



Backyard or On-Site Composting

TRAIN-THE-TRAINER MANUAL

Montgomery County, Maryland
Department of Environmental Protection
Recycling and Resource Management Division
Waste Reduction and Recycling Section



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Composting.

A better way to recycle
your yard trim.

In Montgomery County, Maryland, it's against the law to dispose of yard trimmings (grass, leaves, brush, and garden trimmings) in the trash.



Since 1994, the County has collected yard trim materials in paper lawn bags or in reusable containers placed at the curb for weekly yard trim recycling collection and transported them to the Montgomery County Shady Grove Processing Facility and Transfer Station for processing.



From there these yard trim materials are transported to the County's Composting Facility in Dickerson, where they are composted into a beneficial soil amendment product called Leafgro®.

The County may process up to 77,000 tons of yard trim materials annually at the County's Composting Facility. Any excess amount of yard trim materials must then be delivered to other composting or recycling facilities at additional costs. However, by composting your yard trim materials in your backyard, you will help reduce the amount of material the County needs to collect, transport, and process.

01 THE COMPOSTING PROCESS

During the composting process, your yard trim materials (organic materials) break down and become a dark, nutrient-rich, sweet-smelling soil amendment. It's a biological process that happens naturally with help from beneficial organisms along with Nitrogen, Carbon, Oxygen, and moisture.

Let's look at how each of these contributes to the success of the composting process.



NITROGEN:

Nitrogen comes from green materials. Nitrogen helps build cell structure and comes from green materials such as grass clippings, flowers, and plant trimmings.



CARBON:

Carbon comes from brown materials. Carbon provides the energy source in the composting process and comes from brown materials such as dry leaves, wood chips, straw and sawdust.



OXYGEN:

Oxygen comes from the air. Oxygen supports the organisms living in the compost pile which are needed to consume and break down the organic material.



MOISTURE:

Moisture comes from added water and materials that are high in nitrogen content, such as grass clippings. Water provides organisms with the moisture needed to live.

These four components work together during the composting process to produce a nutrient rich-soil amendment.

WHY YOU SHOULD COMPOST 02

Composting is more than a biological process; it's a way to improve the health of your lawn, plants, and garden; save money by reducing the need to purchase commercial fertilizers; and help the environment.

HEALTHIER LAWN, GARDEN, AND PLANTS

- Compost is nature's fertilizer. It contains most of the nutrients needed for healthy plant growth, releasing nutrients slowly over time.
- Compost improves soil structure by allowing moisture to soak deeper into the ground.
- Compost promotes better root growth, allowing plants to survive periods of extreme weather conditions (e.g., droughts).
- Compost helps suppress diseases.



ECONOMIC

- Compost reduces the need to purchase commercial fertilizers.
- Compost saves time and money from raking and collecting grass clippings or leaves. Also, if you use a landscaper or lawn care service provider, ask if the cost might be reduced since they will not need to remove your yard trim material.



ENVIRONMENT

- Compost prevents runoff from rain and melting snow.
- Compost reduces the need to use excess fertilizer.



FUN FACT!

Vermicomposting is a method of composting using a special kind of earthworm known as a red wiggler (*Eisenia fetida*), which eats about 1/2 its weight in organic matter each day!

LET'S LOOK AT HOW TO BEGIN COMPOSTING. ➤

03 STARTING A BACKYARD COMPOST BIN

To start composting your yard trim materials at home, you need to choose an appropriate bin. There are three important steps to follow when selecting a backyard compost bin.

STEP 1 GAUGE YOUR COMPOSTING TIMELINE

To select the type of compost bin that works best for you, it is important to know both the amount of effort it takes to monitor the compost pile and the amount of time the composting process takes. The more you monitor the compost pile and ensure the right mix of materials, moisture content, and air, the shorter amount of time it will take for the process to complete.



Hot Compost Piles
Ideal conditions that result in finished compost in about nine months.



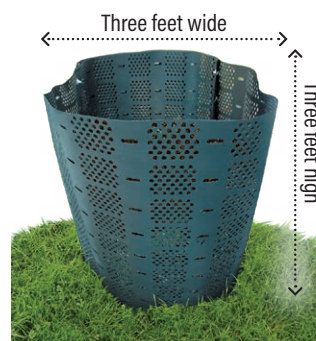
Cool Compost Piles
No time estimate on finished compost. Simply let nature take its course.

