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REPORT OF THE SECOND CORRELATION FIELD TRIP AND MEETING FIRST PILOT AREA SOUTH AMERICA GLASOD-SOTER PROJECT, 25 AUGUST - 1 SEPTEMBER 1988

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INTERNATIONAL SOIL REFERENCE AND INFORMATION CENTRE

1. INTRODUCTION

Between 25 August and 1 September the second correlation meeting-field trip took place within the first pilot area of the GLASOD-SOTER Project that covers parts of Argentina,Uruguay and Brazil. This second trip had been recommended during the final meeting of the first field trip (see Consulting Mission Report No 88/4).
The main objectives of this meeting- field trip were the following:

1. Discuss and solve the problems that might have come up during the application of the SOTER Manual by the three national groups.
2. Discuss and unify the evaluation of man induced soil degradation (status, degree and area affected) according to the last version of the SOTER Manual (Chapters 14 to 16 rewritten by Dick Coote).
3. Discuss and prepare the programme and the objectives of the final correlation meeting to be held in Porto Alegre, Brazil in December 1988.

During this second field trip with the participation of two national correlators of each of the countries involved and the regional correlator of the GLASOD- SOTER Project the problems that had come up were discussed and also the criteria to be used in the evaluation of man induced soil degradation with the experts working on a national level in each country.
The bilateral correlation meeting were planned and will be held during the month of October 1988.

2. REPORT DELEGATION ARGENTINA

* At the beginning of the field trip outside the pilot area the effects of watererosion processes were observed: gullies and loss of topsoil. The surface form of the area is undulating with slopes up to 6%. Nearer to the pilot area the slopes become of a lesser degree and do not pass 3%.

* The first polygon observed is part of the alluvial plain of the Don Cristobal creek. The analysis done in the office based upon existing information had resulted in describing this polygon as affected by gully formation in the area near the creekbed and the rest of the area affected by sedimentation (overwash as an "off site" effect of water-erosion of the higher parts surrounding this plain). After the field experience and the application of the GLASOD guidelines this area was considered without degradation and watererosion.

* Afterwards polygon 0053 was observed characterized by a slightly undulating plain with 1 (one) terrain component and vertic characteristics. The estimated slope is about 4%. The pattern observed in aerial photographs shows a clearly visible watererosion process with removal of topsoil. The evaluation in the office of this polygon located the processes within a major degree of severety than in the field and this made necessary an adaptation of the evaluation results specially in the cases of degree and area affected.
At the same time the qualifications of chemical and physical degradation (loss of nutrients and compaction) were taken out because the dominant process is watererosion and this implies chemical and physical deterioration. This polygon shows a mixed land use (pastureland- cropland) and two symbols were used to indicate this cause of degradation.

* The terrain analysis of polygon 0022, a slightly undulating plain with vertic characteristics, resulted in absence of erosion and degradation processes.

From the observations and discussions during the day the following conclusions can be drawn:

1. A clear tendency exists to magnify processes during the interpretation of existing information and the same occurs during field observation. Without doubt the main cause of this is the very detailed scale of observation that is quite different from the working scale of the project and therefore it is very important to take this into account when coding.

2. It is clear that the analysis of polygons at a larger scale will bring forward erosion processes that will be considered to be problems by people working in soil conservation.

3. It is important that the collegues from Uruguay and Brazil participate in defining the degradation aspects to produce a more adequate scale of values.

4. At the request of the collegues from Uruguay the discussion of loss of organic matter will be included because it is a common problem within their working area.

5. It is recommended to broaden the soil compaction concept because though it was observed within polygon 0083 it was nevertheless coded 0 (zero).

6. It is suggested to analyze the letter that Peters sent about the final report, polygon map and degradation map.

7. It is recommended to define more precisely the concepts of natural stability and the effects induced by man.

8. After the second day in the field and after analyzing the rest of the polygons it was agreed to reconsider the degradation norms the following way:
The coding class: 0 (zero) is not real because physical degradation processes were observed (mostly compaction) and this means that a polygon may show physical degradation without water erosion. This conclusion implies a recheck of the coding already done and a careful check of the values in the coding forms in the future .

