

FACTORS AFFECTING ADOPTION OF CONSERVATION AGRICULTURE AND PERCEPTIONS OF SMALL HOLDER FARMERS IN BORICHA WOREDA, ETHIOPIA

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PRESENTATION OUTLINE



- INTRODUCTION
- RESEARCH METHODOLOGY
- RESULTS AND DISCUSSION (Selected Variables)
- CONCLUSION AND RECOMMENDATIONS
- CFGB'S WORK

1. INTRODUCTION

1.1. Background

- Definition of CA
- CA is characterized by **three principles** (Amelie B. et al, 2009).
- CA is not new agri production methods in Africa incl Eth (FAO,2009).
- SSA countries + Ethiopia ...use of CA is reported to be low.
- Despite the fact that **climate change and soil degradation** is contributing to low agricultural production and productivity.
- However, CA is well established under large-scale commercial farming in some South African counties.

1.2. Statement of the problem

- **Lack of enough moisture and degradation of land** in Boricha
- GO & NGOs are working on SWC and CA technologies.
 - ✓ MOA  Watershed management technologies
 - ✓ MKCRDA and HARC  CA technologies.
- Farmers didn't adopt CA at expected level & there is no clearly documented profile.
- Assess and analyse factors affecting adoption of CA technologies.

1.3. Objectives of the study

- The general objective was:
To assess factors affecting adoption of CA technologies and perceptions of small holder farmers in Boricha Woreda.

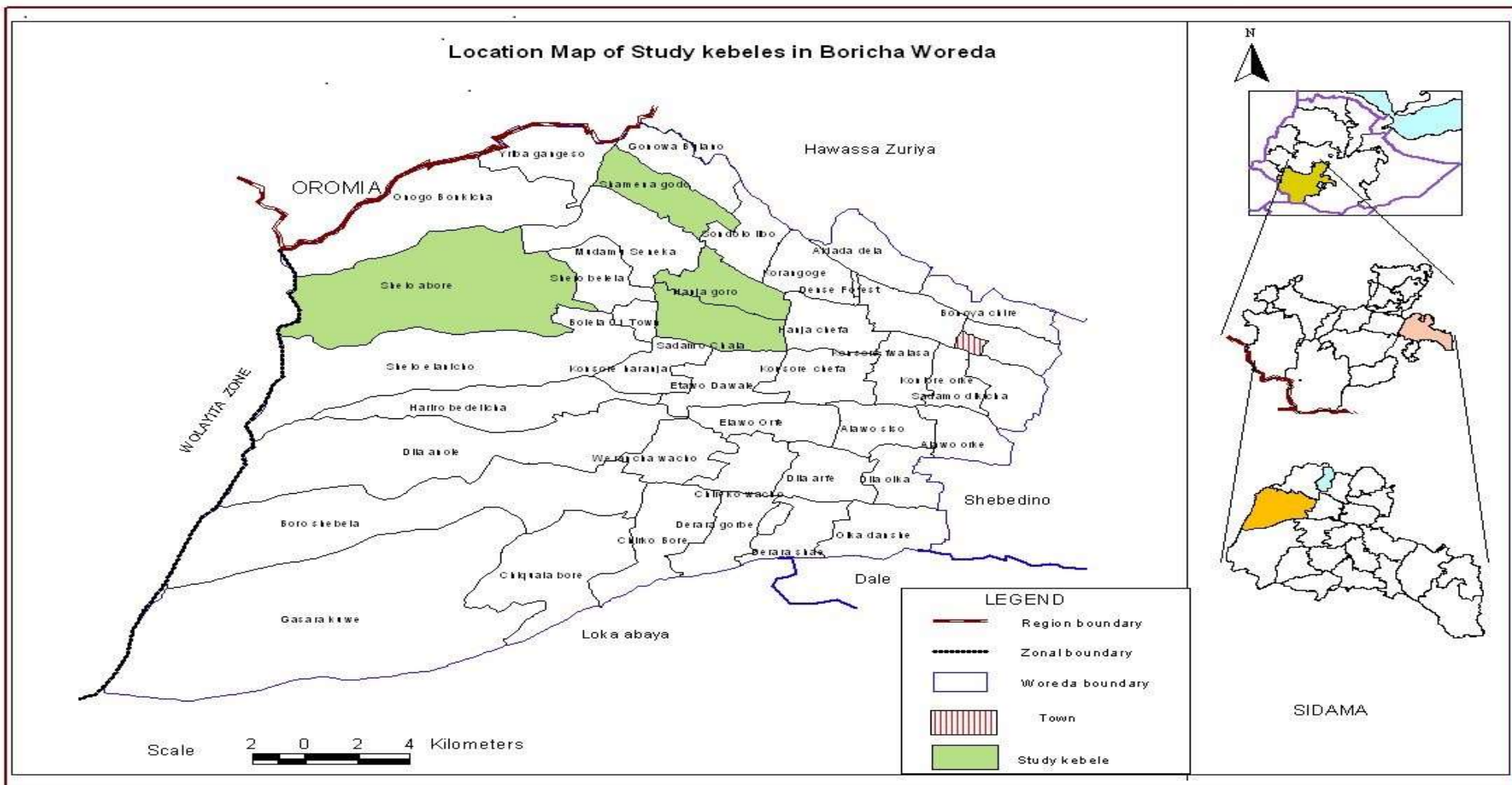
- The Specific objectives were:
 1. To investigate **factors affecting** adoption of CA technologies
 2. To assess the **CA practices and perceptions** of adopters
 3. To investigate the **CA perceptions** of non-adopters

