HOME COMPOSTING
in Napa County

Turning GARBAGE into GOLD

What every Napa County resident can do to keep organic materials out of the landfill, improve garden soil, reduce fertilizer and water use, and grow healthy and beautiful plants.

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For compost troubleshooting or gardening questions, call or drop by our office:

Master Gardener Program
UC Cooperative Extension
1710 Soscol Ave., Suite 4
Napa, CA 94559

Mondays, Wednesdays, & Fridays
9:00 am to 12:00 Noon

INFORMATION/ADVICE LINE
(707) 253-4221
http://ucanr.edu/ucmgnapa

Please visit www.CityofNapa.org/compost for workshop registration information.
Why do we encourage home composting?

Keeping valuable resources out of the landfill is an important goal for us. We must rethink how we consume and discard resources in order to live sustainably. Most of what we send to the landfill can be reused or recycled.

In 2012, Napa County sent 99,518 tons of “waste” to Keller Canyon Landfill in Contra Costa County, Clover Flat Landfill in Calistoga, and 13 other landfills in California. The pie chart below shows what we send to landfills on average.

Organic material* should never go to landfills because:

1. it can be composted and returned to the soil for multiple benefits
2. burying organic material in landfills generates methane, a powerful greenhouse gas.

What we send to the landfill

*Organic Material:
- Food
- Leaves and Grass
- Prunings and Trimmings
- Branches and Stumps
- Agricultural Crop Residues
- Manures
- Textiles
- Remainder/Composite Organics

Napa County is fortunate to have 2 municipal composting facilities that turn yardwaste collected at the curb into high quality mulches and amendments that can be used in our own backyards and agricultural fields.

Curbside collection is a great option — however, backyard composting saves even more resources (no collection trucks needed), offers gardeners the opportunity for total control over the compost ingredients and process, and provides great personal satisfaction!
Grasscycling = Natural recycling of grass

It’s simple…just leave the grass clippings on the lawn when mowing. The grass clippings will decompose quickly and release valuable nutrients back into the soil.

Overall benefits of grasscycling

- Saves time—no more bagging
- Saves money—less water & fertilizer needed, no landfill fees
- Encourages a healthier lawn—clippings contain valuable nutrients
- Saves energy—mowing time, hauling to the landfill
- Saves valuable landfill space

Proper mowing is essential for successful grasscycling

- Keep mower blades sharp and cut grass when surface is DRY.
- Follow the 1/3 rule: mow lawn often enough so that no more than 1/3 of the length of the grass blade is cut in any one mowing.
- Frequent mowing will produce short clippings that will not cover up the grass surface. You may have to cut the lawn every 5 days when the lawn is growing fast, but only every 7 to 10 days when the turf is growing slowly.
Composting basics

Composting “1-2-3”
The bugs, fungi, bacteria, and worms in your yard or worm box do most of the composting for you. Whatever recipe you choose, it’s as easy as 1-2-3!

1. **Shred** compostables. The more you shred, the faster the decomposition process will go.

2. **Mix** dry, brown, carbon-rich material, with moist, green nitrogen-rich material for a balance of nutrients. Equal volumes of green and brown.

3. **Water** the materials as you build the pile, then keep the pile as damp as a wrung-out sponge. This speeds the decomposition process.

No-Fuss Compost
This is the easiest way to compost yardwaste as it accumulates. It requires little or no turning.

**Ingredients:** Yardwaste*, some water as needed.

**Directions:** In a heap, hoop, or bin, layer chopped yardwaste as it accumulates. Water as needed, so compost is kept moist as a wrung out sponge. In 12 to 18 months, the material at the bottom and center of the pile will be dark, crumbly compost. Screen, and use the uncomposted material to start a new batch.

Fast Compost
The fastest way to compost is to build a “hot” pile in a heap, hoop, or bin. This requires frequent turning of the pile.

