MICROMORFOLOGIA DE SUELOS

Proceedings of the fifth International Working Meeting on Soil Micromorphology

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INTRODUCTION

In Kingston (Canada), Spain was proposed to organize the Vth International Working Meeting on Soil Micromorphology. The Spanish group of this speciality accepted the commitment to do it, on one hand because of the honor that it represented and on the other hand to carry out the failed wish of two very important edafologists, the unforgettable Prof. José Mª Albareda Herrera and the promoter pioner micromorphological figure, Prof. W. L. Kubiena. Prof. Kubiena worked in Spain for many years and he did most of his research in our Institut of Edaphology in Madrid.

Several circunstances delayed the event and the second and third generation have organized the Vth International Working Meeting on Soil Micromorphology. We did it with a great illusion.

Thanks are due by their collaboration to the chanceller of the University of Granada, S. S. I. C., Spanish Society of Soil Science so as to the Several Banks and entities by their help.

I also want to exprese my aknowledgement to the Profs. Aguilar, Dorronsoro, Barahona, Guardiola and Garcia Navarro by their help and collaboration in the organization of this Vth International Working Meeting on Soil Micromorphology.

The Micromorphology have had reciently a very big development specially in the constitution and genesis of the soils. As main figures in the field of the micromorphology of soil, authentic pioners in this field of the microscopy we have to the Profs. W. L. Kubiena and the Prof. R. Brewer.

Although most of the effects of desintegration and regrouping on different levels of the constituents of the original material of soil, can often be recognized on a macroscopic scale, its real estimation and interpretation are made on a microscopic scale; therefore the field of Micromorphology is the study and research of these phenomena. As a curious example, we can mention the illuviation or emigration of clay that can be recognized macroscopically but the main part of its explanation or discovery belongs to micromorphological techniques. Likewise, the study of any type of cutans with the microscope, the analysis of its structure in relation with the unions between particules , orientation of the same, particularly if they are argillaceous can explain the genetic process.

A soil horizon can produce effervescence with diluted clorhidric acid, indicating the presence of a carbonate, but if this research is done with the microscope the carbonate can be found in many different forms, which its constitution and structure can permit us to attribute them to different genetical processes; it is not the same as the fact that carbonate is formed by little microcrystals intercalated in the plasma, or as large crystals (calcans , nodules), etc.

We could make similar considerations about the forms of the organic matter, the compounds of manganese, the different oxides, sesquioxide, etc.

In relation to the migration of clay and with the orientation of its mineral grains, it is very interesting to see the variations of these organizations with depth, that only micromorphologically can it be or great interest to set up the differences in the arrangement of the particles of the original material and each one of the horizons of the soil. And so the clay minerals are very interesting to

know the genetic process of the soil when they form part of argillans, papulas, nodules, concretions, etc..

The role of Micromorphology has been extraordinary in relation to the study of the forms of organic matter and it has been possible to establish several classifications from a microscopic point of view with enormous usefulness. Due to its recognized usefulness, it has been widely used for the resolution of the problems on the classification of soils, despite the fact that Kubiena used it extensively in his "Systematic Kay" and Brewer has used it in his " Handbook of Australian Soils ". Its very probable that this whole problem vill be completely resolved with the issue of the glossary; then it will be easy to get, in the micromorphological descriptive, enough universality and unity in the criteria.

In the priod in which we are living and in particular for the future, the methods that study the soil as a "natural body" will be developed considerably without the soil suffering any important modification in its constitutive elements.

These studies are established on the base of a deep analysis of the constitution and of the relations between the constituent parts. The explanation of these facts may allow us to infer the genetical order and the problem of preservation and even the productiveness of the different types of soil. A great opportunity to know the relations ships between the parts that form the soil and its possible origin can be given by Micromorphology.

Near the constituve and the genetic it is the usefulness and in the use of soil with practical purposes we can reach clear ideas with Micromorphometry in the same way as we would do in our inquiry into the fields of migration, growth or transformation.

One of the limits this methodology shows was imposed by the resolvent power of the ordinary and polarized light microscope, being a great advance in the microscopical

analysis and with enormous repercussions in the micro - morphological one, the application of the electronic microscope in its different varieties and techniques to the study and recognition of the smaller fragments of soil because, as we know, they support all the activity phe - nomena. The results obtained with the electronic microsco- pe joined to those of the optical one, mean a considerable advance in in the interpretation of most of the genetical phenomena.

The application of the electronic microscope and other modern and derived techniques has to provide us with a new doctrine or to complete the existing one. This will lead micromorphology and micromorphometry towards places and progresses which are unsuspected today.

M. Delgado

Some Conference Delegates