A Guide to

Backyard Composting

in

Mecklenburg County

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for

Mecklenburg County Solid Waste Management

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Getting Started

Why make backyard compost in Mecklenburg County?

In Mecklenburg County we're famous for our majestic trees and green expanses of lawn, but our beautiful avenues and landscapes come at a price. In one year, enough yard trimmings are left at the curbside for collection to build a 3-foot wide compost pile from Charlotte to Wilmington, and then over 20 miles more out into the Atlantic Ocean!

Home composting is an environmentally friendly and economically wise way to help solve the problem of what to do with this mountain of material.

With a little knowledge and planning, techniques like composting and mulching actually take less time, effort and money than dragging those bulging plastic bags to the curb. Not only that, but home composting can utilize kitchen scraps as well as leaves and trimmings. The end result is its own reward– compost, pure "garden gold" for your flowers, vegetables and landscape plants.

According to The Composting Council, organic compostable materials make up two-thirds of the "waste stream" in the US. By composting at home, you redirect some of these materials back to their natural purpose of restoring life to the soil in your garden and lawn.

And making compost saves you money. The cost of making each batch of backyard compost amounts to less than $5 on the average. In return, you get 10 cubic feet of rich compost, which would cost at least 5 times as much ($25) at the garden center -- if you could find such a high quality product.

What is compost?

Compost is a dark, crumbly, sweet smelling material, similar to the top layer of soil in a forest. It is made of organic materials which have been broken down into a stable form by the action of micro-organisms.

A compost pile isn't a garbage heap. Using proven techniques, you can make compost without unpleasant smells or pest problems.

In nature, autumn leaves and even entire fallen trees slowly decompose and seem to disappear into the soil. Actually, they are being eaten by a vast number of microbes and other organisms, which leave behind a dark colored material called humus. Humus and related organic substances, along with the living organisms which create them, are keys to a fertile soil.

A backyard compost project uses this natural process to create humus-rich compost for your garden.

Where do I put the compost pile?

Put the compost where it is most convenient. This often means near the kitchen, if you are including food scraps.

It can be in sun or shade. Depending on your sense of aesthetics, you can put it somewhere conspicuous or hide it behind a low trellis or other screen. Because of the risk of termites, don't put the pile right next to wooden parts of houses, such as porches.

Water

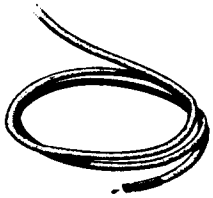
You will need water, so the compost area should be where a hose can reach.

Space

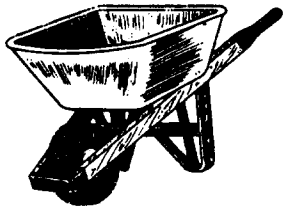
Leave enough space around the bin so it is easy to work with hand tools. The minimum space is about 3 feet X 5 feet (15 square feet or 1.5 sq. m).
The "ideal" for many backyards is to leave space (about 6 feet X 15 feet) for two bins plus a "holding pen" the same size or slightly bigger, especially if you want to compost kitchen scraps. The holding pen is a catch-all where you can conveniently gather compost materials from the yard and garden over several weeks, while the two pens are dedicated to making batches of compost, with kitchen scraps added every few days to the middle.

Tools

You need a few basic garden tools to make compost, all of which can be used for other purposes around the house and yard.



Shovel or something for scooping
Garden Hose
Wheelbarrow (for moving manure or soil)
Rake (for clean up)
4-tined Garden Fork or Pitchfork (optional but very useful)
A 3 or 4 foot length of 5/8" metal reinforcement rod ("rebar"). This is available for about $1 in any garden center, and will last forever. A 4-foot Dowel, 1" thick or a stick) will also work.



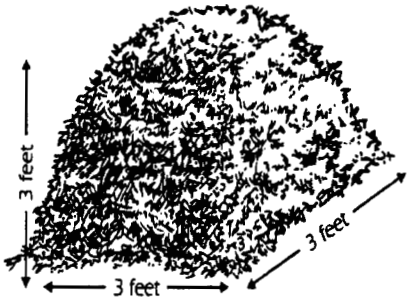
Compost recipes

Cool and slow

The "cool and slow" method costs nothing and provides compost in about two years, sometimes less. It requires no turning and little special attention.

Simply set aside an area in a secluded corner of your yard for piling up fallen leaves and other organic materials, including grass clippings. Do not include kitchen scraps in this sort of pile.

Over two years or less, the material on the bottom will compost. Pull back the top layers and use the rotted material in your garden..



Hot and fast

The "hot and fast" method provides compost much more quickly, especially in the summer. At Compost Central, experimental hot and fast piles made in April and May were ready in August and September, and fall piles were ready the following spring.
In addition, the quality of the compost is more consistent and many weed seeds and diseases are destroyed by the heat.