STEP 2 SELECT YOUR COMPOST BIN

The next step is to select your compost bin. Choosing a compost bin depends on the following factors:

- ▶ The amount of space in your yard
- ▶ How much material you will be composting
- ▶ How fast you want to get finished compost
- ▶ Your personal taste and style

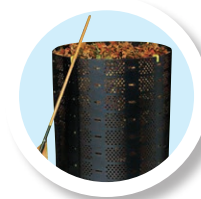
Ideal Size of Compost Bin



Types of Compost Bins

(Sizes vary)

Open Bins



Closed Bins



A compost bin one cubic yard in size (i.e., three feet high by three feet wide) ensures the most efficient rate of composting. If you choose to use a different size of compost bin, be aware this may affect the rate of decomposition of the organic material in your compost bin. (See Appendix A.)

RULE OF THUMB

Compost piles must be large enough to prevent the rapid loss of heat and moisture, but small enough to allow for proper air circulation.

There are many different types of compost bins to choose from. Some options include:

OPTION 1

Get your compost bin from Montgomery County!

- These compost bins are provided by the Montgomery County, Maryland Department of Environmental Protection, Recycling and Resource Management Division, Waste Reduction and Recycling Section
- No additional charge
- Easy to assemble
- Available for pickup at multiple locations. Visit: MontgomeryCountyMD.gov/yardtrim for a list of locations



OPTION 2

Purchase or build your own compost bin!

- There is always the option to create your own bin tailored to your liking
- Purchase a compost bin from one of the following:
 - Local nursery or garden store
 - Hardware store
 - Compost bin manufacturers' website



STEP 3 SET UP YOUR COMPOST BIN

It's time to set up your compost bin. The area where you choose to set up your compost bin is important. Be sure to follow these simple steps:

- Select a convenient location that is not too close to your house and is at least one foot away from any wooden structure (i.e., fence, woodpiles).
- Keep the compost bin at least one foot away from your neighbor's property line.
- Set up your compost bin in either a sunny or shady location. If you choose a sunny location, make sure to check the moisture of the compost pile more frequently since the materials may dry out faster.
- Set your compost bin directly on the ground. Get ready to add your yard trim materials!

NOW THAT YOU KNOW HOW TO SET UP YOUR BACKYARD COMPOST BIN, LET'S LOOK AT HOW TO START COMPOSTING. ➤

04 BUILDING YOUR COMPOST PILE

Once your compost bin is all set and ready to go, it's time to build your compost pile.

TYPES OF MATERIALS

Compost piles consist of certain organic materials that fall into one of the following two categories:

Brown Materials and Green Materials.

BROWN (CARBON-RICH) MATERIALS INCLUDE dry leaves, wood chips, straw, untreated sawdust, empty nutshells, shredded cotton rags, and dryer lint.

Carbon-rich brown materials alone will take a long time to compost. Placing only brown leaves in a compost pile will still result in compost but over a longer period of time. The leaves will become soggy and dense, reducing airflow and increasing the amount of time it takes for the leaves to compost.



DRY LEAVES



WOOD CHIPS



STRAW



UNTREATED SAWDUST



SHREDDED COTTON RAGS AND DRYER LINT



EMPTY NUTSHELLS

GREEN (NITROGEN-RICH) MATERIALS INCLUDE grass clippings, flowers, plant trimmings, fresh hay, and prunings.

Nitrogen-rich green materials speed up the decomposition process, resulting in a finished soil amendment in a shorter amount of time. Materials high in nitrogen decompose very quickly when added in proper proportion to carbon-rich materials.



GRASS CLIPPINGS



FLOWERS



PLANT TRIMMINGS



FRESH HAY











PRUNINGS

RULE OF THUMB:

WHEN IN DOUBT, LEAVE IT OUT!

IMPORTANT!

