

THE DYNAMIC TEXTURE AND HUMUS CONTENT IN ARGIC CHERNOZEM STATIONARY-SITE EROSION CONTROL ALDENI-BUZAU

Marian MUSAT¹, Alexandra RADU¹, Anca-Luiza STANILA², Lavinia PARVAN³

e-mail: dr_marianmusat@yahoo.com

Abstract

The hilly area of Buzau county is very affected by degradation processes predominantly anthropogenic and natural erosion. The surface erosion on agricultural land lost annually to 13.5 t/ha, double the limit. Advanced degradation of the soil cover in the area, led to the award of the name "bad lands Buzau".

Key words:

The hydrographic basin Road Valley is located on the right side of the Slanic - Buzau Valley previously called the degree of degradation due to erosion, was chosen as the standard for surface erosion intensity. This stationary erosion control works Aldeni-Buzau, established in 1967 by Professor Stephen V., Associate Professor Ene Al. and Eng Oblocinschi Al.

Soil type is argic chernozem, the development has been pursued in parallel with the processes of erosion, throughout the research programs.

The paper presents the data obtained during 1998-2011 on some soil properties (texture and humus content) and the average amount of soil washed from the plots required erosion control works inside the experimental field.

They contribute to the finalization of strategies aimed at reducing economic and social effects of the area through the preservation and improvement of soil cover in accordance with the principles of sustainable development.

MATERIAL AND METHOD

The research was conducted in the river valley to the road where soil erosion control works stationary Aldeni-Buzau, located on the left side of the basin.

In the stationary furnished 12 control plots, located on arable land into two batteries: the first contains six plots, each 100 square meters (25m/4m) and a slope of 20%, the second contains six plots, each surface 40 square meters (10m/4m) and a slope of 15%. Control plots are provided downstream devices to collect runoff and soil washing quantities (*figure 1*).

Distribution crop plots was done properly control a three-year rotation with jumper field (perennial grasses) recommended hilly land with a slope of up to 20%. Placed in rotation crops are: corn, winter wheat crops and perennial grasses, the share of each crop is 25%. Note that some plots were applied erosion soil protection systems (crops sown in strips and grass strips).

Rotates for data comparison, one of the field plots was maintained. During investigations were pursued runoff caused by torrential rainfall during the growing season, the amount of soil washed from the perceive and their influence on some soil properties. From each plot were collected soil samples (average samples) according to the "Methodology development soil studies" ICPA Bucharest, 1987, to monitor the characteristics of the soil.

The paper presents the data obtained during 1998-2011 on plots located on land with a slope of 15% regarding: the total water fallen during the growing season, temperature, amount of soil washed clay fraction natural variation and content humus, the depth 0-40 cm values were processed as annual averages recorded during the study.

¹ University of Agronomic Sciences and Veterinary Medicine of Bucharest

² National Institute of Research and Development of Soil Science, Agrochemistry and Environmental Protection of Bucharest