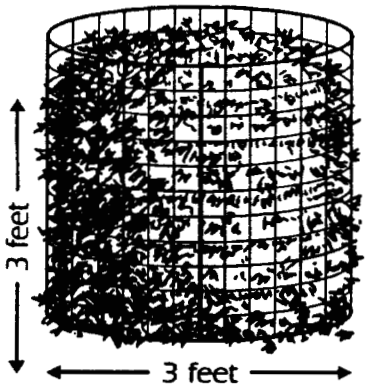
Kitchen scraps can be added to a hot pile. This benefits the compost by adding another excellent source of plant nutrients (and microbe food).

Making a hot and fast pile takes a bit more attention than a cool pile. In Mecklenburg County, the following techniques have been tested and have proven successful.

How to make a simple wire compost bin

Bins look neater than piles. Since loose materials are kept bundled together, a pile can heat faster and speed the composting process. If you add kitchen scraps, you can bury them in the middle, away from bugs and animals.

Bins are a very good choice here in Mecklenburg County. They are easy to make with inexpensive materials.



Materials: 10 feet (3m) of 2" x 4" welded wire fencing, 36 inches (90cm) high
Assembling:
1. Cut the fencing to length (10 ft) with the cutting edge of a pair of pliers. On one end, leave about 1- inch lengths of the horizontal wire sticking out so they can be used to fasten the ends of the pen together.
2. Form a cylinder 36" tall (the diameter will be a little over 3 ft). To hold the shape, push several ends of wire through the wire on the opposite end and hook the wire together.
The bin is light-weight and easy to move (when empty). To turn or "harvest" the pile, unhook the wires and lift the fencing away from the pile of materials. They will hold their shape.

Making a batch of hot compost

When making a hot and fast pile, it is best to make compost in "batches," where you fill your bin to the top with the right mix of materials. This is "aerobic" composting, powered by microbes which require oxygen.

Ingredients
There is a long list of materials you can compost, but when you make a batch, you need some basic ingredients.

✔ ***Water and air***: The compost-making organisms require water and air. Water should be added as you make your batch of compost so that it is thoroughly moistened. Air is provided by turning the pile and by including chunky materials such as gum balls from Sweet Gum trees and small twigs.

✔ ***"Food" for the microbes***: This is carbon which they need for energy and building cells. Here in the Carolinas, that usually means fallen leaves. You can use leaves any time of the year, which explains the benefits of gathering up leaves in the autumn and putting them in a holding pen or pile. About 15-20 big plastic yard trash bags full of leaves are needed for a wire bin like the one we make in class.

If you don't have enough leaves, check with your neighbors or try wooded areas. Half-rotted leaves work fine.

Other cheap, basic sources of "microbe food" (meaning the carbon they neefor energygy and building cells) are spoiled hay and straw, and barnyard or stable litter. Look for free stuff!

✔ *Nitrogen*: Nitrogen is an essential nutrient for plants and microbes and necessary to heat up your pile. Sources of nitrogen include manure from local farms, grass clippings and some kitchen scraps. However, many home composters may prefer to buy a nitrogen rich material, such as bagged chicken manure, alfalfa meal, cottonseed meal, blood meal and organic commercial fertilizers like those made by the Hoffman and Espoma companies.

An effective and inexpensive source of nitrogen locally is a 40 pound bag of commercial cow manure (about $1) supplemented by 6 cups of cottonseed meal, or 2 cups of an 18-8-6 organic lawn fertilizer. Add this to every 3 or 4 bags of leaves and mix well (the manure seems to help coat the leaves).

Though your compost will not meet "certified organic" requirements, you can use a commercial fertilizer high in nitrogen such as urea, lawn fertilizer or 34-0-0 instead of the "organic" nitrogen. In this case, cut the amount to one cup.

Putting it all together

Making a batch of hot compost is a simple process of repeating the following procedure 3 or 4 times until your bin is full:

☛1) Put about 1 foot of leaves (3 or 4 lawn bags full) or other "feed" material into the bin. Pack it down with a rake or other tool.

☛2) Add nitrogen. An easy way to do this is to pour in one bag of cow manure, then spread it evenly over the surface of the leaves. Sprinkle on 6 cups of the least expensive organic fertilizer you can find with a nitrogen rating of 5 or more or 12 cups of alfalfa meal.

☛3) Throw in 1 shovelful of rich soil or finished compost.

☛4) Mix well with a garden fork while watering until the layer is soaked.

☛5) Repeat the process until bin is full. Many composters add a 1 inch layer of soil to top off the bin. This helps keep odors in but is not necessary.

If you have a large amount of kitchen scraps or grass clippings, they can be added in place of the manure and fertilizer (nitrogen) layer. **Kitchen scraps** can be added just like the manure, although it may work better to add them little by little (as they are created) to a hot working pile. A half-dose of nitrogen fertilizer may be helpful, but is not always necessary. **Grass clippings** are best mixed with the leaves or other carbon "feed" while the pile is being built, rather than by layering. In layers, grass tends to mat and create pockets where aerobic composting cannot occur.

