the stem about 4 feet up. Once the trench is complete, undercut the roots with the spade and lay a piece of burlap on one side of the trench with about half of it rolled to tuck under the rootball. Gently rock the rootball back and slide the burlap under, then roll the ball back in the opposite direction and pull the burlap up around the ball. Secure the burlap tightly with a twine or rope, then lift the tree gently by the ball and move it to the new site. Try to avoid breaking the ball of soil during this whole process. If it should break, don't panic! Chances are the transplant will still survive if the task is completed quickly.

Set the transplant at the same depth in the new location and water in completely. Delay any pruning for at least one year to allow adequate establishment.

Homeowners often attempt to move plant material that is too large for them to handle successfully. Anything above 3 inches in caliper should be left to a professional.

## PLANTING MELONS

**E**ven though they take a lot of space and require a long growing season, many North Dakota gardeners cannot resist planting a few watermelons and muskmelons. Their basic requirements are full sun and well-drained soil. Heavy, poorly drained soil can produce good melons, but soil modifications with organic matter and careful water management are necessary to succeed.

Being warm-season crops, they will not respond well if planted too early in our cold spring soil. Many gardeners will cover the area to be planted with plastic to warm the soil for earlier planting. This also helps get the weed seeds sprouted and killed before the melon transplants are set out.

Gardeners have attempted direct seeding with some success. Generally, they seed about mid-May in the southern part of the state and around Memorial Day in the rest of the state. Transplants should be started about two to three weeks before the intended setting-out date. Plants that have grown too large will not establish well.

Basically, the plants should be set out when two true leaves have appeared. Use peat pots or similar containers in which the plants can be moved with minimum disturbance of the root system.

Planting sites should be protected from strong winds not only for the protection of the plants but also to allow the pollinating insects access to the flowers. This can be accomplished by planting a row or two of borage. This crop can be direct seeded because it comes up easily. By the time the melon flowers are showing, the borage also will be in flower, helping attract bees to the area.

For the typical home garden, the bush type of melons is best because the vines sprawl extensively, creating problems of control.

Muskmelons are harvested when they can be separated from the vine easily, while watermelons can be harvested when the underside turns a pale yellow or if you hear a hollow sound when you knock on the fruit with your knuckles.

## Fertilizing Strawberries For Best Fruit Production



Established plantings of strawberries around the

home often lead to frustration when they fail to bear good fruit or are riddled with disease. Often, the strawberry plantings border turf areas and get an unintentional fertilization when May lawn fertilizer applications overlap the strawberry patch.

Fertilize June-bearing berries immediately after harvest and again in mid-August to aid in flower bud development. Use about 5 pounds of 5-10-5 or a similar mixture for every 100 square feet of plants.

Ever-bearing or day-neutral strawberries may be fertilized in the spring and again in August, using the same mixture and rate as for the June-bearing cultivars.

## Symptoms Of Nutrient Deficiency

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orticultural plantings need regular fertilization to remain productive and healthy. Plant nutrients are divided into the following groups :

**Macronutrients:** nitrogen (N), phosphorus (P) and potassium (K)

**Secondary nutrients:** sulfur (S), calcium (Ca) and magnesium (Mg)

**Micronutrients:** boron (B), chlorine (Cl), copper (Cu), iron (Fe), manganese (Mn), molybdenum (Mo) and zinc (Zn)

### Deficiency Symptoms

- N** - Older foliage turning yellow, dropping off; new growth normal
- P** - Leaf die-back, poor seed development, purplish coloration on old foliage
- K** - Leaf distortion; curling, premature leaf drop; scorched older leaves
- S** - Yellow younger leaves, not interveinal; stunted growth; spindly
- Ca** - Rare; deformed roots, dead terminal buds
- Mg** - Lower leaves yellow-bronze, with veins remaining green
- B** - Thickened, curled and brittle leaves; dead terminal buds; deformed fruits
- Cl** - Not defined
- Cu** - Shoot tip die-back, spotting on young foliage, general chlorosis
- Fe** - New growth yellow, often interveinal, eventually turning white; common
- Mn** - Similar to Fe, but with blackish specks on foliage
- Mo** - Similar to N deficiency, with rolled or cupped margins
- Zn** - Rosetted, yellowish foliage on new growth; "little leaf" appearance

Cool, wet weather often can lead to nutrient deficiencies, especially with iron. This often disappears when the weather warms.

