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GAEC 5 Direct Payment System Implementation Challenges in Slovakia

Petra Pipíšková[1], Zlatica Muchová[1*], Dávid Dežerický[1], Peter Michal[1,2]

[1] Institute of Landscape Engineering, Faculty of Horticulture and Landscape Engineering, Slovak University of Agriculture, Hospodárska 7, 949 76 Nitra, Slovakia

[2] Agricultural Paying Agency, Námestie Sv. Anny 7, 911 50 Trenčín, Slovakia

* Corresponding author´s e-mail: zlatica.muchova@uniag.sk

ABSTRACT

The Agricultural Payments Agency (supervisory and registry authority) of the Slovak Republic has announced an erosion hazard layer to meet the requirements of GAEC5 (Minimising soil erosion. Limit soil erosion by putting in place suitable practical measures). If a farmer fails to observe the layer data, they will be fined and might lose access to direct subsidies (also known as direct payments). The layer that has been announced raises a number of questions and concerns amongst beneficiaries of direct subsidies and users of land parcels. For instance, with the Pastuchov land parcel, the uncertainties associated with the application of GAEC5 were raised. A comparison of the water erosion layer commitment for 2023 with the erosion calculated by the Universal Soil Loss Equation (USLE) method based on the Digital Relief Model (DRM) generated from airborne laser scanning has confirmed the uniformity in all classified categories of water erosion over a 65% land parcel area. The situation of the land user has been diminished (i.e. they have to comply with GAEC5 even when there is no reason to) over 11% of the area. The situation of the land user has improved over 24% of the area (i.e. they do not have to comply with the conditions even when there is reason to). This paper describes the problems and outlines the possibilities for the necessary adjustment of compliance with the GAEC5 conditions in Slovakia.

Keywords: water erosion, conditionality, GAEC5, GSAA, CAP EU, DMR 3.5, DMR 5.0, soil loss.

INTRODUCTION

The EU's Common Agricultural Policy (CAP) is currently undergoing a transformation, and this process is aligned with the policy framework aimed at taking effective and immediate action to address climate change and biodiversity loss (Ekardt et al. 2018). After 2023, the CAP must support mitigation techniques for increasingly challenging environmental conditions to ensure food security over the long term, while being consistent with the international objectives of the Paris Agreement (United Nations Climate Change, 2015) and the Convention on Biological Diversity (Convention on Biological Diversity, 2020). To achieve these objectives, the CAP has developed interlinked mechanisms to support farmers-known as direct payments (Heyl, 2020). Direct payments guarantee the sustainable management of resources and are part of the hectare-decoupled payments that are paid each year.

Since 2013, farmers have been required to follow cross-compliance, which includes statutory management requirements (SMRs), good agricultural and environmental conditions (GAEC), and greening requirements and standards to fully benefit from Pillar 1 subsidies. However, cross-compliance sets forth minimal criteria only, and the environmental effects thereof have been questioned (Meredith and Hart, 2019). Greening is based on the principle of cross-compliance and emphasizes crop diversification, maintenance of permanent grasslands, and expansion of ecologically significant areas (EFAs), Hodge and Hauck, (2015). However, greening is considered environmentally weak, among other reasons, because many farmers are exempted from this rule, and a wide range of areas can be included under EFA requirements.

The post-2023 CAP plan (Slovak Government Regulation No 435/2022) replaces the 'greening' and 'cross-compliance' conditionality and adds a completely new component called 'organic schemes' (Heyl, 2020). The Slovak Republic has chosen to apply a whole-farm eco-scheme, animal welfare, and pastoral farming. The ecological scheme targets many issues, including attempts to improve biodiversity (e.g. Erisman et al., 2017; Nilsson et at., 2019), support adaptation to climate change (European Union, 2018; Zinngrebe et al., 2017), improve the structure of arable land, and limit land degradation processes (Panagos et al., 2020). Large monoculture swaths in Slovakia reduce biodiversity; a full-scale eco-scheme will encourage the development of non-productive areas and dividing elements (Coe and Uberoi, 2022). Prairie strips seem to be the only possible solution for a landscape divider that can be applied in a country with huge land fragmentation such as Slovakia (Muchová and Raškovič, 2020). Permanent landscape divisions are a problem resulting from the unattainable consent of all owners (Pagáč Mokrá et al., 2021). Through the nine GAEC standards, which specifically target climate change, water, soil, biodiversity, and landscape elements, the CAP Strategic Plans will help to meet environmental and climate objectives. All CAP beneficiaries are obliged to comply with these standards, which serve as a basis for expectations that farmers can exceed. Still, they may receive additional financial assistance for more ambitious techniques and procedures.

