

# Beginners permaculture garden

## From Appropedia

*See the talk page for this article: "nice start, but doesn't look like Permaculture yet." A better permaculture introduction is needed for this topic.*

This **How To** has more questions than answers. Please help to fill in the missing information.

Here is the basic scenario. One or two people do not know much about permaculture. They know some of the basics about growing carrots, tomatoes, etc. They want to get started with a permaculture vegetable garden, but they don't want to spend a lot of time researching and studying up on it. Their set up budget is in the range of \$200 to \$1,000. They want some flexibility on what techniques to use to get started, and how much to spend. They are busy people, so they need a low effort solution. Preferably the set up can be done in one day with the help of a friend or two. They have already decided that they want a 4' x 8' plot and a raised bed. There is currently a grass lawn where the garden will go. They don't want to rototiller. Instead, they want to put down cardboard and have soil delivered that will go over the cardboard.

## Contents

- 1 Location and Design
- 2 Raised Bed
  - 2.1 Plot Design
    - 2.1.1 Bed Frame
    - 2.1.2 Cardboard covers existing ground
- 3 Soil
  - 3.1 Soil Test
  - 3.2 Composting
- 4 Water
  - 4.1 Clay Pot Irrigation
    - 4.1.1 Olla links:
  - 4.2 Self-Watering Containers
  - 4.3 Drip Line Watering
    - 4.3.1 More DripDepot.com links:
    - 4.3.2 Other links for drip lines:
- 5 Seeds and Pest Control
- 6 See also

Can we provide some easy to follow guidelines on how to proceed? Cost is an important

■ 7 External links

consideration. So if we can estimate the cost of a solution, that would be useful. If we can

recommend specific products from a NPOV and without "selling", that would also be helpful. If some of the methods are debatable, let's put that conversation on the discussion page, and put the NPOV consensus here.

## Location and Design

Observe the desired location least once in the morning, noon and evening. Note sun position of shadows from buildings and trees. Is it shaded and at what times during the day? Direction and strength of the wind, is the garden in the path of a strong wind? You may need to change location or provide a wind break. Where are the tap and/or water barrels located?

For example: The front of the house faces south with a tree in the front yard, the backyard has a small patio at the back door and a shed is located NE corner of the yard. The plot will be between the house and the shed. This places it close to the tap and water barrel as well as the shed for easy access to water and tools. It will receive a moderate amount of sunlight, as it is partially shaded by a tree in the neighbors yard.

## Raised Bed

The plot will be a raised bed. Some expected benefits include easier access (less bending), better air circulation for the plants, plot warms up quicker in the spring, better control of weeds, and better water usage.

## Plot Design

A 4' x 8' plot is a good starting size. It's big enough to supply fresh vegetables for a about two people during the growing season

Although we describe the plot as a rectangle, consideration should be given to other shapes:

- Build a Keyhole Garden (<http://www.sendacow.org.uk/schools/africangardens/keyholegardens>)

## Bed Frame

Our basic design is for a 12" frame. Fill with 6" of dirt, and leave room for added compost and mulch over several years.

Here are several variations for the raised-bed plot:

- **No frame** Slope the sides and cover the sides with mulch to minimize dirt run-off. Consider also a mulch path around the perimeter.
- **Hybrid solution** Use sloped sides and 3" frame.

Here is some discussion on frame and no-frame: Raised-Bed Gardening (<http://extension.missouri.edu/explore/agguides/hort/g06985.htm>) - temporary (no frame) and permanent (with frame).

## Cardboard covers existing ground

There won't be any rototilling. Cardboard will be laid over the existing grass, and soil will be put on top of that. The cardboard should help keep weeds and grass from growing up from the existing ground, and the cardboard will eventually decompose.

Will any ordinary cardboard from cardboard boxes work?

To minimize toxins, avoiding cardboard with a lot of printer's ink is a good idea. Dull cardboard (pizza boxes, moving boxes) is better than shiny or glossy cardboard (usually seen in electronics packaging). Remove any packing tape before using the box. You could also use a thick sheath of newspaper (without the shiny ad pages).

