Growing Disas
on the Oregon Coast

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Soon after moving from South Africa to the U.S.A. in 1993, I started growing disas in Olympia, Washington.

Yachats lies on the coast, hemmed in by hills thickly forested with evergreen trees.

Then, in 2007, my wife and I retired to Yachats, on the coast of Oregon. My crazy plan was to go into partnership in a disa-growing business, selling them as cut flowers. That never materialized, so I just carried on growing them as a hobby. My collection now resides in Jim Rassmann's greenhouse near Florence, a coastal city to the south of Yachats. It is a 45-minute drive to the greenhouse and I visit there about once a week. As a result, I need a cultural setup that takes care of watering the plants between my visits.

Currently I grow five evergreen disa species – *Disa aurata, D. cardinalis, D. racemosa, D. tripetaloides* and *D. uniflora* – and their hybrids. Starting out with flasked plants and seed from the late Dr. Louis Vogelpoel, I have expanded my collection primarily through making my own disa crosses. I have a small orchid laboratory where I flask the seed

The disa section of the greenhouse is a riot of colour at the height of the flowering season in July.

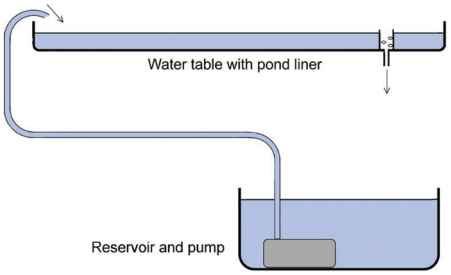
and grow the plantlets in flask until they are ready to face the harsh reality of the outside world. Over the years I have killed my fair share of disa plants; candour compels me to admit that if it were not for my breeding programme I would only have a couple of survivors! But my success rate is improving.

Here on the Oregon coast the temperature rarely goes lower than 0ºC or higher than 25ºC. We have abundant rain – about 150 cm annually – and good humidity. Much of the west coast of North America experiences a similar climate, ideal for growing the evergreen disas. So it is quite surprising to me that my modest collection of several hundred plants is quite likely the biggest one in the entire U.S.A.

Disas' cultural requirements are available from various published sources (Crous and Duncan (2006); Cywes *et al*. (2013), and various articles in orchid journals), so in this article I will simply focus on what has worked for me.

Growing area

Disas are usually grown under shade cloth, but since the walls and roof of the greenhouse are not particularly clear, I haven't found this to be necessary. The mature disa plants grow on three rectangular, level water tables. Each table measures 180 x 120 cm and is lined with pond liner material. The perimeter of each water table is defined by 2.5 cm diameter PVC tubing that creates a rectangular frame on which the pond liner is laid, so that a water level on the table of up to about 2 cm can be easily accommodated. Two of the tables are irrigated on a flood and drain basis, controlled by a timer that can be programmed to turn on and off multiple times every day. The timer turns on power to a small pump for long enough to fill the table to the desired level and then switches off, allowing the water to slowly drain back into a reservoir. Most of the disas are on these two tables. A third table has stagnant water to a depth of about 2 cm. Interestingly, the



Water table, reservoir and pump.

plants growing on this table seemed to thrive just as well as those on the flood and drain table. The disas on all three tables are in pots, mostly about 8.5 cm square, with a volume of about 650 ml. Particularly vigorous plants get slightly bigger pots.

There is a fourth table of the same type, where live sphagnum moss grows in shallow water. This works well as a hospital medium for sickly disas and is also home to a few carnivorous plants, including *Drosera capensis*.

During the coldest part of the winter a small heater can be switched on for a few weeks. The disas can tolerate temperatures down to freezing, but they do better if it stays a little warmer than that. At all times there are two big overhead fans ensuring that there is good air movement around the plants.

Media

After experimenting with media based on volcanic pumice and, later, diatomite, I turned to a mix of Supersphag and Perlite that worked well for many years. Supersphag is a product from New Zealand, consisting of fine pieces of sphagnum moss. With my supply of Supersphag running out, John Marcotte, a Canadian grower, alerted me to coconut husk chips and fibre as an alternative. The coconut material is first leached with two or three changes of water in order to remove unwanted salts. When mixed with smaller amounts of peat moss and Perlite it makes an excellent medium – it is inexpensive, readily available, and easy to work with.

Water

The water supply at the greenhouse is excellent, coming from a nearby lake where sphagnum moss, darlingtonias

Seedlings from the laboratory go into community pots that grow outside on my deck until they are ready for individual pots.

After 4-5 months, seedlings in community pots are nearly ready to plant out.

(pitcher plants) and droseras grow in the shallows. The total dissolved solids measurement of the lake water is less than 30 ppm. I haven't bothered to measure its pH, knowing that if sphagnum can flourish in it that it must be suitable for disas as well.

During the hottest part of the summer the pumps for the flood and drain tables switch on up to five times a day; in winter this is reduced to once a day or less. Every two weeks I change out the water on all the tables.

Fertilizer

Various fully soluble fertilizers containing trace elements work well. Following the recommendations of Cywes *et al*. (2013), I use both high nitrogen (24-8-16) and more balanced (16-17-17) fertilizers at different times of the year. The fertilizer is dissolved in the reservoir water supply at 100-200 ppm, so that the plants get water and nutrient simultaneously. Since most soluble fertilizers do not contain magnesium and calcium, I make sure the plants get a dose of these elements from time to time. Over the past year I have become quite a fan of foliar feeding. Typically, on arrival at the greenhouse I will thoroughly spritz the disa leaves with the dilute fertilizer solution from one of the reservoirs. Then, before leaving the greenhouse an hour or two later, I will water all the plants from above with fresh water to rinse and flush the fertilizer.

