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<https://gunnisoncountygardening.wordpress.com/2010/12/01/the-lowdown-on-composting-in-gunnison-county-how-to-make-the-most-of-a-rotten-deal/>

About

The Gunnison County Gardening blog is maintained by the Colorado State University Extension Office in Gunnison County. Information posted on the site is written by Gunnison County Extension staff and by trained Colorado Master Gardeners with many years of practical experience in high-altitude gardening and horticulture. The purpose of this blog is to openly share and exchange research-based information and practical experience that may help Gunnison County residents make ecologically, financially and aesthetically-sound gardening decisions.

The Lowdown on Composting In Gunnison County (How to Make the Most of A Rotten Deal)

[December 1, 2010 at 6:49 pm](#) [Leave a comment](#)



It's December and it may look to you as though I am just sitting in front of the fire, doing nothing in particular, eating fondue, and waiting for the snow to melt so I can get gardening. Au contraire, Gruyere breath! I am working hard on one of my most important gardening projects of the year. I'm composting.

The Composting Process

In its simplest form, composting is the “cooking” of organic waste materials in a pile to break down the materials into useful by-products. For the small-scale gardener and landscaper, the source of the organic material is usually kitchen scraps, garden wastes, landscape residues, and imported materials such as manures. (For large scale operations such as ranching or farming, composting is a major undertaking requiring equipment and space not available to the average person.) Finished compost can be analogized to time-release cold tablets (and goodness knows, we use a lot of cold tablets in Gunnison Country); because compost releases small amounts of trace minerals and elements over a long time into the garden or landscape, while gradually improving soil and soil structure. See, [CMG Garden Notes # 241](#). [Despite common language usage, compost is not, legally-speaking, “fertilizer.” See, [CMG Garden Notes # 232](#).]

Benefits of composting include:

- * Creation of natural, organic materials for improving soil tilth and for mulching garden, lawn, and landscape plants (See, [CSU Extension Fact Sheet 7.235, Choosing a Soil Amendment](#))
- * Control of the material and, therefore, knowledge of the presence of useful constituents and the lack of harmful ingredients
- * Reduction/elimination of the need for herbicides and insecticides by improving soil growing conditions
- * Beneficial recycling of materials otherwise destined for landfills
- * Simplicity of the process
- * Cost efficiency (self-made composts are nearly free)

Requirements:

- * Suitable space for establishing a composting area
- * Simple construction materials, often obtainable at little or no cost
- * Rudimentary handyman/woman skills
- * Periodic tending of the compost pile
- * Supervisory skills adequate to superintend millions of highly skilled, albeit very small and silent but deadly, workers

In essence, for the average person composting is the process of turning garbage into valuable gardening and landscaping materials. This process is performed by literally billions of bacteria, fungi, and microbes doing what has been their natural function since the inception of life on planet Earth: eating and breeding. These organisms require little to accomplish this: just air, moisture, heat, and food.

The Challenge In the Gunnison Country:

Compost is a valuable organic soil amendment with very few drawbacks. However, like many things, composting in Gunnison County presents a number of challenges not often encountered when compared to composting at lower altitudes and in warmer climates. Knowledge of a few simple tips and techniques will assist the Gunnison area gardener/landscaper in successful composting.

The Needs of Compost Organisms:

Air: While it is true that the air in Gunnison County is quite a bit thinner than the air at lower elevations, there is ample air for composting. The real problem (not unique to Gunnison) is to get the air to the compost organisms. This is accomplished in two ways: constructing the compost pile to enhance air circulation and periodically turning (stirring) the pile to expose different portions to the air. A compost pile without air is dead, because all the little beneficial organisms suffocate.



Moisture:

Much of Gunnison County is very arid, some areas even qualifying as alpine deserts. Compared to other places, Gunnison composters need to be more mindful of maintaining sufficient moisture levels in their compost piles. In other locales, rainfall and high humidity provide sufficient moisture for the composting organisms to thrive. In Gunnison Country, however, some additional moisture must be supplied to compost piles. In essence, supplemental moisture is needed whenever there has been a dry period without rainfall or snow melt sufficient to keep the compost pile moist. In controlling moisture, the goal is to have the interior of the pile damp but not drenched.

