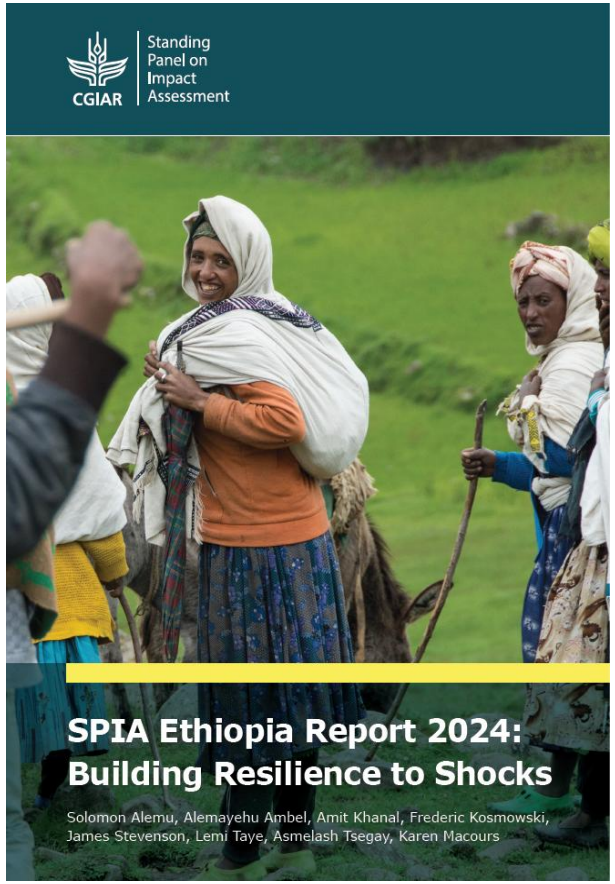
ADD-IN ETHIOPIA

Adoption and Diffusion of CGIAR-Related Innovations in Ethiopia

Kick-off Meeting
Addis Ababa, March 13th, 2025

Standing Panel on Impact Assessment

Understanding diffusion and adoption of Agricultural innovations through time



2020 2024 2027 2030

Through nationally representative panel data

Ethiopian Socio-economic surveys (ESS)

LSMS/Integrated Survey on Agriculture

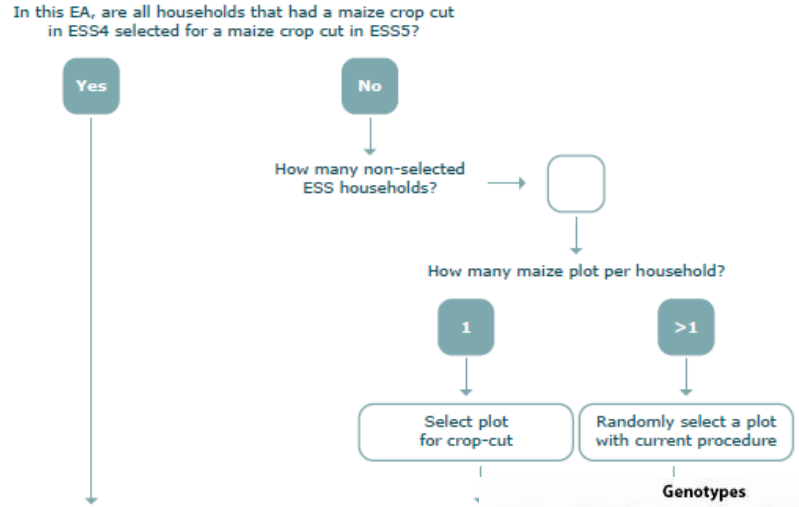
- 2016
- 2019
- 2021/22
- 2025…
- …

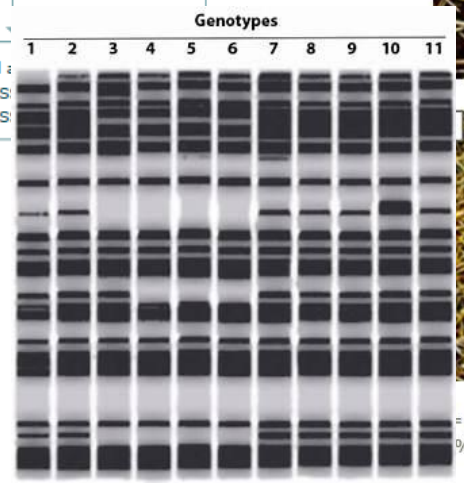
Building-on/developing
New measurement approaches and tools

12c. What do the chickpea flowers look like?

3 = Do not know

Response 1 (white flower) = kabuli type; Response 2 (purple flower) = desi type





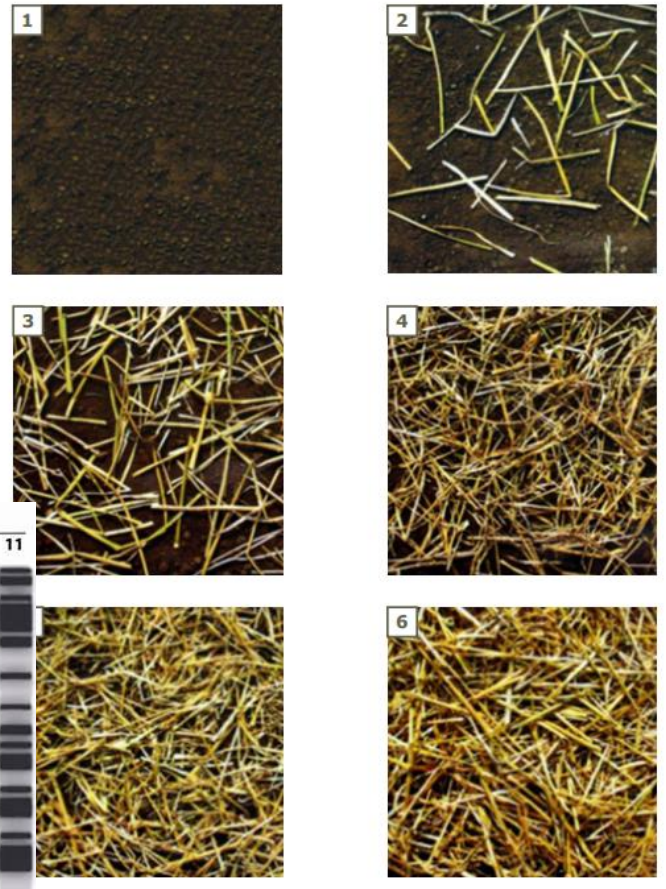
Question/protocol

Livestock keepers were firstly asked "How many [LIVESTOCK TYPE] does the holder currently keep (both his own and from other households)?" followed by the question "How many of [LIVESTOCK NAME] is crossed with an exotic breed?"

The question asked "What has been the main controlled mating or breeding strategy used by this holder for [LIVESTOCK TYPE] in the past 12 months?'. Artificial insemination was among the set of possible answers.

"Has this holder used improved food for [LIVESTOCK TYPE] in the past 12 months?" and "what type of improved food for [LIVESTOCK TYPE] has this holder used in the past 12 months?". Elephant grass, Gaya, Sasbaniya, Oats, Lablab and alfalfa figured among the categories of responses

"After planting of this agricultural season, what did the [FIELD] look like?"



= 0% coverage; 2 = 10%; 3 = 30%, 4 = 50%; 5 = 70%; 6 = 90%.
% and above denotes "crop residue cover."

About and with CGIAR centers developing innovations for Ethiopia

- Bring perspective on evolution and current state of innovations and research portfolios
- Contribute tools and metrics to assess uptake and diffusion of CGIAR-related innovations
- Support the development of a culture of impact assessment throughout the system
- Contribute evidence to national policy designs

Contributing to global knowledge on innovations and smallholder agriculture in LMICs

PLOS One Publish About Browse

OPEN ACCESS PEER-REVIEWED

RESEARCH ARTICLE

Evaluation of a miniaturized NIR spectrometer for cultivar identification: The case of barley, chickpea and sorghum in

Open Access Article

Field Data Collection Methods Strongly Affect Satellite-Based Crop Yield Estimation

by Kate Tiedeman [1,2,*], Jordan Chamberlin [3], Frédéric Kosmowski [4], Hailemariam Ayalew [5], Tesfaye Sida [6] and Robert J. Hijmans [1]

[1] Department of Environmental Science and Policy, University of California, Davis, CA 95616, USA
[2] Max Planck Institute of Animal Behavior
[3] International Maize and Wheat Improve
[4] CGIAR Standing Panel on Impact Asse
[5] Oxford Department of International Dev
[6] International Maize and Wheat Improve
* Author to whom correspondence shoul

Remote Sens. **2022**, *14*(9), 1995; https://

ELSEVIER

Agricultural Systems

Volume 219, August 2024, 103988

Studying inclusive innovation with the right data: An empirical illustration from Ethiopia

Solomon Alemu [a 1], Frederic Kosmowski [a 2], James R. Stevenson [b], Paola Mallia [c], Lemi Taye [c 3], Karen Macours [c d]

ELSEVIER

Journal of Development Economics

Volume 171, October 2024, 103349

Short communication

The seeds of misallocation: Fertilizer use and maize varietal misidentification in Ethiopia ☆

Nils Bohr [a], Tim Deisemann [b], Douglas Gollin [c d], Frédéric Kosmowski [e], Travis J. Lybbert [f]

ELSEVIER

Food Policy

Volume 102, July 2021, 102122

How accurate are yield estimates from crop cuts? Evidence from smallholder maize farms in Ethiopia

Frederic Kosmowski [a], Jordan Chamberlin [b], Hailemariam Ayalew [c f], Tesfaye Sida [f], Kibrom Abay [d], Peter Craufurd [e]

ADD – IN ETHIOPIA

Build on the previous two rounds of SPIA supported studies

- Follow-up analyses on key questions identified
- Leverage successful measurement approaches, data and partnerships

Contribute new themes

- Beyond adoption: impact on livelihoods and nutrition
- From evidence to action: studying the link between research and policy-making

Develop new studies and partnerships

- An international academic partnership with strong capacity development
- An inter-disciplinary team to support a new generation of SPIA supported studies in Ethiopia

Key principles

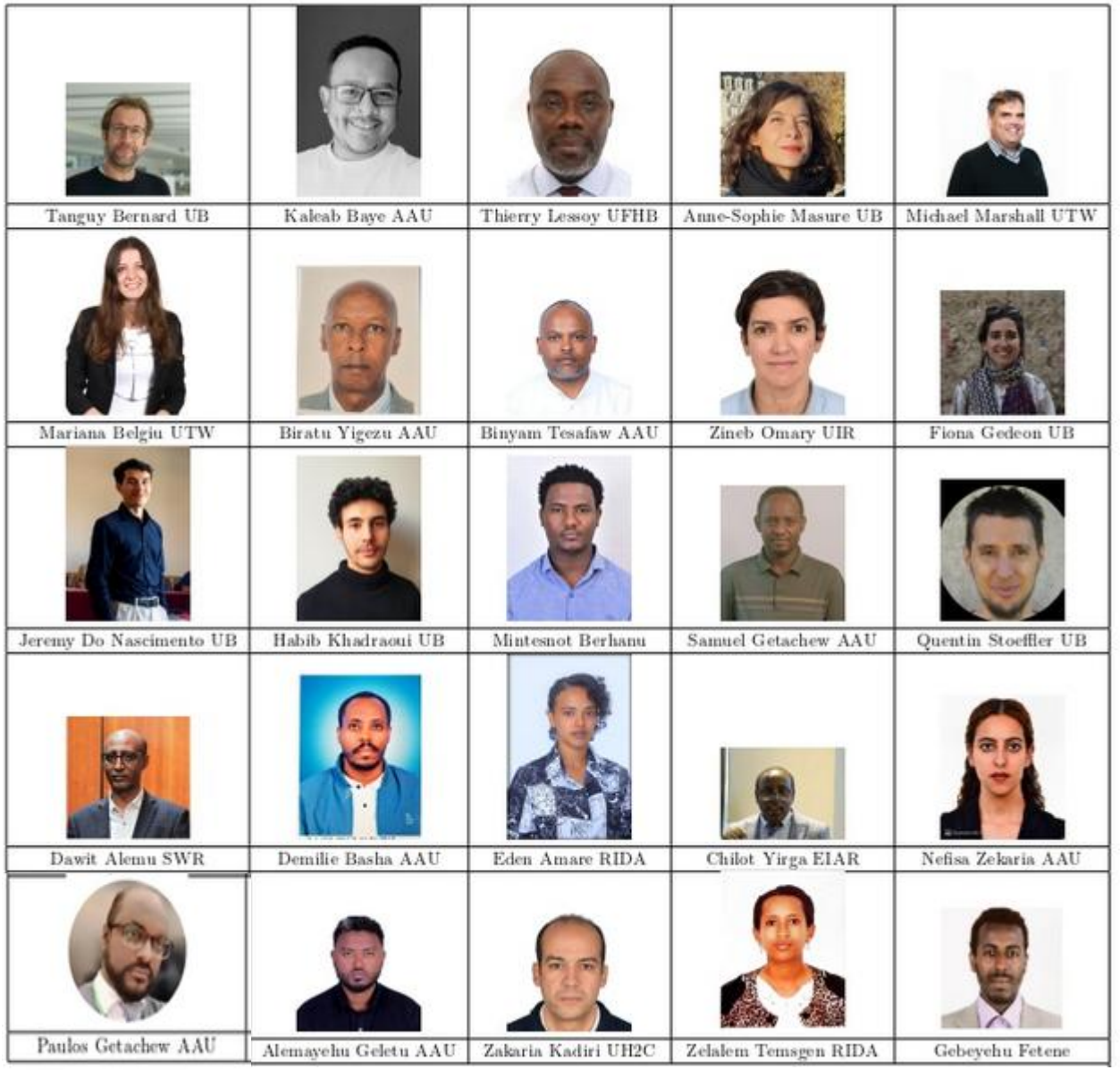
1. **Leverage** Ethiopia's large data collection efforts in recent decades, and inform new data collection
2. **Promote** innovations in both measurements and data collection approaches
3. **Continuously engage** with CGIAR centers, stakeholders and policy-makers.
4. **Foster** innovative inter-disciplinary collaboration across a large set of scientific fields.
5. **Contribute** to strengthen institutional capacities through investment in research material and research staff at Addis Ababa University.

