

# Evaluation of leaf tensile strength of selected grass genotypes

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## INTRODUCTION

- Grass leaves are dominant in pasture swards and, therefore, investigations associated with leaf tensile strength are crucial for the determination of the total energy expenditure to ingest fodder.
- The objective of this work was to evaluate leaf tensile strength of selected pasture grass species and cultivars.

## METHODS

**Origin of plant material:** two cultivar testing experiments in randomized complete block designs on 10 m<sup>2</sup> plots established in 2007 and 2008 with *Dactylis glomerata* – Dg (10 cultivars), *Festuca arundinacea* – Fa (10 cvs), *Festuca pratensis* – Fp (15 cvs), *Lolium perenne* – Lp (16 2x and 15 4x cvs) and *Phleum pratense* – Php (10 cvs) at the Brody Experimental Station (52° 26' N, 16° 18' E)

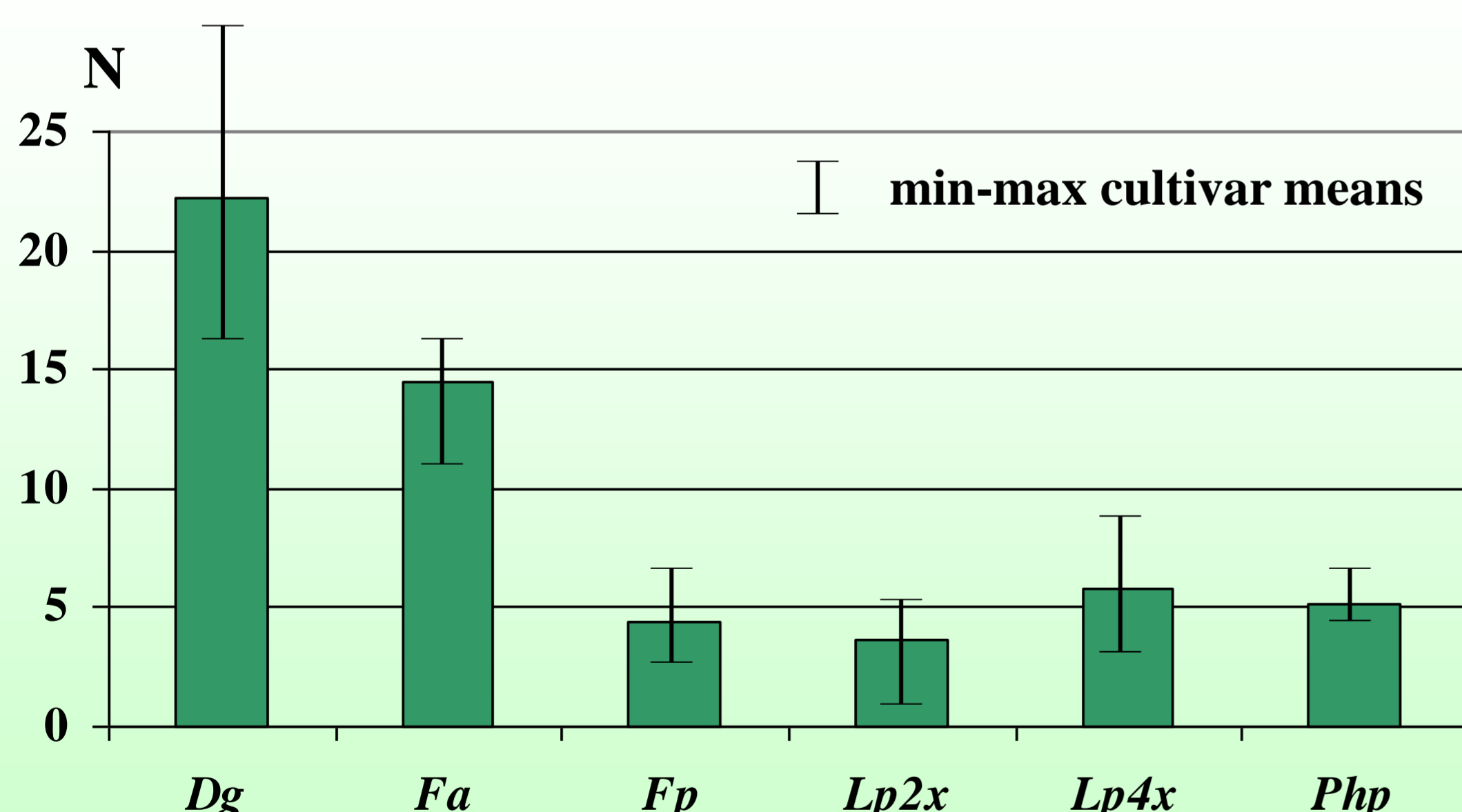
**Material:** 30 fully developed grass leaves of each species and cultivar in the vegetative growth stage (ca. 20 cm height)

**Estimated feature:** leaf tensile strength using prototype testing stand designed on the basis of subassemblies of the Höttinger Baldwin Messtechnik (HBM) Company



## RESULTS

Leaf tensile strength of grasses in total investigation period



Leaf tensile strength of grasses in regard to leaf weight and width

Species	Leaf blade weight		Leaf blade width (mm)	Leaf tensile strength		
	FM (g)	DM (g)		N g <sup>-1</sup> of fresh matter	N g <sup>-1</sup> of dry matter	N mm <sup>-1</sup> of leaf blade width
<i>Dactylis glomerata</i>	1.15	0.33	8.0	19.30	67.98	2.77
<i>Festuca arundinacea</i>	0.76	0.26	7.3	19.00	55.13	1.99
<i>Festuca pratensis</i>	1.48	0.34	5.1	2.95	12.82	0.85
<i>Lolium perenne</i> 2x	0.36	0.08	3.4	10.20	43.33	1.07
<i>Lolium perenne</i> 4x	0.61	0.15	4.6	9.51	39.46	1.26
<i>Phleum pratense</i>	0.86	0.23	6.2	6.03	22.18	0.84

## CONCLUSIONS

- ❑ Intraspecific differences in leaf tensile strength in each of the analysed grass species were statistically significant.
- ❑ Performance of precise tensile strength measurements of leaf blades could be a helpful tool in the breeding for creation of improved pasture grass cultivars and selection of appropriate components in seed mixtures.
- ❑ The obtained results help to better understand the impact of plant functional traits on forage intake.