## Soil

Soil will be delivered to the driveway of the residence and will be carried to the backyard plot using buckets or a wheel barrel. The dirt will go on top of the cardboard. There will be 6" of top soil added. So the total needed is 4' x 8' x 6". A cubic yard of soil is more than enough: 3'x3'x3'= 27 cubic feet in a cubic yard, and only 4'x8'x.5' = 16 cubic feet is needed. Any tips here?

What is the cheapest way to get dirt? The supplier needs to be local. So, maybe the best guideline is to google it.

Is some dirt better than other dirt? Yes, but the only way to determine this is to go look at the soil beforehand. You want it to be dark, loose, loamy, and low in clay, if possible. You are going to improve the soil by adding compost in the future, so it does not have to be perfect soil from the outset.

I once got superb soil super cheap from a property owner who was excavating a pond. A lumberyard was giving away chipped wood mulch, and a horse farm advertised "haul your own manure" for free. If you live in a rural area, keep your eyes peeled for such deals. Or try a Pennysaver's ad (or Nickel's Worth, or Penny Slaver, etc.)

## Soil Test

Even though this will be a raised bed plot with top soil being delivered, this is an urban setting and a soil test is needed for the existing soil in the backyard where bed will be. The test will check for heavy metals

such as lead and arsenic. The test will probably cost \$10 to \$15.

After searching around, Univ. of Mass. Amherst appears to offer the best value for a standard soil test that includes heavy metal testing. Standard Soil Test (\$9):

- Includes pH, Buffer pH, Extractable Nutrients (P, K, Ca, Mg, Fe, Mn, Zn, Cu, B), Extractable Heavy Metals (Pb, Cd, Ni, Cr), and Extractable Aluminum, Cation Exchange Capacity, Percent Base Saturation.
- Amherst Testing Services and Price List (<http://www.umass.edu/plsoils/soiltest/services1.htm>)
- See the PDF link (<http://www.umass.edu/plsoils/soiltest/soilbrochdec2003.pdf>) for instructions. The instructions recommend collecting 12 small samples and mixing them. 12 samples mixed together would seem to apply to multi-acre farmland. If you're planning on just a 4'x8' garden, perhaps a couple of samples mixed together is sufficient. Whatever the size of your garden/farm, variation in current use and history is an important consideration in how many samples to gather and mix together. Comments on this interpretation welcome. - User:Bmorrisett

Soil Testing Links:

- WHYY - Soil Tests (<http://www.whyy.org/91FM/ybyg/soiltests2.html>) An introduction to soil testing. Provides a short description of common soil tests: pH, phosphorous (P), potassium (K), nitrogen (N), calcium, % organic matter, micronutrients, and lead and other heavy metals. Gives soil testing service links for mid-Atlantic states.

## Composting

The garden can include compost generated from appropriate food scraps and yard waste. What's the easiest and cheapest way to get started with this? Some options include an indoor worm composter and various backyard units. Keep in mind the overall budget for this project is modest. A build-your-own-solution is okay if it's really easy to do.

Backyard, Vermicompost and Bokashi are all viable composting options. Read more at the following Wikipedia links:

- Composting (<http://en.wikipedia.org/wiki/Composting>)
- Container Composting (backyard) ([http://en.wikipedia.org/wiki/Container\\_composting](http://en.wikipedia.org/wiki/Container_composting))
- Vermicomposting (<http://en.wikipedia.org/wiki/Vermicompost>)
- Bokashi composting ([http://en.wikipedia.org/wiki/Bokashi\\_composting](http://en.wikipedia.org/wiki/Bokashi_composting))

Here's a reasonable price for red worms. (500 regular red worms will be enough for one bin. You can even split this between several bins/friends. The worms will multiply to fill up your bin space within a couple months.)

