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HÜGELKULTUR




A tree falls in a forest

- Imagine a tree falling in forest. Leaves cover the log; as a result the wood retains moisture and begins to decay. Fungi, insects, amphibians move in and further break down the wood. Eventually the log collapses. It has become a long heap of compost. Vegetation, including trees, take advantage of the moist and nutrient rich environment. The fallen tree has become a "nurse log".



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What is Hügelkultur?

- Hügelkultur is type of **RAISED BED** that tries to recreate forest floor decomposition
- Hügelkultur is a method of creating raised garden beds by covering rotting wood with compost and soil, and then planting into them.
- Hügelkultur is a **composting** process employing **raised beds** constructed from decaying wood debris and other compostable **biomass** plant materials. The process helps to improve soil fertility, water retention, and soil warming, thus benefiting plants grown on or near such mounds.* Wikipedia

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Why build a hügelkultur?


Advantages

- Drought resistant-
- rotting materials retain water
- Higher soil temperatures
- Encourages microbes
- Build fertility in the soil
- Twice the surface area for plants
- Pockets between materials avoid compaction



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Comparison



Hugel and traditional bed comparison. Cantaloupe plants from same seed packet. Hugel bed on right was planted two weeks after traditional bed on left.

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Challenges of Hügelkultur

- Nitrogen Depletion --Counteracted by adding ramial wood, compost, yard clippings
- Soil may need to be replenished after time- it subsides and will expose the logs if the initial amount of soil was not thick enough
- Needs **some** moisture particularly when getting established
- Bed eventually collapses--Hugelkultur sometimes called a 30 year raised bed

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A word on nitrogen depletion

- When a log rots, the carbon immobilizes nitrogen in the surrounding area.
- I asked our UC "soils guy" Dr. Richard Smith. Here is his response.
"Yes, the high carbon in the log would immobilize nitrogen in the area of the log. The affect of the log can only extend a few inches in radius from the log though. Putting high nitrogen fertilizer or organic matter can make up for the immobilization."

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How to build a Hugelkultur

- Dig a Trench
- Bottom layer: logs and thick twigs
- Next layer: a thick pile of dead leaves, dry straw
- Middle layer: lawn clippings, green leaves
- Penultimate layer: mature compost
- Top layer: topsoil 5-6"

INSIDE AN UNDERGROUND HUGELKULTUR TERRACE (Side View)

Type of wood to use in Hugelkultur beds

Wood to avoid in Hügelkultures

- Some trees are **allelopathic**, that is, trees that produce inhibitors of seed germination and seedling growth in order to suppress competing undergrowth.
- Common allelopathic plants are Black Walnut, Pepper, Sycamore, American elm, Oaks, Sycamore, Manzanita California Bay laurel, Cottonwood, Forsythia, Tree-of-heaven, Black locust and Eucalyptus.

Manzanita 'circle' can be easily seen and means "Don't plant here!"



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The next layers

- Cuttings; ramial wood
- Straw; leaves; prunings
- Compost



Cover with 5 to 6 inches of soil

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What is ramial wood?


- Ramial wood or "Chipped Branch Wood" (CBW) is wood from branches less than 3 inches in diameter.
- What the researchers learned is that twigs less than three inches at the tips of deciduous tree branches contain soluble lignin, the base for soil aggregates which creates a long-lasting humus, regenerating and reactivating the soil structure. When this wood decomposes, the nutrients are released into the soil and become available to plants. *UCANR

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Types of Hugelkultur beds

Hay Bale Frame Pallet Frame




Rock Border




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Keyhole Hugelkultur



Raised Bed Hugelkultur



Spiral Hugelkultur



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Keyhole Gardens

Idea from Africa



contain soil

Planting area

Soil, manure, ashes, & other amendments with drainage layer of debris, twigs, etc.

Planting area

compost moisture

Compost, kitchen & garden waste with mounded drainage rocks at bottom



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My Hügel Adventures

- In 2012 I put in a hugel at the top of a very steep slope



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The Hügel "mound" has disappeared but the succulents are doing well...



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Another Hügel Experiment

A maple planted on a steep slope did nothing for years. (It rarely gets watered) I created a Hügel berm below it. After 3 years the Hügel mound is a foot lower but the maple is doing well.




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Whose idea is this?

- The term "hügelkultur" was coined by German horticulturalists Hans Beba and Herman Andra in the late 1970s. Roughly translated into "hill culture", this method consists of creating raised garden beds by covering rotting wood with compost and soil, and then planting into them.
- Made popular by Permaculture guru Sepp Holzer.



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Old school Hügelkultur



Above: These steep raised beds are the perfect height for harvesting without having to stoop.



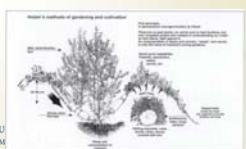
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Permaculture

- What is it? Permanent Agriculture
- A philosophy of designing land use on principals observed in natural systems, with an emphasis on ethics, responsibility to the earth, designing a landscape that maximizes the resources.


Example of a permaculture design principal : hold water and fertility as high (in elevation) on the landscape as possible

- Some Design Ideas:
 - Swales
 - Hügelkultur
 - Food Forest
 - Keyhole garden



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Swales Water Conservation design by Sepp Holzer



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Swales

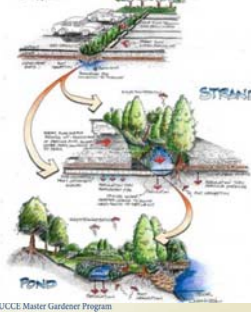
- Contouring the land to conserve water runoff
- Swales are berms that act as ditches to impede water flow

THE SWALE

The swale is a water harvesting ditch dug on even contour / elevation. Water does not flow in a swale because the trench basin is in the exact same elevation, thus creating no erosion and encouraging the water to move passively, soaking directly into the soil to feed gardens, forests, or regenerate entire acreages and groundwater aquifers.

The soil's wicking property pulls water further up the sloped trench walls. The swale trench can be filled with water-permeable mediums such as gravel or wood mulch, then used as a walking path.

This method of watering encourages a drought resistant garden by storing water and also encouraging deeper root growth.



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Caution: Hügelskulture Swales are not solid earthworks

- Swales are an excellent practice for preventing flooding.
- However, swales on steep slopes that are constructed using Hügelskulture practices should not be considered effective dams. *

*See wiki on the danger in mistaking Hügelskulture mounds for solid earthworks

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Typical Hugel Swale


Swales are designed to "keep the water where it falls" that is, prevent runoff.



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Hugelkulture in a demonstration garden



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