

STUDY ON LAND AFFECTED BY EROSION IN GORJ COUNTY

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Abstract

In Gorj County, water erosion is the most common form of soil degradation, affecting an area of 139,027.95 ha, i.e. approximately 57.04% of the total agricultural land. Of these, 134,940.26 ha are affected by surface erosion, and 4,087.69 ha by depth erosion. The diversity of the relief, anthropogenic productive activities and climate change contribute to the extension of these erosion processes, significantly affecting agricultural productivity on the affected areas. Soil erosion in Gorj is thus a major problem for the agricultural sustainability of the region. In the internal hollow, more precisely in the secondary hollows of Tismana, Peștișani, Crasna, Novaci, Polovragi, there are soils evolved on fluvial gravels with a strong acidic character, brought from the mountains. These soils contain a high percentage of skeletal material, which acts as a limiting factor by reducing the edaphic volume of the soil. In these areas, the land has slopes greater than 5%, and surface erosion occurs over the following areas: 7,793.52 hectares in Padeș, 5,733.88 hectares in Crasna, 4,194.32 hectares in Tismana, 3,824.80 hectares in Novaci, and 1,971.58 hectares in Polovragi.

Key words: surface erosion, depth erosion, soil, slope, hollow.

INTRODUCTION

The new EU Soils Strategy underlines the importance of healthy soils in achieving climate and biodiversity goals, with the aim of protecting the soil, reducing erosion, increasing organic matter, restoring degraded soils in the context of identified threats, such as erosion, flooding and loss of soil biodiversity (Mușat et al., 2021; EC Law, 2021). Among the processes that degrade soil quality, erosion is a particularly important factor, both in terms of the damage it causes and the affected areas (Bălan et al., 2024).

Depending on the intensity with which it manifests itself, but also on the consequences it leaves on the soil, erosion can be surface or in depth.

Erosion causes a significant decrease in soil fertility, as this process removes fertile layers from the upper horizons, which contain a significant amount of organic matter and nutrients (Bălan et al., 2024).

Also, runoff generated by erosion reduces crop yields, disrupts the soil water regime (Corcheș, 2023; Nițu et al., 2023) and constitutes a major mechanism for the transport of chemical pollutants in the river network.

Gorj County, located in south-western part of Romania, in the north of Oltenia and on the

middle course of the Jiu River, is distinguished by a remarkable geographical diversity, which includes mountainous, submontane, hilly and plain areas. This variability of the landscape, correlated with the climatic conditions specific to the region, makes the soils in the county susceptible to erosion, a natural process of degradation that significantly affects the quality and fertility of agricultural land.

Soil erosion is one of the most serious environmental and agricultural problems in Gorj County, having a significant impact on natural resources, biodiversity and the local economy. Natural factors, such as heavy rainfall, steep slopes and lack of adequate vegetation, contribute to the acceleration of this phenomenon (Calina et al., 2021). At the same time, human activities, such as deforestation, mining and land misuse, amplify the effects of erosion, endangering large areas of agricultural land and forests.

In Gorj County, erosion is the main form of soil degradation, affecting approximately 139,027.95 ha, which represents 57.04% of the total agricultural area. This phenomenon contributes significantly to the reduction of agricultural production, in some cases even to the halving of crop yields, and in this county,

agriculture and animal husbandry are significant sectors in the local economy, primarily for sustaining the standard of living of the local population. Introducing good soil protection plants in the crop, with an appropriate productive capacity regardless of environmental conditions, has significant consequences on soil stability (Iancu et al., 2009). At the same time, the organic and mineral fertilizers used annually on soils affected by erosion, which have damaged physical and chemical properties, exert a positive influence on both the plants grown on these lands and on the soils (Iancu et al., 2009). It can therefore be said, in this regard, that the genotype-environment relationship can be considered an important indicator in setting limits for the use of agro-technical factors, aiming to increase production and maintaining soil quality (Iancu et al., 2021).