**Ingredients:** Yardwaste*, some water as needed.

**Directions:** Layer and mix 50% moist-green with 50% dry-brown (equal volumes of green and brown) materials until you have a cubic yard (3’ x 3’ x 3’). Keep pile about as moist as a wrung-out sponge. Turn the pile one to three times a week to give it the air it needs for clean, fast composting. If the pile has too many brown ingredients and is not decomposing, mix in fresh green materials like grass clippings or add organic nitrogen fertilizer.

Compost is ready to use in 2-5 weeks. Sift, and use any undecomposed material to start a new pile.

During composting microorganisms (and macro-organisms in slow composting) eat the organic (carbon containing) waste and break it down into its simplest parts.

This produces humus with inorganic nutrients like nitrogen, phosphorus and potassium.

The microorganisms require oxygen that they get from the air you introduce when you turn the material in the compost bin. The microorganisms also require water to live and multiply.

Microorganisms give off carbon dioxide and heat – temperatures within compost piles can rise as high as 100 to 150 degrees Fahrenheit.

If the compost pile or bin is actively managed by turning and watering it regularly, the process of decomposing into finished compost can happen in as little as two to three weeks (otherwise, it may take months).

*When using fresh grass clippings, mix them with dry, brown materials to prevent compaction.*
What to compost

**DO**

50% ↔ MIX ↔ 50%

**Greens...nitrogen rich**

These materials are usually moist.

- green leaves
- weeds, before they go to seed
- veggie/fruit peels and scraps
- spoiled food
- green grass clippings
- coffee grounds, including filter
- tea bags
- egg shells, crushed
- breads
- cooked pasta and rice
- flowers

**Browns...carbon rich**

These materials are usually dry.

- evergreen needles
- dry leaves
- dried brown grass clippings
- bark chips
- straw
- prunings and clippings
- dryer/vacuum lint
- bird cage cleanings
- cardboard and paper
- sawdust

**DON'T**

What not to add:

- meat and/or fish
- dairy products
- oily foods like peanut butter
- for worm-composting: grass clippings (too hot!)
- rubber bands, twist-ties, produce labels
- soil or wood ashes
- weed seeds
- compost starter
- meat-eating animal feces
Make the most of mulch

Mulches are protective coverings on the soil surface that:
- Enrich soil
- Control weeds
- Enhance appearance
- Retard crusting
- Moderate soil temperatures
- Prevent erosion
- Protect plant roots
- Conserve moisture

Building the mulch layer
- Soak the soil first in dry seasons
- Add additional mulch when it becomes compacted or sparse
- Use thin layers around seedlings to allow air circulation
- Apply mulches thicker on sandy soils; thinner on clay soils
- Build coarse mulches 6 inches thick to achieve a 4 inch settled layer
- Suppress weeds with old carpet or thick layers of wet newspaper

Mulching tips
- Monitor mulches to control slugs and snails
- Restore barren soils with organic mulches
- Use only newsprint, not slick magazines
- Substitute woven landscape fabric for clear or black sheet plastic underlayer
- Cover utilitarian sheet mulch with a more attractive organic material
- Keep mulch away from base of trees and shrubs to avoid fungal diseases from excess moisture

Mulching practices through the seasons

**Fall/Winter:** Spread shredded leaves or compost to protect bare ground and planting beds from rains. Protect sensitive roots from excessive winter cold.

**Spring/Summer:** To hasten soil warming, remove winter mulch to compost pile or work into planting beds with a balanced fertilizer. • After planting, apply fresh mulch to suppress weeds and conserve moisture.

