

END OF PROJECT REVIEW



Australian Centre
for International
Agricultural Research



IndoDairy
Industri Susu Tangguh 2025

Changes in technology adoption

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March 2022

Introduction

- IndoDairy project intervention programs

Feed study (2018)

Extension study (2019)

Incentive study (2021)

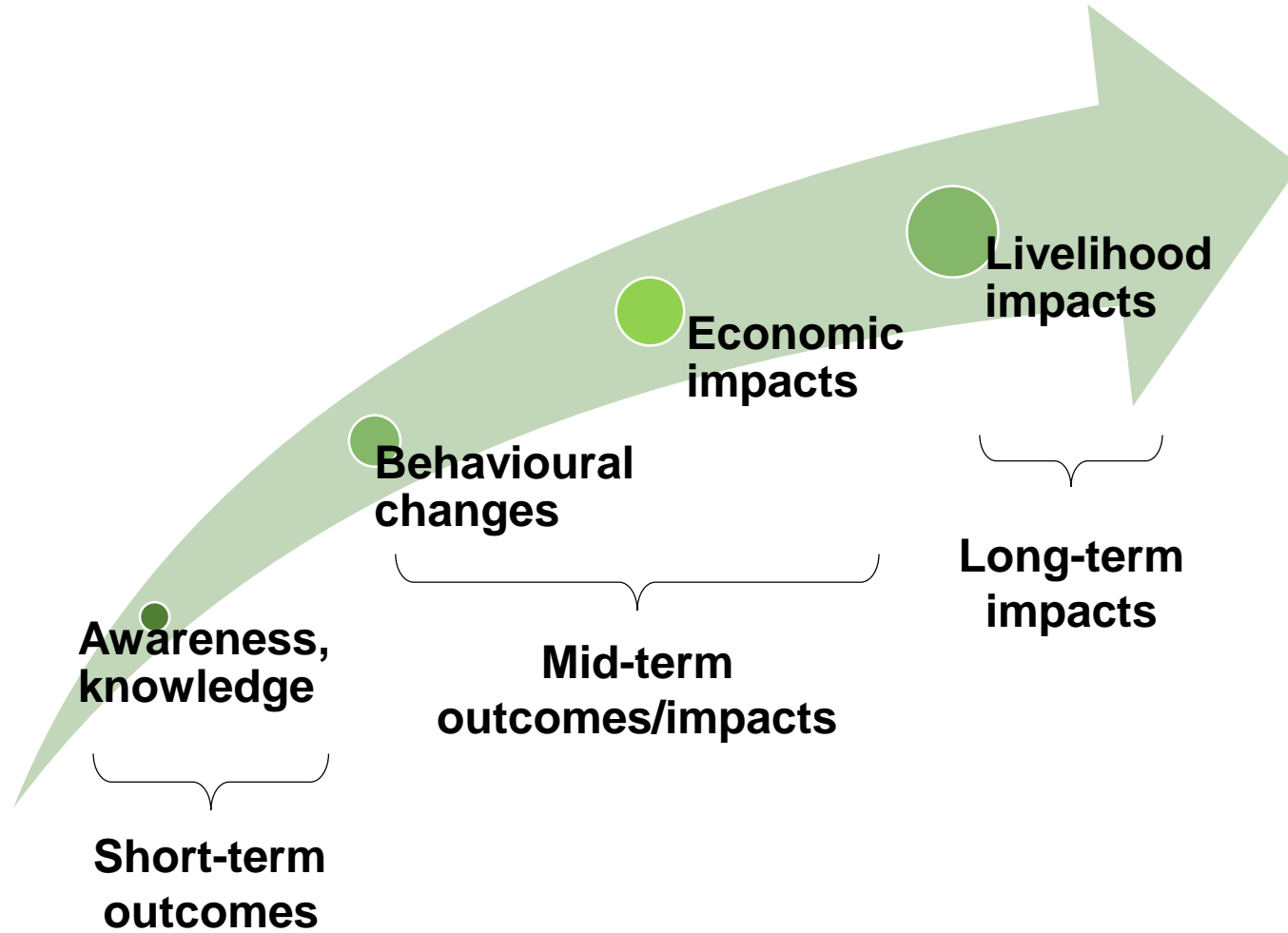
- Endline survey in December 2021 interviewed 480 farmers
 - Panel of 480 farmers
- Project beneficiaries
 - Participated at least in one intervention program (n=184 farmers)
 - Non-beneficiaries (n=296 farmers)
- Six technologies that were consistently the focus of the intervention programs and measured across all groups of farmers

1. Teat dipping after milking
2. Mastitis testing
3. High protein concentrates
4. Forage conservation
5. Unlimited access to drinking water
6. Record keeping

- We **descriptively** measure the changes in farmers' adoption after the intervention programs

