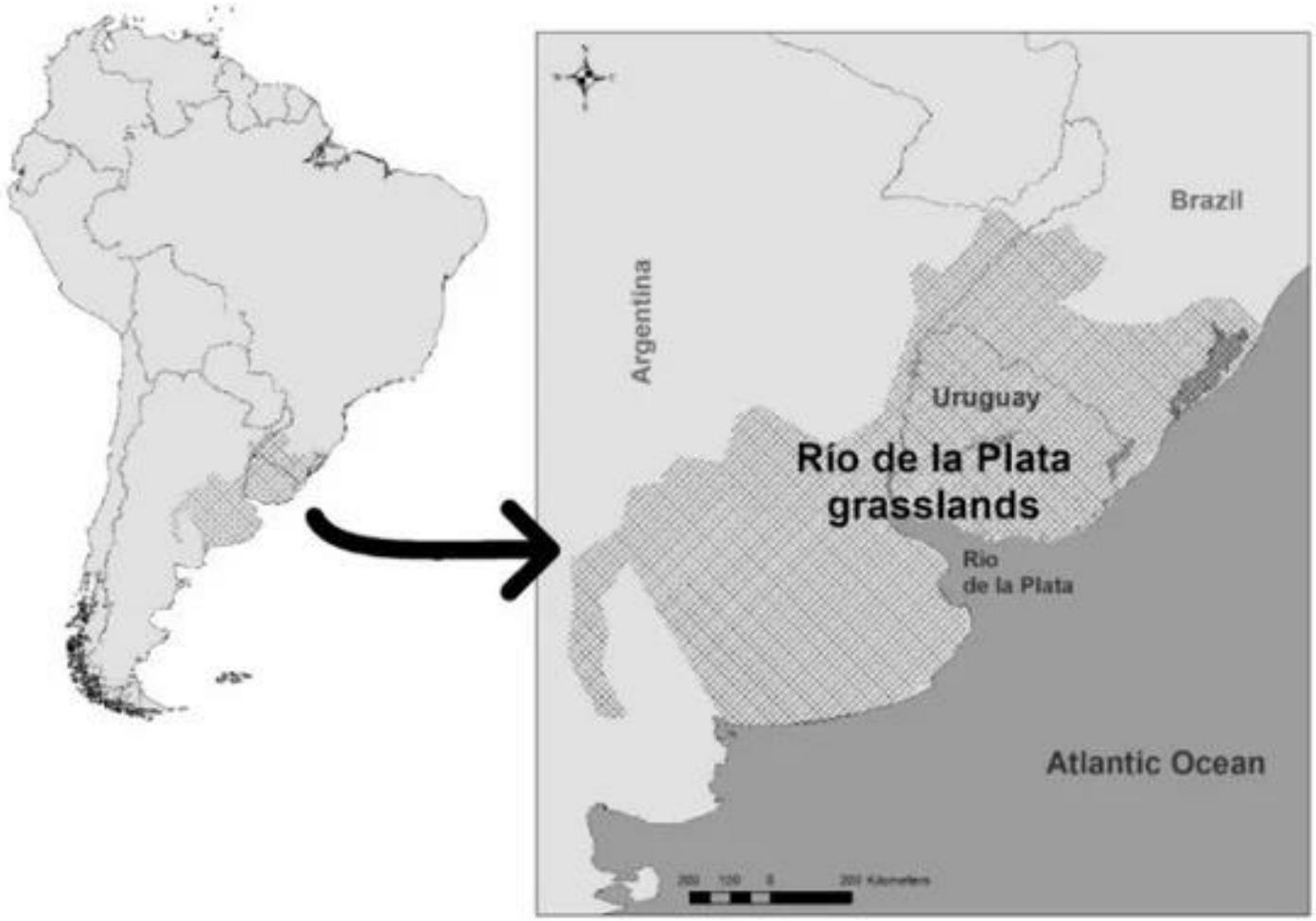
Regenera+.uy: designing a co-innovation process to apply the principles of regenerative livestock production

Blumetto, O.*; Bustamante, M.; Castagna, A.; Caresani, D.; Ciappesoni, G.; Baptista, R.; De Barbieri, I.

The geographical context



Tiscornia, G.; Jaurena, M.; Baethgen, W. Drivers, Process, and Consequences of Native Grassland Degradation: Insights from a Literature Review and a Survey in Río de la Plata Grasslands. Agronomy 2019, 9, 239. https://doi.org/10.3390/agronomy9050239

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Background

Ecological Indicators 101 (2019) 725–733

Contents lists available at ScienceDirect

Ecological Indicators

journal homepage: www.elsevier.com/locate/ecolind

Original Articles

Ecosystem Integrity Index, an innovative environmental evaluation tool for agricultural production systems

Oscar Blumetto[a,*], Andrés Castagna[a], Gerónimo Cardozo[b], Felipe García[c], Guadalupe Tiscornia[a], Andrea Ruggia[a], Santiago Scarlato[a], María Marta Albicette[a], Verónica Aguerre[a], Alfredo Albin[a]

[a] Instituto Nacional de Investigación Agropecuaria (INIA) Uruguay, Las Brujas Experimental Station, Uruguay
[b] Instituto Nacional de Investigación Agropecuaria (INIA) Uruguay, Treinta y Tres Experimental Station, Uruguay
[c] Agricultural Sustainability and Climate Change Unit, Ministry of Agriculture, Uruguay

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ABSTRACT

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Agricultural Systems 191 (2021) 103148

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The application of ecologically intensive principles to the systemic redesign of livestock farms on native grasslands: A case of co-innovation in Rocha, Uruguay

A. Ruggia[a,f,*], S. Dogliotti[b,**], V. Aguerre[a], M.M. Albicette[a], A. Albin[a], O. Blumetto[a], G. Cardozo[c], C. Leoni[a], G. Quintans[d], S. Scarlato[a], P. Tittonell[e], W.A.H. Rossing[f]

[a] Instituto Nacional de Investigación Agropecuaria (INIA), Programa Nacional de Investigación en Producción Familiar, Estación Experimental INIA Las Brujas, Ruta 48 km 10, Canelones, Uruguay
[b] Universidad de la República, Facultad de Agronomía, Departamento de Producción Vegetal, Av. Garzón 780, Montevideo, Uruguay
[c] Instituto Nacional de Investigación Agropecuaria (INIA), Programa Nacional de Investigación en Pasturas y Forrajes, Estación Experimental INIA Treinta y Tres, Ruta 8 km 281, Treinta y Tres, Uruguay
[d] Instituto Nacional de Investigación Agropecuaria (INIA), Programa Nacional de Investigación en Carne y Lana, Estación Experimental INIA Treinta y Tres, Ruta 8 km 281, Treinta y Tres, Uruguay
[e] Instituto Nacional de Tecnología Agropecuaria (INTA), Grupo de Agroecología, Ambiente y Sistemas de Producción, San Carlos de Bariloche, Argentina
[f] Farming Systems Ecology, Wageningen University and Research, Wageningen, the Netherlands

Journal of Insect Conservation
https://doi.org/10.1007/s10841-022-00399-y

ORIGINAL PAPER

Livestock systems preserving natural grasslands are biodiversity reservoirs that promote spiders' conservation

Gabriel Pompozzi[1,2] · Fernanda de Santiago[3] · Oscar Blumetto[3] · Miguel Simó[1]

Received: 17 May 2021 / Accepted: 8 April 2022

Abstract

Grasslands are endangered habitats through the world. Among its threats, land-use change has been recognized as one of the most important drivers of biodiversity decline. Sustainable livestock farming can be important conserving grasslands and preserving their biodiversity, and particularly in Uruguay are extensive and are carried out based on natural grasslands

Recursos Rurais (2022) nº 18 : 5-15
IBADER: Instituto de Biodiversidade Agraria e Desenvolvemento Rural
ISSN 1885-5547 - e-ISSN 2255-5994

Artigo

Oscar Blumetto

Los agroecosistemas ganaderos importante hábitat para las aves: análisis cualitativo del efecto del manejo productivo en especies prioritarias para la conservación en Uruguay

Recibido: 7 abril 2021 / Aceptado: 14 octubre 2021

Resumen La ganadería genera impacto ambiental a través de la modificación de los hábitats naturales y de las emisiones de gases de efecto invernadero que contribuyen

Livestock agroecosystems important habitat for birds qualitative analysis of the effect of productiv management on conservation priority species i

sustainability

MDPI

Article

From Theory to Practice: Can LEAP/FAO Biodiversity Assessment Guidelines Be a Useful Tool for Knowing the Environmental Status of Livestock Systems?

