CONSIDERATIONS REGARDING THE DEEP EROSION IN THE HYDROGRAPHIC BASIN OF THE RIVER BEGA

CONSIDERAȚII PRIVIND EROZIUNEA DE ADÂNCIME ÎN BAZINUL HIDROGRAFIC BEGA

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Abstract: *Erosion in all her manifestation forms and also the land slip presents a great importance due to his distribution area but also because of the damages caused to various economical activities especially the agriculture. The paper's objective is the study of torrential and degradation processes, their evolution and efficiency regarding the hydrographic basins morph dynamic. The hydrologic and antierosional arrangement of the hydrographic basins is an important component for the environment restoration. Establishing the measures and arrangements works requires a deeper knowledge of the nature and amplitude erosional and degradation processes, their tendencies of evolution and consequences, functional efficiencies of various usage categories and measures of prevention or interception.*

Rezumat : Eroziunea în toate formele de manifestare, dar şi alunecările de teren prezintă o mare importanţă datorită arealului de răspândire, dar şi a pagubelor pe care le produce sectoarelor economice, în special agriculturii. Obiectivul lucrării îl constituie studiul proceselor torenţiale şi de degradare, evoluţia şi eficienţa lor în raport cu morfodinamica bazinelor hidrografice. Amenajarea hidrologică şi antierozională a bazinelor hidrografice este o componentă importantă pentru refacerea mediului înconjurător. Stabilirea măsurilor şi lucrărilor de amenajare hidrologică şi antierozională a bazinelor hidrografice torenţiale necesită cunoaşterea cât mai aprofundată a naturii şi amplorii proceselor torenţiale şi de degradare, a tendinţei lor de evoluţie şi consecinţele acestora, eficienţa funcţională a diferitelor categorii de folosinţă şi măsurile de prevenire sau de stăvilire.

Key words*: land degradation, hydrographic basin, deep erosion;*
Cuvinte cheie: *degradarea terenurilor, bazin hidrografic, eroziune de adâncime*

INTRODUCTION

The litho logy diversity, complexity of the geological structure and their tectonically power, the new and actual moves of the earth shell, the majority of the relief sculptural forms and their obvious energy, aggressive manifestations of meteorological phenomenon and the antropisation of the geographic landscape represents the cause of the actual torrential and degradations processes.

In the agrarian fields, especially inside the erosion small basins, the gully erosion covers a significant surface, practically in the territory are found all the types of gullies classified according to the annual rhythm of erosion and the evolution stages from rills to very active gullies:

- small rills (under 2 m deep);
- deep rills (2-3 m deep);
- small gullies (3-5 m deep), narrow (under 5 m), stabilized and active;
- medium gullies (5-10 m deep) narrow (sub 5m);
- gullies medium wide (over 5m open);
- deep gullies (over 10 m deep) stabilized and active.

Most part of this gully erosion forms and especially the advanced one, are partially timbered in their superior third.

Land slips

The surface of terrains affected by active land slips and semi stabilized with reactivation potential is characteristics of sectors of mountainside described as small erosion and swale basins. They are usually grouped in area with coastal springs or areas where they appear as caves in floors with 1.5-2.0 m deep with small conveyance deep. These are manifested in the area with acclivous mountainsides from the torrential micro basins.

From the causes that favoured their spreading we specify:

a) the gradient (gravitational slips);
b) deforestations;
c) area and torrential erosion;
d) excessive humectation of portions from the flank;
e) rocks diversity that builds the flank and their disposer sometimes layered;
f) climatic factors (slow rains that last longer in autumn, the slow melt of snow, easily excessive pluviometric regime);
g) deep and wide cracks that appear in vertosoils in the dry period of the year.

From the causes that led to the land slips previously specified the determinant factor was overstepping the equilibrium threshold (the stability factor) favoured by a few natural causes and/or antropical causes that accentuated the accumulation of excess water (at local level).

MATERIAL AND METHOD

The erosion state of the hydrographic lattice results from the torrentially criteria depending by the liquid flow with the insurance of 1% and the medium annual specified solid flow, thereby:

- gully excessive torrential with $Q_{1\%}$ = 320 l/s and E_{med} = 32 m^3/ha/year;
- medium torrential gully with $Q_{1\%}$ = 30-320 l/s and E_{med} = 4-32 m^3/ha/year;
- gully untorrential with $Q_{1\%}$ = <40 l/s and E_{med} = <4 m^3/ha/year.

The erosion state of the hydrographic lattice depends by the size of the reception surface, the morphometric criteria based on the gully dimension, the position towards the highest flank line, lithology and the terrain layer, objectives in danger downstream etc.

The affectation degree of the land is expressed by indicators (the freedom degree of the gully evolution), that accentuates and allows the prognosis of this deep erosion forms evolution:

» the backing degree (m/year);
» the growing of the surface occupied by the gully (ha/year);
» the growing of the active surface (ha/ year);
» the volume growth (m^3/year).

To determine the freedom degree of the gully evolution mathematical or empiric methods are used initially realized on local or regional level and then by extension adapted for other hydrographic basins. In other situation direct measurements of complex parameters, successive land surveys or establishing semi empirical calculus relations are used.

RESULTS AND DISCUSSIONS

Considering that are studied the deep erosion effects exclusively from the agrarian fields it was made a differentiation of the deep erosion forms from the sylvan and agrarian fields.

The sylvan domain participates at the total erosion with 5.4% which constitutes a small part from the total timbered surface of our country. This is due to the growing of the concentrations times of the flows in the sylvan area with positives effects for the kinetic energy of water decreasing that trains alluviums.

On the entire country the total erosion is 126 mil. t/year and the alluvium effluence constitute 44.6 mil. t/year, which represents 35%.

From the erosion forms, 84.5% comes from the agrarian landed stock (106.8 mil t/year), where the deep erosion participates with cu 29.8 mil. t/year.

Table 1

Erosion forms manifested on the territory of Romania

The process name	Total erosion		The effluence coefficient	The alluvium effluence	
	mil. t/year	%		mil.t/year	%
Surface erosion	61.8	49.0	0.26	16.1	36.2
Deep erosion	***29.8***	***23.6***	***0.46***	***13.8***	***31.0***
Land slips	15.0	12.0	0.35	5.2	11.6
Erosion from the sylvan stock	6.8	5.4	0.40	2.7	5.9
Bank erosion	12.6	10.0	0.54	6.8	15.3
Total	126.0	100.0	0.35	44.6	100.0

The alluvial productions at the hydrographic basin of the river Bega on hydrographic sub basins is shown in the following table:

CONCLUSIONS

The consequences of the terrain degradation from landfall for the agrarian landed stock are multiple. One of the consequences is the terrain degradation in a manner that it needs the employment change.

The severest change of employment is the one when agrarian terrains became sterile lands.

Other important consequence of the terrain degradation is the terrains configurations changes, the local deterioration of important portions of agrarian terrains that determinates heavily difficulties in rational exploitations of these fields.

Other less obvious consequence but not least important is the one that derives from the creasing and falling of the shores of the evacuation of the superficial drainage. The land masses that came into the hydrographic lattice constitute a very important alluviums source that can led to severe clogging.

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