The following materials should **NOT** be added to your compost pile:

-  Dairy Products
-  Fats, Grease, Lard, and Oils
-  Meats, Fish, and Bones
-  Vegetable Scraps*
-  Coal/Charcoal Ash, and Poison Ivy, Poison Oak, or Poison Sumac
-  Pine Needles and Magnolia Leaves (use them for mulch on top of the soil instead)
-  Pet Waste
-  Plants or Weeds that Have Gone to Seed

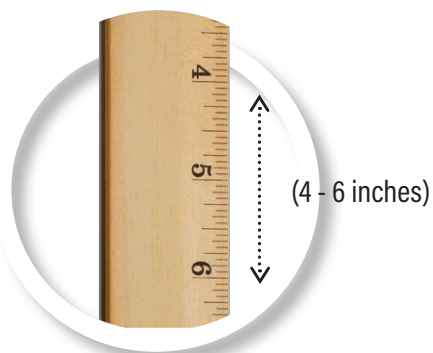
GET THE RIGHT MIX

For the best compost, the proper ratio of brown and green materials is **three (3) parts brown to one (1) part green (3:1) by volume.**

**NOTE: vegetable scraps should not be added to an open compost bin; this can attract pests and rodents. Learn more about composting of food scraps at MontgomeryCountyMD.gov/FoodScraps.*

SIZE OF MATERIALS PLACED IN THE COMPOST BIN

The size of the materials you add into your compost pile affects the composting process. For the best results, try to shred or cut up the materials first before they are placed into the compost bin. The optimal size of materials ranges from 4 to 6 inches.



Optimal size of materials is 4 to 6 inches.



Decreasing the size of the materials in your pile increases the surface area allowing organisms to consume the organic material faster.



Decreasing the size of materials too much may cause them to become too compacted which cuts off air circulation within the compost pile.

AERATION/MIXING

After you add materials to the compost bin, be sure to mix them well.



The organisms in the compost pile need carbon for energy, and nitrogen for cell-growth, and oxygen to breathe. A proper mix of materials helps ensure the organisms thrive and consume the organic material efficiently. During the composting process, the organisms consume oxygen and let off carbon dioxide. It is important to regularly turn the materials to incorporate oxygen back into the compost pile.

FUN FACT!

New compost piles contain 15-20% oxygen!



MOISTURE/WATERING

Moisture is an important part in the composting process. If your materials begin to feel too dry, add more water. The consistency of your pile should feel like a wet, damp sponge. Water is important for the organisms involved in the decomposition process to survive.



TIME

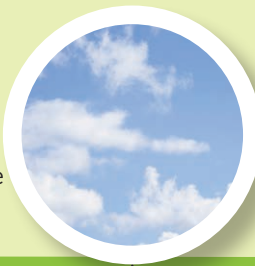
Once you've built your compost pile, sit back and let the organisms do their work. On average, "hot" composting yields compost in as little as nine months; whereas "cool" or "cold" composting yields compost in a longer period of time, typically more than one year.

OTHER FACTORS

Here are some other factors that could disrupt or even stop the composting process.



Including too much carbon-rich material slows down the decomposition process.



Not enough oxygen in the pile causes it to become low in oxygen and can cause odors.



Adding too much nitrogen-rich material can cause odors.



Too much or too little moisture negatively impacts beneficial organisms.

COMPOSTING PROCESS TIMELINE



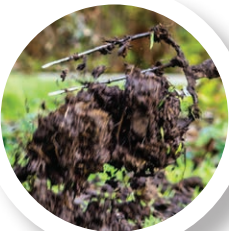
05 MAINTAINING YOUR COMPOST BIN

Now let's look at how to maintain your compost bin.



KEEP THE PILE MOIST BUT NOT TOO WET

- Keeping the pile moist promotes beneficial bacterial growth. Make a depression at the top of the pile to collect rainwater. This keeps the pile moist.
- If your pile gets too dry, add some water or green materials such as grass clippings, which have a high moisture content.
- If your pile gets too wet, add some brown materials, such as dry leaves, to soak up the extra moisture since excess moisture can slow down the composting process.



MIX THE MATERIALS IN YOUR COMPOST PILE

- Stirring your compost pile allows oxygen to enter the pile. Make sure your compost pile gets enough oxygen by mixing the materials every week or two.
- When you mix your compost pile, move the dry materials from the edges of the pile to the center. As you add more materials, be sure to mix them in thoroughly.