Gorj County faces a variety of forms of soil degradation, which emphasizes the importance of sustainable management of natural resources. The impact of soil erosion is significant, both on local ecosystems and on human communities. The loss of fertile soil reduces agricultural productivity, destabilizes ecosystems, and can lead to landslides, affecting infrastructure and housing in vulnerable areas (Kalmar et al., 2022). At the same time, excessive sedimentation of watercourses can have negative effects on the quality of water resources and biodiversity.

In this context, Gorj County is a relevant example for understanding the challenges related to sustainable soil management in regions affected by erosion. This phenomenon requires the implementation of effective prevention and control measures to limit soil degradation (Calina et al., 2021; Bouma et al., 2017; Davidson, 2000; Rhodes, 2017; Smith, 2012; Várallyay, 2010) and to rehabilitate them, by changing production technologies, to improve physical, chemical and biological properties, as well as maintaining a healthy environment (Popescu & Bălan; 2024; Zafiu & Mihalache, 2021).

MATERIALS AND METHODS

This study was carried out in Gorj County, a county that, due to the specificity of its geographical location, benefits from natural

conditions that have favoured the manifestation of the water erosion process and it is aimed to identify the surfaces affected by slow surface geological erosion, as well as the ones affected by depth erosion.

For this study, field and laboratory research was carried out. During the research, the raw results obtained in the field and laboratory phases were processed and interpreted in the office phase.

In addition, simultaneously, the statistical data and documents existing at O.S.P.A. Gorj (Archive of O.S.P.A. Gorj, 1979-2010, 1980-2010, 2010, 2018) were studied and analysed, in order to highlight the areas affected by erosion in the county, but a review of the specialized literature was also made, in this regard, in order to provide a better understanding of this phenomenon, as well as its intensity.

At the same time, the study also focused on identifying the main measures that could be taken to prevent soil erosion and restore degraded land.

RESULTS AND DISCUSSIONS

Erosion is a particularly complex physical and physical chemical process, which consists in the breakdown of structural aggregates even up to the phases of elementary particles and their gravitational transport by the action of water or wind.

Erosion is influenced by the slope in the sense that it manifests itself with a greater intensity on sloping lands. At the same time, erosion is also influenced by the degree in which the land is covered by vegetation, in the sense that when the soil has a lower degree of vegetation cover, erosion manifests itself with a higher intensity. Erosion is also greatly influenced by the anthropogenic factor, through negative actions (taking into cultivation the land with a very high slope, executing the works from the hill to the valley or on the line of the highest slope, dividing and orienting them with the long side in the direction of the greatest slope or perpendicular to the contour lines, cultivation of ploughs on very steep land, clearing pastures, irrational deforestation of forests, etc.) that it undertakes.

Thus, in Gorj County, erosion is caused by intense rainfall, frequent in this region, which generates a large amount of runoff that

destabilizes the soil, the lack of vegetation on steep slopes, either due to natural causes or due to deforestation, which aggravates erosion and, last but not least, the geological characteristics of the soil, which in certain areas are poorly consolidated, allowing quick washing of soil particles. Also, human activities such as massive deforestation for timber and the expansion of agricultural areas reduce the soil's ability to retain water and expose it directly to erosion processes. Mining, such as lignite in the Rovinari-Motru basin, disrupts the natural balance of the land, generating severe erosion and pollution, but also inappropriate agricultural practices, such as cultivating land on a steep slope, contribute to the loss of the fertile soil layer.

Of the total agricultural area of 243,768 ha, surface erosion is manifested on 134,940.26 ha, representing 55.36%, and deep erosion 4,087.69 ha, which represents approximately 1.68% of the agricultural area of the county (Figure 1).