ADD-IN Ethiopia : team

- Agricultural economics and statistics
- Public policy
- Remote sensing and AI
- Food science and nutrition
- Agriculture and plant science

- Ethiopia
- France
- Netherland
- Côte d'Ivoire
- Morocco

- Senior researchers
- Mid-career
- PhD students

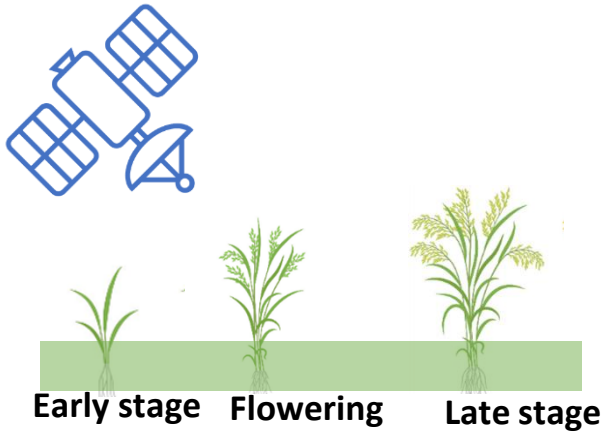


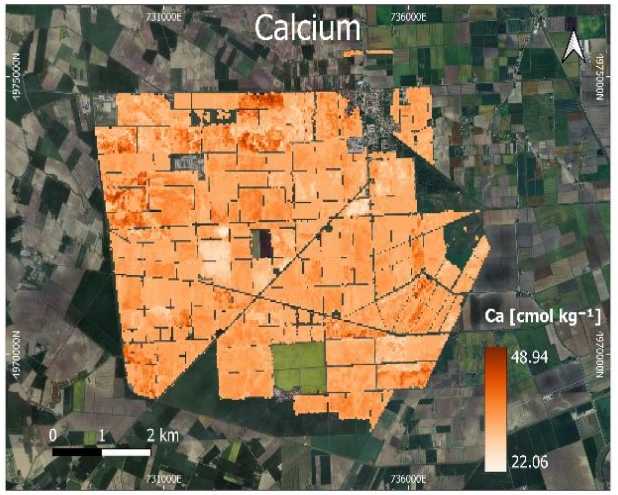
Contribute new measurement approaches

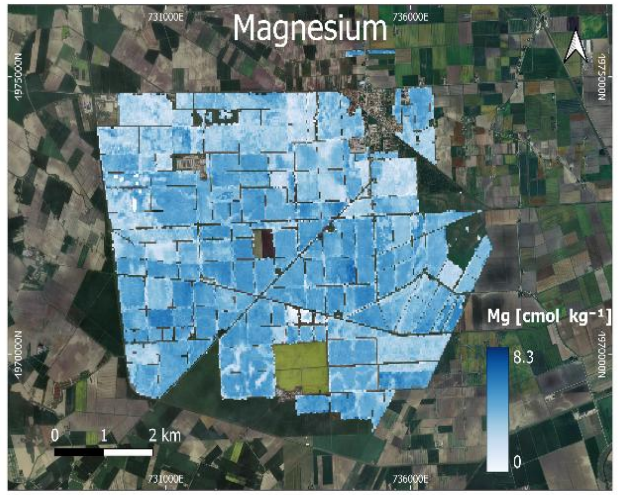
Crop grain samples

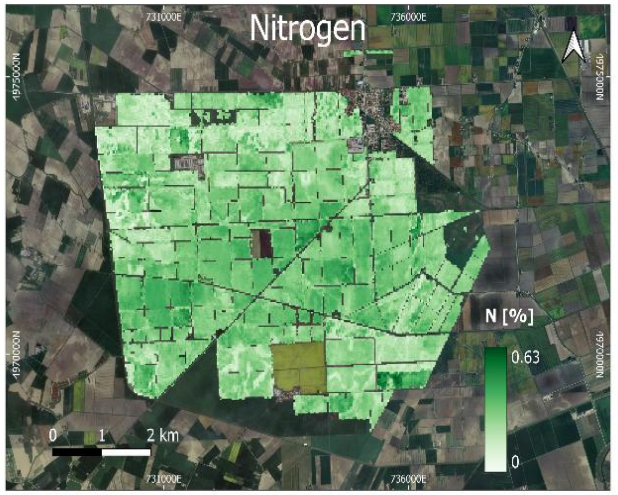
Hyperspectral satellite Images

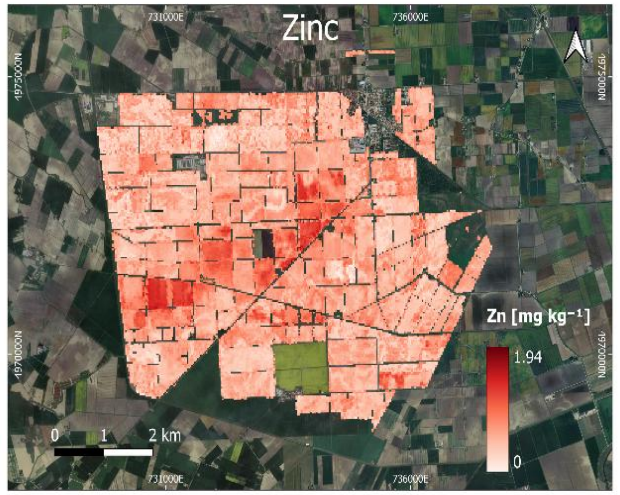
Spatial co-variates







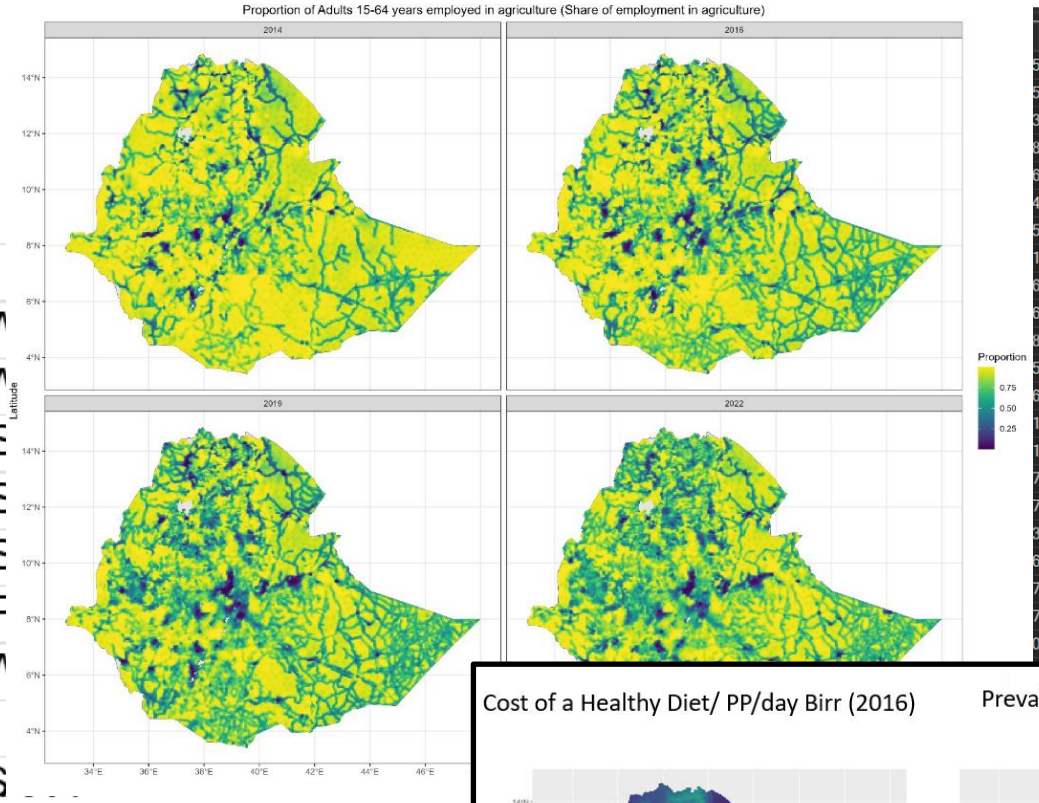




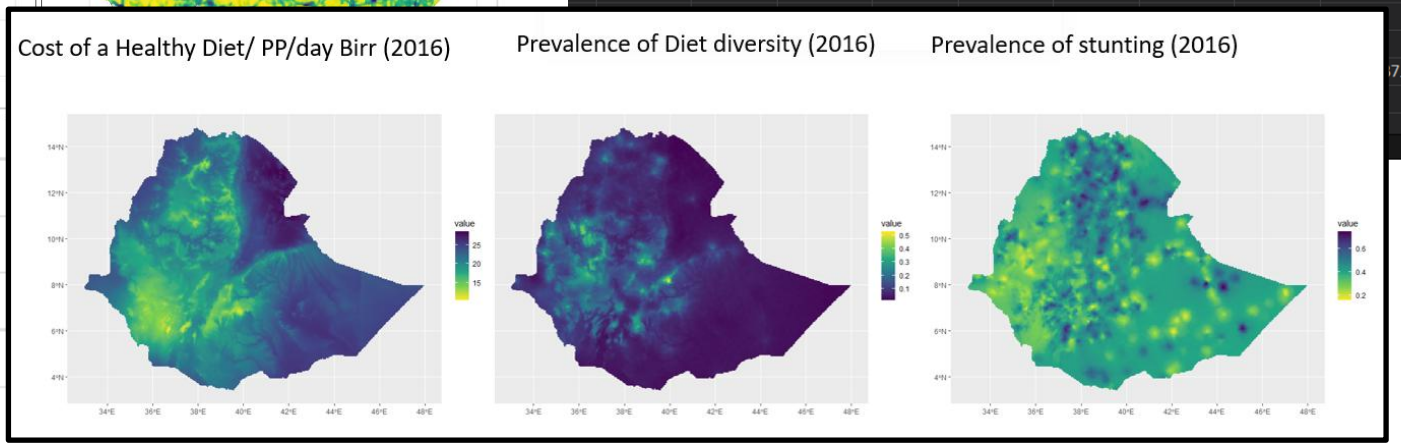
Spatial variation of soil nutrients estimated using Machine learning and hyperspectral satellite images

Making the most out of past and upcoming data

Year	Data
2010	DHS, HCES, V
2011	DHS, HCES, V
2012	Price, AgSS, S
2013	Price, AgSS, S
2014	Price, AgSS, S
2015	HCES, WMS, F
2016	DHS, HCES, V
2017	Price, AgSS
2018	Price, AgSS, S
2019	DHS,, SES, Price, AgSS
2020	Price, AgSS
2021	SES, Price, AgSS, SPA
2022	Price, AgSS



	lat	n_stunt	haz	np_stunt	stunt	n_wast	whz	np_wast	wast	n
532	11.588877	22	-1.71	8	36.4	22	-.76	2	9.1	
569	7.8960746	23	-2.58	14	60.9	25	-.46	0	0	
357	6.5784833	10	-.16	2	20	10	.42	0	0	
853	9.0242387	4	-.66	0	0	4	0	0	0	
626	13.954163	16	-1.73	8	50	16	-.62	2	12.5	
498	10.14332	18	-1.83	9	50	18	.05	0	0	
592	12.910868	17	-1.8	6	35.3	16	-.94	4	25	
159	9.0261986	7	-.59	0	0	7	.54	0	0	
687	12.673719	9	-2.62	7	77.8	9	.51	1	11.1	
635	9.6249251	20	-1.38	8	40	21	-.72	3	14.3	
815	9.249945	12	-3.04	10	83.3	13	-.72	3	23.1	
533	9.5970258	11	-.14	1	9.1	11	-.24	0	0	
607	8.9905247	6	-.94	1	16.7	6	.24	0	0	
166	14.306746	24	-1.57	7	29.2	24	-.46	2	8.3	
144	14.456989	5	-1.89	3	60	5	-1.29	2	40	
719	14.332009	8	-2.22	5	62.5	8	-.33	1	12.5	
703	14.222132	11	-2.16	7	63.6	11	-.1	2	18.2	
365	14.144468	7	-2.93	6	85.7	7	.15	0	0	
615	14.019284	5	-2.8	4	80	5	.57	0	0	
754	13.789596	7	-2.27	3	42.9	7	-.32	0	0	
749	14.075422	9	-1.73	5	55.6	9	-.13	0	0	
009	13.864793	12	-2.24	5	41.7	13	-.58	2	15.4	
									0	
									0	
									7.5	
									0	
									0	



Thank you

Stackholder Committee

Add-in Ethiopia

Key objectives

Align Research with National Priorities: Ensure the research meets Ethiopia's agricultural needs and policy objectives.

Validate Research Outputs: Gather stakeholder feedback on work plans and methodologies.

Foster Collaboration: Encourage knowledge exchange between stakeholders, researchers, and policymakers.

Leverage Stakeholder Expertise: Utilize resources and expertise to improve research quality and impact.

Key Members

- **Government**: EIAR, ATI, ESS.
- **CGIAR centers:** IFPRI, CIMMYT, ICARDA, ILRI.
- **Partners:** WB LSMS.
- **Donors:** Gates Foundation, EU, FAO.
- **NGOs:** Digital Green.
- **Private Sector:** Lersha.
- **Farmers' Associations:** Ethiopian Seed Association.

Partnership & Collaboration Expectations

- **Research-to-Policy Collaboration:** Ensure research is applicable and beneficial to Ethiopia's agricultural policies.
- **Cross-Sectoral Cooperation:** Collaborate across sectors (government, research, private, NGOs) for holistic impact.
- **Continuous Engagement:** Regular validation and feedback to refine research and adjust activities.
- **Shared Responsibility:** Joint effort to enhance research impact, innovation diffusion, and scaling.