María Fernanda de Santiago [1,*], Margenny Barrios [2], Alejandro D'Anatro [3], Luis Fernando García [4], Ary Mailhos [5], Gabriel Pompozzi [6], Sofía Rehermann [2], Miguel Simó [7], Giancarlo Tesitore [2], Franco Teixeira de Mello [2], Victoria Valtierra [5] and Oscar Blumetto [1,*]

[1] Recursos Naturales, Producción y Ambiente, Instituto Nacional de Investigación Agropecuaria (INIA), Canelones CP 90100, Uruguay
[2] Departamento de Ecología y Gestión Ambiental, Centro Universitario Regional del Este (CURE), Universidad de la República, Av. Tacuarembó s/n, Entre Av. Artigas y Aparicio Saravia, Maldonado CP 20000, Uruguay
[3] Laboratorio de Evolución, Facultad de Ciencias, Universidad de la República, Iguá 4225, Montevideo CP 11400, Uruguay
[4] Centro Universitario Regional del Este (CURE), Universidad de la República, Ruta 8 km 282, Treinta y Tres CP 33000, Uruguay
[5] Laboratorio de Botánica, Facultad de Agronomía, Universidad de la República,

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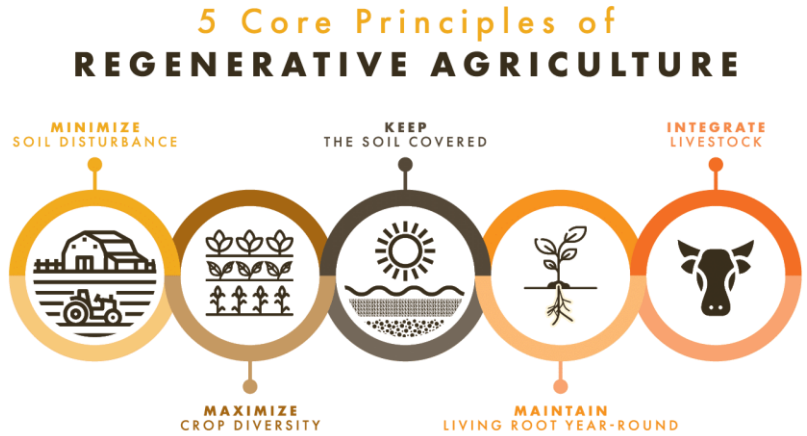
Starting a new path of cooperation

CHARGEURS
LUXURY MATERIALS
CHARGEURS GROUP



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Quantis

GrassToGas

Smarter
SMAll RuminanTs breeding for Efficiency and Resilience

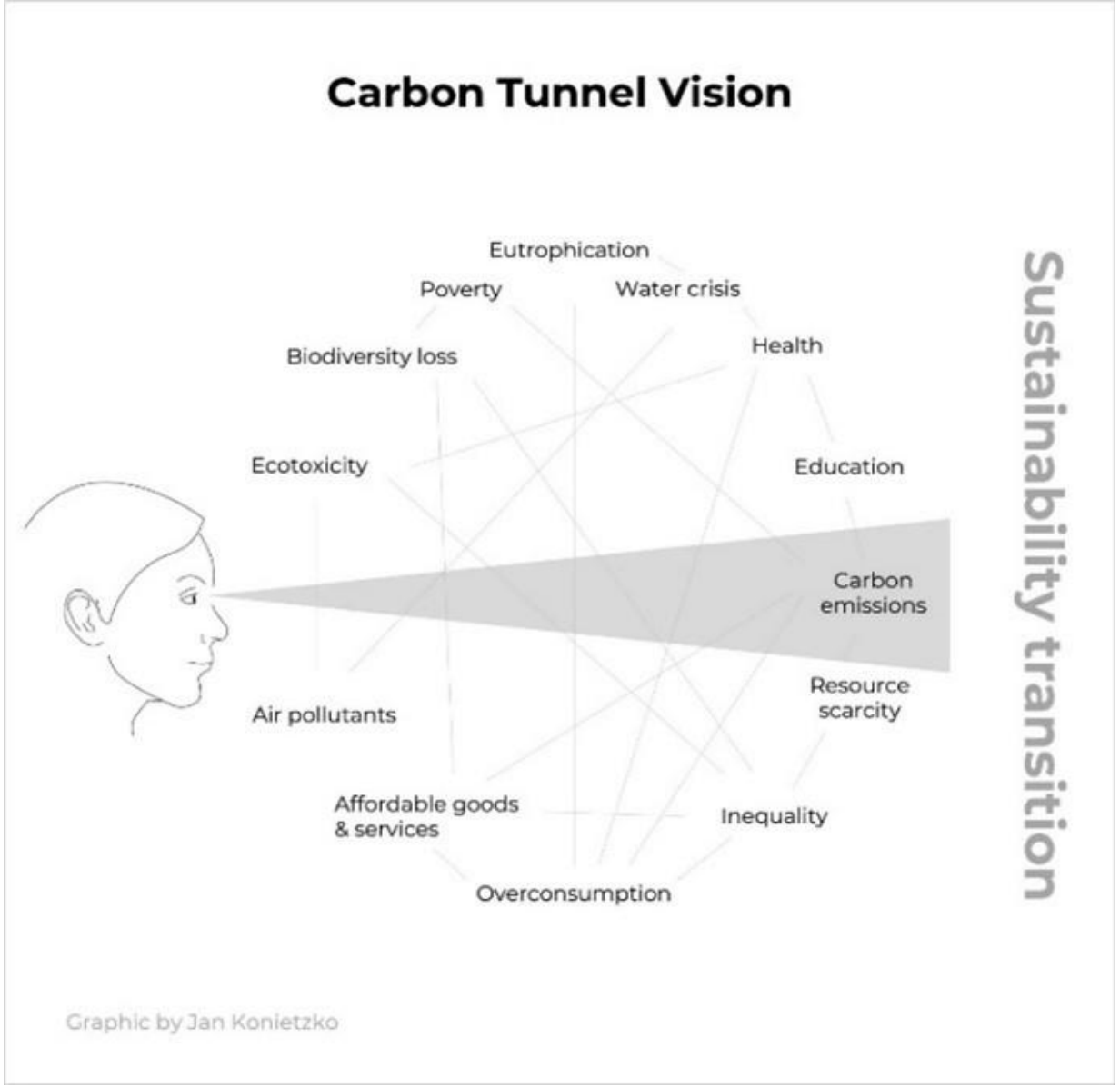
Textile Exchange

Textile Exchange

Regenerative land management systems can benefit sheep and people.

We're supporting the fashion and textiles industry in switching to materials that have better environmental and social outcomes than their conventional alternatives. We believe that through regenerative land management systems, the climate impact of wool can be reduced, and these farming systems can improve biodiversity, water, and soil health while respecting the welfare of animals and people.

