Impacts of *Urochloa* hybrid forage seed adoption in the global tropics 2001-2022

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INTRODUCTION

- The global demand for animal-sourced food is expected to grow significantly by 2027, especially in developing countries, highlighting the strategic importance of the livestock sector for food security and rural livelihoods.
- Cattle farming presents both economic benefits and environmental challenges, such as greenhouse gas emissions and deforestation, emphasizing the need for sustainable practices.
- The adoption of *Urochloa* hybrid forages offers potential solutions, but there is a lack of comprehensive studies on their adoption, economic value, and environmental impact across different regions.

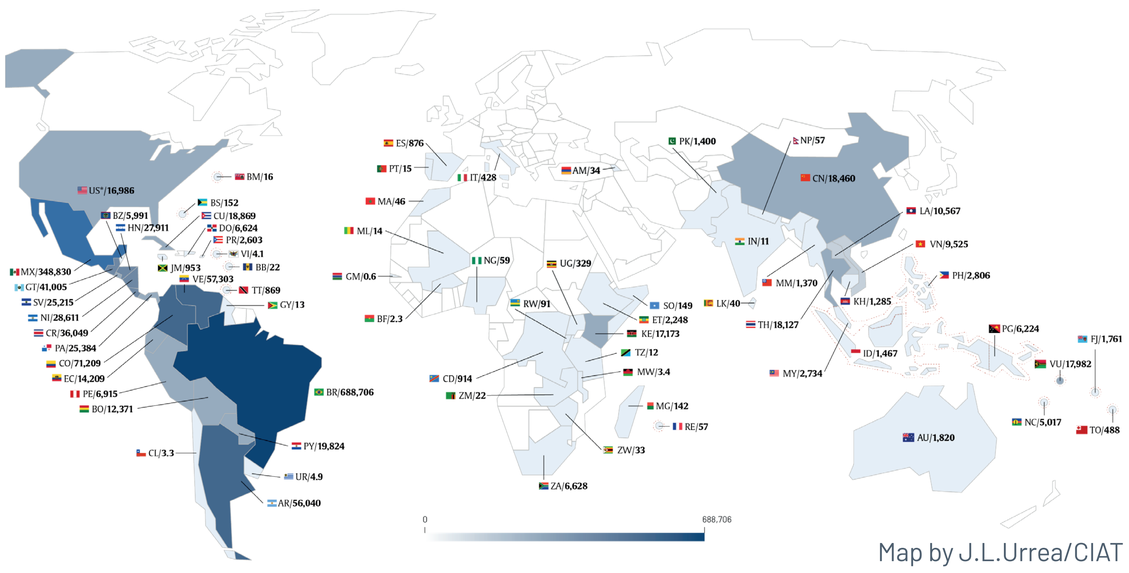
OBJECTIVE

To estimate the adoption of *Urochloa* hybrid forages across more than 70 countries, assessing the land use, social, economic, and environmental impacts of their adoption.

METHODOLOGY

The study is based on using an alternative approach that relies on seed sales data, national statistics, literature, and expert consultations.