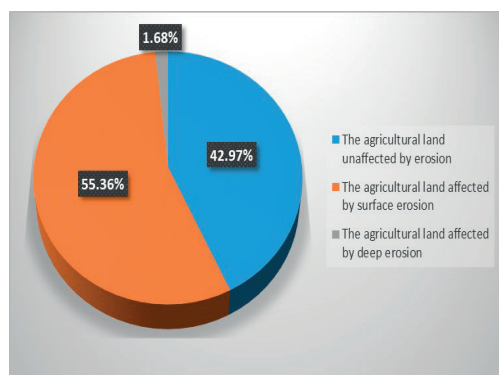


Figure 1. Structure of the agricultural area according to the degree of erosion damage (%)

In Gorj County, water erosion is the most widespread form of soil degradation and affects an area of 139,027.95 ha, of which surface erosion occurs on 134,940.26 ha representing 97.06% of the eroded area, and depth erosion occurs on 4,087.69 ha, which represents 2.94% of the area affected by erosion.

It can therefore be said that water erosion is the most complex, serious and extensive form of soil degradation in Gorj County, strongly affecting soil properties and its production capacity (Bălan & Popescu, 2024).

Surface erosion is very harmful because it contributes to the removal of the upper horizons

of the soil, horizons in which humus and nutrients are accumulated, where intense microbiological activity takes place; the upper horizons also have the most favourable physical and hydro physical properties (Mușat et al., 2023).

The danger of surface erosion also lies in the fact that it is more difficult to observe and is not given due importance because its effects are felt especially after the small productions obtained and most of the time the low productions are attributed to other causes.

Surface erosion occurs under the destructive action of raindrops and/or dispersed runoff, lamination or in the form of small trickles or streams (Figure 2).

The water droplets and the dispersed runoff in the form of a uniform layer of water, acting on the surface of the slopes on which the precipitation falls, produce a fairly uniform erosion of the soil, which becomes evident even for non-specialists when reaching the lower horizons of the soil observable due to different colours from the upper horizon.



Figure 2. Surface erosion - Trickles in Novaci-Rinca area, Gorj County

Table 1 shows the surface erosion on administrative territorial units and on degrees of erosion.

From this table it can be seen that the territorial administrative units most affected by surface erosion are: Padeș with 7,793.52 ha, Crasna with 5,733.88, Tismana with 4,194.32 ha, Runcu with 3,873.60 ha, Novaci with 3,824.80 ha and Baia de Fier with 3,653.78 ha. This can be explained by the fact that within these ATUs there are soils evolved on fluvial gravels with a strong acidic

character, brought from the mountains, soils that contain a high percentage of skeletal material, which manifests itself as a limiting factor by decreasing the soil volume, which gives them a lower resistance to the erosion process.

Thus, due to the predominantly mountainous and hilly terrain, as well as frequent rainfall, ATU Padeș is the area most affected by surface erosion. The strong erosion manifests itself on an area of 4,099.92 ha, which represents 52.6% of the total area affected by erosion, while the very strong erosion, affects an area of 2,024.62 ha, which means 25.98%. Thus, it can be concluded that strong and very strong surface erosion manifests itself on 79.58% of the total area affected by erosion.

Furthermore, the Crasna administrative-territorial unit (ATU) is located in the sub-Carpathian hills and mountains area, with a varied terrain covered by forests, pastures but also by agricultural land in the lower areas, is the second most affected ATU by surface erosion. From the total affected area of 5,733.88 ha, strong, very strong and excessive surface erosion manifests itself on 3,016.48 ha, which represents 52.60% of the area affected.

Regarding the ATU Tismana, out of the total area of 4,194.32 ha affected by erosion, the strong, very strong and excessive erosion is manifested on 59.08% of the surface, that means on 2,477.92 ha.

