

Breeding

Breeding of plants takes place through hybridisation and selection. By crossing plants the breeder attempts to join together the best characteristics of the offspring from 2 different plants. Through selection the breeder tries to select the offspring with the optimal combination of qualities from both parent plants. This process depends completely on the production of offspring; in other words the formation of viable seed. If this is not formed the breeder has a problem. There will be no offspring from which to select new varieties. No offspring does not necessarily mean no fertilization took place after pollination. Many times fertilization does take place but the formed embryo dies at an early stage of development due to known or unknown causes.



Bulb growth
progeny
crossings
Lily

Embryo-rescue techniques

Techniques were developed in the early 1900's enabling unripe seed or embryos from adult plants to be rescued to form small plants. This was done mainly with seed which had a very long dormancy period or when the seeds were particularly heterogeneous. With the continuing developments in tissue culture this technique was also used to save embryos from ovules, which had been fertilized but had never developed into viable seed on the mother plant.



Offspring Lily

Initially, complete ovaries were put in tissue culture whereby seedlings were obtained from embryos which would have died in a later stage of development. Saving embryos that died in an early stage of development came at a later stage, resulting in high-tech ovule- and embryo-culture techniques. Often a combination of these techniques is used: parts of the ovaries are put in tissue culture following which ovule and/or embryo culture is applied.

Significance for breeding

The use of embryo-rescue techniques has been significant in the acquisition of interspecific and intergeneric hybrids. Using this method interesting (half) products have been acquired in potatoes, vegetables and various ornamental crops. Many of the new lily hybrids were obtained from this technique. Also a large number of the new Alstroemeria varieties would not have seen the light of day without the help of embryo-culture techniques. SBW International has been running such like projects under instruction from breeding businesses for a number of years now arising in many interesting interspecific and intergeneric hybrids. It is impossible to imagine modern plant breeding without this technique.



Lily ovary

Further

If you require the expertise of SBW International to obtain offspring from hybridisation through embryo-rescue techniques you can contact our contact persons on our website. It is important that you contact us well in time before you begin with your hybridisation programme. In this way we can advise you on the number of hybrids which will be used in the embryo rescue and the moment in time when these can be presented to the laboratory. We will also be able to do a number of analyses to determine whether embryo-rescue technique is appropriate.



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