

Nitrogen Emissions (N_2O+N_2) and Redox Potential of a Peat Medium during Pot Plant Cultivation

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Summary

In horticultural pot plant production with ebb/flood irrigation, denitrification occurs following irrigation events. It was the aim of the study to identify the main layers of denitrifying activity in the potting medium of ornamental plants. Thus, redox potential was measured at the same time as denitrification N emissions from pots of *Pelargonium zonale* grown in a peat/coir medium. Denitrification was measured using the acetylene inhibition technique. To investigate the redox potential, in each pot, three electrodes were positioned at 1, 3 and 5 cm distance from the bottom, respectively. After flood irrigation, N emissions in-

creased at the same time as some electrodes per pot indicated a reduction of the redox potential. All electrodes reflecting a decrease in redox potential were positioned close to the pot bottom, i.e. in the peat layer with the highest water content after flood irrigation. However, not all electrodes in the lowest substrate layer showed a decrease in redox potential. It is suggested that this might be related to uneven availability of easily decomposable carbohydrates. It was concluded that in the applied cultivation system transient oxygen deficiency and denitrification occurred only in the substrate layer at the pot bottom.

Key words. Denitrification – redox potential – pot plants – peat medium