3. REPORT DELEGATION URUGUAY

1. General aspects

* After the trip through three countries the conclusion is that it is necessary to define "Key" cases (f.i.: degrees zero to light in Entre Rios, moderate in Young and extreme in Melo and the sandy areas of Brazil.)

* The working scale always must be taken into account and this means that the evaluation of point cases (cropfield, meadow) is not enough and that a complete crosscheck of the whole polygon must be done to get a clear vision. This implies fieldwork.

* A correlation must exist between the definition of the polygons and the coding of degradation. For this reason the land use systems must be characterized with precision because although the SOTER Manual does not specify production systems this is an important element to be taken into account when coding degradation rate.

* In any case local experts will be consulted.

2. Punctual aspects (Manual)

Suggestions to enrich the definitions of the Manual:

Physical properties:
The inclusion is suggested in "compaction" of:
- Plow layer
- Loss of structural stability
- Degradation of soil structure.

* The quantification of sealing and crusting is suggested, if the information is available, according to the Manual of Soil Degradation of the FAO, 1980.
Special attention is paid to these aspects of physical properties because within the area visited during the field trip level lands exist with only physical degradation.

* Natural vegetation

The development of visual methods to determine the status and condition of the natural vegetation in each country is suggested to evaluate the degradation of natural fertility of the land (degree and rate) and if possible list indicator plants or plant communities in the report.

3. General conclusions

After the trip the necessity became obvious to adapt and check in

each country the fundamentally qualitative parts of the Manual. Therefore local trips are suggested and during the bilateral ones the attributes and classes can be observed within their real dimension. This means extra cost not foreseen in Montevideo. Therefore 50% of the amount agreed upon for December is asked for as soon as possible.
Once more the importance became clear of regional interchange in order to unify the standards and to enrich the experience executing the project.

4. REPORT DELEGATION BRAZIL

Synthesis of the observations and discussions during the Brazilian part following the route: Santana do Livramento- Rosario do Sul- Alegrete- Santiago- Sáo Borja- San Luis Gonzaga- Ijuí.
Between Livramento and Rosario two cases of degradation were observed, one considered of slight degree and slow rate and the other of moderate degree and slow rate the first one within a terrain component with a deeper solum than the second one within a different terrain component of the same polygon.

From Rosario to the East an area was observed with severe degradation and this case had been caused by natural processes but accelerated by human action.

Travelling to the West to Alegrete the watererosion observed was considered of moderate degree and slow rate.

Within the area with sandy soils between Alegrete and Sáo Francisco do Sul severe erosion problems of fast rate were studied with rills and gullies. These soils were considered the most severely eroded of the whole trip including Argentina and Uruguay.

Between Santiago and Sáo Borja a polygon with Litosols and a very slightly undulating relief was observed that were used for grazing with natural pastures. Erosion was considered slight with slow rate. Afterwards with an ever increasing intensity of land use in various areas of deeper soils derived from basaltic rocks moderate erosion was encountered, but nevertheless these soils have sustained an economically sound agricultural production system for more than 30 years.

The shallow stoney soils of high narural fertility on steep slopes observed between Sáo Miguel das'Missoés y Santo Angelo showed moderate erosion. In this case the rate was slow because after having been used by their owners for more than 30 years these soils are still used for agricultural production today.
In a wheat field a compact layer of about 10 cms. was found at a depth of 15 cms. (plow layer). The presence of this layer lowers the infiltration rate causing a surface run off eroding the soil surface. In order to get an idea of the thickness of the layer of lost soil material an undisturbed soil under natural vegetation was studied and the soil material at a depth of 25 cms. was similar to the material on the surface of the cultivated soil.
This permitted the conclusion that between 25 and 30 cms. of material had been eroded in these soils that have been used for many years under a rotation system of wheat and soybean.

In other areas comparing soils in natural conditions with cultivated soils the thickness of the layer of soil material lost by erosion due to land use was more or less 15 cms.

After observing these cases in the field the conclusion was reached that the agricultural use of the land at this moment is accelerating the erosion processes and that the excessive use of machineries is intensifying these processes even more.

