

Women farmers' participation in the agricultural research process: implication for agricultural sustainability in Ethiopia

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Presentation outline

- Context
- Research issue
- Research objectives
- Methods
- Results
- Conclusion

Ethiopian context

- Ethiopia is a highly agrarian and densely populated country with fragile natural resource
- Technological change is struggling to keep pace with the rapidly growing population
- The country is prone to droughts and about 10% of the population are chronically food insecure
- Women contribute about 43% to the agricultural labor force, managing calorie generating plots.

Research issue

- Women are under represented in agricultural research, extension and governance systems.
- Inclusion of women in agricultural research may enhance food security in a country that is prone to droughts and market inefficiencies.
- Enhancing women's role as innovators. agricultural producers and care takers is critical to sustain agriculture.

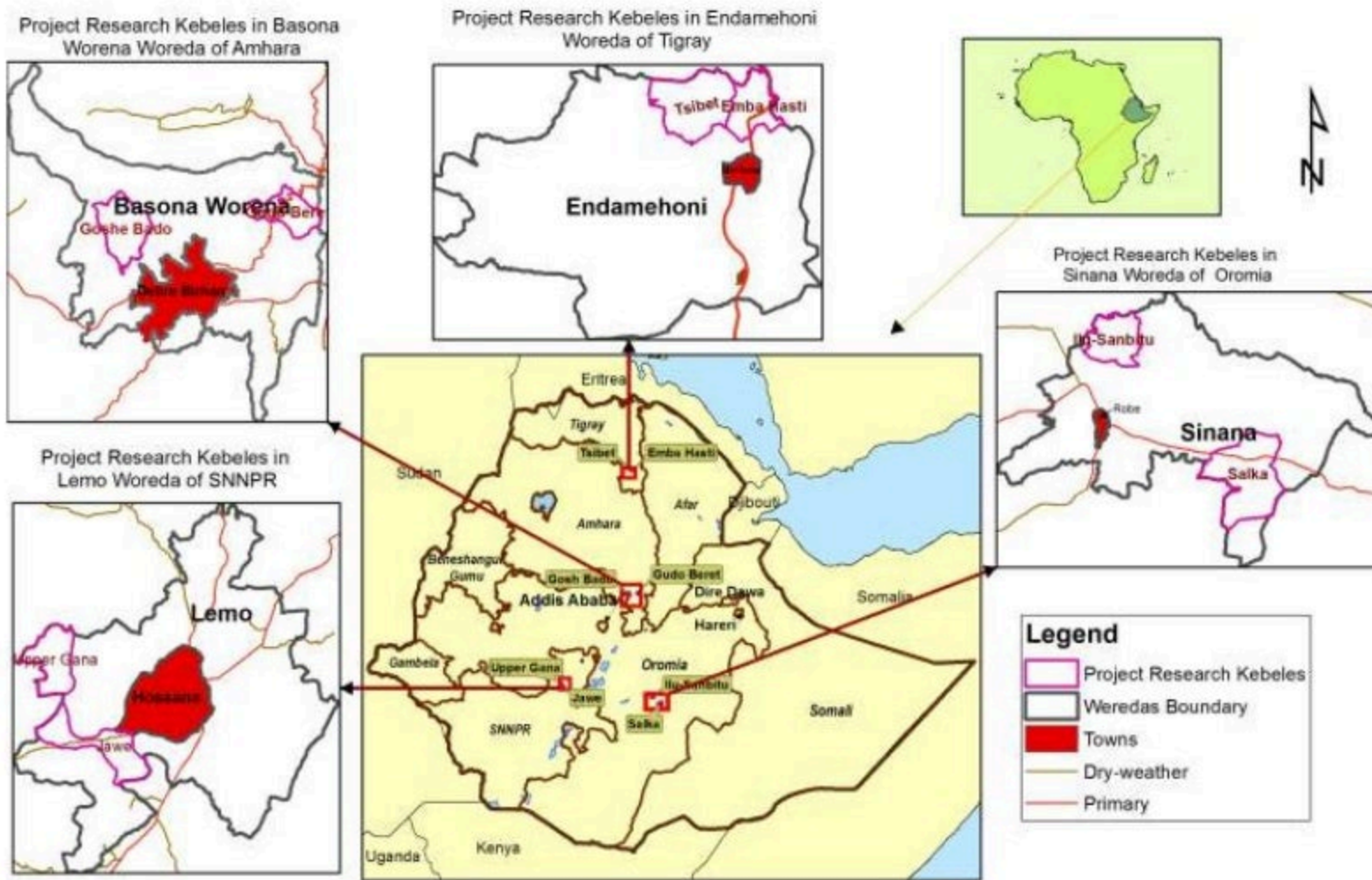
Research issue

- Empowerment of women is central to their participation in agricultural research and achieving sustainable development.
- Limited understanding of the relationship between women's empowerment and participation in agricultural research processes.
- Social aspects of agricultural sustainability have received limited attention.

