

Abstract

Environmental degradation and consumer awareness are raising concerns about the sustainability of conventional farming while increasing interest in organic farming as an alternative food and fiber production. Well-replicated studies during the transition are necessary for testing the causes of observed changes. To test soil property changes following conversion, we collected data from 18 dairy farms (nine converting and nine that remained under conventional methods) in the Waikato, Taranaki, and Manawatu regions of New Zealand. Soil properties on the converting group were compared with matched farms that continued with conventional methods. Converting to organic did not result in increased total carbon or nitrogen, but phosphorus decreased by 42%. Bulk density decreased by 3.5% in converted farms but increased by 9.8% in conventional farms. Earthworm densities were higher in organic farms but there was no significant change in soil microbial parameters. Total nitrogen was lower where microbial respiration was higher but there was no evidence of a link between earthworms and soil nutrient levels. This observation challenges whether the observed changes in studies of farms that have already converted are indeed caused by organic farming methods themselves. Long-term studies are needed before the broader implications of conversion can be fully assessed.