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SOIL: THE SUBSTRATE OF LIFE AND THE CONFERENCE RIO + 20

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Brazil hosts in Rio de Janeiro city, from 13 on 22 June 2012, the United Nations Conference on Sustainable Development (Rio + 20). It marks the 20th anniversary of the Earth Summit (Eco-92). The meeting aims to set paths to that challenge the world seeks a new development model based on the concept of green economy, you want to achieve the well-being of people having greater concern for social equity, environmental hazards and the scarcity of available natural resources.

Between the two are intrinsically involved in natural resources, the soil and the plants. They are vital to the existence of heterotrophy – which cannot produce organic compounds, feeding on organic matter of plants and animals. In the evolutionary process of the plants, there are approximately 450 million years, the Earth's ozone layer seemingly protected enough bodies so that they could survive in the surface layers of the water and on land, then life emerged to the land mass for the first time, probably with aquatic plants, green algae ancestors.

This because even with plenty of energy, carbon, hydrogen and oxygen, but as cellular proliferation, colonies were soon decreased the mineral resources of the open seas. In contrast, the soil, usually rich in mineral nutrients, has emerged as a new environment for life, in the evolutionary process. The critical factor in this transition to the Earth was water, and then develops an alternative evolutionary strategy: the root. Anchors the plant to the ground and collects the water needed for their maintenance and for photosynthesis. From this "jump" rolling plants, which are basically a terrestrial group, presents a series of specialized features that allow you to settle into the soil.

These features are best developed in the group known as vascular plants – which have water-conducting tissue, mineral salts and sap developed.

According to the poor fossil record, the earliest land plants consisted of stems branched exclusives – known as telomas – and probably survived partially submerged in a muddy substrate. In the genus *Cooksonia* fossils, found himself the oldest known vascular plant, rarely exceeded five inches tall and apparently taking action as well. Was found in Shropshire, in England, is in the Upper Silurian period – 414 to 408 million years ago.

In the long and slow evolutionary process of elimination of less adapted, evolved the cells that were able to make their own energy-rich molecules from simple inorganic materials. Such organisms are called **autotrophic**, "self-foods". Without the development of these autotrophic life on earth would soon come to an end. The most successful among the autotrophic were those who have developed a system to make direct use of solar energy, i.e. the process of photosynthesis. The earliest organisms photosynthesizing organisms, although simple compared with the plants, were much more complex than the primitive heterotrophic.

With the exception of bacteria chemical-autotrophic, all life on our planet is directly or indirectly dependent on photosynthesis of chlorophyllaceous bodies, because we are totally dependent on photosynthesis, a process for which the plants are wonderfully well adapted. Even the sources of energy that move the machines of our daily life, such as oil, natural gas and coal, are products of photosynthesis performed by organisms that lived millions of years before the present day.

Key point in the evolution of plants was moving on to use as your new environment. This, as an important natural resource, and essential for the plants is implicit in sustainable development, this means that its preservation and correct usage should be included as more of a concern for the preservation of diversity that settles on the planet Earth, there is a view that the soil is the result of the interactions involving the atmosphere, hydrosphere, biosphere and lithosphere. It is the natural environment for fixation and growth of plants, i.e. it is the Substrate of life – physical-chemical-biological support to the plants to carry out photosynthesis give life itself, animals and the *Homo sapiens*.

The flowering plants or Angiosperms are the oldest vestiges about 125 million years ago. And became dominant throughout the world between 90 and 80 million

years ago. Man gets about 80% of their calories from only six species of this Phylum, out of a total of approximately 300 thousand known species known; a lot of potential to be used rationally. Essential factor for the domain and the importance of these plants is its interaction with land, which is the most important source of nutrients for them. Of 17 chemical elements essential to nutrition of Angiosperms, 14 are provided by the soil, which also provides water and a gaseous environment suitable for the development of the root system. Understanding the origin of soil and its chemical and physical properties related to the needs involved in plant growth is essential for fertilization of crops and planning maintenance of plant diversity, but all this performance is dependent on natural resource conservation: Soil.

If so, that can be observed between the natural resources, the soil is of great importance, because it is the natural environment, outside of the aquatic environment, where to spread biodiversity; and there are approximately 10,500 years man initiated the agriculture, making it possible to maintain a growing population of people who have built towns cities and civilizations.

The current scientific knowledge demonstrates that the plant, photosynthesis and soil are structures fundamental to life. However, the global conferences on environment have given little emphasis on conservation and proper management of the soil, natural resource important to the maintenance of biodiversity and of the populations.

In humid tropical climate conditions, prevailing in Brazil, with featured in Amazon, climatic and biological activities are of importance to the processes or mechanisms of reactions soil origin – chemical, physical and biological character that produce in the ground characteristics correlated with zones, so-called factors of its formation. The climatic and biological processes to contribute in the formation of soil, get this a supporting structure for biodiversity that when performing their functions of respiration, photosynthesis and evaporation transpiration interfere with climate. In this context, the soil occupies prominent role in controlling the quality of the environment and this will depend on the good or bad practices employed, reflecting on edaphic reserves management.

This condition leads to search among the permanent preservation and the correct management of this natural resource. The researcher Otávio Antônio de Camargo, at the Instituto Agronômico (IAC), mentioned that: "environmental

degradation is not the result of a development, but this particular mode, making it necessary and urgent to a significant correction of route."

As an example, it has been the weakness of edaphic stress environments in the Amazon, widely published that reinforces the need for further studies mainly soil management with strong foundations in sustainability. This means that agricultural development and sustainable management of forests in the Amazon, depends on more than understand their ecology and generate compatible technologies for production in scale than import models of other Brazilian ecosystems and even outside.

The solution, says the researcher Otávio Antônio Camargo: "no will then slow down development, but changing qualitatively and quantitatively model, keeping as primary target the improvement of quality of life, though not always thinking about growth as increased production".

When to hold the Conference Rio + 20, Brazil cannot disregard the importance that soil plays for Brazil. The first concerns its breadth and diversification. The Brazilian System of Soil Classification (1998) classifies thirteen classes of land within the national territory, which demonstrates its diversity and the need to meet her as well. The second is related to the condition of large food producer, having the need to use soil conservation practices. The third, because, as natural resource should be used as collective heritage, regardless of its use or possession, because this is one of the vital components of the environment.

However, its preservation within the Rio + 20, on the part of Brazil is contained only in Low Carbon Agriculture Program (ABC), Ministry of Agriculture and supply, and even so in an indirect way. This plan aims to promote the reduction of carbon emissions from farming activities through six strategies. Only one, the Tillage System (TS) soil preservation is contemplated, since the TS are based on three principles: non soil revolving, permanent coverage of soil, soil and crop rotation.

The document of Brazilian Contribution to Conference Rio + 20, in its chapter I, new and emerging Challenges of sustainable development indexes 25 items, and even in those in which the soil is directly involved, agricultural and rural development – biodiversity, combat desertification and forests – no contextualization on conservation and rational use of soil.

Brazil has the highest plant biodiversity of the planet, is the second largest producer of food, home to the United Nations Conference on Sustainable Development

(Rio + 20), therefore have credentials to lead campaign that involves soil conservation based on scientific knowledge, conservation farming practices and environmental education focused on the importance of this natural resource to the sustainability of biodiversity and food security.