

# Hybridization, Plant

 Like  Share 48 people like this. Be the first of your friends.



## Snoqualmie Falls and Seattle City...

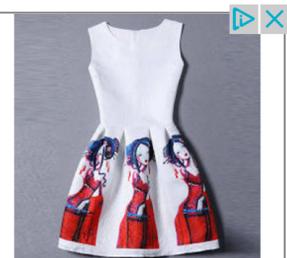
Seattle Trip Planning

[Viator](#)



Photo by: Vasiliy Koval

Hybridization is the process of interbreeding between individuals of different species (interspecific hybridization) or genetically (/knowledge/Genetics.html) divergent individuals from the same species (intraspecific hybridization). Offspring produced by hybridization may be fertile, partially fertile, or sterile.



**She In**  
She In Shine Out



Crop yields increase dramatically when hybridization is used to exceed one or more of the parents in size and reproductive (/knowledge/Reproduction.html) potential.

Plants hybridize much more frequently and successfully than animals do. Pollen from flowering plants disperses widely and may land on flowers of other species. Chromosomal (/knowledge/Chromosome.html) doubling (polyploidy) occurs more frequently in plants and facilitates the fertility of the hybrid offspring. Finally, plant forms are less stringently controlled than animal forms, and so the intermediate form (/knowledge/Intermediate\_language.html) of a plant hybrid is more likely to be physiologically successful.

One of the first persons to study plant hybridization was Josef (/knowledge/Joseph.html) Kölrueter, who published the results of his experiments on tobacco in 1760. Kölrueter concluded that **interspecific** hybridization in nature is rare unless humans disturb the habitat. Since that time, many instances of hybridization among various plant species (/knowledge/Flora.html) have been documented.

One good example of plant hybridization involves hybridization between the elegant sego lily (*Calochortus selwayensis*) and a mariposa lily (*C. apiculatus*) in western Montana. The sego lily, with purple-spotted petals, lives in dry sites at mid-elevations in the Rocky Mountains under the somewhat open canopy of ponderosa pine forests. The mariposa, with its cream-colored petals, lives in moister sites at higher elevations under the more closed Douglas-fir (/knowledge/Douglas\_fir.html) canopies. Interspecific hybrids between the elegant sego and mariposa lilies are found in great abundance on ski slopes where Douglas-fir canopies have been opened and kept clear of trees and tall shrubs.

The ski slope (/knowledge/Alpine\_skiing.html) is a habitat that is too dry and too open for the mariposa to thrive and too moist for the elegant sego, but just right for the hybrids. Such an intermediate habitat is called a hybrid habitat. Human disturbance can generate hybrid habitats of many types and thus can foster interspecific hybridization.

Backcrossing, which is the interbreeding between hybrids and their parental species, can transfer **alleles** from one parent to the other using the interspecific hybrids as a genetic bridge in a process called introgression. Introgression increases the genetic variation of one or both of the parents. In the previous example, there is extensive backcrossing between the hybrids and mariposa lily. The result of this introgression is that some mariposa lilies now display petals with some of the purple spotting characteristic of the elegant sego, and theoretically they can live in slightly drier habitats.

Often interspecific hybrids are sterile or for some other reason cannot interbreed with the parental species. Occasionally sterile interspecific hybrids can undergo a doubling of their **chromosome** set and become fertile tetraploids (four sets of chromosomes). For example, the bread wheats that humans use today are a result of two hybridizations each followed by chromosome doubling to produce fertile hexaploids (six sets of chromosomes). In such instances the hybrids can become new species with characteristics different from either of the parents.

Humans have used intraspecific hybridization, hybridization between strains of a single species, to develop high-yielding crops. In corn, continually **inbred** varieties will often exhibit inbreeding (/knowledge/Inbreeding.html) depression, which is a reduction in vitality and yield. Hybridization between inbred lines can result in hybrids that exceed one or more of the parents in size and reproductive potential. This increased vitality is called hybrid vigor and has been studied since the time of English naturalist Charles Darwin. Crop yields increase dramatically (as much as 100 percent) when hybridization is used in this way. In the twenty-first century, over 90 percent of the corn grown is of hybrid origin.

**SEE ALSO** Grain (./Fo-Gr/Grain.html)

George H. Wittler

## Bibliography

Anderson, Edgar. *Introgressive Hybridization*. New York: John Wiley & Sons, Inc., 1949.

Grant, Verne. *Plant Speciation*. New York: Columbia University Press, 1971.

Wagner, Warren. "Reticulate Evolution in the Appalachian (/knowledge/Appalachian\_Mountains.html) *Aspleniums*." *Evolution* 8(1954): 103–118.



## Snoqualmie Falls and Seattle City...

Seattle Trip Planning

Viator



## User Contributions:

<sup>1</sup> **Pratibha** Sep 1, 2012 @ 8:08 am  
What is the difference between intervarital and interspecific hybridisation?

Comment about this article, ask questions, or add new information about this topic:

Name:

E-mail:

Show my email publicly

Type the code shown:



Public Comment: (50-4000 characters)

Hybridization, Plant - Biology Encyclopedia forum (/forum/)

[< Hybridization \(Hybridization.html\)](#)

[Hypothalamus > \(Hypothalamus.html\)](#)

