

Grodan Plantop NG2.0 Plugs

Fast and healthy development of young plants

Steerable



**Now also available in a
vermiculite-free version.**



Your first step to superior crops

Grodan's stone wool plugs show a high degree of uniformity, complemented by an ideal water and air balance. Their firmness, good shape retention and stability make Grodan plugs perfect for mechanical as well as manual processing. Ideal for today's high-tech propagation, including sowing, transplant selection and transplanting into Grodan blocks. Grodan's Plantop plugs are now available in a vermiculite-free design, a major innovation for propagators that supports cleaner production, strong roots and uniform crops. This reduces the need for cleaning while improving hygiene, root strength, and crop uniformity.



Designed to Grow Why choose Grodan Plantop NG2.0 Plugs?

Grodan stone wool plugs are designed to optimally germinate seeds for various vegetable crops, using the unique qualities of Grodan stone wool:

Consistent high quality, rooted in science

- Designed and produced in Grodan's controlled, high-tech manufacturing environment.
- Automated production ensures consistent, uniform quality at scale.
- Available in various types, dimensions and quantities to ensure a matching solution.
- Backed by over 50 years of continuous innovation, proven performance and cultivation experience.

Clean start, full control

- Clean and uniform by design: Made from basalt rock, heated to 1500 °C / 2750 °F and precisely spun into fibres, resulting in a lightweight, homogeneous and clean stonewool substrate ideal for high-tech cultivation of plants.

- Structurally sound: firm yet flexible, ideal for automation, sowing and transplanting. This prevents the roots from damage during (automatic) selection and transplanting, while allowing for optimal root growth. As the plugs retain their shape they fit the block hole perfectly, which stimulates immediate root growth.
- Precision-shaped: A fundamental aspect of the germination process is uniformity. The identical density and fibre structure across all plugs ensures uniform water, pH and nutrients distribution. The result more usable transplants and saves time during the selection process.
- Root growth through the entire plug: the unique hydrophilic fibers ensure rapid, even water distribution and the vertical fibre structure provide equal resistance for root growth and, as a result, roots fill the entire volume of the plug.
- Supports precision growing: high control of WC and EC, nutrients and water are fully available to the plant. The correct balance between the small and large pores in the stone wool ensures an optimum ratio of air to water in the plugs. When saturated for the first time, the water flows easily downwards resulting in the plug becoming uniformly saturated.

Advancing sustainable practices

- Made from natural basalt: Earth produces 38,000× more than we use.
- Recyclable: Stone wool growing media are perfectly recyclable. Depending on the region, Grodan recycles growing media for remanufacturing and brick additive.
- Factories are close to customers to reduce transport emissions.
- Electrifying our factories with sustainable energy sources and evolving our production methods.
- Grodan products support closed-loop water circulation.

Backed by service and expertise

Supported by Grodan's global network of dedicated Crop Technical Advisors: The way the seeds are sown has a direct influence on their germination. Germination depends on a multitude of elements including the position of the seed in the seed hole of the plug, the irrigation strategy and the climatic conditions imposed. Following germination root growth can be influenced by other factors such as: the type of tray used, how the plug is located within the tray itself, and the effects of the greenhouse climate. Grodan understands that it is crucial to provide professional propagators with the right tools and technical support to further optimise the germination process. Our advisors also support you in transitioning to the vermiculite-free solution.

NG2.0 Technology: Precision rootzone management

NG2.0 Technology improves the water distribution within the plug, consequently the seedling utilises the entire growing media volume. This enhances root growth and results in a healthier and more vigorous young plant. These benefits translate into higher yields, improved fruit quality and reduce the sensitivity of the crop to diseases.

Benefits for cultivation

- Perfect uniformity
- Optimal firmness and flexibility
- Ideal water and air balance
- Consistent shape of the seed hole
- Root growth throughout the entire plug
- Foundation for Precision Growing



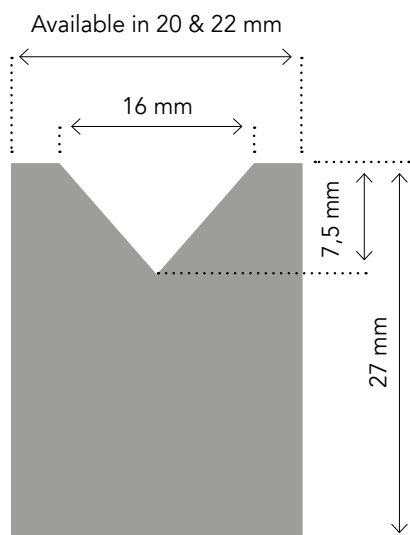
Consistent shape of the seed hole

The seeding process can be performed using a variety of systems. Grodan has developed the optimum seed holes, available in various types of trays, to match each system.