What goes in?

Compost microorganisms need a food source with nutrients. Ingredients with carbon (leaves, kitchen scraps) supply the food; ingredients with nitrogen (manure, kitchen scraps) supply many of the needed nutrients. Use a variety of materials and remember, the smaller the pieces, the faster the pile will decompose.

✔ **Leaves**: fallen leaves are an ideal source of carbon and will probably make up the bulk of your compost. Other options include sawdust from untreated lumber, spoiled straw or hay or even well-shredded newspaper or cardboard.

✔ **Food scraps:** kitchen scraps make an excellent addition. You can include:

- fruit/vegetable peels, stems, and trimmings / citrus rinds (best if chopped fine)spoiled or rotten fruits and vegetables
- corn cobs (broken up or shredded)
- egg shells
- coffee grounds and filters
- tea leaves and bags
- hard-shelled nuts (best if ground or crushed) / peanut shells
- clam/oyster shells (must be ground)
- canning/preserving wastes (pomace, etc.)

✔ **Water:** Keep the compost moist, but not soggy, like a wrung out sponge.

✔ **Manure** from horses, cows, chickens.

✔ **Grass clippings** are rich in nitrogen and can be added to your compost pile as long as they are thoroughly mixed in with other ingredients.

✔ **Unusual ingredients:** pet hair, people hair, vacuum cleaner sweepings, dryer lint, shredded natural clothes fiber (wool, cotton, rayon), newsprint, etc.

✔ **Supplements:** Add small amounts of supplements (few handfuls to a few shovelfuls) sprinkled between layers as pile is being put together, of wood ashes & green sand (for potash) and ground phosphate rock (for phosphorus).

✔ **Most garden refuse**: spent plants, trimmings from edging and pruning, contents of old flower pots, etc.

✔ **Recycled compost**: Ingredients from a finished compost pile which have not broken down completely should be placed in the center of a new pile for a second run-through.

For more information on what can be included, call a Master Gardener at the North Carolina Cooperative Extension office (336-2561).

What stays out?

✖ **Cat litter and droppings** can contain disease organisms that cause brain and eye diseases in newborns. The safest thing is to absolutely avoid all cat and dog droppings.

✖ **Charcoal ashes** contain toxic compounds like those in coal ash, also a no-no. Enjoy your barbecues, but don't dump the charcoal ash in the compost. *Wood* ash is ok in modest amounts.

✖ **Herbicide or pesticide treated plant material** may contain an unpredictable mix of chemicals that can destroy the microbial life in your pile, persist to kill your garden plants, and even pose a threat to you and your family's health.

✖ **Invasive weeds and plants**, like kudzu, ivy, bindweed (wild morning glory), quack grass, Bermuda grass stolons, etc., can survive and be spread in home compost.

✖ **Meat, bones, grease, oils, dairy** attract vermin and often cause fly and odor problems. Use common sense: a stale piece of peanut butter or cheese sandwich is fine; a whole jar of spoiled peanut butter probably isn't.

✖ **Sick garden and house plants** can turn your compost heap into a source of disease.

✖ **Glossy slick paper**, from magazines and catalogs with color photos, contain toxic inks. Newsprint, including the funnies, should be ok.

✖ **Poisonous or thorny plant materials**, from poison ivy to thorny rose branches, can make working with compost a miserably unforgettable ordeal. Also, oleander, castor bean, hemlock and eucalyptus should be avoided since they produce substances that can harm soil life or other plants.

✖ **Stuff that takes forever to break down**, like pine needles and magnolia leaves, will not contribute to the compost. Use them for mulch on top of the soil.

✖ **Too much soil**... Don't overload your compost pile with soil. If you take up sod, compost it in a separate pile, carefully placing the grass sides down (it takes about a year to break down, and gives a very nice result).

Managing the Bin

Watering and turning

Water: It is especially important to keep compost from drying out. During dry spells, water lightly, If there is a heavy period of rain, some composters cover the pile with plastic to avoid letting it get too wet.

Turning your compost pile helps supply oxygen to the interior parts of the pile, which activates microbes to speed the decay process. Turning can also help troubleshoot problems, such as a too soggy pile, or flies due to an overload of kitchen scraps or grass clippings, or if your pile won't heat up in the beginning.

While turning is beneficial, there's no need to overdo it. Too frequent turnings discourage the development of soil organisms that break down cellulase materials (like paper). A less disturbed, cooler pile encourages earthworms and is easier on the back. Your pile will break down without a lot of turning. It just takes longer.

When: Turn a layered pile after the first weeks, then 3 times over the next 2 months. Your compost should be ready in 4-6 months for piles begun in the spring, or 8-10 months for those started in the fall.