Principles of Stakeholder Engagement

- **Collaboration:** Active participation in shaping research direction.
- **Transparency:** Clear and open communication throughout the project lifecycle.
- **Accountability:** Ensure responsible conduct of research and use of findings for policy-making.
- **Inclusivity:** Engage diverse stakeholders from all sectors to ensure a comprehensive approach.

Engagement Methods

- **Biannual Meetings:** Regular meetings to review progress, validate work plans, and address issues.
- **Workshops & Seminars:** Periodic workshops to foster in-depth discussions and knowledge sharing.
- **Virtual & In-Person Meetings:** Flexibility depending on stakeholder availability and regional needs.
- **Ad-Hoc Workshops:** Organize special sessions to address emerging issues or gather specific feedback.

Duration and Milestones of Engagement

- **Project Duration:** 3 years (2025-2027) – with possible phase 2
- **Key Milestones:**
  - Initial work plan validation.
  - Ongoing feedback throughout research phases.
  - Validation of research outputs and final results.
  - Policy recommendation and dissemination workshops.
- **Continuous Stakeholder Involvement:** Regular touch points for ensuring sustained collaboration and impact – bi-annual stakeholder meeting (R2P labs)

Questions

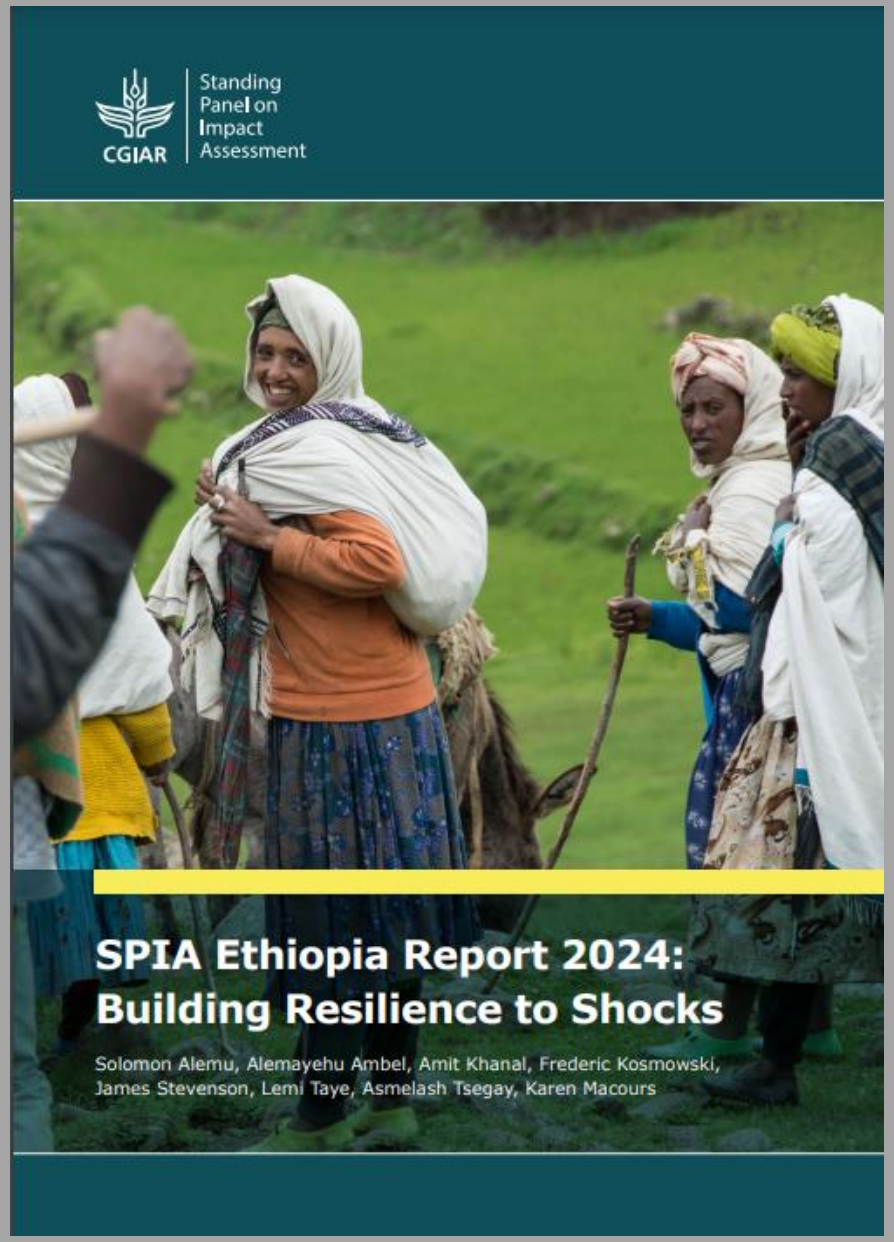
1. What **specific areas**, in addition to those outlined in the TOR, should we focus on to maximize the project's impact and align with the study objectives?
2. Are there any **important issues or aspects** not covered in the TOR that we should consider for inclusion in the project?
3. Are there any **other key stakeholders** who should be involved to strengthen the project's impact and outcomes?

From evidence to policy : a research agenda with the stakeholder committee

Before coffee-break
Please flash the QR code to answer a very quick survey…

Thank you

Thank you



CGIAR | Standing Panel on Impact Assessment

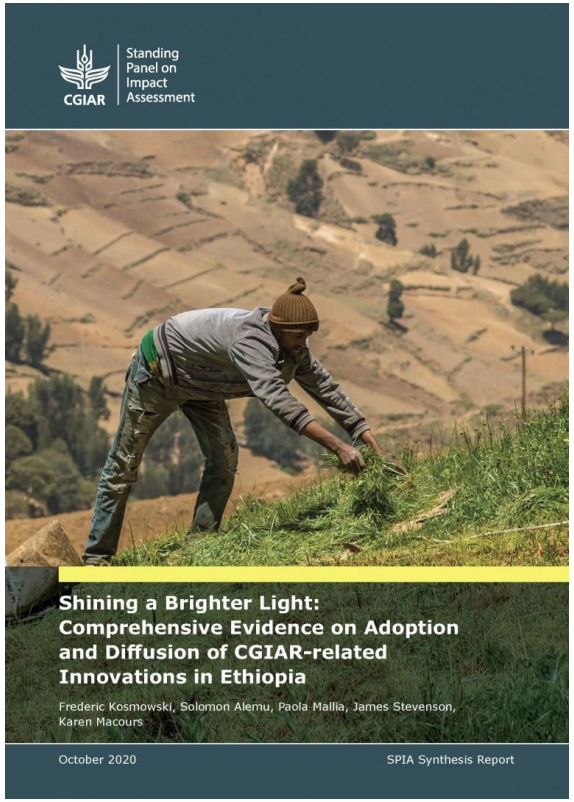
SPIA Ethiopia Report 2024: Building Resilience to Shocks

Solomon Alemu, Alemayehu Ambel, Amit Khanal, Frederic Kosmowski, James Stevenson, Lemi Taye, Asmelash Tsegay, Karen Macours

March 13th, 2025

SPIA 2020 Report: Shining a Brighter Light at the country level

- Ethiopia: Almost all CGIAR centers/CRPs active
- Stocktaking of last 2 decades of research by CGIAR and national partners
  => 52 innovations and 26 policy influences
- Novel data protocols and methods incorporated in Ethiopia Socioeconomic Survey (ESS)
  => representative and at scale
  => objective & independent measures
- Through partnership with CSA and World Bank
- Systematically and factually document CGIAR reach across crop, livestock and natural research management research
  => necessary, if not sufficient, for impact



Kosmowski , Alemu, Mallia, Stevenson, Macours (2020)

Bit.ly/SPIA-Ethiopia

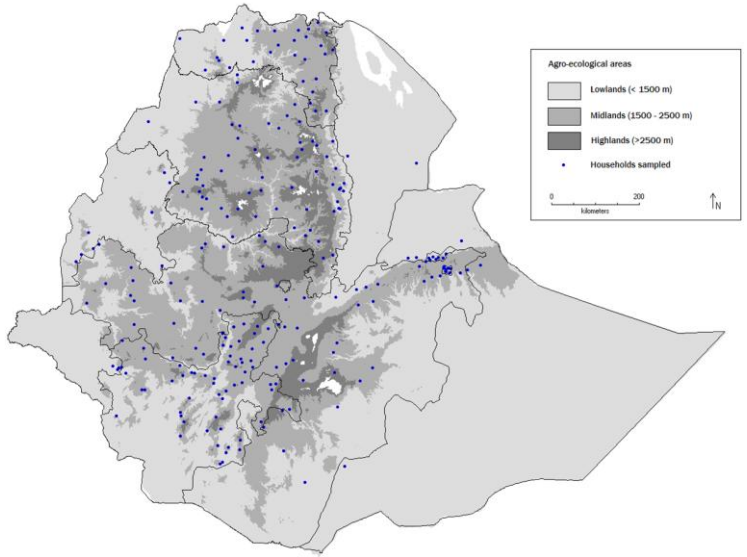
Method: Stocktaking Process

Synthesis document to identify innovations for inclusion into nationally representative surveys

This synthesis of 52 innovations is in the public domain

Innovation	CGIAR-related efforts for development and/or dissemination	Description	Observable feature	Scale and location of AR4D activities	Notes on known dissemination strategies/ pathways
Delivery of improved dairy genetics	1. Improving the Productivity and Market Success of Ethiopian Farmers (IPMS, ILRI, 2004–12) 2. Livestock and Irrigation Value Chains for Ethiopian Smallholders (LIVES, ILRI, 2013–18)	1 and 2 - Hormonal estrus synchronization (Hormonost & BoviPreg) was tested and introduced for small and large ruminants, allowing better control of cattle heat period.	Livestock keeper owns at least one crossbred large ruminant.	1 and 2 - Asebi and Almata (Tigray), Fogera, Metema and Bure (Amhara), Adaa, Mieso, Goma (Oromia), Dale, and Alba (SNNPR). From 2011 to 2014, 600,000 cows in these four regions were treated with hormone and inseminated.	1 and 2 - Following the training of federal and regional staff, hormonal estrus synchronization was pushed as a practice on farm AI service. This innovation is part of the Livestock Master Plan (LMP), which has a target of 5 million crossbreds by 2020. It is also an objective of the World Bank/ Ministry of Agriculture (MoA) Livestock and Fisheries Sector Development Project (LFSDP, 2017–24).
Drought-tolerant maize (DTMZ) varieties	1. Drought Tolerant Maize (DTMZ, CIMMYT, 2007–13) 2. Drought Tolerant Maize for Africa Seed Scaling (DTMASS, CIMMYT, 2014¬–19)	Since 2007, 10 drought-tolerant varieties have been released: BH546, BH547, BH661, Gibe 2, Melkassa 1Q, Melkassa 6Q, Melkasa2, Melkasa 4, MH 130, and MH140.	Household has grown a DTMZ variety on at least one plot. Identification uses DNA fingerprinting.	1 and 2 - 40 *woredas* in five regions (list of *woredas* is available).	Conventional seed system, farmer-based cooperatives, direct seed marketing, and EcX.

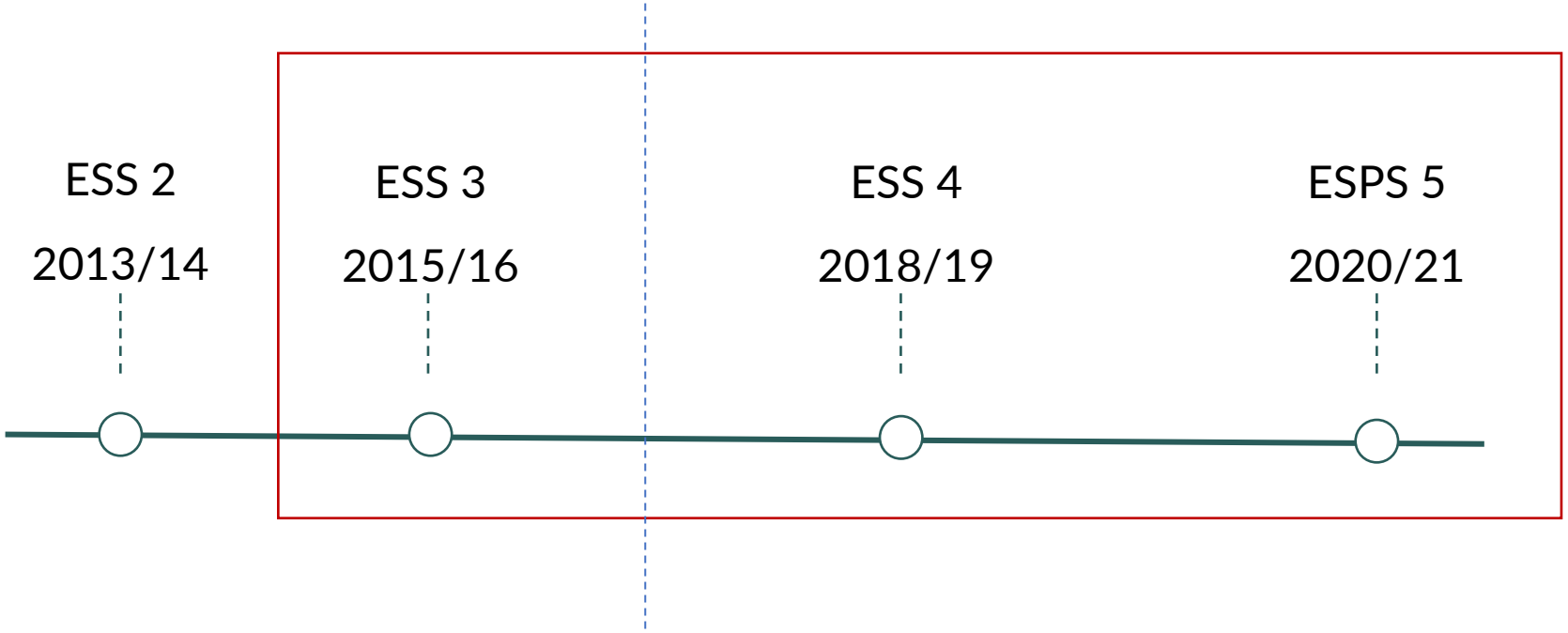
The Ethiopian Socio-Economic Survey (ESS)



