Chapter 1
Ecological Intensification through Nutrients Recycling and Composting in Organic Farming

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Abstract In organic agriculture fertilizers are permitted in organic forms, as defined by regulation. Mineralization of organic fertilizers is a biological decomposition that release plants' available nutrients; hence soil microbial communities are vital in the organic cropping systems. Composting microorganisms can work for the farmer's benefit recycling agricultural organic wastes into materials that contribute to healthy and biologically active soil. Composting process has been deeply described to highlight the link among starting mixture, process factors and final resulting compost. Composting and crop residues incorporation are fundamental to recycle resources at farm level to improve the nutrients use efficiency and to decrease the off-farm input needs. In the organic farming a balanced combination of compost application and crop residues incorporation increases the microbial carbon use efficiency, which regulates the soil organic matter decomposition and nutrients mineralization resulting both to increase the yield and to decrease the negative impact on the environment.

Keywords Crop residues recycling · Microbial C · Nutrients use efficiency · On-farm input · C/N ratio

1.1 Introduction

In organic farming systems crop rotation, cover crops, livestock integration and organic amendment are the pillars for sustainable soil fertility management. Composting is recommended as a tool to recycle inputs (biomass and nutrients) available in the farm and to reduce off-farm inputs. Compost application has been widely

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