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The impact of *I. glandulifera* depended on the target species and on the plant's developmental stage. *I. glandulifera* juveniles were surprisingly not tolerant to 2-MNQ and to intra-specific competition. In conclusion this may regulate growth within *I. glandulifera* populations. Regarding the native seedling experiments only *Urtica dioica* was negatively affected. In the juvenile stage 2-MNQ reduced the growth of *U. dioica* and *Geum urbanum* but not of *Filipendula ulmaria*. In competition with *I. glandulifera* the growth of all natives was reduced, most of all *U. dioica* up to 86 %. However the competitive effect of *I. glandulifera* mostly was not stronger than the intraspecific competition. In conclusion *I. glandulifera* has a similar part in the ecosystems than the investigated dominant native plants without eliminating them but reducing their cover. Species specific reactions to *I. glandulifera* further may result in changed species compositions in native plant communities.

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## Functional variation of *Brachypodium genuense* (DC.) Roem. et Schult in sub-Mediterranean grasslands

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**Keywords:** intra-specific functional trait, grassland invasion, fast-slow growing strategies

Semi-extensive farming cessation and settlement abandonment are threatening European pastoral landscapes and their biodiversity, affecting species assemblage and ecosystem functioning. At community level, this process typically involves the spread of coarse tall grass species able to dominate the community thanks to particular sets of traits. In this sense *Brachypodium genuense* (DC.) Roem. et Schult. is a problematic species occurring in the semi-natural grasslands of the Italian peninsula over 1,200-1,400 m a.s.l. Its spread decreases the light irradiance at the ground level, besides soil pH, temperature and water content as well as species diversity and richness. In addition, *B. genuense* dramatically reduces the nutrient value of pastures negatively affecting both shepherding and habitat suitability for wild herbivores. Consequently, understanding the ecological factors that allow for its spread, and the relationship between its functional features and environmental constraints, is a primary goal for biodiversity and socio-economic issues. Since traits reflect the trade-offs among different functions within a plant and variations in resource availability have been shown to determine their inter- and intra-specific variations.

We hypothesized that *B. genuense* was able to spread and dominate the sub-Mediterranean grassland communities (Monti Sibillini, central Italy) subjected to a wide range of environmental conditions, thanks to its broad spectrum of performances. In fact, it showed large plasticity, mirrored by high variations of Specific Leaf Area (SLA), plant height and tussock cover values.

We found that in more productive conditions (deeper soil, medium/high pH values, north-facing slopes, and “conservative” landforms) populations of *B. genuense* had higher SLA, plant height and cover values. This underlies a fast-growing strategy based on high resource rate of acquisition and use, as well as higher competitive ability for aboveground resources (e.g. light). In unproductive/dry conditions (south-facing slopes, shallow soils, lower pH values) *B. genuense* had lower SLA, plant height and cover values, underlying a slow-growing strategy with low rate of resource acquisition and high rate of resource conservation. In addition, we found that very high nitrogen amount might have a detrimental effect on *B. genuense* individuals decreasing the SLA values, thus requiring the plant to change the growth strategy.

We also inferred that the invasive/dominant behavior of competitive-stress tolerant tall grasses is related not only to clonal integration strategy, plant height, litter deposition, etc., but also to the morphological plasticity of leaves, allowing plants to maintain the coordination of multiple resource capture and, hence, to sustain dominance.

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## **The effects of habitat type and precipitation on *Quercus robur* seedling emergence and survival**

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**Keywords:** forest-steppe, spatial heterogeneity, pedunculate oak, by commas

The existence of forest-steppes depends on a subtle balance of several environmental factors, thus even minor modifications in some parameters can result in considerable vegetation changes. As forest-steppes of the Carpathian Basin are located at the western edge of the biome, they may be particularly sensitive to environmental changes.

In the Carpathian Basin, mean annual temperature is likely to increase and summer precipitation to decrease with climate change. Oaks are usually expected to react negatively to these changes. However, the frequency of extreme precipitation events will probably increase, which may have positive effects for oak regeneration. Unusually wet seasons or years may be of particular significance, and may benefit oak germination and seedling establishment. This, in turn, can have fundamental effects on community structure and composition. In this