- Multi-topic household questionnaire with detailed data on agriculture since 2011
- Rich modules on household socio-economic characteristics
- Sample is a two-stage stratified probability sample
- Nationally representative panel survey
- Includes crop-cuts

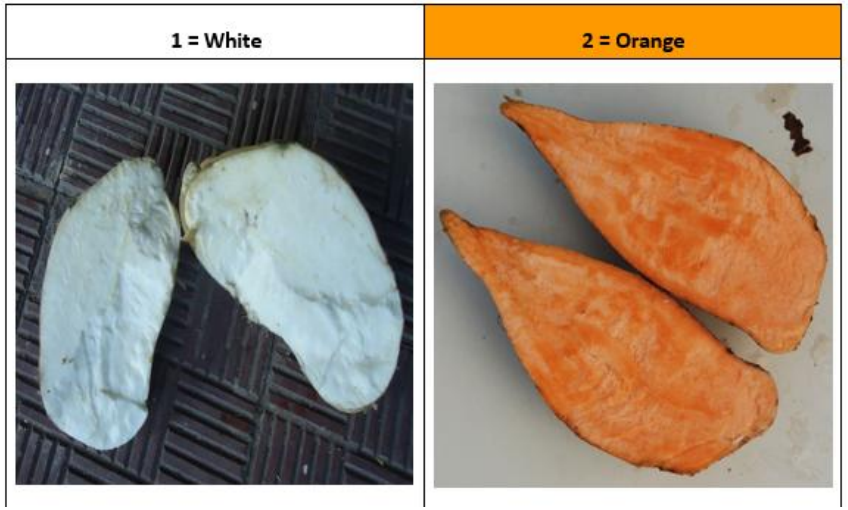
The Ethiopian Socio-Economic Survey (ESS)

SPIA has been working with the World Bank and CSA in Ethiopia since 2015

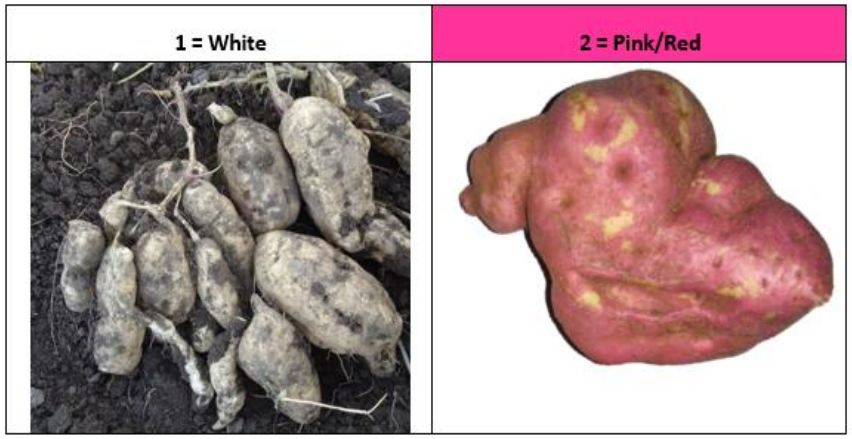


Household panel sample redrawn

Improving measurements: visual-aids



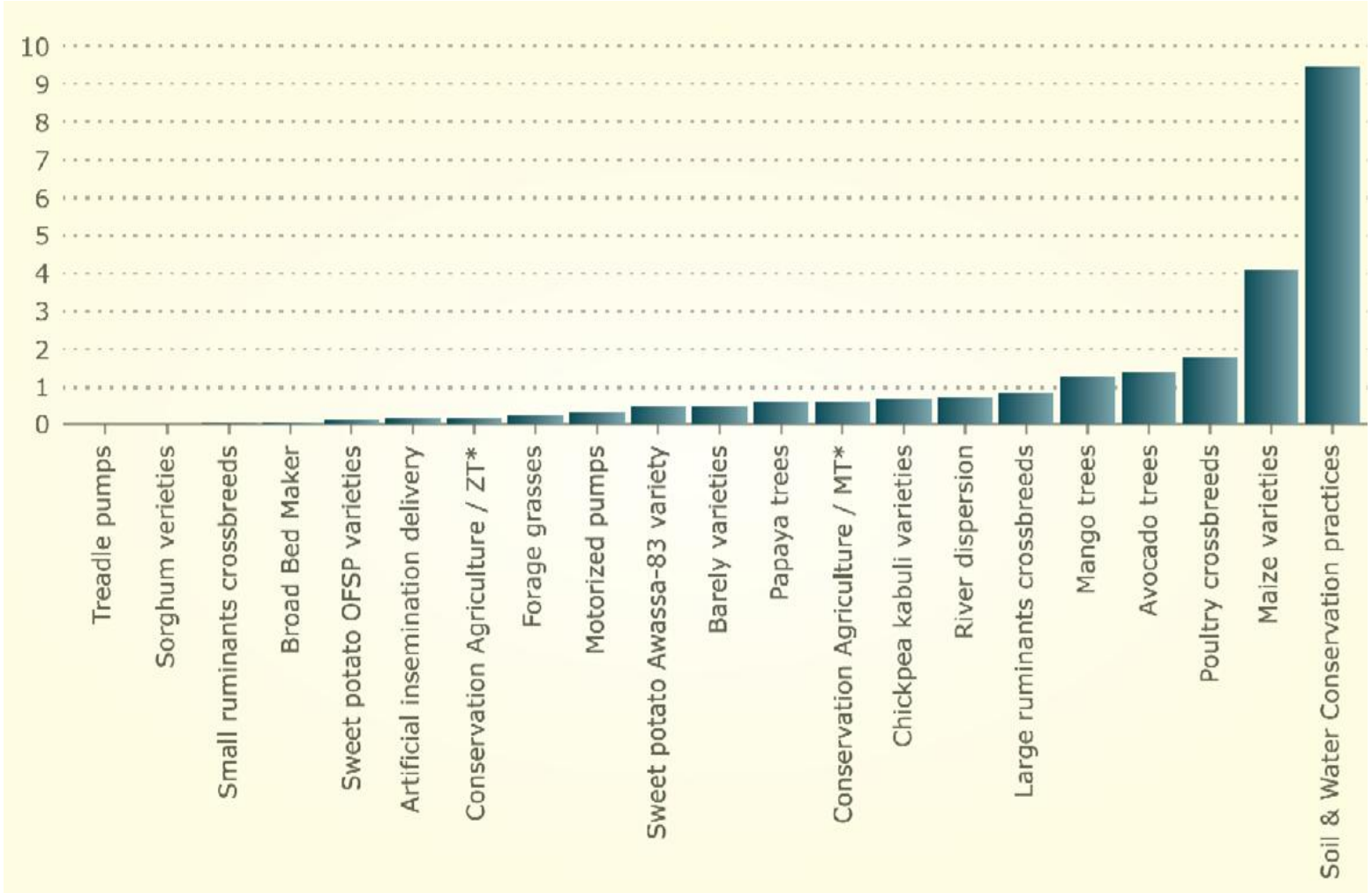
a) Sweet Potatoes
(flesh and skin)



b) Chickpea desi & kabuli types

Increasing accuracy: DNA fingerprinting for crop varietal identification

Reach of CGIAR-related innovations in 2018/19



Based on data we could collect in ESS 4 only (wheat and haricot beans notable absences)

Number of households reached

Standing Panel on Impact Assessment
CGIAR

- Number of households reached
  - Lower-bound estimate – 4.1 m. households
  - Upper-bound estimate – 11 m. households

- Difference between these numbers reflects different level of confidence in contribution of CGIAR:
  - Lower-bound estimate – CGIAR had clear role and there is an observable, embodied innovation to detect
  - Upper-bound estimate – Difficult to differentiate CGIAR role but clear that CGIAR has worked on promoting / evaluating / helping others design their programs etc

SPIA Ethiopia Report 2024

https://cgspace.cgiar.org/server/api/core/bitstreams/e68c4af8-d29d-4102-b96a-1e12c6468c6e/content

- Update of the 2020 report
  - Stocktake: new innovations and policy contributions
  - Updates estimates of adoption and reach
  - Document the changes in the three years between the 4th and 5th survey waves.

- Period where dramatic shocks occurred: COVID-19 pandemic, drought and protracted civil conflict in several regions
  - Multiple, and compounded shocks

Data integrations in ESS4 and ESPS5

Standing Panel on Impact Assessment
CGIAR

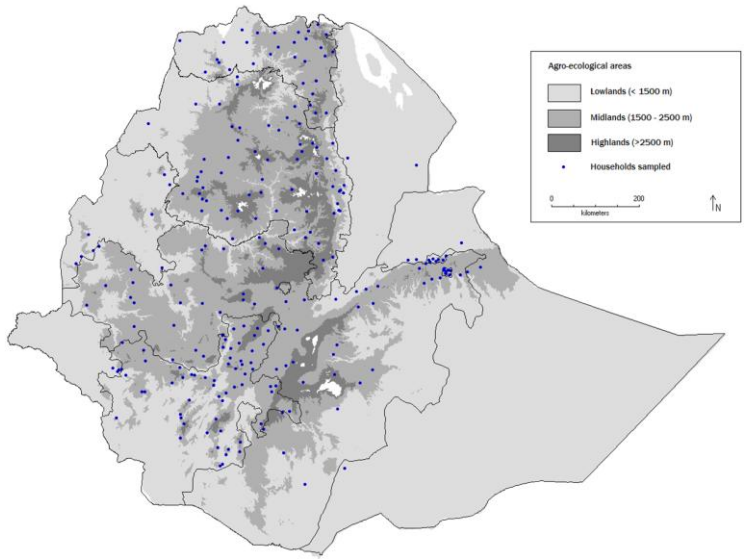
	2020 report	2024 report		
	ESS3 or 4	**ESS5 Second wave of panel data**	**New innovations in this round**	**Complementary measures** (re. impact pathway / theory of change)
Crop improvement	Maize (DNA)	Maize (DNA)		
	Barley (DNA)			Food vs malt
	Sorghum (DNA)			
	Orange-fleshed sweet potato (OFSP – Visual aid)	OFSP		
	Awassa-83 sweet potato	Awassa-83 sweet potato		
	Chickpea - *kabuli*	Chickpea - *kabuli*		Durum vs. bread
	Wheat			
Animal agriculture	Large ruminants	Large ruminants		Artificial insemination (better attribution)
	Small ruminants	Small ruminants		
	Improved chicken	Improved chicken		
	Improved forages	Improved forages		

Data integrations in ESS4 and ESPS5

	2020 report	2024 report		
	ESS3 or 4	**ESS5 Second wave of panel data**	**New innovations in this round**	**Complementary measures** (re. impact pathway / theory of change)
Natural Resource Management	River dispersion	River dispersion		
	Motorized pumps	Motorized pumps		
	Treadle pumps	Treadle pumps		
	Soil and water conservation practices	Soil and water conservation practices		
	Broad-bed maker			
	Conservation agriculture (CA)	CA		
	Afforestation	Afforestation		
	Fruit tree cultivation	Fruit tree cultivation		
			2WT	
			Tree seed centers	
Policy	Productive safety net program (PSNP)	PSNP		
	Water user associations	Water user associations		
			Digital extension	

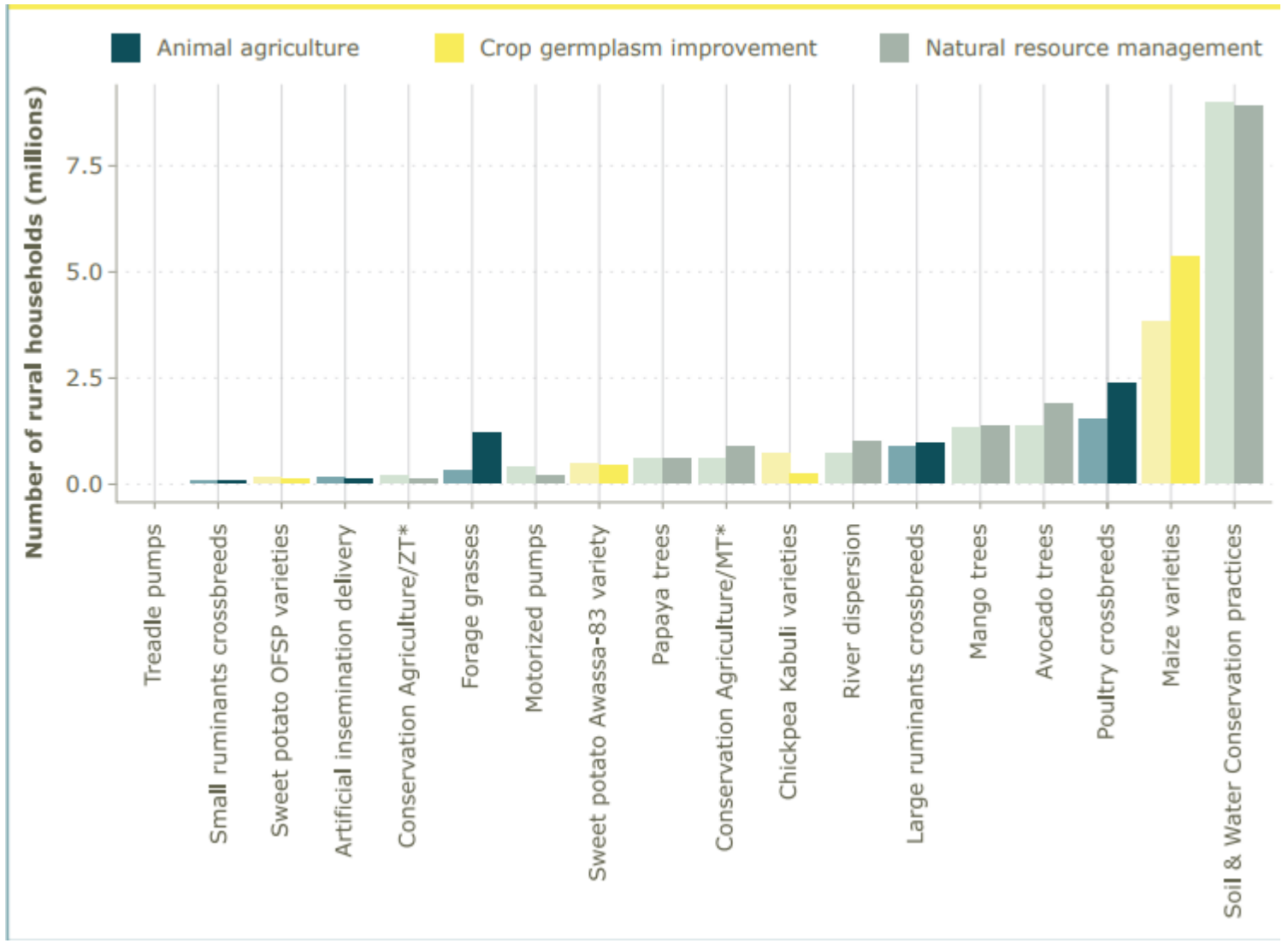
In addition, we report on estimates of reach for two other innovations – improved varieties of wheat and common bean – drawing on different data sources (Hodson et al, 2020; Habte et al, 2020).

