

Intro to Permaculture – Permaculture Design for Food

Video Transcript

Music

Strategies for food production vary greatly between the major climate zones. There are some themes that are constant for all climates. One of those is the use of locally adapted varieties of fruits, vegetables, nuts, and domestic animals. This places Permaculture solidly in opposition to factory farming and the use of genetically modified plants and animals, where only one variety of plant or animal is mass-produced and agriculture is homogenized over wide regions. Remember that diversity is resilience, and the Permaculture approach is to value genetic diversity and support the living evolution of food crops that are suited for the unique conditions of each area.

In drylands, food production centers around the development of oases, where water and nutrients are concentrated from expansive areas into fertile and well-watered strips. In most historic examples of dryland agriculture, runoff is collected from vast areas into valley bottoms and ravines to produce well-watered pockets where farming could be undertaken. On the urban scale, water is concentrated from roof surfaces, roads and other hard surfaces to create protected pockets where abundant gardens can flourish.

Grazing is feasible in drylands over the wider landscape, but the land needs long rests in between, so proper rotation and stocking rates are essential so that grazing does not completely denude the vegetation and trigger cycles of soil erosion that can be very difficult, take a long time to repair.

There are also many native food plants that can be foraged from the desert. In places like the Sonoran Desert in the Southwest of the US, there are abundant wild food plants to be harvested that helped to feed indigenous people throughout their history.

Here's a picture of my urban high desert garden from Prescott, Arizona USA. You can see sunken garden beds that are heavily mulched for water conservation. It was fed only by collected rainwater, which was put into unglazed clay pots sunken into the ground. The water slowly seeped into the surrounding soil with zero evaporation.

The temperate zones are different from the drylands in that we find more intensive food production possible across the wide landscape. The presence of rain and snow means that there's a lot of biological activity going, and soils are easy to build. The temperate zone is where it's appropriate to do large scale field cropping and livestock production with less risk of degrading the land. In temperate climates it's more about managing the abundance and choosing what you will grow, while keeping aggressive weed species from dominating.

Because temperate climates are farther from the equator, sunlight can be a limiting factor. Proper orientation towards the sun and creating suntraps will create microclimates that are lighter and warmer and more protected from the wind.

The idealized farming landscapes in temperate zones are mosaics of field, forest, hedgerow and orchard, rotating fields between grazing, food crops, and cover crops, collecting water in ponds and managing productive forests [as you can see here]. Heating is from wood and wood products.

Fruit and nut trees grow abundantly, as well as fungi. Where I live now in western Oregon, a few hours in the forest can yield many meals worth of mushrooms.

In the tropics, it is almost always warm. Plants may go dormant in dry periods, but when water's available, things are constantly growing. This means that soils are actually poor, because the nutrients are constantly being taken up by the plants. Nutrients can leach easily from soils during heavy rains and become compacted and eroded, so the soil should always remain covered by plants or mulch to protect it. So it's best to focus on tree crops and herbaceous perennials to maintain fertility in the system. Annual agriculture can be devastating in the tropics if nutrients aren't replenished to the soil. Where we do find annual agriculture, like this scene from Cuba, there is an extensive worm composting operation to support it.

The tropics are full of perennial food plants, many of which grow as understory plants, and the integration of annual crops in a mosaic with fruits and nuts provides the soil nutrient stability that is needed. Here's a recent sketch my design firm did for a location on the Island of Maui in Hawaii. The tropics are all about layering, stacking in plants at different heights just like we find in the natural jungle. Here we see Bamboo, Banana, Yam, Cassava, Lemongrass, Pumpkin and Turmeric in a multi-storied jungle of edible and useful species in Costa Rica. And here we see a circle of banana trees in Vietnam surrounded by perennial staple crops like sweet potato, coco yams, and lemon grass as well.

Weeds grow prolifically in the tropics with all the rain and heat, and controlling them needs careful planning. Animal tractoring is one method that can work in the tropics. I'm not talking about hooking chickens up to tiny tractors. It's a movable chicken house and pen where they are intensively grazed on one area, and then moved on. This type of strategy, where the chickens do the work of weeding while they eat greens and insects is the type of relationship we want to create in our Permaculture food system.

Aquaculture, which is the production of fish and other aquatic yields, is hugely productive in large parts of the tropics. Imagine irrigating crops with the nutrient-rich waters of a fish and duck pond.

So wherever you are located, Permaculture provides specific strategies to food production. Remember, the feedback loop is always going, and each new Permaculture practitioner discovers new techniques that add to the local knowledge base, building local and secure food systems.