How: Use a pitchfork or shovel. Open your bin, pick up the wire fencing and set it next to the compost pile. Reattach the wire to form a new cylinder. Then shovel the contents back into the empty bin. There's no need to layer. If the center of the pile is dry, moisten the materials while turning the pile. If it is cold, add a source of nitrogen.

Alternative to turning: Make air passages through the compost with a dowel or piece of rebar. Simply push holes down into the compost from time to time allowing air into the center of the pile. This technique is used in Chinese gardening.

Adding kitchen scraps

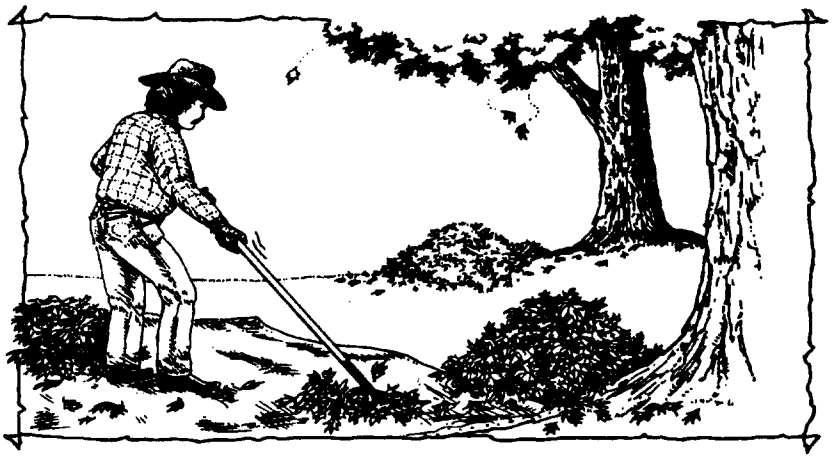
Food scraps are a good source of the nutrients needed by compost microbes. Keep a container for the scraps in a convenient location -- near the sink or cutting board. The size of the container depends on the size of your household. Most homes can get by with a 2-4 liter container. A snug fitting lid will keep out odors and prevent fruit flies. Emptying your container every few days will also avoid these problems.

When your kitchen scraps container is full, make a hole at least 12" deep in the center of your compost pile with the rebar and a hoe, shovel or stick. Empty the contents into the hole and cover. If you have problems with odor, keep a pile of dirt or compost nearby and sprinkle on top of the food scraps before covering over.

Troubleshooting

Use the following chart to help solve problems that may occur in your pile.

Symptom	Problem	Solution
If the pile does not heat up AND there is no odor	Pile too dry; may be in direct sunlight Not enough nitrogen (pile may be moist) Pile is too small (may be warm in the center only)	Add enough water to dampen. Consider moving to shade Add nitrogen source-manure, cottonseed meal, etc. Increase size. Piles smaller than 2x2x2 won't retain heat
If the pile does not heat up AND there is odor	A pile with moist materials: too many fresh kitchen scraps or matted grass clippings A pile with soggy materials: too much water from rain or watering	Add shovels of dry materials , like shredded leaves or newspaper or dry soil Turn pile to aerate and add leaves or shredded newspaper. Cover with tarp in heavy rain
If the pile heated at first, but then cooled after 2 weeks	Not enough turning or mixing	Turn pile putting outside material into center. Water lightly if dry outside
If flies and insects are a nuisance	Too many fresh scraps, matted grass or putrefied garbage	Turn pile & add dry materials. Keep meat, etc. out of pile. Blend grass with dry materials. Put handful of lime on putrefied material



Finished Compost

The temperature has completely cooled down. At least 3 species of arthropods (e.g .the sow and pill bug, ground beetle, and centipede) are normally present. You cannot recognize the materials that went into the compost (except for larger hard to compost ingredients such as corn cobs -- these can be sifted out and recycled)

Uses of Compost

Now that your compost is finished (or at least it has sat there for six months, and you are ready to build a new pile), what can you do with it?

Compost can be added at any time of the year. There are, however, "prime" times. For top dressing of beds and lawns, compost is often added in the fall or winter (for instance, when you aerate your lawn is a good time to top-dress with compost). Side-dressing of established plants is often recommended for spring. Use your compost on:

✔ ***New garden beds and plantings***. Working a 2 or 3 inch layer into the top 6 inches will provide the benefits of compost right in the rooting zone. This is a "high" application rate, but often new plantings in Charlotte and other urban and suburban area are in impoverished soils.

✔ ***Vegetable gardens and transplants***. Add a 2 to 3 inch layer to the beds or rows and work in lightly. It's beneficial to put a trowelful of compost in each planting hole when you transplant tomatoes and other veggies.

✔ *Well tended and mulched beds of annuals and vegetables*. A one inch layer will provide many benefits. In Charlotte, a one inch annual application is a good idea, since our climate lends itself to loss of soil organic matter.

✔ ***Natural areas and well mulched perennial beds***. Pull back your mulch, scratch one-half inch compost into the topsoil, and recover with the mulch. Cover any compost on bare ground with a layer of mulch.