Conical Plug

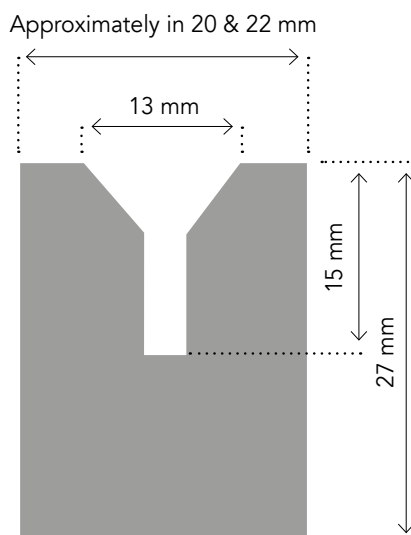
The standard version of the plug is the conical seed hole (see Seed hole diagrams), where the seed rolls to the bottom. A ring of stone wool surrounds the hole so the seed cannot roll over the edge and out of the plug. The holes are uniform in depth to ensure there is always sufficient and equal seed depth. In addition, there is enough space for the roots to develop.



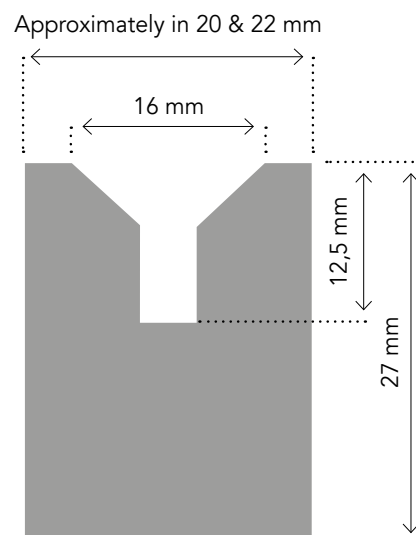
Conical

Funnel S & M Plugs

The Funnel Plugs have a small, deep seed hole creating optimal conditions to germinate without vermiculite. Ask a Grodan specialist which type, Funnel S or Funnel M, fits the most to your needs.



Funnel S



Funnel M



Vermiculite-free Funnel Plug

The Grodan Plantop NG2.0 vermiculite-free Funnel Plug no longer requires the addition of vermiculite after sowing. The vermiculite-free Funnel Plug brings several major advantages to the propagation process:

- Keeps the work environment clean
- Savings on labor and materials
- Less time spent on maintenance, and repairs
- Supporting a more homogeneous crop right from the start
- Reduced risk of overwatering



Grodan Plantop NG2.0 Plugs & Blocks portfolio

The Grodan Plantop portfolio, consisting of Plugs and Blocks, is equipped with Grodan's NG2.0 technology, providing optimal water and nutrient distribution. This guarantees maximum utilisation of the entire growing media volume and promotes fast, healthy development of young plants. The result: the plants develop faster, better and healthier. This translates into higher yields, improved quality, more growing power throughout the year, and reduces the sensitivity of the crop to diseases. This makes the Plantop NG2.0 portfolio the perfect foundation for top propagation and growing performance.

Plantop NG2.0 for propagators

- Optimal steerability of water content (WC) and electrical conductivity (EC).
- Fast and effective distribution of water and nutrients.
- More uniform batches of plants for delivery to growers.
- Optimal root development through the entire plug and block.
- Quicker and secured initial saturation thanks to complete plug and block moisture uniformity.
- Better developed root system results in more healthy and vigorous plants.

Plantop NG2.0 for growers

- Outstanding uniformity within block and between blocks, enabling more accurate steering of WC and EC.
- Better distribution of fine, branched roots inside the block ensures more balanced uptake of water and nutrients.
- Quick EC refreshment for optimal control of EC level during changing weather conditions.
- More optimal, finely branched root system stimulates ongoing vigour of the crop.
- Optimal block-slab interaction.
- Quick rooting in and rooting through when block is being positioned on slab.