- WholesaleWorms (<http://www.wholesaleworms.com/?gclid=CMTI1fy-y5oCFRKAXgod7XeM2g>)

There are loads of DIY instructions for making a worm bin. Most call for drain holes at the bottom, and two containers or more. To keep it simple, if you don't add too much water, and aerate/mix the composting material every week or two, you can use just one bin and skip the drain holes at the bottom, making the project even easier. A few DIY examples:

- Treehugger (<http://www.treehugger.com/files/2009/03/build-your-own-worm-bin.php>) - nice video
- Washtington State Univ. (<http://whatcom.wsu.edu/ag/compost/Easywormbin.htm>)

## Water

In permaculture we try to reduce the use of outside inputs, so the first step would be to do what ever we can to capture all the water falls on our property and direct it to recharge the groundwater. Water barrels installed at the down spout would capture water for use later in the garden. A watering can (cost \$10 and up) is the most efficient way to water as you can take it with you and water while weeding and harvesting. You may wish to use other methods also. Some options are listed below:

## Clay Pot Irrigation

Clay pots, or ollas provide constant drip irrigation by allowing water to seep through unglazed terra cotta pots. Ollas come in varying sizes. Each has a larger body with a long, narrow neck. The olla is buried up to the neck in the garden and filled with water, and then plants are planted around it. The water seeps slowly out through the clay, and the plants develop roots close to the pot to take advantage of the water supply. The olla is refilled as needed.

Ollas can cost from \$12 to \$30 each. The number and sizes needed depends on the plants chosen.

### Olla links:

- Ollas (<http://urbanhomestead.org/journal/2008/05/29/ollas-2/>)
- Using Ollas (<http://urbanhomestead.org/journal/2008/03/24/using-ollas/>)
- Ollas? Oh, Yeah! ([http://www.enebuilder.net/watercon/e\\_article000533719.cfm?x=bbrDcbK,b2FRwTrq,w](http://www.enebuilder.net/watercon/e_article000533719.cfm?x=bbrDcbK,b2FRwTrq,w))

## Self-Watering Containers

A person can include self-watering containers as part of their backyard garden, or start just with the self-watering containers. The self-watering containers can be used outdoors or indoors.

- Self Watering Container (<http://www.homegrownevolution.com/2007/01/self-watering-containers.html>) - instructions including video and PDF file.
- Self-watering plant containers (Appropedia article stub - has link to instructables)
- instructions for earthbox / self watering container (<http://www.instructables.com/tag/>)

q=earthbox&limit%3Atype%3Aid=on&type%3Aid=on&type%3Auser=on&type%3Acomment=on&type  
- instructables.com

Some considerations for self-watering containers that are subirrigated, with bottom-up a watering (source: Dr. Wes Jarrell, Urban Soils ([http://www.greennetchicago.org/pdfs/GreenNet\\_Jarrell\\_Feb\\_2005.pdf](http://www.greennetchicago.org/pdfs/GreenNet_Jarrell_Feb_2005.pdf)) ):

- subirrigation avoids a potential salt built-up that you can have with standard containers/pots.
- container color can be a factor in heating of roots

An easy technique for our gardeners with a small bed is to take empty plastic jugs, poke a few holes in them, and bury them up to their neck in the bed. Water the plants by filling the plastic jug with water and allowing it to slowly seep out over time.

## Drip Line Watering

Drip irrigation (WP) ([http://en.wikipedia.org/wiki/Drip\\_irrigation](http://en.wikipedia.org/wiki/Drip_irrigation)) provides a slow drip of water to plants, conserving water and making it easier to maintain a garden. Drip irrigation can be used on any size garden or farm. Home garden drip line kits are available for both plots and containers. The basic parts of the kit include a timer (optional), tubing, emitters, and connectors. A typical home garden kit will include a 1/2" tube for the main line and 1/4" lines for branches. Lines can be placed 3" - 6" below the dirt surface, between dirt and mulch, or above the mulch. For beginners installing a new garden, between the dirt and the top mulch is a good solution. Home garden drip line kits generally are priced from \$70 - \$200. A less expensive irrigation alternative is a soaker that you can get at Home Depot, etc.

You can look around for best price and best product, but to learn more about home drip line kits, [dripdepot.com](http://www.dripdepot.com/) (<http://www.dripdepot.com/>) is a good place to start. Great description of kits and individual parts, including install instructions. Also see the top menu links under *How-To DIY: Guides* ([http://www.dripdepot.com/getting\\_started\\_with\\_drip\\_irrigation.html](http://www.dripdepot.com/getting_started_with_drip_irrigation.html)) and *Videos* (<http://www.dripdepot.com/free-drip-irrigation-howto-do-it-yourself-videos.html>) .



