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THE IMPACTS IN THE SOIL PROVOKED BY THE BUFFALO CULTURE IN VIANA IN THE LOWERED FROM MARANHÃO.

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INTRODUCTION

The process of settlement of the State of Maranhão had beginning in 1614, 114 years after the beginning of the Brazilian colonization, one of the reasons of that delay was the difficulty to arrive until the north portion of the country so much by sea as for earth.

After the Europeans to have if fastened in São Marcos bay and given início the foundation of São Luís, it was not long a lot reach her area of the lakes known now as Baixada Maranhense.

One of the first cities to be founded in the Slope was Viana's city, in the basin of the river Pindaré, tax of Mearim. The Slope is known as Swampland due from Maranhão á amount of lakes in the area, only in the municipal district of Viana they are seven.

In the process of growth of the municipal district of Viana an unpublished activity was introduced in the area, the creation of buffalos. The buffalo is an animal of great load is the 9th in the ranking of the heaviest animals of the world, it is original of Asia and initially her creation was accomplished in Brazil only in the island of Marajó in Pará.

The proposal of this study is to prove the lacks of adaptation of the soil of the municipal district of Viana, object-area of the research, the creation of blow. Analyzing the effects of the indiscriminate creation for the local soil, he/she intends measures them to look for to lessen the effects provoked by the activity.

METHODOLOGY

Among the methods used in the present study, it is pointed out the phenomenal, that bases on the perception and in the search of the existence of the studied object (TUAN, 1980).

In the Geography the method phenomenal is based in two currents: Geography of the Perception and conduct Geography .

In the work the two thought currents were adopted guided for the perception of the local landscape, and the analysis of the behavior of the agents modeler of the landscape that has been suffering tensions for several activities, mainly the creation of blow.

For the accomplishment of the work the following research activities were developed:

- ¢ Lifting and analysis of the bibliography related with the theme and the area object of the research, through visits to institutions as IBGE and sites of the internet;

- ¢ Production of cartographic material;

- ¢ Geographical characterization of the area of the municipal district, considering the physical aspects and the human activities;

- ¢ Accomplishment of field activities understanding observation and identification of the environmental impacts, as well as I register photographic of the areas more with impacts for erosive processes and pollutant agents;

- ¢ Selection of three flow places verifies of blow for it analyzes of infiltration of water in the soil and collection of samples of the soil.

- ¢ Interpretation, analysis of the obtained results, for tabulation of the and making of graphs.

LOCATION AND ENVIRONMENTAL CHARACTERIZATION

The municipal district of Viana is limited to the north with the municipal districts of Matinha and New Olinda, to east with Anajatuba and Arari, to west with Penalva and Pedro of Rosário and to the south with Cajari and Vitória of Mearim.

The lake that is known as Lake of Viana actually is the Cruise of Rosário formed by seven together lakes are them: Lake of Aquiri, Lake of Penalva, of Cajari, of Viana, Lake-Açu, Maracassumé and Itans. The lakes also aid in the delimitation of the municipal district being to the south, delimited by Viana's Lake, to east for Itans, to the north Aquiri and to west Maracassumé and Cajari.

According to Atlas of Maranhão (2002; p. 17), the local Geology is constituted by formation Itapecuru, with soils of the type Plintossolo, Gleissolos and alluvial soils.

The formation of the current structure of Maranhão had início in the Tertiary era, however just in the Quaternary era in the period Plioceno, the State acquired the current configuration. Daily the atmosphere raisin for agents that aid in the modelling process, in the

Quaternary era Maranhão reached the current configuration, but it suffers constant modifications provoked by the own nature and for the man.

The covering botany is constituted of mosaic of pastures, open forests and vegetation degraded with babassu, that presents some economical activities summarizing the hunt and fishing basically in spite of being an area of environmental preservation, accomplished in a primitive way, and to the bubaline creation.

In agreement with Atlas of Maranhão (2002; p.31) the climate of the area is of the humid type (B¹ and B²), with superior temperatures to 27°C. The relative humidity of the annual air is on average 79% and 82%, the annual medium precipitation is around 1.600 to 2.400 mm. The temperatures register superior averages to 27°C.

The humid areas are among the most productive atmospheres of the world, considered natural grocery stores of biological diversity. Besides, they provide systems of support á life for the humanity's great part, accomplishing fundamental ecological functions as regulatory of the regimes aquatic and as habitat of a rich biodiversity. They also contribute to the climatic stability, through his/her role in the global cycles of water and carbon, being constituted in a resource of great importance economical, cultural, scientific and recreational, that it should be preserved.

Historical of the area

It is a city full of old legends, one of them speech of a serpent that in case she move will sink Viana that legend is full of details says that the head of the serpent is at the mother church and the tail surrounds the city and it concludes in the river Maracu, tax of Pindaré. Another is regarding the own name of the place, that at first it was an indigenous village that passed the if he/she calls of Viana why an Indian it was the search of a called Indian Ana and when it sighted said her: I saw Ana.