**MULCH PARTICLE SIZES AND THEIR DEPTH USES**

<table>
<thead>
<tr>
<th>Mulch Material</th>
<th>1/4 inch</th>
<th>1/2 inch</th>
<th>1-2 inches</th>
<th>3 inches or larger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sifted compost</td>
<td>gravel</td>
<td>straw</td>
<td>shredded paper</td>
<td></td>
</tr>
<tr>
<td>Newspaper</td>
<td>compost</td>
<td>bark</td>
<td>leaves</td>
<td></td>
</tr>
<tr>
<td>Sawdust</td>
<td>pine needles</td>
<td>chips</td>
<td>bark</td>
<td></td>
</tr>
<tr>
<td>Mulch Depth</td>
<td>1 inch or less</td>
<td>1-2 inches</td>
<td>3-4 inches</td>
<td>4-6 inches</td>
</tr>
</tbody>
</table>
## Trouble-shooting

<table>
<thead>
<tr>
<th>SYMPTOMS</th>
<th>PROBLEMS</th>
<th>SOLUTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pile not composting</strong></td>
<td><strong>Too dry</strong></td>
<td>Moisten until slightly damp</td>
</tr>
<tr>
<td></td>
<td><strong>Lack of oxygen</strong></td>
<td>Turn to aerate</td>
</tr>
<tr>
<td></td>
<td><strong>Too much dry brown material</strong></td>
<td>Turn, add fresh green materials or organic nitrogen fertilizer</td>
</tr>
<tr>
<td><strong>Pile smells rotten; and/or attracts flies</strong></td>
<td><strong>Too wet</strong></td>
<td>Turn, add dry brown materials</td>
</tr>
<tr>
<td></td>
<td><strong>Non-compostables present</strong></td>
<td>Remove or avoid meat, grease, etc. and turn</td>
</tr>
<tr>
<td><strong>Rodents in pile</strong></td>
<td><strong>Food waste in open bin</strong></td>
<td>Turn compost</td>
</tr>
<tr>
<td></td>
<td><strong>Holes larger than 1/4 inch</strong></td>
<td>Rodent-proof your bin by covering openings with wire mesh</td>
</tr>
<tr>
<td></td>
<td><strong>Non-compostables present</strong></td>
<td>Remove or avoid meat, grease, etc. and turn</td>
</tr>
<tr>
<td></td>
<td>(meat, grease, etc—see page 5)</td>
<td></td>
</tr>
<tr>
<td><strong>WORM COMPOSTING</strong></td>
<td><strong>Worms not eating enough</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>No grit for the gizzard</strong></td>
<td>Add some dirt, oyster shell or rock flour</td>
</tr>
<tr>
<td><strong>Bin smells bad</strong></td>
<td><strong>Too much food</strong></td>
<td>Feed less</td>
</tr>
<tr>
<td></td>
<td><strong>Too wet</strong></td>
<td>Check drainage holes and/or add dry bedding</td>
</tr>
<tr>
<td><strong>Fruit flies</strong></td>
<td><strong>Too acidic</strong></td>
<td>Add rock flour or oyster shell to change pH</td>
</tr>
<tr>
<td></td>
<td><strong>Food exposed</strong></td>
<td>Bury food</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cover surface with paper or carpet</td>
</tr>
</tbody>
</table>
Enrich your garden with compost

What is compost?
The decomposed remains of plant residues and other organic matter.

What does compost do?
Compost develops into humus and binds soil particles together for improved structure.

What are benefits of compost in the garden?
- Improves drainage & aeration
- Nurtures soil organisms
- Provides plant nutrients
- Conserves soil moisture