Objectives of the study

1. Understand how women farmers are involved in the agricultural research process
2. Determine the socio-economic factors that influence women's participation in different stages of the agricultural research process.

Research sites – Africa RISING project sites



Administrative boundaries indicated in the map should not be considered authoritative

Methods

- Mixed methods
- 230 individual interviews with women farmers
- 16 FGDs with men and women farmers
- Africa RISING project participants and non-participants

Methods...

- The Africa RISING project research process
 - Identification of problems and opportunities
 - Presentation of potential solutions and selection of farmers to test/validate technologies
 - Groups farmers into farmer research groups
 - Implementation on action research
 - Monitoring, Evaluation and Learning
 - Capacity development

Data analysis

- Qualitative data were analyzed using line-by-line coding.
- Quantitative data were analyzed using binary and multivariate probit models.
- Generated a composite women's empowerment index based on the WEAI domains
- Included this index together with other socio-economic variables into econometric models

The stages of the agricultural research process

Stage of the agricultural research process	Description
Identification and prioritization of research and development problems (design stage)	<ul style="list-style-type: none">• Identifying and prioritizing agricultural problems or opportunities in the kebele• Identifying possible solutions to be tested
Identification and testing of potential technology options (testing)	<ul style="list-style-type: none">• Identifying and selecting farmers to participate in testing different technologies• Organizing farmers in to farmer research groups based on preferences• Conducting demonstrations or experiments to test technology options
Dissemination of tested and validated technologies (diffusion)	<ul style="list-style-type: none">• Creating awareness of recommended solutions among future users e.g. hosting farmer field days
Monitoring and evaluation	<ul style="list-style-type: none">• Data collection, reflection and information sharing to decide on actions to be taken• Technology assessments e.g. Participatory Variety Selection (PVS)

Women participation in agricultural research stages

Stage	Africa RISING project participants (n=118)	Africa RISING project non-participants (n=112)	Total (N=230)	Pearson Chi-square (p-value)
Did not participate in any stage	0	36	21	0.000
Identification and prioritization of research and development problems (design)	55	30	42	0.001
Identification and testing of potential technology options (testing)	58	17	34	0.000
Dissemination of tested and validated technologies (diffusion)	38	17	27	0.002
Monitoring and evaluation	32	12	22	0.001

Results from binary probit model for women participation in each stage (Decomposed model)

Explanatory variables	STAGES				
	Did not participate in any stage	Identification and prioritization of research and development problems	Identification and testing of potential technology options	Dissemination of tested and validated technologies	Monitoring and evaluation
AGE	0.401 (0.03)	-0.014 (0.02)	0.000 (0.02)	0.005 (0.02)	0.001 (0.21)
EDUCATION	0.405 (0.29)	0.260 (0.22)	0.212 (0.17)	0.150 (0.17)	0.121(0.17)
MARITAL STATUS	-0.007 (0.68)	-0.450 (0.44)	-0.033 (0.37)	-0.123 (0.14)	-0.171 (0.37)
LAND SIZE	0.003 (0.07)	-0.039 (0.04)	-0.016 (0.03)	0.099 (0.05)**	-0.042 (0.33)
AR PARTICIPATION	-0.915 (0.59)	0.069(0.39)	1.711 (0.39) ***	0.690 (0.37)*	0.186 (0.35)
INFOR SOURCE	-0.196 (0.16)	0.246 (0.14)*	0.093 (0.11)	-0.111 (0.12)	0.208 (0.13)*
EXTENSION ACCESS	-1.444 (0.56) ***	2.141 (0.64) ***	-0.179 (0.53)	-0.162 (0.54)	1.165 (0.67)*
FAMER GROUP	0.189 (0.48)	1.399 (0.48) ***	-0.004 (0.36)	0.094 (0.36)	0.717 (0.36)**
PUBLIC SPEAK	-0.875 (0.56)	0.487 (0.41)	0.699 (0.39)	1.077 (0.39)***	0.832 (0.39)**
CREDIT DECISION	0.542 (2.82)	-1.510 (1.22)	-1.086 (0.76)	0.833 (0.78)	-1.042 (0.64)
INCOME DECISION	-0.970 (1.39)	1.918 (1.524)	0.385 (0.95)	0.123 (0.24)	0.607 (1.07)
PROD DECISION	0.903 (2.70)	2.027 (1.44) *	0.119 (0.92)	0.001 (0.45)	-0.498 (0.90)
PLOT INDIVIDUAL	-1.845 (0.63) ***	1.604 (0.47) ***	0.260 (0.40)	1.008 (0.47)***	0.402 (0.41)
LABOR SUFFICIENT	1.10 (0.97)	-1.444 (0.64)	-0.526 (0.59)	-0.270 (0.42)	-0.068 (0.44)
Pseudo R2	0.52	0.50	0.35	0.29	0.27
P-value	0.000	0.000	0.000	0.000	0.002

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Results from a multivariate probit model of women participation in each stage

