

COMPOSTING FOR SMALL SCALE LIVESTOCK OPERATIONS



1. Why Compost?

Composting livestock manure is an excellent manure management technique for small-scale livestock operations. By collecting manure on a daily or weekly basis from paddocks, stalls, and confinement areas you are not only providing a healthy environment for the livestock but you are also being environmentally friendly.

Composting not only provides the owner with a free source of compost for the yard, garden, and pastures that will benefit plants by slowly releasing nutrients, but it also reduces flies, odors, mud in confinement areas. Composting decreases the possibility of parasite re-infestation, and prevents the introduction of weeds by sterilizing weed seeds found in the manure.

2. Decide on the number of bins you will need.

You will need at least two bins, depending upon the number of livestock you have will determine if additional bins are necessary. The average 8' x 8' x 5' storage bin will hold approximately 320 ft³ of material. Below is a general guide of how many bins you will need based on the number of stalls you have. When planning your compost bins remember that you can never have too much storage.

3. Site Selection

When planning to install a compost bin or manure storage structure site location is very important. You will need to find a high, level area on your property. Do not put the composter in a low lying area or you will have

problems with too much water. Remember to locate the composter far away from creeks, ditches, wetlands, or other water bodies. Check with your township or municipality to see if there are any regulations on where you can install a composter.

For your convenience you will want to consider having the composter closer to the barn and paddock areas to make cleaning up easier and less time consuming.

4. Bin Selection

Next you will need to decide what type of compost bin you would like to install. In this fact sheet there are numerous designs for compost bins made from materials that are easily purchased at any home improvement store. Each bin design includes a materials and tools listing for your convenience.

References:

Healthy Horses, Clean Water. Horses for Clean Water. A Guide to Environmentally Friendly Horsekeeping. Alayne Renee Blickle and Horses for Clean Water. 2000 2001

Building a Compost Bin. Missouri University Fact Sheet. University of Missouri – Columbia Fact Sheet.

Prepared by members of Pennsylvania's Small Scale Livestock Committee.

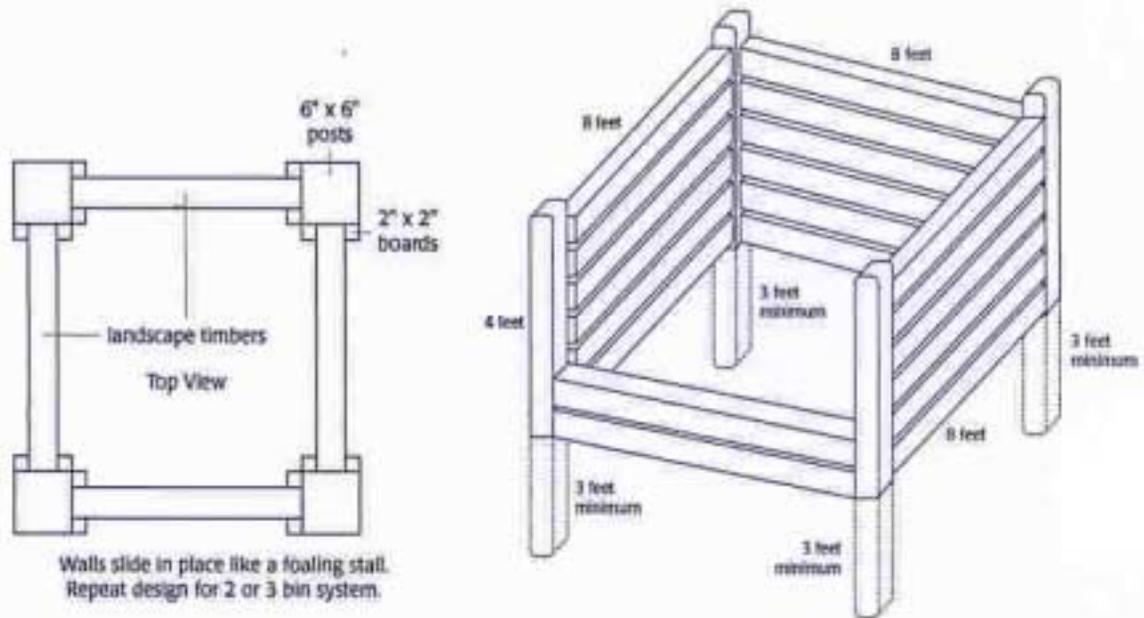
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Landscape Timber Compost Bin

This turning unit is a permanent, sturdy structure. If planning to use a tractor and loader to manage the compost you may want to concrete the posts in place for added stability.