Towards a comprehensive environmental analysis



Source: **Avoiding carbon tunnel vision: action on climate change needs an inter-connected response**
Tina Nybo Jensen, International Policy Manager, GRI

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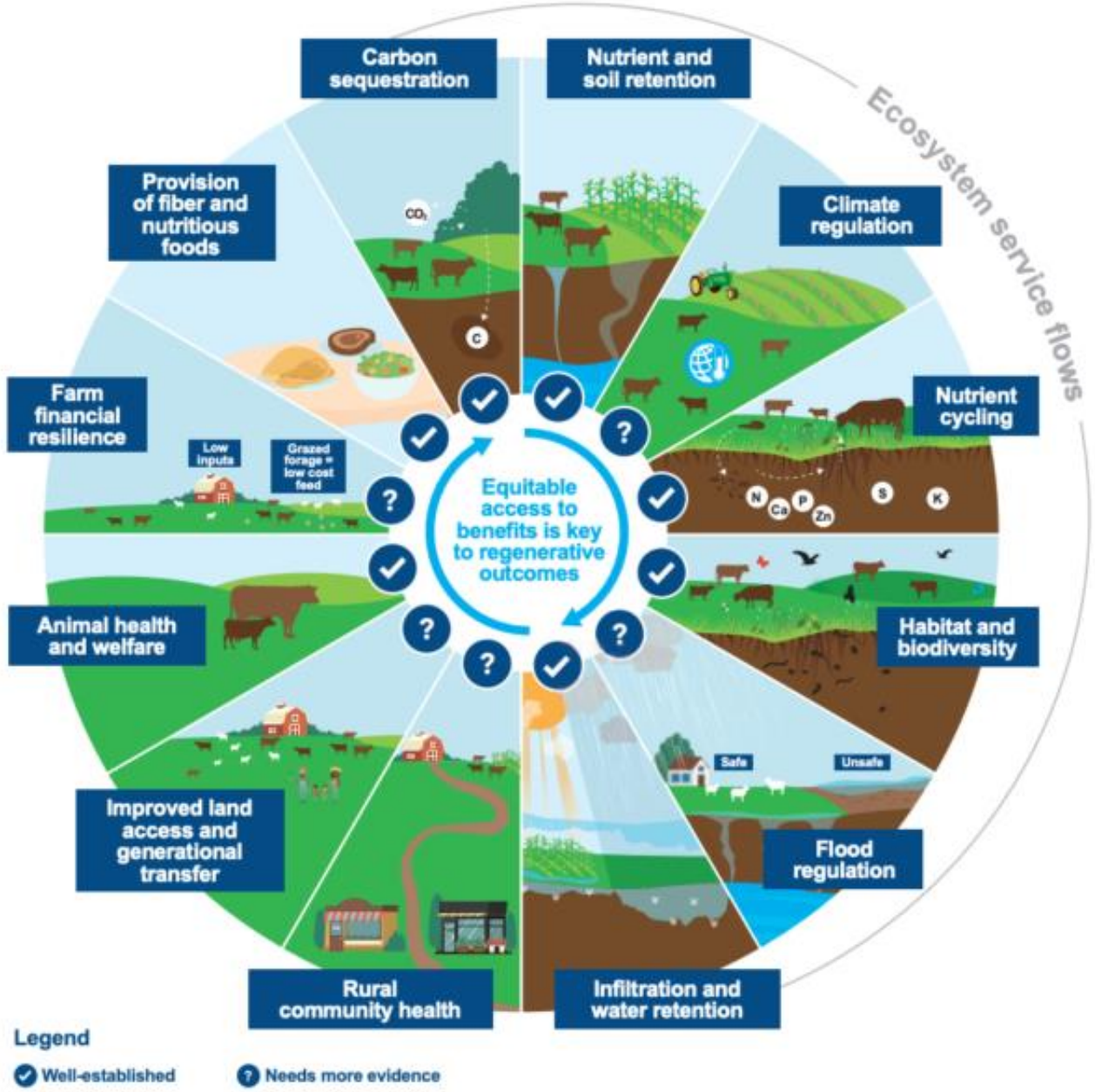
Our way: New conceptions of regenerative livestock production systems



Spratt et al. 2021, doi:10.2489/jswc.2021.1209A
https://www.jswconline.org/content/jswc/76/1/15A.full.pdf

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Study Site

- Nine farms involved in the first stage
- Ten new farms have joined the project in the last year

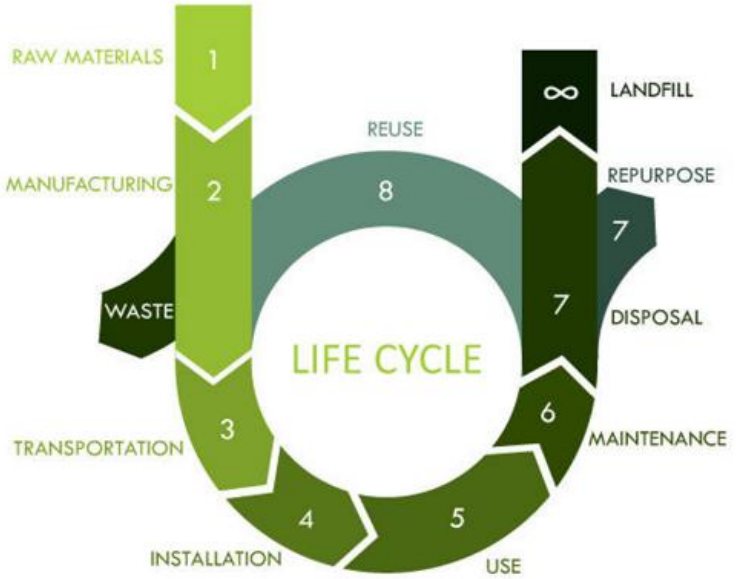
Productive systems based on native grasslands, no deforestation for livestock production

Free grazing mixed Systems (bovine and ovine)

