Key practices for growing polycultures

Polycultures are two or more useful plants grown on the same plot, usually at the same time. From an ecological perspective, they try to mimic natural cycles. Like natural systems, they offer benefits including reduced pest damage, soil conservation, and can even increase crop yields per area compared to monocultures.

Polycultures are the traditional way of growing food and are still widely used in the tropics, temperate market gardens, home gardens and allotments. Growing several crops together offers growers a diverse nutritional range, greater security of production and income, and efficient use of space. Although specialisation of machinery and economies of scale have led to widespread use of monocultures (large fields of a single crop). Polycultures offer significant advantages, for example, they can enhance:

- biodiversity
- nutrient cycling
- soil and water conservation
- carbon sequestration.

They can also offer improved regulation of pests and diseases and can be more productive per land area than growing each crop alone.

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Methods of growing polycultures

There are several ways to grow polycultures. The crop plants can be mixed (mixed cropping) or grown in single or multiple rows of each crop (row, or strip intercropping). A second crop can also be planted amongst a first just before it is harvested (relay intercropping).

In **mixed cropping**, seeds can be combined then scattered over an area together, or crops planted around each other. In the classic Latin American “three sisters” combination, beans are planted around corn (maize), with squash planted around the outside.

**Row intercropping** is popular in smaller gardens where many crop types are grown. At a farm scale, there are usually just two alternating crops.

**Alley cropping**, a type of agroforestry, is a form of polyculture where an annual crop is planted between rows of perennials like trees.

Forest gardens are perhaps the most diverse form of polyculture, where extensive use is made of vertical as well as horizontal growing space.

Growing a polyculture is relatively easy for new growers and experienced growers alike, but choosing good combinations for your site can take some practice and experimentation.

Choosing a combination

**Consider:**
- the height that different crops will be (pick ones that use complementary spaces)
- how much space each crop needs to spread (decide how many to plant and how close together)
- the light requirements and shade tolerances of each crop (grow smaller shade-tolerant crops between larger light-demanders)

**A quick polyculture mix**
Lettuce, spinach, rocket, and other salad leaves often grow well together. Mix seeds together, add a little compost to help spread them and scatter over your ground. Water them in well. Pick frequently for tasty baby leaf salads.

**Key practices for growing polycultures**
four bean seeds evenly spaced around each corn 15 cm away and 3 cm deep. 1-2 weeks later plant the squash around the outside, leaving space on the shady (north) side so you can get in to harvest the beans and corn.

The corn provides a pole for the beans to climb. The leguminous beans fix nitrogen to the soil, and their vines help to stabilise the corn plants. The squash vines become a living mulch, shading weeds and preventing loss of soil moisture through evaporation.

Where and how to grow polycultures

Polycultures are most widely grown in the tropics where light levels are high and relatively consistent through the year. There is high native plant diversity, and considerable food production is at the household level.

Polycultures tend to require higher labour levels than traditional mechanised cropping, particularly when planting and harvesting. The grower also needs to be able to identify all crop plants at the seedling stage (if weeding), and to understand how they grow and what their requirements for growth are.

The benefits (for example, yield increase and pest protection) depend on crops chosen, relative densities, and other environmental factors. Outcomes may be unfavourable as well as advantageous.

Most scientific research focuses on row intercropping of two crops at the farm scale. As of yet, there is little scientific research on temperate crop systems with more than two crops, and further investigation into suitable crop combinations of three or more crops is needed before suitable mixes can be recommended.

You can find a detailed set of instructions to set up your own polyculture vs monoculture experiment here.

Also in this GROW Regenerative Practice series:

- **Key practices for growing ecosystems**
- **Key practices for growing soils**