✔ ***Side-dressing perennials, shrubs and trees***. Spread a half inch to an inch of compost around the bottom of the plant starting about an inch from the stems and continuing out to the "drip line" where the leaves end. Just scratch the compost into the surface.

✔ ***Planting trees and shrubs***. Work compost into a much wider area than just the hole for the tree, or use it as a top dressing. A proportion of 1 part compost to 2 or 3 parts soil is traditionally recommended for transplanting.

✔ ***Lawns***. Top dress every year or two with a half inch of compost. This should cut down on fertilizer and water needs, and give you a healthier lawn. For new lawns, two to three inches is recommended

✔ *House plants* can benefit from a soil mix made from 2/3 commercial potting mix and 1/3 compost, after the compost has been screened.

Compost tea is beneficial for everything. Vegetable plants love it, house plants thrive on mix, and flowers a dilute benefit from it, too. To make it, simply put a few shovelfuls of compost in a burlap sack and suspend it in a big container of water for a few days. The same bag of compost can be reused several times. The tea colored liquid is used to water plants. It makes an excellent "starter solution" for vegetable transplants and tonic for stressed plants.

Unfinished compost (where the materials are well broken down but still identifiable) also has important uses. It can be put on top of soil as mulch, where it will continue to break down. And put it in the trenches as you "double dig" garden beds, as it will provide food for worms and help open the soil under the bed for the roots to grow.

Composting considerations for Mecklenburg County

Herbicide Warning

Be very careful to avoid lawn trimmings and weeds that have been treated with herbicides. They could injure valuable plants.

Grass Clippings

We produce plenty of them in Mecklenburg County, and they are one of the most frequent causes of failed compost heaps. Even the municipal composting operation has trouble with them. They are rich in nitrogen, but they can easy clump together to form a stinking slimy mess in your compost. You have three options to solve this. The easiest is simply to leave them on the lawn where they provide nutrients and mulch. (See **Grass cycling** in the Appendix). You can also spread clippings as mulch in your yard. Or, you can successfully use grass clippings in the compost by mixing them thoroughly with a dry material like sawdust or dry leaves.

Oak Leaves

Oak leaves are fine compost ingredients, although they are quite acidic. Don't worry, the microbes will take care of that without liming. You may find your oak leaf pile breaks down slowly without additional nitrogen from manure or another source. This is especially true if you make a pile in early spring from leaves which fell the previous fall.

Pine Needles

Pine needles make wonderful long-lasting mulch and are often sold as "straw" in the South. However, they are not good for composting as they take forever to break down.

Shredder/Grinders

Using a shredder-grinder will help your leaves break down faster. You can also use it to turn leaves and tree trimmings into mulch or grind alfalfa cubes to make a rich organic nitrogen fertilizer.

Weedeaters for Leaves

In the fall, fill a large trash container about half full with leaves and pulverize them with your weedeater. The final product takes up a fraction of the space of uncut leaves, has the look and feel of peat moss and can be used in compost, or applied directly as a mulch.

To Lime or Not to Lime

The soil in Mecklenburg County tends to be so acidic that annual applications of lime are often recommended for lawns. How about on the compost? There is much debate on this point, and Sir Albert Howard, father of modern composting, did use lime in his "Indore" compost piles.

My personal suggestion is not to apply lime to most compost piles. Your compost's pH (acid/alkaline level) naturally swings toward neutral due to microbial action as a pile breaks down, even if you start with acidic materials. Excessive lime combined with excessive nitrogen and moisture can cause the release of ammonia gas, which not only stinks but lowers the amount of valuable nitrogen in your compost.

Some experienced Southern composters have found that a handful of hydrated lime (not pelletized lime for use on lawns) can help cut odors if there are many fresh food scraps in a summertime pile. The lime also adds calcium. (Don't forget that egg shells provide an excellent source of calcium in a pile.)

Trees

Trees may want to sample your compost by sending roots right up into the pile. There are two schools of thought, here. Some people stay at least a few yards from trees, especially those with shallow invasive roots like cedars. Others like to put their compost in shade and don't mind tree absorbing any nutrients that leach down to their roots.

Time of the Year

There is definitely a compost calendar in Mecklenburg, although you can start a pile at any time. In the autumn, there is no shortage of compost making material with fallen leaves! The downside to fall composting is that, decomposition is slower in the months from October to April. The higher temperatures of spring and summer can contribute to much faster finishing times (as long as you don't let the compost dry out).

Spring. Realistically, spring is the time of frenzied activity in the garden. A few suggestions from experience may be useful. Setting up a pen takes very little time. Start throwing in materials. There are always dried leaves to be found in Mecklenburg County which can be added. You can bury your kitchen scraps under the heap if you cover them with 12 inches of leaves topped with a little soil. Or begin saving kitchen scraps in a 20-30 gallon garbage can, throwing in two measures of sawdust or oak leaves for each can of scraps.

