

FACTSHEET BIO-BASED POTS AND SEEDLING BEDS

Procurement of Innovative Products: Bio-Based Products in Procurement

Why bio-based pots and seedling beds?

What are (bio-based) pots and seedling beds?

Pots and seedling beds are used to grow plants or seedlings in a controlled environment. Pots and seedling beds can be used on a small scale by private users or in large applications in the agricultural or horticultural sector. Pots and seedling beds are conventionally made from polypropylene and polyethylene. Bio-based pots and seedling beds are also available. Bio-based pots and seedling can be made of various bio-based raw materials derived from various agricultural products and waste streams. These resources can be used directly (pressed into a pot form) or used to make bio-based plastic (e.g. PLA) which is then used to make pots or seedling beds. This factsheet provides information on bio-based pots and seedling beds and how to take these into account in procurement.

Why should organisations consider bio-based pots and seedling beds in procurement?

Organisations could consider bio-based pots and seedling beds in procurement if they would benefit from one or more of the capabilities attributed to the bio-based pot or seedling bed. Bio-based pots and seedling beds potentially have different capabilities. Aspects to keep in mind are environmental impact over the life cycle of the product (this could be determined through Life Cycle Assessment in accordance with ISO 14040) and the sustainable sourcing of the input material (this could be assessed in accordance with the sustainability criteria for biobased products from EN 16751 in combination with CEN/TR 16957 - Bio-based products - Guidelines for Life Cycle Inventory (LCI) for the End-of-life phase). With this kept in mind, several potential benefits can also be attributed to bio-based pots and seedling beds¹.

- *Resource efficiency*: If for the production of bio-based pots and seedling beds, use is made of agricultural by-products and waste streams, resource efficiency can be improved. In addition, this switch to by-products and waste streams could stimulate the market for secondary raw materials and the circular economy in general.

- *Reduced Greenhouse Gas (GHG) Emissions*: The greenhouse gasses emitted during the production of bio-based products have the potential to be lower than their petrochemical equivalent². This is amongst others influenced by the biomass location and cultivation methods applied. Reduced greenhouse gas emissions will in turn contribute to combating climate change.

- *Avoidance of GHG Emissions*: By using bio-based products which replace petrochemical products, GHG emissions can also be avoided. Fossil feedstock need to remain in the ground to achieve the limit of a temperature increase less than 2°C³ as is included in the COP 21 agreement and ratified by UN-countries including the EU.

Reduced GHG Emissions

Biobased PLA has the potential to reduce GHG emissions approximately 30% compared to its petrochemical counterpart. This comparison takes into account CO₂ uptake from the atmosphere, polymer production and incineration but excludes GHG avoidance. Future PLA production could amount to 80% savings. Source: 'Bio-based economy and climate change', Nova Institute, 2017-01.

- *Biodegradability and compostability*: Some bio-based products have the capability of being biodegradable and/or compostable including biodegradable in the soil⁴. Assuming a baseline in which used polypropylene or polyethylene pots and seedling beds are either landfilled or burned, switching to pots and seedling beds which are biodegradable or compostable, could result in waste reduction and improved resource efficiency. Products which are biodegradable in the soil could have the additional benefits for certain applications and types of bio-based products of:

- *Easier application*: Plants no longer need to be removed from the pot or seedling bed before being planted.

- *Lower total cost of ownership*: The improved application can save time and cost, resulting in lower total cost of ownership of the product.

¹ These benefits can differ between products and should always be confirmed by the supplier.

² Bio-based economy and climate change', Nova Institute, 2017-01

³ McGlade C. and Ekins, P. (2015) 'The geographical distribution of fossil fuels unused when limiting global warming to 2 °C', Nature 157.

⁴ Biodegradation is a natural chemical process in which materials are being transformed into natural substances such as water, carbon and biomass with the help of microorganisms. Compostability is a characteristic of a product that enables biodegradation under specific conditions (i.e. a certain temperature, timeframe, etc.). (Source: ISO 472:2013 Plastics - Vocabulary)

How to take into account specific capabilities of pots and seedling beds in procurement?

Procedures and purchasing strategies

Procurement within the gardening and landscaping sector often implies procurement of services or works. Pots and seedling beds are likely to be procured as part of a service or works contract or form part of a supply contract for other products, such as plants. If the procurer wishes to ensure reduced GHG emissions or procure biodegradable or compostable pots and seedling beds, the following examples of procurement criteria could be used.

Example 1. GHG Emissions

The potential capability of reducing GHG emissions would be an important benefit and could therefore be confirmed as part of the procurement criteria.

Minimum Requirement: The carbon footprint of the raw material used for fabrication of the pot or seedling bed should be less than the carbon footprint of an appropriate reference raw material.

Additional information: The carbon footprint of the raw material

should be conducted in accordance with ISO 14067 or equivalent. An example of a reference raw material could be polypropylene or polyethylene.