MAINTAIN TEMPERATURE RANGES

- The optimal temperature range for an active compost pile is about 120 to 140 degrees Fahrenheit (°F). Keeping the pile in this temperature range for a period of five days creates the ideal environment for the organisms to break down the organic matter in the pile.
- The amount of moisture and Oxygen, the Carbon to Nitrogen (C:N) ratio, and the size of the compost pile can have an impact on the temperature of the compost pile.
- If the compost pile becomes too hot, the microorganisms in the compost pile will become less active, slowing down the composting process. If this happens, mix the pile to cool it down.

FUN FACT!

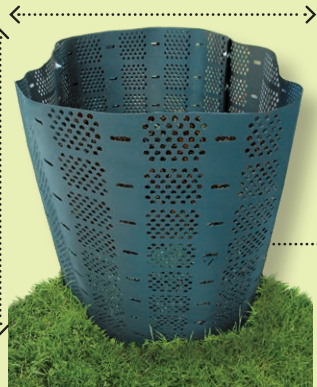
The decomposition process produces heat which is greater than the ambient air temperature.

COMPOSTING TIMELINE

Depending on your particular set-up and how much attention you pay to your compost pile, you can have a finished soil amendment in as little as nine months.

THE COMPOSTING PROCESS IS INFLUENCED BY:

Size of compost bin



Types and size of materials added and how often materials are added



Moisture and oxygen content of the pile



The temperature of the compost pile



Approximately
9 Months



YOUR OWN SOIL AMENDMENT IN AS LITTLE AS NINE (9) MONTHS!

06 SOLUTIONS TO COMMON COMPOSTING CHALLENGES

FREQUENTLY ASKED QUESTIONS ABOUT COMPOSTING

➤ **What should I do if the material in my compost pile feels too dry?**

The decomposer organisms need moisture to live, so you need to add water and/or green materials such as grass clippings. You want the materials in the compost pile to feel moist to the touch, like a damp sponge.

➤ **What should I do if the material in my compost pile is too wet?**

You need to add dry brown materials such as leaves, straw, or sawdust to soak up the extra moisture.

➤ **It doesn't look like anything is happening?**

If the pile feels warm, it's working. To speed up the composting process you may need to add green materials and mix the materials in the compost pile to aerate it.

➤ **Why does my compost pile smell bad?**

Adding only green material to a compost pile can create unpleasant odors, so you need to add brown materials to minimize them. Adding food scraps can also create odors, so be sure to leave those food scraps out!

➤ **What should I do if the leaves become "matted" in my compost pile?**

Shred the leaves first, before placing them into the compost bin. Break up the matted leaves with a pitchfork or shovel. It also helps to add leaves in batches instead of all at once.

COMPOSTING MYTH

VS.

COMPOSTING FACT

Composting is expensive.

Montgomery County, Maryland offers its residents compost bins at no additional charge.

Composting causes odors.

A well-maintained compost pile smells as sweet as the forest floor. Odors happen because of mistakes such as poor drainage, lack of aeration, or the need to add more brown materials in the pile.

Composting attracts rodents and pests.

Yard trimmings won't attract rodents. Just keep food scraps out!



07 USING YOUR COMPOST

Your compost is ready to use when it's crumbly, sweet smelling, and has turned a rich, dark-brown and black color.

NEXT, COMES THE FUN PART: USING YOUR COMPOST!



ADD COMPOST TO YOUR GARDEN SOIL AS A SOIL AMENDMENT

Spread about three inches of finished compost and then mix it into the top six inches of soil.



USE YOUR COMPOST AS A TOP-DRESSING ON YOUR LAWN

In the fall, aerate your lawn and add a quarter-inch layer of fresh compost on your lawn. Adding compost to your turf will improve the health of your lawn.



MAKE YOUR OWN POTTING SOIL MIX

Mix equal parts of compost, sand, and soil, then voila! You have your very own potting soil. Never plant directly into 100% compost; this might adversely affect your plants due to its high concentration of nutrients.

COMPOSTING AT A GLANCE



“I DIG COMPOSTING!”

As you have learned, the composting process uses Nitrogen, Carbon, Oxygen, and Moisture to create a natural soil amendment that benefits your backyard, saves money, and protects the environment. This natural biological process makes composting in your backyard easy! All you need to do is make sure to select an appropriate composting bin, add the right materials to your pile, and maintain your compost pile properly.

