

Recycled garden compost reduces phosphorus in soils

June 1 2007

Broccoli, eggplant, cabbage and capsicum grown with compost made from recycled garden offcuts have produced equivalent yields to those cultivated by conventional farm practice, but without the subsequent build up of phosphorus.

NSW Department of Primary Industries (DPI) scientists have found very high levels of phosphorus and low levels of organic carbon in vegetable growing soils, during a major research project designed to help Sydney Basin vegetable growers significantly improve soil quality and productivity.

According to a DPI study of 34 farms covering the major soil types in the Sydney metropolitan region, excessive cultivation, combined with high application rates of inorganic fertilisers and poultry manure, resulted in phosphorus levels well above that required for vegetable nutrition.

The study, published in the Australian Journal of Soil Research, compared the effect of vegetable production on soil chemical and physical properties with unfarmed soils in the greater Sydney metropolitan area.

Lead author, DPI principal research scientist, Dr Yin Chan, said current management practices used for producing vegetables had reduced the structural stability of the soil and increased the potential for runoff and nutrient transport.

Dr Chan said farmers in the region had relied too much on the use of poultry manure as a fertiliser.

Farmers use poultry manure as a cheap source of nitrogen but it is also high in phosphorus, which accumulates in the soil over time, he said.

The study was undertaken as part of a broader research project examining the benefits of using compost made from green matter recycled from Sydney gardens in vegetable cropping systems.

The Sydney trial has found that over time, additional nitrogen fertiliser may be required as the nitrogen from the compost is depleted, however, the overall crop need for inorganic fertiliser is reduced.

One of the next phases of the project is to undertake a costbenefit analysis of three years of soil and crop data to assess whether use of the green compost as a soil amendment is an economically viable option.

Authors of the study advocated developing strategies for improved nutrient management and tillage practices.

For example, the use of minimal tillage methods of cultivation could reduce further damage to soil structure and loss of carbon from the system.

Adding inputs high in organic matter, such as the experimental compost, may be one way of building up carbon in the soil and improving soil structural stability. In turn, this could reduce the high rates of surface runoff, sediment transport, and nutrient export reported from vegetable farms around Sydney.

Source: New South Wales Department of Primary Industries

Citation: Recycled garden compost reduces phosphorus in soils (2007, June 1) retrieved 18 April 2024 from <https://phys.org/news/2007-06-recycled-garden-compost-phosphorus-soils.html>

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