Plant Reproduction and Development_Asexual Reproduction_SLFAB2

ASEXUAL REPRODUCTION IN PLANTS

In general, rapid propagation to increase in number through asexual means is exhibited by bacteria, protists, animals and plants. The resulting cells or individuals are clones of the original parental organism. There is no genetic variation but in some cases, reproduction without gametes is a response to stress or other unfavourable environmental conditions. Plant sexual life cycles may be accompanied by periods of vegetative reproduction in which mitosis is the basic cellular mechanism.

Methods of Asexual Reproduction

Plants have the capacity for indeterminate growth due to **meristematic** tissues which are found all over the plant body. A detached leaf or twig can regrow. Whole plants can be derived from **cuttings**. *Fragmentation* separates a plant into parts that re-form new plants. A root from one plant can give rise to many adventitious shoots that later grow into separate plants.

In other plants, seeds are produced without fertilization of the flower. This is called *apomixis*. The embryo originates from a diploid cell in the ovule. The seeds from the ovule are dispersed by wind.

Plant biotechnology is well known for **tissue culture** and test tube **cloning**. Most desired crops, ornamental plants and orchard trees can be [redacted] ese methods. A small cutting from a [redacted] is placed in a **culture medium** and ev [redacted] l. It is a mass of undifferentiated [redacted] m a new plant which is then trans [redacted] ow progressive growth.

In *grafting*, a t [redacted] her plant of a closely related speci [redacted] providing the root system is called [redacted] the *stock*. The twig [redacted] placed onto the stock [redacted] is called the *scion*. [redacted] Resistance to certain [redacted] diseases, fruit and [redacted] flower quality are [redacted] just some of the [redacted] desired phenotypes [redacted] that can be combined.

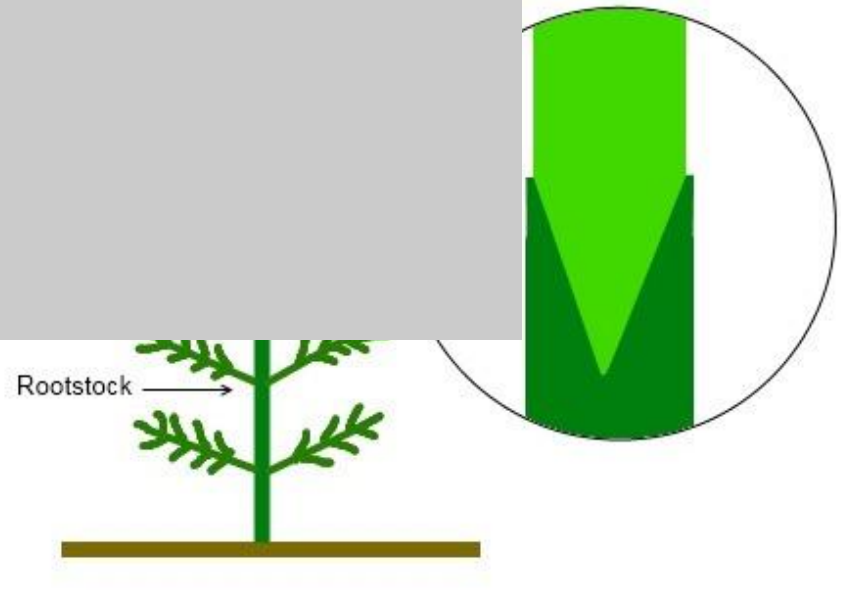
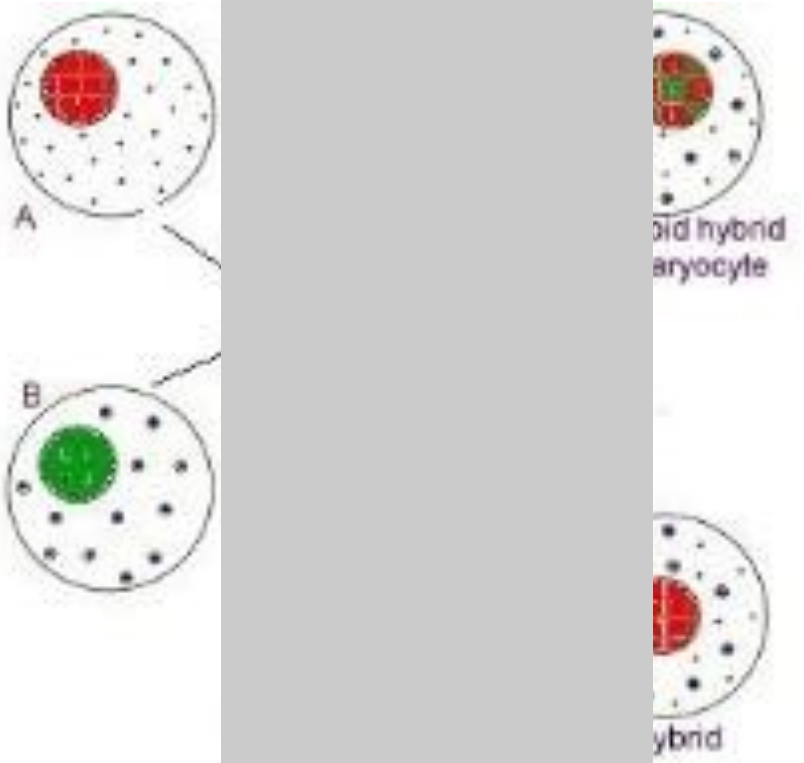


Figure 3.10 Grafting.

In *protoplast fusion*, plant cells from desired phenotypes have their cell walls removed and screened for mutation. The resulting fusant becomes a *hybrid cell* which regenerates cell walls and forms a pla[redacted]issue culture are employed. Genetic en[redacted] for subsequent propagation is made succ[redacted]**re** methods.



(http://users.ugent.be/~[redacted]tm)

Figure [redacted].

Vegetative reprodu[redacted]pagate exceptional plants. It is advantageous because the uniformity in traits allow agriculturists to predict proper planting and harvesting seasons. Fruit quality and quantity is assured under ideal

conditions. However, the lack of genetic variability means that these plants have little adaptability. Drastic conditions in the environment lead to slow or unfinished growth and the plants may eventually perish. Currently, rice scientists in the International Rice Research Institute (IRRI), Laguna are developing plants that can adapt to drought, pests, pathogens and high salt conditions. Gene banks for rice and other crops have been established all over the world. Such banks are a repository of all (rice) seeds in the world maintained at zero degrees Celsius.