

# The Vegtank.

By Tony Martin

A permaculture approach to supplying water for a fruit and veg patch.

How to provide not only a long term water supply, but also several unique growing areas for your garden or small holding by using IBC tank/s with soil on top.

IBC tanks as they are known, are large (approx 1.1m cubed) containers usually made of high-density polyethylene (HDPE) with a galvanised steel framework sitting on a pallet. These are used commercially for the transportation of foods and other liquids such as glue, so it is important that you ascertain what they were used for before buying. They can contain up to 1000 litres of water and will weigh around 1100Kg when full so be sure that you have adequate foundations. You can often pick them up from Ebay, Ebid etc for around £30-60 plus delivery.



Originally I was just planning to use mine to supply water via a hose pipe for my veg patch but I soon realised that I could do so much more with them. What started me thinking about this was, that eventually the IBC tanks would degrade due to the action of UV light, making the plastic brittle and they would break. Clearly, not very environmentally friendly or cost/time effective and so I considered painting them or putting clods of earth on top (that being the place most susceptible to UV damage).

One principle of permaculture states that each item should perform more than one function. So instead of just trying to protect the plastic containers, I spent a little time examining what attributes these containers and contents had and how I could put these to best use. This may sound a little 'over the top' for such a simple item but you may be surprised as to how many advantages it can give.

**1. STORING WATER.** I needed to situate my tanks low enough, that the trickle of water I could pipe in from my small spring (or rainwater harvesting) would reach them, but as high as possible so I could water with a hose pipe or by channelling water to the beds rather than by filling a watering can.

**2. WIND BREAK / WALLED GARDEN.** Even though I have planted 12,000 willow on this land, is still quite a windy and exposed place to grow tender crops, so I placed them in a line to reduce the prevailing wind. Later when I get enough of them, I will form a circle or square around an area and effectively create a walled garden. With a suitable clear tarpaulin I could even create a part time greenhouse/large coldframe.

**3. RAISED BED.** By growing plants on top of this container you have many of the advantages of a traditional raised bed. Easy of planting and picking, reduction of weeds, and some types of pest damage, such as by badgers or rabbits.

**4. HEAT STORAGE.** Water is a very unique substance that stores roughly 4 times the amount of heat per weight compared to other materials such as rock or clay. Each full tank will store around 1KWh of heat energy (the heating equivalent of a 3Kw fan heater running on maximum power for 20 minutes) for each 1°C rise in water temperature. We can exploit this ability by storing heat from the sun and air into our water tank during the day and warmer periods which will then be released during the night and colder days. This will encourage earlier germination and better crop growth. We can enhance this by making the sides of the tank darker by using rough sandpaper to lightly abrade the walls and rubbing in soil, charcoal etc. I would suggest painting as an option but I have not yet found any that will resist the combination of UV light, flexing and that will stick to MDPE. If you wish to go further with heat storage you could encase the IBC in bubble wrap, plastic sheet



or even scrap double glazed units from the dump or local window installers skip. Remember to ask first, generally they will be very happy for you to take them away as it will save them disposal costs. Remember to remove this glazing or cover during hot and very sunny weather as you may literally cook your veg in the soil).

Also when water freezes it releases large amounts of heat energy (about 93KWh of heat if the entire tank turns to ice) which will help stop the soil and surrounding plants from getting even colder as this heat is released.

**5. MICROCLIMATES.** Not only do you have the microclimate afforded to the plants growing on top of the IBC, you also have a small rise in temperature around the tanks, the shelter from the physical forces of the wind (not just stopping the cooling effect of the wind) and a shaded area. Some herbs will do well up the north side of the tank, peas or beans may be grown on trellises attached to the metal work on the west and east sides and squash or melons could be grown on the sunny south side.

**6. WATERING AND FEEDING.** Using a wick into the water tank we can reduce the amount of watering the plants need. By keeping a good sized hole in the top we can also put weeds into the tank that slowly rot down (producing some more heat in the process) and providing some feed to the plants. Rain water will trickle down into the tanks and help re-fill them.

## ISSUES.

Slugs love these tanks. They are always moist and during hot dry weather, dew will form and trickle below keeping a cool damp environment at the base. An application of lime under and around the tank base may deter them or the use of a small moat but regular eviction may be needed initially. Mice can still scale them unless you put some kind of barrier half way up that they cannot get past. During a run of hot dry weather you may need to water the plants as the wick may not draw up enough moisture from the tank.

During cold and dark weather the top of these tanks will be a very exposed place for plants so some form of protection will be probably be necessary.



## Instruction for making a Vegtank.

1. Ensure that you have a stable and strong base for your tank(s) and that when fully filled you will be able to access the tap at the bottom. Some lime spread around underneath and at the sides will discourage slugs etc.

2. You may wish to fit a suitable tap. Most IBCs will come with a large butterfly valve. (around 50-80mm) that is great for flood irrigation of an area however you may prefer a standard garden hose fitting (Ebay, Ebid, search for IBC and hose, around £15)

3. If you plan to dispose of weeds in the tanks, then they may block the butterfly valve or garden tap. So you will need some kind of, non-degradable bag or fine mesh that will sit in the water tank and that you can place the weeds in.

4. Drill a number of holes (around 3-7mm) in the top of the tank to allow excess rain water to help refill the tank and some roots to find their way in.

5. If you are putting weeds into the tank then place some kind of tough collar around the filling hole of the tank leaving enough space for the wick to come between the hole in the lid and the collar.

6. To prevent the weight of soil squashing the top of the plastic container, affix some strong bars or mesh to the metal framework.

7. Place some capillary matting (you can use some old cloth or carpet but it may not soak up water fast enough during hot dry weather or may rot) all the way to the bottom of the tank. Then bring it up between the lid hole and the collar and spread it over the top of the mesh/bars with about 15-45 cm spare around the edges depending on the depth of the compost you intend to add.

8. Now attach the wood, or other materials to the sides of the metal framework, to the desired height (15-45 cm) depending on how tall you are or other requirements. Deeper will mean more strain on the mesh but will reduce the need for watering and allow root veg to be grown as well ( I grew short carrots in there and being so high up they avoided carrot fly.)

9. Fill with fresh weed free compost. If adding weeds to the water you may want to add some lime or better still wood ash from a stove to the compost to offset the acidity of the anaerobic digestion and give added nutrients.

10. If you want to add an extra framework to this tank, such as glazing, or the ability to shade (useful if you are away for a long period in very hot weather) then do so now.

I would love to hear of your experiences with this type of growing and any improvements that you might come up with, photos etc.

Happy growing.

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