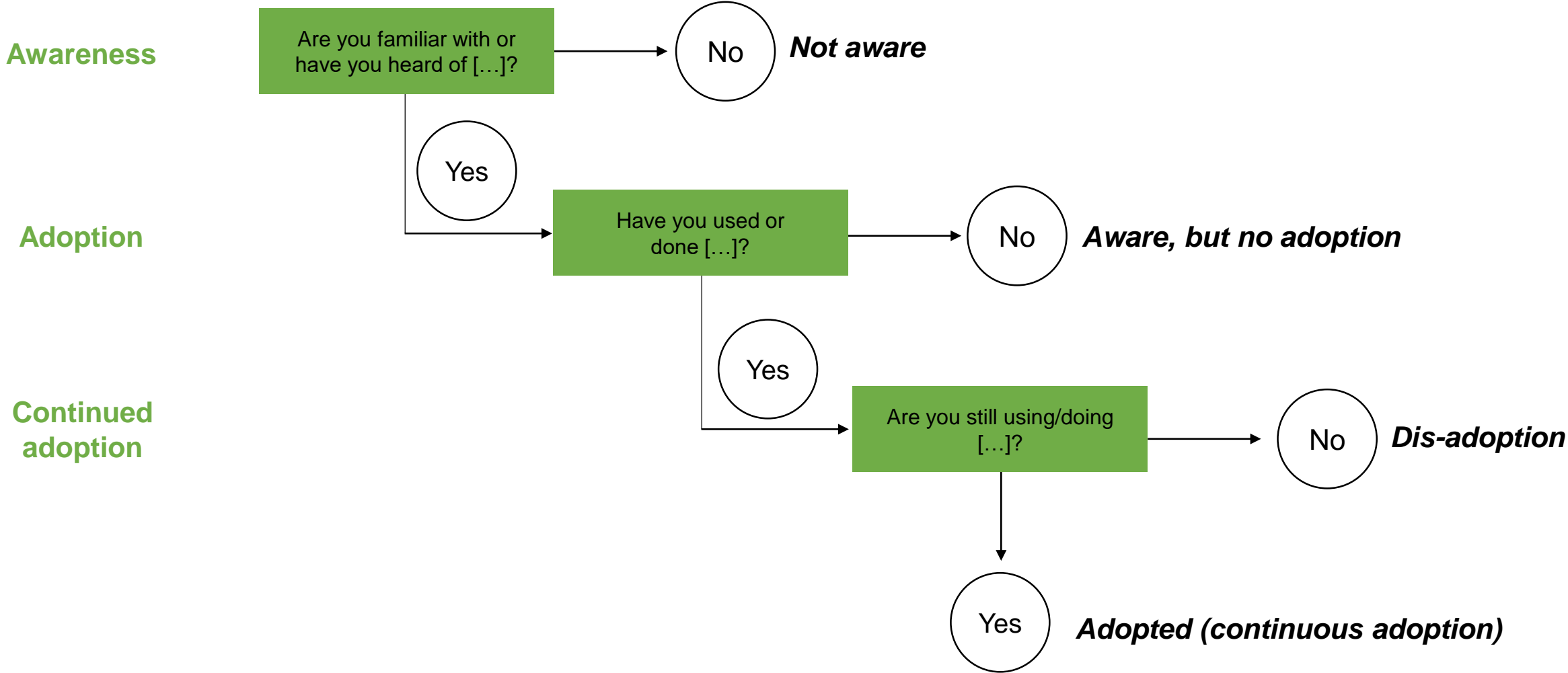


IndoDairy intervention programs

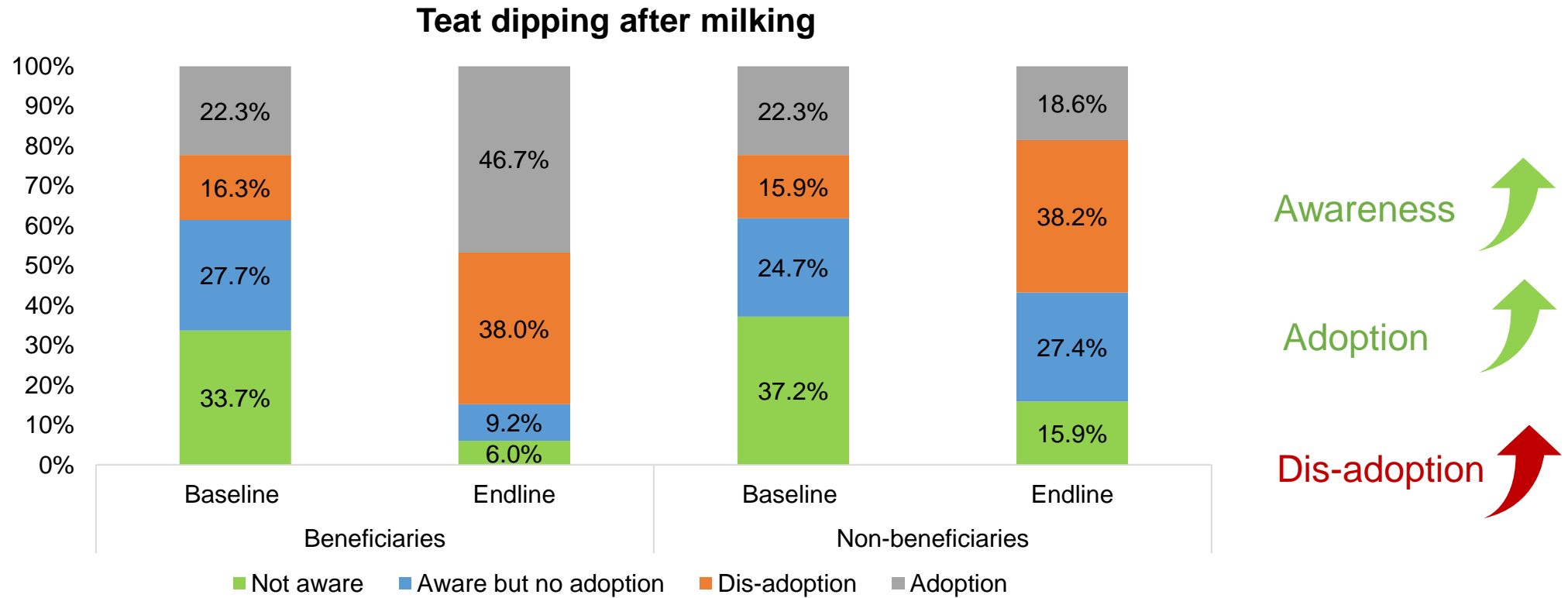


IndoDairy

Framework – Adoption is a process



Changes in technology adoption



	Beneficiaries (n=184)			Non-beneficiaries (n=296)			DID ³
	Baseline	Endline	Sig ¹	Baseline	Endline	Sig ²	
Adoption	22.3%	46.7%	***	22.3%	18.6%		28.2%
Dis-adoption	16.3%	38.0%	***	15.9%	38.2%	***	-0.6%
Aware but no adoption	27.7%	9.2%	***	24.7%	27.4%		-21.2%
Not aware	33.7%	6.0%	***	37.2%	15.9%	***	-6.4%

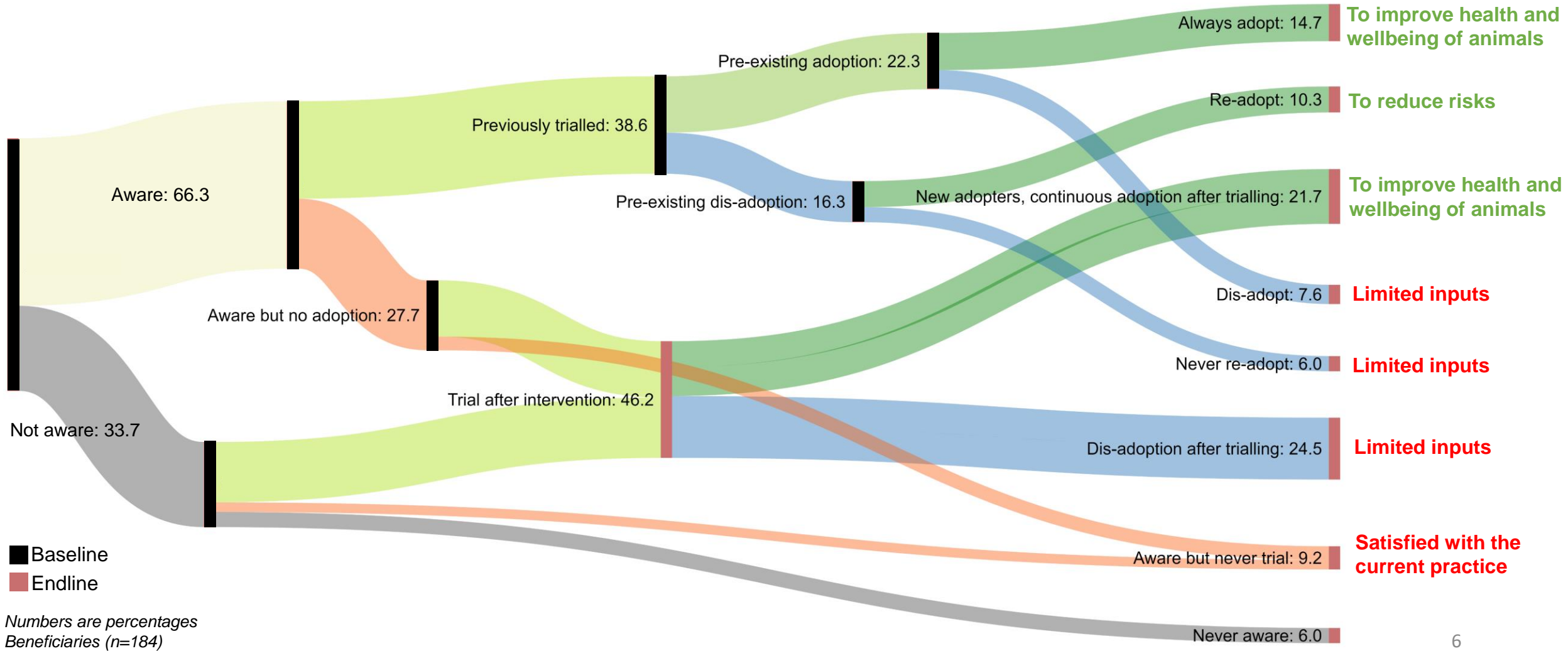
¹ Dependent sample t-test of beneficiaries between endline and baseline

² Dependent sample t-test of non-beneficiaries between endline and baseline

³ Difference in differences

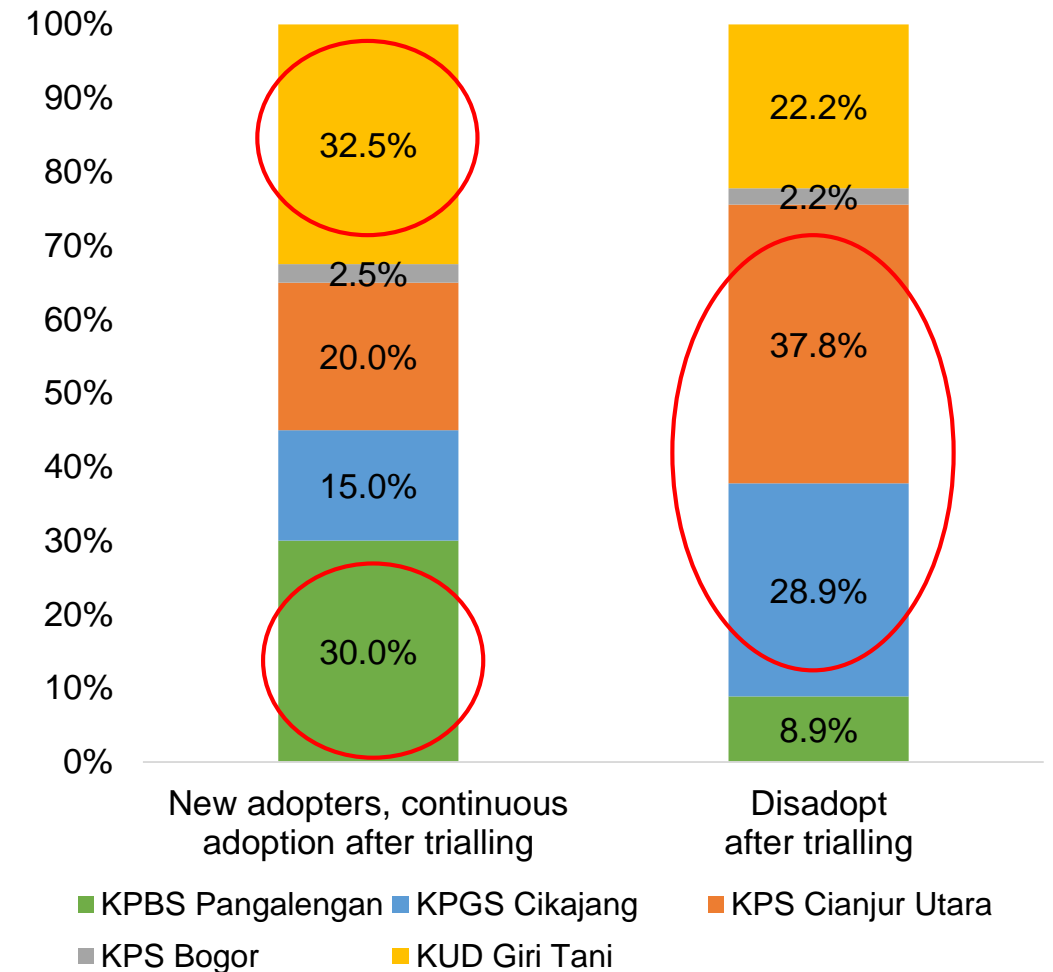
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Transformation of adoption – Teat dipping after milking (Beneficiaries group)