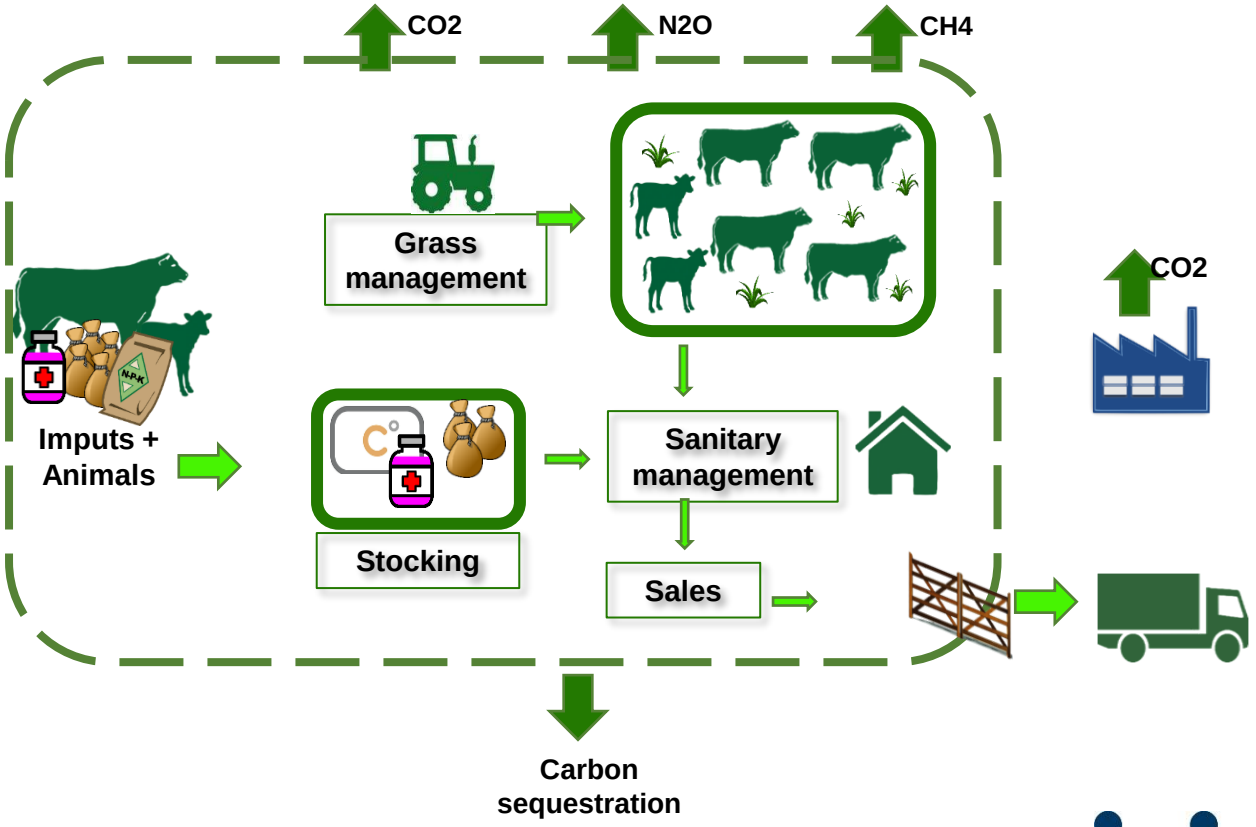
Methods and Results of base line

Classic carbon footprint report

LCA greenhouse gases emission



LCA (Limits of the system)



LCA greenhouse gases emission

Farm	Total emisión (kg CO_{2eq} farm $year^{-1}$)	Total Emision (kg CO_{2eq} ha^{-1} $year^{-1}$)	Emisions by co-product kg CO_{2eq}		
			Meat Bovine	Meat Ovine	Wool
F1	2,954,209	2,264	15.2	9.8	45.8
F2	12,438,706	2,338	16.0	13.6	63.6
F3	8,523,498	1,872	19.4	7.6	35.7
F4	1,807,326	2,410	11.4	8.7	40.7
F5	979,029	2,040	19.9	11.0	51.4
F6	1,382,324	2,048	13.1	12.5	58.2
F7 (Quantis)	2,208,000	2,260			40
F8 (Quantis)	2,249,000	2,120			34

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The other face of carbon cycle

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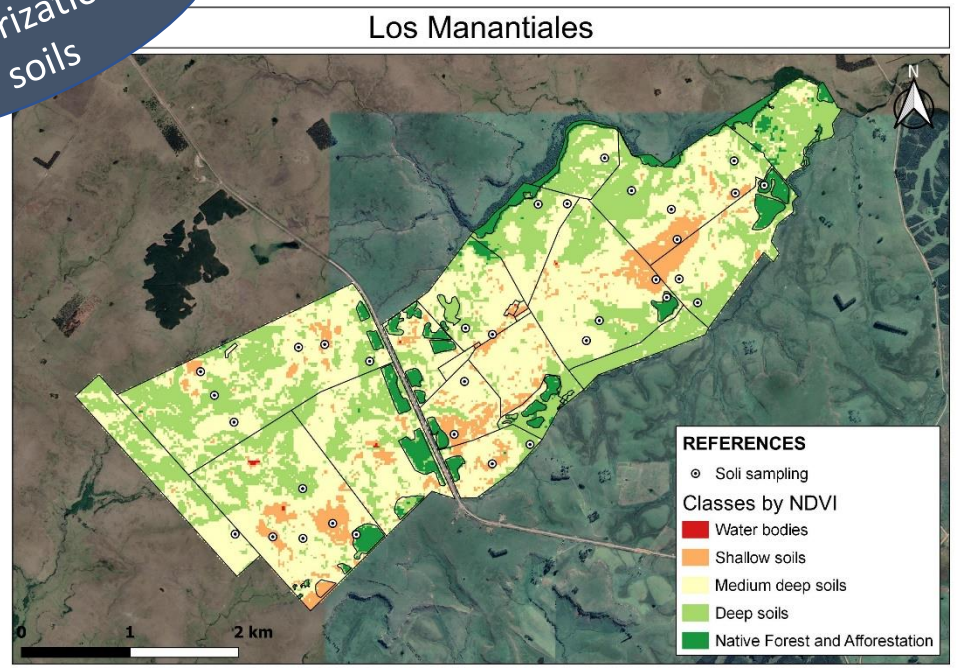
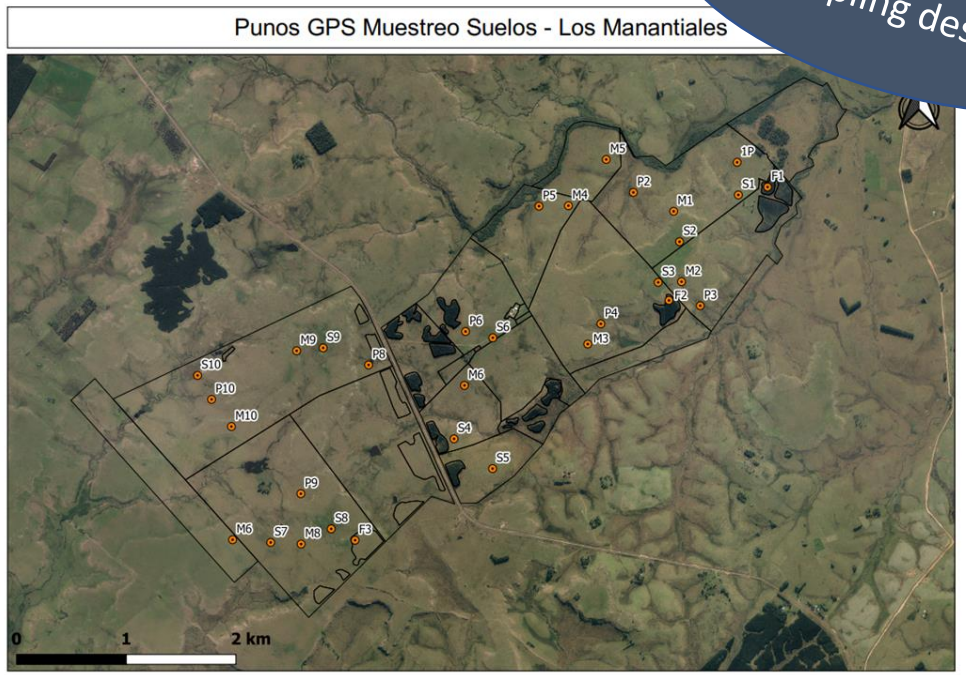
Soil Organic Carbon Stock

Tele detection categorization of soils



Sampling design



Field Sampling

Laboratory analysis

Organic carbon stock Sandstones soils farm:

UNIT	AREA_ha	C (Mg/ha)	C (Mg)		
CN_7.1	52.4	49.3	2,582		
CN_8.14	535.7	58.5	31,320		C (Mg/ha)
CN_8.4	266.1	64.8	17,244		**59.6**
CN_G03.21	150.4	60.1	9,034		
forestry	11.1	62.8	698		
ryegrass	41.6	52.5	2,185		
TOTAL	**1,057.3**		**63,062**		

Organic carbon stock Basaltic soils farm:

UNIT	AREA_ha	C (Mg/ha)	C (Mg)		
deep	457.8	135.8	62,172		
intermediate	634.7	76.0	48,255		C (Mg/ha)
superficial	105.4	25.8	2,718		**93.6**
forestry	64.6	77.3	4,995		
TOTAL	**1,262.4**		**118,140**		

Source: REDD+

Native forest	**21.5**	**117**	**2,515.5**		**C (Mg/ha) 117**

Source: Castagna and Blumetto (2017)

