Experienced Specialist for Pot Cultures

Bernhard Schmidt in Grefrath, which is located in the Lower Rhine-region, cultivates pot plants. He is not a small player, but not a very big one either. His focus on sustainable plant production makes him great.

he brothers Bernhard and Oswald Schmidt founded the company in 1983. They built up an ornamental plant nursery with today 11,000 square metres under glass

and an open area of around three hectares. The company started with the production of bedding and balcony plants. Then they dedicated themselves exclusively to potted roses for 13 years. The high energy consumption and the drop in prices for potted roses forced the company to return to bedding and balcony plants. Today, the assortment is dominated by cold crops: lin spring *Viola cornuta* (also as trios) and *Cushion perennials* such as Saxifraga and Iberis, in summer Lavandula, and in autumn crops such as *Calocephalus* and *Calluna*.

Under glass, bedding and balcony plants such as Calibrachoa, Sanvitalia and Osteospermum are produced, as well as *Cyclamen* and *Poinsettias*. In 2019, Callunas of the "Beauty Ladies" brand were added to the range and are now cultivated in large quantities. This required the expansion of a lava staging area that could be driven over with a pallet transporter. In retrospect, this investment has proven to be dead right. Cold cultures are experiencing a boom. They are easy to produce and require little energy.

Always up-to-date

For Bernhard Schmidt, the most important help for always up-to-date assortments are the relevant cultivators such as Beekenkamp, Dümmen Orange, Kientzler, Selecta one or Syngenta. Each cultivator has its own focus. For Marco Schmidt, son of the owner, the challenge is to compile the assortment in such a way that it is optimally suited to the nursery and its customers. So everyone benefits from it. The nursery family is mainly on the road at the "Flower Trials" to find out about new products. There you can see new varieties. "Novelties play an important role there. If a new colour should ever come onto the market, we'll be there.



Marco Schmidt is focused on sustainable plant production.



Operational Data

Schmidt in Grefrath

- **History:** founded in 1983 by the brothers Bernhard and Oswald Schmidt
- Owner: Bernhard Schmidt, as of 1 January 2023 Marco Schmidt (since 2011 agricultural economist/horticultural technician)
- Employees: 3 journeymen, 4 unskilled workers, 4 seasonal workers
- Plant Size: 11,000 square metres under glass (Venlo and Normhaus), 30,000 square metres open land area
- **Crops:** *Viola cornuta* and cushion perennials such as Saxifraga and Iberis, in summer Lavandula, autumn crops Calocephalus and Calluna "Beauty Ladies", bedding and balcony plants such as Calibrachoa, Sanvitalia, Osteospermum, Cyclamen and Poinsettia.
- Sales: Specialist retail divisions Landgard, Veiling Rhein-Maas
- ► Technology: Venloblock greenhouses Rooting on its own with hollow-chamber energy umbrellas and blowers, mobile table system with ebb and flow irrigation and recycling in a closed system, open landscape with lava layer and ribbon fabric, irrigation partly by watering trolley, partly by overhead irrigation, use of rainwater
- Energy: 90% waste heat from the neighbouring biogas plant, 10% anthracite coal
- Maschinery: Potting machine from Demtec with a capacity of 7,000 pots per hour, automatic spreader from Willburg, pallet transporter from Prins, skip loader from Mayer, buffer table from Willburg, alphaJET mondo inkjet plant marking
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Today, the range is dominated by cold crops.

We can't afford any lapses", says Marco Schmidt, is currently who the company's operations manager.

Sales are made via Landgard's specialised trade, and to a lesser part via Veiling Rhein-Maas. The cash-andcarry-markets are important. Ownermanaged garden centres and flower shops cover their needs here and expect products that differ from those in other assortments. The sales centres are located right on the doorstep. Deliveries are made with own vehicles.

Schmidt bedding obtains the and balcony plants as cuttings and roots them in the Cleverpot system (formerly OmniSolutions). The "AirPlug", focus is on а pot stabilised with a propagation truss. Depending on the requirements, the substrate mixture consists of white peat, coco and perlite. The pre-drilled holes are available in plug-in diameters various and formats. These are usually filled with a fine plug-in substrate so that the cuttings have a good connection with the soil.

The plug-in holes enable quick printer from Koenig & Bauer Coding for work without preparation and also ensure an even plug-in depth, as plugging through is almost impossible.