Below are supplies needed to build a three bin composting system.

Supplies	Equipment
8 – 8' 6" x 6" treated posts	Drill with screwdriver head & bit
40 – 4' 2" x 2" treated boards	25' tape measure
110 – 8' landscape timbers (or similar wood)	Chain saw or hand saw
160 – 3" deck screws	Carpenter's level
Tarp (or plastic sheet) to cover top of each bin	Post hole digger
	Tamping rod or similar tool



Note: number of landscape timbers will depend on the type and width of the timbers you purchase and how tall you wish to make your bins.

1. On level ground, set the posts using a posthole digger. Embed each post at least 2 feet into the ground. Be sure all posts are plumb (perpendicular to the ground). The top of each post should be at the same distance above the ground.
2. Attach the 2" x 2" to the posts (see above diagram) allowing enough room for the landscape timbers to fit between.

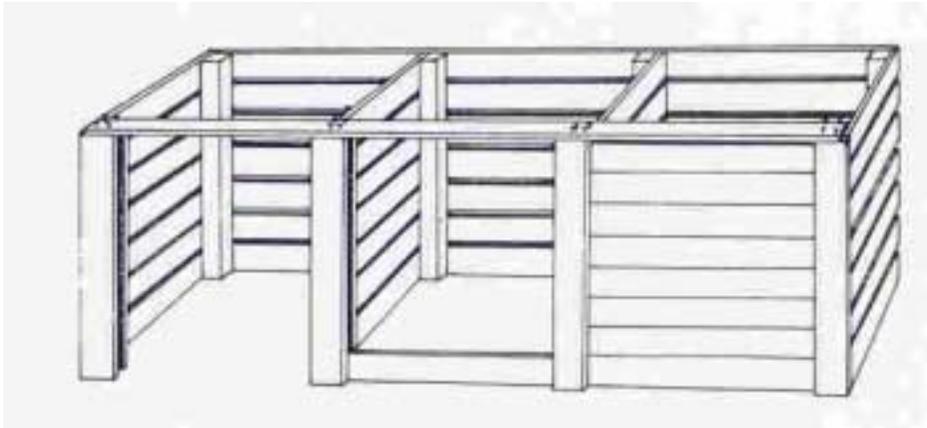
3. Insert the landscape timbers, one on top of another, sliding them between the 2" x 2" boards.

Wooden Three-Bin Turning Unit

This turning unit is a permanent, sturdy structure, but it may be difficult to space the posts to the exact dimensions illustrated. Before cutting the removable slats that slide into the grooves at the front of each bin, cut one slat and check for proper fit in each bin.

Below are supplies needed to build a three bin composting system.

Supplies	Equipment
8 – 4" x 4" x 6' Posts	Drill with screwdriver head & bit or hammer
7 – 1" x 6" x 12' Back Slats	25' tape measure
14 – 1" x 6" x 4' Front Slats	Chain saw or hand saw
14 – 1" x 6" x 46 1/4" Dividers	Carpenter's level
24 – 1" x 6" x 42 13/16" (approximately) Front Slats	Post hole digger
4 – 1" x 1(+)" x 4' cleats, rip cut from one four foot 1 x 6	Tamping rod or similar tool
8 d galvanized deck nails or screws	
One tube exterior construction adhesive	
1 – 1" x 6" x 12' top rail (optional)	



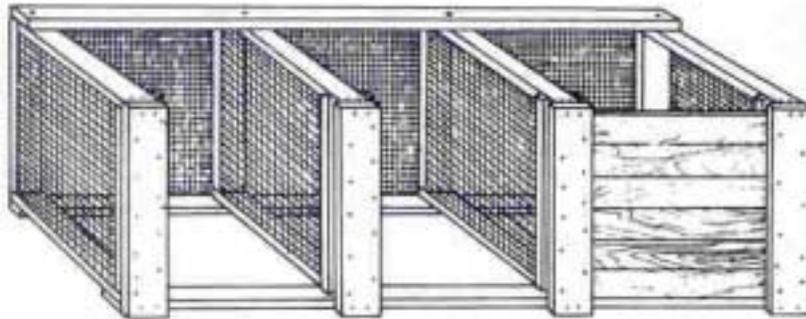
1. On level ground, set the posts using a posthole digger. Embed each post at least 2 feet into the ground. Be sure all posts are plumb (perpendicular to the ground). The top of each post should be at the same distance above the ground.
2. Nail (or screw) on the back and side slats and dividers (pre-drill all holes to prevent splitting). Use adhesive on all joints. The bottom slats should be at ground level. Leave 1½-inch (horizontal) space between slats. Note that the ends of the dividers should come out to 1 inch behind the front of the front posts.
3. Install the fronts and cleats.
4. After the front slats have been sized and cut, slide them into place between the fronts and cleats.
5. (Optional) Nail the top rail to each front post. Do not use adhesive, and do not drive the nails in fully, as the top rail will need to be removed to allow access to the slats.

