

Non seed propagation

Bulbs

A bulb is structurally a short stem with fleshy leaves or leaf bases that function as food storage organs during dormancy. The dormancy is usually caused by dramatic seasonal changes in weather forcing the plant to retreat underground and protect itself from either heat, cold or lack of water.

A typical example of this is the onion that forms a bulb to protect itself and then regrow when the environment is more suited to growing green leaves.

Bulbs tend to start their growing process in the second year from seed by forming a flower stem and seed for the next years growth cycle.

Plants that come from very harsh environments like Garlic actually have very quick life cycles and are prompted to grow roots under snow and ice, pop up for a short flowering period and then retreat back to their bulb stage to avoid the baking heat of summer. Garlic has roots that pulls the bulb further down every year into the ground to avoid damaging surface effects. Onion roots push the bulb upwards to take advantage of the surface nutrients and growing conditions during summer.

Many lily family and allium family plants make bulbs and uniquely the Oxalis genus.

Corms

A corm is a short, solid, vertical, swollen underground plant stem that serves as a storage organ that some plants use to survive winter or other bad conditions such as summer drought and heat (perennation). They appear very similar to Bulbs but are solid unlike bulbs which are a collection of leaf bases and some plants can produce both a bulb and corms that are like small bulbs attached to the main one. An interesting example of this is the

leek which in the form of 'elephant garlic' produces both a large segmented bulb and small corms or bulbils around it's base. Typical edible plants that have corms are Taro and saffron.

Tubers

Tubers are enlarged structures used as storage organs for nutrients. They tend to be just a large source of food for the plant located in an area of the root system to be used when the plant goes back into growth after a rest or when the environment and climate is unfriendly such as during droughts. There are different forms - storage tubers such as potatoes and root tubers such as Yams or Sweet potatoes.

Rhizomes and stolons

These are generally modified plant stems that are located underground that send out roots and shoots or new stem growth. They are also usually the structures that join up to tubers and other storage organs like in potatoes. Stolons are very long rhizome like stems that grow new plants at the ends like Strawberry plants. Ginger, lotus and turmeric are typical edible rhizome plants.

Cuttings

The process of cuttings is simply taking a piece of plant tissue and allowing it or encouraging it to grow new roots from the stem to form new identical plant. Sometimes this is done while the plant is at rest and sometimes while it is in full growth. Some plants are very effectively reproduced this way and as the plant is at a fully mature growth stage will produce flowers and fruit immediately - unlike seed grown plants that may take years to reach maturity. Plants such as the mints have a very fast growth rate for new roots

and can quickly spread through this method after being damaged by animals and insects and other natural events where they get cut or broken.

Grafting

Grafting takes a piece of one plant tissue and attaches it to another to allow them to grow together and usually allow for a known variety to produce fruit and flowers in a reliable way. The upper part is called the scion and the lower root section is called the rootstock. This method is often used to grow plants that are difficult to propagate in any other way such as to grow plants in a wet climate that suffer from fungal infections easily. It is used extensively in grape vine production so that you can grow many plants of exactly the same variety and have them all flower and produce grapes at the same time. Also it can be used for entertaining multi food production eg. a tomato top grafted onto a potato bottom.

Tissue culture

This process involves taking just a few tiny plant cells from the tip of a growing point and then growing them in a controlled nutrient solution and media carefully protected and monitored for light levels and nutrient balance etc. This is primarily used to reproduce expensive plants like orchids and also very importantly to get disease free plants. Generally there are very few diseases that are fast or effective enough to enter the very newest growing tip cells and so they have no virus and bacterial infections in them. So when you grow them on they have been effectively sterilised of these pathogens. Plants will generally grow faster and better once those problems have been removed. Some plants growing in the wild or in constant production collect many pathogens over thousands of generations and start to decline significantly in their

growth. This is probably the only viable way atm to remove virus infections from plants. This is very important to commercial level food production.

Vegetative reuse.

Aside from use as compost many edible plants can be replanted and grown on from their stem bases and other plant material. You can gain much by harvesting the tops and keeping the base of the plants growing on indefinitely. Typically plants like lettuce, leeks, fennel, celeriac can be 'on grown' to harvest again. Carrots can be grown on for their tasty leaf growth. This is also a great way to get free seed as many plants that we buy as edible vegetables are biennial and will flower in the second year of growth and cutting off the root base or tops does not stop the flowering and seed production process.