The main supervisory and registry authority for direct payment applicants in Slovakia is the Soil Management and Payment Agency (PPA). All agricultural areas managed by the applicant for agricultural purposes, i.e. all land identified as arable land, permanent grassland, or permanent crops, and registered in the Land Parcel Identification System (LPIS), is eligible for direct payments. Farmers who meet the requirements for receiving direct payments may file an application by 15 May of the relevant calendar year following the announcement published on the PPA's website https://www.apa.sk/. The LPIS parcel registry of individual direct payment applicants is served through the Geospatial Support Application App (GSAA) (https://gsaa.mpsr.sk/, 2022). GSAA provides applicants with base layers such as use boundaries, EFA features (buffer zones, landscape features, terraces, fast-growing trees), cross-fill (slope, water and wind erosion 2023, landscape features, conservation areas, vulnerable areas), habitat, and areas of natural limitation. Depending on these layers, applicants are checked whether they meet general conditions for receiving direct payments.

For forty years, the quantity of agricultural land in Slovakia has been steadily decreasing. According to the data of the Statistical Office of the Slovak Republic (2022), agricultural land decreased by almost 70 thousand hectares between 1996 and 2020. According to Izakovicova (2022), land degradation in Slovakia is the worst in history. Every season, huge areas of land are irreversibly damaged by floods or wind due to the insensitive management of fields by farmers. Apart from the effects of climate change, the main cause of erosion is the intensification of agriculture. This problem affects about a quarter of agricultural land and hundreds of thousands more hectares could be at risk in the near future (Pauditsova et al., 2018). Erosion also dramatically reduces soil fertility, which is directly related to food self-sufficiency (Izakovicova, 2022). A change could be brought about by correctly setting the GAEC5 conditions (Minimising soil erosion. Limit soil erosion by putting in place suitable practical measures).

The following requirements for arable land and permanent crops must be met by the applicant in accordance with forthcoming national legislation, specifically, these GAEC5 conditions:

1. In areas heavily exposed to water erosion:
   a) no growing of crops with low anti-erosion capacity;
   b) growing of crops with a higher anti-erosion capacity only with the application of anti-erosion agrotechnical measures.
2. Growing of crops with a low anti-erosion capacity only in areas moderately exposed to water erosion and only with the application of anti-erosion agrotechnical measures.
3. In areas exposed to wind erosion, measures must be applied to prevent or mitigate the effects of wind erosion.

Following the above, PPA has disclosed the "Water Erosion 2023" layer in the GSAA app to inform applicants of the areas exposed to wind or water erosion that will apply from 2023. Ministry of Agriculture and Rural Development of the Slovak Republic (MPRV SR).

If the GSAA identifies a piece of land as being exposed to severe water erosion, it will significantly restrict the type of crop for that parcel. Another problem is that the water erosion layer does not always correspond to the actual state of erosion-exposed sites. Concerns are being raised by applicants (knowing the local conditions) that they will lose the opportunity to grow row crops (maize, potatoes, beet, sunflowers, etc.) in areas that are defined as having severe erosion exposure by the GSAA according to the layer despite the fact that they are not that severely exposed or even not exposed at all. The needs of livestock production and crop rotation are also not taken into account. The current set-up requires a change in the current tillage technology, which is unrealistic in the short term without additional funding. If farmers fail to accept this layer (failure to meet GAEC conditions), they will be sanctioned and/or might receive lower direct payments or none at all.

This paper highlights the uncertainties associated with the application of GAEC5, using the example of a specific land parcel in Pastuchov. The paper includes a discussion of the issues associated with assessing the erosion exposure of the site at a practical level and presents alternative solutions for modifying compliance with the GAEC5 conditions.

MATERIAL AND METHODS

Study area

The area is a land parcel with the registration code 5504/1, type: A, Pastuchov, registered as arable land intended for agricultural production with a total area of 62.42 ha (Fig. 1). The land parcel is located in Pastuchov Land Registry Area, Hlohovec District, Trnava Municipality, Slovak Republic (geographically located at x:-515523.3960 m to -514485.7981 m; y: 1254790.0613 m to -1256104.6266 m). The maximum elevation of the site is 264.96 m, while the parcel's lowest point at 209.29 m above sea level is located on the boundary with parcel 5601/1. Deep (over 60 cm) loess and medium soils are present with two major soil units (HPJ), 41.28% brown earth cultivated (HPJ 44) and 58.72% regio-soil cultivated (HPJ 47). The site is classified as a warm, very dry, and lowland region with an average air temperature of 16 °C per growing season [IV.-IX.]. According to the Slovak Hydrometeorological Institute, the long-term average rainfall for the period 1961-2019 for the region is 565.9 mm.