Roots biomass	**1,262.4**	**8.3**	**10,478**		**C (Mg/ha) 8,3**

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Biodiversity and ecosystem services

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Ecosystem Integrity Index

Score value of vegetation structure (grasses, shrubs and trees) for paddock *i*

Score value of vegetal species presence for paddock *I*

Score value of soil (erosion and potential erosion) for paddock *i*

Score value of riparian zone for streams in paddock *i*

$$EII = \sum_{n=1}^{n} \frac{(St_i + Sp_i + So_i + Rz_i)PAi}{4FA}$$

PA_i= area of paddock *i* and FA= farm total area

Blumetto, et al.. (2019) Ecosystem Integrity Index, an innovative environmental evaluation tool for agricultural production systems ***Ecological Indicators***. vol: 101 pp: 725-733

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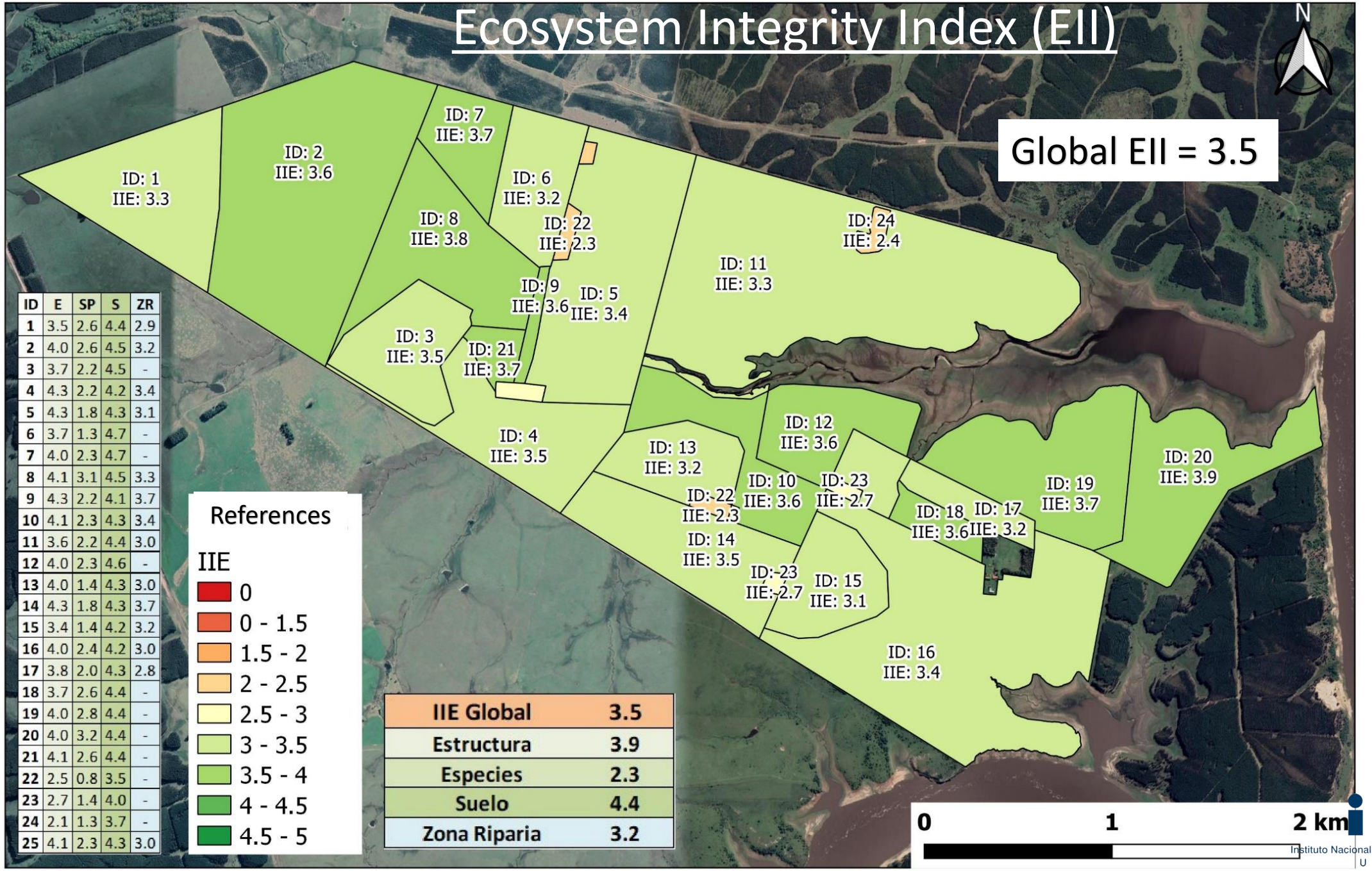
Ecosystem Integrity Index (EII)



ID	E	SP	S	ZR
1	3.5	2.6	4.4	2.9
2	4.0	2.6	4.5	3.2
3	3.7	2.2	4.5	-
4	4.3	2.2	4.2	3.4
5	4.3	1.8	4.3	3.1
6	3.7	1.3	4.7	-
7	4.0	2.3	4.7	-
8	4.1	3.1	4.5	3.3
9	4.3	2.2	4.1	3.7
10	4.1	2.3	4.3	3.4
11	3.6	2.2	4.4	3.0
12	4.0	2.3	4.6	-
13	4.0	1.4	4.3	3.0
14	4.3	1.8	4.3	3.7
15	3.4	1.4	4.2	3.2
16	4.0	2.4	4.2	3.0
17	3.8	2.0	4.3	2.8
18	3.7	2.6	4.4	-
19	4.0	2.8	4.4	-
20	4.0	3.2	4.4	-
21	4.1	2.6	4.4	-
22	2.5	0.8	3.5	-
23	2.7	1.4	4.0	-
24	2.1	1.3	3.7	-
25	4.1	2.3	4.3	3.0

IIE Global	3.5
Estructura	3.9
Especies	2.3
Suelo	4.4
Zona Riparia	3.2

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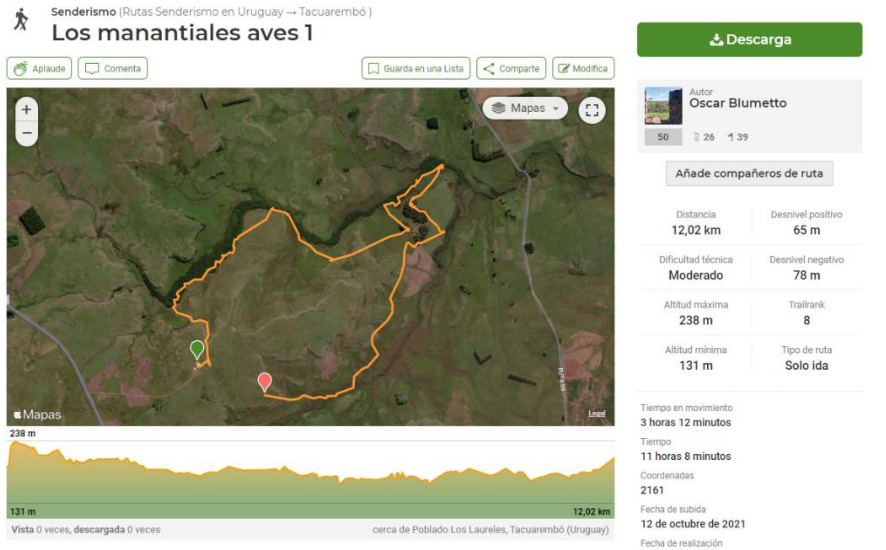