SPIA Ethiopia Report 2024: Data and Methods



- The 2018/19 ESS (ESS 4) covered all nine regional states and two administrative cities, Addis Ababa and Dire Dawa.
  - 316 rural EAs
- The 2021/22 ESPS (ESPS 5) covered all regions except Tigray and a few areas in Afar, Oromia and Amhara
  - 223 rural EAs
- We used the longitudinal and cross-sectional weights provided by the WB
- Additional data collected on seed distribution (DT Maize) and qualitative interviews (Forage in Afar)

Adoption Rates and Changes



Poultry Crossbreeds

CGIAR Standing Panel on Impact Assessment

- The adoption rate increased from 5% to 13% between 2015/16 and 2018/19.

- Higher adoption is observed across most regions, with significant shifts in Oromia (from 11% to 20%) and Benishangul Gumuz (from 7% to 17%).

- This growth may be attributed to the diffusion of improved chicken breeds through public-private partnerships and possibly interventions supported by Ethiopia's Livestock Master Plan.

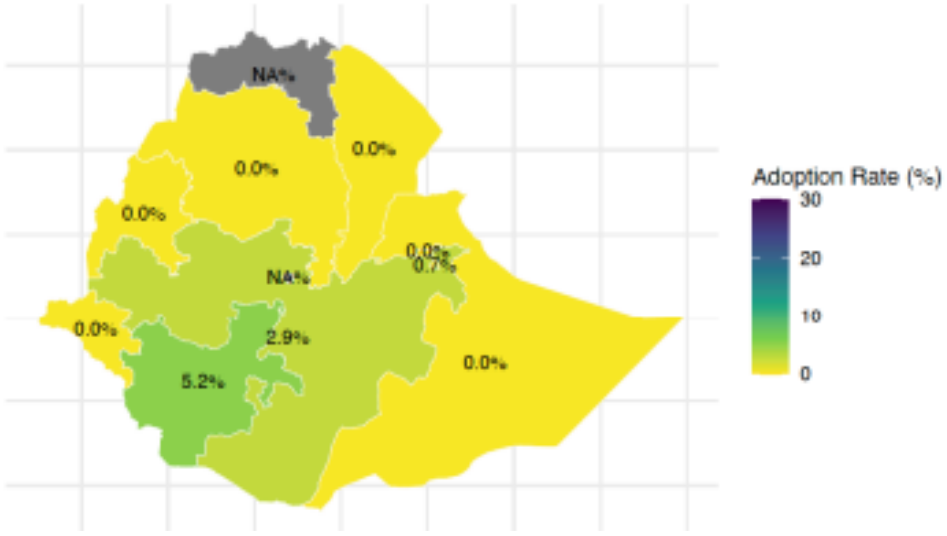
- African Chicken Genetic Gains and the CGIAR Initiative on Sustainable Animal Productivity (SAPLING) have also continued to promote the delivery of improved breeds in collaboration with private breeding companies.

- One cautionary note on the measurement: it is based on farmer's self-reporting

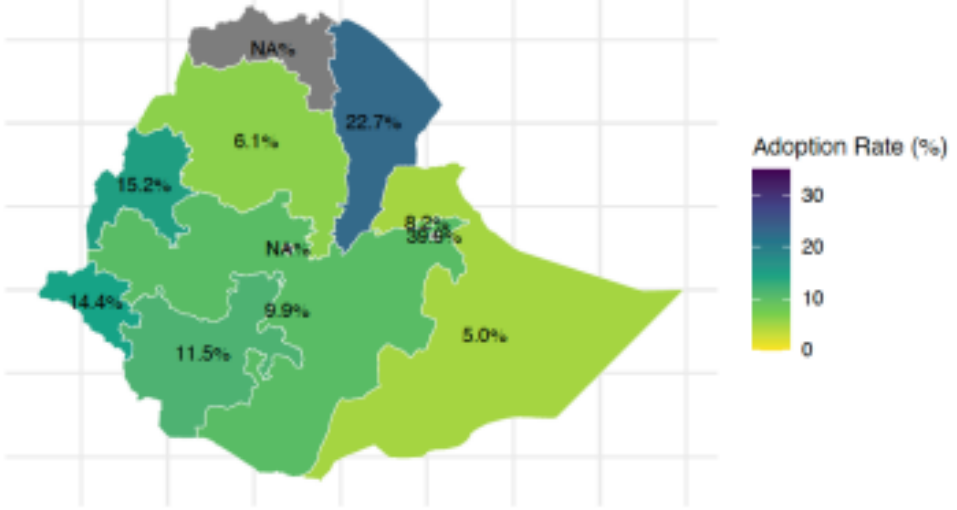
Forage Grasses

- The share of households reporting using a selected set of forages (Elephant, Sesbaniya, Alfalfa & Rhodes) nearly quadrupled from 2.7 to 9.8%
- These increases mostly occurred in all of Ethiopian's lowland areas, where pastoralists' and semi-pastoralists' livelihoods dominate

3A) Forage Adoption by Region: Wave 4 Panel



3B) Forage Adoption by Region: Wave 5 Panel



Forage Grasses: Qualitative Findings

CGIAR Standing Panel on Impact Assessment

- ILRI's genebank has been a provider of high-quality forage germplasm in Ethiopia since 1983

- After ILRI distributes seeds, research stations and private companies are involved in seed multiplication.

- Households typically do not purchase seeds directly: They access fodder through distributions by NGOs and government actors.

- The Ethiopian government has invested in irrigation in Afar, allowing private sector actors to produce fodder alongside cash crops in irrigated areas near the Awash River.

- Fodder prices have risen due to increased demand from NGOs and the regional government.

- No changes observed in the adoption of artificial insemination or crossbred small or large ruminant Not an intensification of the large ruminant sector

Improved Maize varieties

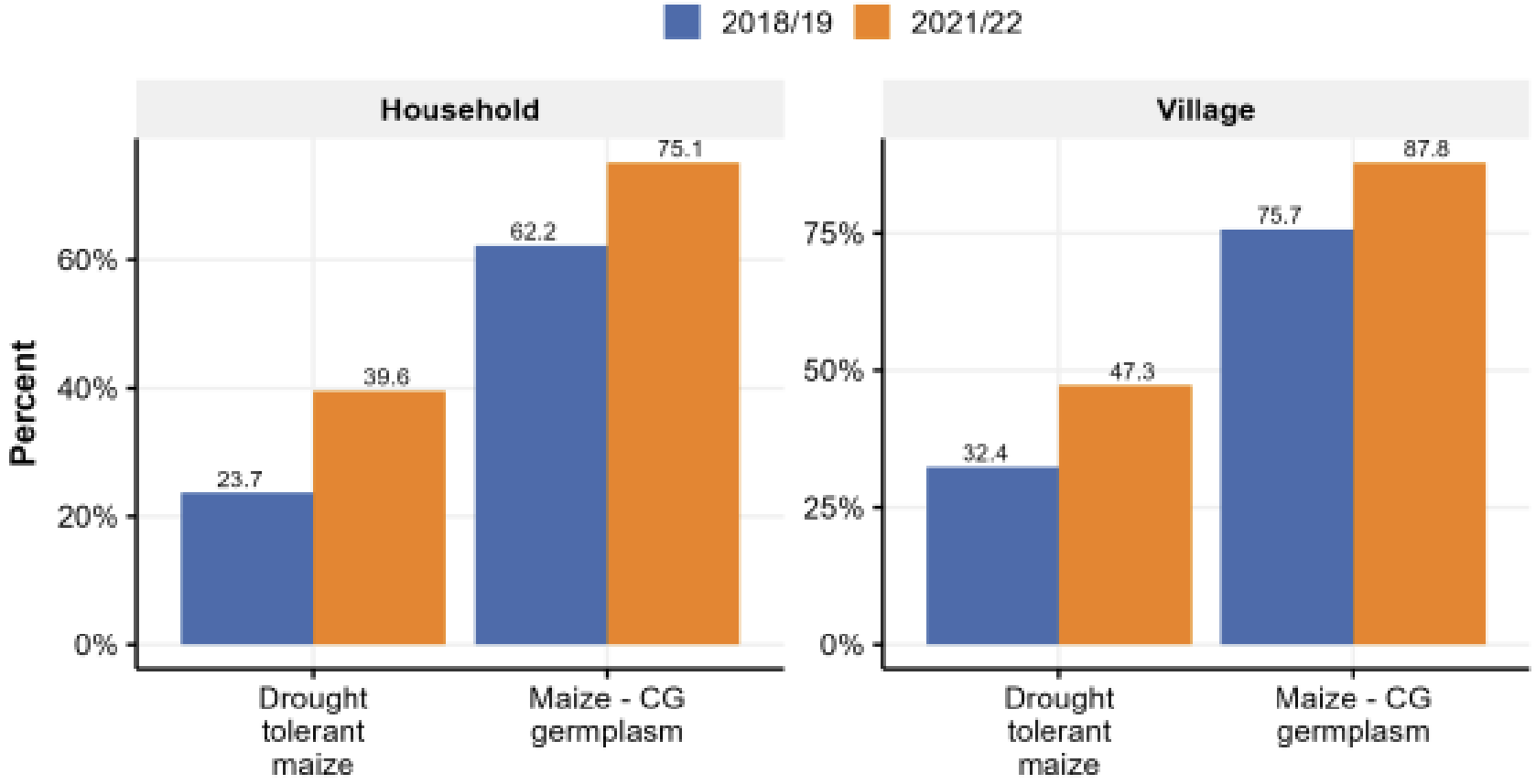
- Maize is a staple in Ethiopia, grown by 9.8 million farmers (CSA, 2019)

- Maize breeding is a major activity of EIAR in collaboration with CGIAR centers
  - Overall, 54 improved maize varieties have been released in Ethiopia since 1990

- Ten drought-tolerant varieties and eight quality protein maize (QPM) varieties have been released
- Most popularDT maize varieties include Melkassa-2 (2004) and BH661 (2011)

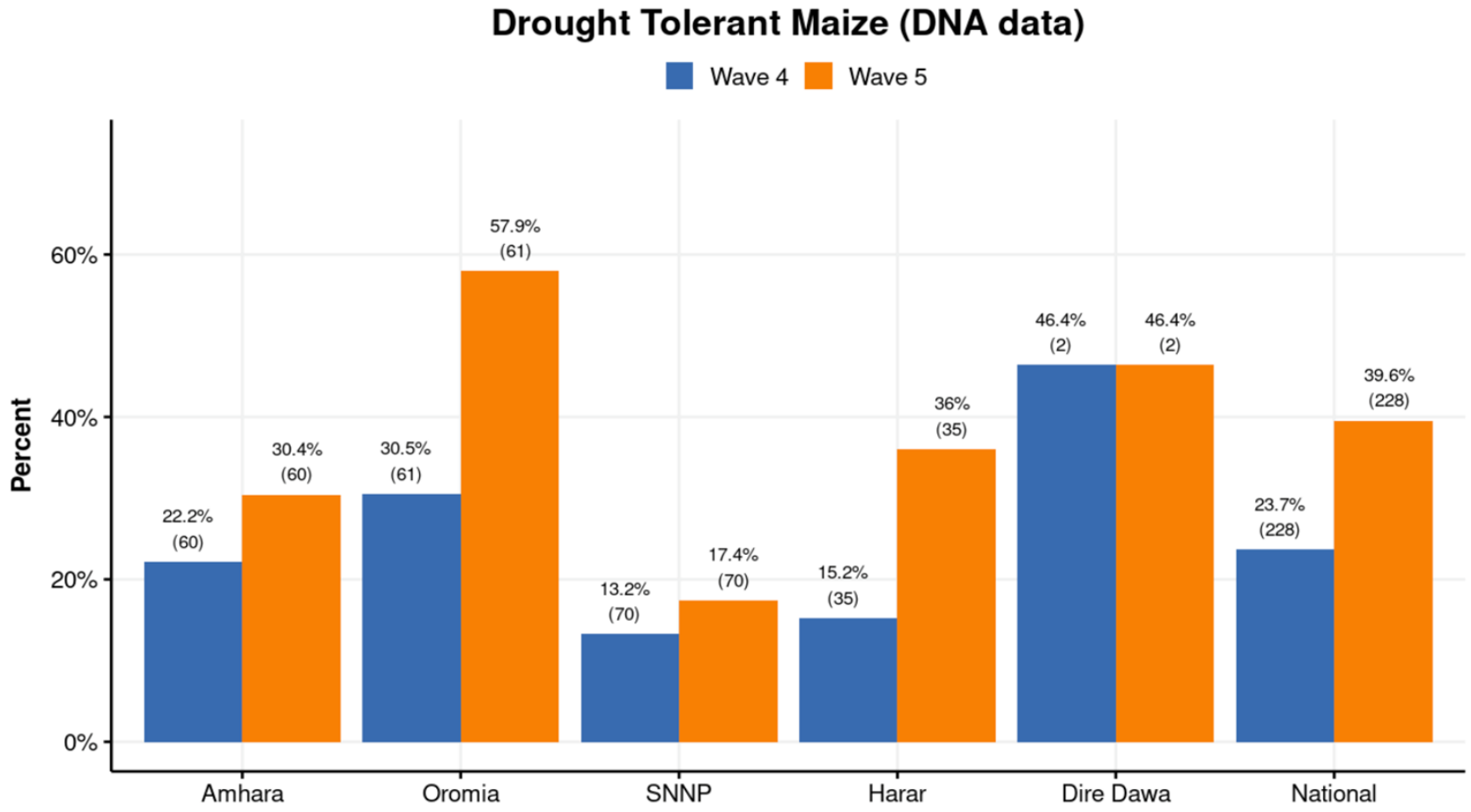
- DT Maize were bred for mid-season drought