Input data

We compared the GSAA 'Water Erosion 2023' reference layer – which forms the mandatory

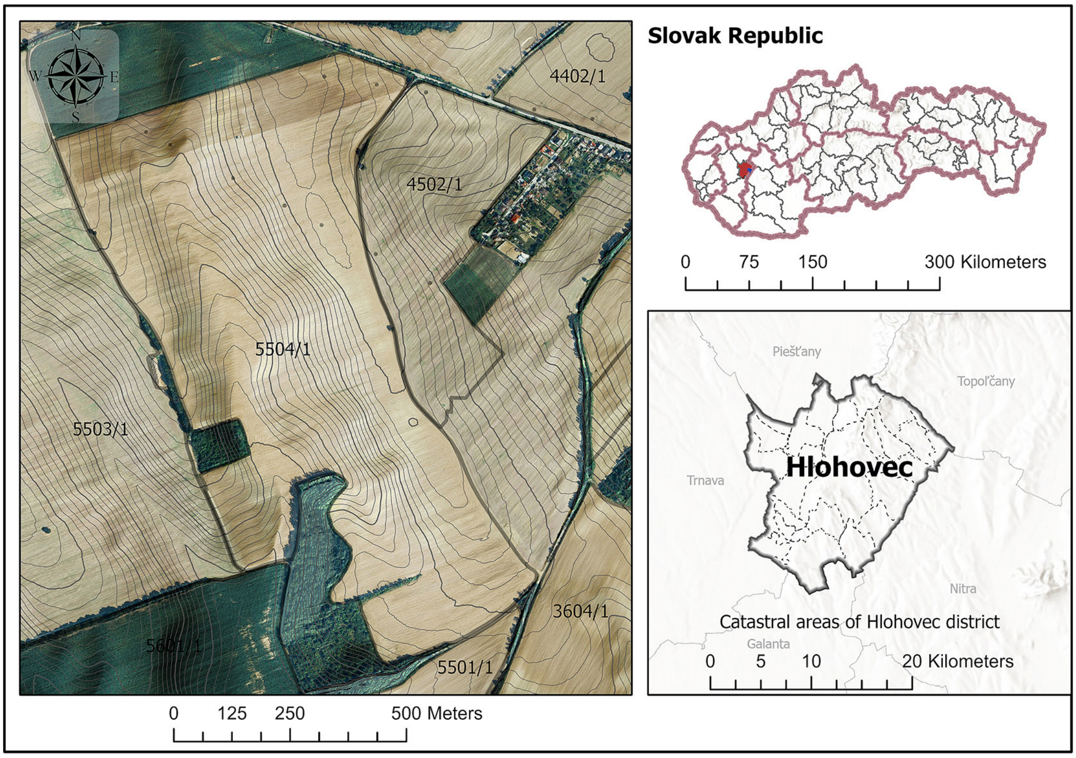

Figure 1. Parcel 5504/1 layout

Table 1. Documents used

Data type	Description	Source	Link
Total annual precipitation	Location Average Rainfall (mm) in 1961–2019	Slovak Hydrometeorological Institute	https://www.shmu.sk
Digital model of relief (DMR)	DMR 3.5 is a topographic layout of the surface to create contours for the cartographic elevation model. Raster cell resolution 10x10 m/pixel	Office of Geodesy, Cartography, and Cadastre of the Slovak Republic	https://www.geoportal.sk
	DMR 5.0 is the result of interpolation of airborne laser scanning (LLS) data showing a detailed elevation model at 1x1 m/pixel grid cell resolution.	Office of Geodesy, Cartography, and Cadastre of the Slovak Republic	https://www.geoportal.sk
Agro layers	The use boundaries represent the area defined by the applicant for direct aid for the relevant calendar year	Geospatial Request for Aid	https://gsaa.mpsr.sk
	Bonito soil-ecological units are areas marked on maps by a boundary and a code with the same genetic, climatic, and relief characteristics	Soil Science and Conservation Research Institute	http://www.podnemapy.sk
	'Water Erosion 2023' is a raster layer showing the area erosion exposure in three categories for the year 2023	Geospatial Request for Aid	https://gsaa.mpsr.sk

baseline for assessing compliance with GAEC5 from 2023 onwards—with the output of the USLE model based on DMR 5.0 and DMR 3.5.

DMR 5.0 was created from airborne laser scanning (hereafter LLS) data and is considered to be the most accurate elevation datum in Slovakia, as provided by several papers (e.g. Leitmannová et al., 2021, Kovanič et al. 2020, Liščák et al. 2022, Muchová and Šinka, 2021). The laser airborne scanning period for the location was from 19.12.2017 to 12.04.2018, the altitude accuracy in BPV (Bolt Post-Adjustment) is 0.04 m and the positional accuracy of the cloud points in ETES89-TM34 is 0.16 m (https://www.geoportal.sk/sk/zbgis/lls-dmr/).