Wood and Wire Three Bin Turning Unit

This turning unit is a permanent, sturdy structure, but it may be difficult to space the posts to the exact dimensions illustrated.

Below are supplies needed to build a three bin composting system.

Supplies	Equipment
4 – 12' 2x4 pressure treated lumber	Tape measure
2 – 10' 2x4 pressure treated lumber	Hand saw or circular power saw
1 – 10' 2x4 construction grade lumber	Hammer
1 – 16' 2x6 lumber	Tin snips
6 – 8' 1x6 lumber	Carpenter's square
22' of 26" wide ½ " hardware cloth	Drill with 3/16" and ½" bits
16d galvanized nails (2 pound)	Screwdriver
Poultry wire staples	Adjustable wrench
12 – ½" carriage bolts, 4" long, with washers and nuts	Pencil
One quart wood preservative or stain (optional)	Safety glasses, ear protection, dust mask, and work gloves



1. Cut two 31½-inch and two 36-inch pieces from a 12-foot length of pressure treated 2x4 lumber. Butt joint and nail the four pieces into a 35x36-inch square. Repeat, building three more frames with the remaining 12-foot length of 2x4 lumber.
2. Cut four 37-inch lengths of hardware cloth. Fold back the edges of the wire 1-inch. Stretch the pieces of hardware cloth across each frame. Staple the edges every 4 inches. These wood frames will be the dividers for the bin.
3. Set two dividers on end, 9-feet apart and parallel to one another. Position the other two dividers so that they are parallel to, and evenly spaced between, the end dividers. Place the 36-inch edge on the ground. Measure the position of the centers of the two inside dividers along each 9-foot edge.
4. Cut a 9-foot piece from each 10-foot length of pressure treated 2x4 lumber. Place the two treated boards across the tops of the dividers so that each is flush against the outer edge. Measure and mark the 9-foot boards at the center of each divider.

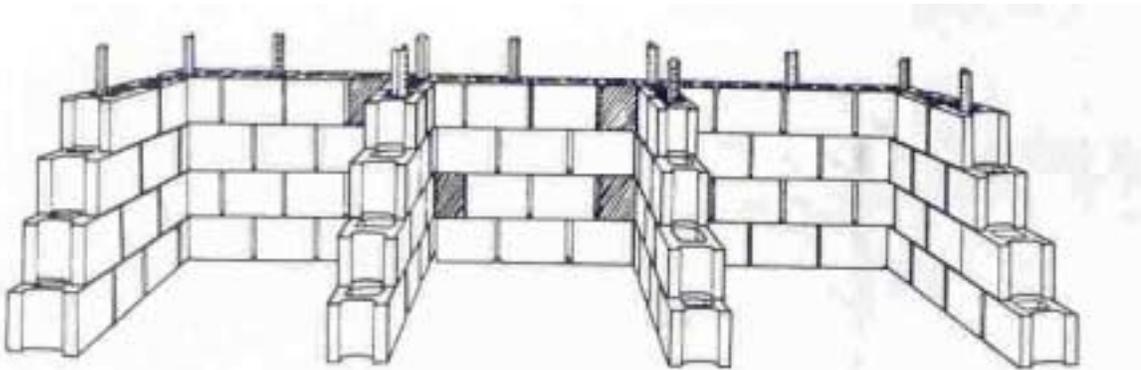
5. Line up the marks, and through each junction of board and divider, drill a ½-inch hole centered 1-inch from the edge. Secure the boards with carriage bolts, but do not tighten them yet. Turn the unit so that the treated boards are on the bottom.
6. Cut one 9-foot piece from the 10-foot length of construction grade 2x4 lumber. Attach the board to the back of the top by repeating the process used to attach the baseboards. Using the carpenter's square or measuring between opposing corners, make sure the bin is square. Tighten all bolts securely.
7. Fasten a 9-foot length of hardware cloth to the backside of the bin, with staples every 4 inches around the frame.
8. Cut four 36-inch long pieces from the 16-foot length of 2x6 lumber for front runners (save the remaining 4-foot lengths). Rip cut two of these boards to 4¾-inch wide strips (save the remaining two strips).
9. Nail the 4¾-inch wide strips to the front of the outside dividers and baseboard so that they are flush on the top and the outside edges. Center the two remaining 6-inch wide boards on the front of the inside dividers flush with the top edge and nail securely.
10. Cut the remaining 4-foot length of 2x6 lumber into a 34-inch long piece, and then rip cut this piece into four equal strips. Trim the two strips saved from step No. 8 into four equal strips. Trim the two strips saved from step No. 8 to 34 inches. Nail each 34-inch strip to the insides of the dividers so that they are parallel to, and 1-inch away from, the boards attached to the front. This creates a 1-inch vertical slot on the inside of each divider.
11. Cut the six 8-foot lengths of 1x6 lumber into eighteen slats, each 21¼-inches. Insert the horizontal slats, six per bin, between the dividers and into the vertical slots.
12. (Optional) Stain all untreated wood.

