# Options for Managing Leaves

Fall yard clean-up usually means having to deal with an abundance of leaves. State law now bans leaves and other types of yard waste from landfills and burning facilities. Several options are available to homeowners, renters, and other generators for managing their leaves. Examples include allowing leaves to remain on the lawn, using leaves as a mulch or for composting, and giving leaves to neighbors or persons needing organic material for their property. Another is to participte in a program sponsored by a municipality or commerical business. These options are detailed below.

**Allow Leaves to Remain on the Lawn**

Smaller quantities of leaves can be left on the lawn if they are mulched down below the top of the grass either with a mulching mower or a regular mower retrofitted with a mulching blade. Mulching is accomplished by cutting or shredding the leaves into very fine fragments, small enough to sink between grass blades and reach the soil. Leaves can be mulched into the lawn one or more times during the fall, especially after the last mowing, which is usually done when the mean daily average temperature is around 50°F. It is important to remove excessive leaf debris from the lawn surface so that the grass is not matted down below the debris. This condition encourages winter lawn diseases such as pink or gray snow mold. Any layer of leaf debris that completely covers the lawn should either be mulched into the grass canopy or removed. Leaves from trees with leaf diseases such as apple scab, fireblight, anthracnose, or leaf spot should be removed to prevent overwintering of disease organisms and possible reinfection of new leaves next year.

**Use Leaves for Mulching and Soil Improvement**

Leaves make an excellent mulch for use in gardens and landscape plantings. Because trees have extensive root systems, nutrients are drawn from the subsoil and accumulate in the leaves. On a weight basis, most tree leaves contain twice the mineral content of manure. As leaves decompose, they add small amounts of nutrients to the soil and improve soil structure. The high fiber content of leaves improves the aeration and crumb structure of most soils. Leaf mulches also conserve moisture by reducing soil water lost through evaporation, minimize soil erosion and compaction from heavy rains, retard weed growth and help keep soil cooler during the warm months.

Whole or shredded leaves can be placed in a loose ring up to six inches deep around trees and shrubs. Avoiding direct contact with tree trunks helps to avoid fungal rots on the trunk and attracting rodents that gnaw on bark. Small amounts of soil and moisture can be put on leaves to help keep them from blowing around.

There are several ways for utilizing leaves in gardens. Whole or shredded leaves can be placed on top of garden soil in the fall and left until spring. Depending on the amount of decomposition that has occurred over winter, leaves may or may

not need to be incorporated into the soil in spring. Another approach is to immediatley incorporate two to three inches of shredded leaves into the top six inches of garden soil after the first killing frost. During the growing season, it is better to compost leaves than to apply them directly around garden plants. Leaves utilize a considerable amount of nitrogen during decomposition process and compete with plants for soil nitrogen. Growing plants can be mulched with finished compost or other materials of a lower carbon content.

Care needs to be exercised when using whole leaves for insulating hardy garden plants during the winter because they tend to form ice sheets and mat down, but well shredded leaves can be used for mulching flowering perennials, raspberries and grapes. Leaf mulch is best applied after the ground is frozen in mid- to late November. If done earlier, rodents my burrow in leaves and damage growing plants. Leaves are not recommended for mulching strawberries because they are more susceptible to damage from matted leaves. In addition, fresh walnut or butternut leaves should not be used as a mulching material in gardens or left on the lawn because they contain a chemical toxic to several plant species. Walnut and butternut leaves can be safely composted. The toxic chemical contained in fresh leaves degrades in compost piles and will not harm sensitive plants when a mature compost product is applied.

**Add Leaves to the Compost Pile**

Leaves make a good addition to compost piles because of their plant nutrient value and high fiber content. (Compost does not however take the place of fertilizers.) Many people hesitate to use compost leaves because some tend to pack down and resist decay. Leaves can be composted successfully by following a few simple guidelines. Shredding is not required but is recommended for speeding decomposition and making leaves easier to control and handle. Materials rich in nitrogen should be added to the compost pile because leaves are difficult to compost alone due to their high carbon content. Sources of nitrogen include manure, grass clippings, fish meal and other commercial fertilizers. Table 1 lists amounts of commercially available nitrogen sources to add to a typical sized leaf compost pile. Apply 0.15 pounds (2.4 oz) for three bushels (approximately four cubic feet).

