

What is influencing agroforestry adoption among smallholder farmers in Zambia?

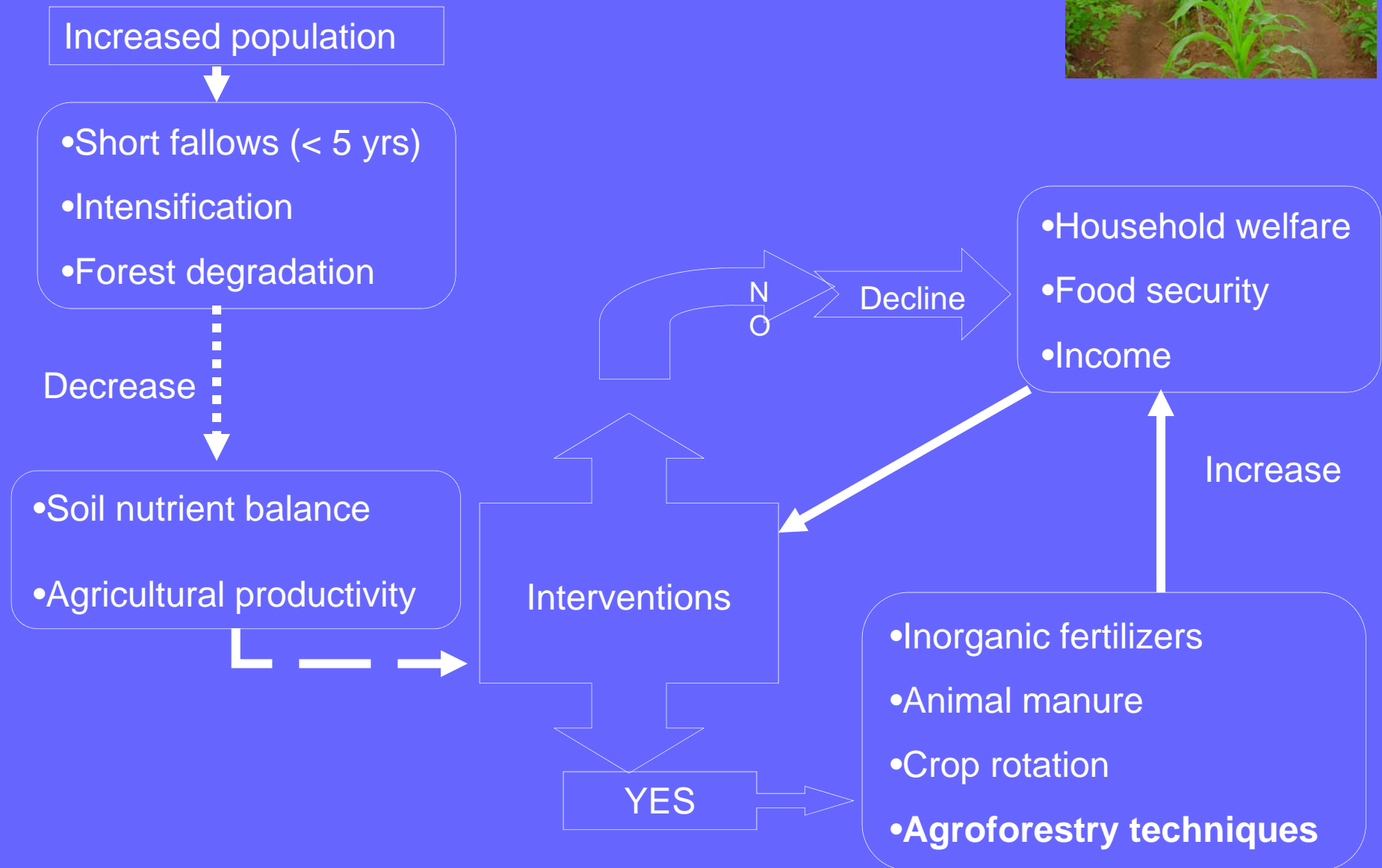
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Outline

- Objective of research
- Background to agroforestry
- Theoretical concepts
- Methodology
- Findings
- Practical implications
- Conclusion

Background to agroforestry



Improved fallows



Source: ICRAF, 2007. Photos taken in Chipata and Petauke Districts at farmers fields



Grass fallow



Maize crop – poor growth



Fertilised maize crop



Felled *Tephrosia vogelii*

Source: ICRAF, 2007. Photos taken at farmers fields in Chipata

Biomass transfer

- Trees/shrubs planted as an improved fallow or periphery of garden
- Leaves harvested and transported to site
- Application at site of crop growing

