



THE APPLIANCE OF SCIENCE

Scott MacCallum travelled to Syngenta's Research base in Switzerland to witness just what it takes to produce some of the products greenkeepers now have at their disposal



Many people take their chances on the lottery each week, all hoping for that life changing moment when the six drawn numbers match their chosen six, but at Syngenta, BIGGA's latest Golden Key Supporter, the research teams battle daily against lottery-sized odds to produce products which will enhance the working practices of the world's greenkeepers.

Sound a bit of an exaggeration? Well, each product which makes it to the shelves has been whittled down from 250,000 hopefuls to one or possibly two which go on to become a fully fledged member of Syngenta's product range.

"Whenever we have a big breakthrough we celebrate," explained Eva Haensel, Syngenta's Professional Products Turf Team Leader, based at the company's Research Station in Stein, in northern Switzerland, of occasions which perhaps only occur seven or eight times a year.

Syngenta has a large administrative Headquarters in Basel, but it is at Stein, around 20 miles away, where the exciting work is carried out. A vast complex, it contains laboratories covering chemistry and biology,

a vast acreage of greenhouses, specially conceived chambers which replicate different climates, not to mention breeding stations for laboratory pests and diseases so miniaturised testing can take place on site. The level of expertise drawn from all over the world working at Stein is such that a call of "Is there a Doctor in the house?" would be met by a veritable stampede such is the number of people with "PhD" after their name.

But the word stampede and Syngenta certainly don't go together. The overwhelming feeling is one of calm efficiency and a raised voice would only be likely to be heard if fire were to sweep the complex. A simple example of this quiet, understated organisation came while sitting in one of the conference rooms early in the afternoon while chatting with Simon Elsworth, Head of Professional Products for UK and Ireland, when the blinds quietly tilted and then lifted, letting sunshine into the room. The building doesn't have energy sapping air conditioning units but temperature is controlled automatically by the tilting and lifting of the blinds, thus providing the optimum temperature.

But it is what is going on in the laboratories that is really eye popping and a closer look at the process to becoming a product brings home just what it takes to producing the products the existence of which many customer might be forgiven for taking for granted.

Most of the 250,000 active ingredients which start the long arduous process of becoming the next Primo Maxx, Heritage, Banner Maxx or Daconil fall at the first hurdle following an assessment, with just 15,000 making it to the next stage. Then profiling, much more vicious than anything Simon Cowell produces, brings that figure down to a mere 30 hopefuls before, hopefully, a winner is finally identified.

Oh, and this whole process, involving Chemistry, Biology, Toxicology and Environmental Safety, can

take 10 years. And then there is only a limited amount of time when the product is licensed to maximise profit from it.

"And when it is all complete we've got to be sure that the product is going to make an impact as unless it is a market leader, or close to market leadership we wouldn't make a return on the investment," explained Simon.

It is when you see this whole process laid out before you that you can appreciate the investment that a company needs to put into any new product which is lucky enough to reach the market place. And this is all the more impressive when you delve further into each stage of the process.

The initial "Discovery" stage actually takes place in the UK, at Jealot's Hill, near Reading, where chemicals are tested to see if they contain properties which might ultimately prove valuable.

Millions of tests are carried out each year to give the best chance of uncovering something new. "Toxicology" takes place at Alderly Park, near Macclesfield, while "Optimisation" – where those active ingredients which showed potential are investigated further to reveal practical benefits which takes place in Stein.

Project teams work tirelessly on developing something from the active ingredients, with many more being eliminated at this stage than moving forward as a development candidate. Using cutting edge techniques the chemists aim to modify the structure of chemicals in order to bring about improvements in their biological, physical and environmental properties which will then lead to new or improved products.

In many cases special bespoke equipment and state-of-the-art robotics has to be developed at significant cost to ensure experiments are as accurate as possible, while the environment in which the work is carried out needs to be devoid





of any possible contamination which would distort findings.

