

## ROSE BREEDING REPORT



*Ton Witmer and Peter van de Pol (right): "The new rose rootstocks result in more vigour and therefore higher production."*

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**In the Netherlands, 95% of rose growers use plants produced from cuttings. Rootstocks hardly play a role, which is quite different to the rest of the world. Will the new rootstocks Pro 3, Pro 4 and Pro 5 change that? In trials, roses produced on these rootstocks have been shown to yield at least 10 per cent more. Breeder Peter van de Pol: "Over the last few decades growers have invested a lot in technology but not enough in the plant. These rootstocks offer Dutch rose producers a new perspective."**

It's clear what sort of products this 125 year-old company sells from the flower containers in front of the office building. Moerheim produces bedding plants such as petunias, as well as being a specialist in the

selection and sale of rose plants worldwide. The company represents rose breeders in small production countries such as Brazil, India and China. And, at the beginning of 2013, the company set up exactly the same sort of working partnership with Peter van de Pol of Plant Research Overberg (PRO). Sitting at the table are van de Pol and Ton Witmer, Moerheim's export manager, based in Leimuiderbrug, the Netherlands. "We met Peter van de Pol junior during the IPM in Essen, Germany. We are working together to select the new rootstocks, propagate and sell them in North and South America," says Witmer.

### World standard

The story begins several decades ago. In 1980 Peter van de Pol, as an experienced and senior

lecturer in horticultural cultivation at Wageningen UR, started a breeding and selection program to improve rose rootstocks. "I supervised many research programs regarding rootstock for roses. We also developed a new propagation technique, top grafting (stenting). That is a combination of a cutting and grafting, which makes it possible to test and propagate new rootstocks year round."

By coincidence – when speaking to a colleague during a congress – he heard about the rootstock Natal Briar that was being used in Australia. "It is a very strong rootstock and turned out to be excellent to propagate, certainly by top grafting. Eventually from the work carried out at Wageningen this became the world standard with at least one billion propagated rootstocks in use. Everywhere, that is, except for in the Netherlands. Here

in the 1980s growers switched on mass to production from cuttings. This was due to the substrate-based production which meant soil based diseases hardly occurred and nutrients and water were more easily available to the roots."

## Even better varieties

Although Natal Briar was a great success worldwide the breeder was inspired to continue to search for even better rootstocks, and for which he could acquire the breeders rights. Van der Pol's institute was abolished in 1998 and he continued independently. He used Natal Briar and other vigorous roses – for example, the hip rose Rugosa – and continued with traditional breeding strategies: Crossings, selection and further crossings. The most important aim was to find an even more vigorous rootstock.

"It's impossible to do this breeding by yourself. The rootstocks need to be selected and tested under practical conditions. That's why eight years ago I started to work with Stokman Roses Kenya and Kordes Roses International and this year with Moerheim. After many selection trials together we came up with the Pro 3, Pro 4 and Pro 5. These are now ready for launching." Stokman is the representative in Africa and Europe. Kordes together with Stokman is responsible for the sales in Europe, including the Netherlands. Moerheim has the sales rights in North and South America.

## Increase in production

The question is, can the three rootstocks be as successful as Natal Briar? Ten growers have been testing the rootstock in the Netherlands while in Kenya some 40 trials are running with good results so far. Pro 3 has resulted in a 10 to 20% increase in production compared with Natal Briar or cuttings. Rootstock Pro 4 has led to an increase in production and higher stem weight. And Pro 5 improves the quality and stem length; stem weight has also been shown to increase by 20%. The increase



in production depends on the varieties being cultivated and the growing conditions.

Van de Pol illustrates the results with a figure derived from a trial carried out at the rose nursery, Porta Nova of Waddinxveen, the Netherlands "Here, the productivity of Red Naomi, which itself has strong roots, rises by at least thirty per cent when using our new rootstocks compared with cuttings. In addition there's less cut-effect so production is more uniform which is also an advantage."

## Adjust cultivation technique

Something unexpected happened during the trials. The plants were so vigorous that the roots grew out of the substrate and blocked the gutters and drippers. The growers had never seen that before. Witmer: "That problem can be solved technically by putting the substrate onto blocks so that air circulates under the rockwool. We call that air pruning. It means that growers cultivating with a rootstock do need to adjust their production system, just like vegetable growers have done already."

Therefore the introduction of rootstocks into rose production in the Netherlands won't be without a few setbacks, says the breeder. "Growers are used to growing with cuttings. In addition, for years they've invested in better growing techniques and not enough in the plant. Due to the high production costs per square metre and insufficient revenues rose growers have gone through some difficult times. When I speak to growers I notice that they are still cautious. But with the extra production achieved by using the rootstocks I'm confident there'll be a turning point. Look at tomato production."

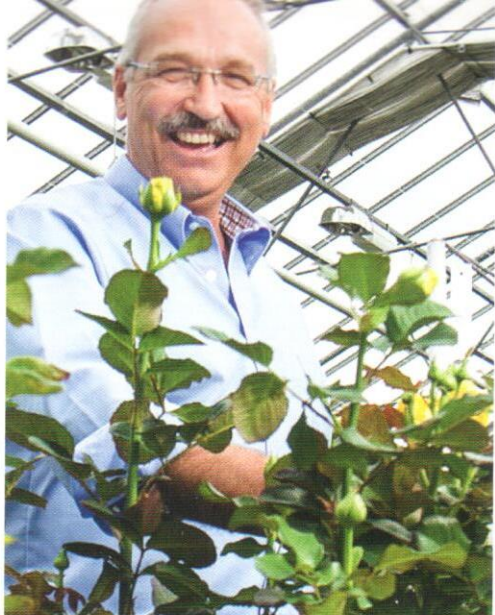
## Sustainable production

About ten years ago tomato growers started to use rootstocks to achieve extra resistance to diseases such as Verticillium and the pepino mosaic virus. An additional advantage was that the extra vigour increased production. Tomato growers now use almost all varieties that have been grafted onto a rootstock.

Witmer sees further reasons that could bring a switch in rose production. "Varieties that have a low yield when grown from cuttings could now become interesting. Also, the rootstock can stimulate more sustainable production. Due to the increased vigour it should be possible to grow at a few degrees cooler and with less light. We're testing other rootstocks in cooler conditions and without assimilation lighting that are producing seventy per cent more. The extra costs, about 65 euro cent per plant, are much lower than the investment in technology."

## Foreign growers interested

The rootstock producer is also receiving a lot of interest from overseas. Witmer has been



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welcomed enthusiastically in South America. "The rootstocks that yield so much extra production have been very positively received in Columbia and Ecuador. It's logical because most of the nurseries there use a rootstock so adjustments to the production system aren't necessary. In addition the price difference for these plants is less; just thirty euro cent more for the royalties."

The next step being made by Moerheim is to attain variety protection in North and South America. As soon as they have the breeders rights in place for the three rootstocks the company will start running trials with different growers in Brazil, Ecuador, Mexico, the United States and Columbia. Witmer: "At the same time we are setting up a propagation nursery in Brazil that will produce the rootstocks and plants for grafting. I'm sure it's going to be a success."

## Summary

Three new rootstocks for roses, which after years of breeding work have entered the market, have been shown to increase productivity by at least ten per cent. A lot of interest is already coming from overseas, where most roses are produced in soil and on a rootstock. The rootstocks also offer a new perspective for Dutch growers who mostly produce from plants based on cuttings. Switching over to a rootstock will require adjustments to their cultivation techniques.