

Making a Johnson-Su Bioreactor

Johnson-Su Bioreactors are fairly cheap and simple to construct using readily available materials and a few basic tools. Once you built a bioreactor, it can be used many times with minor maintenance.



You'll need:

Materials

A sheet of guage weld mesh for the cage column
A 1.16m standard wooden pallet
8m of 1.8m wide weed mat
6 pieces of 90mm PVC pipe
Some tie wire

Making a Johnson-Su Bioreactor

Tools

Bolt cutters to cut the wire mesh.
Pliers for the tie wire
Jigsaw for cutting holes in the pallet
Drill and spay bits
Scissors to cut the weed mat
Tape measure

Building the Weld Mesh Cage

Using bolt cutters or pliers, cut the re-mesh to approx 3.6m in length and 1.50m in height. Temporarily tie the wire cage ends together and stand the cage up like a cylinder.

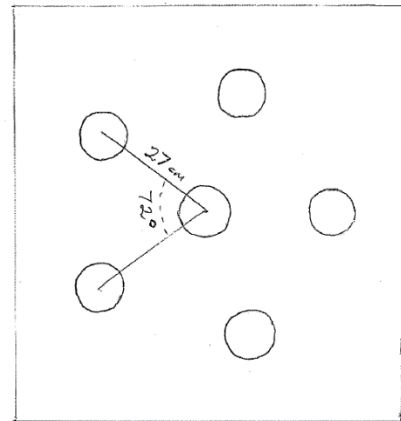
Bend the weld mesh lengthways into a column and securely tie the short ends of the weldmesh together at no more than 15cm intervals using tie wire and pliers to hold it together under the pressure from filling it with materials.

Cutting the cloth

Cut a 4m length of weed mat. This piece of weed mat will be used to line the interior of the re-mesh cage before you fill it with composting materials. Also cut a 1.8m length of weed mat, essentially giving you a square to cover the pallet. Burn six holes in this piece of weed mat, positioned to align with the holes in the pallet.

Preparing the Base

The pallet serves as the base for the Johnson-Su bioreactor, and it supports both the weldmesh/groundcloth cylinder and the septic system drain field pipes. Use a jigsaw to cut six 90mm holes in the top of the pallet as shown in the illustration (alternatively use a customised jig to establish the hole positions. Explore different hole placements and see how you can best avoid cutting completely through the pallet's planks, you can pivot a jig around the center point of the pallet. If you cut a plank completely, place bricks or wooden blocks under the cut ends of the plank to support them as you fill the bioreactor.



Preparing the Pipes

Using a circular saw, cut the six 4m lengths of PVC pipes.
Using a spay bit, drill holes on four sides along the length of the PVC pipes.
The pipes are only in place temporarily and are a form to ensure that six columns are formed to allow airflow up through the bioreactor. These pipes should be removed approximately 24 hours after finishing the filling of the bioreactor.
As such, one set of pipes can be used for a number of bioreactors.

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Once you have all these components in place you can assemble the bioreactor. Site the pallet in a flat spot where you want to make the compost, and cover it with the 1.8m square of weed mat, lining up the holes in the weed mat with the holes in the pallet.

Place the weld mesh column on the pallet and line the inside of it with the long piece of weed mat, folding an edge of the weed mat over top perimeter of the column to hold it in place.

Insert the pipes through the holes so that they are standing upright in the column. These are to be positioned vertically as you fill the bioreactor, a brace (jig) can be used to keep them in place.

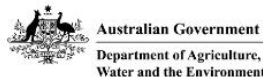
The bioreactor is now ready for filling.

Further instructions on how to make a bioreactor and make and use the compost from a bioreactor visit:

<https://www.csuchico.edu/regenerativeagriculture/assets/documents/johnson-su-bioreactor.pdf>

Notes:

This workshop forms part of our project the 'Lower Blackwood Online Community Forum & Information Hub'. The goal of the hub is to enhance our local farming community's capacity to connect and engage with each other - sharing knowledge, skills and practices that build a community better prepared for, and more resilient to, the impacts of drought & other climate extremes into the future.



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