They also have to breed their own bugs and diseases – Anthracnose, Pythium Blight, Brown Patch, Dollar Spot, Tall All Patch, Fusarium Patch and Gray Leaf Spot - so that chemicals can be tested on them.

At the Research Station in Stein there is a unit of around 30 chambers in which different climates from around the world can be replicated to ensure that it isn't just the northern Swiss conditions that are experienced. But tests are also carried out in the field all over the world to ensure that the results of theoretical testing at the research stations are replicated under field conditions.

Looking at what goes on and the added dimension offered by the equipment now available it is fair to ask how it was done in the old days.

"The level of testing that is carried out now wasn't possible before but the the equipment we have enables us to exceed what the increasingly rigorous regulations expected of us" said Dr Shoumo Mitra , Global Technical Manager for turf, who is based in Basel.

Once a potential product has been identified another set of hurdles lies in wait in the shape of the registration procedures are then undertaken with various tests in various parts of the country to ensure that nothing could be harmful to the environment – flora or fauna. A product must pass all of these tests, and do so in each country in which it is to be sold, before being licensed, and becoming available to the market.

"In total it costs around \$100,000,000 to achieve a registration for an active ingredient in Europe and that is before the costs of developing and registering the formulated products after which we only have the time available on the license to make that money back," explained Simon.

"The tougher the regulations are and the higher the bar is set the happier we are because that will penalise the less ethical companies," he added.

It's a massive operation and all geared to ensuring that Syngenta have the best chance of ensuring the most effective product reaches the market

place and gives customers the best ammunition for the problems they face.

In its current guise, Syngenta is a young company having been formed in the year 2000 but its origins can be traced back 250 years when JR Geigy Ltd began producing chemicals and dyes in Basel and some of its pre-Syngenta identities will be extremely well known to greenkeepers everywhere.

A succession of mergers, name changes and acquisitions led to what had been originally Geigy becoming Novartis which in 2000 merged with Astra Zeneca, which had been Zeneca and before that ICI, to become Syngenta.

One of the company's greatest successes has been Primo Maxx which is increasingly becoming an (essential or 'must have') tool for Course Managers.

"The product works on so many levels to make good turf great; turf quality improved with a Primo programme enhances the playing surface, turf stays looking greener and healthier during periods of stress and, with stronger plants and deeper rooting, makes more efficient use of increasingly costly irrigation and fertiliser. Course managers also appreciate the cost and labour saving benefits of Primo reducing mowing requirements." The reduction in cutting also has knock-on benefits to fuel use and the environment," explained Simon, adding that Syngenta is proud to be a sponsor of BIGGA's Golf Environment Competition.

Clubs which typically spend up to 40 man hours a week mowing fairways through the growing season can find that time halved following a Primo Maxx programme while it can result in over £4000 a year being saved from fuel, maintenance and repair bills.

But it's not just on chemical product that Syngenta offer support to its customers, the company

prides itself on a holistic approach, with technical newsletters and a fine website for customers and the weather forecasting service, Green Cast.

"Green Cast gives a full weather forecasting service for a golf club but more than that gives a risk forecast for disease from 'No Risk' through 'Some Risk', 'Medium Risk', 'Medium/High Risk' to 'High Risk' and this gives Course Managers the opportunity to carry out some pro-active turf disease control. Timing trials at the STRI show it can improve results and reduce the number of applications required to achieve both excellent disease control and turf quality."

A useful section of the Green Cast service can be accessed via the Homepage of the BIGGA website while the full service is available from Syngenta.

Looking forward to what may be in store from Syngenta Simon is sure that there will be some innovative and exciting new products set to his the market place in the years ahead.

"We are investing in developing a wide range of new technologies and will be launching new products and services over the next few years, always aiming to produce the highest levels of quality and performance," he revealed

In keeping with the company's strong environmental ethic Syngenta will continue to work closely with the STRI's Environmental Unit on the development of products and management techniques to prepare and maintain areas for conservation purposes, showing that good environmental stewardship and a controls company can work hand in hand.