Verification: The tenderer shall provide information on the raw materials used and the carbon footprint results, which shall be reported according to ISO 14067 or equivalent. The comparison with the reference raw material shall be included in the report as well as a motivation for the choice of reference material.

Example 2. Compostability

This criterion can be used if the procurer wishes to compost pots and seedling beds. Compostability should be determined for either industrial or home composting conditions.

Minimum Requirement: Plants must be delivered in compostable pots and seedling beds. The pots and seedling beds should be compostable under home OR industrial composting conditions (to be selected by the procurer).

Additional information: All materials used in the pots and seedling beds must be compostable in accordance with EN 13432:2000 or an equivalent standard. In the case of home composting, the French Standard 'NF T51-800:2015-11: Plastics – Specifications for plastics suitable for home composting' could be used. This standard is based on EN 13432 but has adapted the timing for

biodegradability and the temperature at which biodegradability should take place to match home composting conditions. The manufacturer could also prove compliance with EN 13432 and include an explanation of the testing procedure used to determine biodegradability under home composting conditions.

Verification: Products holding a relevant label fulfilling the listed requirements will be deemed to comply. A technical dossier of the manufacturer or a test report demonstrating that these requirements have been met is also accepted. The following labels comply with the EN 13432:2000 standard (made applicable for home composting) (or equivalent) and can be used for verification:

- Vincotte: OK compostable
- Din Certo: DIN Geprüft compostable
- Blauer Angel: weil compostierbar

Example 3. Biodegradability in soil

If the procurer wishes to purchase pots and seedling beds which biodegrade in the soil, this criterion must be used as an alternative to the criterion on compostability.

Minimum Requirement: plants must be delivered in pots and seedling beds which biodegrade in the soil.

Additional information: All materials used in the pots and seedling beds must be biodegradable in the soil. To prove this, in practice often use is made of standard EN 13432:2000. When using this standard, the medium in which the biodegradation should take place changes, as well as the timing of biodegradation. Following this information, biodegradability could be proven in accordance with EN 13432:2000 or an equivalent standard such as the French Standard 'NF T51-800:2015-11: Plastics – Specifications for plastics suitable for home composting'. Other standards that can be used are 'ISO 17556:2012 Plastic – Determination of the ultimate aerobic biodegradability of plastic materials in soil', or 'ASTM D5988-12 Standard test method for determining

aerobic biodegradation of Plastic Materials in Soil'. Moreover, French standard 'NF U52-001 Biodegradable materials for use in agriculture and horticulture- Mulching products' and the Italian standard 'UNI 11462 Plastic materials biodegradable in Soil', include specifications defining the test methods and criteria (minimum pass levels) to designate a material as biodegradable in soil

An explanation of the testing procedure used to determine biodegradability under soil conditions should be included by the manufacturer.

Verification: Products holding a relevant label fulfilling the listed requirements will be deemed to comply. A technical dossier of the manufacturer or a test report demonstrating that these requirements have been met is accepted. The following labels comply with the EN 13432 (or equivalent) and can be used for verification:

- Vincotte: OK biodegradable soil,
- Din Certo: DIN-Geprüft biodegradable soil

What bio-based plant pots and seedling beds are available?

The following databases contain information on the availability of bio-based pots and seedling beds:

- The 'Datenbank FNR' database (Germany) provides an overview of bio-based pots and seedling beds. Information on the product, supplier and whether the product is certified is available within the database.
- The 'CoE BBE' database (the Netherlands) provides an overview of bio-based pots and seedling beds. Information about the producer, product characteristics and whether the product is certified is specified.
- The 'Agrobiobase' database (France) provides an overview of bio-based pots and seedling beds, as well as product specifications and whether the product is certified.
- Vincotte provides an overview of the bio-based pots and seedling beds that it certified and carries its 'OK Bio-based' label. The product name and a link to the producer website as well as a contact person are supplied.
- The 'Blauer Angel' database provides an overview of plant containers which are bio-based and biodegradable in accordance with its criteria for the award of the Blue Angel label.

Points of attention

The following potential barriers and bottle necks have been identified by procurers, policy makers and professionals that work with bio-based products in procurement. The relevance of each of these potential barriers is discussed for the product group 'post and seedling beds':

- **Costs:** The typical cost of a standard Polyolefin pot is about 0.05-0.10 €/pot. Bio-based pots can be competitive in price with conventional plant pots. Costs should not only take into account the price of the pot, but also the reduced handling time and reduced waste. The costs of (bio-based) plant pots are only a small part in relation to the costs of the service, work or goods (plants) to be produced.
- **Level of development:** Products from at least 10 producers are commercially available. Most of these producers supply several products. The level of development is therefore considered reasonably mature.
- **Availability:** Out of the 10 producers found, one supplier was found to distribute its product all over Europe. The others seem to supply within the country in which they operate.
- **Quality of the products:** The quality of bio-based pots and seedling beds can differ, for example the time it takes for a pot to biodegrade as well as the medium in which it should biodegrade. Different standards can be applied depending on the medium in which the pot should biodegrade.