TIPS FOR USING COMPOST

<table>
<thead>
<tr>
<th>As a soil amendment</th>
<th>Work 2-3 inches of compost into top 6-8 inches of soil when ground is warm and moist.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetables</td>
<td>Amend soil with compost before planting. • Side-dress (mulch) with 2-3 inches of additional compost for intensive cropping and heavy-feeding plants.</td>
</tr>
<tr>
<td>Annual flower beds</td>
<td>Mix 1-2 inches compost into top 2-6 inches of soil before soiling seeds. • Layer 1/2-2 inches compost on top of soil during growing season. • Spread 1-2 inches partially-decomposed compost over planting bed during fall clean-up; dig it into soil or cover with mulch for winter.</td>
</tr>
<tr>
<td>Perennials</td>
<td>Layer 2-4 inches of compost on soil and mix in before planting. • Add fresh compost mulch annually to surrounding soil surface. • Dig 2 inch-layer of compost into soil 6-12 inches deep around all perennials just outside root zone.</td>
</tr>
<tr>
<td>Transplanting</td>
<td>Mix small amount of compost into each hole when planting flowers, small perennials, and vegetables.</td>
</tr>
<tr>
<td>Trees and shrubs</td>
<td>Rake 1-2 inches layer of compost into soil, beginning 6-12 inches from the base and extending to 1 foot beyond drip line. Cover with 2-4 inches of mulch. Spread a mix of equal amounts compost and soil 1-2 inches thick over root area where plant roots are close to or protrude above the soil surfaces. Cover with mulch. • Avoid use of compost or other amendments in planting holes for trees for larger shrubs. Roots may not spread into native soil. Instead, spread 2 inches of compost on soil surface around the plant, water it in, and cover with mulch.</td>
</tr>
<tr>
<td>Lawns</td>
<td>Spread sifted compost 1/4 inch thick in fall and early spring. For best results, aerate lawn before spreading and rake in after. In most cases applications of compost will reduce need for other lawn fertilizers. • Prepare for new lawn by mixing 2-3 inches of compost uniformly into the top 6-8 inches of soil before seeding.</td>
</tr>
<tr>
<td>Propagation mix</td>
<td>Mix up to 20% sifted compost with uniform mix of sand, perlite, vermiculite, or potting soil for start seedlings.</td>
</tr>
<tr>
<td>Potting mix</td>
<td>Mix sifted compost with equal parts garden soil and perlite or lava rock. In a soilless mix, use 30% compost, more for moisture-loving plants. • Use sifted compost as a top dressing for container plants.</td>
</tr>
</tbody>
</table>

COMPOSTING VARIATIONS

| Sheet composting    | Spread leaves or plant residues over soil surface in fall. Turn material into soil or wait until spring. • Cut legume or grass “green manure” crops in spring to cover bare soil in summer. Turn under in fall or the following spring. |
| Compost tea         | Soak compost in water (a burlap bag is useful) to make a liquid fertilizer. Use compost tea to water transplants, garden flowers, vegetables, and container plants. Apply to soil or use half-strength as a foliar spray. |
| Trench or posthole composting | Bury yardwaste and food scraps (not meat or bones) 12 inches deep in garden. Soil is ready for planting in 2-6 months |
Worm composting

Even in cool winter weather where outdoor compost piles lie dormant, you can compost your food scraps indoors with worms, and reduce the volume of your household garbage by as much as 25%. The end result is worm compost, unsurpassed as an organic soil builder and plant fertilizer. Worm compost contains 5 times more nutrients than regular garden soil. It can be added to potting mix or dug directly into garden soil around base of plants.

What Kind of Bin?
Your bin should be 10 to 16 inches deep. Because redworms are surface feeders, deep bins are not desirable. A worm bin should have a snug fitting lid to keep out flies and rodents. Bins need ventilation holes in the bottom or sides. The holes should be ¼ inch or smaller to keep out flies.

Pick a Place . . .
Locate your bin where it will not freeze or overheat—in indoors or outdoors. During the cold winter months it should be out of the rain.

Make a Worm Bed . . .
Worm composting will turn food waste into a rich fertilizer and soil amendment.

Ingredients: Food waste, newspaper, red worms

Directions: Worms like to live under lots of damp paper and/or leaves. Make a layer of shredded cardboard or newspapers (black and white only) six inches deep in the box, with enough water to make it damp as a wrung-out sponge. Add worms, food waste (no animal products) as generated and shredded newspapers as needed. Keep the box between 50 and 75 degrees, out of direct sun.

Worm compost is ready after 3-6 months.

Adopt Some Worms . . .
The best kinds of worms for composting are “red worms” or “red wigglers.” They are often found in old compost piles, and are different than the earthworms you find in the ground. You can get red worms or red wigglers from a friend, at a bait store, or online.

