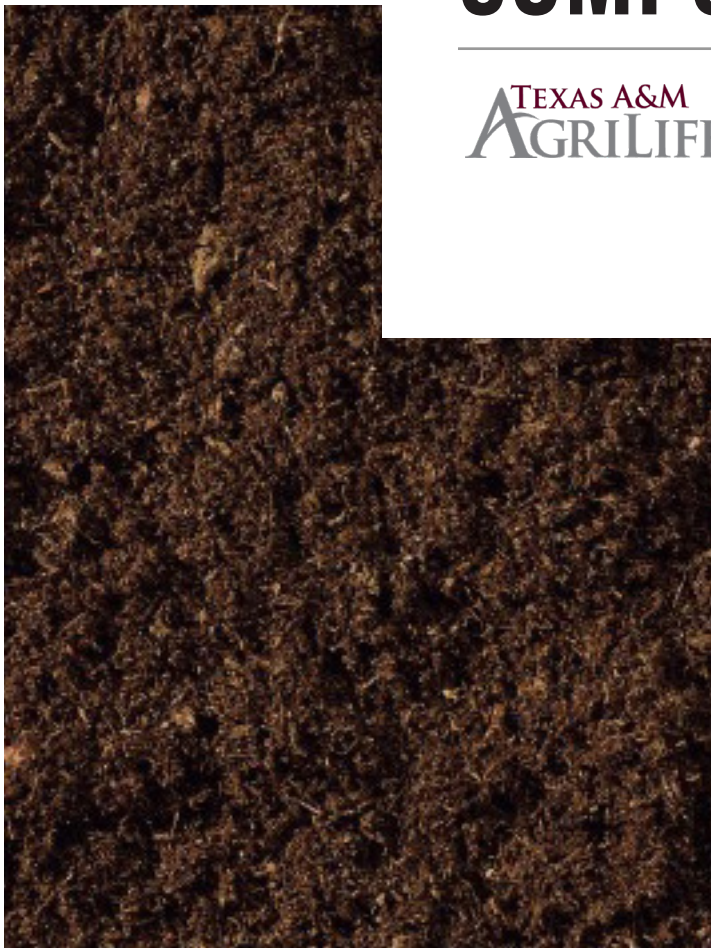




# THE "DIRT" ON COMPOSTING

TEXAS A&M  
AGRI LIFE

WATER  
UNIVERSITY



# Composting 101

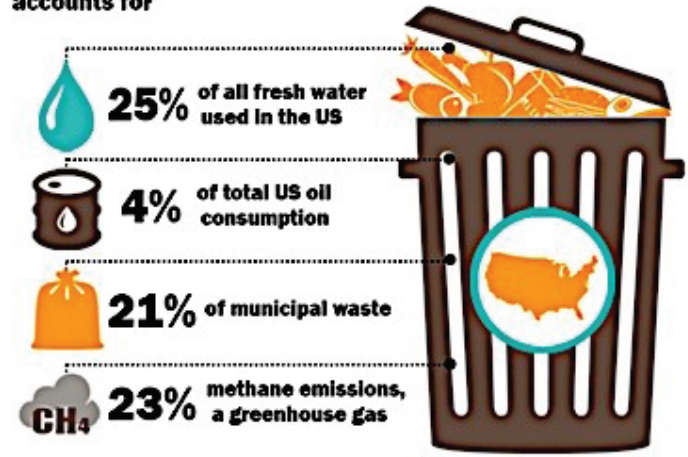
**O**ur “trash” or Municipal Solid Waste (MSW) is made up of a variety of materials that Texans throw away once used or consumed to some degree. The EPA estimates up to 30 percent of what ends up in the landfills is food scrap or yard waste that could and should be composted. Composting at home is now as important as ever due to growing population and limited land available for new landfills.

## What is Composting

Composting is the process of combining organic waste (from plants) in proper ratios into piles, rows, or bins to accelerate their natural breakdown. After being allowed to cure, the result is a stable, soil-like, earthy smelling, dark brown to black material called humus. The finished product is one of the best soil amendments you can find, and plants love it! Composting is not a new process, but an important practice that’s been common in civilizations all over the world for thousands of years. Many of America’s founding fathers composted, including our first president, George Washington.

## FOOD WASTE AFFECTS THE ENVIRONMENT

**In the United States, uneaten food annually accounts for**



**Uneaten food is worth an estimated \$165 billion/year nationally**

*Infographic by the State of Texas Alliance for Recycling*

### WHAT IS MUNICIPAL SOLID WASTE (MSW)?

**OUR TRASH, OR MUNICIPAL SOLID WASTE, IS COMPRISED OF VARIOUS MATERIALS AMERICANS COMMONLY THROW AWAY AFTER BEING USED.**

**MSW DOES NOT INCLUDE INDUSTRIAL, HAZARDOUS, OR CONSTRUCTION WASTE.**

**DID YOU KNOW?**

MORE THAN **95%** OF FOOD WASTE

THAT COULD BE COMPOSTED

ENDS UP IN LANDFILLS AND INCINERATORS.

*Infographic by the Environmental Protection Agency*

## Where to Compost

**Check first**  
Familiarize yourself with local regulations pertaining to composting. Your municipality may have a setback ordinance.

**Locate conveniently**  
Make sure your composting area is easy to access and close to a water source.

**Level it**  
Always compost on level ground with good drainage. Some moisture is good, but too much water is bad; it causes anaerobic conditions.