## Mulching For Better Plant Health

**T**

he single most serious problem with ornamental plants in North Dakota is not a disease, insect or mite problem; it is environmental stress. Stress affects plant material in direct and indirect ways. It can cause damage directly and weaken the plants to the point where they are vulnerable to insect and disease attack.

Stress is a problem in the Plains region because we, in our landscaping efforts, are attempting to grow "alien" species (non-native for the most part). If the Great Plains were allowed to revert to their native state, we would find very few woody plant species.

The home base for most of the woody plants used in the landscape is forest environments. Turfgrass growing up to the base of landscaped trees is an unnatural state; in the natural state, these same species are growing in a cool, moist, shaded soil covered by a blanket of decaying leaves and wood. Compare that with the capricious conditions of a typical landscape setting in the Plains: extremes of heat and cold, prolonged dry spells, compacted soil, and turfgrass competition for water and nutrients.

Other than planting only the few native species in our landscapes, the stress problem can be alleviated by mulching the trees and shrubs we choose to plant. Here is a list of the benefits of organic mulch:

- **Water conservation** – This keeps the water available longer to the root system.
- **Insulation** – Mulch protects against temperature extremes, resulting in less injury.
- **A barrier for turfgrass** – This has a double benefit of keeping mowers away from the base of trees where injury can occur, and it eliminates the competition from turfgrass roots for water and nutrients.
- **Weed control** – Organic mulch at a depth of 4 inches will smother most weeds.
- **Better soil condition** – The "organic tea" that results from gradual breakdown of organic matter improves the soil.

A number of organic mulches are available. They include wood chips or shredded bark, ground corncobs, soybean straw, leaves, grass clippings and sawdust. Rock mulches create heat islands, do not conserve water and provide an opportunity for mischief.

When applying mulch, put it on about 4 to 5 inches thick to allow for settling to 3 to 4 inches. Mulch an area equal to the drip line for maximum benefit to the trees and shrubs, as well as to the turf, which will do better in full sun anyway. Just be sure to keep a mulch-free zone (about 2 to 3 inches) around the trunk of the tree to minimize rodent damage in the winter.

While mulching will not be a cure-all for our woody plant problems, it can go a long way in relieving many of the stresses they suffer. It will not "cure" trees that are poorly transplanted or receive other improper cultural care, nor will it bridge the gap for trees poorly adapted to their sites.

## *Beware of Some Combination Products*

### Proper Watering

**M**any homeowners fail to understand what the term “proper watering” means. First of all, it means that if rainfall is sufficient in the region and at a particular site, the irrigation system does not need to be turned on and the landscape plants do not need to be watered. When watering is necessary, doing it wisely will save time, money and, of course, water. Here are some pointers:

- **Water deeply and infrequently.** This pattern will help develop deep, penetrating root systems capable of mining water and nutrients from a larger volume of soil.
- **Make water applications uniform.** This is accomplished via a properly designed and installed automatic irrigation system but also can be carried out with the thoughtful placement of a sprinkler.
- **Water efficiently.** This means making water applications when environmental conditions will allow plants to get the maximum use out of the water. Early mornings are best, while evening hours are the worst. Vegetable and fruit plantings are watered most efficiently via drip systems. Part of efficient watering is delivering water at a rate that it will soak into the soil without runoff. Water going down the drain or on the sidewalk does not do the plant material any good.
- **Mulch where appropriate** for all the reasons given earlier.

**W**eed & Feed and Ortho Home Orchard Spray are two good examples of combination products.

The first product often is promoted early in the spring to get rid of weeds and fertilize the grass. Here are two major points you need to know about it:

- This product contains a pesticide (weed killer) and should be handled accordingly. Most of the time, the homeowner handles it as simply a fertilizer.
- When the timing is right for weed control, it isn't right for lawn fertilization. When the product contains a pre-emergent herbicide such as Pendimethalin, it is best applied when the grass is still dormant. Adding fertilizer at this time benefits the grass very little, and the perennial weeds, which already are growing actively, get a boost. Applying this material when the grass is growing actively misses the opportunity for pre-emergent control, having no effect on the already sprouted weeds.

