

EGF Working Group “Grazing”

Grazing in a high-tech world



PISA case study: how an innovation in grazing management can modify all the production system at farm level

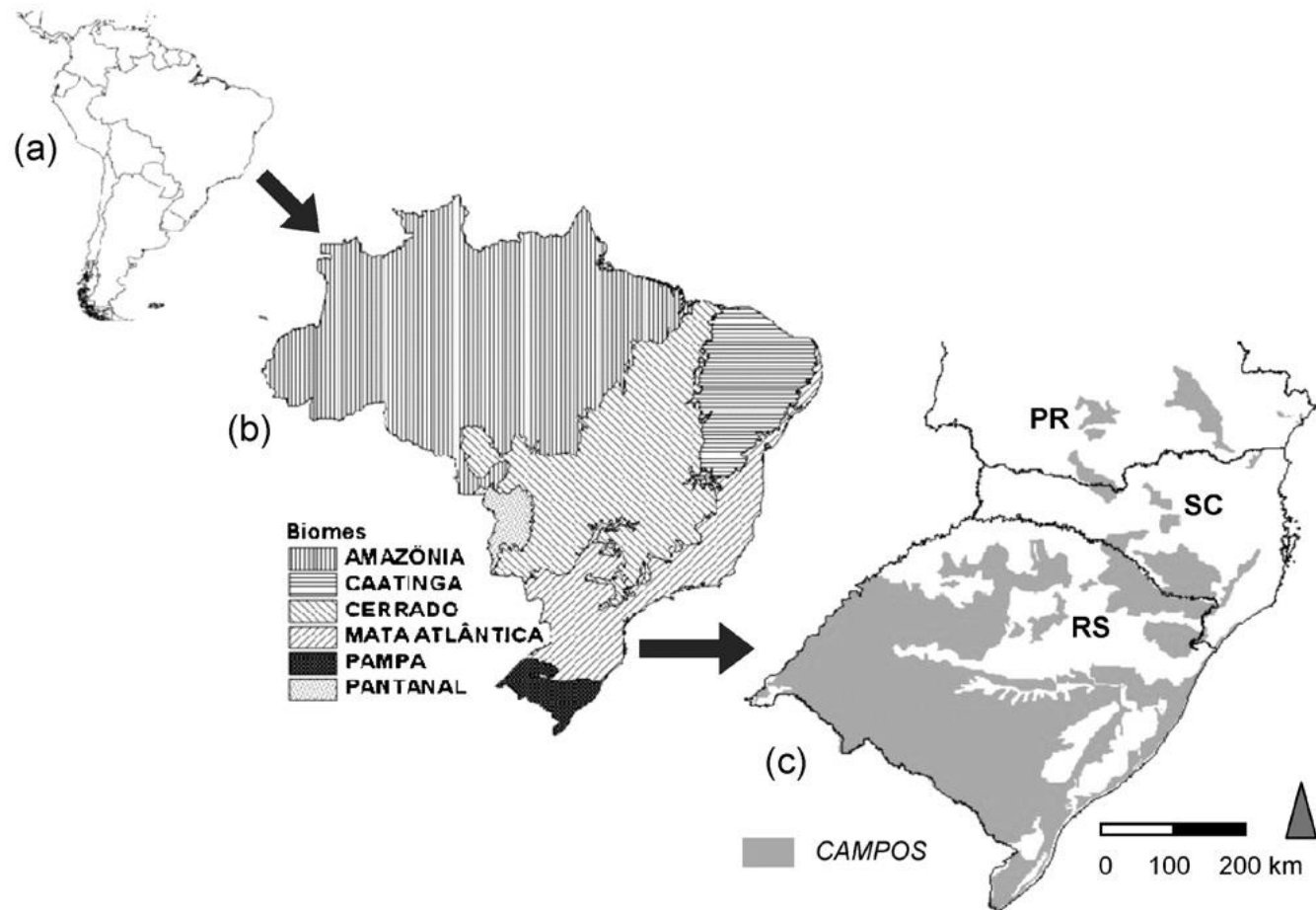
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The Brazilian Pampa Biome



Overbeck, G.E. et al. 2007. Brazil's neglected biome: The South Brazilian Campos. *Perspectives in Plant Ecology, Evolution and Systematics*, v.9, p.101-116.

PISA is a concept of production system based on sustainable intensification principles.

It is an Extension Project reaching now 1050 small farmers in Southern Brazil.



The PISA case study: from science to practice



On average, farmers milk 14 lactating cows, for a total daily milk production of ~150 l. Farms have ~20 ha.

Cows have access to pastures but ~70% of nutrients come from silage +concentrates

Consequences: > cost, > labor (feeding animals), < \$ and young abandoning

Science into practice: changing small holders lives...
...by which means? Starting with principles...