A different, non-beneficial process occurs when organic materials remain water-logged. In scientific terms, the difference is the distinction between aerobic and anaerobic processes. Aerobic: good; anaerobic: bad. Composting organisms require some moisture because hydration is necessary for health and digestion,

but too much moisture results in drowning. When beneficial organisms are drowned in a compost pile, they are replaced by other non-beneficial organisms whose by-products are not desirable (i.e., a smelly, slimy mess). On the other hand, without moisture, the composting organisms die of dehydration. Controlling the moisture in a compost pile can also be viewed as a question of getting air to the composting organisms: in Gunnison where the air is thinner, it is easier to drown or dehydrate them.

Heat:

In order to thrive, composting organisms need heat. There are two sources of heat for composting: (1) the sun and (2) heat generated by the composting organisms themselves metabolically. In Gunnison Country, maintaining heat is the primary challenge for small-scale composting. The combination of short summers, high altitude, frequent frosts and freezes, and aridity serves to drain heat from Gunnison Country compost piles. A healthy compost pile will generate some of its own heat, but some steps must be taken to preserve that heat in Gunnison's climate, especially in a new pile.

Excessive low or high temperatures adversely affect beneficial composting organisms. The optimum temperature at the core of a compost pile is around 145F, although there is a range of temperatures on either side of 145F at which the composting process will occur. Basically, a cooler pile will simply take longer to compost the raw ingredients. The metabolic activity of composting organisms slows or ceases when temperatures are low. A much hotter pile will "burn" up the materials into ash-like products. In fact, compost piles can get so hot that they actually catch fire. This does happen in places like Arizona and Texas, but it would be very unlikely that a Gunnison Country compost pile would ignite. In Gunnison County, the more heat in the pile the better, because heat losses are a much bigger problem than excessive heat. Gunnison compost piles usually operate with core temperatures lower than 145F.

While it is not necessary for successful composting, knowledge of the core pile temperature is handy because it can reveal something about the health of the pile. A sudden drop in temperature can signal problems with the interior composting conditions. In Gunnison Country, core temperature drops in mid Summer indicate a problem which needs addressing.

A drop in late Fall is normal. Conversely, a rise in temperature in Spring indicates that the composting process is "heating up" for the season. A rise in temperature in a new compost pile indicates that the composting organisms have begun to work. Garden centers sell special thermometers which can stand up to

the strain of thrusting into compost piles – do not use regular thermometers for this purpose.

Food:

The most important element in the compost process is the raw material used by the composting organisms for food. There are many sources of raw materials for the compost pile:

- *kitchen scraps: almost any vegetable or fruit material is ripe for the compost pile
- * lawn clippings
- * dead leaves, preferably crushed
- * garden waste, such as the inedible leaves, stalks, and roots of vegetables and trimmings from ornamentals
- * cow, poultry, goat/sheep, or pig manures (but not horse, dog, cat, or human manures)
- * pet or human hair
- * other landscape materials, such as dead plants and bark and wood chips (See, [CSU Fact Sheet 7.212, Composting Yard Waste](#))

Issues with Kitchen Waste:

Some common sense is required. Since some domestic and most foreign mega-corporation farming operations dip or spray fruits and vegetables with insecticides and chemicals preservatives, all grocery store fruits and vegetables should be thoroughly washed immediately before use, including those which will be peeled or processed before eating. The same is true for material which is destined for composting. Apple peels, for example, are great for composting, but the apple should be washed before peeling. [Note that the seeds of some fruits contain toxins (to prevent them from being eaten by animals) and should be avoided, an example being apple seeds. Likewise, the pits of some fruits can be so hard that they are difficult to compost, an example being peach pits.] Citrus peels contain chemicals which inhibit certain beneficial microbes – compost them in small quantities.

Thought Should Be Given to Materials Added to Compost

Issues Include:

1. Kitchen Waste Problems
2. Landscape Waste Problems
3. Problems with manure
4. Unique Ingredient Issues
5. Disease & Insect Issues

Leftovers are a good source of compostable material. However, foods which have been heavily salted or which contain large amounts of cooking oils do not compost readily. Moreover, such materials would add salt and other undesirable materials to the compost produced. As an example, we do not follow recipe instructions to add salt and/or olive oil when boiling pastas. Since we almost always end up with a little leftover pasta which we will compost, we wait to add salt until the pasta is plated. The olive oil is intended to prevent the pasta from sticking to itself during the cooking, this may be omitted by simply stirring the pasta in the pot a little more often. A second bonus to our procedure is that pasta water without salt or oil, once cooled, can be used in the garden or on houseplants, which benefit from the starchy water. This technique also recycles the water for a second use.