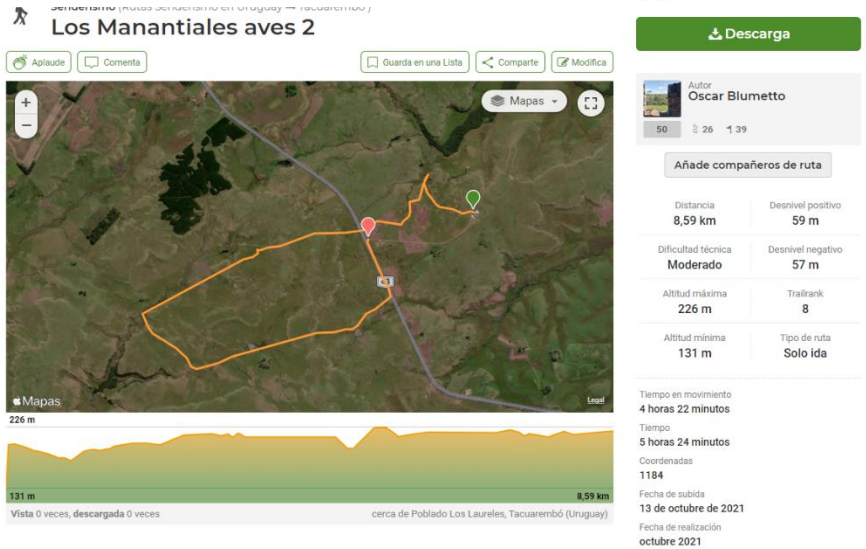

Birds assemblages

Methodology: Mackinnon lists (MacKinnon and Phillipps, 1993)

Farm	Richness	Shannon Index	R Chao
Los Manantiales	119	4.46	160
La Soledad	103	4.27	154

MacKinnon, S. & Phillipps, K. 1993. A Field Guide to the Birds of Borneo, Sumatra, Java and Bali, Oxford University Press, Oxford, 491 p.

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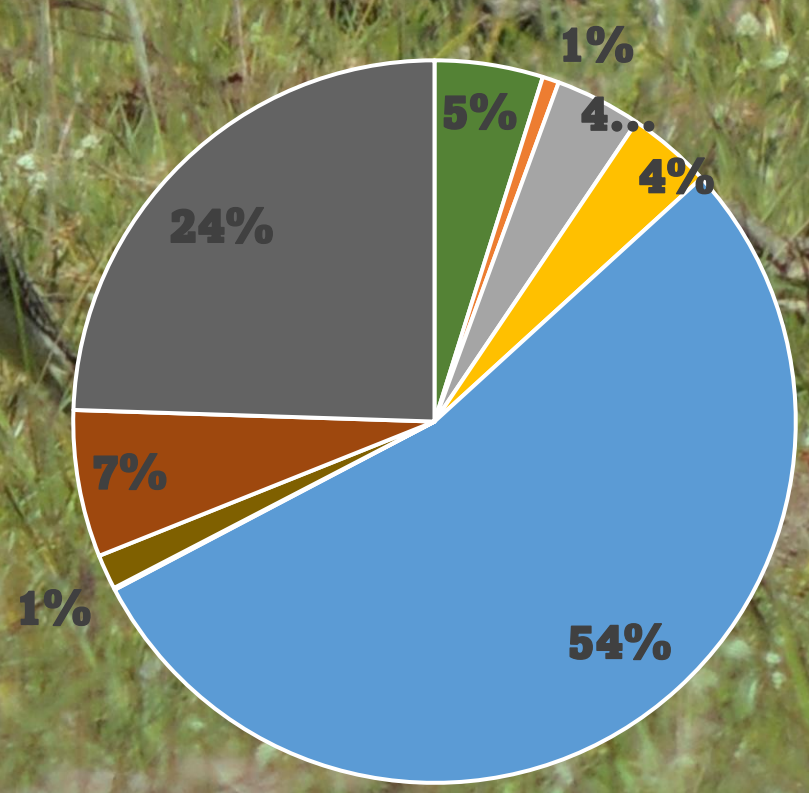
Richness and diversity of birds

	Richness	Shannon-Weaver Index
TOTAL	**171**	**4.51**
Case 1	135	4.56
Case 2	50	3.57
Case 3	92	4.18
Case 4	96	4.26
Case 5	70	3.98
Case 6	69	3.98
Case 7	73	3,98
Case 8	119	4.46
Case 9	103	4.27

Land cover	Richness ± SE	Shannon-Weaver Index ± SE	Time for list (min) (media ± DE)
Native grasslands	131 ± 3.1	4.28 ± 0.03	21 ± 9
Pastures	39 ± 2.2	3.46 ± 0.08	31 ± 19
Eucalyptus plantation	12 ± 1.2	2.58 ± 0.13	69 ± 36
Native forest	91 ± 3.2	4.03 ± 0.03	25 ± 11

Proportion of trophic gremmies



Priority birds species for conservation


Cisne de cuello negro
(*Cygnus melacoryphus*)


Capuchino boina gris
(*Sporophila cinnamomea*)


Dormilón patagónico
(*Caprimulgus longirostris*)


Tamborcito grande
(*Megascops sanctaecatarinae*)


Gavilán langostero
(*Buteo swainsoni*)


Chorlo cabezón
(*Nothura maculosa*)


Coscoroba
(*Coscoroba coscoroba*)


Pato criollo
(*Cairina moschata*)


Gavilán ceniciento
(*Circus cinereus*)


Batitú
(Bartramia longicauda)


Playerito canela
(*Tryngites subruficollis*)


Capuchino garganta café
(*Sporophila ruficollis*)


Remolinera
(*Cinclodes fuscus*)


Chorlo dorado
(*Pluvialis dominica*)


Seriema
(*Cariama cristata*)


Águila mora
(*Geranoaetus melanoleuca*)


Monterita cabeza gris
(*Donacospiza albifrons*)


Cuervo cabeza negra
(*Coragyps atratus*)


Carao
(*Aramus guarauna*)


Coludo chico
(*Emberizoides ypiranganus*)


Cardenal
(*Paroaria coronata*)


Halcón peregrino
(*Falco perigrinus*)


Chiripepe
(*Pyrrhura frontalis*)


Mirlo
(*Gnorimopsar chopi*)


Pajonalera pico recto
(*Limnoctites rectirostris*)


Ñandú
(*Rhea Americana*)


Tachurí canela
(*Polystictus pectoralis*)


Martineta
(*Rynchotus rufescens*)


Ratonera aperdizada
(*Cistothorus platensis*)

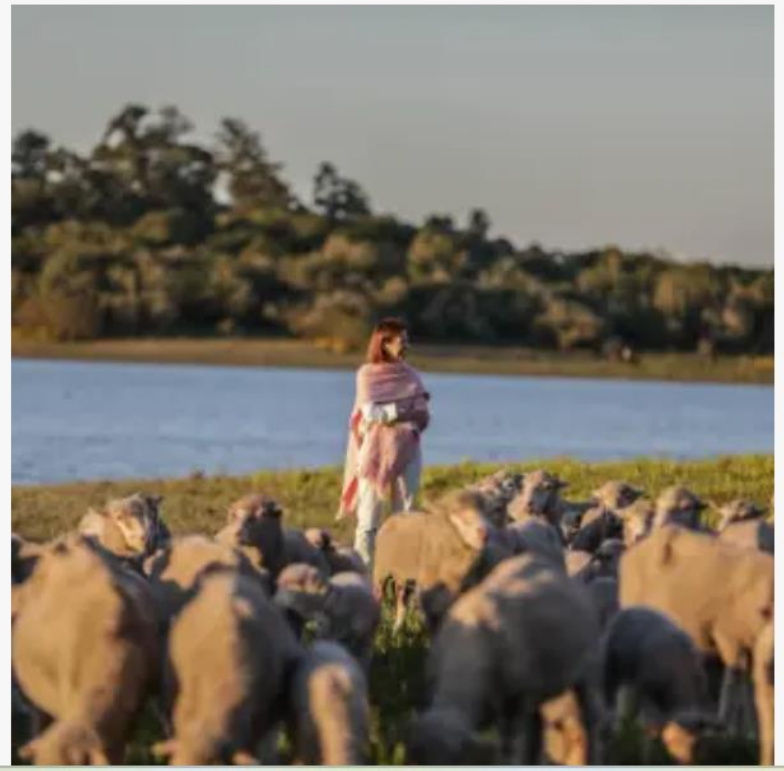

Volatinero
(*Volatinia jacarina*)


Viudita blanca grande
(*Xolmis dominicana*)


Perdíz
(*Nothura maculosa*)


Cachirla dorada
(*Anthus nattereri*)

New opportunities in wool sector



Gucci's Sustainability Efforts in Uruguay

The Italian brand has linked with Chargeurs Luxury Fibers on a regenerative agriculture program in Uruguay. Gucci has joined forces with Chargeurs ...