Table 1. Surface erosion on ATUs and on erosion degrees in Gorj county

No. crt.	Administrative-Territorial Unit	Eroded area (ha)	Degree of erosion				
			Mild erosion	Moderate	Strong	Very strong	Excessive
0	1	2	3	4	5	6	7
1	Padeș	7,793.52	468.10	877.20	4,099.92	2,024.62	323.68
2	Crasna	5,733.88	1,459.80	1,257.60	1,458.50	1,125.90	432.08
3	Tismana	4,194.32	881.60	834.80	1,417.92	720.00	340.00
4	Runcu	3,873.60	422.00	1,068.40	1,548.00	625.10	210.10
5	Novaci	3,824.80	591.30	708.90	1,539.30	780.30	205.00
6	Baia de Fier	3,653.78	504.90	445.20	1,780.00	620.00	303.68
7	Bălănești	3,446.21	314.00	931.00	1,431.21	590.00	180.00
8	Bustuchin	3,315.40	424.40	790.60	549.90	1,202.50	348.00
9	Peștișani	3,256.40	348.10	1,287.70	1,000.30	460.20	160.10
10	Crușet	3,062.31	505.38	530.28	1,066.45	830.00	130.20
11	Borăscu	3,046.45	536.90	720.51	780.00	584.26	424.78
12	Prigoria	2,698.68	340.00	1,212.00	513.00	320.00	313.68
13	Berlești	2,690.60	74.20	995.40	1,184.00	343.00	94.00
14	Licurici	2,579.78	351.70	665.19	1,086.04	343.39	133.46
15	Roșia de Amaradia	2,391.70	974.40	312.10	270.50	520.40	314.30
16	Aninoasa	2,385.82	284.30	242.60	950.30	530.40	378.22
17	Stănești	2,353.38	381.50	410.00	655.00	475.00	431.88
18	Dănculești	2,336.00	250.00	505.00	453.00	998.00	130.00
19	Bumbești-Jiu	2,313.23	396.00	483.00	785.00	280.25	368.98
20	Logrești	2,297.60	529.70	549.60	443.20	630.10	145.00
21	Mușetești	2,296.55	880.53	519.05	530.60	270.37	96.00
22	Alimpești	2,290.90	23.30	388.90	825.30	521.00	532.40
23	Godinești	2,256.60	340.00	450.00	865.10	475.20	126.30
24	Bengești-Ciocadia	2,220.67	163.70	179.50	1,638.47	239.00	-
25	Motru	2,194.00	413.00	328.00	651.30	481.70	320.00
26	Săcelu	2,139.80	437.07	586.23	670.00	330.20	116.30
27	Stejar	2,054.04	539.73	460.28	741.00	230.00	83.03
28	Mătășari	2,035.00	461.00	86.00	135.00	780.00	573.00
29	Bumbești-Pițic	2,022.20	420.00	620.00	450.00	340.00	192.20
30	Târgu-Jiu	2,020.00	999.00	230.00	625.00	98.00	68.00
31	Vladimir	1,974.00	230.00	205.00	1,405.80	133.20	-
32	Polovragi	1,971.58	337.80	867.50	339.00	170.00	257.28
33	Slivilești	1,928.15	678.00	265.50	266.50	385.00	333.15
34	Brănești	1,909.27	112.30	339.10	1,093.87	329.00	35.00
35	Târgu-Cărbunești	1,830.00	630.00	469.00	630.00	50.00	51.00
36	Schela	1,800.58	293.30	846.80	219.20	190.20	251.08
37	Văgulești	1,778.71	329.63	457.34	313.71	389.00	289.03
38	Bolboși	1,678.70	323.70	46.40	803.10	380.20	125.30
39	Scoarța	1,650.00	686.00	275.00	350.00	280.00	59.00
40	Turburea	1,635.46	408.20	455.78	321.00	340.00	110.48
41	Căpreni	1,628.25	376.66	304.93	590.40	230.00	126.26
42	Negomir	1,526.00	254.00	337.00	275.00	540.00	120.00