Issues with Landscape and Garden Materials:

Material such as wood chips, shredded bark, and branches can be composted, but these take a very long time to decompose – years in Gunnison Country. As an additive to a small scale compost operation, these materials will “rob” nitrogen from other compost material, which can degrade the overall quality of the resulting compost. In this case, the problem is controlled by limiting the amount of this type of material in the compost pile. A chipper/shredder is helpful in grinding these woody materials down to a size which composts more readily. Another strategy is to mix manures into wood and bark chips; manure provides the microbes and nitrogen to speed up wood decomposition.

Conversely, when adding significant amounts of raw manures to a compost pile it is useful to mix in woody material; this being a case where wood chips, shredded bark, and straw are particularly helpful by “breaking up” the dense manure material. This is also a time when shredded paper (e.g., strips from a document shredder) can be helpful. Note that some manures contain very high amounts of nitrates and ammonia. These manures are considered to be

“hot” because they can burn plants if applied “fresh from the field” to a garden or landscape. Composting manures with other materials reduces the risk that plants will be burned.

Another, hidden danger with landscape and garden materials is the presence of compounds such as pesticides and herbicides. Think twice before composting plants, lawns, or landscape materials from areas which have been treated with herbicides or other pesticides within the previous year. Pesticide compounds can remain present on the surface of or in the tissues of plants and be carried into a compost pile in the form of lawn clippings, autumn leaves, perennial trimmings, and so forth. A common example is the herbicide 2,4-D, which is the broadleaf weed killer contained in most of the consumer weed-and-feed type lawn care products. Unlike some other herbicides, 2,4-D can persist in the soil and in plant tissues by uptake through the root system, even if the plant itself was not sprayed. Compost made from materials containing significant amounts of this herbicide could be a disaster in a garden or perennial bed. While 2,4-D and other weed killers can be very useful when used wisely, pesticide residues do not belong in compost.

Issues with Manures:

Being mostly rural, ranching country, Gunnison County is replete with opportunities to obtain manures for composting. These materials are often free for the taking (with the rancher’s prior permission). One thing to be aware of is that some farms and ranches treat their livestock with medicines and other chemicals to prevent diseases and promote growth. Manures from treated livestock can contain trace residue of these substances; so, if this is of concern, ask the rancher or farmer about these issues. Often, it is sufficient to harvest manure from pastures or pens grazed after a certain amount of time has passed after the inoculations, feed supplements, etc. Gunnison County’s Extension Office is very knowledgeable about such issues, especially as in regard to cattle. See, [CMG Garden Notes #242](#).

Most commercially available “fertilizers” (in the bags at the garden center) are basically manures which come from large cattle feed and dairy lot operations. Typically, such manures contain high concentrations of salt, nitrates, and other substances used by lot operators in feeds and supplements. This is the source of the white blush often seen when first opening one of these bags of manure-based products. Besides the fact that such manures are expensive in quantity, they add unwanted materials to small-scale composting and ,therefore, should be avoided. Big city dwellers without ready

access to farms and ranches may have no other choice, but Gunnison composters have an advantage here.

Note that many garden centers are beginning to stock products based on other materials (e.g., mushroom-based amendments) which avoid some of the problems of commercial manure-based products.

Whatever the source of manures, it is best to compost them for at least four months before use in the garden or landscape. In Colorado, this means harvesting the manure in spring or early summer, composting it until late Fall, and then applying the compost. Note that manures do typically have an odor, at least until the composting process is well under way. This can be reduced by encapsulating the manure in the center of the compost pile.