³ Spiru Haret, University of Bucharest

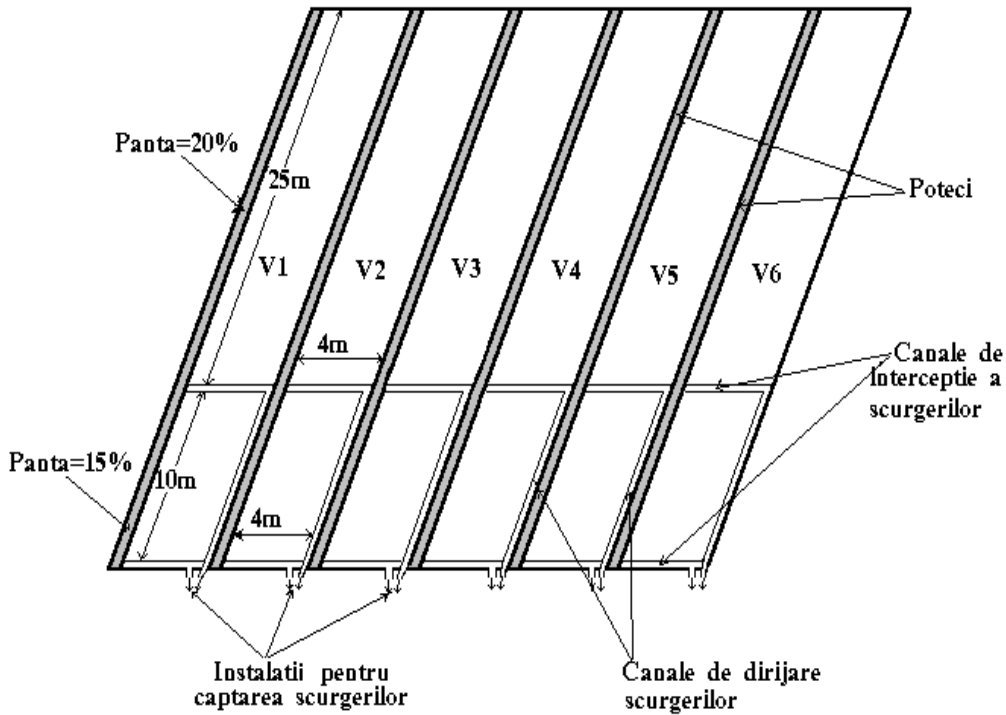


Figure 1 Plots for erosion control - location sketch Aldeni-stationary BUZĂU

RESULTS AND DISCUSSION

Total Precipitation fallen from April to September during 1989-2011 (figure 2) is characterized by differences in values of 552 litres/m². The rainfall year was 2005, when there were 708.88 and driest litres/m² 2008 156.8 litres/m² register.

Mean monthly rainfall recorded at the growing season during 1998-2011 (figure 3) increase progressively until July litres/m² value of

85.5, after which the trend is decreasing. It stands close to the average values in June and August, 72 and 73.2 litres/m². Quantity lowest monthly average rainfall was recorded in April 35 litres/m².

Monthly average temperatures (Fig. 4) were similar to the trend of monthly average rainfall. I mean, the warmest month was July with 21°C, followed by August with values very close to 20.6°C. The coldest month was April with an average of 9.8°C.

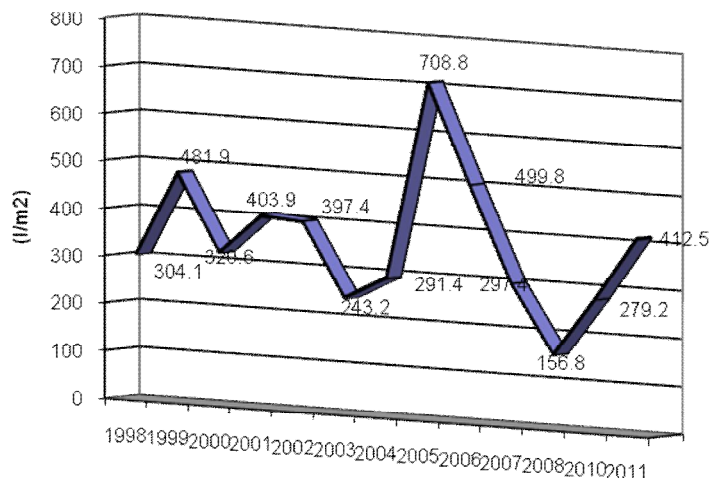


Figure 2 Dynamics of total rainfall during the growing season 1998-2011, recorded at stationary

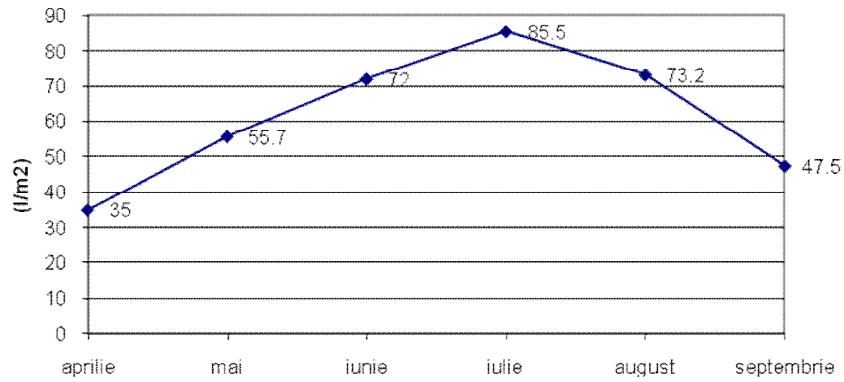


Figure 3. Dynamics of average monthly rainfall for the period 1998-2011, recorded at stationary

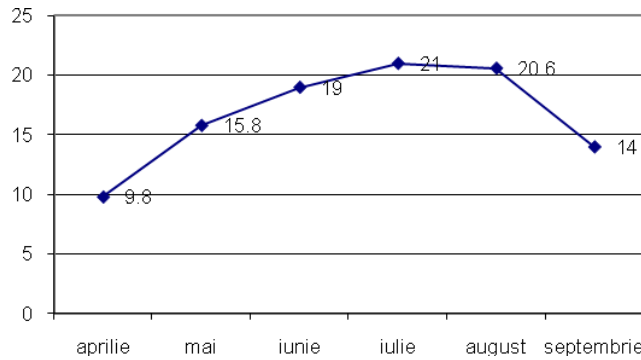


Fig.4. Dynamics of average monthly air temperatures during 1998-2011, recorded at stationary

The average weight of soil washing 1998-2001 in control plots is 9.9 t/ha and year. During this period, the control plots was applied to a three-year crop rotation, the sole V2 and V5 were kept fallow alternating two series of three years, while sole V3 and V4 only once and received of sola jumper (perennial grasses).