When you select your compost bin, the ideal size is three feet high by three

feet wide. Remember, Montgomery County, Maryland provides compost bins at no additional charge for Montgomery County, Maryland residents.

When you add your materials, make sure to add the appropriate mix of brown and green materials needed to create the right balance of Carbon to Nitrogen. But when in doubt, leave it out!

To maintain your compost pile properly, make sure to aerate/mix the materials and add water when needed. Depending on your particular set-up and how much attention you pay to your compost pile, you can get finished compost in as little as nine months.

At the end of the composting process you will have a crumbly, sweet smelling, rich dark-brown/black beneficial soil amendment that can serve multiple uses to keep your backyard lush and green. Use it as a top-dressing on your lawn or mix it in the soil for growing annuals, herbs, and vegetables.

For more information visit: [MontgomeryCountyMD.gov/yardtrim](https://montgomerycountymd.gov/yardtrim).

A

TYPES OF COMPOSTING BINS

APPENDIX

OPEN COMPOST BIN



BINS FOR WORM COMPOSTING



CLOSED COMPOSTING BINS



ACCEPTABLE MATERIALS TO COMPOST

B

APPENDIX

Add any of the following materials to your compost bin:



Grass Clippings



Prunings



Dry Leaves



Untreated Sawdust



Fresh Hay



Flowers



Wood Chips



Shredded Cotton Rags



Plant Trimmings



Straw



Dryer Lint



Empty Nutshells

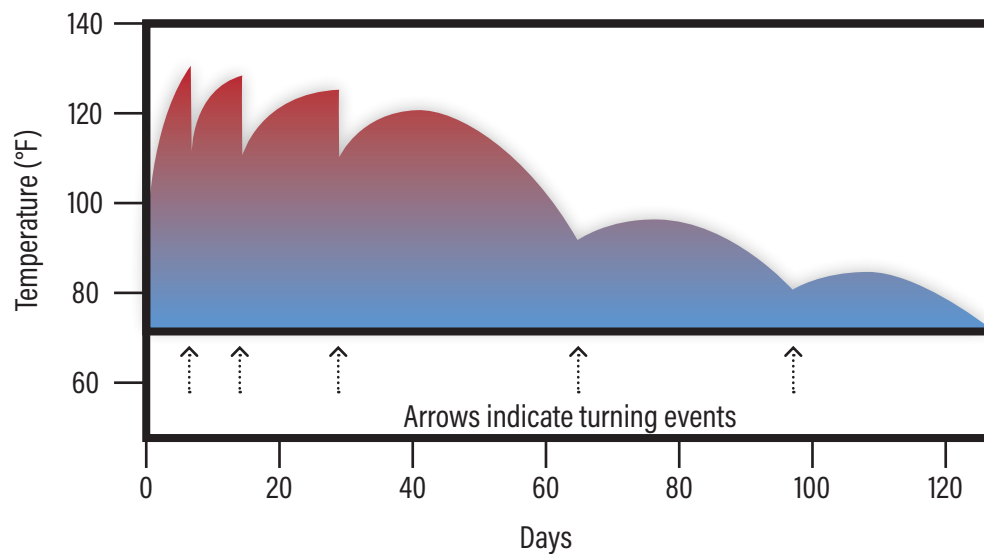
C

TEMPERATURE GRADIENT TIMELINE

APPENDIX

As organisms consume organic matter, they generate heat. Ideal temperatures for your compost pile are between 120°F and 140°F. Above 140°F, most beneficial organisms become less active. The temperature of the compost pile is influenced by the balance of the amount of heat produced by the beneficial organisms consuming the organic matter versus the amount of heat lost through aeration or surface cooling.

COMPOSTING TEMPERATURE GRADIENT TIMELINE



After an initial period of high temperatures, the temperature of the compost pile will gradually drop. Turning the materials in the compost pile rejuvenates the oxygen supply and exposes new surfaces to decomposition, causing temperatures to rise. Additionally, turning the compost pile when it reaches 140°F reduces the likelihood of the beneficial organisms becoming dormant.

For information about composting workshops, as well as educational materials about backyard or on-site composting, visit the Montgomery County Department of Environmental Protection, Recycling and Resource Management Division website at MontgomeryCountyMD.gov/yardtrim or call 311 or 240-777-0311 • TTY: MD Relay 711.