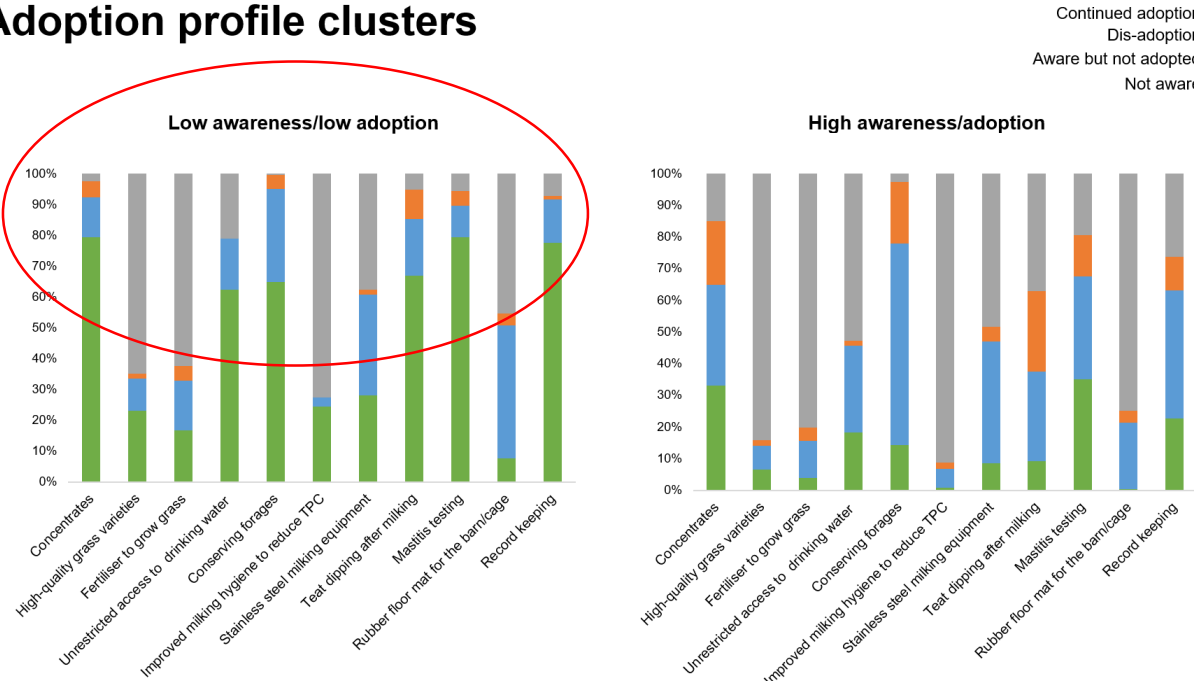
After trialling: Continued adoption vs dis-adoption

	New adopters, continuous adoption after trialling	Dis-adoption after trialling
Age (years)	49.2	49.0
Education (years)	6.8	6.4
Farm size (heads)	5.9	5.7
Lactating cow (heads)	2.8	2.5



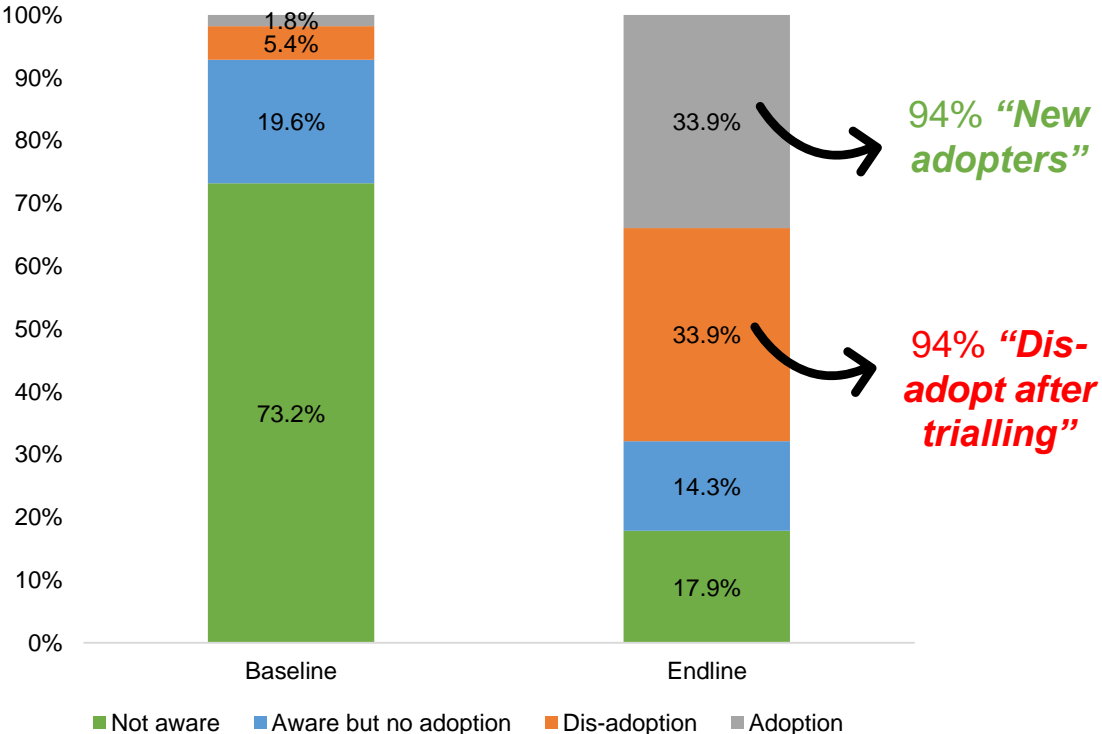
Low adoption cluster (*Presentation: SMH multilevel challenges to adopt technologies...*)

Adoption profile clusters



56 farmers in the Low adoption cluster were the project beneficiaries

Teat dipping after milking



WhatsApp Group Discussion with farmers – June - July 2021



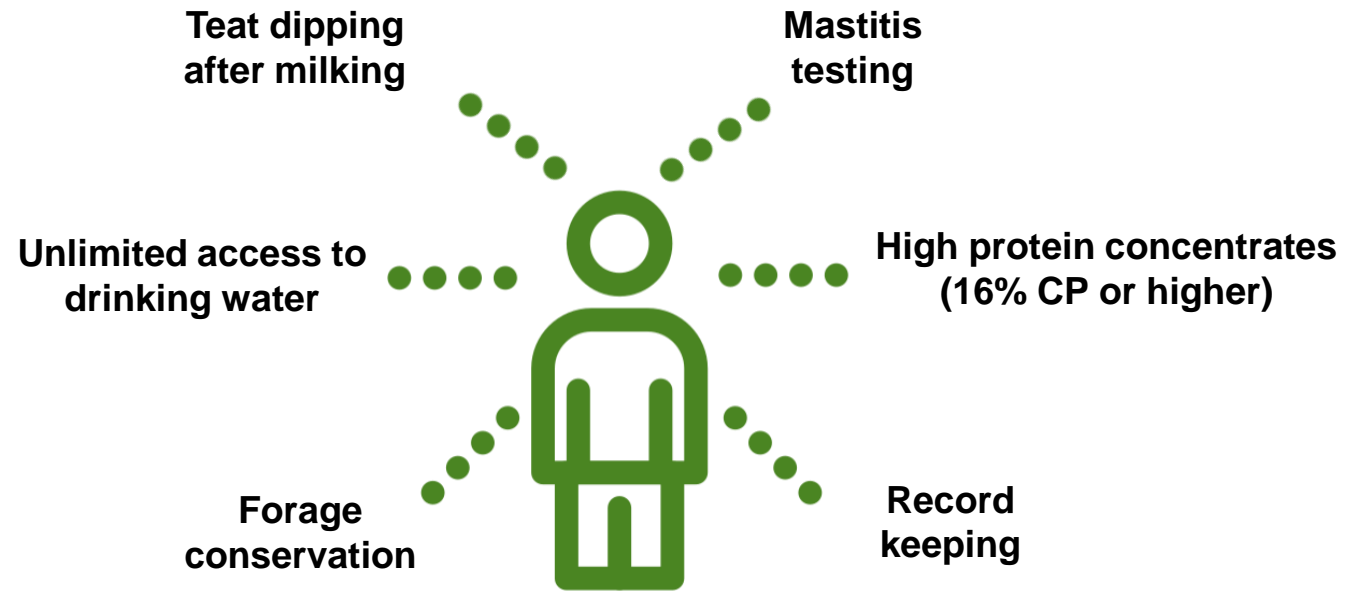
“The result is very effective, the quality of milk is very good, the usual TPC was high, and now I can reach under a hundred” (Farmer 5 in Cisarua)



New adopters, continuous adoption after trialling

- Age : 36 years old
- Managed 2 lactating cows (Endline 2021)
- Participated in feed, extension, and incentive study

Farmers' awareness of technologies increased



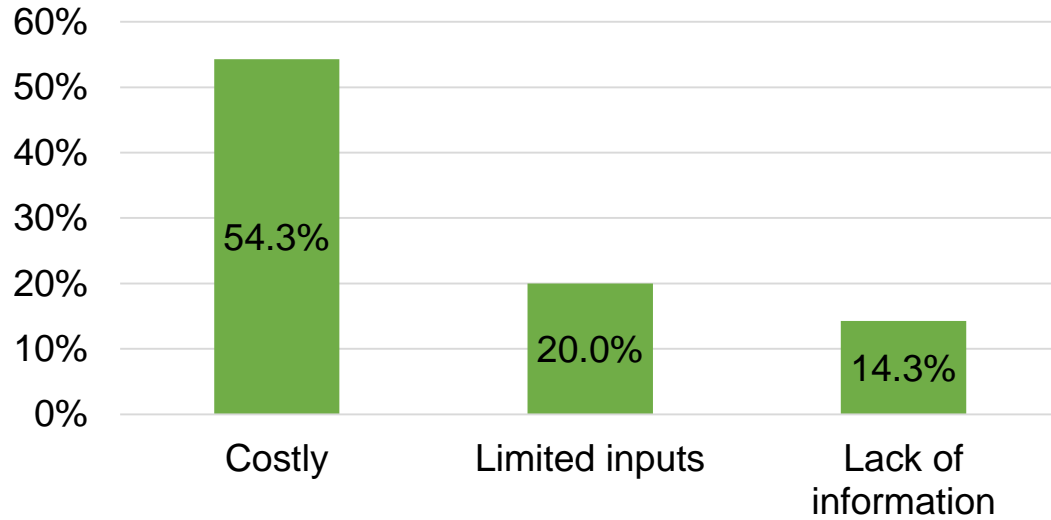
Technology adoption status after the intervention programs