**Table 1. Amounts of Various Nitrogen Sources Needed to Apply 0.15 Pounds (2.4 oz) Nitrogen**

| Nitrogen Source | % Nitrogen | Ounces to Apply |
|---|---|---|
| Ammonium nitrate | 33 | 7.0 |
| Calcium nitrate | 15 | 16.0 |
| Urea | 46 | 5.2 |
| Dried blood | 12 | 20.0 |
| Fish meal | 10 | 24.0 |

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Leaves should not be allowed to sit around too long and dry out. Leaves exposed to weather lose much of their nitrogen and phosphorus content. This combined with drying out, makes them more resistant to decomposition. Compost piles should be moistened periodically with water to keep them spongy moist. For more information on composting, contact your local Extension Office or see Wisconsin Department of Natural Resources (DNR) Publications

"Home Composting: Reap a Heap of Benefits" and "Home Composting: The Complete Composter".

**Gives Leaves to Someone Who Needs Them**

In some communities property owners may be looking for leaves to use in large gardens, orchards, or on farmland. At least two municipalities in Wisconsin have clearinghouses with names, addresses and phone numbers of people desiring leaves on file. Residents with excess leaves can call the municipality of names of people willing to take their material. This type of exchange could also be initiated on a smaller, more informal basis in neighborhoods, workplaces and community centers. Persons may transport up to 20 tons of household solid waste, including leaves, per year without a transporter license from the Wisconsin DNR. Up to 50 cubic yards of yard waste, including leaves may be composted or landspread per year without Wisconsin DNR approval if done in an environmentally sound and nuisance free manner. People should check with their municipality to determine if there are any local ordinances governing composting or landspreading activities.

**Participate In a Community or Commercially Sponsored Collection Program**

Some communities and haulers have developed yard waste collection program for residents and in some cases, businesses. Yard waste is collected at drop-off sites and/or through curbside pick-up programs. The collected material is managed at compost sites or properties where it is landspread on fields. Collection options include:

- Community-sponsored programs where households rake leaves to the front of their properties near the curb or place them in bags for pick-up. Loose leaves are collected with vacuum trucks, street sweepers, or front-end loaders equipped with raking attachments. Residents in communities that collect loose leaves should check newspapers or contact local officials for exact pick-up schedules. Leaves should be raked near the curb just a day before pick-up. Blowing leaf debris and leachates can cause serious water quality problems if washed into storm sewers. Leaves can clog storm sewers or stimulate weed and algae growth in lakes and streams.

- Hauler-sponsored programs where generators pay to have bags of leaves picked up. Haulers may slit and empty bags into a truck at curbside or simply truck unopened bags to a composting or landspreading site. Some haulers or composting facilities may request generators to use special paper bags for bagging leaves. These bags are often broken apart at composting sites and composted along with the yard waste. In a few communities, haulers may provide customers with plastic wheeled containers for yard waste.

- Drop-off programs sponsored by communities, haulers, nurseries, farmers or other parties interested in managing yard waste. Generators are responsible for delivering materials to a composting or landspreading site, usually in bags. Some drop-off programs may charge a fee for accepting materials. One drop-off program variation is moving collection trailers or roll-off containers left in neighborhood locations for scheduled collection periods.

For information on community or commercially sponsored collection programs, contact the Recycling Coordinator for your municipality or responsible unit. (Responsible units were established in Wisconsin to implement recycling programs. A responsible unit may be a county or a group of one or more cities, towns or villages.) Under current state law, responsible units are required to inform residents about local management options for yard waste. Responsible units or member municipalities can provide services, contract for services on behalf of residents, or work with neighboring communities or commercial businesses to ensure some yard waste management options are available to residents. Other information sources include your local Extension office, area refuse haulers, and the Yellow Pages, where commercial yard waste processors may be listed.

