



## **Closing the natural cycles - using biowaste compost in organic farming in Vienna**

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One of the basic principles of organic farming – that organic management should fit the cycles and ecological balances in nature – is put into practice in Vienna on a large scale.

In Vienna, compost produced from separately collected biowaste and greenwaste is used on more than 1000 ha of organic farmland. These municipally owned farms are managed organically, but are stockless, like the vast majority of farms in the region. The apparent need for a substitute for animal manure triggered the development of an innovative biowaste management. Together with the Municipal Department 48 responsible for waste management, which was keen for the reduction of residual waste, the Municipal Department 49 - Forestry Office and Urban Agriculture and Bio Forschung Austria developed Vienna's biowaste management model. Organic household wastes and greenwastes are source-separated by the urban population and collected in a closely monitored system to ensure high compost quality. A composting plant was constructed which today produces a total of 43000 t compost per year in a monitored open windrow process. The quality of the compost produced conforms to the EU regulation 834/2007. A large part of the compost is used as organic fertilizer on the organic farmland in Vienna, and the remainder is used in arable farming and in viticulture in the region around Vienna and for substrate production. Vienna's biowaste management-model is operating successfully since the 1980s and has gained international recognition in form of the Best Practice-Award of the United Nations Development Programme.

In order to assess the effects of biowaste compost fertilization on crop yield and on the environment, a field experiment was set up near Vienna in 1992, which is now one of the longest standing compost experiments in Europe. The results showed, that the yields increased for 7 – 10 % with compost fertilization compared to the unfertilized control and the nitrogen recovery by crops was between 4 and 6 % of the total nitrogen applied in the compost treatments. Phosphorus and potassium supply with compost fertilization was approximately as high as with mineral fertilization. The humus content of the soil increased in the compost treatments, indicating that organic carbon applied via compost was stored in the soil. Regarding total heavy metal contents and available heavy metal fractions in soil and heavy metal contents in crops, fertilization with biowaste compost at rates allowed by organic farming rules gave no cause for concern. Nitrogen leaching to the groundwater as determined using ceramic suction cups was not increased with compost fertilization as compared to mineral fertilization.