

## **CRUCIAL<sup>δ</sup>: a long-term field trial to assess waste recycling impacts on environment and production system integrity**

Jakob Magid, Pernille Hasse Busk Poulsen, Andreas de Neergaard, Lars Stoumann Jensen

*Plant and Soil Science Laboratory, Department of Agriculture and Ecology, Faculty of Life Sciences, Copenhagen University, Thorvaldsensvej 40, DK 1871 FC*  
***jma@life.ku.dk***

Recycling of waste from urban to rural areas will become increasingly important in lieu of global urbanization dynamics (Faerge et al. 2001), and the finite amounts of available P resources. However, the societal perception of organic urban waste has become increasingly negative, leading to widespread advocacy of incineration. In the post-industrial era a significant change in composition of urban organic waste products has occurred in many first world countries, due to cleaner technologies as well as outsourcing of heavy industries. At the same time animal wastes have attained increasing contents of medicinal residues and other xenobiotics. Therefore we established the 'CRUCIAL' long-term field trial in 2003, in order to meet the societal demands for assuring that recycling of waste can be done without compromising environmental quality and production system integrity (Magid et al., 2006). This facility is offered to the international research community.

The facility was established based on the rationale that by approaching the known limits for a number of heavy metals below which no profound disturbance should be observed on key soil ecological functions, it should be possible to discern if some of the many unknown components in the composite urban waste as well as agriculturally based fertilizers have measurable impacts. The following treatments were established: human urine, sewage sludge (normal and strongly accelerated level), degassed and subsequently composted organic municipal waste (normal and accelerated level), deep litter, cattle slurry, cattle manure (accelerated level), NPK fertilizer, unfertilized but with clover undersown and an unfertilized control.

The poster will present results obtained from a mid-term baseline soil biological characterization, completed work on microbial diversity using high throughput DNA sequencing, as well as work on multiresistant pseudomonad dynamics after fertilization. Ongoing work on leaching of metals and bacteria will be briefly described, and potentials for future collaboration highlighted.

Faerge,J., Magid,J. & de Vries,F.W.T.P. 2001.Urban nutrient balance for Bangkok. *Ecological Modelling*, **139**, 63-74.

Magid,J., Luxhoi,J., Jensen,L.S., Moller,J. & Bruun,S. 2006. Establishment of a long-term field trial with urban fertilizers – is recycling of nutrients from urban areas to peri-urban organic farms feasible? In: Long-term Field Experiments in Organic Farming (eds J.Raupp *et al.*), pp. 59-78. Verlag Dr. Köster.

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<sup>δ</sup> Closing the Rural-Urban Nutrient Cycle - Investigation of Urban Fertiliser pre-treatments, Agronomic research on Urban Fertiliser turnover in soil and impact on Crop growth, and Initiation of a Monitoring Programme on Soil Quality changes wrought by using Urban Fertilisers in Long-term Field Trials