	Never aware	Aware but never trial	New adopters, continuous adoption after trialling	Re-adopt	Always adopt	Dis-adopt after trialling	Dis-adopt from previously continued adoption in the baseline	Never re-adopt
Teat dipping after milking	6.0	9.2	21.7	10.3	14.7	24.5	7.6	6
Mastitis testing	17.4	16.3	20.2	2.7	4.9	21.8	8.2	8.7
High protein concentrates	27.1	20.7	9.2	4.9	4.4	8.2	10.3	15.2
Forage conservation	12.5	60.9	2.1	1.6	0.0	11.5	2.2	9.2
Unlimited access to drinking water	13.6	33.1	12.0	0.0	11.9	3.3	24.5	1.6
Record keeping	19.6	35.9	9.2	2.2	6.0	3.8	21.7	1.6

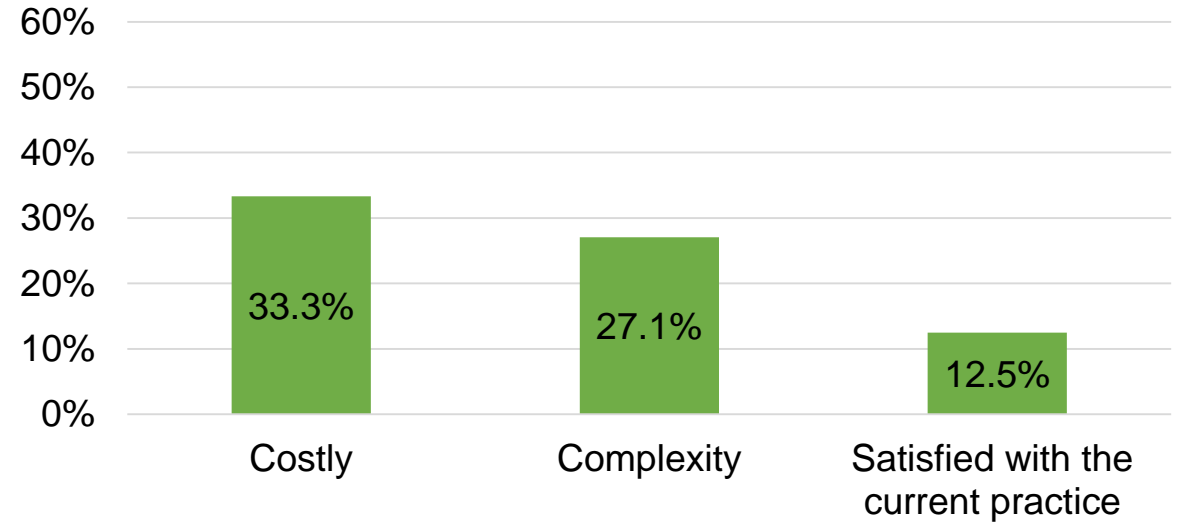
Numbers are percentages
Beneficiaries (n=184)

Main reasons for “never trialling”

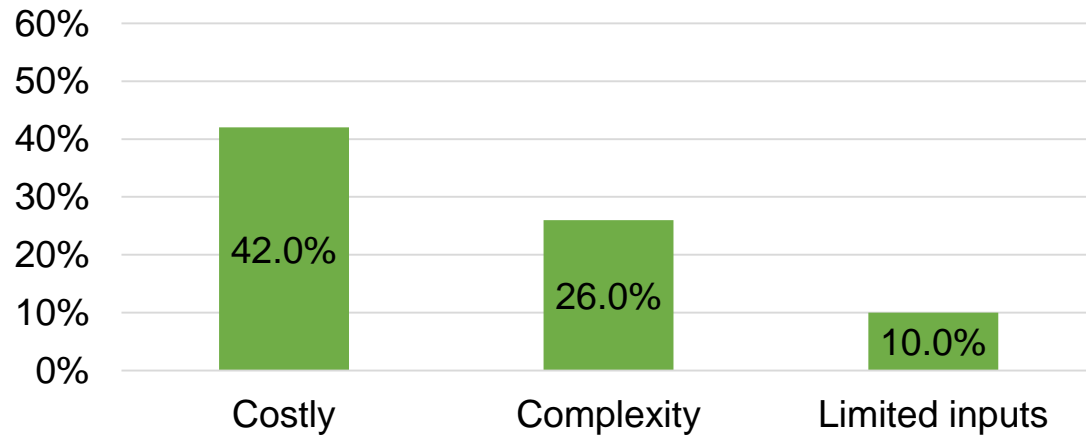
High protein concentrates



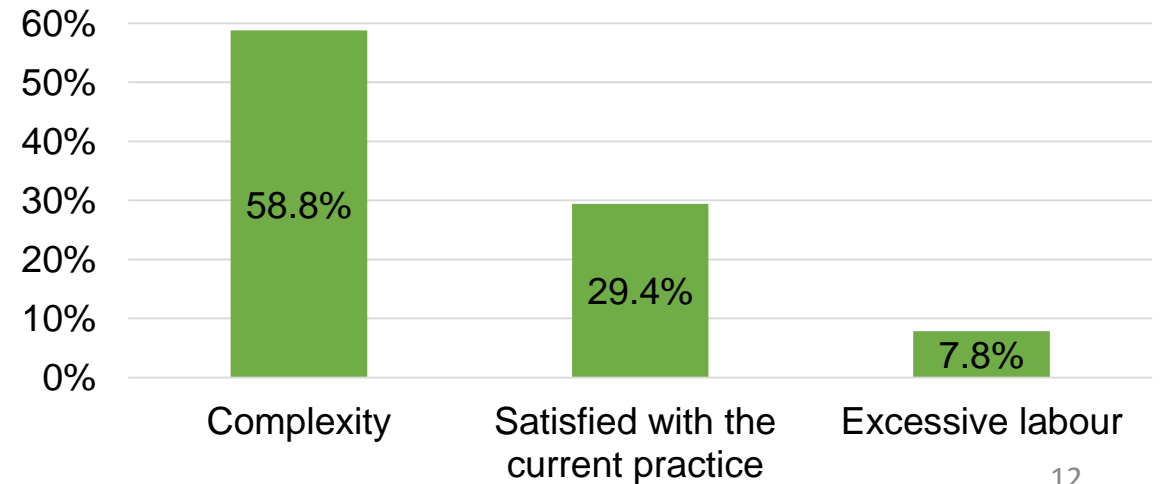
Forage conservation



Unlimited access to drinking water



Record keeping



Conclusion and policy implication

- There are improvements in awareness of farmers to technologies and some evidence of positive behavioral changes as the results of intervention
 - Robust impact assessment needs to be further conducted to estimate the impacts of the project
- Persistent barriers to trial and continuously adopt technologies still exist
 - Cost, limited inputs, and complexity
 - Institutional issues, beyond the farm
- Improved institutional environment is one key to smallholders' success in technology adoption (*Abate et al. 2016; Doss 2006; Gebremedhin, Jaleta & Hoekstra 2009*)
 - It is important that intervention programs not only focus on addressing adoption constraints at the farm level but also address issues at the institutional levels
 - Value chain collaboration is potential to overcome institutional barriers

Thank You!

<http://www.adelaide.edu.au/global-food>

<https://www.indodairy.net/>



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Research and Development

Indonesian Agency for Agricultural Research and Development Ministry of Agriculture



