

### Chemical characterization of agricultural waste found in communities Lajedo, Amargosa and Vira beju in Petrolina-PE during the drought period.

José Michael Araujo, Alineaurea Silva<sup>\*1</sup>, Leonardo Nunes, Maria Aldete Ferreira, Maria Cristina Crispim

1. Email: [alineaurea.silva@embrapa.br](mailto:alineaurea.silva@embrapa.br) (corresponding author)

#### Abstract

Low soil fertility in rain dependent areas prevent satisfactory yields and result in discouragement and financial imbalance for the family-based farmers. The soil correction or fertilizer has not been a common practice among farmers and the lack of family-based intervention that results in degenerative cycle of agriculture in these areas results to: not corrected or complements soil fertility - productivity is low - prevents that invest in soil improvement - resulting in low productivity. This cycle could be broken if they used some waste generated in these family farms. However, it is important to known that these residues are, how often are generated and the composition of the same to make a recommendation of their use based on more accurate information. The present study was carried out in order to chemically characterize the agricultural waste generated in three communities in Projeto Pontal in period of water deficit, between August and November 2013. Therefore, we conducted semistructured interviews and collected the waste generated in three communities: Vira Beiju, Amargosa and Lajedo, from August to November 2013. The residues were analyzed in the Laboratory of Embrapa Semiarid. Phosphorus (P- total) was determined by colorimetry with metavanadate. The determination of sulfur (S) was made by turbidimetry, wherein the turbidity is measured spectrophotometrically. Sodium and potassium were made from the flame emission spectrometry. Nutrients: Ca, Mg, Cu, Fe, Mn and Zn were determined by atomic absorption spectrometry (AAS). The analysis of trace elements was performed directly in the extracts. The analysis of boron was taken by colorimetry method azometina H. The determination of nitrogen was performed using the semi -micro Kjeldahl method using the technique of wet solubilization, followed by steam distillation and titration to quantify the  $\text{NH}_4$ . In the study period, the residue found predominantly in all the properties was the goat manure. Other wastes were found in only one property, such as mesquite residues, cassava shoots and leftover bean crop. The goat manure, with production of approximately  $5\text{m}^3$  per month on investments was the richest among chemically residue found, showing an average  $16.04\text{ g.kg}^{-1}$  of nitrogen,  $1.76\text{ g.kg}^{-1}$  phosphorus,  $5.11\text{ g.kg}^{-1}$  potassium  $21,02\text{ g.kg}^{-1}$  calcium  $6.71\text{ g.kg}^{-1}$  and  $1.91\text{ g.kg}^{-1}$  sulfur. The other wastes have lower monthly generation values of the manure and chemicals also lower except crop residues mesquite that showed average 22.67

## Session E3: Sediment, Nutrients, and Carbon

$\text{g.kg}^{-1}$  of nitrogen and  $24.24 \text{ g.kg}^{-1}$  calcium. The cassava foliage showed levels of calcium ( $27.86 \text{ g.kg}^{-1}$ ) above the values of the same element in manure. Nevertheless, it becomes impractical the continued use of cassava foliage or other vegetables because they not used by local farmers for feed. Only the manure becomes a viable option for this purpose although in the dry season as all evaluated manure is sold to generate income for the family. Thus, it is necessary to evaluate the generation of waste in the rainy season and possibly suggest to store them for the purpose of use in soil fertilization of these areas.

### Keywords

Agricultural waste, chemical analysis, soil fertilization