



Surrey, BC, Canada
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Orchids from Seed to First Flowering

Next to “How do I grow it?” the second most common orchid question is “Why do orchids cost so much?”. The short answer is time. Whether it is the candy-striped *Phalaenopsis*, a neon pink *Odontioda*, or a fragrant *Zygopetalum*, the plant is probably a 4 to 5 year old first bloom seedling. These plants come from one of two origins: seed or mericlone. Just like children from the same parents, plants from seed are variable whereas mericlone plants, in theory, are exact copies of the mother plant so they all look alike. This article looks only at growing orchids from seed.

The life of that plant started in a greenhouse 4 to 5 years ago when a hybridizer selected both parents because of highly prized characteristics such as flower number, shape, color, plant vigor and compactness. The pollinia, waxy masses of pollen, were taken from the “pollen parent” plant and placed on the stigma of the “pod parent” plant. The hybridizer then tags and records each cross because “lineage” is as important in orchids as it is in thoroughbred horses. Depending upon the genus of orchid, the seeds take from 4 to 14 months to develop in the seedpod. When the pod is mature the hybridizer cuts it off the plant and sends it to the lab.



Orchid seedpod

Most labs prefer to use the green pod technique for intact seedpods. Mature seed from a split pod can also be used and is preferable in some circumstances. Once in the lab, sterility becomes extremely important. The seedpod or free seeds are carefully sterilized with a household bleach solution because a single bacteria or fungal spore can contaminate and overgrow the slower growing orchid seeds. In fact, all manipulations of seeds and subsequent growth stages take place under sterile condition in a laminar flow hood, to reduce chances of

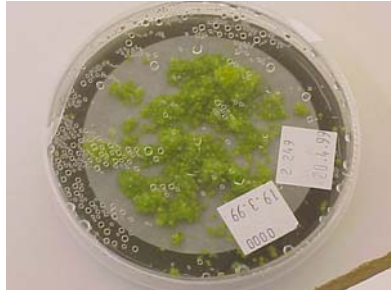


In the Lab

contamination to almost zero. Since orchid seeds contain an embryo and virtually no endosperm (the plant equivalent of yolk), all nutrition must come from the media. Lewis Kundson’s procedures for the sterile culture of orchid seeds, published in 1921 and 1922, established the basic protocols that are still in use for all plant tissue culture today. In nature, an orchid must immediately establish a symbiotic relationship with a special type of fungus if it is to grow and survive, but, in the lab, the media we use contains all the nutrition that the developing seed needs. Seeds are sown by the thousands onto media in a laminar flow hood.



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Protocorm plate

Some orchids need darkness to germinate while others are not particular. Germination can take as little as 2 months but some genera require 6 to 12 months with cycles of heating and cooling. Once the seed germinates, it develops into a protocorm, which is a little ball of cells that does not look like a plant at all. After 2 to 5 months, the protocorms in the seed plate have grown in size and number and are just starting to get leaves and roots. They are transferred to spreads. From a single seed plate, you generally get 4 or more spreads. With the decrease in sibling competition and fresh media, the young plants start to really develop and grow. They typically spend 2

to 4 months in the spread flask and then are placed into final replate flasks where the density is even lower and they complete their seedling growth in 4 to 8 months.

They are then sent out to the greenhouse for deflasking and acclimatization. The seedlings need to be acclimatized in higher humidity for 6 to 8 weeks because, while in the flasks, they do not develop a protective cuticle on their surface to stop them from drying out. The young plants are grown in the greenhouse for 16 to 24 months, with at least 2 repottings before they flower for the first time and are ready for sale.



Plants ready to come out of flask