



Organic fertilization for soil improvement in a vegetable cropping system

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A long term trial for soil improvement by organic fertilization was carried out in Kruishoutem from 2001 till 2010 in a vegetable rotation (carrots - leek – lettuce (2/year) – cauliflower (2/year) – leek – carrots – lettuce (2/year) – cauliflower (2/year) – leek and spinach). The trial compared yearly applications of 30 m²/ha of three types of compost (green compost, vfg-compost and spent mushroom compost) with an untreated object which did not receive any organic fertilization during the trial timescale. The organic fertilization was applied shortly before the cropping season.

Looking at the soil quality, effects of organic fertilization manifest rather slow. The first four years after the beginning of the trial, no increase in carbon content of the soil is detectable yet. Although, mineralization of the soil has increased. The effect on the mineralization is mainly visible in crops with a lower N uptake (e.g. carrots) leading to a higher nitrate residue after harvest. Effects on soil structure and compaction occur rather slowly although, during the first two cropping seasons compost applications increase the water retention capacity of the soil.

Compost increases the pH of the soil from the first year on till the end of the trial in 2010. Thus, organic fertilization impedes acidification in light sandy soils. Also soil fertility benefits from compost by an increase in K-, Ca- and Mg- content in the soil from the second year on.

After 10 years of organic fertilization, yield and quality of spinach were increased significantly ($p < 0.05$) compared to the untreated object. Also leek (2002 and 2009) and lettuce (2003 and 2007) benefit from organic fertilization.