

### **Positioning of Grodan**

Grodan supplies innovative and sustainable substrate solutions for the professional horticultural sector, based on Precision Growing principles. These solutions are, amongst others, applied for the cultivation of vegetables and flowers, such as tomatoes, cucumbers, sweet peppers, aubergines, roses and gerberas. High tech stone wool substrates are offered together with tailor-made advice and tools to support Precision Growing and thus a sustainable cultivation. In professional horticulture, Grodan substrates are the ultimate alternative for soil. Grodan was established in 1969 and is active in over 60 countries worldwide. The Grodan head offices are in Roermond, the Netherlands.

### **Rockwool Group**

The Grodan Group is a part of the Rockwool Group, the world's leading supplier of innovative products and systems based on stone wool, improving the environment and the quality of life for millions of people. The Group is amongst the global leaders within the insulation industry. Together with other building-related products such as acoustic ceilings, cladding boards and its consultancy business, the Group ensures energy efficient and fire safe buildings with good acoustics and a comfortable indoor climate. Next to the green solutions provided in the horticultural industry by Grodan, it creates inventive special fibres for industrial use, effective insulation for the process industry and marine & offshore as well as noise and vibration systems for modern infrastructure. The Rockwool Group was founded in 1937 and employs over 8,800 people in more than 30 countries worldwide. The head office is located close to Copenhagen. In 2010 the Group generated sales of DKK 11,732 million. The company is listed on the NASDAQ OMX Nordic Exchange Copenhagen.

### **The Grodan passion**

Grodan is leading in high-tech stone wool substrate solutions for plant, grower and community.

### **Passionate about Precision Growing**

All Grodan substrate solutions are aimed at doing more with less, with respect for people and the planet. Or, as Grodan calls it: 'Precision Growing'. It is the most efficient and effective form of growing focussed on the use of minimum input materials to generate maximum output. Growing costs decrease, crop yield and quality increase. In addition, this form of growing actively contributes to a sustainable horticulture.

### **Grodan for a sustainable future**

Sustainability plays a prominent role within Grodan and can be seen in every stage of the life cycle of Grodan substrate solutions, from production through to the recycling of our stone wool. Grodan pursues a durable way of doing business, in which economic, social and environmental interests are in balance. Over the years, this pursuit has yielded the company many system, quality and environmental certificates. Ranging from ISO 9001 and ISO 14001 to KIWA (Dutch quality standard) and the European Ecolabel.

## From manufacturing to end of life solutions – a closed circle

The basic material for Grodan substrates is basalt - volcanic rock that is extracted in non-protected areas according to strict environmental regulations. This rock is turned into stone wool slabs, blocks and plugs in an efficient manufacturing process. One cubic metre of basalt produces fifty cubic metres of stone wool - sufficient for the cultivation of 350,000 kg of tomatoes or 1 million cucumbers. Used substrate slabs, blocks and plugs are recycled by Grodan in a sustainable manner. The recycled material can be processed to create new stone wool products or it can be used for the production of bricks, cement, potting compost, or soil improvers.

## Solutions

Grodan supplies innovative cultivation solutions comprised of clean and controllable stone wool substrates in combination with Tools & Services geared towards Precision Growing.

### a) Stone wool substrates

In 2007, Grodan introduced the patented Next Generation technology. Thanks to the use of revolutionary hydrophilic fibre, substrate slabs and blocks produced by means of this technology, provide users with considerable advantages. These vary from better root development to better uniformity and resaturation, better control range, to more even water distribution and EC distribution.

A few examples:

<u>Slabs for the cultivation of vegetables:</u>	Grotop Master <sup>®</sup> , Grotop Master <sup>®</sup> Dry, Grotop Expert <sup>®</sup> , Grodan Vital <sup>®</sup> , Grodan Vital <sup>®</sup> Dry, Grodan Classic <sup>®</sup> , Grodan Classic <sup>®</sup> Multi Year
<u>Slabs for floriculture:</u>	Flortop Rosa <sup>®</sup> , Grodan WFL, Growcube <sup>®</sup> Gerbera
<u>Blocks for propagation:</u>	Plantop Delta <sup>®</sup> , Plantop Vitagreen <sup>®</sup> , Plantop Rosa <sup>®</sup>

In 2011 Grodan introduced the new and revolutionary Vision technology for the propagation market. Starting point for the new Vision technology was the Next Generation technology of Grodan. The insights gained during the development of the Next Generation growing blocks and slabs were combined with knowledge in the field of high quality stone wool products. The new technology is characterised by its brown colour as new raw materials have been used in the production process, which have considerably improved its reliability.

<u>Propagation plugs and blocks</u>	Grodan Pro plug <sup>®</sup> Grodan Pro block <sup>®</sup>
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The first success story of the Vision technology is the Grodan Pro plug. A new seeding plug with impressive results: the loss percentage is reduced by up to 20%. Moreover, propagators who use the new plug use water far more efficiently, as all the water can be fully recirculated. Extensive and lengthy trials have validated that the Grodan Pro plug answers to the highest expectations of propagators. The Grodan Pro block will be introduced end of 2011.

### b) Tools & Services

Grodan shares its years of built up expertise and experience in Precision Growing with growers in the form of Tools & Services. As well as tailor-made advice from specialist crop consultants, Grodan also offers support via other channels, for e.g. seminars, training courses, (digital) newsletters, articles in trade journals, Gronow (digital coach) and WCM-user advice.

Grodan's 6 phase model<sup>®</sup> is a blueprint for an optimum growing result, for each individual cultivation phase and for the cultivation as a whole. Each phase is characterized by a specific crop development, which entails specific requirements with regard to the substrate. Each phase therefore requires appropriate advice, taking the crop and root climate into account.

Grodan advisors have a large degree of expertise in horticulture and provide growers with tailor-made advice. Grodan operates worldwide, which means that the organization is able to bring together the knowledge and experience of thousands of growers all over the world. In addition to personal advice and training, the company also uses things like brochures, (digital) newsletters and the internet to share knowledge.

#### Water Content Meter

The WGM control (a hand held meter) and the WGM Continu (connected to a climate control computer) give an insight into changes in water content, EC and the temperature in the slab.

#### Gronow<sup>®</sup>

Gronow is a digital tool, which provides the grower quick and easy insight into water management on the basis of figures and graphs. This enables him to adjust the irrigation strategy where necessary and this increase the yield. Furthermore, the software package includes two other modules: one for climate control (Gronow Climate) and one for crop registration (Gronow Crop).

#### **How is stone wool manufactured?**

Stone wool is a natural product consisting of volcanic rock (also known as diabase or basalt). The production process simulates a volcanic eruption and takes place at temperatures of over 1500 degrees Centigrade.

#### **Some of the advantages of stone wool**

The use of stone wool provides many advantages. Its controlled manufacturing process makes this a growing medium of consistent high quality. Sterile production at extreme high temperatures guarantees a clean product without any pollutants. Furthermore, the use of unique hydrophilic fibres means that cultivation on stone wool substrate is extremely controllable. The grower is able to water and fertilize specifically in order to achieve the optimum growing result. There is no longer any waste. Because of an efficient use of water and nutrients, the yield per square metre is high and the energy consumption per product unit is low. Moreover, the material is light in weight and therefore easy to handle. And last but not least, stone wool can be reused simply. In brief, it is durable as well as an environmentally friendly product.

#### **More information:**

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