1.4. Research Questions

1. What are factors affecting adoption of CA technologies
2. What are the practices and perceptions of adopters towards CA
3. What are the perceptions of non-adopters towards CA

3. RESEARCH METHODOLOGY

3.1. Description of the Study Area



Administrative map of Boricha woreda

Source: SNNPR BoFED, 2015

3.2. Research Design & Sampling Methods

3.2.1. The Research Design

- **Household level survey** was designed.
- **Sampling frame** was prepared.
- **Head of selected HHs** were interviewed.

3.2.2. Sampling Methods and Strategies

- 4 sample kebeles were selected **purposively**.
- **Sampling frame (1261) was stratified** into Ad (88) and Nad (1173).
- **Sample size (n)** was calculated using the formula:

$$n = \frac{N}{1 + N(e)^2}$$

3.2.2. Sampling Methods...Cont

- **n was 120 HHHs (43 Adopters & 77 non-adopters).**
- **Probability of proportional to size principle.**
- **Systematic random sampling method was used.**

3.3. Data Types and Sources

- **Primary and secondary data sources.**
- Male and female respondents.
- Documents, records and reports of GOs and NGOs.

3.4. Data Collection Methods

- 4 enumerators were **recruited and trained**.
- The questionnaire was **pre-tested** at Bonayamiride kebele.
- **Interviewing** was carried out to collect **Primary quantitative data**.
- **Secondary quantitative data** were collected from GOs and NGOs.

3.5. Data Analysis Methods

- **SPSS software version 20.**
- **Descriptive statistics** used to provide a **summary of variables.**
- **Chi-square test** was used.
- **Independent T-test** was used;
- **Binary logit model** was used to analyse the factors influencing CA technology among sample farmers

4. RESULTS AND DISCUSSION

4.1. 1. Demographic Characteristics of HH in Relation to CA Adoption

Table 5: Sex disaggregated sample HH in relation to CA Adoption

	Adopter (N=43)		Non Adopter (N=77)		Total Sample (N=120)		χ^2
Variable (1)	No	%	No	%	No	%	
Sex							
Male	35	81.4	51	66.2	86	71.7	3.124 NS
Female	8	18.6	26	33.8	34	28.3	
Source: Survey result, 2015			NS Non significant at 5% level				

- Data gathered from 120 HHs consisting of 43 (35.8%) adopters and 77 (64.2%) non-adopters were analysed.
- Generally, 86 (71.7%) male and 34 (28.3%) female households were interviewed.

4.1. 1. Demographic Characteristics Cont...

Table 6. Age, family size and farming experience of sample households in relation to CA adoption

Variables (3)	HH practicing CA	N	Mean	SD	t-value
Age (years)	Adopter	43	40.791	11.07	1.783 NS
	Non-Adopter	77	37.481	8.95	
	Total	120	38.67	9.84	
Family size	Adopter	43	7.42	2.21	1.061 NS
	Non-Adopter	77	6.95	2.39	
	Total	120	7.12	2.33	
Farming experience (years)	Adopter	43	23.535	9.08	1.824 NS
	Non-Adopter	77	20.442	8.81	
	Total	120	21.55	8.996	

Source: Survey Result, 2015

NS Non-significant at 5% level

4.1. 1. Demographic Characteristics Cont...