0	1	2	3	4	5	6	7
43	Ploșoru	1,477.00	125.00	187.00	780.00	308.00	77.00
44	Ciuperceni	1,470.10	551.20	42.70	109.00	713.00	54.20
45	Stoina	1,351.70	134.87	216.22	610.00	270.00	120.61
46	Fărcășești	1,315.00	328.00	230.00	741.00	16.00	-
47	Tureni	1,256.63	521.94	315.69	197.00	125.00	97.00
48	Hurezani	1,211.53	28.35	304.48	119.36	629.34	130.00
49	Drăgotești	1,177.50	87.50	107.50	200.00	523.00	259.50
50	Albeni	1,150.70	100.40	184.70	425.20	280.50	159.90
51	Bălești	1,145.90	246.80	34.00	625.00	184.10	56.00
52	Lelești	1,084.00	317.00	417.00	204.00	98.00	48.00
53	Dănești	1,047.70	469.00	385.80	115.00	57.60	20.30
54	Samarinești	1,015.00	115.00	198.00	517.00	94.00	91.00
55	Țânțăreni	956.10	373.90	287.20	167.00	98.00	30.00
56	Câlnic	859.00	161.50	168.90	320.00	128.00	80.60
57	Săulești	850.00	176.00	213.00	231.00	143.00	87.00
58	Ionești	834.00	74.00	342.00	240.00	148.00	30.00
59	Bălteni	742.00	250.00	253.00	178.00	61.00	-
60	Turcinești	682.30	152.70	80.40	289.00	120.00	40.20
61	Jupânești	678.20	159.90	117.10	220.10	80.00	101.10
62	Arcani	603.30	45.00	197.60	241.00	83.00	36.70
63	Cătunele	591.00	68.30	86.15	190.25	221.30	25.00
64	Bărbătești	573.80	97.40	119.80	270.90	68.90	16.80
65	Drăguțești	520.00	110.00	75.00	220.00	92.00	23.00
66	Țicleni	502.30	115.01	102.29	120.00	110.00	55.00
67	Telești	491.50	77.30	125.00	63.00	123.20	103.00
68	Urdari	489.08	150.30	107.90	87.40	75.40	68.08
69	Glogova	466.00	80.00	98.00	191.00	97.00	-
70	Rovinari	311.00	78.00	115.00	56.00	28.00	34.00
	TOTAL	134,940.26	24,569.57	28,655.82	44,478.10	26,160.83	11,075.94

Source: Original data

In Novaci the strong, very strong and excessive erosion is manifested on 2,524.60 ha, which represents 66% of the area affected by erosion. In Baia de Fier, strong erosion affects 48.72% of the total area affected by this phenomenon.

The least affected by surface erosion are ATU Glogova with 466 ha, but where also strong and very strong erosion occupies the largest area, namely 288 ha, which is 61.80%, but also ATU Rovinari with 311 ha, where strong and very strong and excessive erosion is manifested on an area of 118 ha, which represents 37.94% of the area affected by erosion.

Thus, out of the total area affected by surface erosion, which is of 34,940.26 ha, mild erosion is manifested on 18.20%, moderate erosion on 21.24%, strong erosion on 32.96%, very strong erosion on 19.39%, and excessive erosion on 8.21%.

Depth erosion, also called linear or torrential, occurs on land with higher slopes, in directions of concentration of the runoff, where the process of detachment and transport of mineral and organic material is much more intense compared to surface erosion (Popescu et al., 2024).

Depth erosion causes great damage to agriculture through its formations, rills (Figure 3), gullies (Figure 4) and ravines (Figure 5), which can remove large areas of land from the agricultural circuit, prevent the mechanized execution of works, can affect industrial objectives, human settlements, communication routes, etc.

Depth erosion affects 4,087.69 ha representing 1.68% of the agricultural area of Gorj County.



Figure 3. Depth erosion – Rill in the Novaci - Rînca area, Gorj county



Figure 4. Depth erosion – Gully in the Novaci - Rîncea area, Gorj county



Figure 5. Depth erosion – Ravine in the Novaci - Rîncea area, Gorj county

Table 2 shows depth erosion on ATU and depth erosion formations.