Tip Sheet 5: Vermicomposting: Composting Inside with Worms

What is Vermicomposting?
Vermicomposting is a way to compost fruit and vegetable scraps indoors or if you don't have a big yard or garden to set up a compost bin. All you need to make your own worm bin are special worms called red wigglers (*Eisenia fetida*), fruit and vegetable scraps, and a closed container.

- What Do You Need to Start?**
- Opaque (not see through or at least 12" x 12" x 12" with a lid)
 - Window screen/mesh
 - Duct tape or glue gun
 - Scissors, box cutter, or drill
 - Red wiggler worms, specific to vermicomposting
 - Newspaper for bedding
 - Fruit and vegetable scraps
 - Water

COMPOST BINS

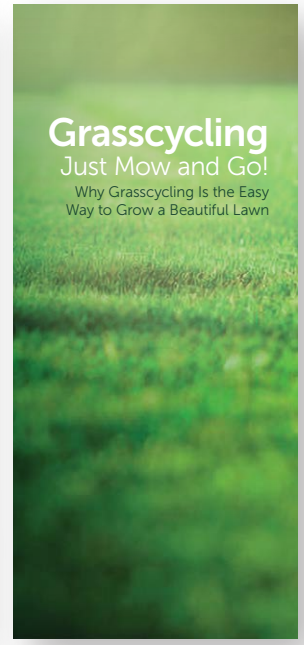
Available at no additional charge for Montgomery County, MD residents only.

Montgomery County, MD Department of Environmental Protection
Recycling and Resource Management Division; 240-777-6480; Fax: 240-777-6445; MD Relay 7-1-1

Available at these locations:

<p>BETHESDA Whole Foods Market™ 3269 River Road Bethesda, MD 20814 301-984-4860 Visit the Customer Service Desk</p> <p>Dove Library™ 1400 Democracy Boulevard Bethesda, MD 20817 240-777-0922</p> <p>BURTONSVILLE Country Nursery, Inc.* 3330 Spencerville Road Burtonsville, MD 20866 301-421-9593</p> <p>CHEVY CHASE/FRIENDSHIP HGTS. Audubon Sanctuary Shop* 8940 Jones Hill Road Chevy Chase, MD 20815 301-652-3606</p> <p>Whole Foods Market™ 4420 Willard Avenue Chevy Chase, MD 20815 301-657-1520 Visit the Customer Service Desk</p> <p>DAMASCUS Damasus Library™ 9701 Main Street Damasus, MD 20872 240-773-9444</p> <p>DERWOOD Montgomery County Recycling Center (Effective 1/15/2020) 14102 Frederick Road Derwood, MD 20855 3-1-1 / 240-777-0311</p>	<p>GAITHERSBURG Whole Foods Market™ 314 Kentlands Boulevard Gaithersburg, MD 20878 301-258-9500 Visit the Customer Service Desk</p> <p>KENSINGTON Kensington Park Library™ 4301 Knowles Avenue Kensington Park, MD 20895 240-773-9515</p> <p>OLNEY-SANDY SPRING Good Earth Garden Market™ 1410 Olney-Sandy Spring Road Sandy Spring, MD 20860 301-774-2631 (Closed for Winter)</p> <p>POOLEVILLE Pooleville Library™ 17633 Fisher Avenue Pooleville, MD 20837 240-773-9550</p> <p>POTOMAC Good Earth Garden Market™ 11630 Falls Road Potomac, MD 20854 301-765-0228</p> <p>Potomac Garden Center* 12024 Darnestown Road North Potomac, MD 20878 301-948-8890</p> <p>ROCKVILLE Deceptive Office Building Division of Solid Waste Services 101 Monroe Street, 4th Floor Rockville, MD 20850 240-777-6484</p> <p>Dawson's Market 225 North Washington Street Rockville, MD 20850 (240) 426-1364 Customer Service Desk</p>	<p>ROCKVILLE Conf'd. Habitat for Humanity Restore* 1029 E. Guile Drive Rockville, MD 20850 301-947-3304</p> <p>Meadowdale Nature Center™ 5100 Meadowdale Lane Rockville, Maryland 20855 301-258-4030 Open Tuesday-Saturday 9am-5pm</p> <p>Whole Foods Market™ 11325 Woodlawn Drive Rockville, MD 20852 301-984-4880 Visit the Customer Service Desk</p> <p>SILVER SPRING Habitat for Humanity Restore* 12004 B Plum Orchard Drive Silver Spring, MD 20904 301-990-0014</p> <p>Whole Foods Market™ 833 Wayne Avenue Silver Spring, MD 20910 301-608-9373 Visit the Customer Service Desk</p> <p>Taloma Park Public Works Dept. 31 Chevego Avenue Silver Spring, MD 20910 301-891-7633</p> <p>WHEATON Wheaton Library 11701 Conroy Avenue Silver Spring, MD 20902 301-933-1110</p>
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* Weekend Hours
** Weekend and Evening Hours
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RECYCLE RIGHT! RECYCLE YARD TRIM AT HOME