Fall. Make a "leaf corral" from wire fence and blow or rake your leaves into the corral until it is completely full. If you have a big yard, you'll want to use a 4 yard length of wire fence. Then wet the leaves, press them down and put in more. Use these leaves to make compost all year long.

Anaerobic (and Aerobic) Sacks

If you have very limited space, you can put your kitchen wastes and leaves, mixed one-to-one, into a large plastic garbage bag, seal it tightly, and stick it in a corner. In six months to a year, it will turn to compost through an airless (anaerobic) and odorous process. Easy Composting suggests putting the bag in the sun, turning it every so often and tossing in a handful or two of dirt or finished compost. A Mecklenburg County version is to mix equal amounts of oak leaves and moist grass clippings, put them in a sack and leave them in a corner of the basement.

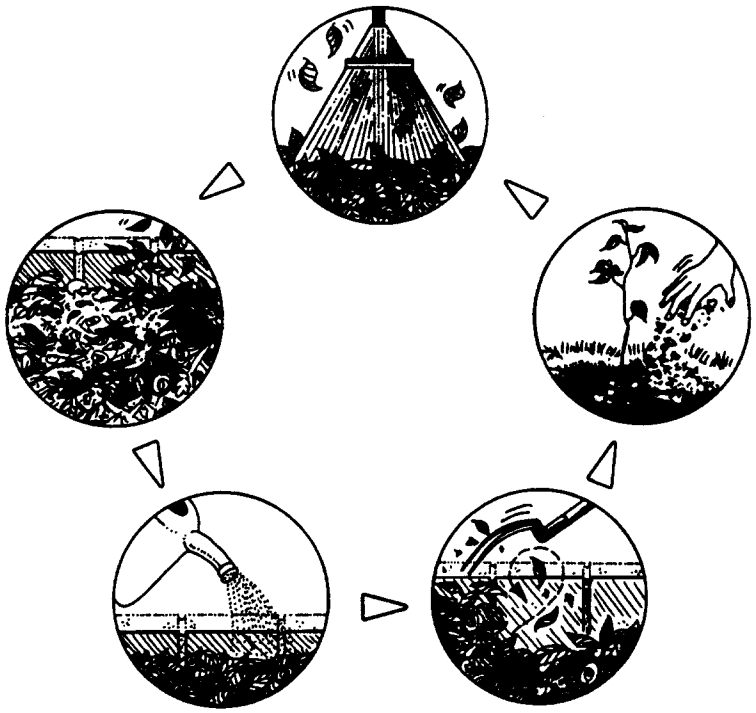
My suggestion is to stick to more conventional piles or pens and to consider worm farming if your area is limited.

Rats!

Although problems with rats in the compost are rare, the potential is real. One way to prevent this is to keep meat and other smelly kitchen scraps (e.g. leftovers with rich cheesy sauces) out of your compost. Another protection is to make your composter out of a recycled 55 gallon drum or inexpensive metal trash can, with air holes too small for vermin drilled in the sides..

Compost as a Planter (or how to hide the pile)

Compost need not be an eyesore. Feel free to plant around the bin area, especially around pens that are "aging" without turning. One commonly grown "compost bin crop" is cherry tomatoes (make sure your bin gets some sun). Prepare the soil for tomatoes 1 ½ feet out from the pen around the bottom, and let the tomatoes vine up the sides. Green beans, like Kentucky Wonder or Scarlet Runners, work too. And try summer flowers like Cosmos. Experiment!



Appendices

Appendix I. Compost Central

At least 20% of the residential waste produced in Mecklenburg County is yard trimmings. Since 1993, the State of North Carolina has banned yard trimmings from sanitary landfills. Mecklenburg County's Engineering Department has tackled these problems in a creative and effective way. Each week, the City of Charlotte collects yard waste at the curb for 136,000 households and brings it to Compost Central, Mecklenburg County's municipal compost facility located near Charlotte's international airport. Yard waste from the north of the County and the city of Huntersville is taken to the 8-acre North Mecklenburg Mulch & Compost Facility near Huntersville.

At these two locations, giant grinders and windrow turners convert the residential trimmings as well as commercial yard debris, wooden pallets, spools, and crates into mulch and high quality compost. More than 42,000 tons (84 million lbs.) of material were processed in 1994 at the two locations, reducing it to 65% of it's original volume.

Mulch

The mulch-making process begins when incoming materials are shredded and ground up to reduce particle size. Pallets are ground in a separate tub grinder equipped with a magnet to remove nails. The freshly shredded materials are ready to be sold as mulch.

Compost

Compost-making is a more complex process taking about 7 months for completion. Yard wastes are ground and mixed in a tub grinder with 2½" screens. This screened material is then put into long piles called "windrows," 20 feet wide by 8 feet tall, and up to 1200 feet in length. Water is added to the materials to reach 45% to 55% moisture content. The windrow piles are turned weekly, using a machine called a windrow turner.