The fully fitted and already watered plates are available in different versions, adapted to the individual crops

Schmidt roots the plants under drizzle. A suspended watering trolley with special sprinklers passes over the crops every 30 minutes in winter and every 15 minutes in summer. "Better less than too much," advises Marco Schmidt. "The leaves are only lightly wetted to compensate for evaporation deficits - that's enough.."

Sustainabile plant production

The nursery family attaches great importance to a pollutant-free and environmentally friendly cultivation. includes This plant protection, fertilisation, use of substrates and



water consumption. The use of inhibitors is reduced thanks to cultivation measures such as light, fertilisation temperature and strategies. "The cultivators are helping us a lot by working intensively on



Cuttings are rooted in the Cleverpot system.



The "AirPlug" is a propagation pot stabilised with a truss.





A modified lea

A modified leaf blower is used for the spreading of beneficial insects.

compact-growing cultivars," says Marco Schmidt. "This has helped us to reduce the use of growth regulators significantly. We have not reached level zero yet, but we're on the right track."

Rooting is done under drizzle.

For the horticultural technician, inhibiting growth is a matter of feeling. He does not believe in high-tech methods controlled by computer programs. "We are still gardeners," he adds, "we use technology to support us - but not to hand over everything to machines and robots."

The use of beneficial insects is a difficult topic that requires a lot of training. There are always setbacks, as in the past summers with extreme temperatures, when the use of beneficial insects had no effect.

But at least, for two years now, the nursery has managed to cultivate the plants completely organically; and to avoid the use of pesticides in the case of around 100,000 cyclamen.

One challenge was the combat of thrips. They can be kept below the damage level with a regular application of predatory mites.

Marco Schmidt has modified a Makita leaf blower to spread beneficial insects. The device uses the battery-powered leaf blower Makita DUB 186 with a capacity of 192 cubic metres per hour and a range of up to eight metres. A quite precise and simple spreading can be realised by regulating the air volume and dosage. Meanwhile, the market offers further spreading devices for beneficial insects, e.g. Brinkmann's spreader. His technique goes even further in the direction of automation, but requires a pipe rail system. However this cannot be implemented consistently in the mix of old and new buildings. Therefore, the mobile and flexible version was chosen in Grefrath.

Marking of the plants with continuous inkjet printer

Plant marking also represents more sustainability. In the past, Schmidt used adhesive labels for marking.

Exakt dosieren, janz ohne Pumpen.

Die neue SOLO Akkuspritze 442 mit elektronischer Druckregelung 16 Liter Nennvolumen, leicht und leistungsstark mit 18 V Wechselakku. Bis zu 3,4 Stunden kann mit einer Akkuladung gearbeitet werden. Das mitgelieferte Ladegerät sorgt in nur 1,1 Stunden für eine volle Batterie. Die Pumpenleistung kann über ein Softbedienfeld, das gleichzeitig die Ladezustandsanzeige enthält, in vier Stufen zwischen 1 bar und 4 bar eingestellt werden.

Der ergonomische Behälter sorgt zusammen mit dem einstellbaren, gepolsterten Tragesystem für ein ermüdungsfreies Arbeiten auch bei längerem Einsatz.

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Plant marking and coding with continuous inkjet printer.



Peat substitute depending on the crop: On the left Verbena with wood fibres and compost, on the right Calibrachoa with wood fibres and perlite.



An automatic spreader is used to cover the substrate surface with a layer of mulch.



The marking is contactless, the ink is only applied at certain points and dries immediately.



Already well-proven: a new hollow-chamber energy umbrella with two fabrics in one system.

This doesn't make sense in combination with recyclable pots. A different process was needed in which the pot can be completely reused and be processed quickly during production.

Schmidt has chosen a state-of-the-art technology from Koenig & Bauer Coding. A continuous inkjet printer applies the desired information directly to the pot. The alphaJET mondo works computer-controlled and the print head is integrated into the production line. The marking can be done with up to five lines, with a character height of 2 to 15 mm. The operation speed is up to 2,400 characters per second. It can easily be adapted to the usual speeds of all common potting machines, transplanting machines and conveyor belts. Printing is contactless. The ink is only applied at certain points and dries immediately.

This avoids smears and enables a clean print image. The text creation is extensive with automatic time and date functions, sequential numbering, barcodes and logos as well as printing of True Type fonts and a wide selection of character sets. The alphaJET is operated via a touchscreen display.