Pests and diseases

While well-grown disas are the very picture of health and vitality, they are susceptible to their fair share of pests and diseases. Even as I write this in early summer, I am having to deal with a mysterious problem affecting the foliage on the disas. Aphids, thrips, fungus gnats, earwigs, slugs and snails have all created problems for me. Plants occasionally rot off at the level of the media surface; newly deflasked seedlings are particularly susceptible to damping off. Consequently, I do find it necessary to use insecticides and fungicides from time to time. When the other cultural conditions are right, there seems to be less need for chemical treatments.

The rare yellow form of *Disa uniflora* is a mutant, unable to produce the anthocyanin compounds that give disas their red, orange and pink colours

Disa Amanda contains equal proportions of four different disa species.

Disa Cape Meyer (*D.* Helmut Meyer x *D.* Cape Perpetua) Reg. 2019.

Disa Sonstraal (*D.* Cape Meyer x *D. uniflora*) Reg. 2021.

Disa Hermanus (*D.* Yellow Bird x *D.* Glasgow Orchid Conference) Reg. 2020.

Disa Uniklein (*D.* Issy Klein x *D. uniflora*) Reg. 2021.

Disa Cape Salmon (*D.* Esra Bosch x *D.* Kirstendior) Reg. 2021.

Disa hybrids come in a variety of colours, sizes and markings, but it is hard to beat the stunning beauty of *Disa uniflora*.

Disa Stellenbosch (*D. uniflora* x *D.* Unitrikew) Reg. 2019. Dr. Floris Haasbroek made this beautiful hybrid and sent me some seed several years ago.

Starting from seed

Although disa seed will germinate well when sown on a suitable damp substrate, quicker growth is achievable by flasking the seed on sterile nutrient agar. I use a one-quarter strength Murashige and Skoog formulation with some added banana. Phytotechnology Laboratories sell two products, P668 and O156, that I use in combination along with added agar. With good management, plantlets can be replated from the mother flasks after 2-3 months and be ready for deflasking after another 4-6 months. The deflasked seedlings live on my deck where I can keep a close eye on them. For these tender plantlets, the survival rate is better on the breezy deck than in the greenhouse. They usually flower three years after flasking, though vigorous clones will sometimes do so in two years.

Breeding

As well as remaking many old hybrids, I have made and registered some new ones, although this hasn't been my primary goal. A lot of effort has gone into trying to improve the form, colour and vigour of the pure yellow (alba) form of *D. uniflora*. While I have bred plants with somewhat brighter yellow colouring and good shape, they are still difficult to keep alive once they have flowered. The only way I have managed to keep these forms in my collection is by constantly breeding from them. I have also tried, without success, to breed a large, pure white disa, either *uniflora* or a hybrid.

One interesting and elegant new hybrid of mine is *D.* Amanda. It is named in honour of a blind Native American woman who was cruelly treated when white settlers moved into Oregon during the 1860s. *D.* Amanda is a cross of *D.* Lynette Banks with *D.* Kewensis, resulting in equal parts of *D. cardinalis, racemosa, tripetaloides* and *uniflora* in its genetic makeup.

As children we always spent our summer holidays in Hermanus, so it has a special place in my heart. My parents retired there and my father grew disas with great success in the 1980s. So, in 2020 I registered the cross between *D.* Yellow Bird and *D.* Glasgow Orchid Conference as *D.* Hermanus (see Front Cover). This hybrid turned out to possess great vigour and produced large, shapely flowers with attractive colouring. This year I have registered *D.* Uniklein, *D.* Sonstraal and *D.* Cape Salmon.

We don't have sunbirds in this area, but we do have hummingbirds and they are particularly attracted to red flowers, where they look for nectar. I have noticed that hummingbirds will fly up to the window if there is a nearby disa flower on display in the house. Red crocosmias from South Africa are among their favourites here in Oregon. On a sunny day in June, I put a red disa on the railing of our deck. In less than a minute, a hummingbird was there to

A hummingbird investigating the flowers of *Disa* Sonstraal.

investigate. The bird quickly realized that there was no food on offer, but I managed to get a photo before it flew off.

I find it difficult to take photos that accurately show the colours of disas, especially the red and orange shades. Photographs of the same flower, taken with different digital cameras can look quite different from each other. Even with the help of Photoshop some of the colours are a little off.

While disas can be quite frustrating at times, they give me a lot of enjoyment. Cywes *et al.* (2013) summed them up accurately: "Given the correct growing conditions, few orchids are as vigorous and rewarding, but on the default side few are as unforgiving and die as fast if the basic cultural requirements are neglected." Aside from helping to keep me occupied during my retirement, they provide me with a strong connection to South Africa and my fond memories of "home".

Acknowledgements

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ABOUT THE AUTHOR

Walter Orchard hails originally from South Africa. He became interested in disas through his father, who grew them successfully in his retirement. He and his wife Christine now live in Yachats on the central Oregon coast where the local climate and water supply are ideal for disa growing. Walter's disa collection is hosted by Jim Rassmann, in nearby Florence. When not repotting disas he can be found uprooting invasive weeds, jogging around Yachats, playing bridge or baking artisan bread.