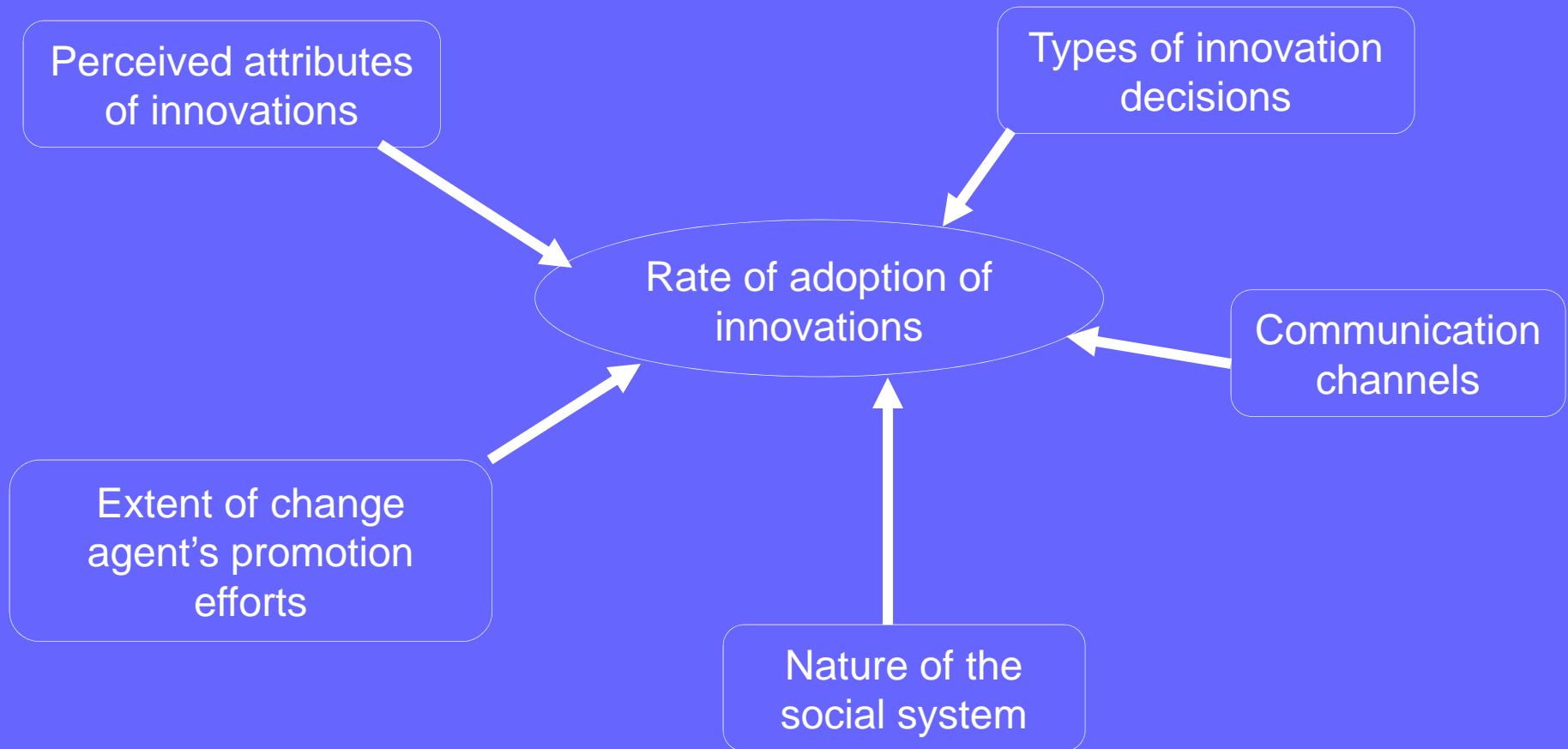
Biomass transfer system



Objectives of research

- ❖ Determine the level of adoption of improved fallows and biomass transfer
- ❖ Identify and assess factors influencing adoption of these technologies

Theoretical concept: Adoption and diffusion model



Rogers, (1995; 2003)

Method

- ❖ Data - Household interviews
- ❖ 388 households in eastern Zambia
- ❖ Adoption measurement at 2 levels
 - Trialing
 - Adoption
- ❖ Chi-square tests of independence
- ❖ Strength tests – phi or Cramer's V (Field, 2005; Pallant, 2007; Bryman & Cramers, 2009)