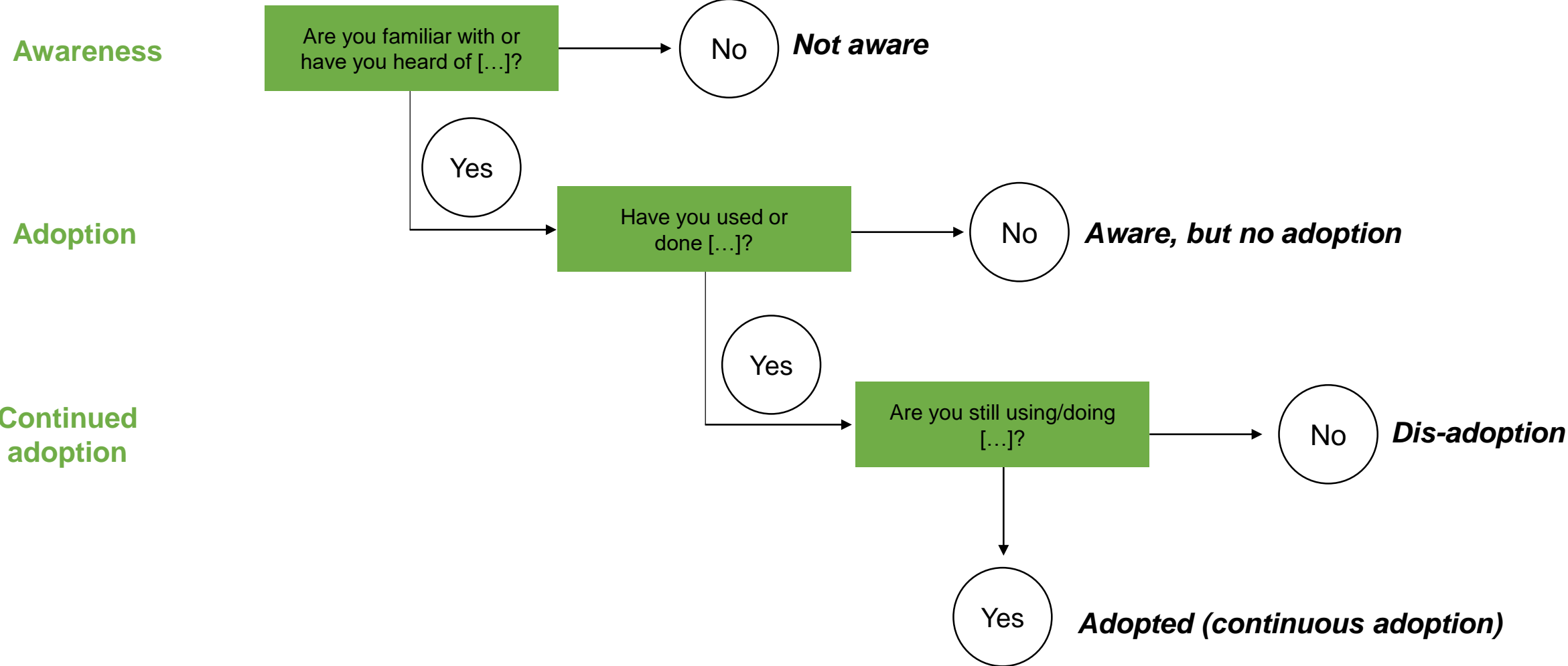
Dairy
Australia

Your Levy at Work

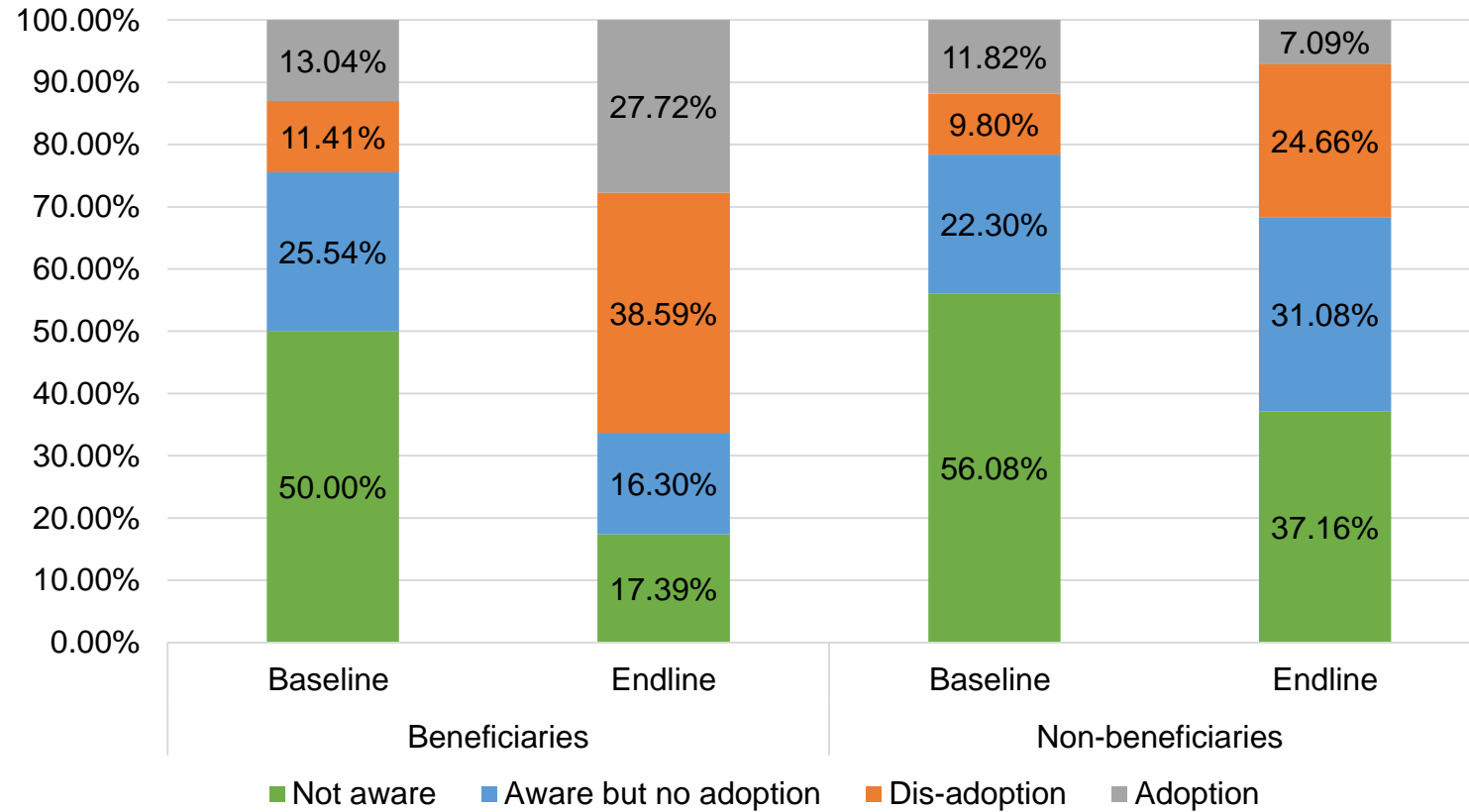


IPB University
— Bogor Indonesia —

Framework – Adoption is a process



Mastitis testing



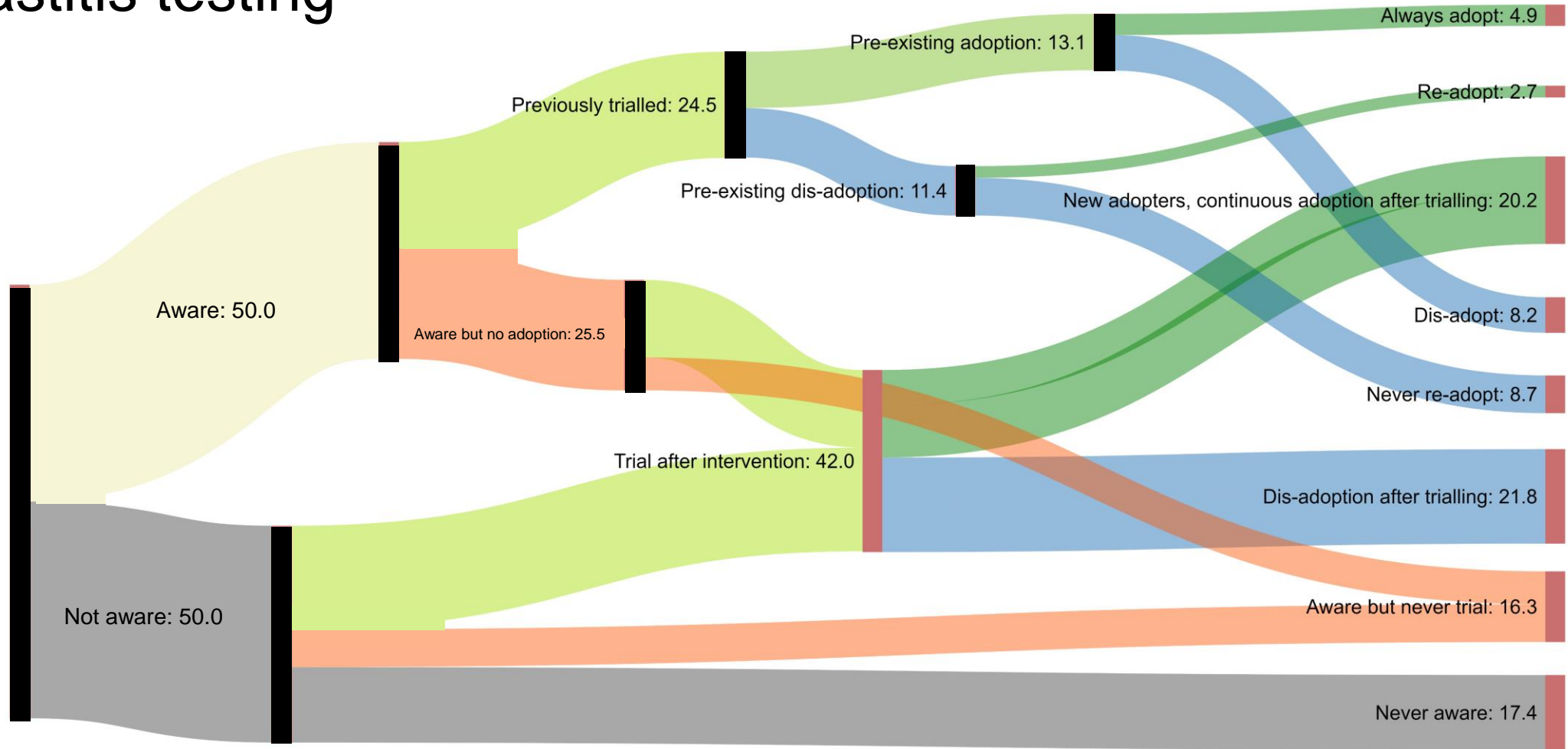
	Beneficiaries			Non-beneficiaries			DID
	Baseline	Endline	Sig ¹	Baseline	Endline	Sig ²	
Adoption	13.04%	27.72%	***	11.82%	7.09%	**	19.40%
Dis-adoption	11.41%	38.59%	***	9.80%	24.66%	***	12.31%
Aware but no adoption	25.54%	16.30%	**	22.30%	31.08%	***	-18.02%
Not aware	50.00%	17.39%	***	56.08%	37.16%	***	-13.69%