Women's Wear Daily - Maria Belen Archetto • 196 d

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#REGENERATIVE AGRICULTURE #URUGUAY #ENVIRONMENT

The Climate Action Award: another SMARTER synergy!

Another good news related to the synergies that SMARTER is causing in Uruguay. An Uruguayan Merino farmer **Gabriela Bordabehere** (from La Soledad farm) and **Gucci** received **The Climate Action Award at Milan Fashion Week SS2023.** Gabriela´s farm together with other sheep producers are part of *Nativa Regenerative Agriculture program* (from Chargeurs Luxury Materials and Lanas Trinidad), in partnership with Gucci and supported by INIA. Much of the scientific knowledge that helped make trade deals a reality was done within SMARTER (WP7). Analyzes of LCA, carbon stock, biodiversity (birds), Ecosystem Integrity Index (developed by Blumetto et al., 2019) and predictomics (for CH4, RFI, GFW) were included.

In addition, Gabriela was the leading farmer in the video of the Smarter Round Table in Uruguay, which also had a representative from the firm Chargeurs Luxury Materials at the discussion panel and in the video .

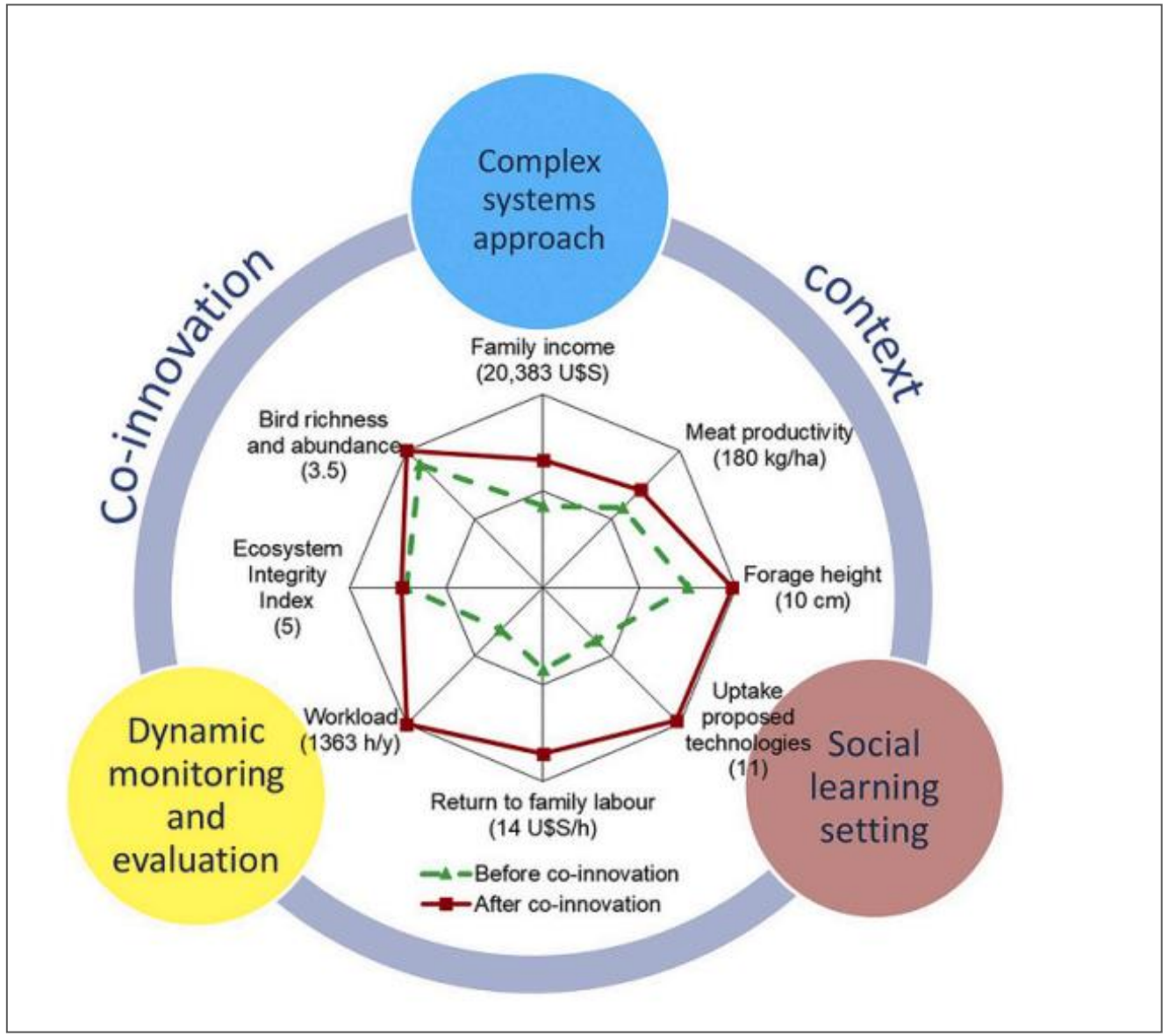
For more info:

- Gucci wins The Climate Action Award
- ¿Cómo contribuyó la ciencia uruguaya para que las lanas finas nacionales despierten el interés de Gucci?

