



[Kidsgardening Home](#) — [Member Log-in](#) — [Store](#)
[Click here](#) for printer-friendly version.

This month . . .

Building Soil Nature's Way

Exploring decomposition and soil health

Decomposition is a big word for some students. Help them break it down (pardon the pun), and they'll find that *de-* (reverse) + *compose-* (put together) means "to take something apart." All living things -- an oak leaf, a moth's wing, a carrot top -- are constructed from basic building blocks, such as proteins and starches. Eventually, all die and become food to multitudes of bacteria, fungi, insects, and worms. In the process, these once-living materials are transformed into nutrients for plants, which provide oxygen and food for everything else on Earth. In this cycle, Nature exhibits no waste, and that's a good lesson for all of us. But she doesn't make haste -- it can take millennia for decomposers to create a single inch of life-giving organic topsoil!

Do your young gardeners make the connection between spreading straw to keep weeds away from their tomatoes and strawberries and the process we just described? As they mulch, they distribute organic matter over the soil surface, providing a food source for the creatures below. Many school gardeners are familiar with the much speedier process of building humus: composting. Savvy students know that compost is "gardener's gold," and that adding it to the soil enhances plant growth. By creating an ideal blend of organic materials, oxygen, and moisture, we essentially create a decomposers' feeding frenzy, and they do their job in record time.

This month's project is an exploration of building life-giving humus that blends these methods -- Nature's slow "mulching" and gardeners' accelerated composting. (If students keep up with their role as mulchers, they'll not only feed the soil, but cut down on their weeding and watering chores, to boot!) Along with earthworm populations and healthy harvests, interest and enthusiasm are sure to proliferate. The [Curriculum Connections](#) and [Resources](#) sections offer suggestions for helping students cultivate a "sense of humus" in the garden and classroom.



Materials

- Newspaper
- Water source and hose
- Organic materials: grass clippings, hay, straw, leaves, weeds, livestock manure -- whatever is available
- Sawdust, wood chips, or bark mulch for paths (optional)
- Tools: wheelbarrow, bucket or tub, gloves, lawn mower (optional), black plastic (optional)

Building a Lasagna Garden

With this approach, you can build a garden purely on kid power, without having to dig sod or fire up a tiller. By smothering grass or a weedy patch with layers of mulch and organic matter -- akin to assembling a lasagna layer by layer -- you're setting up an environment that will suppress unwanted plant growth and encourage decomposing organisms to turn your "ingredients" into rich soil. Some gardeners prefer to let decomposers do their work through fall and winter, and plant the bed in spring. Others plant directly into the mulch, or into pockets of compost or soil nestled within it, as soon as it is built.



Start by brainstorming sources of organic matter with your class. They might suggest grass clippings from home lawn mowing, leaves and clippings from landscaping services, and mulch hay donations from farms. Urban dwellers can contact parks and recreation departments to deliver loads of organic material, collect coffee grounds from cafes, and request donations of peat moss or other material from garden centers. **Note:** To be safe, it's best not to accept clippings from lawns that have been treated with pesticides and herbicides.

Step 1: Level existing vegetation. Use a lawn mower, leaving clippings in place, or stomp tall grass and weeds flat to the ground.

Step 2: Define your beds. Use stakes or a garden hose to mark the edges of your bed. Beds should be narrow enough that students can reach the center without straining. That way, they can work from the paths and stay off the beds, preventing compaction.



Newspaper, straw, and grass clippings form the foundation layers of this "lasagna"

Step 3: Smother it! Fill a tub with water and moisten 4 to 6 pages of newspaper at a time (and see how long it takes before someone becomes engrossed in an article). Lay the damp paper over the defined area, overlapping the edges by at least two inches. If you create multiple beds, cover the pathways between them with newspaper topped with a thick layer of sawdust, bark mulch, or wood chips.

Step 4: Mulch, mulch, and mulch some more. Spread layers of organic matter (see [Materials](#) list). Keep off the bed as much as possible to reduce compaction. Spray dry materials with water until they are as damp as a well-wrung sponge before adding the next layer. If you use materials that contain weed seed, such as hay or uncomposted horse manure, use them as lower layers in your lasagna to minimize weed growth.

Keep adding layers until the bed is covered at least 12 inches deep. (Pat Lanza, author of *Lasagna Gardening*, recommends 18 to 24 inches. Depth is a variable students can

experiment with.) To hasten decomposition, use high-nitrogen material, such as fresh grass clippings or livestock manure, alternated with layers of high-carbon materials like straw and brown leaves. Decomposers will get to work and turn this smorgasbord into a rich medium for planting by the next spring. Or you can follow Step 5 and "bake" your lasagna.

If you plan to plant immediately, go to step 6.