Adoption Trends of DT Maize and CGIAR-related Maize Varieties



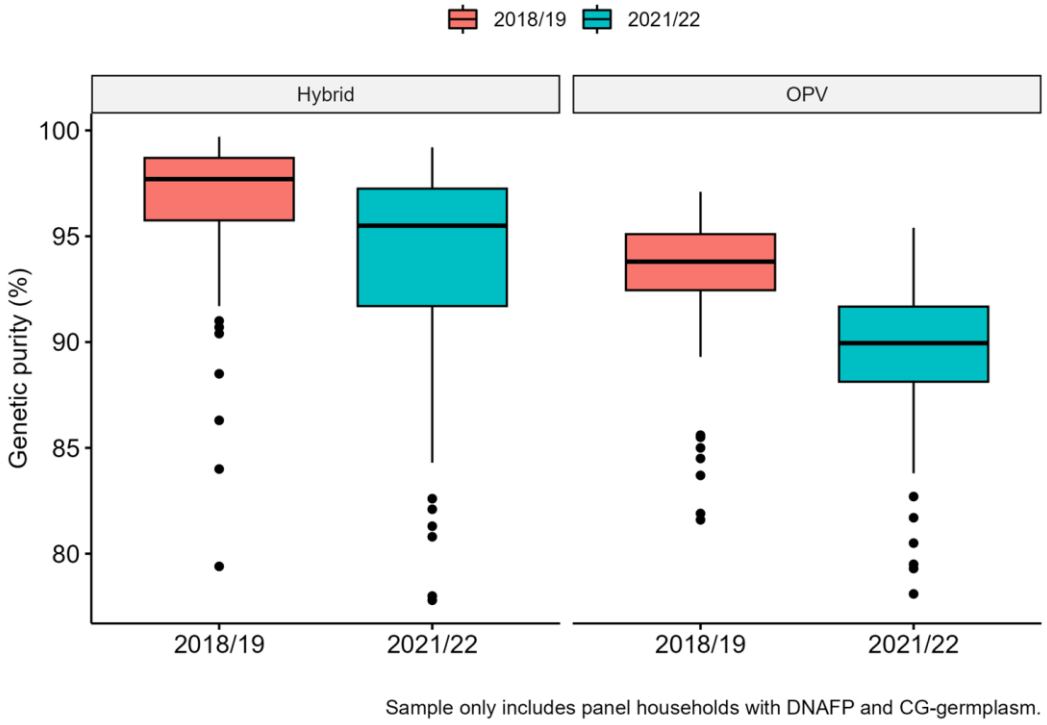
Only panel sample used. Percent at the household level are weighted sample means using panel weights.

Adoption Trends of DT Maize and CGIAR-related Maize Varieties

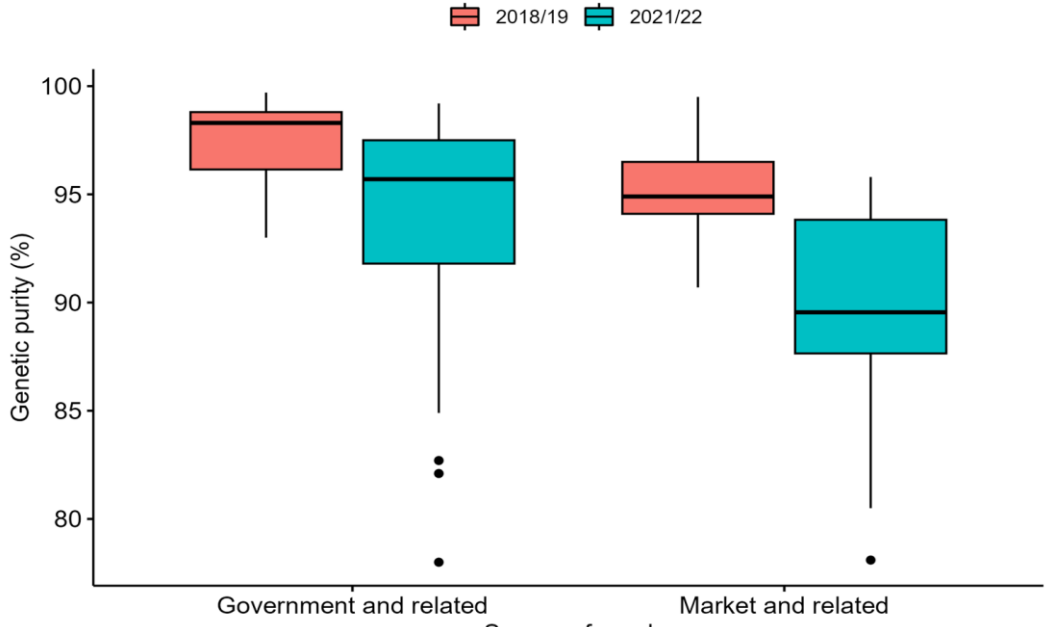


Percent at the household level are weighted sample means.
Number of observations in parenthesis.

A large decline in the genetic purity of CGIAR-related maize varieties

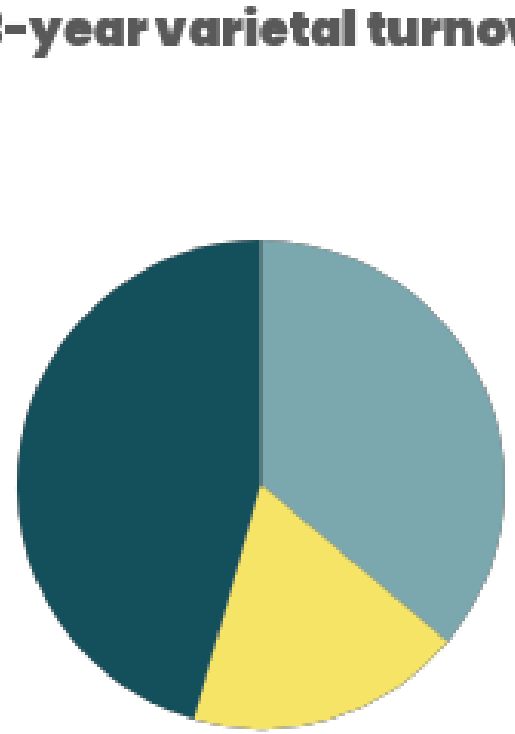


Sample only includes panel households with DNAFP and CG-germplasm.



Sample only includes panel households with DNAFP and CG-germplasm.

Maize seed turnover on farmer's fields



- Average age of CGIAR varieties in farmers' fields shifted from 19 to 20 years

Maize seed turnover on farmer's fields

- Maize seed turnover is large: 62% of households shifted variety between 2018 and 2020
- Farmers tend to adopt a diverse range of variety: no 'single replacement variety '
- DT Maize seeds are less often disadopted than other seeds (~1/3 disadopted)

		Seed name in ESS4 (2018/19)															
		BH-140	BH-540	BH-660	BH-661	BH-670	Damote	GIBE1	Jabi	KULANI	Limu	MELKASSA-2	Melkassa-1Q	Shone	AHM-850 (Wenchi)	AMH852Q	Total
Seed name in ESS5 (2020/21)	BH-140	6	2		1			1	1					2			13
	BH-540		16														16
	BH-660			5	6			2		2				1			16
	BH-661			17	26			6		3	2			3	1		58
	BH-670		1														1
	BH-547									1							1
	Damote			1										2			3
	GIBE1		2		1	2	1	11		3		1	1	5			27
	KULANI			9	5			4		9	3			1	4		35
	Limu		4	5						6	4			1	1		21
	MELKASSA-2				1			1		1		2				1	6
	MH-130		4	2	1		1							1			9
	SHONE	1		2				1			2			4			10
	Total	7	29	41	41	2	2	26	1	25	11	3	1	20	6	1	216

Note: Orange cells indicate drought-tolerant maize varieties. Data merging between ESS4 and ESS5 was done with all observations from ESS5 and households with one varieties from ESS4

Does DT maize adoption occur in drought-prone areas?

CGIAR Standing Panel on Impact Assessment

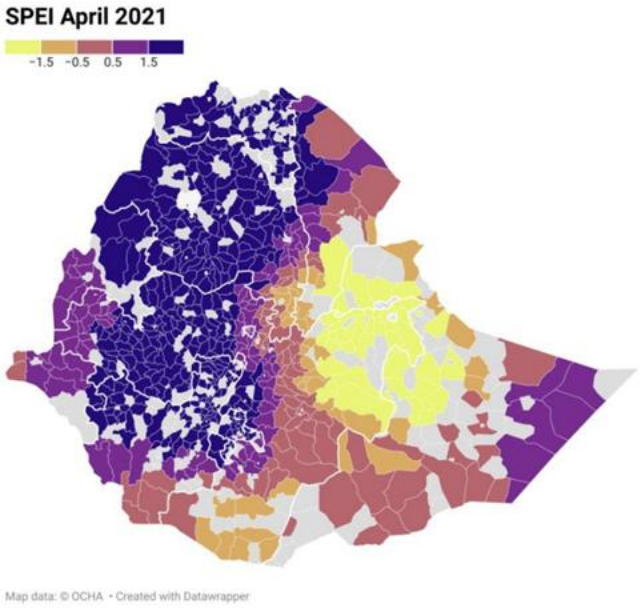
- To test this hypothesis, we used the Standardized Precipitation Evapotranspiration Index (SPEI) Index

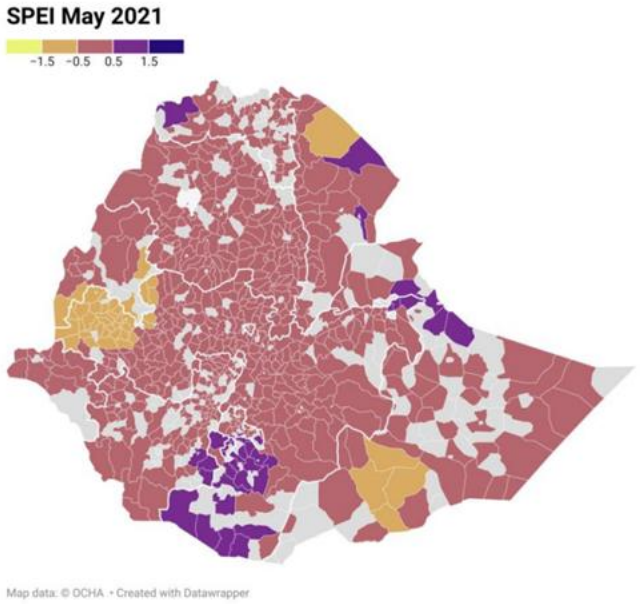
- We regress drought-tolerant maize adoption over the SPEI metrics, using regional fixed-effects

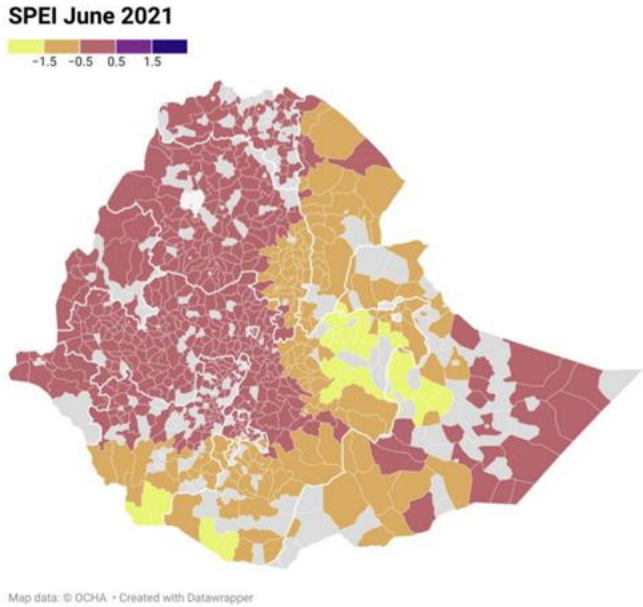
- Two metrics of SPEI are used:
  - Monthly SPEI in the median planting months (EA-level)
  - Average SPEI in the previous three years

SPEI from April to June 2021

- Median planting months for maize range from March to June in both waves
- Severe drought conditions occurred in 2021







Does DT maize adoption occur in drought-prone areas?