Add to that the extra cost of a combination material and the fact that the dry application of herbicide is not as effective as a liquid application.

The Ortho product is a combination of fungicide and two insecticides. If you read and understand the label, very few problems will arise. But how many people know when bees are not active? The label says to apply this material during blossom time to control brown rot, a fungal disease. The insecticide components (malathion and methoxychlor) are very toxic to bees, and if sprayed during high bee activity (midday), a large kill could take place, with the result being poor or no fruit set.

The fundamental drawback of these combination materials is that both ingredients seldom are needed at once, resulting in waste. You'll get better results when you tackle each cultural practice separately. If annual weedy grasses are a problem, apply the appropriate pre-emergent herbicide, then fertilize with the right formula material when the grass begins active growth.

Daconil 2787 is a broad spectrum fungicide that can be used to control brown rot and other diseases, and several effective insecticides that have a lower bee toxicity are available for insect control. Using separate products to take care of specific problems may be a bit inconvenient, but it's a big step toward environmental responsibility.

## Weather-related Garden Problems

**E**nvironmental extremes, which are normal in our region, can be the cause of many garden problems. These problems eventually may become infectious or simply be the direct result of a major weather shift with no biotic basis.

**Blossom Drop:** This is the failure of plants such as tomatoes, peppers and snap beans to set fruit. It's caused by temperature extremes or dry conditions. Tomato and peppers often will drop flowers if the temperature goes below 55 F or above 75 F. Generally, when temperatures stay consistently high, and when uniform watering is followed (deeply once or twice/week), fruit set will increase.

**Bitterness:** Cucumbers are noted for this when they are grown under stress, which includes high temperatures, droughty conditions and disease problems. Keeping the plants well-watered and free of disease will have an impact on reducing bitterness. Cultivars differ in their tendency to produce bitter fruit. "Sweet Slice," "Burpless Hybrid," Marketmore '97" and "Diva" are known to have fewer problems.

**Blossom-end Rot:** It results in tissue deterioration at the blossom end of the fruit, causing the tissue to turn brown or black. Secondary fungal organisms usually are present in advanced stages. It's found in tomatoes, peppers and summer squash. It is caused by the plant's inability to take up sufficient calcium for the developing fruit. This commonly is a result of root damage, fluctuations in soil moisture or excess nitrogen fertilizer. Avoiding overfertilization, maintaining an even moisture regime and taking care in mechanical cultivation will reduce the occurrence.

**Sunscald:** You'll see white or yellow areas on the sides of the fruit and the eventual collapse of the affected areas. Secondary decay organisms may invade damaged areas. Tomatoes and peppers are affected, usually after defoliation from a leaf spot disease during extreme periods of heat. Select disease-resistant cultivars, and protect plants from disease development with timely sprays. Grow plants in cages or as a vine for maximum foliage protection and reduction in disease development.

**Cracking:** Deep, radial cracks will occur at the stem end of tomato fruits. It typically will show up following a heavy rainfall or irrigation after a long period without rain accompanied by high temperatures. The larger, later-maturing cultivars are most prone to cracking; smaller, earlier cultivars generally are not as susceptible. Mulching and uniform watering will help reduce cracking.

## SHEDDING BARK

**S**hedding bark is a normal consequence of growth on most trees. When young, the bark of most trees is smooth and thin. As the tree matures, the bark layer thickens, the outermost layer dies, and the bark is pushed farther from the cambium, forming ridges. Silver maples, elms and birches are some of the trees that do this in our area. The Shagbark Hickory and Sycamore, popular trees east of the Mississippi, are known for this characteristic. In fact, the material makes good kindling. In Ohio, the mature Redbuds often peel off long strips of bark, revealing an orangish-brown inner bark. As long as this is happening on older trees, you have nothing to worry about. On young trees, this may be a symptom of sunscald, which eventually could kill the tree if you do not take further protective action.

## MOWING NEW LAWNS

 Often the question arises, "When can I mow my seeded lawn? Some grass is 4 to 5 inches tall and there still are some seeds that have not germinated."

**Answer:** Mow the new seedlings at 2 inches as soon as some of the grass is 3 inches tall. Frequent mowing at this height initially will encourage tillering, give the bluegrass a chance to fill in, and result in a thicker lawn more quickly. Once matured, the grass can be maintained at this height. Or, for better stress resistance, fewer weeds, lower water requirements and deeper color, mow at 2½ to 3 inches.

