

Growing in the Bale



Gardeners can make a quick raised bed by using hay or straw square bales. The bales hold water, and the added 1½- to 2-foot height makes gardening easier for those who can't bend easily.



Bale selection is important. Wheat, rice, and barley straw make the best bales because they drain well. Straw bales tend to have fewer weed seeds than hay, but fescue, ryegrass, bermudagrass, and native hay bales also work.

Make sure the fields the bales came from were not treated with picloram (Tordon, Surmount, Grazon P+D) or clopyralid (Redeem R&P, Transline) herbicides, since these may stay in the hay and influence plant growth. Select firm and tightly tied bales.

Place bales where the sunlight strikes the area for as much of the day as possible. Select the area carefully, since it is hard to move the bales once crop production starts. The surface should accept water, or you should provide for runoff. You can put a sheet of plastic at least a foot wider and longer than the bale on the ground to keep excess water from soaking into the soil. Place the bale so the binding twine runs parallel to the surface of the soil or so most of the straw or hay grain is perpendicular to the surface. Do not cut the twine; the bale needs to hold its shape as much as possible. Start preparing the bale for production by thoroughly soaking the bale with water; most 40- to 50-pound bales take about 15 gallons, which is almost 125 pounds of water. Add limestone at ¾ to 1 pound per bale, and fork it in.

We suggest some guidelines for adding fertilizer to start the composting process. Organic growers use manure teas both to prepare the bales for production and to fertilize the crop. Conventional growers have several options. One is to use as little as ½ pound of ammonium nitrate followed by supplemental applications up to ¾ pound.

Fertilizer Additions for Preplant Bale Composting			
	Day 1	Day 7	Day 10
	Ounces of fertilizer per bale		
Well fertilized bermudagrass, ryegrass, fescue	3-6 AN	3 AN	3 AN
Native pasture, Grain straw	6 AN + either 4KS + 3SP + micros or additions at day 10	3 AN	either 12 (13-13-13) or 10 KN + 10SP + 3MS + 2FS
AN=ammonium nitrate, KS=potassium sulfate, SP=0-46-0, MS=magnesium sulfate (Epsom salts), FS=ferrous sulfate, micros=micronutrient mix, KN=potassium nitrate			

Another option is to use ½ pound of ammonium nitrate plus ⅓ pound of potassium sulfate plus ½ pound 0-46-0 plus micronutrients. Hay from well-fertilized fields may compost with just the additional nitrogen; straws and native hay from unfertilized pastures may require all of the additional nutrients. Proper fertilizers and water make the bale warm to more than 100°F. If your bale is not warm by the third day, add more fertilizer, and make sure it doesn't dry out. Check the bale for moisture and heat every day.

A less complex but more expensive way to prepare bales for planting is to water them with a complete soluble fertilizer solution every time. Any of the 100 percent soluble "blue" fertilizers work, including 20-10-20, 15-5-15, 15-16-17, or 18-18-21, as long as they have micronutrients in the mix. Water with 8 tablespoons (4 ounces) of fertilizer per gallon of water for 10 days during composting. After planting, just use water or the label recommended fertilizer-to-water ratio.

After 2 weeks, composting should slow and bale temperature decline. Then it is time to plant. Traditionally, a cap of 3 to 5 inches of soil or sand mixed 50-50 with compost or peat moss was applied to the top of the bale. This "top cap" protects the bale from drying too quickly but is not necessary. You push a hole into the bale and set the plant into the hole. As always with vegetable transplants, as long as something green is sticking out, it isn't too deep. You usually plant tomatoes two to a bale, peppers four to a bale, cucumbers four to a bale, and lettuce two or four plants per bale. You can grow almost any vegetable in bales, but we do not recommend corn and okra. They tend to make the bale top-heavy and easily blown over. You can grow many of the annual flowering plants in bales, but we do not recommend it for perennials.

Water bales frequently after planting. Weeds should be few and easily pulled by hand, but you can wipe glyphosate on small weeds if there are too many. Unfortunately, slugs seem to thrive in the moist bales. You can control them by hand-picking or with metaldehyde baits, diatomaceous earth, or beer traps. Treat other insect and disease problems as you would in-ground culture.

After harvest, remove the old plants and start new plants by poking a new hole in the bale. Evaluate the condition of the medium before replanting, and be sure to add additional fertilizer to meet the needs of the second crop. There are reports of bales lasting for 2 years, but most of them come from much colder climates than Mississippi. Plan to use the composted hay or straw in the garden or landscape after a spring and fall season.

Growing vegetables in straw or hay bales has a long history of success. Cucumber production in straw bales was introduced more than 50 years ago. Straw bale production is still frequently used commercially for greenhouse cucumbers in Europe and Canada. Although it uses more fertilizer and requires more attention than in-ground culture, growing vegetables and flowers in bales does cause less back pain, and it's a great conversation starter.

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