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AGE	-0.152 (0.02)	0.00 (0.02)	0.007 (0.19)	0.005 (0.02)
EDUCATION	0.231 (0.22)	0.256 (0.17)	0.143 (0.17)	0.098 (0.17)
MARITAL STAT	-0.431 (0.43)	-0.045 (0.37)	-0.278 (0.37)	
LAND SIZE	-0.037 (0.04)	-0.013 (0.03)	0.102 (0.05)**	-0.031 (0.03)
AR PARTICIP	0.045 (0.39)	1.678 (0.381)***	0.662 (0.36)*	0.083 (0.34)
INFOR SOURCE	0.257 (0.14)*	0.059 (0.11)	-0.147 (0.11)	0.144 (0.11)
EXTEN ACCESS	2.109 (0.63)***	-0.176 (0.54)	-0.286 (0.37)	1.016 (0.61)*
FAMER GROUP	1.349 (0.48)***	0.042 (0.36)	0.062 (0.35)	0.713 (0.34)**
PUBLIC SPEAK	0.471 (0.41)	0.656 (0.39)	1.22 (0.38)***	0.763 (0.37)**
CREDITDEC	-1.431 (1.27)	0.742 (0.67)	0.525 (0.73)	-1.113 (0.62)
INCOME DEC	1.820 (1.51)	0.269 (0.93)	4.389 (0.181)	0.750 (1.28)
PROD DEC	1.988 (1.17)*	0.129 (0.96)	3.981 (1.79)	-0.177 (0.91)
PLOT INDIV	1.577 (0.47)***	0.267 (0.41)	1.045 (0.46)**	0.460 (0.39)
LABORSUFF	1.325 (0.62)	-0.659 (0.45)	-0.236 (0.41)	-0.022 (0.39)

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LABORSUFF	1.325 (0.62)	-0.659 (0.45)	-0.236 (0.41)	-0.022 (0.39)

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Results from binary probit models with a composite empowerment index

Explanatory variables	STAGES				
	Did not participate in any stage	Identification and prioritization of research and development problems	Identification and testing of potential technology options	Dissemination of tested and validated	Monitoring and evaluation
AGE	0.016 (0.01)	0.015 (0.01)	-0.004 (0.01)	-0.005 (0.01)	-0.015 (0.01)
EDUCATION	-0.093 (0.12)	0.108 (0.10)	0.199 (0.10) *	0.057 (0.10)	0.147 (0.11)
MARITAL STATUS	0.525 (0.26)	-0.499 (0.20)	-0.327 (0.21)	-0.293 (0.21)	0.162 (0.23)
LAND SIZE	0.014 (0.01)	-0.01 (0.01)	0.020 (0.01) *	0.012 (0.13)	-0.035 (0.02)
AR PARTICIPATION	-0.617 (0.23) ***	0.405 (0.19) **	0.786 (0.19) ***	0.394 (0.20) *	0.403 (0.22) *
INFOR SOURCE	-0.122 (0.08)	-0.04 (0.07)	0.112 (0.67) *	-0.059 (0.07)	0.119 (0.08) ***
EXTENSION ACCESS	-1.033 (0.25) ***	0.859 (0.27) ***	0.614 (0.28) **	0.496 (0.28) *	0.426 (0.29)
EMPOWERINDEX	-0.327 (0.09) ***	0.350 (0.07) ***	0.204 (0.07) ***	0.330 (0.07) ***	0.312 (0.07) ***
Pseudo R2	0.28	0.23	0.20	0.16	0.17
P-value	0.000	0.000	0.000	0.000	0.000

*, ** and *** shows significance at 10%, 5% and 1% respectively

Qualitative vs quantitative data

- Production decision making
 - Lack of decision making power over productive resources
 - Land size and location of land
 - Female household heads with higher chances



Qualitative vs quantitative data

- Leadership
 - Membership to farmer based groups (design and M&E)
 - Ability to speak up (diffusion and M&E)
 - > 50% of surveyed women not members of farmer-based groups



Qualitative vs quantitative data

- Time allocation
 - Labor sufficiency not sig in quant
 - Women's workload frequently cited in



“Women farmers are limited to participate in the different extension events and trainings because they are too busy with reproductive work. They do not have enough time to participate in different trainings and farmer field days as compared to men (women’s FGD, non-participants, Ilu-Sambitu, Sinana)”.

Other socio-economic factors

- Information & knowledge
 - Mostly cited by women
 - Ranked amongst the top 5 influencing factors
- Access to extension agent
- Key in early and later stages
- Cultural norms



Conclusion

- Empowerment increases women's participation in agricultural research processes
- Different domains and indicators influence their participation in each of the stages (early or later)
- Addressing empowerment factors that influence women's participation in earlier stages is
- Participation in earlier stages requires more empowerment aspects which prepare them for later stages
- Any technology added to the system should fit into the social domain – women's empowerment as a key social indicator

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Collaborative Platform for Gender Research



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