1 Dependent sample t-test of beneficiaries between endline and baseline

2 Dependent sample t-test of non-beneficiaries between endline and baseline

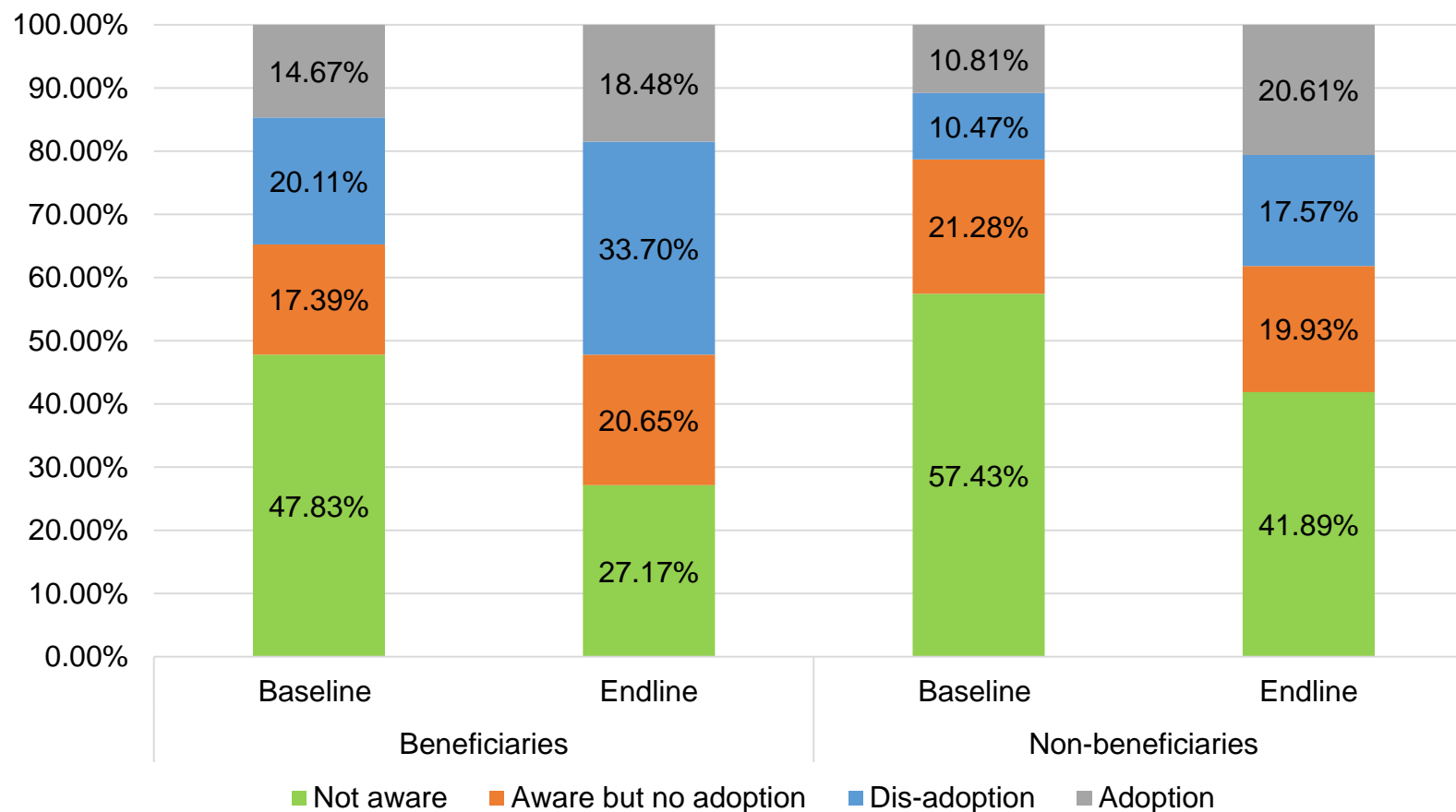
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Mastitis testing



Baseline
Endline

High protein concentrates (16% CP or higher)



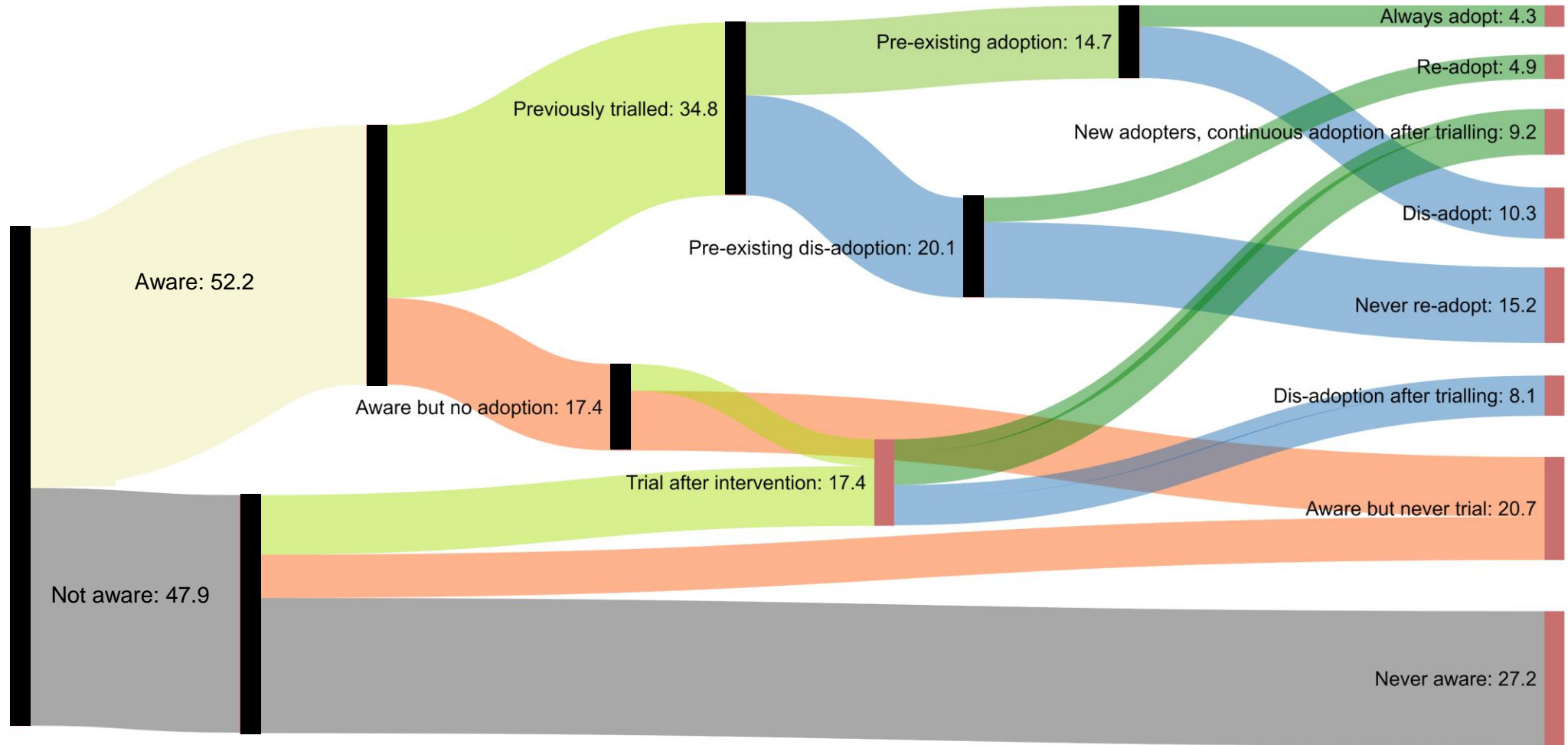
	Beneficiaries			Non-beneficiaries			DID
	Baseline	Endline	Sig ¹	Baseline	Endline	Sig ²	
Adoption	14.67%	18.48%		10.81%	20.61%	***	-5.99%
Dis-adoption	20.11%	33.70%	***	10.47%	17.57%	***	6.49%
Aware but no adoption	17.39%	20.65%		21.28%	19.93%		4.61%
Not aware	47.83%	27.17%	***	57.43%	41.89%	***	-5.11%

1 Dependent sample t-test of beneficiaries between endline and baseline

2 Dependent sample t-test of non-beneficiaries between endline and baseline

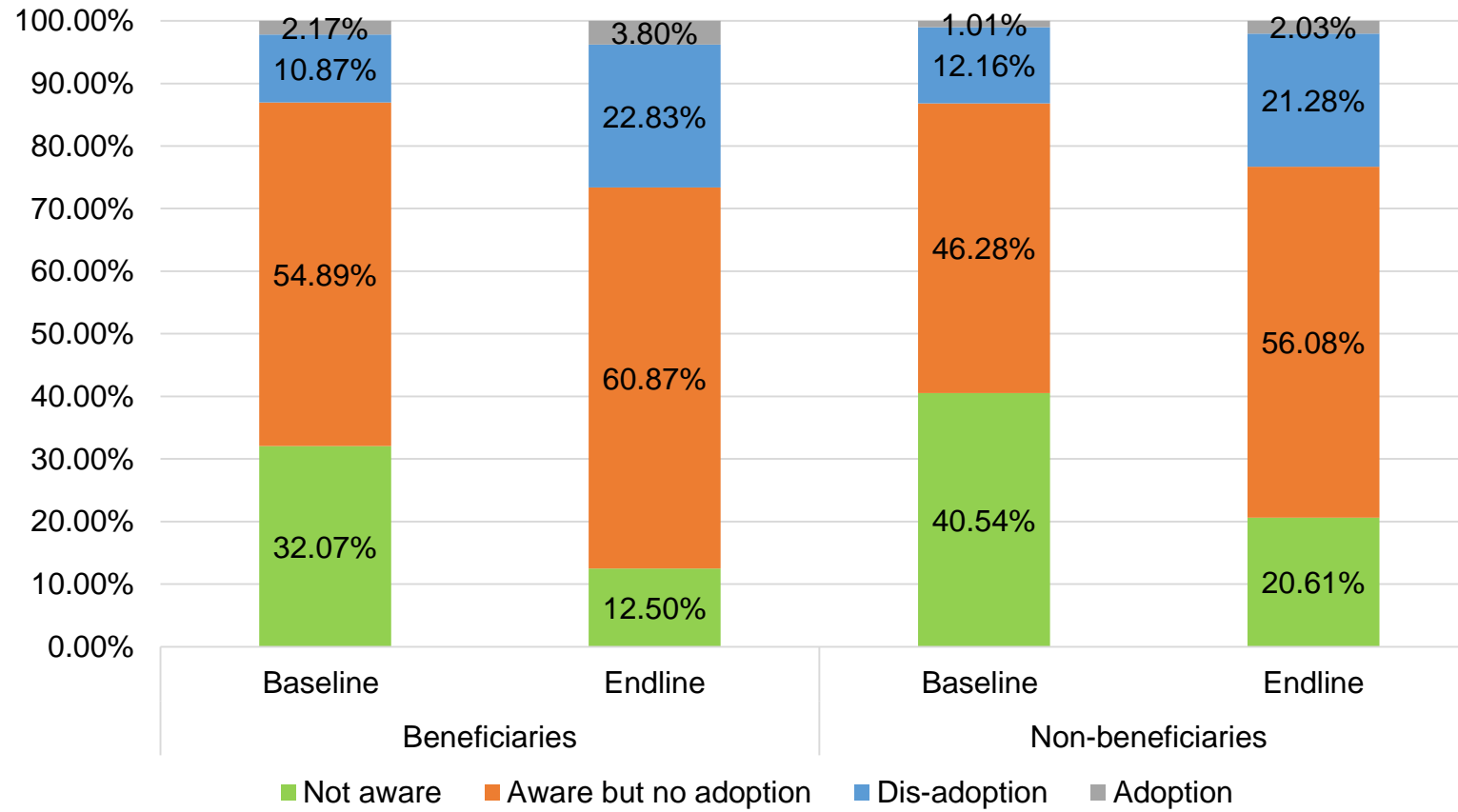
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High protein concentrates



