

Organic Fertilizers for Container Plants

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Summary

Container plants of hardy nursery stock are usually being fertilized with coated mineral fertilizers (controlled release fertilizers) at a rate of 3.0 – 6.0 g per litre substrate. The coating material of all commonly used controlled release fertilizers (Osmocote, Multicote, Nutricote etc.) are made of synthetic polymers. They are usually smaller than 5 mm, so they are microplastic. It is estimated that in the EU 30,000 – 90,000 tonnes of controlled release fertilizer (= 3,000 – 9,000 tonnes coating material) are being consumed (Fraunhofer Institutes 2021).

Following the discussion about possible ecological hazards of microplastic, the European Fertilizing Products and Amending Regulations (EC) of 5 June 2019 will require from biodegradable coatings for

controlled release fertilizers by 2026. All controlled release fertilizer producers have been researching biodegradable coatings but it is not sure how such fertilizers perform and what they will cost. And furthermore, considering the current discussions about biodegradable products, it is not sure that the consumers will accept them.

The uncertain future of controlled release fertilizers and the growing organic nursery production, where controlled release fertilizers and other synthetic nitrogen fertilizers are not permitted, led the LVG Bad Zwischenahn to test organic fertilizers since 2017 at full rate applications (without top dressing in summer) for hardy nursery stock in container cultivation.

In the trials, various combinations of organic N- and NPK fertilizers have been tested, at full rate as well as in split applications. The best results were achieved by mixing sheep wool pellets or coarse horn chips (7-12 mm) for the supply of N into substrate containing approximately 10-20% green compost (for the supply of P and K). The necessary rate was quite high (approximately 8.0 g/l = 1,100 mg N compared to 600 – 700 mg N with controlled release fertilizers). Actually, research is being conducted to find out if the binding of microorganisms is the reason for the necessary high rates. So far, the mineralization of N was

similar to the N release of controlled release fertilizers as well as N leaching from the pots.

Already several commercial nurseries are using such substrates with horn chips quite successfully. But individuals wishing to change from controlled release fertilizers to organic fertilization should keep in mind that the qualities of different organic fertilizers is very variable. So tests with smaller numbers of plants are recommended. And the supply of microelements in the substrate by fertilizers must not be neglected.