**DO NOT** place your compost pile directly against wooden buildings, fences, or trees, as any wood in contact with compost will decay.

## Why Compost?

Composting improves soil quality and nutrition. Benefits include:

- Improved soil texture and aeration;
- Improved drainage and nutrient availability in clay soil;
- Water loss prevention and nutrient leaching in sandy soils.

Soils also require less fertilizer when compost is added because it holds moisture, which saves water AND money!

# S.M.A.R.T. Composting

Although there are many ways to successfully produce compost, one of our favorite techniques is the Berkeley method, also known as “hot” composting. The steps are easy to remember with this helpful acronym.

## Size

Size matters when trying to get your compost pile “hot.” Collect materials until you have about a 4’ by 4’ pile. A smaller pile works, too; it just might not get as hot and might take a little bit longer.

## Moisture

When building or turning your pile, be sure to add water evenly throughout and in-between layers to achieve even moisture. Adding water to the top of a pile often leaves some areas too wet and others too dry. Maintain the moisture in your compost pile so it stays as wet as a damp sponge. If you take a big handful of your material and squeeze hard, only a couple of drops of water should drip out. Any wetter and you might start to develop stinky or anaerobic conditions. Rainwater is best when you have it, but tap water works, too!

## Aeration

The microorganisms in your pile that break everything down prefer an oxygen rich environment. That’s why aeration might be the most important factor to successful composting. By turning your pile regularly, you provide much needed oxygen and redistribute beneficial bacteria, fungi, and other organisms. Aerating also helps to maintain equal moisture and carbon to nitrogen ratios throughout your pile. In most cases, the more you turn your pile, the quicker you achieve finished compost!

## Ratios

Your C to N ratio (Carbon to Nitrogen) is important to finding a balance between our browns (materials higher in carbon) and our greens (materials higher in nitrogen) when composting. If you add too many browns, like wood chips, sawdust, or paper, you might not achieve the higher temperatures for rapid decomposition and could most likely be left with larger materials in your end product.

On the other hand, too many greens (materials higher in nitrogen), like coffee grounds or vegetable scraps, could cause temperatures that quickly rise to levels in which the important microorganisms cannot thrive, eventually slowing the composting process. A ratio of two-parts “brown” to one-part “green” by volume is ideal. One way to achieve this is to layer browns and greens while building your pile in a lasagna-type recipe, adding roughly twice as much brown material on top of a layer of green.

## Temperature

Heat is also very important in rapid composting and is supplied by the respiration of the beneficial microorganisms that break down the organic material. To prevent heat loss and allow for the build up of heat, a minimum volume of 3’ by 3’ by 3’ of material is recommended. Decomposing microorganisms function best in 135°F-165°F, and a good pile will maintain itself at about that temperature range between turnings. A probe compost thermometer is a great way to measure accurately. If temperatures get much higher than 165°F, it will be too hot and can rapidly cool as some decomposers begin to die off.

## What to compost

### Browns (higher in carbon)

- Dry leaves
- Aged hay
- Cardboard egg cartons
- Newspaper
- Chipped wood
- Dried grass
- Paper towels
- Shredded paper
- Coffee filters
- Sawdust
- Pine Needles

### Greens (high in nitrogen)

- Vegetable scraps
- Fruit peels/rinds
- Coffee grounds
- Tea/leaves
- Houseplants
- Spent flowers
- Manure from herbivores
- Alfalfa meal or hay
- Weeds that haven’t gone to seed
- Green plant prunings
- Bone meal
- Hair
- Feathers
- Fresh grass clippings

## What to avoid



Avoid adding these materials to a backyard bin or pile:

- Meat, bones, fish or dairy products
- Grease or oil
- Weed or grass seeds
- Pest or disease infected or infested plant material
- Fireplace Ashes

## Using your compost

In a new landscape, flower bed, or garden; mix up to 2" of finished compost into the top 6" of soil.

For yearly lawn maintenance, apply 1/4"-1/2" of screened compost as a top dressing in early spring.

In established beds, apply up to 1/2" of compost once a year as a top-dressing in addition to your favorite natural mulch, maintaining 2"- 4" of total mulch layer.

Utilize a 50/50 mix of sifted compost and sand to fill in low spots or bare spots in your landscape to improve drainage and reduce erosion.

For those who garden in pots, compost can be a useful component of your potting mix. A mix of equal parts compost, topsoil and sand works well for most plants.



## Compost Troubleshooting

Symptom	Problem	Solution
Pile is wet and smells like rancid butter, vinegar or rotten eggs.	Not enough air or too much nitrogen or too wet.	Turn pile and add straw or wood chips. Improve drainage.
Pile does not heat up.	Pile is too small or too dry.	Make pile larger or provide insulation; add water while turning.
Pile is damp and sweet smelling, but will not heat up.	Not enough nitrogen.	Add nitrogen: mix in grass clippings, food scraps, coffee grounds.
Pile is attracting animals.	Pile contains meat or dairy products or food scraps are not covered well.	Enclose pile in 1/4" hardware cloth; cover food with brown materials: wood chips / leaves.



This publication cannot be reproduced without written consent from Texas A&M AgriLife Water University.

By Daniel Cunningham, Patrick Dickinson, Dotty Woodson and Clint Wolfe

Illustrations and design by Gabe Saldana

17360 Coit Rd., Dallas, TX 75252  
wateruniversity.tamu.edu