Starting project

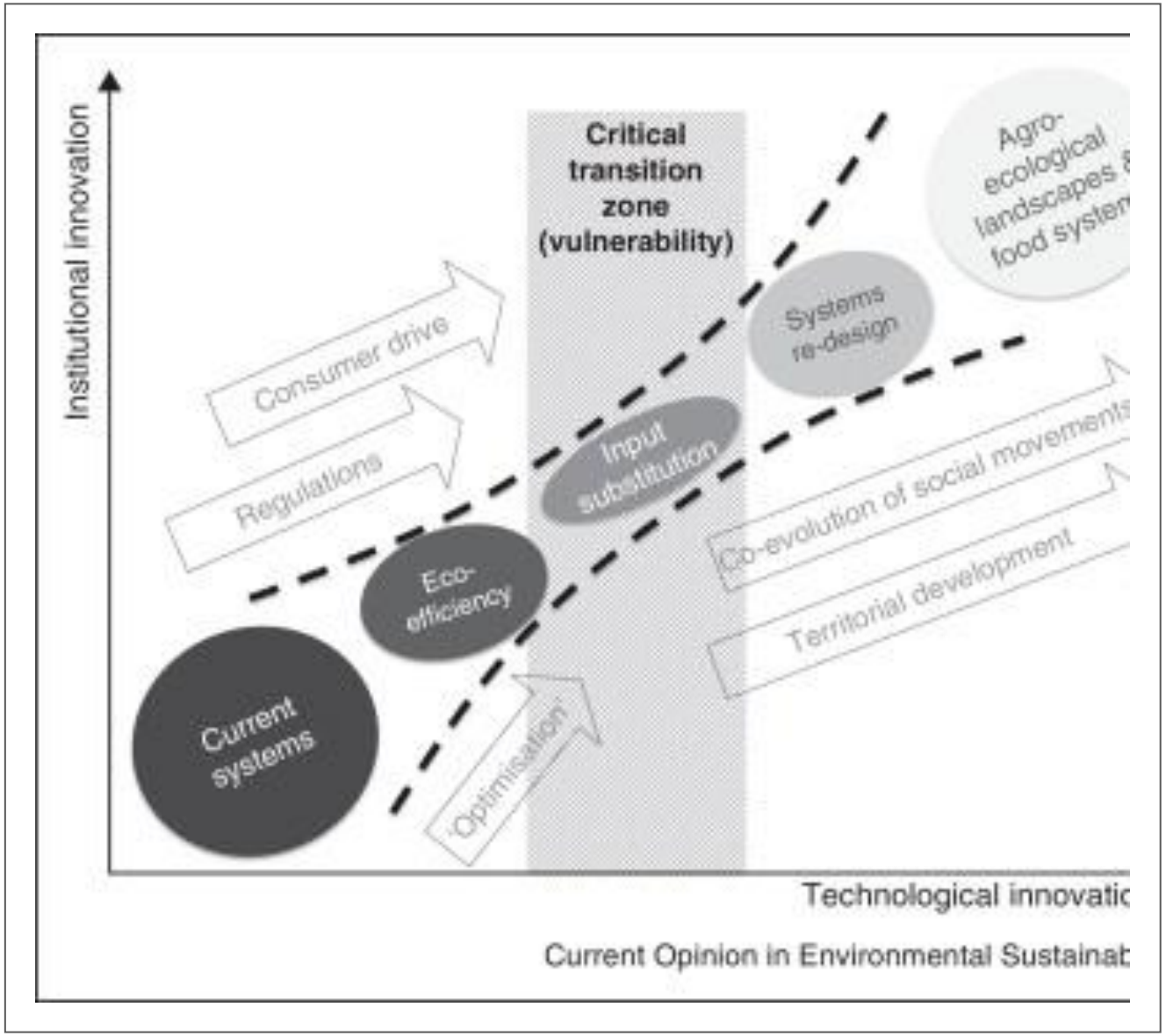
The challenge: to establish a co-innovation process

A. Ruggia, S. Dogliotti, V. Aguerre, M.M. Albicette, A. Albin, O. Blumetto, G. Cardozo, C. Leoni, G. Quintans, S. Scarlato, P. Tittonell, W.A.H. Rossing (2021). The application of ecologically intensive principles to the systemic redesign of livestock farms on native grasslands: A case of co-innovation in Rocha, Uruguay. ***Agricultural Systems***,191, 103148, ISSN 0308-521X, https://doi.org/10.1016/j.agsy.2021.103148.



Ecological intensification

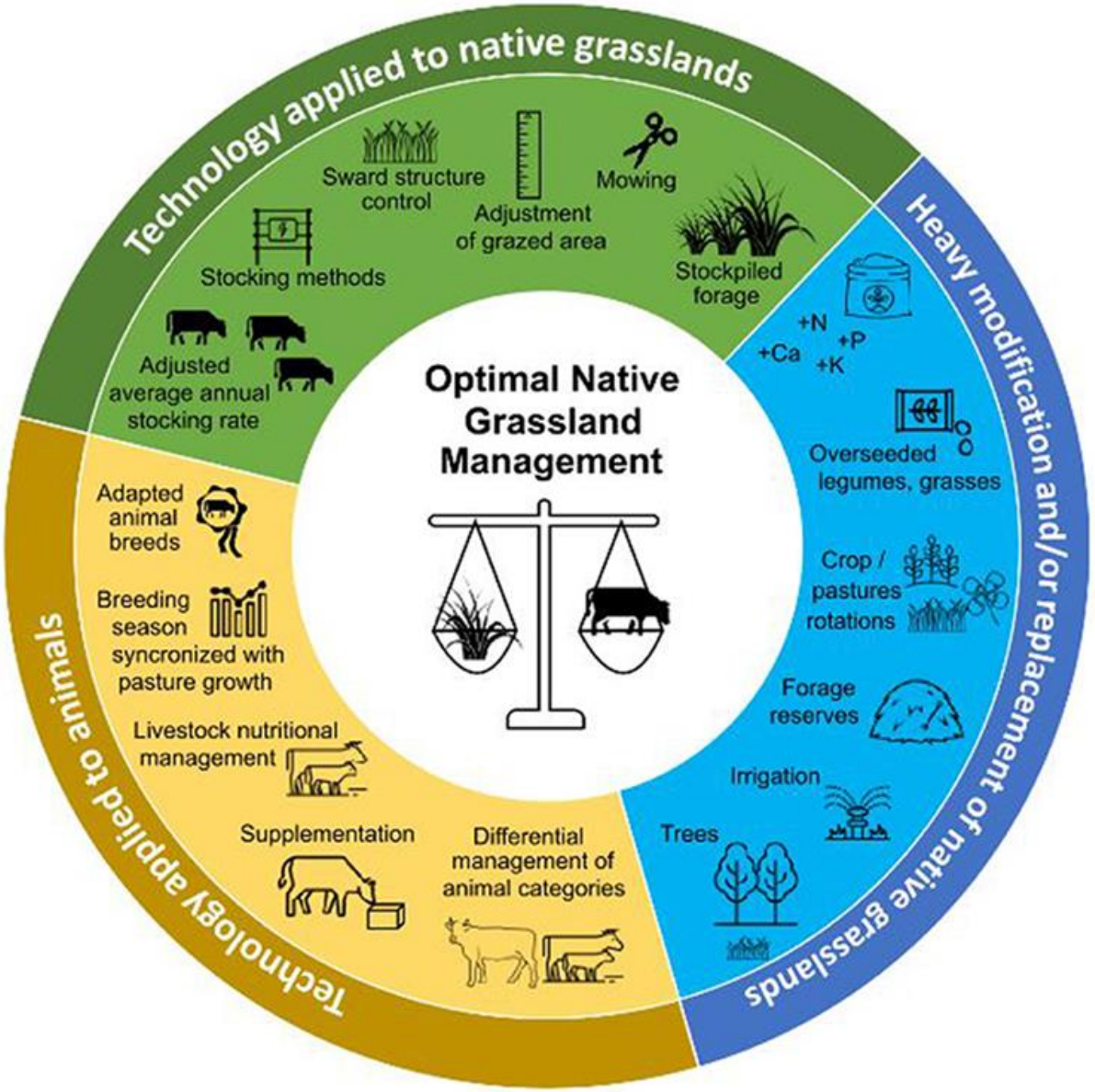
- Tittonell, P. (2014). Ecological intensification of agriculture—sustainable by nature. Current Opinion in Environmental Sustainability, 8, 53-61.



Productive proposal: to apply INIA´s recommended good practices and to develop new ones

- **Jaurena, M., Durante, M., Devincenzi, T., Savian, J., Bendersky, D., Moojen, F. G., et al., 2021**. Native grasslands at the core: a new paradigm of intensification for the campos of Southern South America to increase economic and environmental sustainability. **Front. Sustain. Food Syst.** 5:547834.

  doi: 10.3389/fsufs.2021.547834



Expected results

- The evaluation of the productive and environmental results of co-innovation process.
- Training professionals to be able to conduct the transition and carry out the environmental assessment
- To protocolize processes and indicators for verification/ certification by third parts

- Thanks to Organizing Cometee of IGC 2023 for supporting the participation in this congress

Thank you for your attention!

Oscar Blumetto
Principal Researcher
Natural Resources, Production and Environment

oblumetto@inia.org.uy

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