■ Baseline
■ Endline

Forage conservation



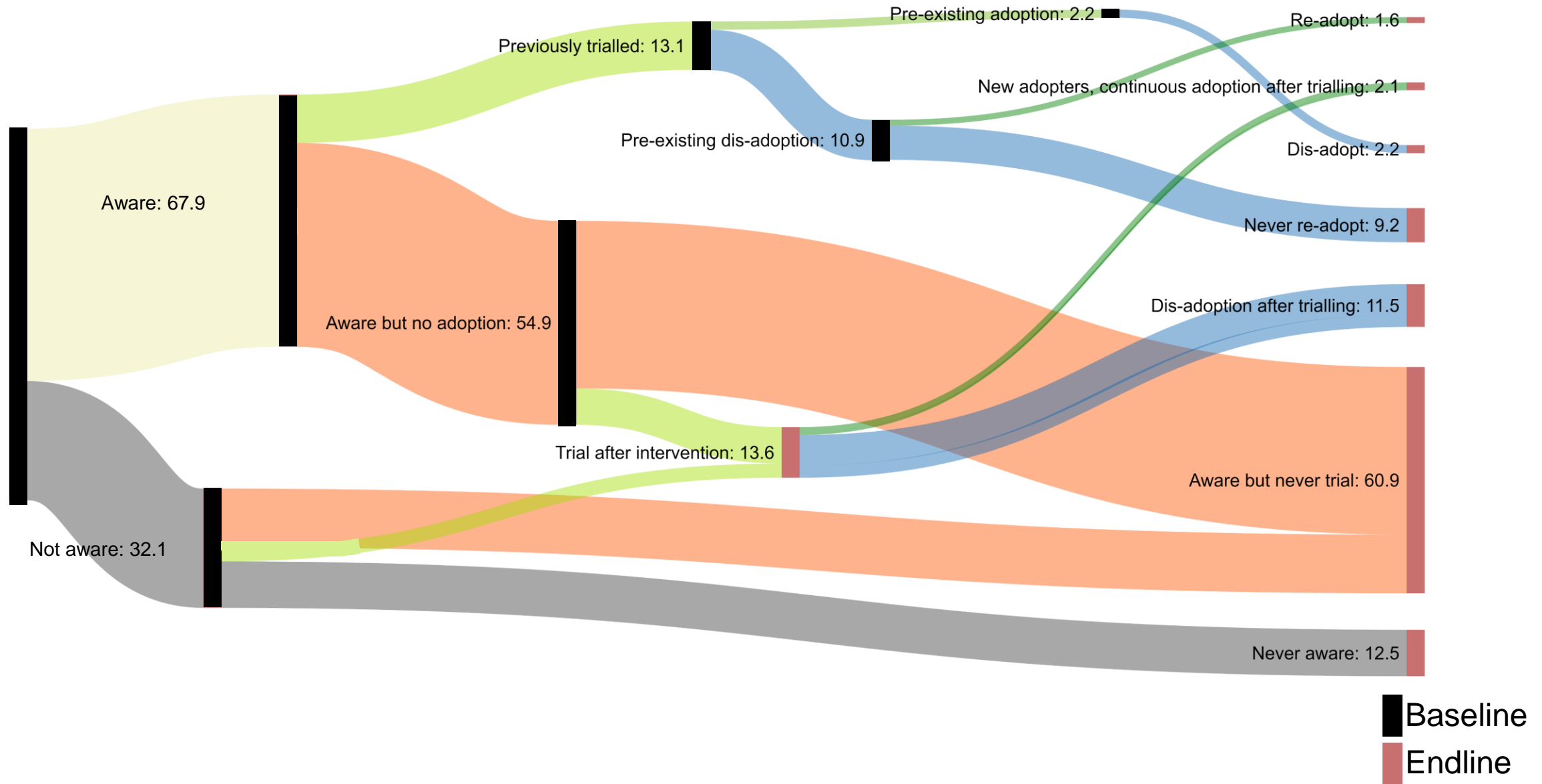
	Beneficiaries			Non-beneficiaries			DID
	Baseline	Endline	Sig ¹	Baseline	Endline	Sig ²	
Adoption	2.17%	3.80%		1.01%	2.03%		0.62%
Dis-adoption	10.87%	22.83%	***	12.16%	21.28%	***	2.83%
Aware but no adoption	54.89%	60.87%		46.28%	56.08%	***	-3.82%
Not aware	32.07%	12.50%	***	40.54%	20.61%	***	0.37%

1 Dependent sample t-test of beneficiaries between endline and baseline

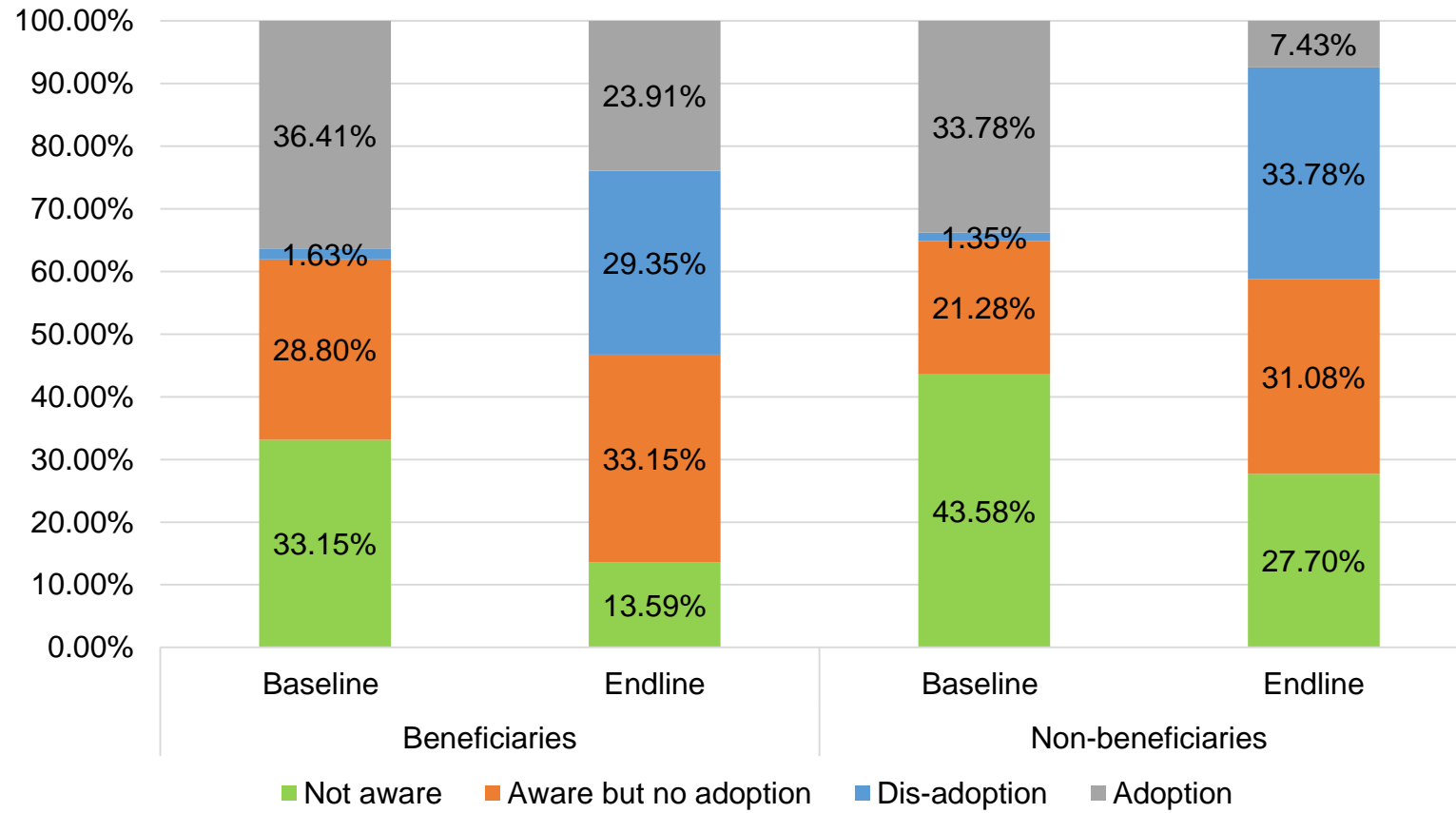
2 Dependent sample t-test of non-beneficiaries between endline and baseline