Within two-three weeks, the temperature in the windrow piles have reached 130°F, and by six- eight weeks 150°F. Piles are maintained at this temperature for 4 months, when they naturally cool back to 120-130°F. At this point, the compost is screened twice. The finest materials, which pass through a ⅜" screen, are cured for an additional month, and then sold as compost. The remaining material is passed through a 1" screen, which is then sold as nugget mulch without further curing. The largest chunks and plastic trash (removed from the other materials with a gigantic vacuum cleaner), are sold as boiler fuel.

From spring through early fall, there is enough nitrogen in the trimmings to allow composting without the need for additional nitrogen (about a 30:1 carbon:nitrogen ratio). In the fall and winter, however, trimmings (largely leaves) have a 75:1 C:N ratio, and the piles require supplemental nitrogen. This is provided in the form of synthetic fertilizer, either ammonium nitrate or urea, which is mixed into the piles.

Compost and Mulch Sales

For home gardeners needing more compost then their backyard piles can produce, Mecklenburg County Composting provides a convenient and inexpensive source for compost and mulch. Compost and mulches are sold to the public at Compost Central (588-9070) and North Mecklenburg Recycling Facility(875-1563). Call for hours and availability. Purchasers must provide their own means of transport, such as a pick up truck.

- **Compost: $20 per cubic yard +tax or $3.00 per 50lb. bag +tax**
  Compost produced at Compost Central is made specifically for landscaping and gardening purposes. It is a high quality uniform odorless product, with particles less than ⅜" across and has a neutral pH of 6.8-7.2. It has a relatively high nitrogen level of about 2% (about 4 times higher than the nitrogen content of commercial bagged cow manure). Recent analysis showed N-P-K ratings of approximately 2 - 0.18 - 0.75. The compost also contains other plant nutrients, including calcium, magnesium, sulfur, iron, manganese, zinc, copper and boron.

- **Nugget Mulch: $9 per cubic yard +tax or $1.40 per bag + tax**
  Nugget mulch is made from pieces of woody materials which were not broken down during the composting process, and are too large to include in compost. Nuggets are 1" or less across. Nugget mulch is an attractive product similar to bark nuggets in effect. It is used as a ground cover, not a soil amendment, because of the relatively large size of the pieces.

- **Mulch: $7 per cubic yard +tax or $1.15 per bag +tax**
  Mulch is produced by shredding woody materials, and/or wooden pallets. It does not undergo the 7 month composting process. It makes an excellent and inexpensive ground cover, but is not intended for use as a soil amendment.

- **Eco Products Bagged Compost & Potting Soil.**
  Mecklenburg County also sells its compost (and a potting soil mix) in local garden centers under the brand name ECO products. New Solutions, a Charlotte-based company, markets the product for the County.

Guidelines for curbside collection of yard trimmings

Although the county strongly encourages residents to recycle their lawn trimmings through Grass cycling and their yard trimmings through backyard composting, Compost Central offers a way to dispose of large materials, such as tree limbs, that cannot be easily handled at home. Material less than 6" in diameter and 5 feet in length can be collected at curbside in many areas. Larger materials must be delivered directly to Compost Central or North Mecklenburg where there is a charge for yard waste (see below).

Materials should be placed in open containers for curbside pickup. You may also use clear plastic bags left untied at the curb. However use of plastic bags increases processing difficulty as well as costs and can lower the quality of the finished compost or mulch by leaving shreds of plastic in the product.

Yard Waste Fees

In 1996, Mecklenburg County began charging for both residential and commercial yard waste brought to Compost Central and North Mecklenburg. The charges are by weight: $14 per ton; by volume: $1 for automobile load, $6 for vans, pick-ups, trailers (less than 10 ft), $3.50 per yard for compacter trucks ($6 minimum), $3 per yard for all others ($6 minimum)

Appendix II - Grass cycling

Grass cycling is one of the easiest and most effective yard waste reductions programs in existence. Instead of raking and bagging clippings after you mow, you leave them on the lawn to decay naturally. Nutrients released during the rotting process can improve soil quality by 30% or more.

Mowing. Any lawnmower can grass cycle. Keep blades sharpened, mow frequently and only when grass is dry to avoid clogging the mower. Mulching mowers make the job easier and do a better job. A kit to convert a non-mulching mower is available for less than $30.

Do not remove more than one-third of the growth at one time. Fescue lawns - most of our lawns here in Charlotte - do best if allowed to grow to 3" - 4", especially in the summer growing season. The taller grass will shade the soil, cool roots and prevent weeds.

Watering. The more you water, the faster your lawn will grow. The average lawn can consume as much as 1,000 to 3,000 gallons of water at each application. But there are some basic rules about watering that will help your lawn grow at manageable levels and stay healthy.

