



Australian Government
Australian Centre for
International Agricultural Research

WHAT INFLUENCES SMALLHOLDER ADOPTION OF PROVEN AGRICULTURAL TECHNOLOGIES? IDENTIFYING DIFFERENCES IN MEN AND WOMENS' AGRICULTURAL PRODUCTION DECISION MAKING IN SOUTHERN LAOS USING COLLECTIVE BEHAVIOUR ELICITATION (CBE) GAMING ACTIVITIES

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ETH zürich

Acknowledgements



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ACIAR



- **Parent project:** Smallholder farmer decision-making and technology adoption in southern Lao PDR: opportunities and constraints
- **Collaboration with ACIAR projects:**
 - ASEM/2012/081
 - SMCN/2012/071
 - SMCN/2012/075
 - SCMN/2014/088
 - AH/2012/068

Collective Behaviour Elicitation (CBE)

- Agricultural project in **Southern Laos**
- Farmers exposed to **new technologies**
- Disappointing **low rates of adoption**
- **Multi-institutional**: 3 Lao research institutions (NAFRI, NUoL, DTEAP), Australian researchers (JCU, Adelaide Uni, Murdoch Uni, CSIRO) and funding body (ACIAR) and Swis institute ETH Zurich
- **Multi-disciplinary**: sociology, economics, livelihoods, BN modelling, Gaming, extension specialist, business consultant, literature reviews

What is CBE ? – “the game”



FACILITATING A GAME SESSION

PROBLEM IN REALITY

INTRO-
DUCTION

BRIEFING

GAME PLAY

EVALUATION

DEBRIEFING



Context
Roles
Rules
Objectives



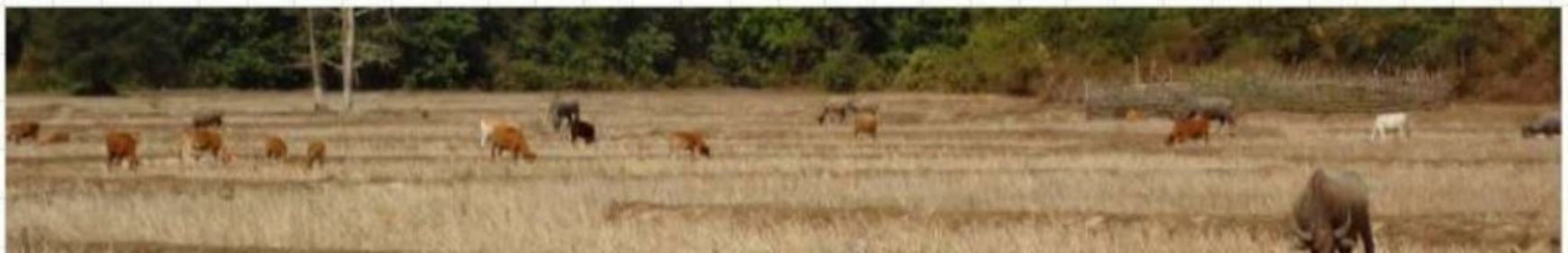
Game master
Timing
Update
Clarification
Adaptation



Observers
What players say
Quantitative indicators

Preparation is a key step in gaming

- “Game” needs to be as close to “reality” as possible : both relevant and truthful
- Data collection (“reality”): 20 villages in 2 Provinces
 - Headman interviews (19), ranking (83), qualitative surveys (114), focus groups (40), Q sort (35) stakeholder interviews (19)
 - Farmer Perception Survey (745) using e-voting
 - Bayesian Network (BN) modelling
 - Literature review: economic/livelihoods
 - <https://sites.google.com/view/acrtechnologyadoption/home>