## Dealing With Summertime Turfgrass Diseases

**T**he upper Midwest offers a wide variety of climatic and soil conditions. However, when a particular “weather cycle,” such as a rainy one, sets in, turfgrass diseases that normally are isolated can become contagions across the region. The purpose of this section is to give the homeowner basic guidelines in assessing some common lawn problems and steps they can take to correct and even prevent their recurrence.

Here are the top five most common disease problems with home lawns:

**1. Snow molds – pink and gray.** Both are brought on by wet, unfrozen conditions under snow, or without it. Different organisms (*Fusarium nivale* for the pink snow mold, and *Typhula incarnata* and *T. ishkariensis*) cause similar symptoms to the casual observer. Both begin as light yellow-green areas, with the infected turf becoming bleached, and in the case of the pink snow mold, having a slimy appearance and pink appearance around the edges. Pink snow mold tends to remain patchy, while gray snow mold will tend to run together and form large patches.

**Management:** On the last mowing, cut the grass shorter than usual, especially in a particular area with a history of snow mold problems. Do whatever is possible to improve surface drainage: Core aerate in the fall (around Labor Day weekend), recontour the area with topsoil to keep water from collecting, and avoid late-season fertilization that would overstimulate the grass into producing soft, succulent growth.

Generally, Kentucky bluegrass is not as severely damaged by the snow mold fungi as bentgrass, resulting in very little lethal damage. If this fungus recurs in a given area, overseed it with Park Kentucky blue because it is one of the most resistant cultivars on the market.

Chemical control usually is not necessary and often is too expensive for home lawn treatment. Banner, Rubigan, Termec and Bayleton are the systemic fungicides used on golf course greens to help control these diseases.

**2. Necrotic ring spot – *Leptosphaeria korrae*.** This disease starts out as yellow patches in the spring or fall. The resulting straw-colored patches (dead grass) surrounding a swath of green live grass (creating a “frog-eye” effect) then show up in midsummer. The roots in the straw-colored patches are dead. At that point, no amount of fungicide is going to do any good because the damage was done earlier in the season, when the pathogen was active. Many times, recolonization of the dead areas begins with aggressive Kentucky bluegrass cultivars. Otherwise, weeds begin filling the void of living plant material.

**Management:** This disease lends itself to good integrated pest management practices for control. If the yellow patches are noted in the early spring, a lab



test confirms the presence of the pathogen *L. korrae* and the homeowner has an automatic irrigation system, daily watering with 0.1 to 0.2 inch of water will keep the infected grass alive and showing none of the “frog-eye” symptoms. Keeping the thatch and upper soil layer moist continuously will increase anti-fungal bacteria activity, helping prevent new infections in late summer and early fall.

Adequate nitrogen level maintenance is necessary for recovery and prevention. Research has shown that natural sources of this element in products such as Restore, Lawn Restore and Milorganite will help provide this balance and supply a bank of microorganisms to stimulate the natural microflora that will help suppress the disease.

Fungicides are effective only when used in a preventive manner. Rubigan and Banner are two common choices.

**3. Summer Patch** – *Magnaporthe poae*. This is typically a problem with peat-sodded lawns on heavy clay soils during periods of high temperature stress and excessive irrigation. The symptoms are similar to necrotic ring spot, showing a “frog-eye” appearance. Only lab tests can determine which disease exists, so both of these diseases are dubbed “summer patch disease syndrome,” with treatments for control being the same.

Summer patch is evident when a sodded lawn with heavy thatch is watered on a daily or every-other-day basis, resulting in oxygen being driven out of the root zone.

In addition to using the same treatment schedule as in managing necrotic ring spot core aeration of the sodded turf will help in the oxygenation of the root zone. This can be done annually or twice annually: around Memorial Day and again around the Labor Day weekend.

**4. Cottony Blight** – *Pythium spp.*. This disease is a relative to damping-off, which often is experienced while starting seedlings. It develops during hot, humid weather toward the latter part of the summer in areas that are noted for poor air circulation and surface drainage. Suspect this disease if a section of lawn seems to have turned brown literally overnight. It also often shows first with a cobweblike fungal growth that is mistaken for spider webbing. Many times, the disease stops at that point, with nothing more than isolated dead spots, which recover in cooler weather.