Concrete Block Composting Bin

A concrete block compost bin is sturdy, durable, and easily accessible.

Below are supplies needed to build a three bin composting system.

Supplies	Equipment
46 – concrete blocks for the first bin, and about 32 concrete blocks for each additional bin	Work gloves
Wooden or metal posts	



1. Place five concrete blocks in a row along the ground at the composting site, leaving about $\frac{1}{2}$ " between each block to let in air.
2. Place four concrete blocks in another row along the ground perpendicular to, and at one end of, the first row, forming a square corner; leave about $\frac{1}{2}$ " between each block.
3. In the same way, place four concrete blocks at the opposite end of the first row to form a three-sided enclosure.
4. Add a second layer of blocks, staggering them to increase stability and leaving about $\frac{1}{2}$ " between each block.
5. Add a third layer of blocks, again staggering them to increase stability.
6. The last, and top layer should have four blocks across the back and three on each side
7. To make the bin more stable, drive wooden or metal posts through the holes in the blocks.
8. To build additional bins beside the first one, use one sidewall of the first bin so that you only need to build two additional walls.

Wooden Pallet Holding Unit

A composting bin can be built inexpensively using wooden pallets. Used pallets are often available from manufacturers and landfills.

Below are supplies needed to build a three bin composting system.

<i>Supplies</i>	<i>Equipment</i>
Wooden pallets to size the bin – pallets are needed for the sides and if you would like the bottom	Saw
Nails	Sledge Hammer
Baling Wire	Claw Hammer
4 – pressure treated posts or metal posts	Work Gloves



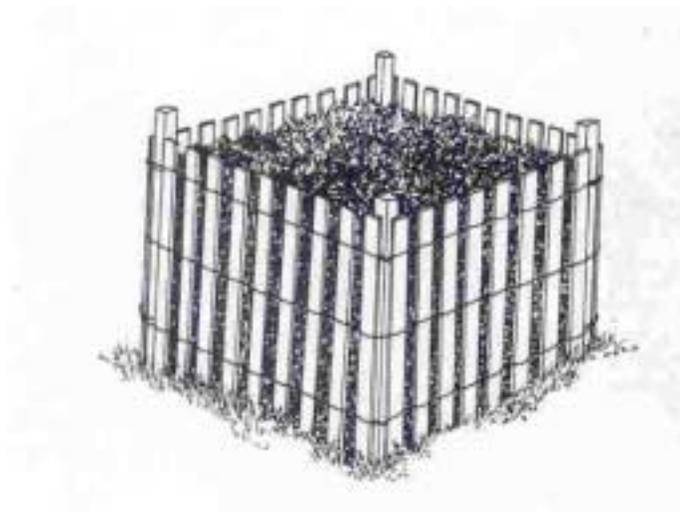
1. Nail or wire pallets together to make a four-sided bin.
2. An additional pallet can be used as a base, to allow more air to get into the pile and to increase the stability of the bin.
3. For additional stability you can use wooden or metal posts in the corners.

Snow Fencing Holding Unit

A snow fence holding unit is simple to make.

Below are supplies needed to build a three bin composting system.

<i>Supplies</i>	<i>Equipment</i>
4 – wooden or metal posts	Heavy duty wire or tin snips
Heavy wire ties	Pliers
Snow fence	Sledge Hammer
	Work gloves



1. Choose the site for your holding unit, and pound four wooden or metal posts into the ground 3 feet apart, at the corners of the square.
2. Cut the heavy wire into lengths for ties. Attach the snow fence to the outside of the posts with the wire ties, using pliers
3. Attach the ends of the snow fence together in the same way, forming a square.