The ATUs most affected by deep erosion are: Bălănești with 187.79 ha, followed by Crușeț with 142.98 ha, Alimpești with 137.50 ha, Bumbești-Jiu with 136.08 ha and Mușetești with 132.22 ha.

Table 2. Depth erosion on ATUs and erosion formations, in Gorj county

Nr. crt.	Administrative-Territorial Unit	Affected area (ha)	Erosion formations at depth		
			Rills	Gullies	Ravines
0	1	2	3	4	5
1	Bălănești	187.79	7.18	5.89	174.72
2	Crușeț	142.98	7.78	5.20	130.00
3	Alimpești	137.50	6.80	5.70	125.00
4	Bumbești-Jiu	136.08	10.14	8.41	117.53
5	Mușetești	132.22	7.08	7.50	117.64
6	Licurici	126.31	18.47	15.36	92.48
7	Hurezani	126.28	12.00	4.00	110.28
8	Bustuchin	125.48	12.00	15.00	98.48
9	Prigoria	118.76	10.40	9.86	98.50
10	Borăscu	114.59	8.08	6.31	100.20
11	Tismana	103.26	11.57	11.09	80.60
12	Scoarța	98.00	5.80	13.20	79.00
13	Roșia de Amaradia	93.82	10.18	10.44	73.20
14	Bumbești-Pițic	89.90	3.80	5.60	80.50

0	1	2	3	4	5
15	Bolboși	85.56	5.40	4.36	75.80
16	Berlești	81.30	3.90	3.20	74.20
17	Stejari	81.21	8.78	6.28	66.15
18	Baia de Fier	78.79	6.80	8.49	63.50
19	Runcu	77.15	11.06	11.39	54.70
20	Ciuperceni	76.80	6.30	11.40	59.10
21	Aninoasa	73.88	5.67	4.21	64.00
22	Telești	72.10	8.90	12.30	50.90
23	Godinești	71.16	6.56	5.60	59.00
24	Padeș	69.95	9.06	10.29	50.60
25	Albeni	66.10	21.50	16.10	28.50
26	Motru	59.50	-	4.50	55.00
27	Urdari	58.33	7.44	4.89	46.00
28	Căpreni	58.14	5.66	4.18	48.30
29	Glogova	58.00	4.00	11.00	43.00
30	Bărbătești	55.20	10.80	7.30	37.10
31	Arcani	55.00	5.70	2.30	47.00
32	Săulești	53.10	3.80	11.30	38.00
33	Polovragi	50.92	9.14	9.58	32.20
34	Dănești	49.13	5.04	4.09	40.00
35	Bengești-Ciocadia	45.30	10.30	5.20	29.80
36	Țicleni	42.19	6.18	4.41	31.60
37	Schela	42.10	9.34	7.76	25.00
38	Îonești	41.90	4.42	2.48	35.00
39	Novaci	40.79	8.12	8.87	23.80
40	Țânțăreni	40.59	5.80	3.61	31.18
41	Peștișani	39.44	8.24	9.10	22.10
42	Logrești	39.29	7.20	8.09	24.00
43	Slivilești	38.40	-	4.20	34.20
44	Crasna	36.43	8.60	5.53	22.30
45	Negomir	34.30	27.00	3.70	3.60
46	Stănești	33.89	9.40	8.19	16.30
47	Bălteni	33.70	7.40	3.30	23.00
48	Stoina	31.92	7.11	4.17	20.64
49	Samarinești	31.70	2.80	3.40	25.50
50	Brănești	29.32	3.00	7.80	18.52
51	Ploșșoru	29.30	-	-	29.30
52	Săcelu	29.07	6.42	4.85	17.80
53	Văgiulești	28.34	-	-	28.34
54	Lelești	28.00	4.00	3.00	21.00
55	Mătăsari	27.00	3.80	2.50	20.70
56	Drăgotesti	25.80	3.80	4.30	17.70
57	Târgu-Jiu	25.00	-	-	25.00
58	Turceni	24.83	6.14	3.40	15.29
59	Cătunele	24.00	-	2.00	22.00
60	Călnic	23.91	6.82	4.39	12.70
61	Turburea	22.49	6.34	4.53	11.62
62	Fărcăsești	21.00	-	-	21.00
63	Jupănești	20.50	4.14	3.36	13.00
64	Bălești	19.20	4.80	2.30	12.10
65	Vladimir	17.20	-	-	17.20
66	Rovinari	15.00	-	-	15.00
67	Turcinești	12.50	3.00	4.20	5.30
68	Dănciulești	12.00	-	-	12.00
69	Târgu-Cărbunești	11.00	-	-	11.00
70	Drăgulești	6.00	-	-	6.00
	TOTAL	4,087.69	450.96	404.96	3,231.77