Step 5: "Cook" your lasagna. Cover the mulched area with black plastic and weight the edges with soil or timbers. Ask students if they believe the color of the plastic will have an effect on the decomposition process. (Dark

Much Ado About Mulch

Gardening authors Pat Lanza and Lee Reich have both recently published books that extol and illustrate the benefits of using mulch to eliminate tilling, and to reduce weeding and watering. We encourage school gardeners to consider their

Building Soil Nature's Way Contents

Classroom Project

[Background](#)

[Materials](#)

[Building a Lasagna Garden](#)

[Maintaining Lasagna Beds](#)

Curriculum Connections

[Sparking Curiosity for Decomposition](#)

[Does Soil Need Plants?](#)

[Cooking Up Math Connections](#)

Resources

[Web Sites We Like](#)

[Some Favorite Books and Curricula](#)

Related Articles

[Making Haste with Waste](#)

[Wasteful Lessons](#)

[Leftover Lessons](#)

NGA's Guide for School Garden Entrepreneurs



NGA's latest book for educators, *Growing Ventures*, features stories of 18 student-run business projects, as well as step-by-step guidelines, activities, and worksheets for engaging students in planning and implementing a plant- or garden-related business that meets your curriculum goals. You'll find more details at our

colors absorb the sun's rays, heating up the materials and hastening decomposition.) They might wish to try covering other lasagna beds with white or clear plastic and observe the outcome of the different trials (difference in temperature, how quickly the materials break down, and so on). The lasagna should be transformed within about 6 weeks if temperatures remain above freezing.

Step 6: Planting. Pat Lanza, who lives in upstate New York, has had success planting her lasagna beds immediately after building them, even in autumn. Wherever you live, your students may wish to experiment with fall planting. Be sure to give perennials several weeks to grow and establish their roots before a hard frost is due. (For activities and curriculum ideas relating to extending the growing season, check out this back issue of Classroom Projects: [Pondering Plant Coverups](#).)

Suggest that students measure temperatures within the bed to see if decomposers heat up the materials. If you're in a cool climate, heat from decomposition may help the growth of fall plantings.



Compost pockets in the top layer of this lasagna bed await transplants

To transplant, pull mulch away to form a hole, install the plant, and firm the mulch back around its roots. You can also fill planting holes with compost or soil, and then put plants in place. To sow seeds, sift an inch or two of compost or soil over the surface of the mulch, plant seeds, and cover with more compost. Keep the seedbed moist, and as soon as the seedlings emerge, gently pull mulch around them. Monitor them daily to make sure they have enough moisture.

Maintaining Lasagna Beds

Watering. Mulch captures moisture and reduces evaporation (and your efforts spent hauling hoses and watering cans), but it can't do it all. By installing drip irrigation before building lasagna beds, you'll only have to manually water seedlings and new transplants. Once their roots become established in the rich organic mulch, you can let the irrigation system take over.

You can also use gallon milk jugs or 2-liter soda bottles as free, slow-drip watering tools. Using a pin, punch tiny holes in the lower half of each jug -- both bottoms and sides. Bury them in the bed near plants and fill them, and they will slowly leak water that plants can use. You might challenge your students to design and test other irrigation tools made from recyclables.

Keep mulching! Add an inch or two of mulch every couple of weeks during the growing season to feed decomposers and build soil. Regular mulching means you'll have fewer weeds to remove, and those that do grow will be easier to pull. The less you disturb the surface of the bed while working in the garden, the fewer weed seeds will be exposed to the sunlight they need to germinate.

Maintain paths. We recommend mulching paths to keep weeds from making inroads and to give students a clear indication of where to walk. Use materials that are slow to decompose: wood chips, bark mulch, and the like.

Delve further into decomposition with suggestions in the [Curriculum Connections](#) section.

advice! The methods outlined in their books can lighten the workload, allowing students to focus on observation and inquiry, teachers to concentrate on integrating the curriculum, and volunteers to funnel energy into enhancing gardens or developing new ones. See our [Resources](#) section for more information.

[Gardening with Kids Store.](#)

Member Benefits

New Discounts

Members now save 10% on items at the Gardening with Kids store *and* NGA Garden Shop.

[Enter members area.](#)

Free Courses

Take all 5 online courses ... FREE.

[Enter members area.](#)

Answers to Your Gardening Questions

Our gardening experts will tackle your growing dilemmas.

[Enter members area.](#)

Special Opportunities

We will draw from our pool of members for testing new curricula, participating in online projects, and exchanging with other members at conferences.

COMMENTS?

We welcome your questions and comments about this newsletter or your membership. Please reply to: [Growing Ideas editor](#).



Next Page

Copyright© 2004 National Gardening Association
Growing Ideas Classroom Projects is a benefit for NGA's [Members](#)