ALBA Laboratories

Where quality begins

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Newsletter

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Newsletter Spotlight

Zantedeschia or Calla lily

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The origin of baby tortoises

Here we are again! A bit later than scheduled, but it has been very busy at the laboratory. Before winter really sets in we needed to initiate quite a few products and together with the increasing amounts in the laboratory I simply did not get around to sitting down and writing.
Well, winter has started, which means here in the Western Cape the rains have begun and the night temperatures have dropped into the low 10's. This might not be considered 'cold' in Holland, but here it is really, really, cold. One does get used to higher temperatures….

After four months we have a system in place for the hardening off, but the change in temperatures is making it all quite complicated. In February and March it was very hot, which is not beneficial for plant growth. Suddenly after Easter the temperature dropped and had to adjust the watering regime and the location for growing the material as well. As we see it now; it will be ever changing of circumstances, which makes it quite a challenge to become successful. Only our first batch suffered from damping off, and all subsequent plant material did grow out nicely until we hit the high temperatures in March, or missed a watering session. During these winter months we probably can control the environment a bit better and the current batch of plant material is looking good.

Introducing our new products:

A green variation of the white *Z. aethiopica*

A two-toned *Zantedeschia* hybrid

Zantedeschia or Calla lily

A while ago I was asked the question why the *Zantedeschia*'s (varkoor), which start to flower in the fields here in the Western Cape, are mainly white and do not display the array of colours that are available in the shops. It is quite simple; the white ones are *Zantedeschia aethiopica* and the multi-coloured ones mainly derived from *Z. albomaculata*, *Z. pentlandii* and *Z. rehmanni* (so-called hybrids). That was the scientific part….
The most obvious difference for 'normal' people is that the local Calla's have a rhizome (= tuber-like root) and like moist conditions and subsequently will flower during winter in our region.

The hybrids form proper tubers, like warm, dry weather and will flower in summer. Commercially the hybrids are much more popular, but both species are propagated in tissue culture for the nurseries. They all have their own unique beauty.

In our tissue culture protocol there is a huge differences in the culture medium of the two family members and they are almost non-related in that sense. Also the multiplication factor varies between the two, with the white ones being quite a bit slower than the hybrids. Unfortunately we have found that the *aethiopica*'s are very difficult to get clean. Often we think we have a clean culture, only to discover about six months down the line, that there is a bacterium coming out of the plant material. With new colour variations in the 'white' material we have now seen pinkish, yellowish and green flowers. Another variation in the *aethiopica* selections are the dwarfed cultivars. This makes our task of producing the different selections only more of a challenge and we hope that we can get the *aethiopica* selections clean to be able to deliver the plant material to the various

nurseries!

Providing some general back-ground information:

IPPS meeting in Pretoria

In March we were invited to give a presentation at the IPPS meeting in Pretoria. Although I have been out of the lecture and presentation world for quite a while, it is still enjoyable to talk about one's passion. I do hope the audience does enjoy it as much….
The original brief was to give a presentation on "how to get Agapanthus clean in the laboratory". That would have been very specific and very short! So after consulting my scientific back-up, I decided to give a broader presentation on infections and all the things we do in a tissue culture laboratory to prevent them. As with most specific techniques, initiation of plant material is not cast in stone. One can imagine that a thin shoot requires a shorter treatment with a sterilising agent, than a thicker shoot. Even though in literature there is always a note saying something like 5 minutes in bleach, this is just a much a guideline as to tell somebody that one needs to cook potatoes for 20 minutes! This means that in a laboratory we are guessing what will work and trust me, we often guess wrong. I have had beautifully sterile shoots… as dead as a doornail! I've also had products that looked like we forgot the disinfectant cycle…. Each and every time it varies and even after we have successfully initiated our products, we still run the risk of loosing the material, either by human error or the occurrence of something they call an endophyte. At least that is what a well-known Professor keeps telling me. Basically you can not see that the organism is there and there is a big chance that it is not there, but it might be there and if stressed, it will grown and do damage. This might explain why suddenly in a late stage of our culturing the whole batch 'turns up' infected… we normally blame the production staff, which is much easier than wondering if it always has been there…

Giving information on commonly used techniques:

Embryo-rescue


A seedless watermelon; same flavour, less hassle


Embryos in a tube

For most people this sounds like we get out in bad weather and rescue little plant embryos from death by exposure. As you might have guess, far from it! But then; have you ever wondered how one gets new selections in seedless products? We all enjoy seedless water melons, seedless cucumbers and seedless grapes, but how did they ever select them?
Most of these products work on the principle that the new formed embryo, which is necessary to initiate the setting of the fruit, gets spontaneously aborted a few days after pollination, normally induced by the mother tissue. The fruit itself will grow out and give us the desired product, without those irritating pips. However in obtaining new selections, these embryo's which are going die if left in the developing fruit, need to be rescued. We physically take the embryo out of the seed and place it on a culture medium, where it can grow out into a healthy happy plantlet.
Again, various products have various requirement and one needs to do quite a bit of research to figure out what the time is that the embryo is big enough to grow out but still alive as well. At some point the live little embryo starts to disintegrate and by than it is already too late to rescue the poor little plantlet. Seeing that the products are often only available in a certain period of the year, the development of the technique might take some years; however these products are often in breeding programmes that take years, so from that point of view… it is not a train smash if we get delayed a little bit!

Supplying some back-ground on general misconceptions:


Ficus benjamini; most likely from tc

Tissue culture only for mass production?

Most of our customers only use the tissue culture phase to increase the numbers of their crops rapidly. Obviously that is one of the strengths of our technique; we are able to increase one plant to several thousands within a relatively short time span. We find that some customers have unrealistic perceptions of the speed of propagation. This is unfortunately also still re-enforced by some of my fellow-laboratories. It might not be as quick as what people think, but we are able manage most orders with 12-18 months. Especially the 'familiar' products fall in that category as after initiation there is hardly any need for research on the product. But still it takes a while before my one shoot becomes

origin

two and these two become three….
Recently we finally found a customer who started thinking out of the box and is currently using the laboratory to receive disease free and vigorous plant material on a regular base. This plant material is used as mother stock and after a few cycles the plants are replaced with 'fresh' material. Although this is common practise in e.g. the ornamental *Ficus benjamini* cultivation, we think some of the nurseries in South Africa feel embarrassed telling us that they would like to use our plant material for mother stock! The higher costs of the tissue culture plant are watered down by taking cutting from the material and the after-effect of the hormones used in the laboratory do often give more side-shoot formation on the plants than when cuttings from cuttings are used. Nothing new and definitely not necessary to feel like a crook for using the material as mother stock….
From the laboratory point of view, we can cultivate smaller amounts (a few hundred plants) commercially, but obviously it does help if a range of the plant material is supplied, making the medium production a bit more economical too.

News flash:

The origin of baby tortoises

On 2nd of June I finally learned where baby tortoises come from…. They fall out of the sky! So this would give some credit to the old stork story….
While preparing to cut the grass I noticed a small leave-like thing on the grass. When I picked it up it was a baby tortoise with its shell still soft and rubbery… as it was lying upside down the only way I could imagine it getting there was through the sky. Don't think the two tortoises that live in our backyard have created offspring yet.
Please check the size of our little friend, who now lives with my mother who has time to baby sit the little thing! Any information that somebody has to help? Thanks!

Stoffel junior