Marco Schmidt is enthusiastic about the investment: "The device works very precisely and, in contrast to adhesive labels, avoids a lot of waste because it can be programmed exactly to the number of pots. There is no wastage. The ink consumption is extremely economical: 0.7 litres of ink are needed for one million pots.

To ensure a closed recycling circle, pots made of PCR plastic (post-consumer recycled material) from the Dutch pot manufacturer KUMA are used. It comes 100% from household recycling collections. After use, it can be sorted out again of the waste system to be recycled into pots or other objects.

On the road to a peatless future

For some time now, the company has been working with up to 50% peatreduced substrates from the manufacturers Klasmann-Deilmann and Van der Knaap. The standard mixture currently consists of 50% peat, 30% wood fibres and 20% compost. There are some modifications to the peat substitutes depending on the crop - for example, wood fibres and perlite for *Calibrachoa*, and wood fibres and compost for *Verbena*.

Marco Schmidt is going an extra mile now.

He is using a completely peat-free substrate from Klasmann-Deilmann for the first time. "The first pallets are already delivered - it will be a first test," he explains. "If the test is successful, we will be able to reduce the proportion of peat even further."

The plant professional only sees problems with Callunas. Because of the low pH value, it is a real challenge to eliminate peat completely. Marco Schmidt also makes sure that the proportion of coconut products in the soil mixes is as low as possible. Using coconut as a substitute for peat is not "green" enough for him.

To counter the problem of weeds, especially in the outdoor crops, the pots (from 9 to 13 cm) are covered with Klasmann-Deilmann's "TerrAktiv" container mulch. The process is automated with an automatic spreader from Willburg. The system is integrated in the potting machine as part of the production line. It covers the substrate surface with a mulch laver of about one to two centimetres. The material lowers evaporation from the substrate and reduces the thereby number of watering cycles which is an important factor, especially in hot and dry periods. The balanced moisture in the substrate benefits not only the plants, but also the soil life. Extreme rainfall hardly causes any silting or erosion which minimises nutrient leaching and thus fertiliser inputs. A positive spin-off is the repellent property on slugs. The material excellent has adhesive properties and forms a stable top layer without impairing the passage of water and "We air. were reducing the operating costs for pot cleaning by 30 to 40% by using the mulch material," adds Marco Schmidt.

Reduce the ecological footprint

Last year, the energy umbrella in the Venlo houses was replaced in order to save more energy - from a simple umbrella as a surface-mounted system to a hollow-chamber umbrella with a double fabric as a suspended system from the umbrella specialist Fischer. The new system consists of an upper shade fabric with woven-in white plastic strips and a lower day umbrella fabric made of transparent plastic strips. Both fabrics are connected to each other at intervals of 20 cm. The lower fabric thus sags slightly and generates an air cushion, which is ultimately responsible for the extra insulation.

A photovoltaic system is currently being discussed in order to reduce the ecological footprint even further.

Where the fabrics are sewn together, this area is strengthened and is used as a fixation point for the suspension hooks. Hollow-chamber umbrellas are particularly suitable for upgrading existing systems where a modern double-umbrella system is not possible or would be too complex and therefore too expensive. At Schmidt, the upgrade was supported and implemented within the Federal Programme for Increasing Energy Efficiency and CO2 Savings in Agriculture and Horticulture.

"The reduction in energy expenditure was immediately noticeable," explains Schmidt. Waste heat from a neighbouring biogas plant is mainly used to heat the nursery.

This provides the base load. A coalfired boiler is available to cover peaks. It was hardly used after the installation of the new umbrella system. This meant that the nursery could be heated almost exclusively with the "green" energy from the biogas plant. lt provides a particularly sustainable energy source, because it is "fed" only with waste and residual materials from agriculture and landscape work. This also includes waste and rotten food that would otherwise end up in the refuse incinerator. No crops are used that would have to be specially cultivated for this purpose; for example maize. But that is still not green enough for the nursery family. А photovoltaic currently system is order being discussed in to reduce the ecological footprint for plant and production even further.

Marco Schmidt says: "Like agriculture, ornamental horticulture is a subject under public criticism. That's why it pays off to reduce fertilisers, pesticides and fossil fuels as much as possible."

Text und Bilder: Peter Springer, Alfter



Peter Springer

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