



Prof. Reuveni, Stockton STK

Six questions to...

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Timorex Gold® is a contact biofungicide based on Melaleuca alternifolia plant extract. Thanks to its multiple components, it controls a broad spectrum of fungal and bacterial disease in various crops. Which components are key to the efficacy of the product?

During the years, we have accumulated reach experience on this plant extract and the understanding of the different component within the extract. Today, we can say that we have the ability to identify the active components in each extract and thus create better and more effective products. These include mono-terpens and their alcohols. Timorex Gold® reflects part of this ability and of course remains part of our confidential information.

One can say that you have dedicated your life to investigating the activity of Melaleuca alternifolia! Is there anything new about this plant that you think can emerge or is Timorex the happy end.

This is indeed the case. A lot of time and efforts have invested in Melaleuca alternifolia by myself and the other team members of Stockton during the years and I have to admit that it keeps surprising us all the time. We are exploring new characters of

Melaleuca alternifolia, which enable us to develop new applications following Timorex Gold® to new crops and diseases. These include activity against new fungal and bacterial plant pathogens. Recently, we have been investigating the impacts and involvement in plant metabolism and plant growth and yield. This is definitely a very potent active ingredient that has not reached its peak.

Stockton (STK), with whom you are affiliated, has recently signed a major agreement with Syngenta as the exclusive global distributor of a new biofungicide technology based on tea tree oil for the control of several diseases in ornamental crops. Can you tell us more about the ingredients in this oil extract and how it works on diseases?

We are very proud in the global agreement signed with Syngenta which reflect the strength of Stockton in developing botanical biopesticides solutions to different arenas in the agriculture and definitely reflect the advantages and values of plant extract as an important biological source for biopesticides. The Melaleuca alternifolia extract composed of many ingredients that has different impact and together create a perfect synergy to create a successful source for biopesticides. In addition, the unique formulations of these promote enhanced efficacy. These ingredients disrupts fungal cell membrane and inhibit respiration process.

Stockton has an active R&D program for the development of future natural products for crop protection. Is all the research

and development conducted in Israel under your supervision and is it only focusing on plant extracts?

Stockton's R&D program is being managed mainly in Israel by our VP R&D and with myself as the Chief Scientist, and naturally goes to the target countries for future development. We are very much proud in the unique knowledge and expertise we have accumulated in botanical biopesticides and we intend to keep improving this expertise. Provide some details on R&D capabilities such as:

- Rapid screening methods, extraction and production practices.
- Formulation expertise: efficacy, efficiency and speed of effect.
- Experienced Registration team.

How many research staff do you have in Stockton and is all the research conducted in-house?

During the years, we have established a special structure where we are conducting part of our R&D internally in and concurrently we have a wide collaborations with universities and academic institutions like the Weismann institution in Israel. The uniqueness in what we're doing is the bridging between early stage research and real farmers' needs constantly.

Are you conducting University teaching and Public Research on top of your work for Stockton?

As a professor in Plant pathology in academic Institute, I also conduct public research in various aspects in plant pathology which includes ethology, epidemiology and development of effective eco-friendly disease control programs for grapevines and deciduous trees in Israel.

demand for Trichogramma in sugarcane and for Trichoderma against crops diseases. And we need more active ingredients for foliar diseases." The Brazilian biocontrol association which has 24 members, meets many challenges. The first is to improve the slow process of legislation (2-3 years) and the misunderstanding from regulators on how biocontrol works. "Then biocontrol companies have to invest a lot on marketing and offer the same payment conditions than the chemical companies," adds Pedro Faria who remains confident for the future: "There will be opportunities to develop biocontrol with new generations of farmers. IPM is the key!"

BIOCONTROL IN AFRICA: CHANGE IS IN THE AIR!

The example of Kenya shows how a complete change to IPM can occur rapidly in plant protection. "In 2001 we were confronted with a strong resistance of leaf miners to pesticides. We looked for other solution and in 2003 we introduced biocontrol products in IPM programs. We rapidly had a great success with IPM, allowing to spray smaller volumes of conventional pesticides and use more beneficial insects." says Tom Mason, Managing Director of Dudutech. The other driver of the Kenyan market was the residue level, as many vegetables are exported to Europe where controls are strict. In 2013, the LMR for peas changed in the EU and some pea crops were refused. The growers were confronted to a change in crop management if they wanted to continue exporting their crop. "So we must adapt to the retail chain requirements. I think that in the next 10 years, small scale farms will adopt new technologies such as biocontrol and there will be a big change."

South Africa, a promising market? A wide country with 9 provinces, South Africa has a crop protection market still dominated by chemical pesticides. The value of this market is estimated at around 500 million US dollars for 2015. Biocontrol products are probably less than 5%, mainly on