**Management:** Good surface drainage is essential to control this disease. Annual core aerations, along with proper irrigation timing and duration, would help. Early morning, infrequent irrigations are best. Avoid nighttime watering. Maintain an adequate but not excessive nitrogen level.

The fungicides such as Banol, Subdue and Ailette will help control the further spread of this disease, but nothing beats good cultural practices in preventing it.

**5. Rust** – *Puccinia spp.* This disease is one that draws the most exasperated reactions by homeowners because of the “orange dust” all over their mowers, shoes and pants. It generally shows up on lawns that have been seeded within the last year or so and may be under some drought, heat or nutrient stress. Because it shows up in late summer, many homeowners fret that it may kill their lawns. This is not likely to happen, because the pathogen is not known to be fatal to turfgrass.

**Management:** The best management is to correct the deficiency, which is usually nitrogen (N). Make a light application, about 0.25 to 0.50 pound of actual N per 1,000 square feet and water in. The resulting growth can be mowed and collected in a bag for disposal to minimize the spread of the inoculum. In most cases, the rust becomes a nonproblem after the grass matures and is under a regular maintenance regime that includes maintaining the N fertility level.

This disease generally causes more emotional harm to the homeowner than it does to the turfgrass.

## DIVISION OF PERENNIALS

**“W**hen should I divide my perennials?” is a common question. As a sweeping generalization, they should be divided in the season opposite their flowering time. That means spring-flowering plants should be divided in the fall, and fall-flowering plants should be divided in the spring. Many summer-blooming plants can be divided in either the fall or spring. This allows for maximum energy utilization for foliage and root production, with the result being healthier and showier flowers the following season. Here is a list of some perennials that can be divided in the fall:

***Achillea x ‘Coronation Gold’*** – This is one that can be divided in the spring as well. It does best in full sun and well-drained soil. Divide every three to four years, or as desired.

***Ajuga reptans*** – The bugle weed is a toughie that will grow in poor soils, making a nice ground cover. While it will tolerate full sun, it will grow better in light shade. It may not be hardy in the northern regions of the state or where snow cover is poor.

***Cerastium tomentosum*** – The snow-in-summer flowers in late spring, making an attractive mat with gray foliage the rest of the growing season.

***Dicentra spectabilis*** – Bleeding hearts will get about 2 feet tall, although some have grown to 4 feet or more. They do best in an east location or partial shade protected from the wind. Clumps can be divided in the spring or fall.

***Hemerocallis spp.*** – The daylily is such a tough plant that division anytime during the growing season has been successful. Because of the aggressive growth, it usually will need division every three to four years.

***Hosta spp.*** – The plantain lily is a favorite because of the summer flower show and its excellent shade tolerance. Cultivars are on the market that will tolerate full sun. Divide it in the spring or fall as new plants are desired elsewhere.

***Paeonia lactiflora*** – Peonies are the most durable of perennials, many times spanning generations in one location. They grow best in full sun and well-drained soil. Be sure to include three buds with the division, setting it no more than 1 inch below the soil surface. You often need patience because it sometimes takes three years to rebloom after a division.

***Papaver orientale*** – Oriental poppies are a favorite for early summer blooms and are almost equally loved for the attractive, large ferny foliage. They will grow best in partial shade but can take full sun. While they can be divided in the fall, success in re-establishment is difficult. Better to let them stay undisturbed and purchase new plants.

***Phlox paniculata*** – The garden phlox commonly is grown in eastern and southern gardens in North Dakota. Winter die-out may take place where the snow cover is poor. The spent blooms need to be removed to prevent self-seeding and a weakened stand. The clumps should be dug every three to four years with the roots removed to within 2 inches of the crown and the crown replaced.

## Seeding or Sodding a New Lawn

**F**all is the best time to seed or sod a new lawn in North Dakota. The reason this is a much better time than in the spring is because of the different type of growth occurring in the grass plant in the fall. The energy produced by the grass foliage is being transported into the crowns, roots and rhizomes, not in top growth. The turf gets well-established for a good show the following growing season.