Standing Panel on Impact Assessment
CGIAR

Tab 1. Regression results of drought-tolerant maize adoption on the SPEI of **median planting month** and following months (2021)

	(1)	(2)	(3)	(4)	(5)
Median Planting Month	-0.0733**				-0.104***
	(0.0316)				(0.0340)
1 Month After		-0.0707			-0.111***
		(0.0476)			(0.0399)
2 Months After			-0.0113		-0.0321
			(0.0482)		(0.0604)
3 Months After				-0.0243	-0.0715
				(0.0522)	(0.0588)
Constant	0.210***	0.330***	0.357***	0.357***	0.360***
	(0.0666)	(0.0911)	(0.0966)	(0.0818)	(0.0862)
Observations	475	475	475	475	475

The median planting month by each EA is taken as the 1st month, one month after the median month is taken as the 2nd month, & so on.
DTMZ is a binary variable with value 1 if adopted
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Does DT maize adoption occur in drought-prone areas?

Standing Panel on Impact Assessment
CGIAR

Tab 3. Regression results of drought-tolerant maize adoption on the **average of SPEI (2018-2020)** in the median planting month and following months (2021).

	(1)	(2)	(3)	(4)	(5)
Month Planted	0.0928				0.0601
	(0.112)				(0.118)
1 Month After		-0.00330			-0.117
		(0.0918)			(0.104)
2 Months After			-0.125		-0.211*
			(0.106)		(0.114)
3 Months After				-0.208*	-0.262*
				(0.111)	(0.149)
Constant	0.321***	0.350***	0.314***	0.381***	0.469***
	(0.0812)	(0.105)	(0.0950)	(0.0856)	(0.171)
Observations	475	475	475	475	475

The median planting month by each EA is taken as the 1st month, one month after the median month is taken as the 2nd month, & so on.

DTMZ is a binary variable with value 1 if adopted

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

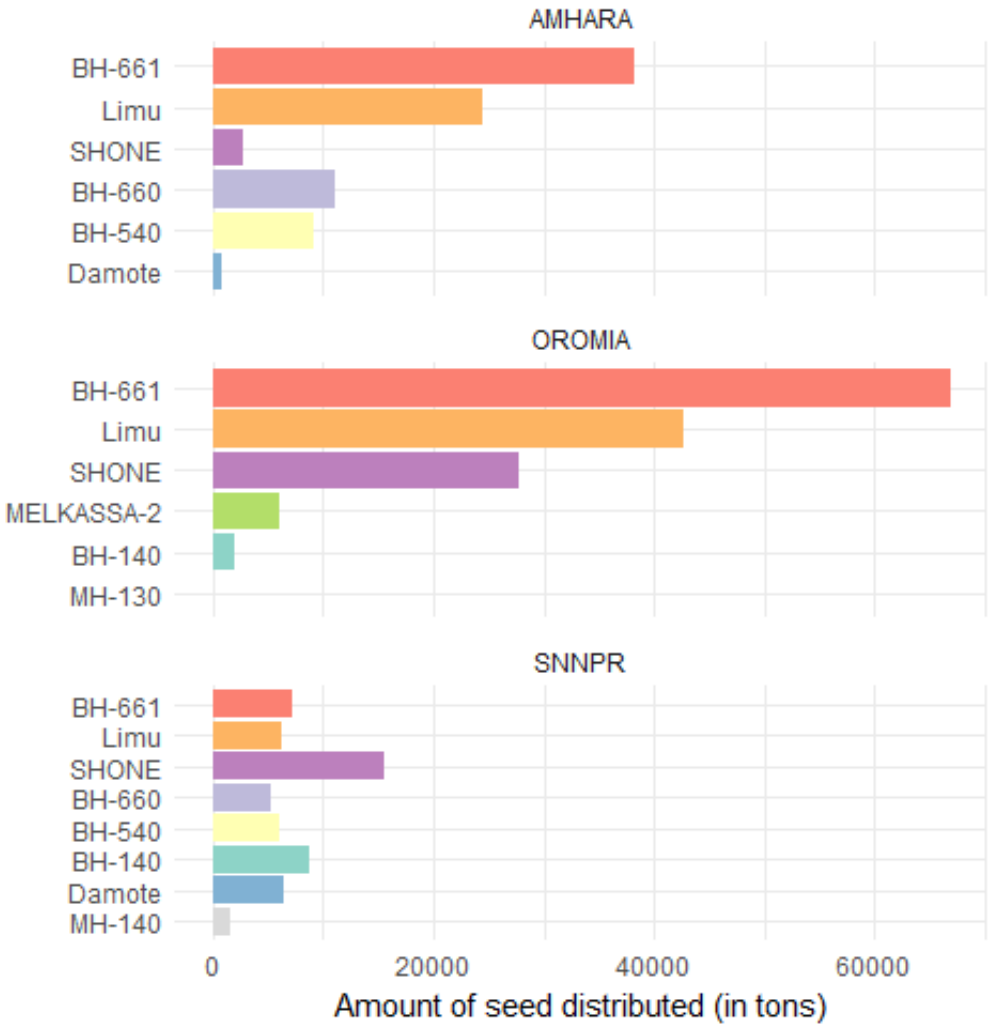
Note: includes regional-level fixed effects

DT Maize seed distribution efforts

In 2020, the Ethiopian Ministry of Agriculture distributed large amounts of seeds to farmers

Fig 1. Amount of maize seed (in tons) distributed between April and September 2020 by region in Ethiopia.

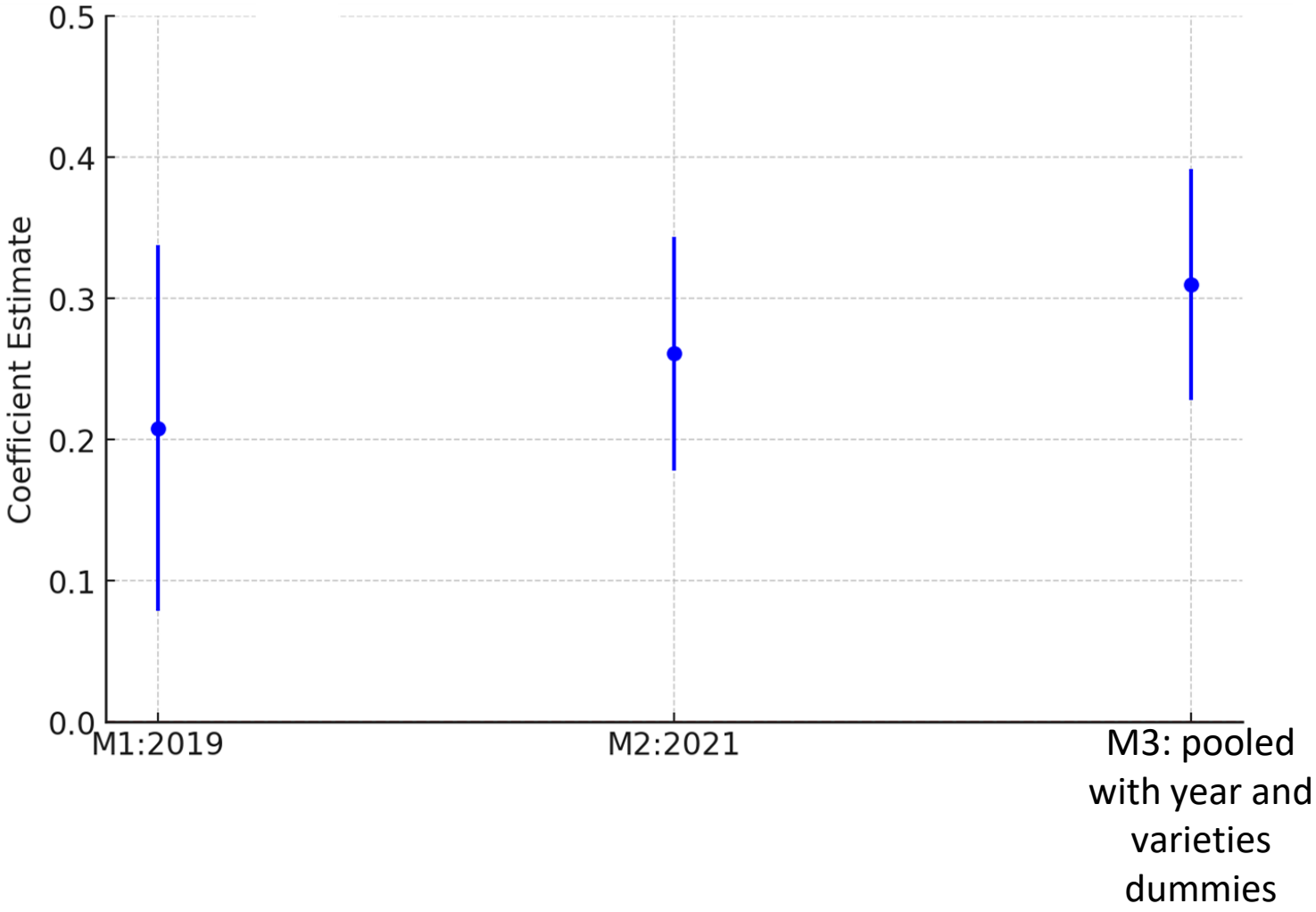
Source: MoA, 2020



Association of DT Maize seed distribution efforts with farmer's adoption

Standing Panel on Impact Assessment
CGIAR

Fig 2. Variety-level regression of adoption on seed distribution efforts by the MoA



Improved Chickpea Varieties

CGIAR Standing Panel on Impact Assessment

- Chickpea Types: Ethiopia grows both Kabuli and Desi varieties. Kabuli types are introduced by ICRISAT and ICARDA, and are usually exported
- Reduction in improved kabuli-type chickpea, from 4.7% in 2015/16 to 1.3% in 2021/22
- AgSS data confirms a 22% decline in the area under all chickpea varieties from 2015/16 to 2021/22, with a 40% reduction specifically for Kabuli types from 2018/19 to 2021/22.
- Trade and Conflict Impact: COVID-19 and internal conflict may have discouraged farmers from cultivating Kabuli types due to trade disruptions.

Other Innovations

- Some other innovations large-scale a positive trend: Conservation Agriculture with minimum tillage (from 4 to 7%) and afforestation (10 to 14%)

- Wheat: New rust-resistant varieties were estimated to be cultivated on 44% of wheat area in 2016/17 (Hodson et al., 2020)
- Common Bean: 67% of improved varieties identified (Habte, 2021)

- Video extension use was reported by 4% of EAs
  - No evidence of large-scale exposure

- The 2WT was found on 4% of EAs
  - Similar share of owners and users
  - These few EAs are very far away from the location of CGIAR research activities

Who are the adopters: a comparison of ESS4 and ESPS5

CGIAR | Standing Panel on Impact Assessment

	"Total size of parcels"		"Distance to market (km)"		"Asphalt as a main access road"		"Livestock manager is female"		"Female share of family labor is > 50%"		"Annual consumption per capita (ETB)"		"Bottom 40% annual consumption"		"Productive asset index"		"Annual off farm income (ETB)"		"Age of household head"	
	Wave 4	Wave 5	Wave 4	Wave 5	Wave 4	Wave 5	Wave 4	Wave 5	Wave 4	Wave 5	Wave 4	Wave 5	Wave 4	Wave 5	Wave 4	Wave 5	Wave 4	Wave 5	Wave 4	Wave 5
Animal Agriculture																				
Large ruminant crossbreed	0.55***	1.08***	-3.90***	-2.39***	0.16***	n.s.	n.s.	n.s.	-0.04**	-0.06***	n.s.	3,041.22**	n.s.	-0.16***	n.s.	0.34***	2,293.34**	3,370.51**	n.s.	5.84**
Poultry crossbreed	n.s.	0.50***	-1.84***	n.s.	0.10***	n.s.	0.06**	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	0.27***	-959.04***	n.s.	n.s.	n.s.
Forage gras (Elephant, Sesbaniya, Alfalfa & Rhodes)	-0.48***	n.s.	-3.28***	-2.24***	-0.08***	0.12**	0.11***	0.18**	-0.05***	n.s.	n.s.	n.s.	n.s.	n.s.	0.75***	n.s.	-1,206.19***	n.s.	-6.29***	n.s.
Crop germplasm improvements																				
Chickpea kabuli varieties	1.18***	1.43***	n.s	n.s	-0.14**	n.s	n.s	n.s	n.s	-0.08***	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s	n.s	n.s	n.s
Maize varieties	n.s.	n.s.	2.40***	3.84***	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	0.51***	n.s.	n.s	n.s	n.s	n.s
Drought-tolerant maize varieties	n.s.	n.s.	n.s.	5.30***	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	-0.17**	n.s.	n.s.	n.s.	n.s	n.s	n.s	n.s
Natural resource management																				
River diversion	n.s.	-0.37***	-2.32***	7.03***	n.s.	-0.12***	n.s.	n.s.	n.s.	n.s.	n.s.	4,193.68**	n.s.	n.s.	n.s.	n.s.	n.s.	-1,236.67**	n.s.	-4.49**
SWC practices	0.65***	0.39***	6.40***	n.s.	n.s.	n.s.	0.06**	n.s.	-0.05***	n.s.	n.s.	n.s.	n.s.	n.s.	0.42**	0.33***	n.s.	n.s.	n.s.	2.81***
Minimum tillage CA	1.02**	0.64***	4.26**	-1.81***	n.s.	0.11**	n.s.	n.s.	-0.06***	-0.04**	-3,281.10**	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.	3.31**
Fruit trees (Mango, Papaya, Avocado)	n.s.	n.s.	n.s.	-1.79***	0.15***	0.06**	n.s.	n.s.	n.s.	0.05***	-2,198.41***	n.s.	0.14***	n.s.	0.32***	0.17**	-760.49**	n.s.	4.51***	2.25**

Conclusion

- There is clear value in having sustained panel data
- Agricultural innovations continued to scale up during a period of immense instability, including COVID-19, drought, and civil conflict.
- The increase in estimated reach of innovations during 2018/19–2021/22 is remarkable and unexpected.
  - Between 5.8 and 11.5 million rural households were reached in 2021/22
- This growth was largely driven by drought-tolerant maize, which nearly doubled in adoption in three years. Forage and improved chicken also contributed.
- Scaling was likely influenced by supply-side factors such as government and NGO distribution of DT maize seeds and forages.
- CGIAR-related agricultural innovation likely to have played a role in enhancing rural household resilience