Issues Unique to Certain Materials:

Some plants generate a natural form of herbicide which inhibits the growth of other plants which might compete with them. These are known as allelopathic plants. Composting great amounts of material from these allelopathic plants can be counterproductive. Examples found in Gunnison Country include some members of the brassica family (e.g., cabbage), kochia weed, and knapweed. In the field, any plant is likely allelopathic when nothing else will grow under or next to it. Composting of material from plants exhibiting allelopathic properties should be avoided. In Gunnison a common example is pine needles, which have some allelopathic traits, so do not add them to compost piles.

Some plants contain toxins which are dangerous to humans. Examples include weeds such as cutleaf nightshade and ornamental flowers such as monkshood (*Aconitum*) and columbine hybrids. Note that animals such as deer can often eat these plants safely, so the fact that an animal eats a plant it does not make it safe for human consumption. These plants should not be included in compost which will be used in a vegetable garden or in areas where livestock graze or children play. The CSU Gunnison Extension Office can provide assistance in identifying which garden and landscape plants contain toxins which render questionable their use in compost.

Many books, etc., recommend composting fireplace ashes or spreading ashes over landscape and garden areas. In Gunnison Country, adding ashes to compost may be counterproductive because they may raise the pH of finished compost. Since our soils in the Gunnison Country generally tend to be alkaline (high pH) amending soils with an alkaline compost can further raise soil pH. So, when fireplace or barbecue ashes are completely cooled they should be disposed

of in the household garbage. For more information on soil pH, see [CMG Garden Notes #222](#).

Issues with Heavily Diseased or Infested Materials:

Finally, a compost pile will kill insect eggs, weed seeds, and pathogens if the pile temperature reaches and is maintained at 145F or hotter. Since Gunnison compost piles do not typically reach or maintain this temperature, weeds which have gone to seed or plants which are heavily infested with disease or insects should not be composted in Gunnison Country. They should be burned or bagged and disposed of in the landfill. Common examples of material to avoid composting are house- and garden plants infested with aphids or garden flowers which have succumbed to powdery mildew.

Gunnison Country Tips and Techniques

1. The More Compost Piles the Better.

In Gunnison Country, compost is generally made in some form of bin. Bins can be constructed from scrap building materials (cheaper) or can be made from various kits sold by hardware and garden suppliers (more expensive). If room permits, a good system is to place three bins side by side. Coarse materials go in one bin until it is full. Then material is added to the second bin until the second bin is full. During this time, the material in the first bin has begun composting. When the second bin has been filled, start filling the third bin. By the time the third bin is filled, the compost in the first bin should be ready to harvest, and coarse materials may be added to the first bin. On a rotational basis, each of the bins will have composting material in a different stage of development. If there is only room for one or two bins, turn the piles a little more frequently and sift out finished compost as often as possible to make room for more material.

Keys to Successful Composting In Gunnison:

1. Have several piles if possible
2. Build up a large biomass
3. Use a variety of materials
4. Have patience
5. Inoculate the pile
6. Deter scavengers
7. Avoid hard-to-compost materials
8. Choose the site wisely
9. Avoid unreasonable expectations
10. Forget about the pile

In Gunnison Country, the revolving plastic drums often sold on television for composting are usually unable to generate compost quickly enough, or in sufficient quantity to justify the expense. If one wishes to try drum composting, obtain a food grade drum from a commercial food manufacturer (they often have damaged empties available for small cost). Look for drums which have lids which can be opened entirely, as opposed to drums which have only 3 or 4 inch spouts. These drums can be laid directly on the ground sideways and rolled back and forth to turn the contents. Fully opening lids allow easy access to the contents for adding material and removing compost and for evaluating the progress of the decomposition. Consider the problem of how air will be getting to the contents. Dark colored drums collect heat better and therefore speed up the composting activity. In general, composting drums require less added moisture than other types of compost bins.

2. Keep up the Biomass.

To achieve useful core temperatures in a compost pile in Gunnison Country, the amount of organic material must fill a space about 4x4x4 feet. Bigger is better. A pile with less material will have a hard time generating and holding enough heat to maintain the composting process efficiently. Many composters place a perforated plastic pipe upright in the center of large compost piles. This helps get air down into the pile and is a handy place to add water when a pile starts to dry out. Some garden centers sell large augers which bore holes into compost piles to open paths for air and moisture.