Preparation – game setting



PLAYERS DECISIONS

ROUND 1 - WET

	Blue	Yellow	Pink	Green	Orange	Purple
EVENT						
Village Chief						
Communal grassland						
	Natural	Natural	Natural	Natural	Natural	Natural
	Rice	Rice	Rice	Rice	Rice	Rice
	Imp. Gr	Imp. Gr	Imp. Gr	Imp. Gr	Imp. Gr	Imp. Gr
	Natural	Natural	Natural	Natural	Natural	Natural
	Rice	Rice	Rice	Rice	Rice	Rice
	Imp. Gr	Imp. Gr	Imp. Gr	Imp. Gr	Imp. Gr	Imp. Gr
	Natural	Natural	Natural	Natural	Natural	Natural
	Rice	Rice	Rice	Rice	Rice	Rice
	Imp. Gr	Imp. Gr	Imp. Gr	Imp. Gr	Imp. Gr	Imp. Gr
	Natural	Natural	Natural	Natural	Natural	Natural
	Rice	Rice	Rice	Rice	Rice	Rice
	Imp. Gr	Imp. Gr	Imp. Gr	Imp. Gr	Imp. Gr	Imp. Gr
Off-farm work						
Number of cows						
BEFORE FEEDING						
Money left						
Number of tons						
AFTER FEEDING						
Money left						

Game playing

- Aim to elicit specific behaviours that prevent or facilitate adoption of introduced agricultural technologies.
- Games were played through successive seasons so that the production 'pinch points' where farmers make 'go/no-go' decisions regarding uptake of technologies were identified.
- As such, CBE activities uncovered tacit and explicit beliefs, decisions and actions indicating the bottlenecks and barriers to technology diffusion.



79 participants representing farmers, traders and extension workers played in men's and women's groups At 4 locations