RESULTS

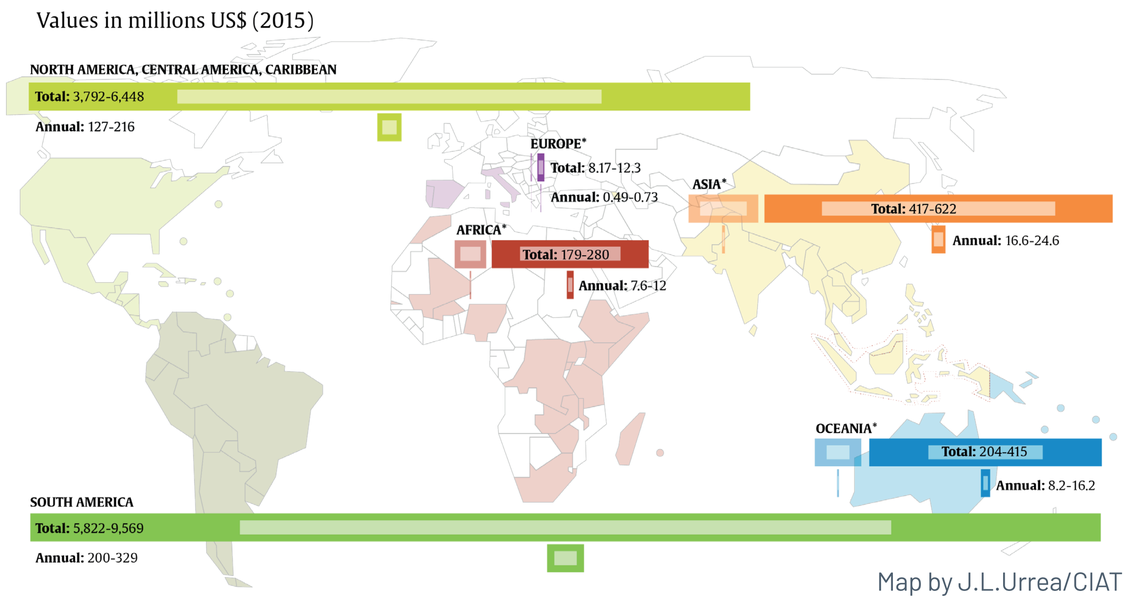


Map by J.L.Urrea/CIAT

Figure 1. Global adoption of *Urochloa* hybrids, 2001-2022, (in ha, cumulative)

Table 1. Adopters and beneficiaries of *Urochloa* hybrid adoption, 2001-2022

COUNTRY	YEAR	ADOPTING PRODUCERS	WOMEN ADOPTERS	TOTAL BENEFICIARIES
Africa	2005-2022	55,853	19,778	**531,324**
Asia	2004-2022	280,813	54,896	**2,186,524**
Australia/Oceania	2004-2021	105,202	20,946	**1,294,910**
Europe	2005-2020	821	245	**3,447**
North and Central America, Caribbean	2001-2022	766,535	93,231	**5,344,752**
South America	2002-2022	226,679	44,706	**1,498,090**
TOTAL Global	**2001-2022**	**1,435,904**	**233,801**	**10,859,046**



Map by J.L.Urrea/CIAT

Figure 2. Total and annual regional *Urochloa* hybrid forage crop values, 2001-2031

Table 2. Estimated GHG emission reductions and spared land from *Urochloa* hybrid adoption in the Americas, 2001-2022

	AREA (HA)	TOTAL LWG (MT)	TOTAL $CO_{2EQ.}$ (MT)	GHG REDUCTION (MT $CO_{2EQ.}$)	SPARED LAND (HA)
Scenario A – 100% replacement (unrealistic)					
Dichantium aristatum	7,153,400*	21.46	238.85	n.a.	n.a.
Urochloa hybrid cv. Cayman	1,512,702**	21.46	162.24	76.61	5,640,698
Scenario B – 70% replacement					
Dichantium aristatum	5,007,380*	15.02	167.20	n.a.	n.a.
Urochloa hybrid cv. Cayman	1,058,891**	15.02	113.57	53.63	3,948,488
Scenario C – 50% replacement					
Dichantium aristatum	3,576,700*	10.73	119.43	n.a.	n.a.
Urochloa hybrid cv. Cayman	756,351**	10.73	81.12	38.31	2,820,349
Scenario D – 30% replacement					
Dichantium aristatum	2,146,020*	6.44	71.67	n.a.	n.a.
Urochloa hybrid cv. Cayman	453,811**	6.44	48.67	22.98	1,692,209

*Area required with *Dichantium aristatum* to produce the same LWG as with the adopted *Urochloa* hybrids; **Area with *Urochloa* hybrids in the Americas that replaced native/naturalized pastures.

CONCLUSIONS

- Productivity and Environmental Impact: *Urochloa* hybrids significantly enhance cattle productivity and contribute to substantial reductions in greenhouse gas emissions, offering both economic and environmental benefits.
- Adoption and Potential: Despite being adopted by over 1.4 million farmers across 1.6 million hectares, *Urochloa* hybrids still represent a small portion of total agricultural land, indicating considerable potential for further adoption, especially in Africa and Asia.
- Challenges and Future Needs: To fully realize the potential of *Urochloa* hybrids, it is crucial to address barriers such as seed system development, extension services, and policy support, particularly in emerging markets.

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