

Coenological and biomass investigation of the sandy grasslands along the Danube

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Festuca taxa are important grassland species in the Pannonian vegetation, and are defining members of it where conditions are too extreme for most plants. Based on surveys on grassland management, habitats of narrow-leaved or small *Festuca* species are an indicator of poor productive capacity, but are important in terms of nature conservation. The significance of these grasslands are likely to be increasing in line with climate change and expanding dry habitats.

Coenological plots and cut samples of biomass were made along the Danube from 17 areas, beginning in the northwestern part of the Little Hungarian Plain, across the central great sandy plains of the Carpathian Basin (divided into three parts: north, middle, south) to the southernmost part of the Basin at Deliblato, Serbia. The last samples were made beyond the Carpathians on the Romanian Great Plain and Bulgaria. 6 samples were recorded in each area using 0,5x0,5 m quadrats. Samples were divided to the following categories: 1. *Festuca* taxa, 2. other grasses; 3. legumes; 4. other dicots; 5. other monocots; 6. dead leaves.

We followed the sandy vegetation from the Little Hungarian Plain (Csallóköz) to the Romanian Great Plain along the Danube. Our main goal was to determine the quantity and composition of the biomass of these grasslands.

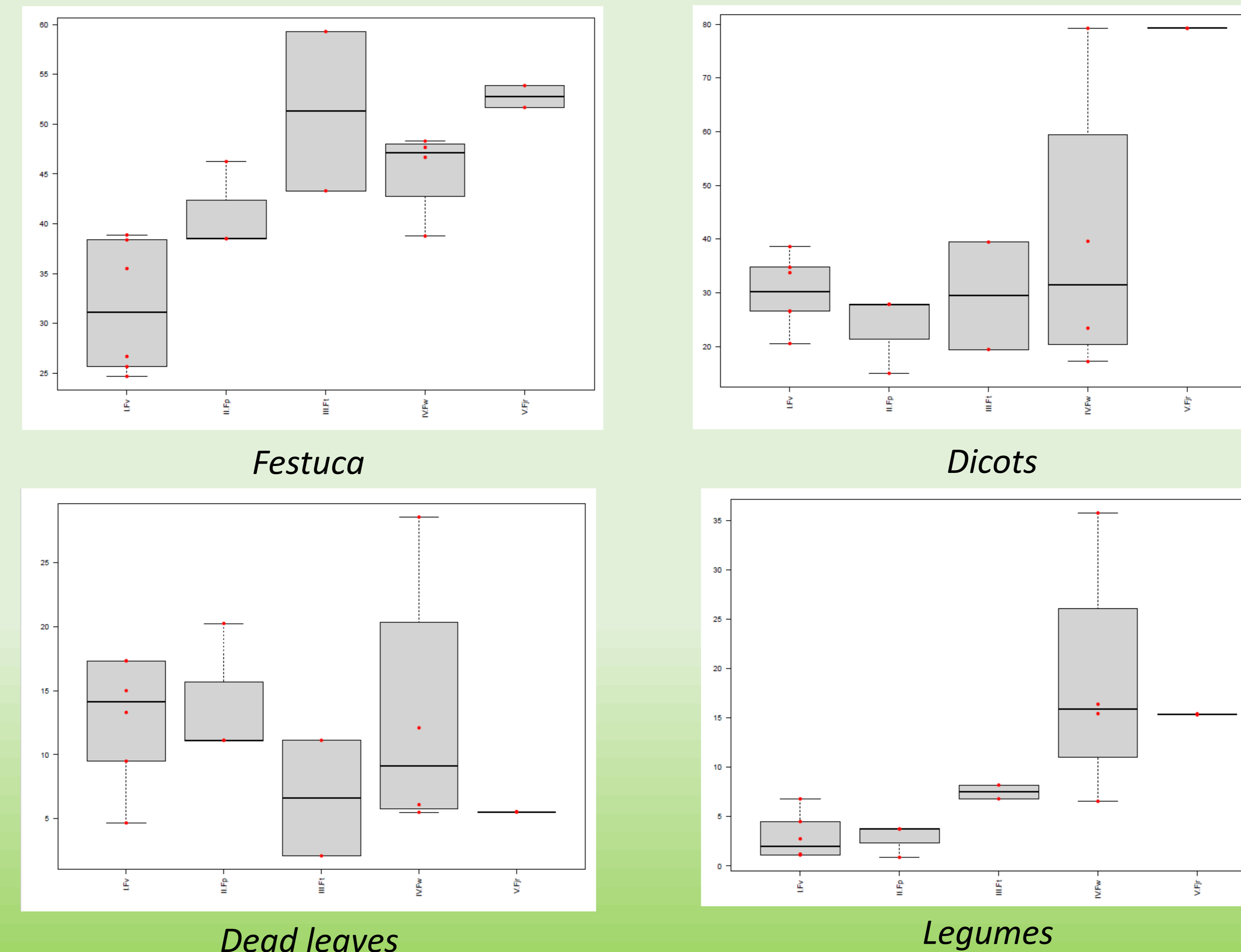


Fig 1.: typical *Festuca vaginata* grassland at Kéleshalom, Hungary

Fig. 2.: Biomass composition of the *Festuca* grasslands. The columns are the following:

- I. *Festuca vaginata* (Fv)
- II. *Festuca pseudovaginata* (Fp)
- III. *Festuca tomanii* (Ft)
- IV. *Festuca wagneri* (Fw)
- V. *Festuca javorkae/rupicola* (Fjp)

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What is the quantity of biomass and does it change at various locations?
How do the composition of biomass and the composition values of *Festuca* spp. make these grasslands capable of pasturing?

According to our results, the biomass of the grasslands was low, varying from 300 to 800 g/m². It is under 500 g/m² in open sandy grasslands, and was relatively higher in closed ones. *F. vaginata* grasslands had the lowest value, while *F. rupicola/javorkae* had the highest, but comparing to the other categories, the relative biomass of *Festuca* taxa was high in every habitat. Dicots (without legumes) were also an important category. The relation of these two groups also changed: the more closed the habitats (from *F. vaginata* across *F. wagneri* to *F. rupicola javorkae*), the lower the relative abundance of *Festuca* taxa and the higher of legumes. Samples from *F. rupicola/javorkae* and *F. wagneri* included also the most legumes.

The quality and quantity of hay from these dry grasslands is low, it can be a usable feed source for the small ruminant industry, i. e. sheep grazing. However, as the climate of the Carpathian Basin is getting drier in line with climate change, their role in pasturing should be reconsidered in the future.