DMR 3.5 was created by digitizing contours from the Base Maps at scale 1:10000 (ZM10) and Technical Maps at scale 1:25000 (TM25) with modifications. It is done in 10x10 m/pixel resolution. The evidence used is summarised in Table 1.

Methodology

The reference layer for 'Water Erosion 2023' was obtained by the authors by georeferencing the raster base from the GSAA portal and then vectorizing it in the specified categories: areas without erosion, moderately exposed areas, and severely exposed areas (Fig. 2). The published layer on the GSAA portal was developed by the Research Institute of Soil Science and Soil Protection (VÚPOP) based on DMR 3.5 and has not yet published the official procedure for its development.

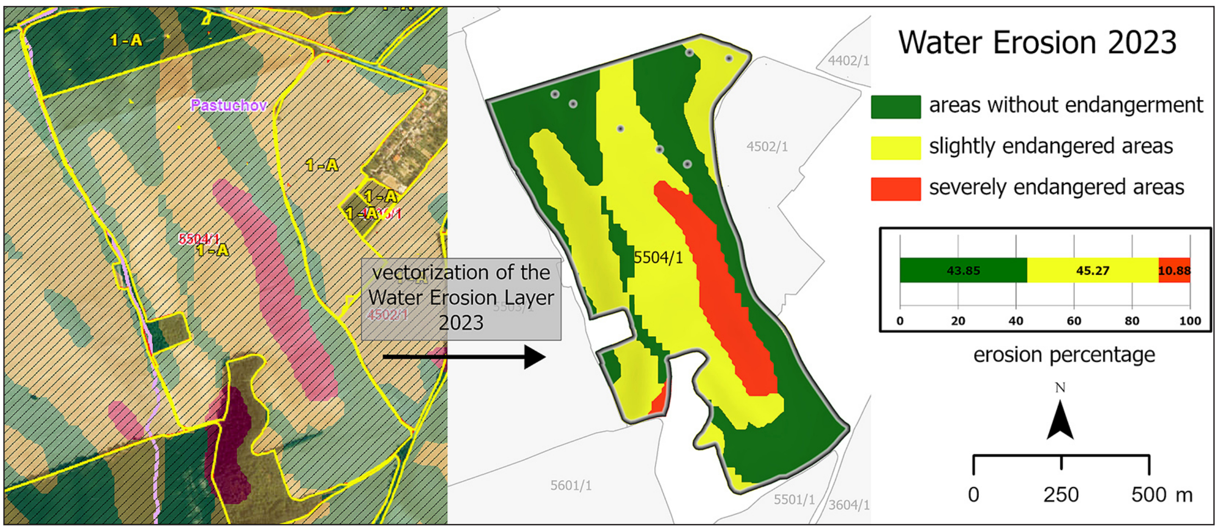

Figure 2. Preparation of the 'Water Erosion 2023' layer according to GSAA documents

The water erosion exposure was calculated using the Universal Soil Loss Equation (USLE) according to Wischmeier, Smith (1978). The factor values R=15.4 $MJ.ha^{-1}.cm.h^{-1}$ for the Piešt'any ombrographic station (Ilavska et al., 2005), K factor based on the main soil units according to Ilavska et al. (2005) between values of 0.51 and 0.72 $t.ha^{-1}.mm.h^{-1}$, factor C = P = 1 for the calculation of potential water erosion; the topographic slope length and slope factor (LS factor) was calculated from the DMR 3.5 (10x10m/pixel) and DMR 5.0 (1x1m/pixel) models of McCool et al. (1989). We show area slope variation calculated from the DMR inputs used in Figure 3 and Table 2.

The principle of permissible erosion according to STN 75 4501 - Conservation of agricultural soils was used to assess the limiting erosion hazard rate of the land. Basic regulations and Act 220/2004 Coll, Agricultural Land Protection and Use, as amended.

The Water Erosion Layer 2023 was taken as a reference and is mandatory for users. It was compared with soil loss calculations according to the USLE model (Janeček et al., 2012) based on DMR 3.5 and DMR 5.0.

According to STN 75 4501, the limit values of soil transport during water erosion are considered for shallow soils (0.3 m) – 4 $t.ha^{-1}.year^{-1}$, for medium-deep soils (0.3–0.6 m) – 10 $t.ha^{-1}.year^{-1}$, for deep soils (above.6 m) – 30 $t.ha^{-1}.year^{-1}$. According to Act No. 220/2004 Coll., the limit values of soil loss are considered for shallow soils (0.3 m) – 1 $t.ha^{-1}.year^{-1}$, for medium-deep soils (0.3–0.6 m) – 4 $t.ha^{-1}.year^{-1}$, for deep soils (above 0.6 m) – 10 $t.ha^{-1}.year^{-1}$.