Grazing is a time consuming process



We assume that animals do not have enough time to "graze nutrients" due to the classical rationale...

Courtesy: M. Gibl

Changing the classical rationale on pastoral systems



**Plant growth
(primary productivity)**



**Plant harvest
(secondary productivity)**

**Focus on harvesting
efficiency**



Animal oriented guidelines: evaluation process



from reductionism...

...to production systems

(-)

Spatio-temporal scales

(+)



Phase 1

Scale: bite

**Output: sward
targets**

**Main parameter:
Intake rate**



Phase 2

Scale: tiller

Output: sward dynamics

**Main parameter:
Efficiency of
harvesting**



Phase 3

Scale: paddock

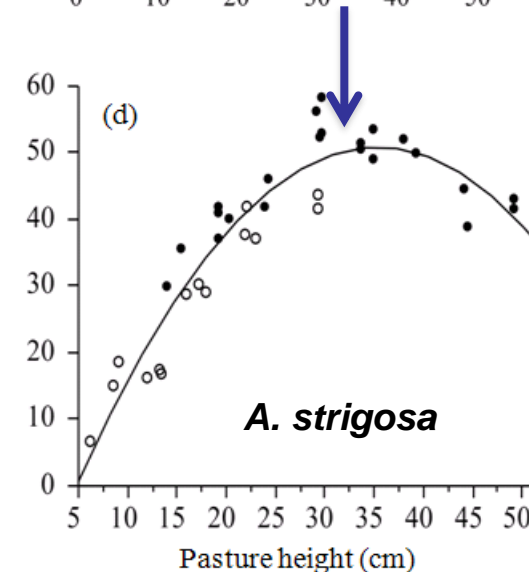
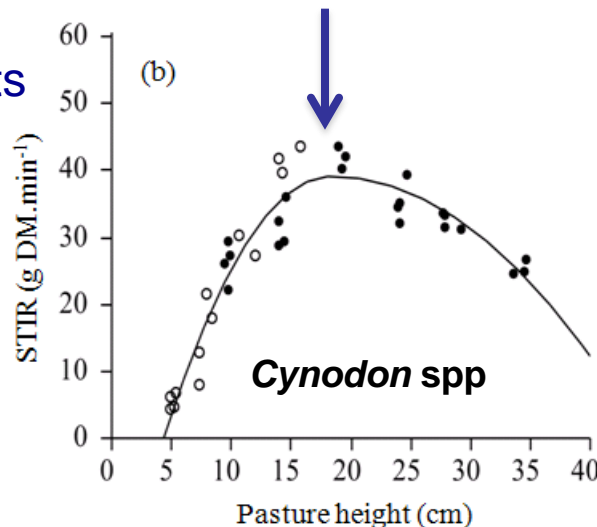
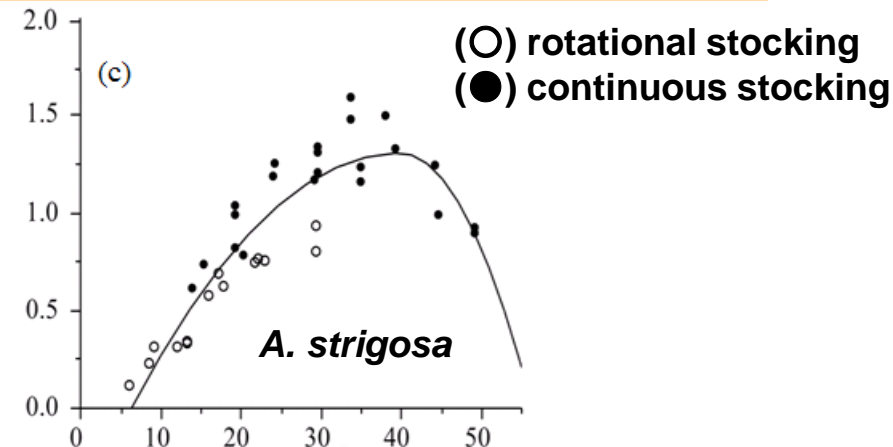
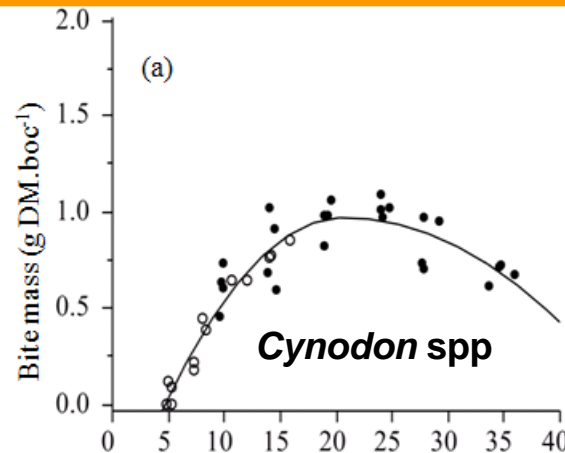
**Output: sward
production**

