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***Understanding Soil Interfacial Reactions
for Sustainable Soil Management and
Climatic Change Mitigation***

Abstract Book



8th International Symposium of Interactions of Soil
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*Understanding Soil Interfacial Reactions for
Sustainable Soil Management and
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Plenary Session

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IMPORTANCE OF BIOGENIC SILICON IN PEDOLOGICAL SEQUENCES, AS A DETERMINANT OF THE EDAPHIC PROPERTIES OF AGROECOSYSTEMS OF THE ARGENTINIAN PAMPEAN PLAINS

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Silicon (Si) is the second element of importance in the lithosphere found mostly as silicate and biogenic silica essential for many organisms. Particularly amorphous silica biomineralizations of vegetal origin (silicophytoliths) can be found in many plant families being the grasses (wild types and crops) their major producers with sizes between 5 and 50 μm . After plant decomposition this biomineralizations are incorporated pre- and postpedogenetically into the soil modifying its physicochemical mineralochemical and biological properties. Mineralochemically was analyzed by petrographic and scanning electron microscopy MEB and EDAXs while Si in soil solution was measured by UV-VIS spectrophotometry all through routine techniques. Results from the physicochemical mineralochemical and biological analysis proves the presence of different well-preserved silicates and also a relevant amount of silicophytoliths in the southeastern Argiudolls of the Buenos Aires province explained by the dominant coverings of grasses in the meadows of the extensive Cenozoic. From the physical point of view the silt fraction is a major component of the skeletal fraction of the aggregates which confer structural stability providing favorable physical conditions such as porosity infiltration and transport that will lastly affect the mobility of soil solutions. Silicophytoliths constitute a relevant textural fraction to which the conservative managements applied during last decades had contributed to preserve since they allowed high amounts of them to be incorporated into the soils. On the other side the irrational managements had drastically modified and depleted the soil profiles from silicophytoliths stocks. Therefore managements are considered the main controllers of these biomineralizations stocks that will lastly contribute to the aggregate's stability preservation since they will enrich their matrix with amorphous silica associated to the soil organic matter. Finally as biomineralizations are an

important component of the organic-inorganic soil phases it's considered relevant to plan adequately the use of silicophytolith's supplier crops as a tool for the mitigation of the negative effects suffered over hundreds of years and the improvement and preservation of edaphic properties.

Keywords: MINERALOGY, BIOMINERALIZATIONS, SILICOPHYTOLITHS, SOM, SOIL MANAGEMENT

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EFFECT OF WIND EROSION ON SOIL ORGANIC MATTER ON AGRICULTURAL LAND

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The problem of wind erosion occurs in many parts of our planet. As noted in the «Global Warming Report 1.5° C» prepared by an intergovernmental group of experts at the United Nations climate change in Russia is occurring several times faster than the world average. This contributes to accelerated development of various degradation processes of soil cover.

Studies were conducted on agricultural land of the Republic of Bashkortostan - southern federal subject of Russia. Over the past decades has been observed a decrease in precipitation and gradually increasing aridity of climate. Cases of hurricane winds leading to increased development of wind erosion are becoming more frequent. Wind erosion most often occurs in areas with unstable and insufficient moisture. It is indicates likely development of destructive processes in unprotected areas of plants.

The latest comprehensive studies of deflation processes of the republic date back to the 80s of the last century. This determines need to conduct actual research using new technologies such as geoinformation technologies (GIS) and remote sensing data.

As a result, the work revealed a strong destructive effect of wind erosion on agricultural lands. The transformation of soil microaggregates was studied and defined them movement and zones of accumulation. The correlation between soil organic matter of the soil the nature of the vegetation cover orographic features of the relief the methods