



Newsletter

Although the time interval between newsletters proves to be a bit more irregular than originally intended, we still are producing them! Fortunately most of the newsletter has been composed in my head before I finally bother to sit down and type it into the computer. Or not even so much bother, but allowing myself the time to do it. Things at ALBA laboratories are a bit hectic at the moment.

With the start of the nursery we needed to make space and time and subsequently a few trial projects have been terminated. At this stage we have the know-how and there is very little purpose in maintaining cultures 'because we can'. So our projects with giant bamboo, Clivia and pomegranates have been terminated. Always a bit sad to see the cultures go, but it is leaving more time for the things that actually do bring in money! If in one point in time these products are required again, we can get the protocols off the shelf and repeat the performance. Over the years we have had several crops in the laboratory which were terminated production wise, but have been re-kindled some time later; *Clematis*, *Hemerocallis*, *Hydrangea* and *Yucca* to name just a few.

Introducing our new colleague:



The first results!

Gwen Muller

Since the last week of July Gwen has started looking after the plant material in the nursery. That concerns both the mother stock material and the plant material that is coming out the lab. As we are putting it kindly; she is fiddlefaffing with plants all day and the results are proof that she is dedicated to the little plantlets. At this stage she is able to give all plants individual attention; however we expect that once we are getting more and more plants out of the lab, which remain alive, she will have to divide her attention between all of her babies.

Although Gwen does not have any formal training in horticulture, in 2008 she made a career change when she decided to change her IT orientated jobs for positions which are more nature orientated. The nursery and garden aspects of her current position are much more of interest to her than the data recording that unfortunately comes with the territory!

Obviously there is still a lot to learn by all of us and with the changing of seasons, we expect new problems to arise. But let us consider them new challenges instead of new problems!! At this stage we are very pleased to notice that the production of raspberries, a crop which has proven a 'disaster area' at several other nurseries in the past, is going very well. The plants are growing out nicely and seem to be happy. Well done, Gwen!

Sixth issue, August 2010

Newsletter Spotlight

Gwen Muller, welcome to our team

Orchid seedlings versus monoclonal plants

Autoclaving; the basic principle

Tissue culture for dream production?

10 years ALBA



Gwen Muller

Providing some general back-ground information:



Bonatea speciosa, sown and propagated in tissue culture

Orchid seedlings versus monoclonal plants.

Since the start of ALBA laboratories we have been cultivating various orchid species in the laboratory, both from seed and from a selected mother plant. Monoclonal means that the material stems from one plant (clone) and this material is genetically identical. Seedlings on the other hand are genetically all different.

Often we hear the comments that the (monoclonal) plant material which we are supplying is not as vigorous as (seedling) plant material supplied by other orchid growers. And yes, in many cases that might be true! The monoclonal selections that we have in the laboratory will be identical to the mother plant which was selected in the greenhouse. Most of the time this selection was been done on the beauty of the flower only, with little to no consideration about the vigour of the plant on which the flower was produced.

When sowing orchid seed in a flask, one often finds hundreds of seeds germinating. Obviously when material is selected from the hundreds of plantlets in the flasks, we take the biggest and most vigorous ones. This will provide any customer with impressively big plant material. However, it is not necessarily the most spectacular flower that is produced by these selected plants. Seedling plant material which might not be as vigorous might give a more spectacular flower. Remember that if we use this type of material as mother stock, we will not have vigorous plant material again, but only the promise of a beautiful product once it is flowering!

Also the scale of production for commercial seedlings is often small, just 5 to 10 plants. When we deliver 300 or more plants of a monoclonal selection, we will always have smaller, less spectacular looking material as there always will be more variation in such a consignment.

Giving information on commonly used techniques:

An autoclave

When we mention that we 'autoclave' the plant culture medium, we normally get this very blank stare. The principle of autoclaving is no rocket science; however, it is something most of us simply are not familiar with. On the other hand, most of us are in fact familiar with the system as it is quite similar to a pressure cooker!

Few people realise that boiling is actually the state where a liquid becomes a gas. If the pressure above the liquid is lower, a liquid will boil at a lower temperature. But if the pressure is higher, it will require a higher temperature. Remember; long ago at high school they told us that high up in

the mountains water will boil quicker (as the pressure is lower).

In an autoclave we make sure that the pressure builds up by keeping the steam in a closed environment. Obviously the apparatus is built in such a way that it can withstand that pressure. To give you an idea... the pressure equals holding 1kg of sugar on the tip of your little finger!

We load our culture flasks into the autoclave, making sure they are sealed of adequately. By raising the pressure, we can heat the inside of the autoclave to 121 degrees Celsius. At that temperature all living things will die, simply because all enzymes and proteins are going to be demolished. This heating under pressure results in everything inside the autoclave becoming sterile. Because the pressure is so high, the liquids that we have in the jars will not boil and therefore the sugars in the plant culture medium will remain sugars and not turn into caramel.

Now when the autoclave opens, all the areas that are exposed to the air will become contaminated again, but everything in the sealed jars will remain sterile. And that is the way we use the culture medium.... sterilised from all infectants, which in turn means that the plants that we grow in tissue culture will remain 'disease-free', unless that disease was already in the plant to start off with...



the autoclave at ALBA laboratories

Supplying some back-ground on general misconceptions:



dream production

Tissue culture is a good medium for dream production

Although I still get very enthusiastic about the possibilities of producing an exotic crop for a wonderful upliftment project; over the years we have learned that most of these projects do not materialise. Eventually they still might happen, but in the years that we have been running ALBA laboratories, most of the big-scale projects never materialised. Even at a smaller scale, people approach us to do this crop for which they foresee a bright and shiny future on the window sills of the consumer and forget that before the product reaches that eager consumer, a lot of costs are to be incurred.

A project for scented *Geraniums* for the production of essential oil required 5 million plants. Even at a ridiculously low price of R1 for a hardened off plug, the capital outlay would have been 5 million Rand, just for the plant material itself. Not to mention the logistics and costs of getting the plants into bags and eventually planting them out in the field. Even for the dreamers, who figure themselves getting rich quickly through agriculture, these figures are a bit of a wake-up call.

While assisting at the start up of the projects, we have gained valuable information about a large array of crops. Giant bamboo is another of those crops. Over 5 years we gained the knowledge of cultivation and hardening off of the material, however, to date we still are waiting for the first order! And we still have the tea-tree, described in an earlier edition of the newsletters.

At this stage we know we are capable to do most projects, but will not be starting the research and development of the products on our own budget anymore. Too often we have found ourselves 'stuck' with product that was not required anymore. Our new accountant is keeping a close eye on procedures as I often start with things merely by being enthusiastic about the concept. And trust me; we do not want to upset our accountant!

Lately we learned that ALBA laboratories has been 'advertised' as being the strategic

tissue culture partner for large-scale agricultural projects. Although we do consider this a compliment about our abilities to assist in such projects, we like to stress that we are not participating in any projects. Nor did we discuss such projects with the parties involved.

ALBA laboratories 10 year young:

10 years ALBA

Unbelievable how time flies; it has now been 10 years since we started our laboratory in Atlantis. Over the years we gained a lot of experience and have gone from a specialised set-up with only one crop, to a production laboratory in which we have over 80 different crop species. Of which some with only one selection, but others with over 60 different selections; currently we have 347 different 'articles' in the laboratory!

Naturally not all these crops are at the stage where we have 'it all figured out', but the experience with the large amount of different plant species does allow us to anticipate the plant requirements quickly and make an educated guess of what the crop would like in its growing medium. Needless to say there are still a few crops that we are struggling to find the correct culture medium for.... but what is life without a challenge (or two).





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* It's the start of arum lily season. The endangered arum lily micro frog breeds inside the water and dew held in the cup of these lilies. They are being threatened by loss of habitat. Please don't buy arum lilies sold at traffic intersections or by vendors on the streets..

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Helping save the Arum lily frog



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