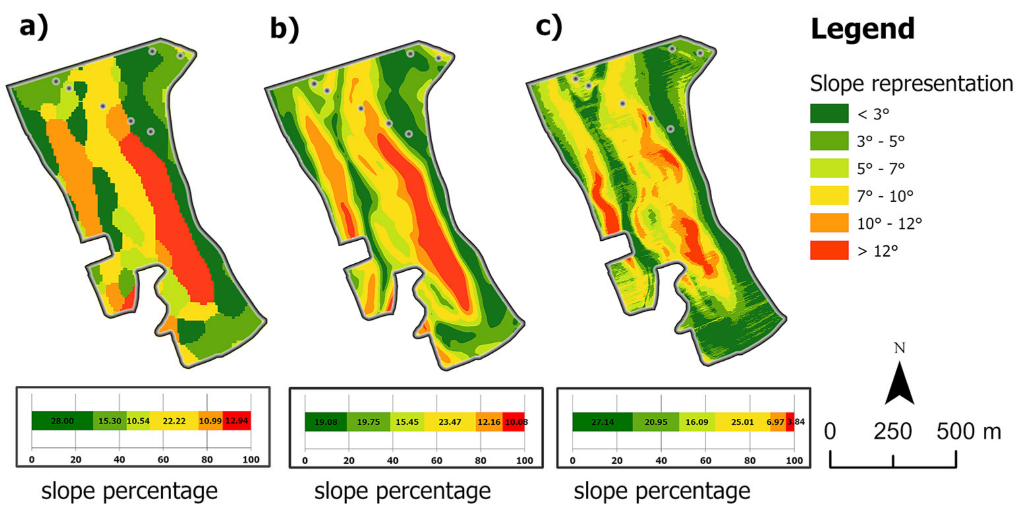

Figure 3. GSAA slope, (b) DEM 3.5 slope, (c) DEM 5.0 slope

Table 2. Area and percentage overview for slope categories according to 3 models and 2023 layer and slope differences according to GSAA

Slope classification	GSAA	DEM 3.5		DEM 5.0	
	Distribution	Distribution	Difference	Distribution	Difference
< 3°	28.00 %	18.15 %	-9.85 %	27.14 %	-0.87 %
	17.48 ha	11.13 ha	-6-35 ha	16.83 ha	-0.65 ha
3°–5°	15.30 %	18.79 %	3.48 %	20.96 %	5.65 %
	9.55 ha	11.52 ha	1.97 ha	12.99 ha	3.44 ha
5°–7°	10.55 %	14.69 %	4.14 %	16.09 %	5.54 %
	6.58 ha	9.01 ha	2.43 ha	9.98 ha	3.39 ha
7°–10°	22.21 %	27.21 %	5.01 %	25.01 %	2.80 %
	13.87 ha	16.69 ha	2.82 ha	15.51 ha	1.64 ha
10°–12°	10.99 %	11.56 %	0.57 %	6.97 %	-4.02 %
	6.86 ha	7.09 ha	0.23 ha	4.32 ha	-2.54 ha
> 12°	12.94 %	9.59 %	-3.35 %	3.84 %	-9.10 %
	8.08 ha	5.88 ha	-2.20 ha	2.37 ha	-5.69 ha

To compare individual calculations, soil loss was recalculated with the soil depth and classified according to the SEOP erosion exposure index into the following categories: areas without erosion (SEOP value < 1), moderately exposed areas (SEOP value from 1 to 7), and severely exposed areas (SEOP value > 7).

RESULTS

From the GSAA 2023 water erosion layer, based on area representation, it was calculated that 44% of the land parcel 5504/1 (27.37 ha) is in the no exposure category, 45% (28.26 ha) in the moderate exposure category, and 11% (6.79 ha) in the severe exposure category.

The annual average soil loss modelled at DMR 3.5 is 18.75 $t.ha^{-1}.year^{-1}$, and at DMR 5.0 the average soil loss is 16.91 $t.ha^{-1}. year^{-1}$. The difference of 1.84 $t.ha^{-1}.year^{-1}$ is due to the quality of the incoming DMR, which affects the determination of the LS factor. Taking into account the soil depth and applying the classification of permissible erosion loss according to STN 75 4501 and Act 220/2004 Coll., the average values of soil loss reach for DMR 3.5 (STN 75 4501): Ø= 2.80 $t.ha^{-1}.year^{-1}$, DMR 3.5 (Act 220/2004 Coll.): Ø= 1.86 $t.ha^{-1}.year^{-1}$, DMR 5.0 (STN 75 4501): Ø= 1.69 $t.ha^{-1}.year^{-1}$, DMR 5.0 (Act 220/2004 Coll.): Ø= 1.12 $t.ha^{-1}. year^{-1}$.