Source: Original data

Of the total area affected by the deep erosion of the Bălănești territory, the area affected by ravines is 174.72 ha, which represents 93%.

As far as Crușețul is concerned, the area occupied by ravines is also the largest,

representing 90.92% of the area affected by depth erosion.

The situation is no different in the case of Alimpești either, in the sense that the area occupied by ravines represents 90.90% of the total area affected by deep erosion. From this it can be concluded that in these 3 ATUs, deep erosion, represented by ravines, affects these territories approximately entirely.

The ATUs with the smallest area affected by deep erosion are Drăguțești (6 ha), Târgu-Cărbunești (11 ha) and Dănciulești (12 ha), but in these ATUs, the entire affected area is occupied by ravines. These formations, which represent the most advanced stage of depth erosion and constitute a major danger to agriculture and the environment, fully cover (100%) the areas exposed to this process.

CONCLUSIONS

Soil erosion is the most extensive and most serious form of soil degradation in Gorj County, affecting both agricultural land and natural ecosystems. This phenomenon contributes to the loss of soil fertility, the reduction of arable areas and the increased risk of landslides.

Surface erosion is a major problem in Gorj County, affecting a total area of 134,940.26 ha, representing 55.36% of the total agricultural area of the county, having different degrees of intensity. Thus, out of the total area affected by surface erosion, moderate erosion (21.24%), strong erosion (32.96%) and very strong erosion (19.39%) are the most common, accumulating over 73% of the total affected area.

The ATUs most affected by surface erosion are Padeș, Crasna, Tismana and Novaci, where strong, very strong and excessive erosion occupies significant percentages of the total eroded area.

Surface erosion is influenced by the predominantly mountainous and hilly terrain, by the rainfall that is frequent in this region, as well as by human activities, all of which favour soil degradation processes.

Depth erosion (linear or torrential) affects 4,087.69 ha, which represents 1.68% of the county's agricultural area, having a negative impact on agriculture, infrastructure and the environment.

Bălănești, Crușeț and Alimpești are the most affected by depth erosion, ravines covering over 90% of the area affected by this phenomenon. The ATUs with the smallest area affected by erosion are Drăguțești, Târgu-Cărbunești and Dănciulești, however, in these areas, erosion is predominantly in an advanced form, through ravines, which represents a significant risk.

Soil erosion has a very high impact from an economic, ecological and social point of view, by reducing agricultural production and farmers' incomes, degrading biodiversity and natural habitats, as well as affecting local communities, exposed to the risks of landslides and forced migration due to economic difficulties.

In order to prevent and combat soil erosion, it is essential to implement measures such as afforestation of vulnerable areas, establishing the structure of crops according to the degree of erosion and the protection it provides to the soil, using a cropping system that ensures the reduction of the speed, flow and volume of water flowing on the slopes, shaping the land surface in order to retain as much precipitation as possible, the execution of special hydrotechnical works for the interception and evacuation of water from the slopes (earth embankments, terraces, coastal canals), as well as the adoption of conservation agriculture practices (minimum tillage or no-till, permanent soil cover and crop rotation). These actions contribute to reducing soil degradation and maintaining soil fertility in the long term.

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