



RIO18
21st World Congress
of Soil Science

21 WORLD CONGRESS OF SOIL SCIENCE
Sunday 12 – Friday 17 August 2018
Rio de Janeiro, Brazil

Rio de Janeiro August | 12 - 17

EVALUATION OF ORGANIC AND INORGANIC RESIDUES FOR ORGANIC PRODUCTION SYSTEMS AND SMALL PROPERTIES OF PARAGUAY

Carlos Leguizamón Rojas¹; Marcos Sanabria Franco¹; Silvia Bobadilla Galeano¹; Celeste Saucedo Valverde¹; Alicia Rivas Mendieta¹; Astrid Reichert Duarte¹; Pedro Morinigo Ferreira¹; Doralicia Zacarias Servin¹; Alba González¹

Universidad Nacional de Asunción - Facultad de Ciencias Agrarias¹

Organic or inorganic residues can be used as inputs to maintain or improve soil fertility in organic production and in the 250,000 small properties (<20 ha) with limited capital for access to inputs and responsible in the prevailing food production in the country. The objective of this study was to evaluate the effect of organic and inorganic residues in the soil and agricultural products of the small property. Were evaluated doses of ash obtained from the soybean processing industry, doses of compost made from residues of the sugar industry and dose of bovine manure from the farm itself. The nine doses of ash were evaluated in a Rhodic Paleudult with a sandy texture and in a Rhodic Kandiodox with a clay loam texture, in pots. Two types and seven doses of compost were evaluated in pots, in a Typic Paleudalf of the area of influence of the sugar industry, using wheat (*Triticum vulgare*) as an indicator plant. Three doses of bovine manure were evaluated in a small property on a Rhodic Paleudult with sandy texture in a sequence of *Manihot esculenta* - *Zea mays* L. Ash doses produced pH increases in sandy soil from 3.88 to 5.79 and in clay loam soil, from 4.3 to 5.60 with 2.5 and 7.5 t ha⁻¹ of ash, as well as allowed to neutralize exchangeable acidity; the pH even reached 9.19 in the sandy soil. The ash also increase the available phosphorus, low to high level, in both soils; increased levels of exchangeable potassium, going from low to high level in sandy soil and increased the exchangeable magnesium concentration in both soils. The two compost evaluated increased the aerial and radicular dry matter of the wheat, they did not produce significant increases in interchangeable calcium, magnesium and potassium levels and had differentiated effects on the pH levels and available phosphorus. The application of bovine manure produced a significant increase in the production of the cassava-corn sequence. The yield of commercial roots of cassava (in kg ha⁻¹) was adjusted to an equation $y=6,956.5 x + 29,189.6$ with $R^2=0.92$, in the range of 0 to 30 Mg ha⁻¹ of manure applied. In the corn yield there were successive increases of 0.64 to 2.92 and 3.86 Mg ha⁻¹ with the doses of 0, 7.5 and 15 Mg ha⁻¹ of bovine manure, respectively. These results indicate the potential of organic and inorganic residues processed or not in the process of organic production and low input agriculture. Furthermore, the use of each residue should be evaluated in the soils in which it will be used.

Keywords: ash; compost; bovine manure; cassava; corn; soil chemical properties

Financial Support: Consejo Nacional de Ciencia y Tecnología, Project Number. 14-INV- 130 "Soil fertility management for food production".



**Brazilian Soil Science
Society**

<https://www.21wcsc.org>
21wcsc@21wcsc.org
commercial@21wcsc.org