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Forage conservation



Unlimited access to drinking water



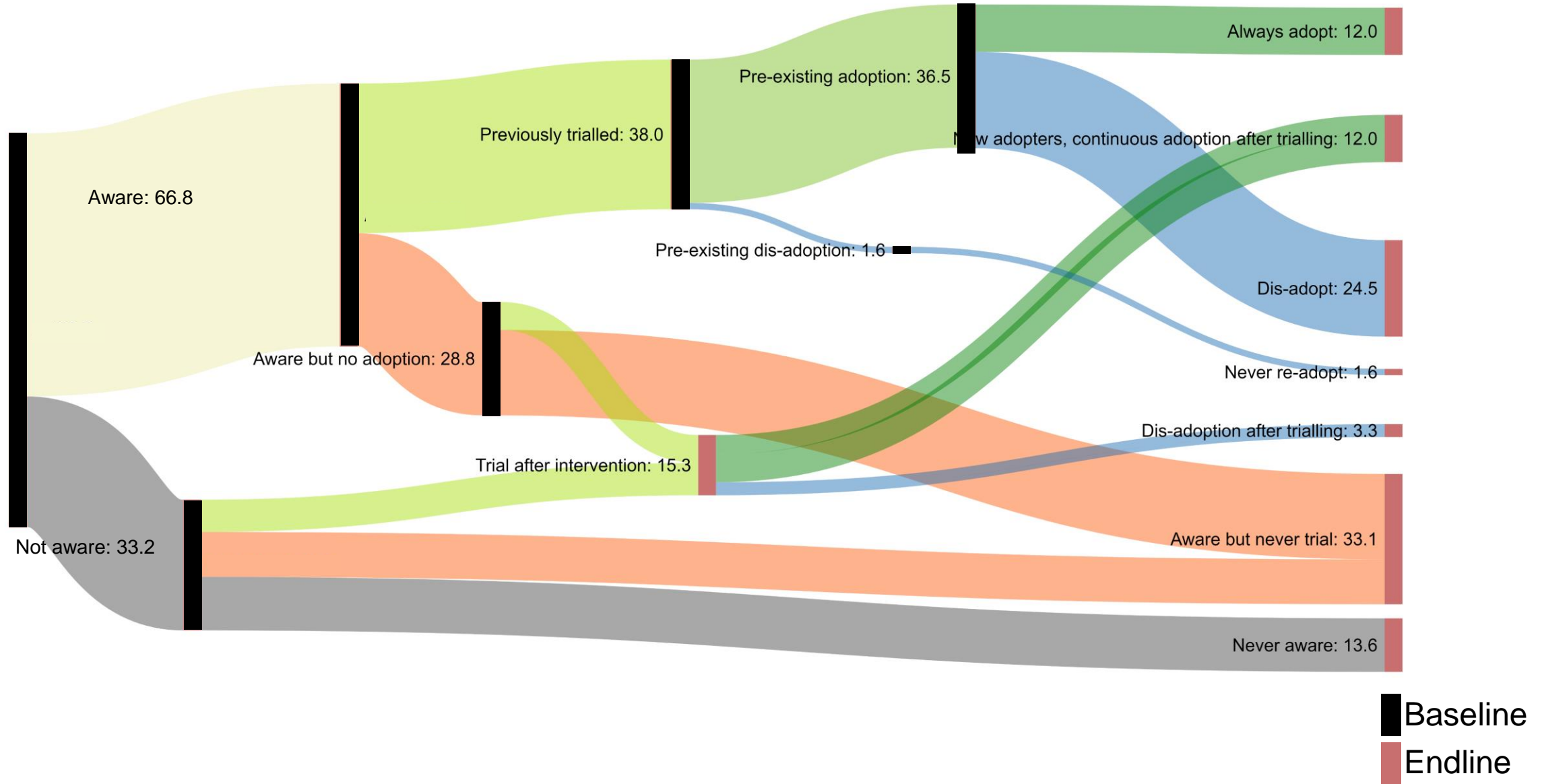
	Beneficiaries			Non-beneficiaries			DID
	Baseline	Endline	Sig ¹	Baseline	Endline	Sig ²	
Adoption	36.41%	23.91%	***	33.78%	7.43%	***	13.85%
Dis-adoption	1.63%	29.35%	***	1.35%	33.78%	.	-4.72%
Aware but no adoption	28.80%	33.15%		21.28%	31.08%	***	-5.45%
Not aware	33.15%	13.59%	***	43.58%	27.70%	***	-3.69%

1 Dependent sample t-test of beneficiaries between endline and baseline

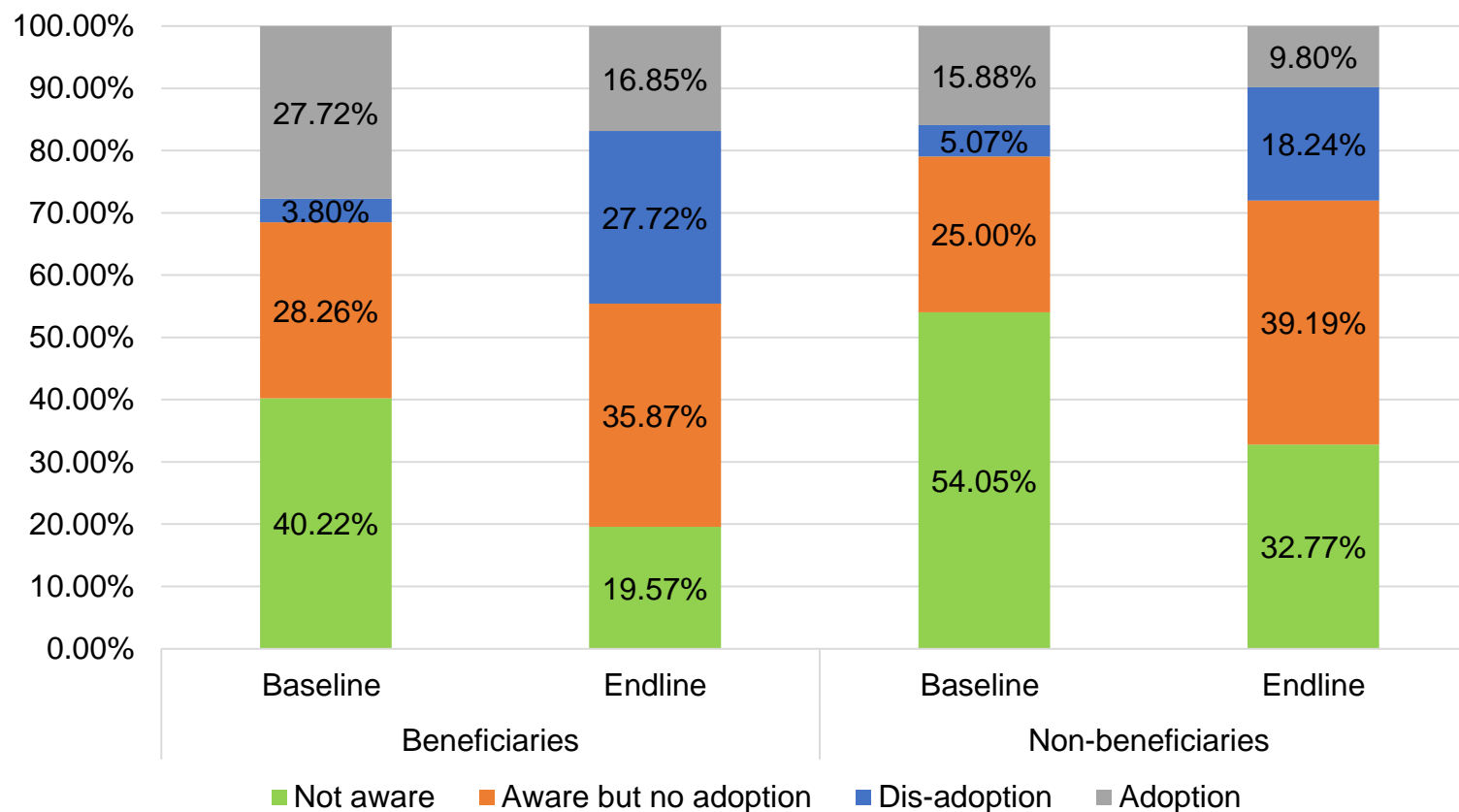
2 Dependent sample t-test of non-beneficiaries between endline and baseline

***<0.01 ; **<0.05 ; *<0.1

Unlimited access to drinking water



Record keeping



	Beneficiaries			Non-beneficiaries			DID
	Baseline	Endline	Sig ¹	Baseline	Endline	Sig ²	
Adoption	27.72%	16.85%	**	15.88%	9.80%	**	-4.79%
Dis-adoption	3.80%	27.72%	***	5.07%	18.24%	***	10.74%
Aware but no adoption	28.26%	35.87%	**	25.00%	39.19%	***	-6.58%
Not aware	40.22%	19.57%	***	54.05%	32.77%	***	0.63%

1 Dependent sample t-test of beneficiaries between endline and baseline

2 Dependent sample t-test of non-beneficiaries between endline and baseline

***<0.01 ; **<0.05 ; *<0.1

Record keeping