Other reasons for fall rather than spring turf establishment:

- Warmer soil temperature for faster establishment
- More dependable weather
- Fewer weed problems
- Fewer insect and disease problems

When referring to “fall” in North Dakota, the time frame is anywhere from the first part of August to mid-September. Beyond that, wait until mid-October to dormant seed. The planting will take off and grow better than waiting until the following spring to get the seed down. With sod, success has been realized right up through mid-October. Just be sure the sod is watered before going into the winter months.

Forget about covering the grass seed with “clean, weed-free” straw. That’s an oxymoron. All straw is dirty, containing weed seeds. The best procedure is to get the seed down first, then cover it with hydromulch, which is a virgin wood fiber that is clean and free of weed seeds. Other than that, germination blankets are the next best choice. These will decompose during a 30- to 45-day period and not contribute any weed seeds.

## Fall Weed Control in Lawns

**F**all is the the best time for perennial lawn weed control. The applied herbicides will tend to be translocated to the root system for a more complete kill. Killing off weeds such as dandelions and broadleaf plantain at this time of year will give the grass ample time to grow into the space left by the dead weeds. Couple this with a fertilization treatment and you almost are assured of a weed-proof lawn the next spring.

For success, identifying the weeds to be controlled is extremely important. For example, dandelions and plantain are controlled effectively with 2,4-D products, but they provide poor control of clover. Dicamba, by contrast, provides excellent control of clover but only fair control of dandelion and plantain.

Here is where a combination product is useful. A combination of 2,4-D, Dicamba and MCPP, also known as Trimec, will give excellent control of all of those (and many other) weeds. But remember, no matter what the combination product may be, some weeds are difficult to control and will require repeat applications. Some examples of these hard-to-kill weeds are violets, ground ivy and creeping jenny. You need patience and persistence to be successful.

## Causes of Premature Leaf Drop

**S**ome years, the leaves on deciduous trees will color and drop 30 to 45 days ahead of normal defoliation. This often is observed on ash, apple, elm, oaks and hackberries. This early senescence is in response to stress the tree species are going through. The stressors could be environmental, such as extended drought, excessively high temperatures, pollution, flooding and soil compaction. Insect activity or disease pressure also could be the culprit. Many times, the problem is a combination of all these factors, coupled with the incorrect plant for the particular site.

Early defoliation should be a concern when it begins before the end of August. Significant leaf loss at this time reduces the amount of stored carbohydrates in the woody tissue for next year’s growth. The plant becomes stunted and further stressed, and eventually succumbs to either an environmental extreme or some biotic factor. Apple scab and other leaf spot diseases showing up on poplars contribute to a shortened productivity or lifetime.

To tell if a tree is going to live another year, examine the buds. If they are plump and soft, and the cambium is a fresh green, chances are it will be back. If the buds are dry or undersized, the specimen may be a candidate for firewood.

## Wildflowers



andscape impacts with wildflowers are on the increase across the country, and for good reason. After a one-year investment in labor and care, wildflower plantings typically need only an annual mowing to redistribute and scarify some seed.

To get started, try to select an area that is free of rhizomatous weeds such as quackgrass or Canada thistle. Kill off existing vegetation with chemicals such as Roundup or via cultivation. The best time to establish a planting is in early summer after the spring flush of weeds has slowed. If you miss this time, then do a fall planting in mid-October. No germination will take place at that time, but the seeds will sprout with vigor the following spring. Do not fertilize, but do provide some water if conditions are dry when you sow the seeds. Some plantings consist of a combination of flowers and native grasses.

This diversity will attract many predator insects, which will aid in providing destructive insect control. Of course, the main reason for wildflower plantings is the seasonal beauty they provide.

Some suggested companies to consider are:

Prairie Moon Nursery  
Route 3, Box 163  
Winona, MN 55987  
(507) 452-1362

Wildflower Nurseries  
P.O. Box 2724  
Oshkosh, WI 54903  
(414) 231-3780

Iowa Seed Source  
110 Middle Road  
Muscatine, IA 52761  
(319) 264-0562

Prairie Nursery  
P.O. Box 306  
Westfield, WI 53964  
(608) 296-3679

## Recent Plant Variety Releases, Horticulture

Plant Sciences Department, NDSU

For a list, visit [www.ag.ndsu.nodak.edu/plantsci/breeding/woodydesc.htm](http://www.ag.ndsu.nodak.edu/plantsci/breeding/woodydesc.htm).

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