Technical plants were sown in strips of two rows, and the corn crop has been applied anti-

erosion system with grass strips.

Trend humus content (*figure 5*) and natural clay (*figure 6*) is generally decreasing, with smaller differences for parcels V3, V4 and V2 differences for parcels, V5 and V6. Erosion leads especially colloidal particles of humus and clay on slopes that are carried as silt and soil clogs or adjacent water courses.

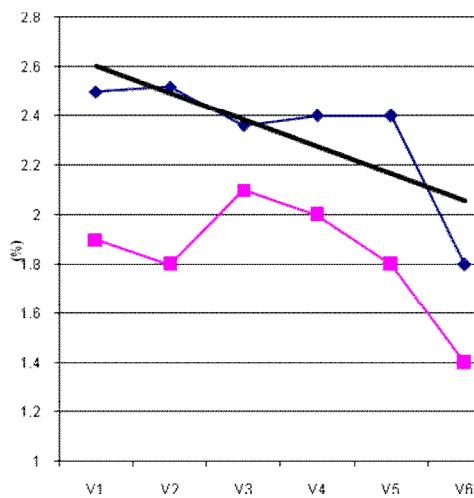


Figure 5 Changes in humus content of the soil in plots of mind during 1998-2011, recorded at stationary

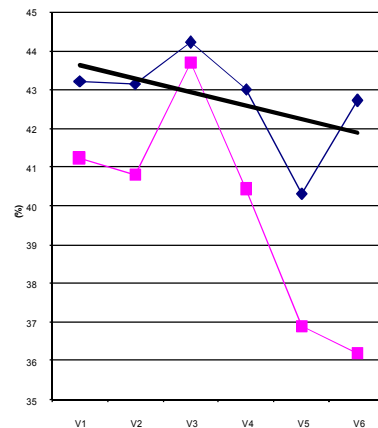


Figure 6 Changes in physical clay content of the soil in plots of mind during 1998-2011, recorded at stationary

In *figure 7* we can see the influence of erosion on natural clay content of the soil. The smallest difference in the percentage of natural clay was recorded at 0.5% plot V3, V4 followed by a plot of 0.6%, where the amount of soil washing was about 7 tons/ha. Largest decrease in the percentage of natural clay V6 plot occurred in 5.8%.

Humus content of the soil decreases by 0.2% to 0,4% at V3 and V4 (*figure 8*), the largest percentage decrease was recorded in plots that V1 and V5 of 0.6%.

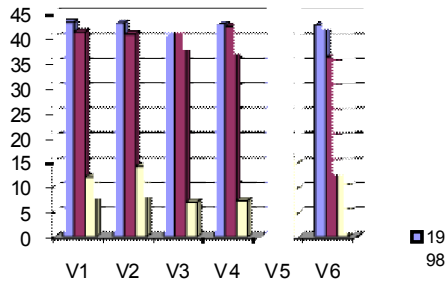


Figure 7 The influence of the erosion of the natural clay content (%) Ground the control plots with a slope of 15% during 1998-2011, recorded at stationary

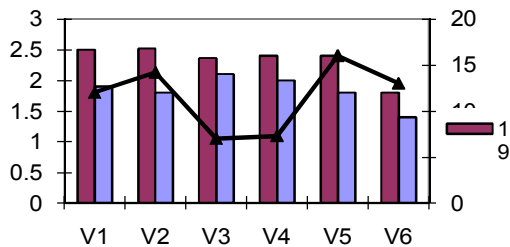


Figure 8 The influence of the amount of mold erosion (%) Ground the control plots with a slope of 15% during 1998-2011, recorded at stationary

Average annual erosion was in the range 7-16 t/ha and year. It is noted values recorded in plots 7t/ha V3 and V4 7.3 t / ha, values close to the normal value of 6 t/ha and year, due to the role of

filtering technologies implemented erosion and perennial grasses.

The soil left unprotected for a period (field) in a production cycle is affected by soil erosion compared to permanently covered with vegetation. An example of this is the plot V6 which have an average 16 t/ha washed with 10 t/ha to normal.

CONCLUSIONS

Total rainfall from April to September fallen during 1998-2011 (Figure 2) is characterized by differences in values of 552 litres/m²;

Mean monthly rainfall for the period 1998-2011 recorded at stationary gradually increase until July litres/m² value of 85.5, after which the trend is decreasing;

The warmest month was July with 21°C coldest April with an average of 9.8°C;

Trends in humus and clay content is generally decreasing physical with smaller differences for parcels V3, V4 and V2 differences for parcels, V5 and V6;

Average annual erosion was in the range 7-16 t/ha and year;

Role filtering technologies applied and perennial grasses erosion is evidenced by average erosion values close to normal during 1998-2011 6 t/ha and year;

The soil left unprotected for a period (field) in a production cycle is most affected by erosion, more physical and more clay than the soil humus permanently covered by vegetation.

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