Table 7. Marital status and education level of households in association with adoption of CA

Variable (2)		HH practicing CA				χ^2
		Adopter (N=43)		Non-Adopter (N=77)		
		No	Percentage (%)	No	Percentage (%)	
Marital status	Single	1	2.3	1	1.3	0.947 NS
	Married	41	95.3	72	93.5	
	Divorced	0	0.0	1	1.3	
	Widowed	1	2.3	3	3.9	
Education level	Not able to read and write	10	23.3	26	33.8	4.477 NS
	Just able to read and write	8	18.6	17	22.1	
	Grade 1-4	8	18.6	8	10.4	
	Grade 5-8	12	27.9	20	26.0	
	Grade 9-12	4	9.3	6	7.8	
Some college education	1	2.3	0	0.0		

Source: Survey result, 2015 NS Non significant at 5% level

4.1. 2. Socio-economic Characteristics of HH in Relation to CA Adoption

Table 8. Socio-economic measurement variables in relation to CA adoption

Variable (4)	HH practicing CA	N	Mean	SD	t-value
Land size (Ha)	Adopter	43	1.4593	.87446	0.340 NS
	Non-Adopter	77	1.3890	1.18795	
	Total	120	1.414	1.083	
Plot distance from home single trip (Km)	Adopter	43	.3540	1.52580	0.821 NS
	Non-Adopter	77	.2017	.43346	
	Total	120	0.256	0.973	
Livestock holding (TLU)	Adopter	43	4.0888	2.78169	0.911 NS
	Non-Adopter	76	3.6675	2.19647	
	Total	119	3.820	2.421	
Annual Income (ETB)	Adopter	16	8712.50	9668.251	0.941 NS
	Non-Adopter	22	6360.00	5692.091	
	Total	38	7350.53	7594.074	

Source: Survey result, 2015 NS Non significant at 5% level

4.1. 2. Socio-economic Characteristics Cont...

Table 9. HH's Socio-economic characteristics by categorical variables in relation to CA adoption

Variables (3/5)		HH practicing CA		χ^2
		Adopter (N=43)	Non-Adopter (N=77)	
		Percentage (%)	Percentage (%)	
Soil fertility status	More fertile	74.4	53.2	5.192*
	Less Fertile	25.6	46.8	
Enough Availability of labour	Yes	95.3	80.5	4.990**
	No	4.7	19.5	
Involvement in formal and informal Organization	Yes	100.0	98.7	0.563 NS
	No	0	1.3	
Participation in off/non-farm activities	Yes	27.9	22.1	0.512 NS
	No	72.1	77.9	
Getting incentive for practicing CA	Yes	93.0	10.4	78.502***
	No	7.0	89.6	

Source: Survey result, 2015 *, ** and *** are sig and NS Non significant at 5 % level

4.1. 3. Technology Related Characteristics of HH in Relation to CA Adoption

Table 10. HH's Technology related variables in relation to CA adoption

Variables (3/6)		HH practicing CA		χ^2
		Adopter (N=43)	Non-Adopter (N=77)	
		Percentage (%)	Percentage (%)	
Perception of HH on CA in increasing income	More important	95.3	87	2.13 NS
	Less important	4.7	13	
Preference of buying non selective herbicides than hand weeding	Yes	69.8	55.8	2.245 NS
	No	30.2	44.2	
Perception of HH on CA over CoA	Good	100.0	87.0	6.092*
	Bad	.0	13.0	
Level or amount of information needed	Some information	2.3	5.2	0.569 NS
	All information	97.7	94.8	
Thinking that CA technologies are compatible to existing system	Yes	95.3	77.9	6.288*
	No	4.7	22.1	
Easily experimenting of CA in small plot of farm	Yes	100.0	90.9	4.152*
	No	0	9.1	