We classified the calculated soil loss values into 3 classes: areas without erosion exposure, moderately exposed areas, and severely exposed areas. In Figure 4 we show a chart comparison, and in Figure 5 we summarize the results of the areal distribution of soil loss for all categories individually.

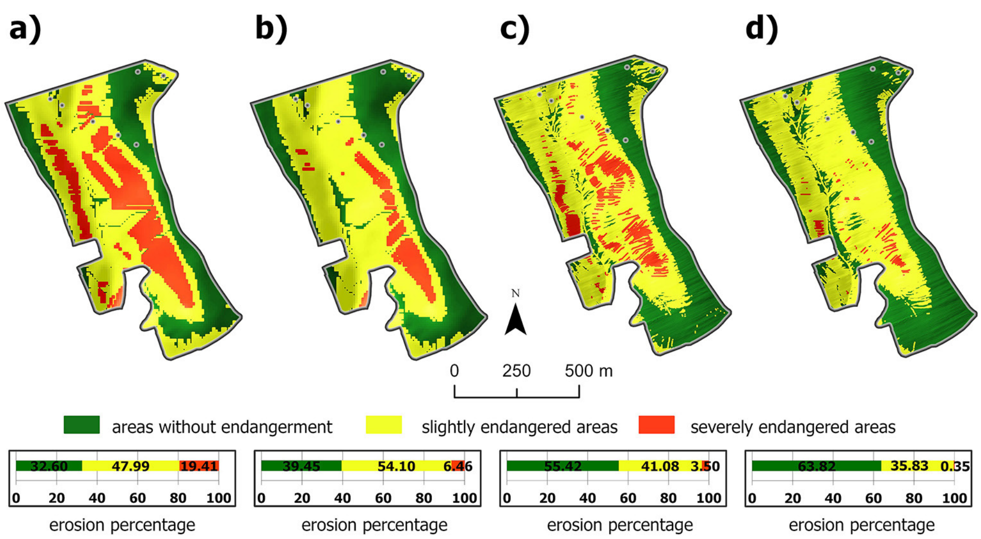

Figure 4. Evaluation of water erosion using (A) DEM 3.5 Permissible Erosion by STN75 4501, (B) DEM 3.5 Permissible Erosion Under Act. 220/2004 Coll., (C) DEM 5.0 Permissible Erosion Under STN75 4501, (D) DEM 5.0 Permissible Erosion Under Act 220/2004

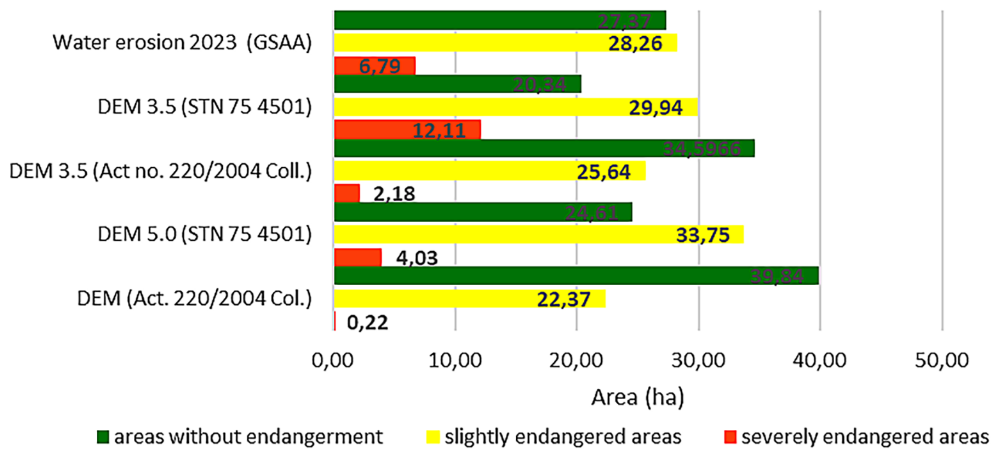

Figure 5. Intensity of potential water erosion areas

Table 3. Area and percentage overview for erosion categories according to 4 models and 2023 (GSAA) layer and water erosion differences