Second IBGE (1959), the history of the municipal district began when Priest Pedrosa sent a number of Indians that you/they inhabited the village of Itaquí, to a place in the Slope From Maranhão where she fastened forming the village of Maracu. Starting from 1709 the village of Maracu began to be busy for the priests Jesuits that built home and the church of Our Lady of Conceição, the Head office, besides the agricultural farm São Bonifácio of Maracu sponsored by the government. Later they came the currents of immigration, of Portuguese origin, most accompanied by great number of slaves.

The priests of Jesus' Company had direct influence to the time in that the village was elevated the Town on July 08, 1757 in execution to the determination in the paragraph 2 of the regiment of the Missions, with Viana's denomination.

In first of March of 1768 the then governor of the Province makes a visit due Viana town some disputes for earth that you/they were happening in the area. In letter the Portuguese crown counts that found the town in a good development. For the provincial law it was high the city for the law no. 377 on September 30, 1855.

RESULTS DISCUSSIONS

The constant population increase took the world producers to develop new agricultural techniques and cattle farmers to supply the population. Besides those employed technologies now, the substitution and adaptation of new species is an activity that has if expanded more and more.

The agriculture in the municipal district of Viana is little expressive, being summarized basically to the local provisioning. The activities really lucrative of the area they limit the fishing and the creation of buffalos. The fishing is an inheritance of the first local inhabitants, the Indians, and it is guaranteed by the great amount of lakes in the area. Already the creation of buffalos is an adaptation activity, since it is an animal of Asian origin and his/her first performance in Brazil happened at the Island of Marajó.

The creation of blow is part of the local cattle farmers economy and it moves the market of the area. However the creation doesn't have any restriction type, in spite of being in an area of environmental preservation, the buffalo is a heavy animal and her indiscriminate creation has been provoking a series of partner-environmental problems.

In the sixties, they were 3 thousand heads in the Slope From Maranhão. Pinheiro (2000) it emphasizes that now exist very more buffalos in the Slope than the area can support. The animal produces more meat and milk that the cattle, but he has an inadequate physiology to the area.

The buffalo is an animal that eats a lot, it is weighed and he has wide skulls breaches. With that, it damages the much more vegetation than the cattle. Of agreement Pinheiro (2000), for the habit of passing long periods in the water, it darkens the waters and it ends up killing fish through the trampling, provoking a serious due social problem the conflicts between the buffalo creators and the fishermen. Besides eating plants aquatic regulations of the ecosystem, getting to reduce the amount of species, according to him there is also another

consequence of that that is the reduction of the jacanas number, a type of bird that serves as source of income of the local population.

The first field work was accomplished from the 10 to December 12, 2003, drought period, what provided the best observation of the geomorphology the place. In most characterized by being hour emerged submerged hour, decrease of the thickness of the sedimentary package was observed provoked by the increase of the load, in the case of the buffalo and made possible by the existence of porosity of sediments.

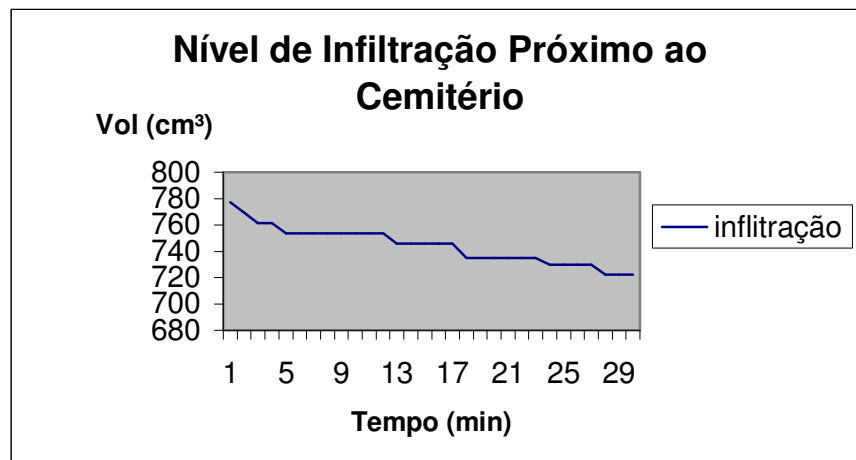
In the second departure to field on March 02, 2005, period of rains, the lakes already began to fill and the landscape was totally modified. Being possible to observe mainly the drainage pluvial that due the soil is failed to protect increased the amount of erosion, causing furrows not very deep, denominated by War (1980) as ravines.

To prove the harmful effects for the soil provoked by the creation of de blow, he took place during the second work of field in 3 bases of experimental researches, in them it was measured the infiltration taxes in the soil for 30 minutes, besides collections of samples of the soil in the three points for proof of the compacting and contamination of the soil in those places.