Source: Survey report, 2015 * is sig and NS Non significant at 5 % level

4.1. 4. Institutional Characteristics of HH in Relation to CA Adoption

Table 11 HH's Institutional variables in relation to CA adoption

Variables (5/8)		HH practicing CA		χ^2
		Adopter (N=43)	Non-Adopter (N=77)	
		Percentage (%)	Percentage (%)	
HH aware about CA technologies	Yes	100.0	97.4	1.136 NS
	No	.0	2.6	
Length of time after HH heard about CA	Less than 2 years	.0	30.7	16.379 *
	Two years & above	100	69.3	
HH received training on CA (at least once)	Yes	97.7	74.7	10.278 *
	No	2.3	25.3	
Training topics HH received	All components covered	54.8	21.7	14.625*
	Partly covered	45.2	78.3	
Getting advisory service from extension agents	Yes	88.4	29.9	37.783*
	No	11.6	70.1	
HH participation in CA field days or visits	Yes	44.2	10.4	18.073*
	No	55.8	89.6	
HH who have credit access in the last two years	Yes	30.2	16.9	2.897 NS
	No	69.8	83.1	
Knowledge sharing practice of the household	Yes	95.3	94.8	0.017 NS
	No	4.7	5.2	

Source: Survey result, 2015 * is sig and NS Non significant at 5 % level

4.2. Econometrics Model Results Cont...

Table 14. The maximum likelihood estimate of the binary logistic regression model on factors affecting adoption of CA technology

Explanatory Variables		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 ^a	Incentive CA(1)	4.357	.710	37.600	1	.000	78.000
	Constant	.594	.355	2.798	1	.094	1.812
Step 2 ^b	Incentive CA(1)	4.420	.821	28.964	1	.000	83.060
	Get Advisory Service from EAs(1)	2.682	.810	10.965	1	.001	14.608
	Constant	.999	.410	5.925	1	.015	2.715
Step 3 ^c	Incentive CA(1)	4.176	.870	23.036	1	.000	65.106
	Get Advisory Service from EAs(1)	3.496	1.038	11.349	1	.001	32.985
	CA Training Topics Covered(1)	2.302	.971	5.619	1	.018	9.990
	Constant	.774	.452	2.933	1	.087	2.169

Where, B= is Estimated Coefficient; S.E. =is Standard Error; df =is Degree of Freedom; Sig =is significance level; Exp(B) =is Odds Ratio

4.2. Econometrics Model Results Cont...

- The odds for CA adoption is **65.106 times** higher in adopters who **received incentive** compared to those who did not at all.
- The odds for CA adoption is **32.985 times** higher in adopters who **got advisory services of extension agents** compared to those who did not at all.
- The odds for CA adoption is **9.990 times** higher in adopters who **received all training package** on CA principles compared to those who received partially.
- Incentives, advisory Services of Extension Agents and Training Topics Covered were **positively & significantly influenced the likelihood of CA adoption.**

5. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

- DESCRIPTIVE STATISTICS results showed that adoption of CA is affected by socio-economic, technological and institutional factors.
- CA is significantly and positively affected by
 - ✓ **Socio-economic** factors such as *soil fertility status, enough availability of labour and incentive.*
 - ✓ **Technological factors** such as *perception of CA over CoV, thinking of CA compatible to existing system and easy experimentation of CA,*

5.1. Conclusion Cont...

- *CA is significantly and positively affected by*
 - ✓ **institutional variables** such as *length of time after the HH hear about CA, CA training received, CA training topics covered, advisory service of extension agents, and HH's participation on CA field days.*
- BINARY LOGIT MODEL results showed that
 - ✓ *Incentive, advisory service of extension agents and CA training topics* positively and significantly influenced **the likelihood of CA adoption** decisions of the farmers.

5.1. Recommendations

- Recommended to improve motivation of the farmers and reduce their fear on risk of failure. **Incentive...Only??/Sustainability ??**
- Advised to collaborate and work together to standardize & define CA Promotion strategies that both can agree.
- **Contents and methodologies of the trainings** recommended to be prepared and approved by concerned bodies.
- Recommended to **build capacity of extension agents of both the projects and MOA** especially on consultancy and facilitation skills.

CFGB's Work

- **Crop diversification** (Eg. Promotion of cover crops that can be edible by both human & livestock eg lablab), **addressing gender** (via SHG approach), providing emphasis on **marketing piece** as well e.t.c.
- **CFGB doesn't encourage CA promotion strategies** which are based on provision of **incentive**. Would like to focus beyond incentive so that farmers can continue practicing CA after projects come to an end.
- **Development and translation of training manuals** by CA technical team (that can be used as facilitator's guide) and **various resources**.
- **Capacity building training** on curriculum familiarization, consultancy and facilitation skills, etc are being undertaken by CA specialists and project team for extension agents.

**THANK YOU FOR YOUR
ATTENTION!!**