Feed the First Meal . . .
Begin feeding your worms only a little at a time. As they multiply, you can add larger quantities of food wastes. Bury the wastes into the bedding regularly, rotating around the bin as you go. When you return to the first spot, most of the food you buried there should have been eaten. If not, just feed the worms less for a while. Compost materials include vegetable scraps, fruit and peels, bread and grains, tea bags, coffee grounds and filters, crushed eggshells.

Maintaining Your Worm Bed . . .
FEED YOUR WORMS regularly as is convenient. Add only as much food as the worms seem able to handle. To avoid fruit flies and odors, always bury food under bedding.

ADD FRESH BEDDING every 1-3 months. Always keep a 4” to 6” layer of fresh bedding over the worms and food in your bin.

KEEP BEDDING SLIGHTLY MOIST like a wrung out sponge. In a plastic bin, add dry bedding to absorb excess moisture. Wooden bins may require adding water occasionally.

Harvesting Worm Compost . . .
After a few months, you will notice that the bedding has been eaten. You can begin harvesting the compost, which will look like rich, dark soil. Harvesting the compost and adding fresh bedding at least twice a year is really necessary to help keep your worms healthy.

# Effective ways to re-use what grows in your garden

<table>
<thead>
<tr>
<th>YARD MATERIAL</th>
<th>MAKE INTO COMPOST</th>
<th>USE AS MULCH</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Herbaceous Plants</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flowers &amp; garden trimmings</td>
<td>Shred* to speed decomposition</td>
<td></td>
<td>Sheet compost</td>
</tr>
<tr>
<td>Most weeds</td>
<td>Pull before seeds set. Hot composting will kill most seeds</td>
<td></td>
<td>Mow &amp; compost</td>
</tr>
<tr>
<td>Troublesome roots &amp; weeds (bind weed, bermuda grass, quack grass, etc.).</td>
<td></td>
<td></td>
<td>Put in yardwaste cart</td>
</tr>
<tr>
<td><strong>Woody Plants</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prunings, brush</td>
<td>Chip or shred before composting. Use as aerator on bottom of pile</td>
<td>Chip or shred for paths or ground cover</td>
<td>Make a planting mound by covering with soil. Use to stake up annuals or perennials</td>
</tr>
<tr>
<td>Large branches, trunks</td>
<td></td>
<td>Chip for paths or ground cover</td>
<td>Cut for kindling and firewood. Devise creative landscape uses</td>
</tr>
<tr>
<td>Plants with thorns</td>
<td>Chip or shred small lengths cautiously</td>
<td></td>
<td>Use at bottom of planting mound</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Put in yardwaste cart</td>
</tr>
<tr>
<td><strong>Leaves</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dry leaves</td>
<td>Stockpile dry to use with fresh green materials</td>
<td></td>
<td>Sheet compost</td>
</tr>
<tr>
<td>Soft, deciduous &amp; fast decomposing</td>
<td>Shred* for faster decomposition</td>
<td>Shred. Use under trees &amp; shrubs or planting beds</td>
<td>Use as bedding in worm compost bin</td>
</tr>
<tr>
<td>Tough leaves, needles</td>
<td>Shred* large or waxy leaves for faster decomposition. Good as aerating bottom layer</td>
<td>Use naturally under oaks &amp; redwoods; use around other tree &amp; shrubs, pine needs on acid-loving plants</td>
<td></td>
</tr>
<tr>
<td>Leaves with toxins &amp; growth suppressants</td>
<td>Compost to break down harmful substances</td>
<td>Compost before using as mulch</td>
<td></td>
</tr>
<tr>
<td><strong>Fruits &amp; Vegetables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fallen or inedible</td>
<td>Bury in middle of bin or pile; mix with dry materials</td>
<td></td>
<td>Use small amount in worm box or bury in trench compost</td>
</tr>
<tr>
<td><strong>Lawns</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grass clippings</td>
<td>Mix with ample dry brown ingredients to avoid compaction</td>
<td>Dry &amp; use on planting beds</td>
<td>Grasscycle with mulching mower for best use</td>
</tr>
<tr>
<td>Sod</td>
<td>Stack upside-down for 1-2 years. Cover Bermuda grass and sod with black plastic</td>
<td></td>
<td>Cover turf with black plastic in late winter until grass is killed, then replant</td>
</tr>
<tr>
<td><strong>Diseased Plants</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leaves, flowers, trimmings, plants</td>
<td>Hot compost only; 3-5 days above 130° will kill most diseases</td>
<td>Do not use as mulch</td>
<td>Put in yardwaste cart</td>
</tr>
</tbody>
</table>