Results

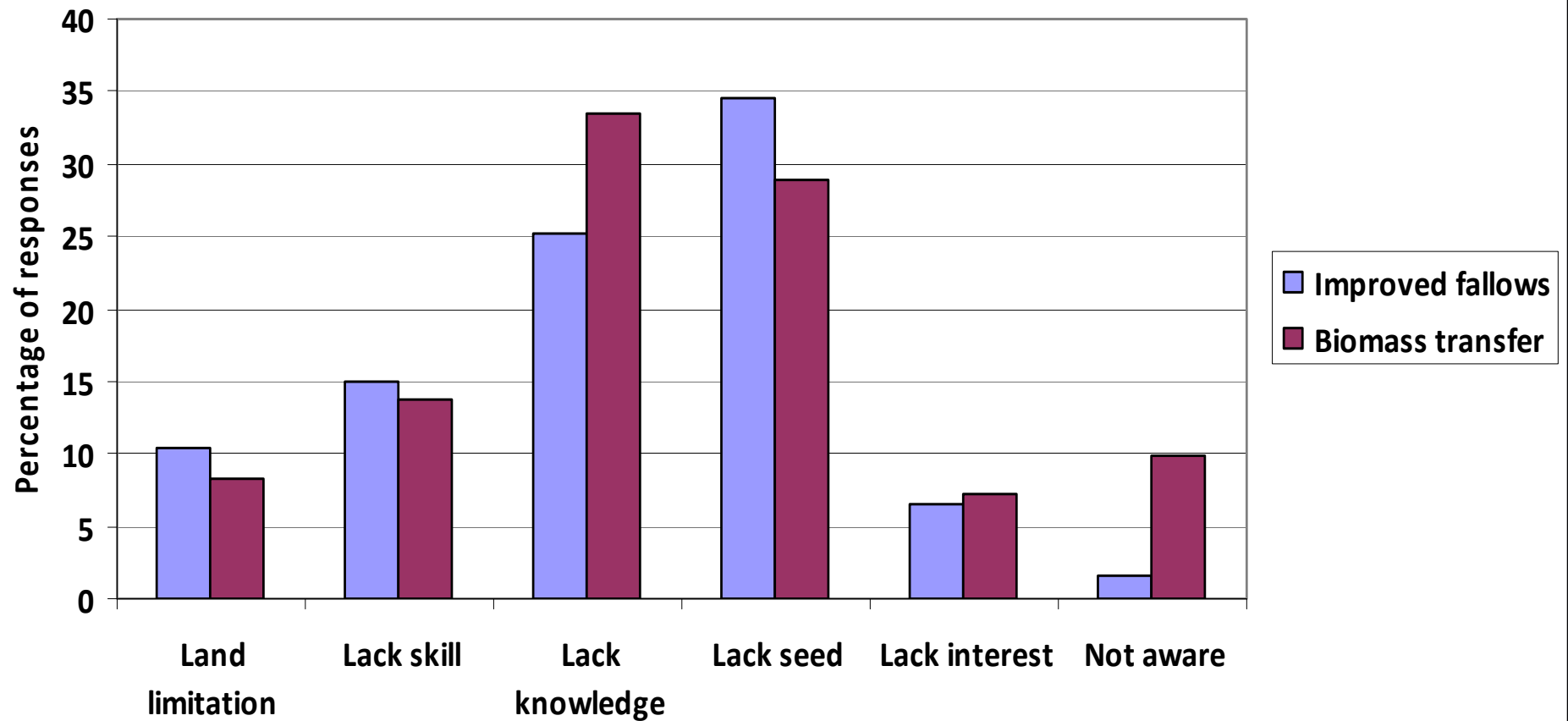
Adoption levels

	Improved fallows	Biomass transfer
Of overall sample	N=388	N=388
Never trialed	55.2%	78.6%
Trialed	44.9%	21.4%
For those who trialed	N=174	N=83
Adopted	73.6%	89.2%
Stopped	26.4%	10.8%

Factors influencing adoption

- Trial stage
 - Tried a technology
 - Did not try
- Continuance stage (of those who trialed)
 - Adopted (continued use)
 - Discontinued

Factors influencing agroforestry adoption

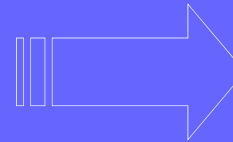


Figures do not add to 100% because respondents could select more than one

Factors influencing adoption of improved fallows

Trialing

- ❖ Gender
- ❖ Age
- ❖ Club membership
- ❖ Farming experience
- ❖ Lack of skill
- ❖ Lack of knowledge
- ❖ **Lack of seed**
- ❖ **Lack of interest**
- ❖ Lack awareness



Continuance

- ❖ Non-farm income
- ❖ Method of plowing
- ❖ Land limitation
- ❖ **Lack of seed**
- ❖ **Lack of interest**

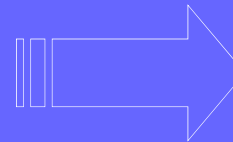
Factors influencing adoption of biomass transfer

