

When lifespan is prolonged by ageing!

Earlier issues of FCI have indicated the growing interest among growers on all continents to adapt their production to soil-less systems. Growing media products originating from coir are currently recognised to be in strong demand since supplies of sphagnum peat in Europe have been hampered by last year's wet summer. Growers using coir should be aware of some "invisible" factors that determine the quality of this particular media.



The cocopeat is dried in clean, concrete bunkers at Dutch Plantin's site in India.

Coir quality is determined by the manufacturing process and while the resulting chemical and physical properties cannot easily be judged by the human eye, they will influence the crops growing performance; not immediately, but over an extended period of months. The first factor concerns the ageing of coir-pith (also known as cocopeat). Fer Weerheijm,

director production and sales at Dutch Plantin, explains, "When cocopeat first became interesting for use in horticulture, more than 20 years ago, the raw coconut husks could be sourced from waste heaps next to coconut plantations that had accumulated over decades." The material had undergone a natural ageing process. "Despite being an organic material," says Weerheijm, "the cocopeat did not break down very quickly. The aged material had a high lignin and low cellulose content."

Today, demand has exhausted these sources and the coconut husks for processing into cocopeat arrive freshly split from the fruit. "The cellulose content is much higher," says Weerheijm, "which negatively influences the stability of the final medium." Since this is a key criterion, along with its air porosity and buffering ability, an ageing period of four months is included in the standard manufacturing process of Dutch Plantin after the pith has been separated from the fibre.

The second factor is associated with the media's buffering ability. Weerheijm says, "Coconut trees are very tolerant of salts. Sodium and potassium ions therefore exist in the coir-pith. This salt complex is stable until a higher ranking ion, such as calcium, is sprinkled onto the media as a fertiliser, which triggers the release of the sodium and potassium into the root zone while the calcium becomes bound in the media complex." Again, if the husks have first been exposed to several monsoon seasons, the power of the natural

salt complex is naturally diminished. Otherwise, it is important that the sodium and potassium levels are reduced. Weerheijm says, "The acceptable chemical requirements of coir products are included in the certification standards of the RHP Foundation. A product with the RHP quality mark is therefore a guarantee to growers that the buffering process has been correctly conducted. Unbuffered cocopeat sets off a time bomb for nutrient deficiency!"

Stability sensitive to fibres

Apart from the cocopeat, the coconut husks can also be a source of coco-fibre and coco-chips. These are both used as additives in potting mixes, acting as natural wetting agents and improving the elasticity of the media. They bring advantages of easier re-wetting and reduce the media's retraction within the pot avoiding a larger surface area for water evaporation. The thickness and length of the fibres, similar to the cubic size of the chips, are critical to both the evenness



The grow-bags arrive in a compressed form with pre-cut holes to place the plants and drippers for irrigation.

of water dispersion within the final media and their practical inclusion in potting mixes where automated production lines are used. Weerheijm says, "Our manufacturing processes concentrate on creating fibres and chips that will not interrupt the working speed of the automated potting machines, but have a maximum impact on the required characteristics of the media. The fibre thickness is a particular point of concern. Compared to the coir-pith, the fibres are a weaker part of the husk; their lower lignin content means that they break down quicker. Fibre inclusion therefore reduces the stability of the media. To try and balance out the negative effect of coir fibres on the media's stability, we only use the stronger bristle grade with the thinner fibres graded out during the manufacturing process."

Grow-bag system

A very different market to the cocopeat, fibres and chips is the grow-bag system, which can be supplied direct to growers. The manufacturing involves exactly the same protocols in terms of obtaining the required chemical and physical properties, but rather than being shipped as compressed blocks, the cocopeat is compressed into a plank with a coarser cocopeat layer on the bottom and wrapped in plastic.

Jaap Vreeken is a bouvardia grower in the Netherlands who has converted his 2 ha of greenhouses to the modern grow-bag system. The decision to use a soil-less system was first taken because of problems with soil nematodes; the substrate used was stonewool. Vreeken says, "This was back in the early 1990s and most of the experience with substrates, generally in rose cultivation, was based on stonewool. We were the first bouvardia grower to try using substrates. Since this is a niche crop we have had to learn from our own experiences. The stonewool gave good results, but when a breakthrough in bouvardia breeding was made in the mid 1990s by John De Jong and improved varieties became available, we decided to run a trial using cocopeat in containers. Our experience was that the crop grew quicker, the cocopeat was easy to work with and there were less problems with the appearance of burnt leaves in the period just before harvesting the stems. We are replacing the crop every 2-3 years on a rotational basis and since the first trials we have continued to work with cocopeat, now using the available grow-bag system." <



The grow-bags are placed on the support rails and allowed to soak in water (including fertilizer) for approximately 36-48 hours. A slit is then made in the bottom of the grow-bag to permit drainage.



The bouvardia production using the growbag system results in a harvest of 220-300 stems/m²/yr using a 6,000 lux supplemental lighting level. Vrenken comments that the grow-bag height of 12 cm appears to be optimum; he believes that a lower volume of substrate would be detrimental to the crop's performance.

Jaap Vreeken is one of four growers in the Netherlands specialising in the production of the niche cut flower, bouvardia.