Several areas around Gunnison Country have frequent winds. Sometimes these winds are strong enough to blow compost materials right out of the pile. Fertile ideas for preventing this include: constructing compost bins from materials such as unmortared concrete blocks, wrapping wire or wood bins with old plastic tarps (which also helps hold heat inside), and siting composting activities in areas

protected from prevailing winds. In any event, it makes sense all things being equal to construct bins so that any door or access hatch opening does not face the normal winds.

For similar reasons, it is best to site compost piles in well-drained locations. While moisture is necessary for composting, excess water can float away composted material. Moreover, areas where water collects are the lowest areas and therefore collect colder air, inhibiting the composting process. If one thinks a little about suitable places for compost piles, the ideas will come flooding in.

Do not worry if there is a lot of material to compost. It is not usually possible for a small-scale operation to generate too much compost for the composter's garden and landscape. If excess compost is made, offer it to friends or neighbors. Knowledgeable persons will usually jump at the chance to take it. The amount of compost to use in home gardens and landscapes has been analyzed by CSU's Extension Service and information is available on line or at the local Gunnison County Extension Office.

3. Utilize a Variety of Organic Materials.

For a small-scale composter, it is important to incorporate various types of organic materials in each compost bin. Some authoritative books even give formulas for the ratios of various materials to be added to a compost pile. While this may be scientifically sound advice, the attempt to adhere to rigid rules for building a compost pile in Gunnison is much less important than simply getting started with a variety of materials and building up the biomass large enough to start up and sustain the composting process. (Note that the material in a healthy compost pile will naturally shrink in size as the decomposition process occurs, thus making room for more material to be added.) Using of a variety of materials has several benefits: a) different textures of material help to establish and preserve air flow in the pile, b) the variety helps to ensure that a diverse amount of trace nutrients and minerals are in the finished compost, and c) the variety creates a synergistic process in decomposition where one type of material complements the others in the pile.

4. Have Patience.

Because Gunnison Country is arid and cold, compost piles do not process material at the same pace as compost piles in warm and moist climates. Books and TV programs which talk about having finished compost from start to

finished within a few weeks or months are not talking about Gunnison Country. Compost bins in Gunnison usually require a year or so to generate finished compost.

In a Gunnison winter, the process of composting will slow way down because the deep cold will send many of the micro-organisms into a hibernation. One tip for prolonging the vigorous action in the compost pile is to cover it with black plastic or landscape cloth. The black covering will absorb solar radiation and keep the pile going longer in Fall and start sooner in Spring. Hold down the plastic/fabric with weights or skewers to prevent it from blowing away. Try to do this in a way which is easy to remove when adding new material to the pile. If using plastic rather than fabric, punch several holes in the plastic for air flow. One good key to when compost is ready is the smell, it should smell like good farm soil.

If it smells like the original constituents, or had an ammonia or sour smell, the compost needs more time. Another key is appearance, the compost should have turned into loose, dark material which resembles rich loam. It should be loose and crumbly. Since the outer portions of the pile will decompose at a slower rate than the center and bottom portions, pull the outside portions aside and remove the finished compost inside. A homemade screen made from 2×4 inch lumber scraps and hardware cloth is handy for separating the finished compost from the unfinished material.

5. Inoculate the Pile.

Although the micro-organisms necessary for composting are present everywhere in the air and the soil, in Gunnison Country it is helpful to inoculate a compost pile with additional “little soldiers.” There are numerous sources of these wee beasties: cow or poultry manure, finished compost itself, commercial compost starters (which contain helpful bacteria, usually in a powdered form), and garden soil from an established garden. (In fact, it is useful to add a few shovelfuls of soil into the compost pile anyway.) Spread the inoculant around the pile and mix it in. In a sense this is like planting little composting seeds in the compost pile. This would be a good time to add water if the pile is at all dry. Inoculation can occur when the pile is started, whenever the pile seems like it could use a jump start, or both.

6. Protect the Bins from Scavengers.

Because Gunnison is rural, there is no part of the County where wildlife is not prolific. Some thought should be given to protecting the compost piles from

attracting wildlife. Rabbits and racoons, for example, can find kitchen scraps a temptation. One simple way to deter these uninvited guests is to line compost bins with hardware cloth (wire screening) Deer, elk, and bear are more interested in trash cans, dumpsters, and bird feeders than in compost piles. The last bear at the authors' Ranch walked right past the compost bins and headed for the dumpster.