- ✔Water infrequently and heavily to encourage deep root growth, but don't overwater.
- ✔Water at night or in the early morning to reduce the amount lost to evaporation and to reduce disease.
- ✔Water more frequently in hot weather.

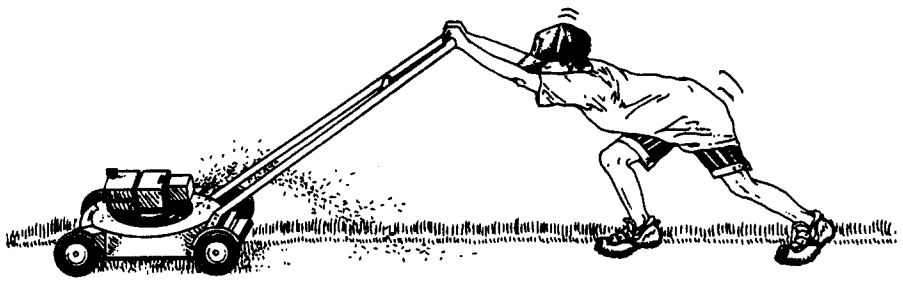
When your lawn needs watering, apply an inch to clay soils and a half-inch to sandy soils. In dry periods, clay soil should be watered weekly; sandier soils twice weekly. A garden hose applies about ¼" to ¾" water per hour through a typical lawn sprinkler. So watering may take three hours or more. On clay soils, stop watering if you see run-off. Wait and thenwater again.

Fertilizing. Lawns need properly timed fertilizer applications to become green and dense. Apply fertilizer when grass is dry. This prevents the foliage from being burned and allows the fertilizer to fall around the plants where it can be watered into the ground.

Fall is the best time to apply fertilizers to cool-season grasses such as Kentucky bluegrass, tall fescue, creeping red fescue and perennial rye grass. Warm-season grasses such as Zoysia and Bermuda should be fertilized during the spring and summer.

Aeration. Proper aeration of your lawn helps water penetrate the soil and increases the availability of root nutrients. You can aerate your lawn with a hand-driven or powered aerator or coring machine that creates "pores" in the lawn. Aeration loosens compacted soil and enhances soil oxygen levels. This in turn improves conditions for the survival of natural aerators, earthworms.

Try it. You may have to mow more often during the growing season, but you'll save 30 to 35 minutes each time you mow by leaving the grass clippings on the lawn. And you'll save money by cutting your expenses for fertilizer, trash bags and wear and tear on your mower by not having a bag attachment full of heavy clippings.



Appendix III - Books & Resources

Most garden books these days have a section on composting, and there is a small library of books devoted to composting. Here is a selected list of books you might find helpful. Most are available at the Charlotte Mecklenburg Public Library.

Compost Critters. Bianca Lavies. *(J591.52)* A wonderful children's book, built around the author's spectacular photos, which provides a fascinating look at the critters who live in your compost heap. Also shows Lavies' real working pile (she uses a type of pen) at various stages. Recommended (especially if you have children and for teachers).

Easy Composting. Ortho Books. Beautifully illustrated with photographs, one of the co-writers (Robert Kourik) is a legendary organic gardener and author of books on edible landscaping in Northern California. A picture being worth 1000 words, this book is one of the best overviews of composting available. Non-technical but scientifically reliable information. Recommended.

Worms Eat My Garbage. Mary Appelhof. A delightful book with droll illustrations, which will set you up for vermiculturing. A classic. Recommended.

Let It Rot! The Gardener's Guide to Composting. Stu Campbell. (631.875) An classic which covers all the basics in a short time, written in a highly readable, down-to-earth style. Good discussion of not being obsessed with high temperatures (>140 F) in the home pile, and of the uses of compost.

The Rodale Guide to Composting. Jerry Minnich, Marjorie Hunt. (631.875) A "Composter's Bible" of over 380 pages, this book looks at various aspects of composting. The chapter on methods gives pros and cons of several different ways to make compost.

The Urban/Suburban Composter: The Complete Guide to Backyard, Balcony and Apartment Composting. Mark Cullen, Lorraine Johnson. (635.04875) Pleasant book which, in spite of its title, covers the basics much like the other books. Does contain a helpful chart comparing different systems for people in different living situations, a few ideas for very small-scale composting, and a section on vermiculture.

Organic Gardening Magazine. Rodale Press. The Rodale family defined the American notion of "organic" gardening close to a half century ago, and one of the pillars of their method is composting. The magazine runs a special page on composting every month, and will send you a pin and run your picture if you send them a photo of you and your compost heap.

Sunset's Illustrated Guide to Organic Gardening, The MacMillan Book of Organic Gardening by Marie-Luise Kreuter and ***The Self-Sufficient Gardener*** by John Seymour all have useful composting sections.

Consumer Reports magazine has reviewed low-pesticide gardening, shredders and mulching mowers, among other topics related to composting. It is also a useful source of information.

Notes: