ALba Laboratories

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Making the world more colourful

ALBA laboratories opens up its doors!

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Please find here the first news letter from ALBA laboratories. We would like to share information with you on a regular base. This would allow you, our customer, to get better understanding of the procedures in a plant tissue culture laboratory, some of our products, and the chalenges we face in delivering the final product to you.

Newsletter Spotlight

Giving information on commonly used techniques:

Initiation of *Agapanthus species*

Recently we were informed again it is “general knowledge” that Agapanthus, can only be initiated in tissue culture by using its flower-heads….
Having been taught by one of the pioneers of tissue culture in the Netherlands, Dr. Lidy Leffring, I am of the opinion that the growth point, the meristem, is the part of the plant that one should use for plant tissue culture. Basically you just transfer this growing point from the plant to the test tube and then gently stimulate side shoot production. That way the plants that are growing out will be true to origin. Most alternative techniques involve induction of plants from single cell origin and although that is very well possible, it also introduces a higher risk of mutation or any other form of genetic differentiation.
So to get back to the start of this topic, at ALBA laboratories we have developed a protocol that allows us to introduce the meristem into tissue culture in such a way that we have a 75% success rate of keeping the mother material alive as well! Please do not hesitate to contact us if you require more information about your tissue culture requirements.

Agapanthus flower

Providing some general back-ground information:

Bacteria in tissue culture

On several occasions we have been asked if we could assist with the identification of bacteria that appear to be growing in plant tissue cultures. At ALBA laboratories we are of the opinion that it does not matter which bacterium is growing in your culture, there should be NO bacteria growing in your culture at all. Harmful bacteria are known to cause major problems in agriculture. One of the methods to combat these problems is to grow disease-free plant material. Getting plants from tissue culture is by no means a guarantee that the material will remain disease-free for its entire life in the field or nursery; however it does give the plant material a head start! In tissue culture we often find saprophytic bacteria, which do not harm the plants themselves but they do compete with the plants for sugars and nutrients. This plant material is often internally infected with these bacteria as well and once planted out in the nursery they will not perform as well as the clean plants.

More information on bacteria and bacterial disease can be found in the recently published overview by Prof. Teresa A. Coutinho, Goszczynska T, Lennox CL & Venter SN (2009) Bacterial diseases of plants in South Africa. Briza Publishers, Pretoria, South Africa. ISBN 978-1-920146-02-3.

Introducing our new products:

Mandy taking giant bamboo out of the flask

Giant Bamboo

Since 2005 we have been involved in various projects that deal with the establishment of Giant Bamboo at a commercial scale. We were approached by one of the many companies that see bamboo to be the tool for uplifting rural communities all over the African continent. The global problems of CO_2 emission, that is warming up the earth's atmosphere at an alarming rate, can be balanced by planting trees. In various parts of the world, it is common practice to 'show' your dedication to the environment by paying a levy that is used to plant trees in other parts of the world, the so-called for example 'Trees for Life' projects.

Giant bamboo is a non-invasive grass that can reach on average 15-20 metres in height. The uses of the crops are many and it supports the economies of many parts of Asia in more than one way! This product would be ideal for many small communities in rural Africa, since besides firewood and building material, it could supply any requirements for alternative fuel production as well. However, we have learned that all parties involved are waiting for somebody else to start working with this crop. At ALBA laboratories we think the promotion of several other crops for bio-fuel production, but lacking any alternative use for the local community at all, will create a dependence on outside companies for these communities and this has, in our opinion, little to do with upliftment.

Until recently no commercial plant material of giant bamboo was available locally and all plant material needed to be imported. At ALBA laboratories we invested in Research and Development to establish a protocol for the propagation of several giant bamboo species. Currently small trials are being performed with plant material that is of 100% African origin. We will keep you informed about progress in this area.

Supplying some back-ground on general misconceptions:

Variegated plant material

Over the last 12 years we have worked with several variegated forms of plant material. Often these are mutations that have happened spontaneously in a nursery or in the field; sometimes it is a rare condition that only one, out of many, seedlings is showing. The commercial interest in these 'abnormalities' is often great, everybody would like to have this new and exciting product. The disappointing part of this message is that more often than not, this variation in leaf colour is not stable.
Without becoming too technical; it all depends on in which cell layer of the leaf the mutation is. Unfortunately it is often in one of the outer two layers, which makes it a condition that rarely gets transferred to the off-spring of the product. The immediate response is to supply the material to a tissue culture laboratory as they can 'clone anything', but again, we often find that the induction of side-shoots in the mother material will result in various forms of variegation. As Murphy's law will have it: the desired type being most rare and the clones often reverting back to green, or to pure white. This latter type of plants will die once planted out in the nursery as there is no chlorophyll to support the plant's photosynthesis. The solid green plants do often look similar to the original plant material and have often limited commercial value. To select on the variegated plants in the laboratory is very difficult as the leaves that the plants have in the tubes are very small and often not completely open.

Some examples of variegated plant material

Michiel's comment:

I do hope you enjoyed our first newsletter and please let us know if there are any topics that you would like some information on. Please do not hesitate to forward the information to others that might be interested!
