

# The right mix

STK has launched the world's first hybrid foliar fungicide. We spoke with the firm's VP of sales

With the launch of Regev – the name means 'clump of land' in Hebrew – STK of Petah Tikva in Israel believes that it has a product that represents the future of sustainable crop protection, especially for high value crops. Regev is the first hybrid foliar fungicide. While many products combine two or more chemical active ingredients or biologicals, nothing else has both.

Regev grew out of Timorex ACT, a botanical

fungicide that STK – then known as Stockton – launched in 2013. This is based on tea tree oil (TTO) extracted by steam distillation of *Melaleuca alternifolia* leaves. It was developed for a broad spectrum of plant-pathogenic fungi in many different crops.

Over time, Timorex ACT became the most widely used biofungicide for bananas in Latin America. It is used with vegetables, herbs, grapevines, bananas, rice, coffee and tree fruit in over 30 countries, and is now

approved for use in China and most US states.

However, says Yair Nativ, VP of sales, achieving market penetration was more difficult than expected. "The perception of biologics in the conventional market is to assume automatically that they don't work or that they are inferior to chemistry."

The vast majority of growers around the world have never tried a biological of any sort for various reasons. They may not understand the science or have the time to learn it; they do not want

Regev is based on tea tree oil



Regev's predecessor, Timorex ACT, is already used with multiple crops

to mix products in the field; or they are simply used to chemicals, which seem to work perfectly well enough.

The difficulty STK had in marketing Timorex Gold led it to think about a new approach that would give the benefits of biologicals without the need to learn new ways of applying them, by combining one with a chemical. Many thought this an odd idea, because the whole point of biologicals is supposed to be showing that you are green and organic.

## Getting the message across

"When you come with a mixture, no-one understands what the marketing message will be," says Nativ. "It's partly green but also partly chemistry, and it is not organic. We had a lot to prove."

Regev is a combination of 400 g/litre TTO extract with 200/g litre difenoconazole, which is already used to control many diseases. Its dual mode of action (MoA) combines TTO's cell membrane disruption

with difenoconazole's inhibition of ergosterol biosynthesis. This also means the probability of resistance or cross-resistance developing in plant pathogens is very low.

In addition, studies have shown that the combination improves the efficacy of difenoconazole, including against fungal populations with a lower sensitivity to it. On this basis, STK claims that Regev "combines the disease control activity of a natural botanical fungicide with the strength and activity of a chemical ingredient" and that it helps to improve resistance management and yield.

Regev significantly inhibits spore germination or lesion development on treated leaves and limits the expansion of lesions caused by various fungi. The diseases it controls include powdery mildews (caused by *Erysipales fungi*), apple scab (*Venturia inaequalis*), Black Sigatoka in bananas (*Mycosphaerella fijiensis*), and species of *Alternaria*, *Cercospora*, *Botrytis*, *Rhizoctonia*, *Pyricularia*, *Helminthosporium* and *Sclerothium*.

STK carried out many field trials around the world, both internally and with external partners in the US and Latin America. Three years ago, Regev was launched in Latin America, where STK has previous experience and new product registration is easiest.

The company is now working with Adama in Chile, Peru, Ecuador and Colombia; with Asenta in Mexico; with Amvac in the rest of Central America; and also with a small, local company in the Philippines. This process has brought the product to the hands of the farmers and the uptake level has been very high, largely because of its ease of use.

