REDUCING HYDRIC EROSION IN SOME AREAS OF OLT COUNTY TROUGH EXEMPLES OF ANTIEROSIONAL MODELS

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ABSTRACT

Soil degradation by hydric soil erosion cause the destroy of fertile topsoil of the soil surface and the impossibility of its recovery.

Man, through misuse of land has led to a reduction of water retention in the soil, it evaporates or drains very quickly to surface clogging rivers and causing flooding, because the vegetation cover is missing as to cushion the effects of strong rainfall, this erosion is due to pollution by pesticides and chemical fertilizers, acid rain, massive cutting of forests, poor soil work which degrade its structure over time.

In this context it is necessary the realization of a work aimed to analyse hydric soil erosion, damages bring by this and to provide appropriate measures to control and combat these very serious erosion phenomena that develop within agriculture area of Olt County.

INTRODUCTION

Olt County is characterized by the symmetry of the relief related to Olt river bed and the simple geological structures of the soil.

As noted, Olt County belongs in terms geomorphological of the two major units of relief: Getic Plateau, which occupies only a third of the extent of the county and the Romanian Plain incumbent two thirds of the county. In the two large units, which come into contact without sharp bumps, a wide range of landforms meet, grouped into two major categories: the mezzo- relief represented through the valleys and inter-and micro-relief which meets throughout the forms of mezzo-relief.

Regarding the current dynamics of the landscape, embodied primarily in soil erosion, it appears that it is more active and expanded with the transition from plain to plateau in relation to increasing the relief energy, with increasing of friable rocks and rainfalls.

Agricultural area in the Olt county is 437.165ha of which 390.569 ha arable and 31.022 ha natural pastures.

The land affected by erosion covers almost 15,500 hectares of area and those affected by depth erosion by eflation occupies an area of 6200 ha. These lands are located in the mobile sand area: Ianca, Potelu, Stefan cel Mare.

Land area affected by erosion caused by water are common in the northern part of Olt county, especially on the slopes bordering the valleys of major rivers. Areas affected by excess moisture are spread sporadically throughout the county, amounting to about 3550 ha.

MATERIAL AND METHOD

There were used the following research methods: 1) The method of multidirectional investigations in the literature, 2) To determine on the field and mapping of areas affected by erosion considering the following pedogenetic factors: topography, vegetation, rock or parent material and climate, 3) Apply the universal law of universal soil loss equation, 4) Computer simulation method where we have created models of erosion and soil loss, depending on rain intensity and slope size, and the degree of coverage of land with vegetation in Olt County, 5) The ecological reconstruction of erosion affected by hydric erosion, which should be considered some general and specific measures applied

to soils in the county of Olt.

Soil erosion can be controlled only by covering the soil with vegetation to minimize the kinetic energy of rain, bringing it approximately to the value of "0" and at the same time reduce water flow on slopes, forcing water to enter deeper into the ground to restore water reserves in aquifers. In the first model we used P factor values corresponding for soil covered with annual and perennial grasses, resulting the following figure.

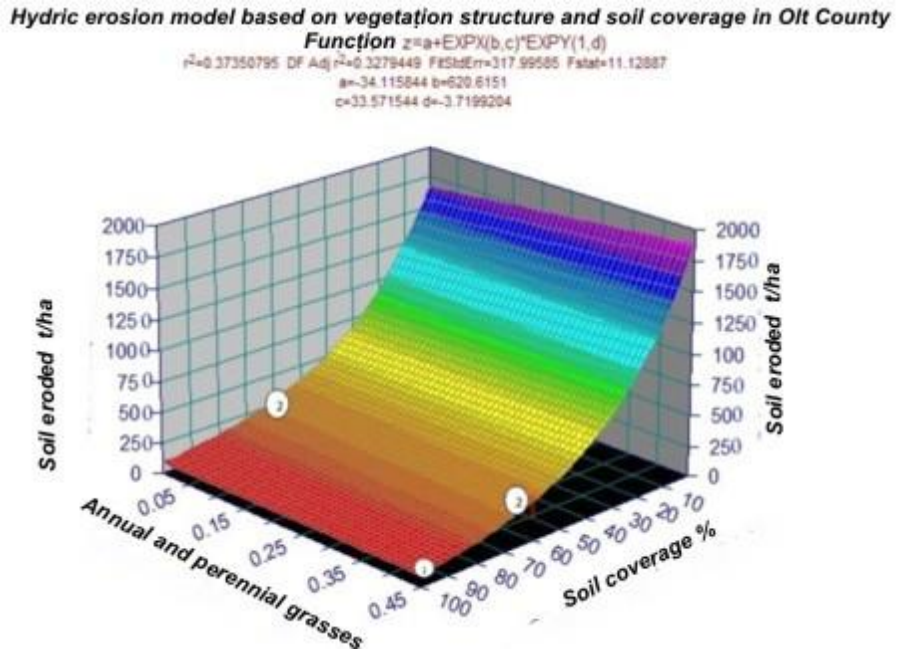

Figure 1. Hydric erosion model based on vegetation structure (annual and perennial grasses) and soil coverage in Olt County.

From Figure 1 we observed that if a soil coverage was realised with 95% consisting of annual and perennial grasses, soil erosion could be 100% combated (point one on the graph) and the situation became alarming at a rate of 50% coverage when the quantity of eroded soil was 250 t / ha (second point on the graph). In the second model of combating the soil erosion we used values of P factor corresponding to dicotyledonous soil cover. We saw that at a soil coverage of 100%, the soil was not subject to erosion, and to a high of 60% coverage 500 t/ha were lost.