Soil erosion exposure	GSAA	DEM 3.5 (STN 75 4501)		DEM 3.5 (Act 220/2004 Coll)		DEM 5.0 (STN 75 4501)		DEM 5.0 (Act 220/2004 Coll)	
	Distribution	Distribution	Difference	Distribution	Difference	Distribution	Difference	Distribution	Difference
No exposure	44% 27.37 ha	32.60% 20.34 ha	-11.25% -7.03 ha	39.45% 34.60 ha	-4.40% -2.76 ha	55.42% 24.61 ha	+11.58% +7.23 ha	63.82% 39.84 ha	+19.98% +12.47 ha
Moderate exposure	45% 28.26 ha	47.99% 29.94 ha	+2.71% +1.68 ha	54.10% 25.64 ha	+8.82% +5.49 ha	41.08% 33.75 ha	-4.20% -2.62 ha	35.83% 22.37 ha	-9.44% -5.90 ha
Severe exposure	11% 6.79 ha	19.41% 12.11 ha	+8.53% + 5.32 ha	6.46% 2.18 ha	-4.42% -2.76 ha	3.50% 4.03 ha	-7.38% -4.61 ha	0.35% 0.22 ha	-12.53% -6.57 ha

In Table 3, we summarize the area and percentage of each erosion category according to the 4 models. We also show the individual difference between the layer of water erosion 2023 (GSAA) and the modelled erosion layers.

The results showed (Table 3) that according to DMR 5.0 and Act 220/2004 Coll, the no-exposure category increased by 19.98%. Users of these areas are free of any restrictions, which – according to the erosion heterogeneity layer – are wrongly considered to be at moderate or severe erosion risk under current rules. Users must restrict their agricultural production in areas of more than 12 ha in order to comply with GAEC 5, even though there are apparently no such conditions. Even if the DMR 5.0 model is applied with STN 75 4501, which has stricter limit values for land loss, users are wrongly sanctioned on an area of more than 7 ha.

Comparing the results modelled under DMR 3.5 and Act 220/2004 Coll, the opposite trend emerges, where the non-exposed areas are generated according to the 'Water Erosion Layer 2023' by 4.40% lower. Take note of the differences in soil loss calculated based on DEM 3.5 with STN 75 4501) and DEM 5.0 with STN 75 4501. No exposure areas show a difference in the acreage of +22.82% in favour of DEM 5.0 with STN 75 4501 and +24.37% in favour of DMR 5.0 with Act 220/2004 Coll.

Under DMR 3.5 with Act 220/2004 Coll, the moderately exposed areas increased by 8.82% when compared to the layer in the GSAA. Land loss calculated in line with DEM 5.0 and Act 220/2004 Coll is lower by 18.27% compared to DMR 3.5 with Act 220/2004 Coll. According to DEM 5.0 with STN 75 4501 and DEM 3.5 with STN 75 4501, a difference of less than +7% in the category of moderate exposure by soil loss was obtained.

When comparing the results generated by the DMR 5.0 model plus Act 220/2004 Coll with the results from the 'Water Erosion Layer 2023', the distribution of areas of severe exposure is lower by 12.53%, compared to the soil loss calculations based on DEM 3.5 with STN 75 4501 with an increase of 8.53%.

DISCUSSION

The GAEC5 conditions that were presented through the Water Erosion 2023 layer of the GSAA were misinterpreted, which led to a negative response from land users. The situation was exacerbated by the late availability of the layer, which has a start date of 2023 (i.e. immediately), meaning that land users had only a short period of time to resolve inaccuracies with the real situation.

A comparison of the GSAA 2023 Water Erosion Layer against the calculated erosion based on the DMR 5.0 model showed uniformity among the classified categories over an area of 40.53 ha (65%): 24.87 ha of no exposure, 15.53 ha of moderate exposure, and 0.13 of severe exposure.

The conditions improved for land users at an area of 15.12 ha (24%): We assess that the following conditions have improved: the no exposure category that is moderately exposed in reality (2.50 ha), the no exposure category that is severely exposed in reality (none), and the moderate exposure category that is not exposed in reality (12.62 ha). The conditions improved for land users at an area of 6.70 ha (11%): We assess that the following conditions have been downgraded: the moderate exposure category that is severely exposed in reality (0.09 ha), the severe exposure category that is not exposed in reality (2.31 ha), and the severe exposure category that is moderately exposed in reality (4.30 ha).