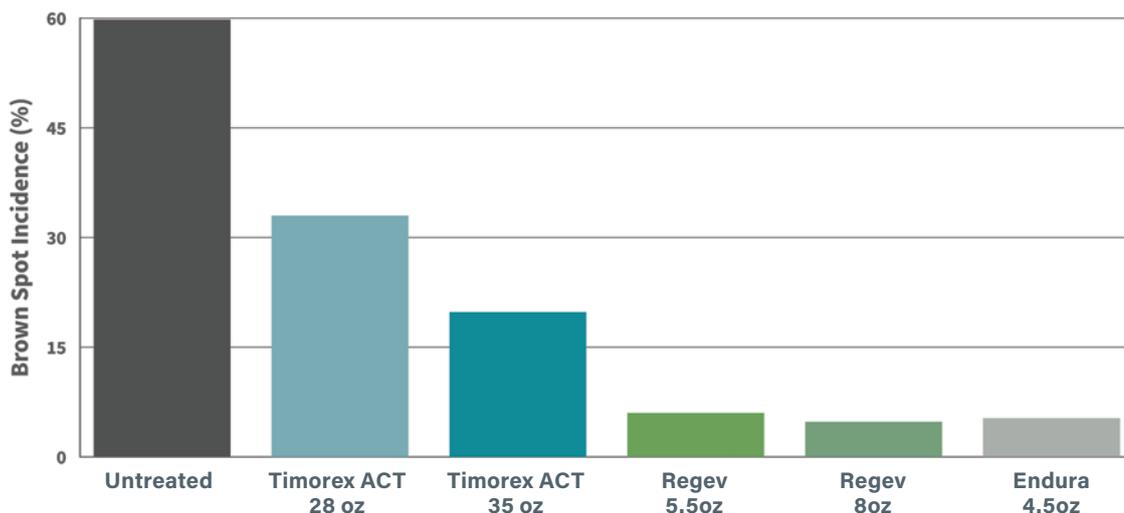
## Ease of application

"There's no need to educate the farmers about how and when to use it or what to expect when they do," Nativ says. "If you have the disease, you just go out and spray it like you would any other chemical."

There is only one residue – difenoconazole – so Regev can be used on fruits for the export markets where there are severe restrictions on maximum residue levels, like the EU and East Asia. In addition, it is claimed, because the diseases have never been hit with anything like this before, yields can be substantially improved

US registration in September 2020 was the big breakthrough of recent years, Nativ says. STK is now working there with Summit Agro. Market entry in Europe, however, is some years away because of the lengthy registration processes here, especially in southern Europe. And, where Timorex ACT





GLC Consulting | Quitman, GA | 2017 | Pathogen: *Alternaria alternate* | Application every 7 days  
4 Applications, 20 GPA | RCB, 4 repetitions | Planted: April 3 | First Spray: April 24

➤ was introduced as a totally organic pesticide, Regev is being pushed as a full-label fungicide with the science fully in place behind it.

“When you are doing it that way, there are no short cuts. The registration process is endless,” Nativ says. It will therefore take another five to six years before Regev hits the market in the EU. Conceivably, the timeline may be different in the UK, now that it has left the EU.

STK is now in negotiations with some small companies in India to find a suitable partner and expects to choose one by the end of this year. Similarly, it is looking for partners in other countries in the Far East. In China, for reasons nobody really understands, the law forbids mixing biological and chemical treatments. Most of Africa is also some way off as a potential market.

As yet, Regev has not been used with large-volume row crops, beyond

some minor use with potatoes and rice in Colombia. This is mainly because of price, because the market here is dominated by very low-cost generics. STK, at least for now, prefers to focus on fruit and vegetables.

### Longer-term outlook

“If people look 20, 30 or 40 years into the future, they know the crop protection market will be full of biologicals,” Nativ says. “They also know there will be a certain gap to cover until the biologicals are more effective and the cost of them is more competitive.”

STK believes that mixtures and hybrids like Regev have an important role to play in bridging the gap, enabling growers to experience and understand biologicals. The company also has other products in the pipeline, combining TTO with other actives. One key issue here in

the choice of actives is the need for certainty that they will remain legal in the US and the EU.

There are also some plant derivatives in the company’s future portfolio. “This is somewhat further down the road, but we do have other areas coming in and now that we are a little bit older as a company, we are going to develop them from the beginning and we will do this in parallel,” says Nativ.

The new products are for use in fungicides and insecticides. The latter is seen as an area of big potential for hybrids, because of the often low efficacy of biologicals in insecticides in some situations. A one-residue hybrid would offer a lot of answers to this problem.

“Herbicides are really the Holy Grail of biologicals,” Nativ says. “Currently, there are a few that work on specific weeds. There are some plant-based compounds but they tend to require too high doses and there are no broad spectrum biological herbicides on the market. We are working on it, but so far we have nothing specific to look forward to.” ●



Figure 1 – Field tests of Regev on potatoes

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