5. FINAL MEETING

1. The first topic discussed was the qualitative evaluation of man induced soil degradation according to the guidelines of the Manual rewritten recently.
During the fieldwork it became evident that it is absolutely necessary to prepare descriptions as precise as possible of the different classes of degree and rate of soil degradation.
The predominant degradation type in the pilot area is water-erosion in combination with physical degradation.
Although quantification is difficult it is recommended to express the thickness of the layer of lost soil material as a percentage of the solum.
An exact description of the landuse (production systems) is of vital importance because of its direct relation to soil degradation.
In many situations the difference between natural and man induced erosion is difficult to determine because natural erosion can be accelerated by human action.
In many cases the vegetation can be used as an indicator of degradation.

2. In the case of soil degradation by watererosion the loss of organic matter is included automatically and will not be analyzed separately but in those situations where a significant loss of organic matter occurs without erosion it will be taken into account.

3. Based upon the experience obtained during the fieldwork the decision was taken to create a new class of land use to be included in the Manual under chapter 10-18 in order to be more precise (see 1) in this aspect. It concerns a rotation system of cropland and pastureland (Code AP: Rotated Cropland- Pastureland).

4. The correlation trips are of vital importance because only after having evaluated and analyzed degradation in Argentina, Uruguay and Brazil it became possible to establish their relation and to create a scale of the relative degree of the degradation problems in each of the three countries in particular and in the whole pilot area in general. In this way soil degradation by waterosion was considered minimal in Argentina, moderate in Uruguay and maximal in Brazil.

5. As soon as possible the coding forms that are ready will be sent to Wageningen to be used in the process of developing the digital database.

6. The final report to be prepared by each of the three national groups will consist of three fundamental parts:

A. General information of the area
B. Methodology
C. Legend and Description of Units

The description of the methodology used is very important in order to be able to understand how the basic imformation was obtained and how it was adapted and organized afterwards according to the guidelines of the Manual.
Polygon maps and degradation maps will be prepared. During the final correlation meeting the definitive decissions will be taken about the legend to be used and the order of importance of the different aspects of soil degradation observed in the pilot area.
The extension of the area affected by certain type, degree and rate of degradation is considered to be very important.
The possibility will be studied to indicate on the degradation map cases of severe degradation observed in the field with special symbols.
The idea to subdivide polygons in phases of degradation was abandoned.

7. The final correlation meeting will be held in Porto Alegre, Brazil, from 12 to 15 December 1988.
For the inauguration the following authorities will be invited: The President of EMBRAPA, the Rector of the UFRGS and the Secretary of Agriculture of Rio Grande do Sul.
The delegation of each of the three countries involved will consist of a minimum of three and a maximum of four representatives.
Although the presence of the authors of the Manual will be desirable it will not be of essential importance.
The Brazilian delegation asked for financial support for the trip to Porto Alegre, the hotel and other expenses during the meeting because most of them are not residents of that city.

8. The forewarding of half of the payment foreseen for December will be asked because of the costof the correlation trips that will be held between the three national groups during the months of September and October.

6. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

1. In spite of the problems of the small working scale and the qualitative approach used for the evaluation of soil degradation the applicability of chapters 14 to 16 is evident.

2. Once more the extraordinary importance of fieldtrips became clear in order to visualize and unify the norms of the Manual.

3. Field work is necessary in order to characterize with precision the polygons and the degradation aspects .

4. The participation of experts of each country is essential for completing the detailed description of the polygons. At the same time the help of experts of the different countries was very important for perfecting and actualizing the data.

Recommendations

1. Adjust the descriptions and the application of the Manual during the bilateral correlation trips.

2. Broaden the information to improve the definitions and to create a collection of "Key" examples of degradation classes for use on a regional level.

3. Create a collection of photographs (photo key) of examples of degradation classified according to the Manual.

4. Enrich the definition of compaction by including plow layer and loss of structural stability.

5. Study the feasibility to indicate local cases of severe erosion on the degradation map.

6. Use vegetation as an indicator of processes and degrees of degradation and prepare a list of indicator especies.

7. Express the layer of material lost by erosion in terms of a percentage of the whole solum and not only of the surface layer.