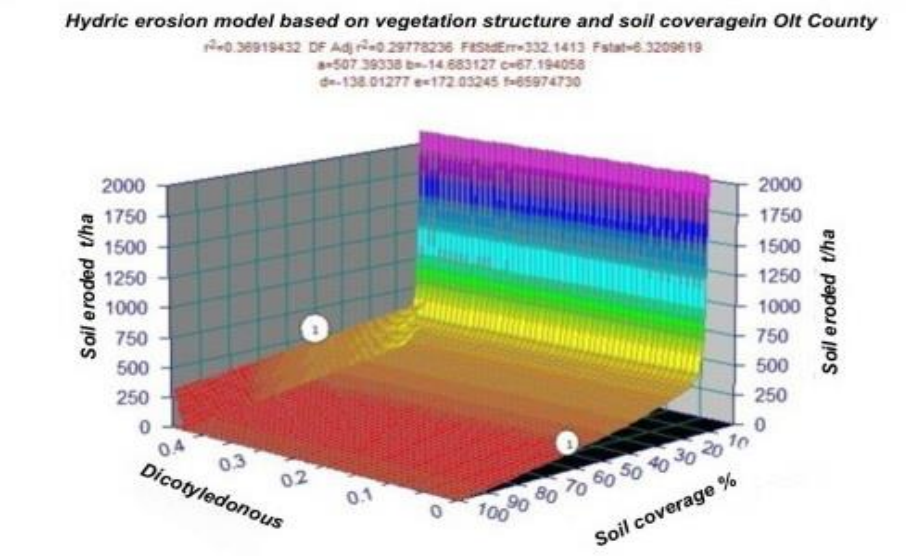

Figure 2 Hydric erosion model based on vegetation structure and soil coverage in Olt County.

Effectiveness of erosion model presented in Figure 3 depending on the slope and coverage of ground vegetation consists of annual and perennial dicotyledonous, reacted differently depending on: a) the size of the slope, b) rain intensity, c) degree of the vegetation cover.

Thus, from the following figure, where we took into account the slope and vegetation coverage (annual and perennial grasses) shows that the slopes up to 40% and a coverage of 100%, about 7 t / ha were washed. And the highest amount of eroded soil was found under a bare soil and a slope over 40%. Note that this model was made taking into account rains with a value of 90 mm / hour.

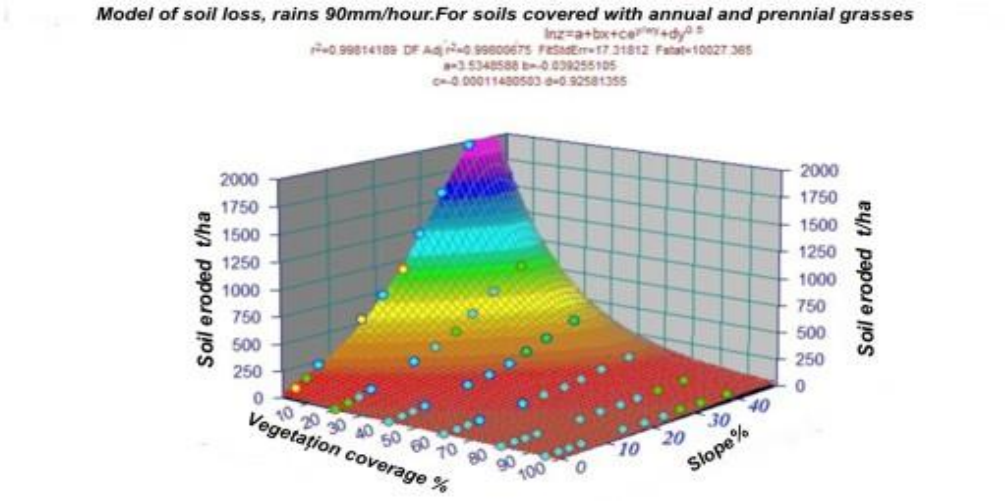

Figure 3. Model of soil loss, rains 90mm/hour. For soils covered with annual and perennial grasses.

Comparing the two models showed that best results against erosion were given by the model of planting annual and perennial grasses.

RESULTS

➢ The special models were calculated for the recognition and control of erosion, including determinațiile in relation to soil sealing.So I made a correlation between the slope of the terrain and soil erodes the amount for small showers of up to 10 mm and a length of 1 hour and slope length up to 250 m where it is observed that erodes the soil which grows from,, 0 "up to 260 tons.

➢ At the slopes of over 45% and a low intensity rainfall amount of soil erodes it becomes alarming, given the amount of fallen water is 80-90 mm in an hour what soil drain eroded surfaces can reach up to 4500 tons per hectare.

➢ Soil erosion can only combat by covering the ground with vegetation, so as to reduce the kinetic energy of the approaching rains up to, 0, "and at the same time to reduce the flow of water on mountains, forcing the water to go into the depth of the soil to replenish the water supply from underground blades.

➢ So I made a model of the process of erosion of soil water, using all the universal equation of soil losses by replacing P with factor values specified for each crop. In the first model we used the values corresponding to the P factor to cover the ground with annual and perennial grasses, it is observed that if you carry out a soil coverage with a 95% percentage of annual and perennial grasses, soil erosion is combated by 100%, and the situation becomes alarming from a coverage rate of 50% when the soil erodes the amount is 250 tons.In the second model to combat soil erosion have used appropriate ground cover factoruluiP values with dicotyledonous plants.

➢ We observe that the degree of coverage of 100% of the ground soil is no longer subjected to the process of erosion, and at a level of 60% coverage is lost 500 t./1ha

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