Article published on February 1st 2012 | Business

This type of reproduction favors the production of new genetic individuals and hence the constant generation of genetic variability in populations. There are mechanisms to promote cross-pollination in plants such as self-incompatibility , the heterostyly , the herkogamy and dioecy .

In the evolution of plants were emerging mechanisms favoring outcrossing reproduction and excluding all or part of autogamy . The dioecy is the most important of them as male and female gametes originate separately in different individuals (the asparagus is a dioecious plant example). The male and female gametes develop in different places of the same plant (eg corn) or develop asynchronously, ie the gynoecium matures before the androecium or the same flower (Example: some ferns and some trees pollinated anemophilous).

A large number of angiosperm flowers had hermaphrodites with stamens and carpels in the same flower and were mostly self-incompatible. Even today the situation remains. The angiosperms are characterized by modern be monoecious or dioecious . Indeed some species have been described asBryonia presented eg monoecious and dioecious individuals.

In most families of angiosperms floral structure is such that it prevents the accidental transfer of pollen to the stigma . In other words, is as elaborate floral structure that only the help of pollinators (insects, birds) ensures the transfer of pollen to the stigma of another flower.

The androecium and gynoecium of the flowers of some species mature one after the other. This phenomenon is called dichogamy . The homogamy , however both floral whorls mature simultaneously. In protandrous flowers the stamens mature before the gynoecium while protogynous flowers, the gynoecium is the first mature.

In Botany , the androsterilidad is the condition under which the plants hermaphrodite or bisexual are incapable of producing anthers , pollen or functional male gametes. Virtually all species of plants, domesticated and wild, have shown male-sterile individuals and that condition is heritable. Male sterility in plants appears sporadically in species pollinated as autogamous , as a result of genemutants (usually recessive), or cytoplasmic factors combined effect of both. Male sterility can manifest as abortion of pollen, the anthers not open to release pollen grains are inside, the abortion of the anthers, the anthers are transformed into pistils (anthers pistiloides), among many other cases. Male sterility is useful and interesting for plant breeding because it provides a very effective means to simplify the formation of hybrids, thus eliminating the laborious process of manual emasculation. On the lines do not produce male sterile anthers of flowers functional and, therefore, there can be self-pollination, are pollinated only by the line or lines that are used as male parent.

Joseph Gottlieb KÃ¶lreuter was the first to observe, to 1763, this phenomenon in plants. However, the first reference we have about the use of male sterility for the production of hybrid seed , was made by Jones and Davis in 1944, when they discovered cytoplasmic male sterility gene in onion . At present, the male sterility is used to remove artificial emasculation in the production of hybrid seed on a commercial scale in plant breeding

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Article Keywords:
Flower shop hamilton, flower delivery hamilton

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