Stocktaking

of CGIAR innovations in Ethiopia

Stocktaking Objectives

Update

CGIAR innovations since 2022 updated stocktake

Revisit

Characterization of CGIAR innovations

Analyze the stock

Evolution through time
Distribution across sectors and crops
Distribution across targeted benefits (e.g. yield, risk, nutrition, policy…)

Assess diffusion

Time, geographic and scale of diffusion

Understand drivers of initial and later diffusion (actors and conditions)

Identify

priority innovations for detailed follow-up studies

Follow-up on previous SPIA reports

Newly identified ones

Stocktaking Methods - 1

Update CGIAR innovations since 2022 updated stocktake

- Desk-review: CGIAR Dashboard, previous stocktake, other sources
- Interviews with CGIAR centers:
  - Missing innovations
  - Recent diffusion activities (including pre-2022 innovations)

Revisit Characterization of CGIAR innovations

- Associate each (past and current) innovation with key objectives and context conditions
- Information sources:
  - Seed registers
  - Scientists interviews

Innovation level characterization: examples

Crops: Yield, Disease resistance, Drought tolerance, Salinity Tolerance, Acidity tolerance, Temperature tolerance, Nutritional quality, Marketability

Livestock: productivity, product quality, adaptability, etc

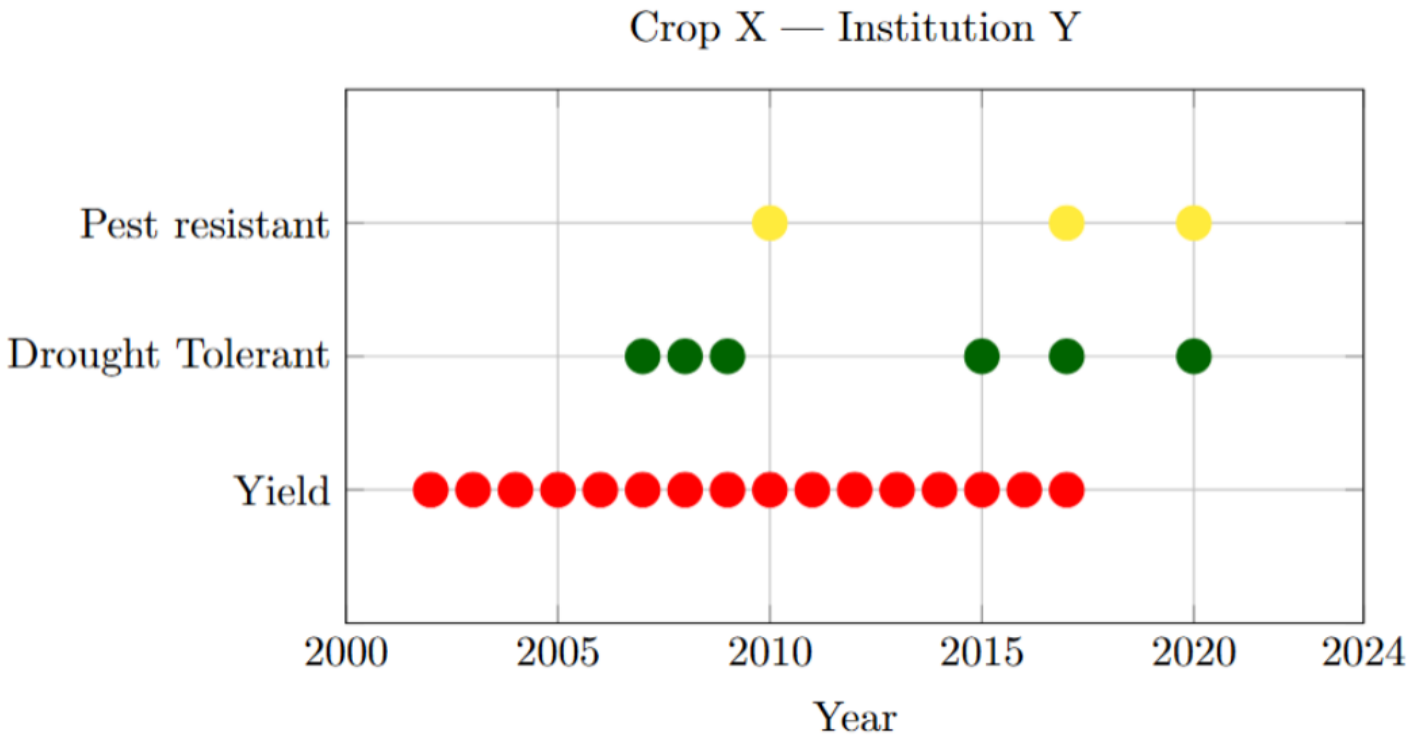
NR: cost-effectiveness, adaptability, multipurpose etc

…

Stocktaking Methods - 3

Stock-level characterization, by crop and time.

Example of indicators:
Coverage,
Redundancy,
Up-to date
…

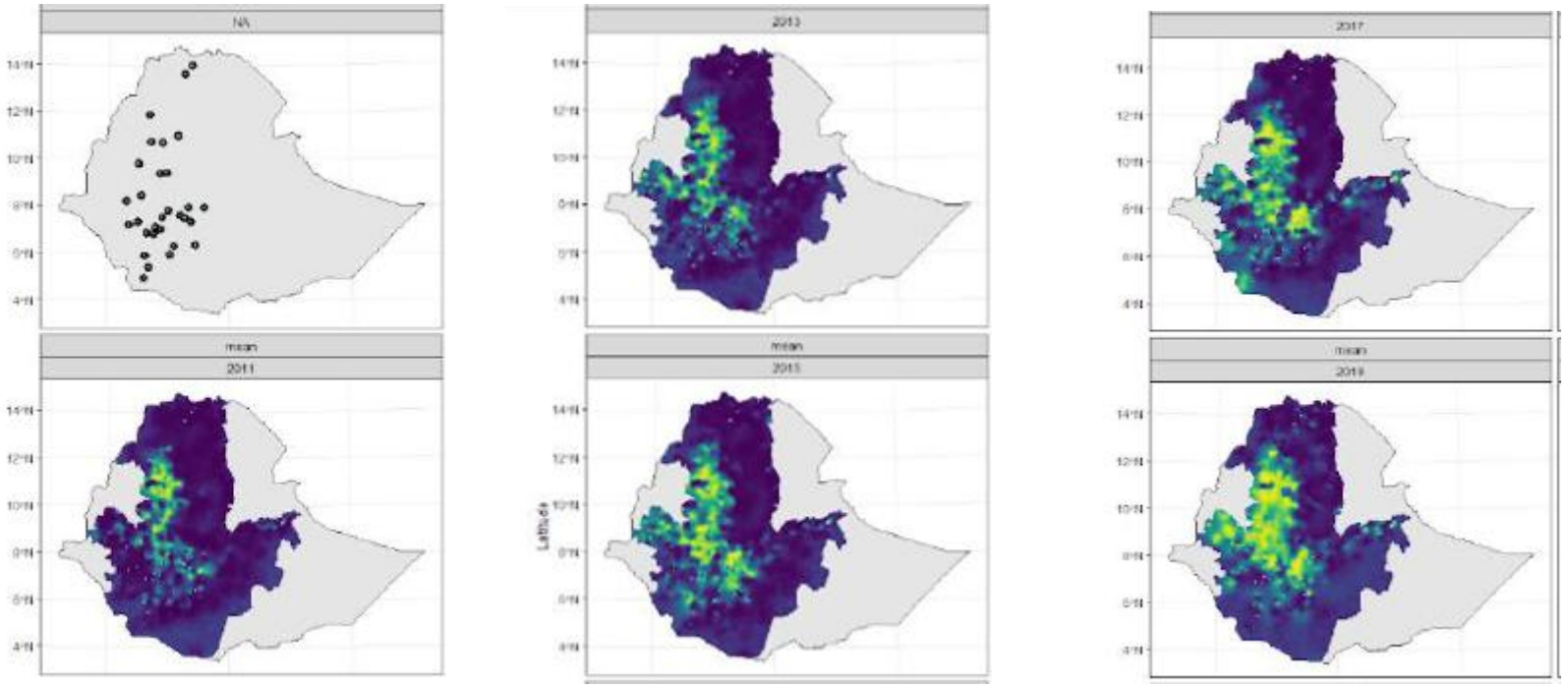


Stocktaking Methods - 4

Assess diffusion

- For each innovation: identify CGIAR/Government diffusion activities (time, place, intensity).
- Identify other sources of innovations (private sector, NGOs…): time and localities
- Assess diffusion among small-scale farmers: leverage past data from SPIA and Atlas of Food Security and Nutrition

Eg. Using the Ethiopian Atlas for Food Security and Nutrition to assess the diffusion of CGIAR-developed yield improving maize varieties, through space and time



Stocktaking Methods - 5

Understand (selected) diffusion

Stakeholder and expert interviews:

- For innovations with strong record of diffusion: drivers, context timing
- For innovations with lower record of diffusion: keep lessons (e.g. not adapted vs not (yet) needed)

Stocktaking – tasks and timing

March Develop updated information template – previous stock-take template + characterization of innovations

April Fill template for all CGIAR innovations in Ethiopia : Desk review

May Share results with CGIAR centers in Ethiopia for review and missing information

June Analyze Stock of innovation per center, per crop and through time

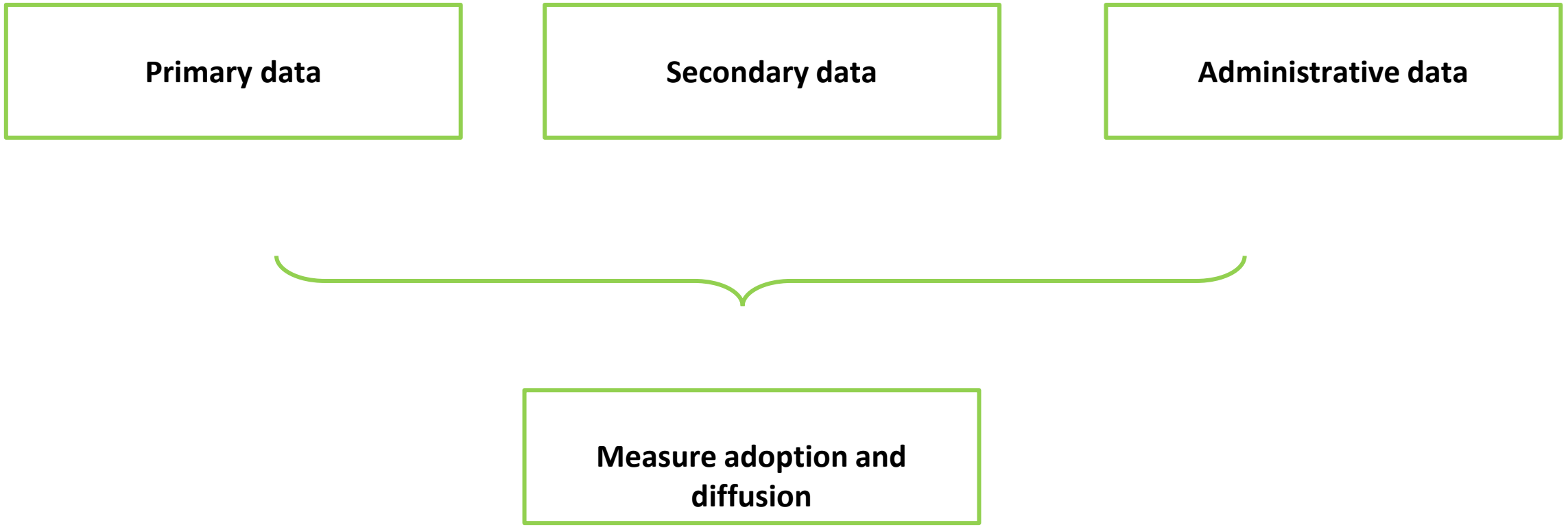
July Identify key innovations for follow-up studies on diffusion and impact

Next Stakeholder committee (September 2025) present and discuss full draft of updated stocktaking

Thank you

Data Cooperation

Data intensive project



Key Principles

1. **Ethics**
   - Research protocols
2. **Regulations**
   - Comply with national and international laws
3. **Reproducibility**
   - FAIR principles
   - Comply with CGIAR and SPIA recommendations
4. **Partnerships**
   - Way forward

Ethics

1. Request study approval:

- Nationally through Addis Ababa University
- Internationally through the University of Bordeaux

1. Request participants consents

- Before participation
- Possibility to withdraw from the study at any time
- Identify a contact person available to answer participants' questions

1. For any data publicly released:

- Anonymized
- Any data that if combined all together should not allows identification

Regulation

1. National regulations:

- New data protection law: *Data Protection Proclamation No. 1324/2024*
  - Newly primary data collected should be kept in Ethiopia
  - A secure and institutional server located at the Addis Ababa University
  - Access only to the team's members located in Ethiopia
- Unmanned aerial vehicle
  - Fly permission from the relevant institutions
  - Only trained and authorized persons could fly it

1. International regulations:

- Compliance with the EU *General Data Protection Regulation*

Reproducibility

In line with CGIAR's Open Access and Data Management Policy:

- Research outputs should be made as open as possible
- Unless regulations or a data agreement protocol restricts its usage

1. What to share?

- Data replication packages for research outputs
  - Questionnaires used
  - Metadata describing the datasets
  - Anonymized Raw data
  - Codes generating the results

2. Where?

- CGSpace repository
  - Open access platform recommended by CGIAR to store published research results

Partnerships

To move forward, we aim to leverage existing data from different sources. This will involve concluding partnerships with existing actors

Data Agreement Protocol with Addis Ababa University

- Objectives and key deliverables
- Data access conditions
  - Define personal data processing: storage, access, users
  - Duration of access
- Discuss open access possibility:
  - Objective to ensure research reproducibility
  - Granularity level

Before leaving…

Please flash the QR code to answer a very quick survey…

Thank you

Thank you