Farmers



Farmers



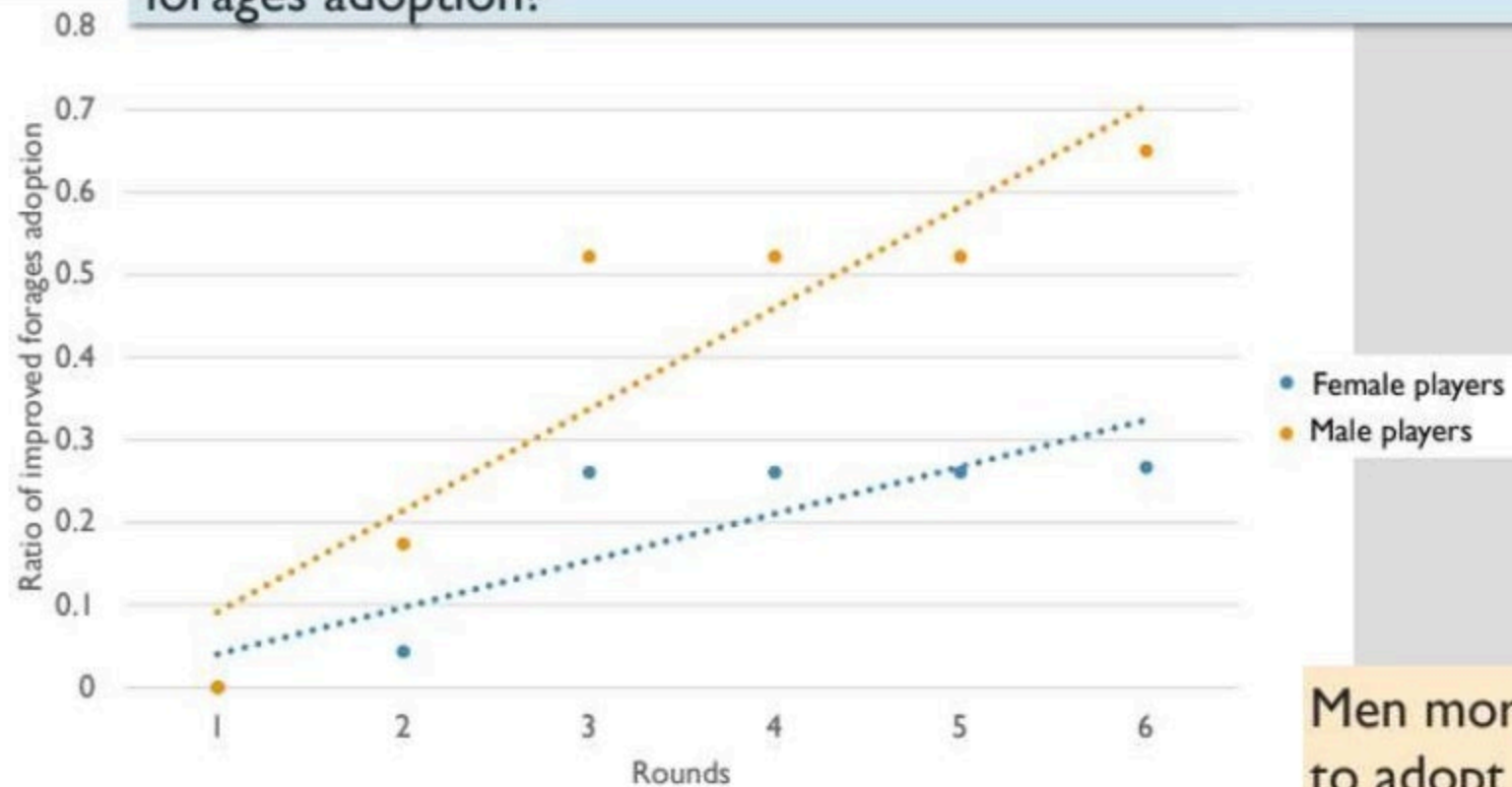
RESULTS

- Findings in every one of the four villages indicated that the average productivity outcomes for women's teams were higher than for men's teams (i.e. they had more successful outcomes). $p=(0.0625)$. Further,
 1. Women had better capability to see beyond the short term pain for the sake of long term gain – but also had longer timeframes in mind when choosing a production pathway.
 2. Women were more likely to lend/borrow the machinery to other players.
 3. Women were more likely to quickly transition the village to cooperate and get white rice production going – i.e., greater capability for creating alliances and cooperation.
 4. Men were more likely to put fertilizers in 'bad soils', suggesting poorer productive decision making.
 5. Women were more likely to send relatives to work in Thailand. The way the game was set up there were clear monetary benefits arising from migratory wage seeking activities, especially at the start of the games in order to build funds for successive seasons.

RESULTS

Men were more likely to invest in cattle, were ownership is traditionally an indication of status. Conversely, in the game, raising cattle resulted in unclear benefits, and fewer women invested in cattle under these conditions.

Is there a difference in gender when it comes to improved forages adoption?



Men more open to adopt improved forages?

BENEFITS

The gaming methodology has generated enthusiastic responses from participants and is visually engaging.

Farmers have also indicated that the game tool has had educational effect because it has demonstrated the concepts of strategic resource allocation of farming systems and the potential benefits of longer-term planning horizons.



Gaming is an exciting research methodology that combines community engagement and data collection, and is particularly useful for exploring the potential consequences of strategic decisions in agriculture.



Key Messages from CBE gaming:

- Pros:
 - Engaging and Educational
 - For farmers, introduces system and long-term planning
 - For researcher teams, provides gender understanding of behaviour / likely reactions to proposed
 - For policy makers, explores the potential and gendered consequences of strategic decisions in agriculture
 - Shifts emphasis from 'technology' to potential users and their preferred behaviours
- Cons:
 - Game requires comprehensive preparation and team capacity building; and results in comprehensive data collected - hence lengthy interpretation process
 - Instantly, strongly and visually challenges deeply rooted assumptions and myths which can be challenging to research teams and policy makers



NO PAIN NO GAIN

**Take
home message*

Perez, Pascal; Giger-Dray, Anne; Moglia, Magnus;
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ACIAR Project: ASEM/2014/052: Smallholder farmer decision-
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