DEGRADATION OF WATER QUALITY IN CUIBUL VULTURILOR
RESERVOIR AS EFFECT OF SOIL EROSION

G. Purnaveli1, D. Dana2, E. Filiche1, G. Petrovici1, A. M. Dodociolu4,
R. Mocanu2, I. Secleanu2, L. Anton2,
1Research and Development Center for Soil Erosion Control, Perieli, 731240, Romania, e-mail: purnaveli@gmail.com;
2National Research-Development Institute for Soil Science, Agrochemistry and Environment Protection, 61 Mărai, 011464, Bucharest, Romania e-mail: danadani@yahoo.com;
3University of Craiova, 17 Libertății, 200386, Craiova, Romania, e-mail: mocanuromulus@yahoo.com

ABSTRACT
Potential surface water resources for Romania are appreciated by ANM Bucharest as follows: the rivers and inland lakes-39.6 million m³/year, the Danube river 53.3 million m³/year. From these resources, only 11 million m³/year are from reservoirs.
For a period of 14 years, 1992-2006, the Research and Development Center for Soil Erosion Control, Perieiu monitored the Ciuful Vulturar reservoir in order to ensure a part of the water necessary for the population of Brăila city.
Soil erosion has a great impact on this reservoir through the processes of sedimentation and degradation of the water quality. The degradation of the water quality is caused by the decrease of water depth and by the natural or artificial addition of fertilizers.

RESEARCH METHODS
Sedimentation of this reservoir, at NRI (normal retention level) under the impact of the erosion process, was determined by bathymetric and topographic measurements of cross profiles, in 1992. These profiles are re-made at 3 or 4 years. The cross profiles were spaced off by 200 to 700 m. Along the length of these profiles bathymetric measurements were made every 30 m on a floating platform mechanically powered.
The dynamics of water quality degradation, as effect of the nutrient losses, was established by monitoring the concentration of nutrients at the entrance points of the Ciuful Vulturar reservoir (frontal entrance-Tutova river,186 samples; lateral entrance-laura, Roșcani and Cârjaonl rivers, 474 samples and intake area-188 samples).
Water samples were taken manually and with an automatic water sampler (ISCO), during normal discharge flow and after hydrologic events.
Determinations of nitrogen, phosphorus, and potassium contents have been made according to the Romanian standard.

RESULTS
The obtained results are presented in Figures 1-8.

CONCLUSIONS
1) Due to sedimentation process, a regression of the reservoir length was observed, decrease being from 5686 m to 4789 m;
2) Thickness of sediment deposited along the accumulation and sediments distribution tended to keep the same accumulation kind similar to those occurring in the Brăila hilly plateau;
3) The thickness of sediment have maximum values near the dam decreasing through to tail reservoir.
4) Concerning the dynamics of water quality:
   - between June-July (coinciding with critical erosion season) the concentrations of elements studied are the highest;
   - the largest accumulation of elements is recorded on the lateral entrance, 2-3 times hair than the frontal entrance;
   - due to dilution phenomena of accumulation, the water quality is not affected in the plugs area.

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