Growth strategies as determinants of CO₂ sequestration and response to nitrogen fertilisation in C₄ grasses in South American natural grasslands

Anderson Cesar Ramos Marques[A,F], *Leandro Bittencourt de Oliveira*[B], *Raíssa Schwalbert*[A], *Bianca Knebel Del Frari*[A], *Gustavo Brunetto*[C], *Fernando Luiz Ferreira de Quadros*[D], *Carlos Nabinger*[E] *and Fernando Teixeira Nicoloso*[A]

[A]Department of Biology, Federal University of Santa Maria, Roraima Avenue 1000, CEP 97105-900 Santa Maria, RS, Brazil.

[B]Integrated Regional University of Alto Uruguai and Missões (URI), Frederico Westphalen, RS, Brazil.

[C]Soil Department, Federal University of Santa Maria (UFSM), Santa Maria, RS, Brazil.

[D]Department of Animal Science, Federal University of Santa Maria (UFSM), Santa Maria, RS, Brazil.

[E]Department of Forage Plants and Agrometeorology, Federal University of Rio Grande do Sul Porto Alegre, RS, Brazil.

[F]Corresponding author. Email: acrmarques@hotmail.com.br

Supplementary Material Table S1. Morphological and physiological characterization and of habitat of utilized species

Species	Leaf appearance rate	Phyllochron	Leaf elongation duration	Lifespan of leaves	Growth habit	Habitat characteristics
	-- *Leaf degree days^{-1}*--	---------------------- *Degree-days* ----------------------				
Axonopus affinis	0,0075	-	259	506	Grow by stolons	Areas with high soil moisture and with higher fertility
Paspalum pumilum	-	-		-	Grow by stolons	Areas with high soil moisture and with higher fertility
Paspalum notatum	0,0057	200	379	705	Grow by rhizomes	Distributed in all natural grasslands in South America
Paspalum urvillei	0,0051	200	-	-	Tussock/prostrate	Preferably in areas with low humidity
Paspalum plicatulum	0,0059	172	309	518	Tussock/prostrate	Preferably in areas with low humidity
Andropogon lateralis	0,0056	185	284	563	Dense tussock	Preferably in areas with low humidity
Saccharum angustifolius	0,0031	331	638	1039	Dense tussock	Preferably in areas with low humidity
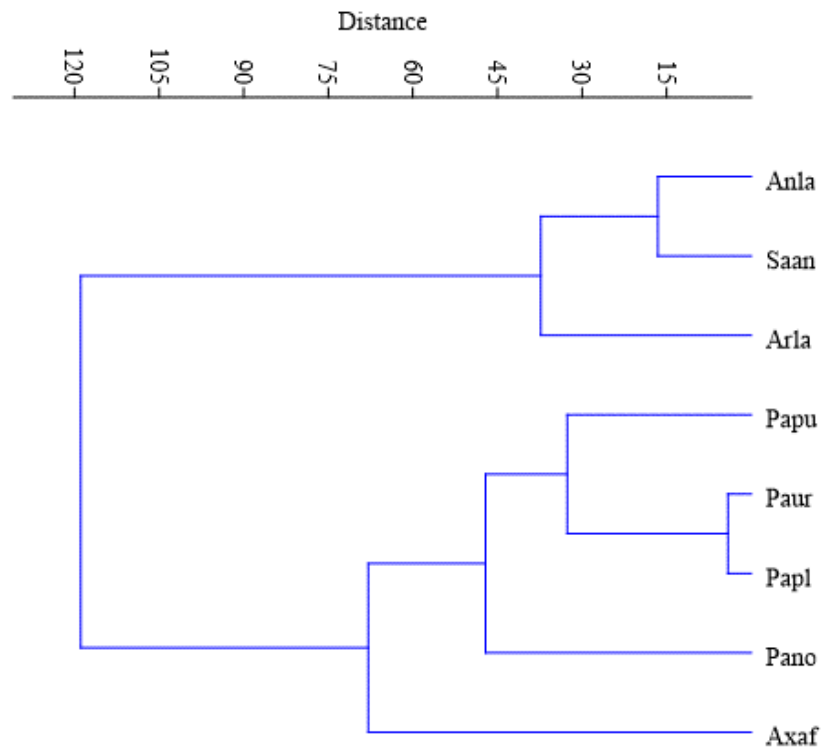
Supplementary Material Figure S1. Cluster analysis based on the similarity of leaf attributes of native grass species adopted to set the differences (p < 0.05) between groups of species belonging to the resource capture and resource conservation types. *Axonopus affinis* (Axaf); *Paspalum pumilum* (Papu); *Paspalum notatum* (Pano); *Paspalum urvillei* (Paur*); Paspalum plicatulum* (Papl); *Andropogon lateralis* (Anla); *Saccharum angustifolium* (Saan) and *Aristida laevis* (Arla).
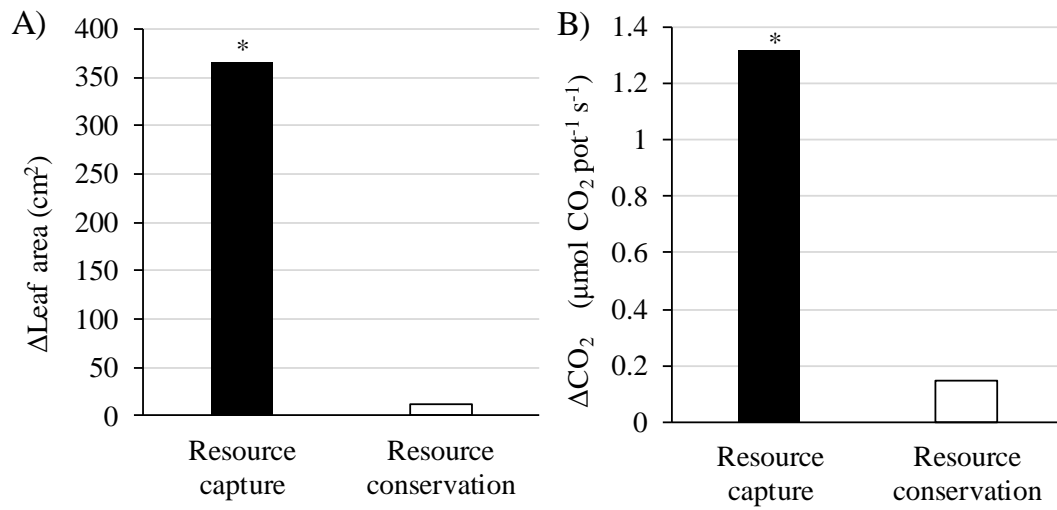
Supplementary Material Figure S2. Variations in leaf area (ΔLeaf area; A) and net assimilation rate of CO_2 (ΔCO_2; B) of grass species in South American natural grasslands presenting resource capture or conservation strategies as function of N availability. * Means significantly differed in the randomization test ($p < 0.05$).