Comparative Effects of Different Compost Used As Soil Amendment on Soil Fertility and Crop Yields. (A08-wu151342-Poster)

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Abstract:

Composts are used often in sustainable agriculture, especially for organic farming. This study was to compare soil fertility (chemical indictors) and yields of vegetable crops as affected by composted chicken house manure (cm), yard waste compost (yw) and vermi-compost applied individually and combinely (yw+cm,vc+cm)at rate of 13.4 Mg.ha-1 with and without finely ground limestone (ca) additions. Soil (Xeralfs) used was from Sonoma County, California. Lettuce (Lactuca sativa), broccoli (Brassica oleracea)and mustard were grown successively in pots at Oxford greenhouse, the University of California at Berkeley. After the first harvest, soil pH increased from 5.4 to 6.5-6.9 indicating the composts themselves were able to improve soil pH and to 7.6-7.9 with ca additions. After four harvests, SOM% increased from original 1.49 to 3-4. The cm- and yw-amended soils had greater impact on SOM increase than vc-amended soil. The SOM% increased less in composts combined ca-amended soils but found higher amounts of concentration of extractable carbon (TOC UgC.g-1.soil.) in those soils. Soil CEC increased in all treatments. Total and available nitrogen and available P were increased more obviously in cm- and vc-amended soils ($P<0.05$). Crop yeilds (g. dry weight) were increased in all treatments compared to controls ($P<0.001$). Among the different composts and their combinations, the order of increase on crop yields was cm>vc>yw ($P<0.001$), cm+ca>vc+ca>yw+ca (P cm, yw+ca>yw and yw+cm>yw ($P<0.001$) and vc+cm>cm. Compare to cm applied alone, combined cm with other composts, especially with yw has positive influences on soils and crop yields while decrease negative impacts on environmental quality.

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