**More DripDepot.com links:**

- Automated Vacation Plant Watering Kit, Item: #151 (<http://www.dripdepot.com/151.html>) - for \$90, might meet the needs for a 64 sqft plot. Can button drippers be installed above the dirt and below the compost & mulch? Answer from dripdepot.com: should work okay -- you can put mulch over the button dripper -- disadvantage is that it is harder to tell if it is working properly if you can't see it. User:Bmorrisett
- Soakers (<http://www.dripdepot.com/1048.html>) - some of the guide info indicates soaker tape might be better for a vegetable gardens.
- 1/4" Dripline - 100' (<http://www.dripdepot.com/1256.html?gclid=CLyGiZLn9pcCFQEoGgodBjXbDg>) - 1/4" dripline with 1/2 GPH emitters spaced every 12". \$20. **Emitters included???** - User:Bmorrisett

**Other links for drip lines:**

- IrrigationTutorials.com - Drip Irrigation Design Guidelines (<http://www.irrigationtutorials.com/dripguide.htm>) This site seems mostly focused on lawn care. These system are all above-ground. "Don't bury the drip tube. If you do bury drip tube don't complain to me if gophers, moles or other rodents chew it up."
- Google search "subsurface drip irrigation systems" ([http://www.google.com/search?source=ig&hl=en&rlz=1G1GGLQ\\_ENUS260&q=subsurface+drip+irrigation+systems&aq=0&oq=subsu](http://www.google.com/search?source=ig&hl=en&rlz=1G1GGLQ_ENUS260&q=subsurface+drip+irrigation+systems&aq=0&oq=subsu))
- Dripworks Drip Irrigation (<http://www.dripworksusa.com/>) Free 72 page catalog is a great resource to learn about drip irrigation.

**Seeds and Pest Control**

It is important when selecting plants you keep in mind to select plants that serve multiple purposes. A good way to do this is to use companion planting. In permaculture there are no pests and no waste. A

common phrase to highlight this: "You do not have a slug infestation, just a duck deficiency."

Mother Earth News (<http://www.motherearthnews.com/>) has articles on seed and pest control (click on print preview to see all pages and skip the ads):

- How to Organize a Community Seed Swap ([http://www.motherearthnews.com/Organic-Gardening/How-To-Organize-A-Community-Plant-And-Seed-Swap.aspx?utm\\_source=iPost&utm\\_medium=email](http://www.motherearthnews.com/Organic-Gardening/How-To-Organize-A-Community-Plant-And-Seed-Swap.aspx?utm_source=iPost&utm_medium=email))
- Seed Care (<http://ipost.com/rd/9z1z4g821a2nuqst3r2ssqn3p9db5r1udc11ut4gg38>)
- Best Garden Seed Companies (<http://ipost.com/rd/9z1zqqipj68s1fh57tu08105on65epm1di3v0k0nhn8>) - by state
- **Google custom searches** (good!):
  - Find seeds and plants (<http://www.motherearthnews.com/find-seeds-plants.aspx>)
  - Diagnose pests and find organic solutions (<http://www.motherearthnews.com/Find-Organic-Gardening-Products.aspx>)

## See also

- Category:Lazy gardening
- Category:Urban agriculture
- Permaculture garden in Cook County - permaculture garden how-to specifics for Cook County and Chicago, Illinois.
- Permaculture in Denver Colorado
- Victory gardens
- Transition towns

## External links

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Are there already good answers to the questions here that are in one place, and easy to read in 30 minutes? Also, where should one go for more information?

- 7 Tips for Starting Your Own Organic Garden (<http://www.globalhealingcenter.com/natural-health/gardening-tips/>)
- Garden Irrigation System- Basic 101 (<http://www.gardenirrigationsystem.info/>)
- Garden Irrigation System (<http://gardenirrigationsystem.info/>)
- RV Solar Panels (<http://rvsolarpanel.info/>)

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