**Options for Shredding Leaves**

Many householders and businesses prefer to shred leaves for mulching, composting or to increase the amount of leaves they put into each bag. Leaves can be shred with a variety of machines ranging from lawn mowers to shredder/chippers. Most unmodified rotary lawn mowers at least partially shred leaves; use of a mulching mower or mulching blade may do a better job of shredding. Mowers shred leaves better when the front end is slightly higher than the rear. Bagging attachments can be used like vacuum cleaners to shred and collect leaves. Full mower bags can be empties onto garden beds, a plastic tarp (for dragging leaves to desired locations) or into a compost pile or leaf bag. Some hardware and garden stores sell electric or gas-powered leaf blowers that are also combination leaf vacuum/shredder machines which collect, shred and bag leaves in one step. These machines cost approximately $50 to $100.

Generators may also purchase or rent a shredder/chipper. Many hardware and rental stores rent these by the hour or half day. Homeowner-sized shredder/chippers cost approximately $250 for a small electric model to over $1,000 for semi-commercial gas powered models. Consider the volume of leaves that need to be shredded before selecting a shredder/chipper. Smaller machines require much more time and effort to handle large volumes of leaves and need more maintenance. Wet leaves clog machines, so leaves should be dry before shredding with either shredder/chippers or lawn mowers. Proper safety equipment and procedures including manufacturer's recommendations for usage should be used when operating power machinery.

**Leaf Burning – An Unhealthy Solution to Leaf Disposal**

The options above are preferred methods for managing leaves. Leaf burning contributes to air pollution, health problems, and fire hazards. Now that people can no longer send yard waste to landfills or burn facilities in Wisconsin, there is growing concern that households and businesses may be tempted to burn leaves on their properties. Open burning of leaves produces particulate air pollutants and chemicals such as phenols and hydrocarbons, which contain toxic, irritant, and carcinogenic (cancer-causing) compounds. Leaf smoke also contains carbon monoxide.

Smoke consists of microscopic aerosol particles, which when inhaled, can penetrate into the deepest regions of the lung and remain there for months or years. Breathing particulates can increase chances of respiratory infection, reduce

lung capacity and the lungs' ability to use inhaled air, and trigger asthma attacks in some people. Moist leaves burned without proper air circulation burn poorly and produce high levels of toxic organic compounds. Some of these, such as aldehydes and ketones, can cause irritation of the eyes, nose, throat, and lungs. A fraction of leaf smoke consists of polynuclear hydrocarbons, some of which are potent carcinogens.

Burning leaf piles create carbon monoxide gas, as a result of incomplete combustion. This invisible, odorless gas when absorbed into the bloodstream through the lungs combines with red blood cells, reducing the amount of oxygen that red blood cells can absorb and supply to body tissues. Results may be a simple as headaches and nausea, or as severe as death, although this is rare with open air burning. Unborn children, newborn infants, smokers, the elderly and persons with heart and chronic lung disease are more susceptible to short carbon monoxide exposures than the general population.

Backyard burning has been the number one cause of wild fires responded to by the Wisconsin DNR during the last five years. Wildfires cause property loss, are expensive to control and extinguish, and endanger health and safety of people and animals.

Clearly, safe, environmentally sound options for managing leaves such as mulching, composting, and landspreading, are much more preferable whether done by generators or on a large scale by communities and commercial businesses. For more information on effects of leaf burning or on leaf management methods, contact your local Extension office.

Written by Holly Johnson, Solid Waste Processing Specialist

Updated 10/2013 by Joe Van Rossum, Recycling Specialist

For further information contact:

**Madison**
UW Extension
610 Langdon Street, Room 317
Madison, WI 53703
608.262.0385 tel
608.262.6250 fax

**Milwaukee**
UWM UW-Extension
161 West Wisconsin Avenue, Suite 6000
Milwaukee WI 53203
414.227.3160 tel
414.227.3165 fax

**Stevens Point**
University of Wisconsin
800 Reserve Street
Stevens Point, WI 54481
715.346.2793 tel
715.346.3624 fax

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