8. Use as most important criterion for the cartography of degradation the area affected (extension).

9. Revise in the Manual the definition of "Marsh" in order to be able to include those situations where the inundated soil does not present a high organic matter content.

ANNEX 1.

PROGRAMME OF THE SECOND CORRELATION FIELD TRIP OF THE FIRST PILOT AREA OF THE GLASOD-SOTER PROJECT, 25 AUGUST- 1 SEPTEMBER 1988.

Wednesday	24 August	Arrival of participants in Buenos Aires. Overnight stay.
Thursday	25 August	Visit to Castelar. First meeting. Air trip to Paraná. Overnight stay Santa Fe.
Friday	26 August	Field trip. Overnight stay Villaguay.
Saturday	27 August	Field trip. Overnight stay Paisandú, Uruguay.
Sunday	28 August	Field trip. Overnight stay Melo.
Monday	29 August	Field trip. Overnight stay Santana do Livramento, Brazil.
Tuesday	30 August	Field trip. Overnight stay Santiago.
Wednesday	31 August	Field trip. Overnight stay Ijuí.
Thursday	1 September	Final meeting Ijuí.
Friday	2 September	Departure of participants.

ANNEX 2.
ANEXOS 2.

LIST OF PARTICIPANTS. Correlation trip GLASOD- SOTER from 25 August to 1 September 1988.

LISTA DE PARTICIPANTES. Gira de Correlación GLASOD- SOTER del 25 de Agosto al 1 de Septiembre 1988.

Whole trip:
Toda la gira:

Delegation of Argentina
Delegación de Argentina

Juan C. Salazar — INTA
1712 Castelar- Argentina

Carlos Irurtia — INTA
1712 Castelar- Argentina

Delegation of Brazil
Delegación de Brasil

Jorge Olmos — SNLCS/EMBRAPA
Rua Jardim Botanico 1024- Rio de Janeiro Brasil

Pedro J. Fasolo — SNLCS/EMBRAPA
Rua Arthur Loyola 96- Curitiba-PR- Brasil

Delegation of Uruguay
Delegación de Uruguay

Juan H. Molfino — Dirección de Suelos
Avda Garzón 456- Montevideo- Uruguay

Cesar Alvarez — Dirección de Suelos
Avda Garzón 456- Montevideo- Uruguay

Delegation of GLASOD- SOTER
Delegación de GLASOD- SOTER

Wilhelmus L. Peters (coordinador) — Universidad del Zulia
Facultad de Agronomia
Apdo 526- 4001-A Maracaibo- Venezuela

Argentinian Part (August, 25-27)
Parte Argentina (25 al 27 de Agosto)

Rosa Maria Di Giacomo	INTA 1712 Castelar- Argentina
Raul Fuentes	Dirección Suelos y Agua Paraná Argentina
Hugo Tassi	Dpto de Suelos EEA-INTA Paraná- Argentina
Egidio Scotta	Dpto de suelos EEA-INTA Paraná- Argentina
Carlos Moresco	Dpto de Suelos EEA-INTA Paraná- Argentins

Uruguayian Part (August, 28-29)
Parte Uruguay (28 al 29 de Agosto)

Ana Terzaghi (28-8) 19 de Abril 576- Paysandú- Uruguay

Juan C. Sganga (28-8)	Dirección de Suelos Av.Garzón 456- Montevideo- Uruguay
Leonel Aguirre (29-8)	Dirección de Suelos Av. Garzón 456 Montevideo- Uruguay
Alejandro Borches (29-8)	Dirección de Suelos Av. Garzón 456- Montevideo- Uruguay
Eduardo Di Landro	Dirección de Suelos Av. Garzón 456- Montevideo- Uruguay

Brazilian Part (August, 30-31)
Parte Brasil (30 al 31 de Agosto)

Egon Klamt	Dpto do Solos- UFRGS Av. Bento Goncalves 7712- 90.001 Porto Alegre- RS- Brasil
Reinaldo Pötter	SNLCS/EMBRAPA Rua Arthur Loyola 96- Curitiba-PR- Brasil