

Blueberry trial in innovation centre 'de Kas'

Due to the increasing consumer demand for blueberries and a shift in professional horticulture from cultivation in soil to substrate, blueberry cultivation on substrate is increasing significantly around the world.

Originally, blueberries were mainly cultivated in subsoil. However, there are a number of important advantages that can be achieved by cultivating on substrate, such as an improved fruit quality, higher production and possibilities to recirculate.



Blueberries

Rooting

In March 2017, Van der Knaap started a trial to identify the optimum medium for the rooting of cuttings in innovation centre 'de Kas'. The results showed clear differences in the growth and development characteristics of the different rooting media. Paperpots and Obturo® plugs showed the most favourable results concerning rooting and plant loss.

Follow-up trial

We moved the plants into their final pots after rooting. In this follow-up trial, we are testing three different substrates to enable us to compose the ideal substrate for blueberries. As the fruit of blueberries grows on two-year-old wood, 2018 was an

in-between season for generative cropping. In 2019, the first fruits will be harvested. This also illustrates the challenge of this crop. Due to the long cultivation period, we need to find sustainable mixtures.

Currently, many mixtures are used which are based on peat and perlite. However, with this type of mixture, there is a tendency for compaction after three years due to degradation. This results in a wet mixture with low air content, which will cause root problems.

Trial setup

Three substrates are being compared: a mixture of peat and perlite (the 'standard mixture'), a mixture of coco and peat, and a mixture of 100% coco.

Blueberry is an acid-loving crop and prefers a substrate with a pH value between 4.5 and 5.0. In the first instance, peat seems to fit these properties better on paper, because coco naturally has a pH value between 5.5 and 6.0. With the help of NH₄ fertilisers, the pH in coco

will fall rapidly to the ideal zone. As the berries are already fertilised with high levels of NH₄ in current practice, this will not pose a problem.

In addition to the research on substrate, the effects of organic nutrient solution from our patented bioreactor are also being examined, which has fulfilled one of our long-standing wishes. Half of the plants will receive organic nutrient solution from this bioreactor in 2019, after which we will compare the yield to the plants given conventional feed.

Results

We expect that the coco mixture is the best choice in the longer term. Because of its fibre structure, coco has an airier composition than a peat mixture and is therefore less sensitive to degradation.

Van der Knaap has been working with coco mixtures in other multi-year crops for years with excellent results, for example rose cultivation. The aim of this trial is to confirm the success of the coco mixtures for blueberry cultivation.



Substrate trial blueberry in innovation centre 'de Kas'

Advantages of organically grown strawberries

The cultivation of organically grown fruit and vegetables is growing enormously globally. For that reason, Van der Knaap wanted to find out whether an organic cultivation system impacts on the nutritional components and flavour of strawberries compared to a regular cultivation system. In September of this year, we started a study in our innovation centre 'de Kas' on the effects of such a cultivation system.

Nutritional components

Beneficial nutritional components in crops are attracting increasing interest both at home and abroad. Nutritional components are active substances present in biomass which can be of interest for various applications and markets, but also human health.

They are substances such as vitamins, nutrients, sugars, folates and antioxidants that are present in varying quantities. The levels can be influenced by cultivation measures.



Strawberries

Trial setup

The trial has been set up in one of the newly established departments at our innovation centre 'de Kas'. The cuttings were planted on Forteco coco mats, type Power.



Strawberry trial in innovation centre 'de Kas'

Our Forteco Power mats consist of a mix of coarse and fine coco, which perfectly suits the strawberries' fine rooting system. We planted strawberries of the 'Elsanta' variety on 2 September 2018.

The goal of this trial is to demonstrate that the nutritional components of a strawberry can be influenced by changing the cultivation and fertilisation method. We will identify the differences of an organically grown strawberry compared to a reference where mineral fertiliser is used.

Organic fertiliser

Using an organic nutrient solution, we offer the crop a broader package of nutrients than we do using mineral fertiliser. These additional nutrients change the pattern of absorption. This will be expressed by an altered composition of minerals and different nutritional components in the fruit, which makes it a healthier and tastier product.

The organic nutrient solution is produced by our patented bioreactor. Van der Knaap's R&D team has been working on the development of a cultivation system which enables us to grow organically and separately from the subsoil. Karel de Bruijn, R&D manager at Van der

Knaap, directed the development of a reactor that converts proteins into nitrate (NO_3) nitrogen. The nutrient solution produced by the reactor is free from organic residues, moulds and bacteria.

Flavour

In addition to the research on the nutritional components, we will also focus on the flavour of the fruit. After all, a tasty product is eaten better. To assess this objectively, we will arrange tasting sessions by an independent taste panel of the WUR in Bleiswijk.

Results

The first results are expected in the spring of 2019. The knowledge we gather through these trials, means we can provide our growers with perfectly balanced substrates and fertilising and cultivation advice which will allow them to grow an optimal tasty product with high nutritional value.

More information

Would you like more information about topics in this newsletter?

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