To learn more, scan the QR code or contact your local Grodan account manager.

Vermiculite-free solutions now available for tomatoes, peppers and cucumbers

Our patented vermiculite-free solutions for high-tech propagators of tomatoes, peppers and cucumbers improve the sowing process while maintaining optimal germination rates and top-performing plant quality in both the propagation and cultivation phase. These innovative, industry-first vermiculite-free products are aligned with the growing needs of propagators – and their customers – for a cleaner greenhouse environment and more homogeneous crop, without having to compromise on sowing speed, germination success and plant quality.

While vermiculite is a reliable solution for ensuring effective germination in professional propagation, the granular nature of vermiculite means that the particles disperse easily. They regularly find their way into water filters, irrigation systems and other technical equipment, not to mention into gutters and even onto the floor.

As the industry has continued to advance, scale up and automate over the years, some propagators have started to look for ways to avoid these challenges. To meet this need, in close collaboration with some of our clients in large-scale trials, we have invented a unique vermiculite-free plug and block.

Key benefits of a vermiculite-free approach

- Less time and money spent on cleaning, maintenance and repairs: A vermiculite-free approach supports a cleaner, safer and more efficient production environment, both for propagators and high-tech growers using young plants raised from seedlings.
- Savings on labour and materials: No vermiculite means no need to cover the plugs with foil after sowing. As a result, a vermiculite-free approach saves propagators valuable time and money.
- Improved sowing process: Eliminating the need to apply vermiculite simplifies and speeds up the sowing process, improving the propagator's efficiency.
- Equally high germination rate: Extensive trials have demonstrated no difference in germination rate between our vermiculite-free solutions and the traditional approach.

- Reduced risk of overwatering: There is no vermiculite to form clumps and 'suffocate' the seeds if too much water is given. Therefore, propagators using vermiculite-free plugs can be more generous in their watering strategy in the germination phase, without fear of harming the crop.
- Uniform and robust plant development: Vermiculite is difficult to spread uniformly over a batch of seeds. In contrast, vermiculite-free plugs assure propagators of a more homogeneous crop right from the start. Moreover, in trials, plants on vermiculite-free blocks have developed outstanding stem stability, improving their robustness to cope in automated setups.

Smooth and low-risk transition to vermiculite-free

Our solutions have been carefully designed for quick and accurate automated sowing using most of today's sowing machines. This makes the switch to vermiculite-free propagation relatively straightforward and risk-free. In fact, many of the clients involved in our trials have already made the transition.

Try it for yourself

Are you interested in taking a cleaner, more efficient and more cost-effective approach to propagation, without having to compromise on sowing speed, germination success, homogeneity and plant quality? Contact your Grodan representative to request a vermiculite-free trial today.

Designed to grow

Grodan is the global leader in supplying [soilless rootzone management solutions](#) for Controlled Environment Agriculture. These solutions are applied to the cultivation of vegetables, medicinal crops and flowers such as tomatoes, cucumbers, sweet peppers, eggplants, roses and gerberas.

At Grodan, we aim to help feed and treat the world's growing population by innovating solutions from our stone wool growing media to enable 'more-with-less' growing. Through the method known as out-of-soil, our [stone wool substrates](#), [sensor systems](#), [software](#) and [expertise](#) support the reliable, informed growing of healthy, fresh, high quality produce. Our material is 100% recyclable, and supports growing methods that use up to 50% less water, 20% less chemical plant protection products and 75% less land. Sustainability plays a prominent role within Grodan, from manufacturing stone wool substrates to [recycling solutions and services](#).

Grodan has more than 50 years of cultivation experience. We pioneered the development of hydroponic growing methods in the 1960s, and today, our soilless rootzone management solutions are used in large-scale commercial greenhouses and indoor facilities in over 70 countries across the globe. The head office is located in Roermond, the Netherlands.

ROCKWOOL BV / Grodan

Industrieweg 15
6065 JG ROERMOND
Postbus 1160
6040 KD ROERMOND
The Netherlands
T +31 (0)475 35 35 35
info@grodan.com
www.grodan.com



Grodan®