**Main parameter:
Efficiency of
utilization**

Grazing behaviour determining pasture targets



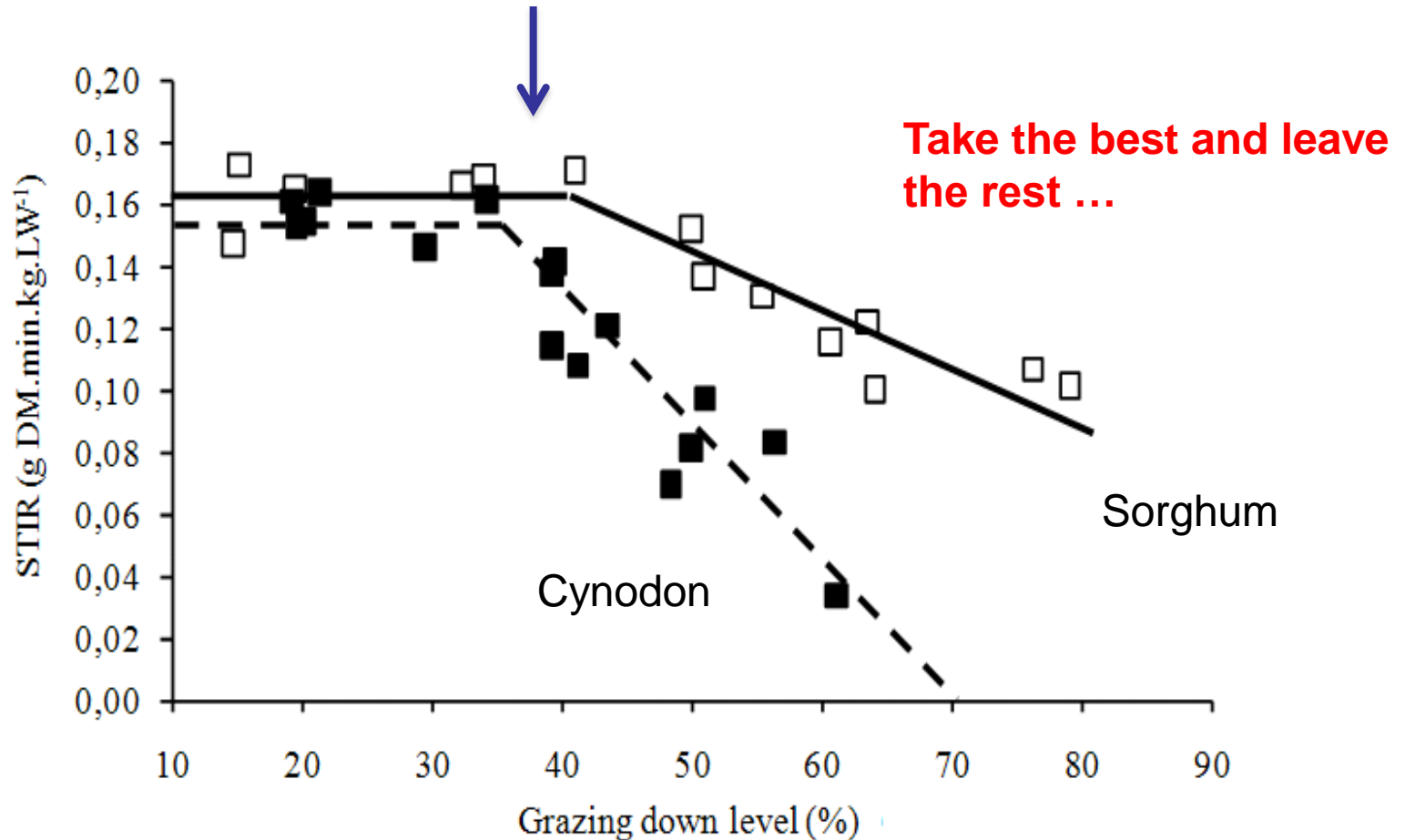
Determining pre-grazing targets...



Pre-grazing targets

Mezzalana et al., 2016. Adaptations of Type IV functional response for estimating short-term intake rate by grazing herbivores. **Journal of Functional Ecology** (subm).

Determining post-grazing targets...



Carvalho, P. C. F. 2013. Harry Stobbs Memorial Lecture: Can grazing behaviour support innovations in grassland management?. **Tropical Grasslands – Forrajes Tropicales**, v. 1, p. 137-155, 2013.

