Promising future for plant compounds

The horticultural sector is looking for new ways to keep on making money. The production and trading of plant compounds is very promising in this respect. Because each tomato, rose or pot plant contains thousands of compounds that might be useful for the pharmaceutical or food industries. And that might be the basis for a whole new chain.

Everyone who works in horticulture knows about it: the tomato packaging that is partly manufactured of tomato fibres. A great example of the biobased economy, or in other words: plant ingredients replace fossil raw materials as resource for pharmaceutics, food supplements, cosmetics, pesticides, animal feed

and fuels. Below the surface there are more of such examples. An increasing number of growers sells plant compounds and it is likely that in the future, the Dutch horticultural sector will become an important producer of plant compounds. To make such a future a reality, various parties started working together. Bio Based Greenport Westland-Oostland is now involved in various projects – among which the packaging enriched with fibres of cleared tomato plants and the development of green plant protection products – and the so-called Entrepreneurial Platform for Plant Compounds was established. Jan Smits (Bio Base GreenportWO): 'Plant compounds have a great future.'

New earning capacity

Chipboard, skin creams and chicken feed

'To ensure a healthy future, the horticultural sector needs to look for new earning capacity', says Jolanda Heistek, program manager Greenport Westland-Oostland (GreenportWO). Increasing international competition is the cause of this search: other countries are more often very capable to grow quality vegetables, flowers or fruit. A new earning capacity may sound abstract, but can be very obvious and concrete. The marketing of special plant compounds for instance, or: the ingredients of plant products. Each fruit and each crop consists of thousands compounds that might be useful for other purposes. But which crops contains which compounds for which solution? To answer that question the Centre of Expertise for Plant Compounds started the extract library. Extracts were made of 1300 different plant varieties, in addition the Centre collected available literature regarding functionality and plant compounds present in these crops. Interested companies can screen the extracts to check if they contain desired characteristics or specific molecules. Sweet peppers for instance contain raw materials for chicken feed, replacements for E-numbers and anti-oxidants. In addition, their stalks can be used in manufacturing chipboard and MDF. Tomatoes contain compounds which can be used in treating tumours, diabetes and obesity. The juice in the stems of tomato plants works against fungal diseases. Roses contain certain compounds which

> 'Those plant compounds are often used to make this world a bit more beautiful'

can be used as natural colourant and which are working against UV radiation (and thus can be used in skin creams). And these are only few examples.

Sufficient organic waste

150 thousand tonnes of waste

Two processes are important when it comes to plant compounds; the cultivation of plants in order to extract their substances and the residual flows that also serve to extract specific useful substances. The horticultural sector has sufficient organic waste. Smits: 'The Dutch region Westland-Oostland produces 150 tonnes of plant waste material on an annual basis. This includes pruning waste, plant waste at the end of a cultivation period or produce that could not be auctioned off against the minimum price.' This enormous amount of waste is a great starting point to search for other applications, like the development of the packaging material containing fibres of tomato plants. That has only been the beginning though. Bio Based GreenportWO now cooperates with the Centre of Expertise for Plant Compounds and Koppert Biological Systems in developing green crop protection products which are based on organic residues. Waste is what remains and therefore each Euro you can earn with it is very welcome of course. But the plants themselves – such as tomatoes and roses – can also contain useful compounds. These plants need to be cultivated especially in order to extract these useful compounds. And that is a whole different ballgame, says Steef Meewisse. Since a few years, the Dutch rose grower from the village of Bleiswijk supplies specially cultivated plants to a pharmaceutical company for medicinal applications. He cannot say which plants he cultivates or which plant compounds the company is after, because his client does not want to disclose this information. Meewisse can say however, that marketing plant compounds is different, very different. 'You really have to keep in mind what the demand is. Not: I have got a plant. But: what does the world need? And how can I contribute to this by doing what I can do well, namely growing plants? That is a very different way of thinking.'

Dot on the horizon

You don't sell plant compounds by just transporting them to an auction, says Jan-Willem Donkers, theme manager Knowledge & Innovation at GreenportWO and Greenport Aalsmeer. The buyers of plant compounds are very different companies than horticultural sellers are currently used to. These customer do not for instance request a MPS certificate, but an extensive risk analysis. Customers that do not want you to mention who they are, because of the competitive market they are active in. And customers that operate in completely different markets. Donkers: 'selling flowers is way easier than selling plant compounds, because that is pretty complex.'