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### New Dark Earth Experiment in the Tailândia City - Pará-Brazil: the Dream of Wim Sombroek.

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There are occurrences of soils formed since prehistoric humans occupied the Amazon. These soils, highly fertile and stable, are called Indian Dark Earth (IDE) due to its own micro-ecosystem that is not easily exhausted, even under tropical conditions, where they remain a long time. The places where we find IDE nowadays, archaeological sites, had been locales of human settlements in the pre-Columbian past of Amazônia. These places had served as deposits of material of vegetable origin (leaves and splints of several palm trees, peels of manioc, seeds, etc.) and of animal origin (bones, blood, fat, excrements, shells, etc.). To form IDE, it seems that the abundance of discarded organic substance was essential. The organic composition resulted in highly fertile soils with high contents of P (more than 1000mg/100g); Ca, Mg, Zn, Mn and C (Kern 1996). The IDE organic substance is about six times more stable than the soils of the forest (Pabst 1992, Glaser 2000). This factor must be one of the responsible for the stability and the high fertility of IDE. Since 1966, Wim Sombroek dreamed about the possibility of recreating these soils. In 2001 and 2002 in seminars in Brazil, Sombroek and his collaborators presented a plan of replicating IDE. The subject was argued widely by the community, mainly in the workshop on ADE during 2002, in Manaus. Hence, in Pará State, a group of researchers looked to make possible Wim's dream possible and recreate these soils denominated New Dark Earth. It was decided to use as vegetable material sawmill residues (trituated blade, RLT, and saw powder, RPS); charcoal-making residues (C) and as an animal raw substance, slaughter house residues (RA). The experiment on New Dark Earths was conducted in the area of Tucuruí/Albrás line, coordinates 02 57 ' 021 "S and 048 57 ' 21 "WGr, in the Municipality of Tailândia, Pará, and supported by the Tailâminas Plac Company that donated an area of 4ha, for a foreseen period of 25 years, for use in the experiment. Our intent is to form a type of soil starting with the natural soil, so be able to control the physical, microbiology, chemical and mineralogy variable by decades, as an example of the formation of ADE. In the experiment initially, 17 treatments (combination of charcoal-making, sawmill and slaughter house residues), with four repetitions each one. For the distribution of the portions the experimental boundaries were used in case blocks. In 2003 the sampling and description of soil profiles, following the methodology proposed by Lemos & Santos (1996) was completed. The data represent the physical, mineralogy and chemical conditions, of the soil in the "zero time" of the experiment. The sampling of the parcels took place in the months of March and September of the elapsed years, a sample of soil from the first 20cm depth of each parcel was collected. Until now 4 field campaigns were carried out and 272 samples of soils were collected. Nutrient levels are being determined in these samples, pH in water and in KCl; calcium, magnesium and aluminum (KCl 1N); hydrogen and aluminum (calcium acetate 1N, pH 7,0) organic carbon (Walkley-Black, modified); phosphorus, sodium and potassium (Mehlich) and whole nitrogen (Kjeldahl), according to EMBRAPA (1997). The results regarding 6, 12 and 18 months of running the experiment show a great variation in the contents of the chemical elements coming from the process of decomposition of the material. This variation is more intense in the experiments where there is diversity in the mixture of materials. The pH has kept relatively constant (pH = 5,5 to 6,5) along the sampled periods, with exception of the treatment with monthly addition of bovine blood, which presented more acid values (pH = 4,63 with 12 months). Calcium presented the highest values (90 to 93 mg kg<sup>-1</sup> in 12 months) in the C and C+RPS treatments, respectively, while in the original soil (blank soil sample) it presented 31 ppm in this same period. Mg got a similar behavior to the Ca, with maximum values at 10 to 14mg kg<sup>-1</sup> to the 12 months in the treatments RLT+RA and C+RPS+RLT+RA+S, and 3ppm in the original soil. Sodium displays maximum values in the treatments with bigger diversity of mixture C+RPS+RLT+RA+S (104mg kg<sup>-1</sup> in 6 months). In the original soil (blank soil) Na practically kept constant (33 mg kg<sup>-1</sup>). P reached maximum of 897 mg kg<sup>-1</sup> along the 12 months of experiment, in portions where butcher shop residues were present. Despite the great contribution of organic substance added to the soil, the increase of C was not significant, in some treatments with RA addition only and RLT, the values of C (1,5g kg<sup>-1</sup> 6 months) had been below of the values of the original soil (5,2g kg<sup>-1</sup>), even so with RPS addition have gotten 18,1g kg<sup>-1</sup> in this period. Although these results are still in the initial phase of the experiment, a narrow relationship between the behavior and readiness of the nutrients in the analyzed treatments has been noticed, and an increase of its concentration in the parcels where the residues had been incorporated in relation to the parcels of original soil is being verified.

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