“Rotatinuous” stocking on temperate pastures



“Rotatinuous stocking” on tropical pastures



Stakeholder empowerment

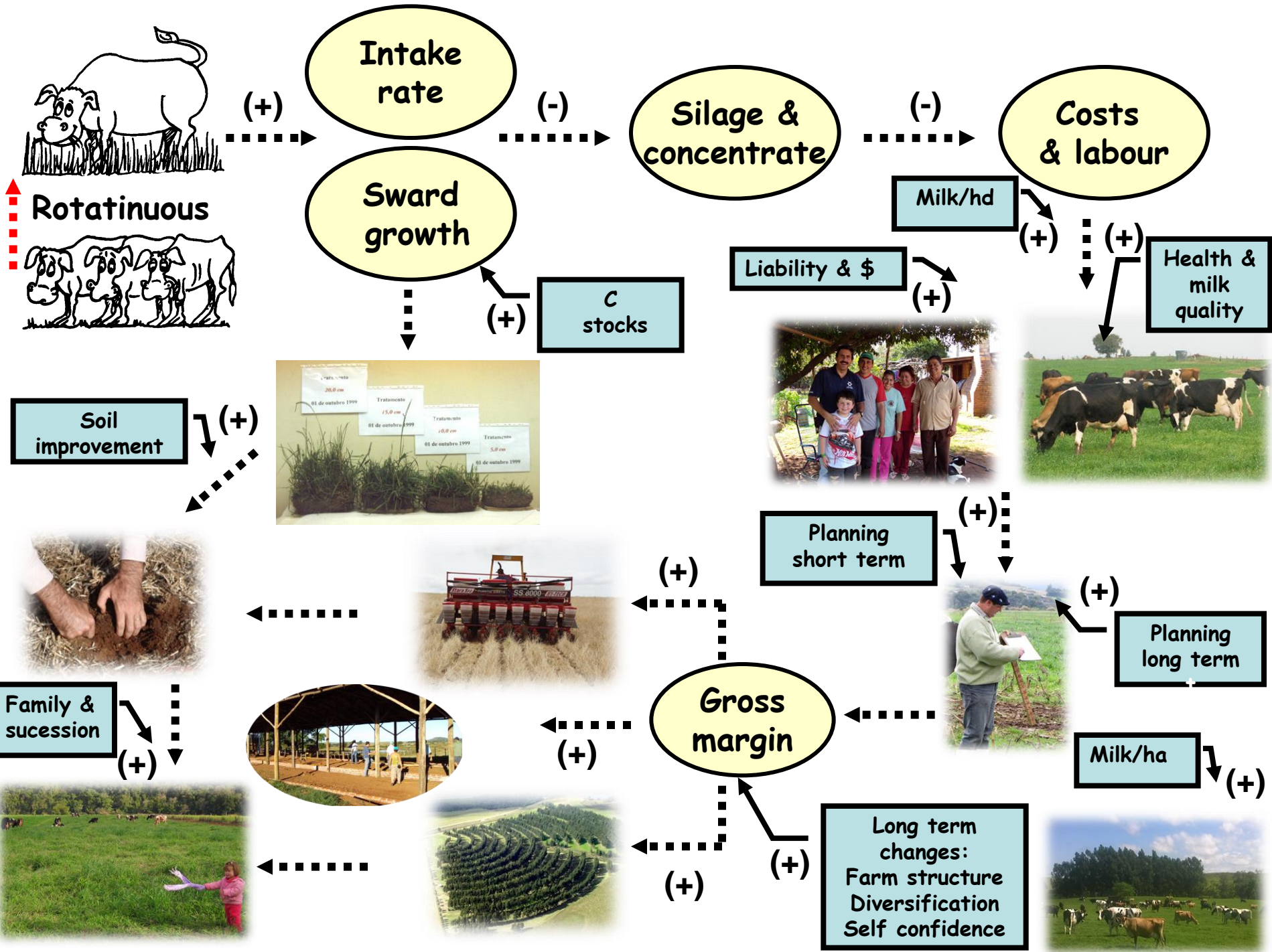


Alexandre Becker
"High-tech" sward stick– home made



Field day PISA Vale do Taquari
Travesseiro, RS, July 2012

Courtesy: SIA



**Há 4 anos
colhendo
resultados**

**Changing the value of farmers
work (father) changes the
willingness of young to not
leave farms...**

**...then, high-tech will keep
their interest on rural life...**



RESULTADOS DE ÁREAS COM PASTOREIO ROTATÍNUO 2015/16

GRANJA BECKER | TRAVESSEIRO/RS

Need for innovation in grazing science...



Thank you!
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Grazing Ecology Research Group:

sharing opportunities in grazing science



Integrated Crop-
Livestock Systems
Research Group



UFRGS
Federal University of
Rio Grande do Sul



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