Effects of military activity on Pannonian sand grasslands

In our research we studied different types of open sandy grassland. We compared these vegetation types in the military sample areas of the Great Hungarian Plain and the Little Plain (Gönyű, Györszentiván and Tatárszentgyörgy). In the former military shooting ranges and exercise ranges in the Little Hungarian Plain (Gönyű and Győrszentiván), habitat reconstruction and grassland planting were carried out, as well as burning in one of the populations. Active military activities are still ongoing in the Great Hungarian Plain (Tatárszentgyörgy). Six coenological surveys were made in each of the sample areas using 2×2 m quadrats. *Festuca vaginata* was the dominant species in the open grassland areas studied in all restored and active military sample areas. Among these open sandy grasslands of *Festucetum vaginatae* type, natural sandy grasslands were the most diverse in terms of species composition. Established and spontaneously formed vegetation became similar to these grasslands by the fifth year of the post-intervention study, but the vegetation of the burned area was poor in species. In the sample area under military activity, some populations dominated by *Festuca vaginata* were also poor in species. Nevertheless, the vegetation recovered well, as five years after the restoration works were completed, the vegetation of the recultivated and planted sample areas in the Little Hungarian Plain was restored to semi-natural conditions. This was due to the location of species-rich propagule patches nearby, which provided natural grasslands. Thus, it can be concluded that military activity may have played a role in habitat conservation, which is confirmed by the vegetation surveys of areas with active military activity.

MALDI-TOF MS application for microbial identification - advantages and limitations

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Microbial populations play many roles in the environment such as in the soil. They are responsible for nutrient cycling, its availability in the soil, and the biodegradation of toxic pollutants. Hence their role in maintaining the balance in the ecosystem. Therefore, isolating and identifying different microorganisms are important to most environmental research.

Due to the high cost and time associated with the conventional molecular techniques that are based mainly on phenotypic characteristics, for example, growth pattern on different media, colony morphology, Gram stain, and various biochemical reactions, Matrix-Assisted Laser Desorption Ionization Time-Of-Flight (MALDI-TOF) Mass Spectrometry (MS) has gained considerable attention for routine identification of bacteria, characterization, and typing. Complement with the Colony Forming Unit (CFU) method can be used for obtaining a protein fingerprint or profile unique to each microorganism, this technique has been

mainly used in many fields such as food quality and safety, clinical diagnoses, and the environment. In this review, we will discuss the ability to use the applications of MALDI-TOF MS in the identification of microorganisms from various environmental samples.
The different environmental conditions have different effects on the survival-, reproductivity- and role of microbes in the environment. This review aims to introduce and summarize these developments that have been enabled for routine application in the field of protein-based microbial identification.

Sentinel- 1-es műholdfelvételeken alapuló belvíz elöntés vizsgálat GLCM textúrák és gépi tanulás segítségével

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Napjainkban a klímaváltozásnak következtében az egyre szélsőségesebb időjárásnak köszönhetően egyre gyakrabban és egyre nagyobb területekre kiterjedő belvíz elöntésekre számíthatunk. A belvíz hatalmas kártételei miatt fontos a preventív védekezés mielőbbi megkezdéséhez. A nagy területekre és megfelelő térbeli felbontással rendelkező ingyenesen az Európai Űrügynökség (ESA) által elérhető Sentinel műholdcsalád aktív és passzív műholdjainak a felvételei által „szinte folyamatos" monitorig rendszer alakítható ki. A felhőmentes napokon a Sentinel 2-es felvételek a légköri zavarokkal terhelt (felhő, felhő árnyék) időszakokban a Sentinel 1-es felvételek felhasználása teszi ezt lehetővé. Az általunk kidolgozott konvolúciós neurális hálózat (CNN) Sentinel 1-es (radaros) felvételek nyers sávjaiból, a radar vegetáció indexből (RVI) és a Gray-Level Co-Occurrence Matrix-ból (GLCM) nyert bemeneti jellemzők alapján kívánja bemutatnia a belvíz detektálásának lehetőségét.

Inland Excess Water study based on Sentinel-1 satellite images using GLCM textures and machine learning

Nowadays, due to climate change and increasingly extreme weather, shallow floods are becoming more frequent and widespread. Given the enormous damage caused by IEW, it is important to start preventive protection measures as soon as possible. A 'near-continuous' monitoring system has been developed using images from the active and passive satellites of the Sentinel satellite family, available free of charge from the European Space Agency (ESA), with sufficient spatial resolution and over large areas. On cloud-free days, Sentinel-2 images can be used alongside Sentinel-1 images during periods of atmospheric disturbance (clouds, cloud shadows). Our workflow aims to demonstrate the possibility of detecting IEW using a convolutional neural network (CNN) with input features extracted from raw Sentinel-1 bands, radar vegetation indices and Gray-Level Co-Occurrence Matrix (GLCM textures.