Meet the Ranch "verminator":



7. **Avoid Hard-to-Compost Materials.**

Kitchen scraps such as meats and dairy products are not recommended in Gunnison compost piles. Such things attract vermin and predators. Likewise, manures from pets are not advisable because the cooler operating temperatures of Gunnison compost piles are not high enough to kill off the pathogens common in such substances. Additionally, use of horse manure or hay in compost piles is inadvisable because the core temperatures in Gunnison compost piles are not hot enough to destroy the seeds usually present. Untreated pet and human hair can be composted, but moderation is necessary because these materials can form mats which repel water and interrupt the composting process. The same matting problem applies to paper, which can be composted but should be used in moderation.

Usually it is better to recycle paper at the County recycle center. Autumn leaves are good for composting but they also can form layers which repel water (it helps to crush the leaves before adding them to compost piles). A mix of materials with different textures can help to avoid the matting problem. Straw can be added to compost piles, but straw can also form mats and takes a surprising amount of time to decompose. Straw is beneficial, however, in small amounts to help maintain air flow in a pile or to help dry out a pile that has become too soggy. Tree and shrub trimmings can be composted, but these woody materials

require a significantly longer time to decompose fully. A chipper/shredder can speed up the process of composting woody materials.

7. Place the Compost Pile in a Beneficial Location.

Avoid the temptation to hide the compost pile behind a screen or under a lot of shade. The more daily sunshine the better. Locate compost piles where they are protected from cold winds. Also, pick a location which is well-drained but close to a source of water. Often, this means putting compost piles adjacent to a vegetable or flower garden, which makes it easy to moisten a dry pile with the garden hose when watering the garden. Put the pile near to the house to reduce the hike through the snow to deposit materials (kitchen scraps) in Winter.

A healthy compost pile does not have noticeable offensive odors, so the fear of smells should not dictate the siting of the pile, unless a great deal of raw manure is to be used in the pile.

8. Avoid Unreasonable Expectations.

The composting process is a continuous one. Totally finished compost is dark and crumbly. It looks and smells like rich loam. However, partially finished compost is still useable. A few undecomposed twigs or leaves do not harm anything and compost at this stage can even be beneficial for working into heavy soil to “break it up” into better soil. Do not expect compost to solve a serious soil deficiency. Such a deficiency – identified by proper soil testing – is best dealt with by a specific commercial product designed to address an serious soil problem. As a hypothetical example, a significant need for extra iron in a particular garden should be dealt with by application of a product designed to supply iron (e.g., an iron chelate), which should be used at rates determined by a soil test. Compost alone will not be able to supply enough iron to cure a true iron deficiency. (Incidentally, a lack of iron is not usually a problem of soils in Gunnison Country; what appears to be iron chlorosis is more often a watering problem.)

Similarly, compost will not cure a soil with a serious pathological problem. However, over time compost will help to create a healthy soil which will help grow plants which are resistant to various diseases, insects, etc.

Ordinarily, compost from a healthy compost pile will provide most of the nutrients and elements necessary to fully satisfy the needs of garden and landscape plants. However, in Gunnison, additional nitrogen is usually needed

to supplement the compost. Plant-useable nitrogen is relatively inexpensive and easy to apply. In a garden or landscape where compost is used, this often is the only fertilizer required, unless a specific plant has a special need.

9. **Forget the Compost.**

As mentioned before, composting takes a little longer in Gunnison Country than elsewhere. It is possible to kill a compost pile with kindness. Over watering or excessive turning can be counterproductive. A healthy compost pile should sit happily by itself, cooking away, and making wonderful material for garden and landscape. The natural rhythm for composting in Gunnison Country is to build up the materials in the pile in Spring (starting with the material that accumulated during the previous Winter), monitoring the pile during the Summer, and harvesting the finished compost in Fall. Harvested compost should be spread over the areas where wanted, worked in a little if possible, and left there undisturbed over Winter until ground preparation commences the next Spring.

In normal circumstances, composting is a simple but valuable activity and one in which the process takes care of itself most of the time. The easier the composting, the more likely the home and small-scale composter will be successful. Most of the time, the best approach is to leave the compost pile alone to “do its thing.”

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