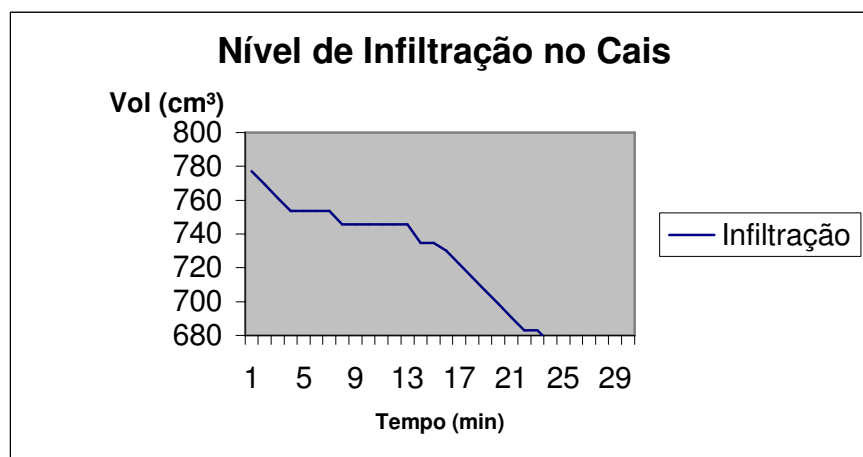
In the field works three points different with different aggression levels were selected to the soil. The first point is located close to the municipal cemetery and there are some houses, however that didn't interfere the action of the buffalo. The results obtained in the first point (gráfico1), they presented low infiltration taxes, with averages of 0,3 mm/min. In the second sampling point, close to the wharf Dilú Melo, the place was without vegetation and the action of man was visible. The average of found infiltration was of 0,6mm/min as display the graph 02. I finish him/it point was in the proximities of Gruguéia, where they long for to build a popular habitation group, it went diagnosing as an area of fort proven trampling with it analyzes her/it of infiltration (gráfico3), where the found average was of 0,3mm/min. The three points presented low infiltration taxes because of the type of soil predominant, associated his/her high compacting degree, due the degrading activities developed in the area in study.

Through the numbers obtained with the research is possible to affirm the fragility of the soil of the municipal district of Viana and the wear and tear provoked by the activity that has been developed in the area. According to Ross (2000) the stratum of grass just offers medium protection degree to the soil face to the action of the pluvial waters, in Viana that problem is worsened because the buffalo feeds of that stratum, leaving the unprotected soil as much of

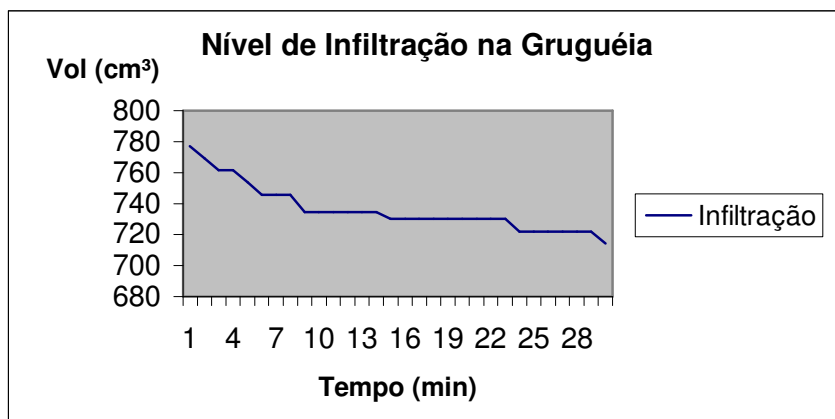
the pluvial action as of the trampling of the own animal provoking the compartimentação of the soil, proven fact starting from you analyze them (graph 1, 2 and 3) of infiltration.



Graph 1. Level of infiltration of the water in the soil found in the first point.



Graph 2. Level of infiltration of the water in the soil found in the second point.



Graph 3. Level of infiltration of the water in the soil found in the third point.

FINAL CONSIDERATIONS

The humid areas are among the most productive atmospheres of the world, considered natural grocery stores of biological diversity. Besides, they provide systems of support a life for the humanity's great part, accomplishing fundamental ecological functions as regulatores of the regimes aquatic and as habitat of a rich biodiversity. They also contribute to the climatic stability, through his/her role in the global cycles of water and carbon, being constituted in a resource of great importance economical, cultural, scientific and recreational, that it should be preserved.

The degradation of an area, independently of the implanted activity, it is verified when: the) the vegetation and, for consequence, the fauna, they are destroyed, removed or you expel; and b) the layer of fertile soil is lost or removed, affecting the flow and environmental quality of the superficial and underground bodies of water. When that happens, he/she is reflected in the alteration of the physical characteristics, chemistries and biological of the area, affecting his/her socioeconomic potential.

In the study area-object it is very easy to find atmospheres as having described above, however it is also observed that the problem is larger than imagines, because ally with the creation of buffalo has the lack of basic sanitation, the whole sewer drains for the fields contaminating as much the soil as the bodies of water. Para to accomplish a work of recovery of the local ecosystem it would be necessary before everything to treat of the municipal basic sanitation.

In Viana it would be problematic the prohibition of the creation of buffalos, since the animal is part of the local economy and of the sustentation of countless families, the most

efficient road would be the delimitation of areas for the activity, modifying his character that would stop being extensive to be intensive.

In the case of the soil of the area it would be necessary recover him, however for that a detailed study of the conditions of the same should be accomplished, for then to draw measures that would lessen the diagnosed effects. However it is valid to point out that in a work of environmental recovery is in general important the involvement and understanding of the society with the activities that will be being developed in the atmosphere.

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