Trialing

- ❖ Club membership
- ❖ Income from livestock sales
- ❖ Method of plowing
- ❖ **Land limitation**
- ❖ Lack of skill
- ❖ Lack of knowledge
- ❖ **Lack of seed**
- ❖ Lack awareness

Continuance

- ❖ **Land limitation**
- ❖ **Lack of seed**
- ❖ Lack of interest



Practical implications

Results suggest that:

- Different factors need be focussed on at different stages in adoption process
- Institutional factors such as land tenure are important
- Resources such as seed availability are important
- Emphasise factors influencing decision to trial when designing dissemination programs

Conclusion

- Trialing of agroforestry technologies is low
- Continuance rate after trialing is high
- Various factors influence the decision to trial an agroforestry technology and to continue using it
 - A key factor is lack of seed as it influences both the decision to trial and to continue improved fallows and biomass transfer
 - Land issues and land owner interest also important
- Main issue is to get farmers to trial these technologies

Thank you

Chi-square test results - trialing

Testing	Improved fallow				Biomass transfer			
Variable	χ^2	df	P	Phi/ Cramer's V	χ^2	df	P	Phi/ Cramer's V
Gender	4.305	1	0.029	-0.111	2.262	1	0.103	0.083
Age	12.219	4	0.016	0.177	5.487	4	0.241	0.119
Education	2.689	4	0.611	0.083	2.807	4	0.591	0.085
Club membership	24.999	1	0.000	0.259	13.075	1	0.000	0.19
District	3.509	3	0.320	0.095	3.632	3	0.304	0.097
Marital status	2.909	2	0.233	0.087	2.147	2	0.342	0.074
Income from livestock sales	3.142	5	0.678	0.09	18.498	5	0.002	0.218
Non-farm income	5.656	5	0.341	0.121	6.856	5	0.232	0.133
Main occupation	6.102	4	0.192	0.125	8.559	4	0.073	0.149
Method of ploughing	2.621	2	0.270	0.082	6.461	2	0.040	0.129
Farming experience	36.196	10	0.000	0.305	17.716	10	0.060	0.214
Previous land use	2.909	3	0.406	0.087	3.693	3	0.297	0.098
Tenure type	0.041	1	0.422	0.088	1.1	1	0.294	-0.053
Soil fertility status	0.728	2	0.695	0.043	1.189	2	0.552	0.055
Limited land	3.333	1	0.068	-0.101	5.787	1	0.009	-0.134
Lack skill	49.237	1	0.000	-0.363	12.577	1	0.000	-0.189
Lack knowledge	104.197	1	0.000	-0.524	47.618	1	0.000	-0.357
Lack seed	19.544	1	0.000	-0.23	22.752	1	0.000	-0.249
Lack interest	3.837	1	0.030	-0.11	2.788	1	0.056	-0.097
Lack awareness	3.285	1	0.026	-0.113	10.097	1	0.001	-0.172

Chi-square test results (adoption)

Continued practice	Improved fallow				Biomass transfer			
	χ^2	df	P	Phi/ Cramer's V	χ^2	df	P	Phi/ Cramer's V
Gender	0	1	0.871	0.12	0.07	1	0.526	0.069
Age	0.92	4	0.922	0.073	2.395	4	0.664	0.17
Education	1.924	4	0.750	0.105	1.32	4	0.858	0.126
Club membership	1.958	1	0.162	0.106	1.282	1	0.258	0.124
District	1.529	3	0.678	0.094	2.629	3	0.452	0.178
Marital status	0.093	2	0.468	1.517	2.86	2	0.239	0.186
Income from livestock sales	9.282	5	0.098	0.231	6.226	5	0.285	0.274
Non-farm income	6.707	5	0.005	0.31	8	5	0.156	0.31
Main occupation	3.8	4	0.284	0.148	0.123	4	1	0.039
Method of ploughing	7.404	2	0.025	0.207	1.14	2	0.566	0.117
Farming experience	12.235	10	0.270	0.265	8.222	10	0.512	0.315
Previous land use	1.105	3	0.776	0.08	0.568	3	0.904	0.568
Tenure type	2.799	1	0.094	-0.127				
Soil fertility status	1.427	2	0.490	0.091	0.08	2	0.767	0.08
Limited land	13.063	1	0.000	-0.3		1	0.004	-0.317
Lack skill	2.799	1	0.094	-0.127	0	1	0.726	0.039
Lack knowledge					0	1	0.726	0
Lack seed	14.351	1	0.000	-0.303	6.351	1	0.012	-0.352
Lack interest	10.344	1	0.006	-0.244	8.725	1	0.003	-0.451