SoilCare project BSc / MSc / PhD Research Information

Research level

BSc

Research Title

Agricultural processing methods of the soil and their impact on mineral nitrogen in comparison.

Abstract

When it comes to ensuring ecosystem services, the quality of soils plays an essential role, especially in the context of food production. However, land use and agriculture are changing soil characteristics and thus soil services (Adhikari 2016: 102-103). The cultivation of soil always includes the change of soils, which can lead to degradation of those. In particular, the intensive land use of agriculture often leaves the soil insufficient time to regenerate (Montanarella et al., 2008: 23). For this reason, it is essential to deal with alternative soil management forms to ensure sustainable agricultural use of the soil. As part of the SoilCare project, this work deals with three different farmers and their soil improving cropping systems (SICS). The three farmers comply with various ecological guidelines from Switzerland: organic farming (Bio Suisse), integrative production (IP) with direct payment (ÖLN). This work focuses exclusively on the influence of management forms on mineral nitrogen in soil. In the organic farm the benefits of a green verge is examined, in one of the integrative production farms different types of green manuring are examined, and in the third farm two types of manuring are compared: the CULTAN procedure in comparison to the conventional organic manure distributed with a drag hose.

Objectives of the research

The primary objective of this work is to investigate the influence of different soil improving cropping systems on mineral nitrogen in the soil. Nitrogen is an essential nutrient for plant growth and productivity, and for this reason, nitrogen also plays an important role in agriculture (Haynes 1986: 24). In addition, the fertilization of nitrogen can lead to environmental pollution especially in the waters (Umweltbundesamt 2018: 6). In addition to the different forms of management that are studied within the farms, this work should also draw a comparison of the three different farms and their ecological orientations with respect to mineral nitrogen.

SoilCare study site

Luisa Kubioka is analyzing the mineral ntrogen content of the three study plots in Switzerland.

Partners in this research

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