Following these results, it can be clearly stated that the 2023 layer of water erosion (GSAA) currently in place will continue to cause problems. Land users will be constantly confronted with the reality of the situation. Eroding soils or soils exposed to erosion need to be realistically identified. Panagos et al. (2020) state that the future Common Agricultural Policy (CAP) 2021–2027 could be a framework for better monitoring soil erosion in the EU and for applying soil conservation practices to reduce soil erosion. According to Evans (2013), data on the specific manifestations of erosion in an area are also essential for calibrating model estimates and calculations, especially in times of climate change. Vácha (2022) considers soil erosion monitoring as a very useful activity that contributes significantly to the assessment of erosion phenomena on agricultural land; such an approach has been implemented in the Czech Republic (Gebhart et al., 2023; Kapička et. al., 2019). Monitoring of farmland erosion is also taking place with varying length, intensity, and extent in several European countries such as Germany (Hoper and Meesenburg, 2012), Spain (Rodriguez-Blanco and Taboada-Castro, 2013), Switzerland (Prasuhn, 2011), UK (Boardman, 2013), Sweden (Alström and Akerman, 1992), and Belgium (Van Oost et al., 2005).

Discrepancies of erosion models with the current state on the ground may be in favour of the user, and this means satisfaction on both sides since in these cases, the user will have no reason to raise these concerns, thus the state will have no reason to deal with the issue. On the other hand, discrepancies that are to the detriment of the user will give rise to many questions and spark subsequent field assessments, as they mean lower direct payments for users. Also, improperly defined areas of moderate and severe exposure do not allow the cultivation of crops with low erosion capacity, which can put farmers at a disadvantage in securing fodder for their self-sufficiency, often unjustifiably so.

The Water Erosion Layer 2023 in force published on the GSAA portal does not always represent the real situation of an area exposed to erosion. These discrepancies are mainly caused by the use of the DMR 3.5 base for the calculation of soil loss due to water erosion, which does not allow a realistic determination of water erosion with accuracy to the land parcel level at a resolution of 10x10 m/pixel. The fact that so far we have a continuous elevation model for the whole of Slovakia only on the DMR 3.5 model predetermines its use for the purpose of controlling the conditions of subsidy schemes. We consider this to be inadequate also due to the fact that currently the DMR 5.0 model based on the LLS has already been developed for an area of 42,545,756 km^2 (83.35% of the Slovak Republic, including the overlap between the individual LOTs and the overlap of state borders). The explicit use of DMR 5.0 in locations where it has already been developed is essential to ensure that the evidence base for direct payments shows much more accurate inputs to the models. When using the DMR 5.0 model for the whole territory of the Slovak Republic, it is necessary to take into account problems in the calculation of water erosion due to the consideration of a large number of hydrotechnical objects (culverts, bridges, etc.), which are not taken into account by the DMR 5.0 (e.g. Muchová and Šinka, 2021).

If the current 'Water Erosion 2023' layer is kept, we recommend averaging the land parcel to a single average erosion hazard value for the area based on the magnitude of the distribution of each water erosion category. A similar approach is being implemented in the Czech Republic (Kapička et al., 2019). The degree of vulnerability to water erosion is divided into three classes: no exposure, moderate exposure, and severe exposure. This method would avoid the issues that in a single parcel, agrotechnical practices unfairly affect negligible areas in higher water erosion categories and vice versa. The extreme heterogeneity of erosionally distinct categories within a single land parcel would be avoided. According to the categorisation of land parcels, rules for proper soil conservation agrotechnics and suitability/unsuitability of the crops grown would be clearly established. The implementation of the CAP would thus avoid ambiguous interpretation of the conditions, which is currently happening in Slovakia.

CONCLUSIONS

A change in the mitigation of degradation processes could be brought about by the correct setting of conditioning conditions under GAEC 5 (Minimising soil erosion. Limit soil erosion by putting in place suitable practical measures). In September 2022, the Agricultural Payments Agency published a notice to direct payment claimants that they will have to comply with conditionality requirements from 2023. Through the water erosion layer 2023, parts of land parcels that are severely exposed to water and wind erosion are mandatorily identified. On the parts of these land parcels, land users must restrict the choice of crops and apply soil conservation technologies in accordance with GAEC5. The concerns raised by land users are based on the fact that the water erosion layer does not always correspond to the real exposure to erosion, which will unfairly limit management in terms of livestock production needs and crop rotation. The current regulation also requires a change in the established tillage technology with an impact on forced investment in mechanisation, which is unrealistic in the short term without additional funding. Depending on the land parcel listed in Pastuchov Land Registry, on the sample area of 62.42 ha, we found a discrepancy between the registration and the real state. The results show a downgrade of land user conditions in 11% of the area. The conditions improved for land users at an area of 24 ha (24%): This means that 35% of the model land block area is incorrectly evaluated. The solution, in our opinion, is to rethink the input layer by monitoring the actual occurrence of erosion events, which should become part of the mandatory reporting. There is also a need to use more accurate modelling inputs wherever available and/or appropriate classification of soil blocks.

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