*Substitute lawn mower with bag attachment for chopper/shredder to reduce particle size of compost ingredients.
The Recycle Guide includes curbside and electronics recycling, household toxics, construction & demolition programs, buying recycled product, and much more.

Find the Guide in both local phone books under “R” in the yellow pages or visit www.NapaRecycling.com.

BUY COMPOST & TOPSOIL

Enrich your soil, prevent erosion, conserve water, save money, fight global warming and close the loop with Napa’s local compost.

Our compost is OMRI listed for use in organic production!

Napa Recycling & Composting Facility
NRWS will deliver for a fee – 10 cubic yard minimum
255-5200

Upper Valley Disposal & Recycling
Harvest Compost & Blended Compost
Please call for pick-up or delivery details
963-7988

The City of Napa offers an annual Water-Wise Landscaping Workshop Series for residents interested in saving on water bills while beautifying their properties. For details, call 257-9309.

CHOOSE LESS TOXIC
PRODUCTS FOR PEST CONTROL

Our Water Our World…Is a program that provides information about less-toxic pest management. Look for this information in participating stores (8 in Napa County!) before you buy:

• User-friendly Fact Sheets are available on common pests & less toxic ways to control them including product recommendations

• Tags on store shelves to help you find the less-toxic products recommended

• www.OurWaterOurWorld.org offers information about pesticide use. Website also lists participating stores in Napa County.
Contact information

UCCE Master Gardeners of Napa County
For home composting and gardening questions
1710 Soscol Avenue, Suite #4
Napa CA 94559
Phone: (707) 253-4221
or toll free from American Canyon and Upvalley
(877) 279-3065
http://ucanr.edu/ucmgnapa

City of Napa Recycling Division
For compost workshop registration or recycling questions
PO Box 660
Napa, CA 94559
Phone: (707) 257-9200
Fax: (707) 253-1603
www.cityofnapa.org/recycle

Napa County Public Works
Natural Resources Conservation
805 First St
Napa, CA 94559
Phone: (707) 259-8600 or 259-8330
www.countyofnapa.org

Upper Valley Waste Management Agency
(for Yountville north)
c/o Napa County Public Works
Natural Resources Conservation
805 First St
Napa, CA 94559
Phone: (707) 259-8600 or 259-4094

Napa Recyling & Waste Services
Napa County Recycling & Waste Services
820 Levin Way, American Canyon
(707) 255-5200
www.naparecycling.com

City of American Canyon Public Works Dept
205 Wetlands Edge Road
American Canyon, CA 94567
(707) 647-4550

Mar 2014

More information

References/Books
Easy Compost, the Secret to Great Soil and Spectacular Plants, 1997, Brooklyn Botanic Garden 21st Century Series
Mike McGrath’s Book of Compost, 2006, Mike McGrath, Sterling Publishing, New York
Soil Biology Primer, Soil and Water Conservation Society, USA
Start with the Soil, 1997, Grace Gershuny

Websites
Grasscycling info
www.calrecycle.ca.gov/Organics/Grasscycling
Composting Info
www.epa.gov/wastes/conserve/composting
Variety of compost bins and accessories
Many compost bins are available for purchase on-line. Search "compost bin."
Worm Sources
www.thewormfarm.net
www.unclejimswormfarm.com
Composting with red wiggler worms
www.cityfarmer.org/wormcomp61.html
www.calrecycle.ca.gov/Vermi/
Local recycling information
www.naparecycling.com
California Master Gardener information
http://camastergardeners.ucdavis.edu

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