Leaves Are Your Yard's Best Friends.
¡Recicle bien! Recicle el recorte de grama en casa. Las hojas son las mejores amigas de tu patio trasero.

- ✓ Get a backyard compost bin from Montgomery County at many locations throughout the County (MontgomeryCountyMD.gov/yardtrim) or build your own bin. Obtenga un contenedor de abono para el patio trasero del Condado de Montgomery en muchos lugares del Condado (MontgomeryCountyMD.gov/yardtrim) o construya su propio contenedor.
- ✓ Add yard trim, including leaves and grass clippings to your compost bin. Agregue los recortes del jardín, incluidas las hojas y los recortes de césped, a su contenedor de abono.
- ✓ Keep the materials moist and mix the materials every other week. Mantenga los materiales húmedos y mezcle los materiales cada dos semanas.

Montgomery County, Maryland
Division of Solid Waste Services
Waste Reduction and Recycling Section

Montgomery County, Maryland
Division of Solid Waste Services
Waste Reduction and Recycling Section

For More Information About Backyard Composting / Para Obtener Más Información Sobre El Compostaje En El Patio Trasero:
MontgomeryCountyMD.gov/yardtrim • Call 311 or 240-777-0311, TTY MD Relay 711

FOLLOW US ON SOCIAL MEDIA!

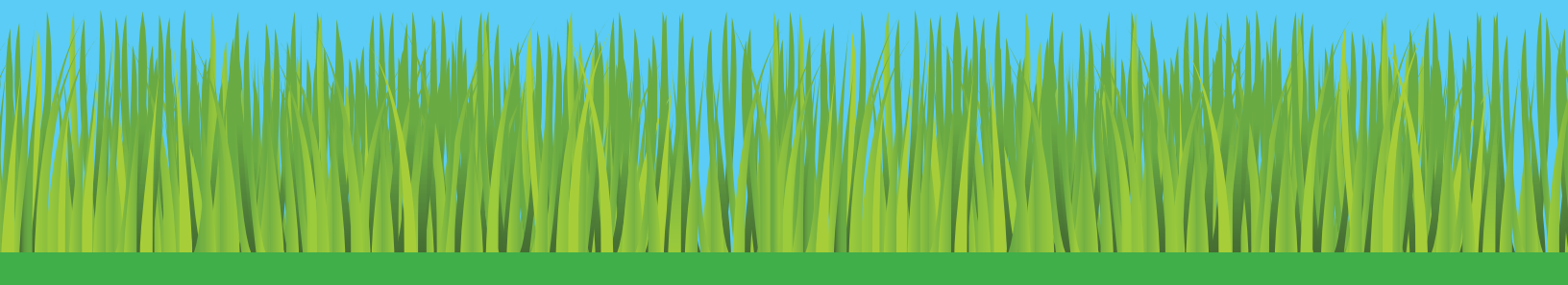


FACEBOOK: MyGreenMontgomery

TWITTER & INSTAGRAM: MyGreenMC

FLICKR: DEP Montgomery County

YOUTUBE: MontgomeryCountyDEP



**Montgomery County, Maryland
Department of Environmental Protection
Recycling and Resource Management Division
Waste Reduction and Recycling Section**

2425 Reedie Drive, 4th Floor • Wheaton, Maryland 20902

MontgomeryCountyMD.gov/yardtrim
311 or 240-777-0311
TTY: MD Relay 711



This information is available in an alternate format by calling 240-777-6480.