

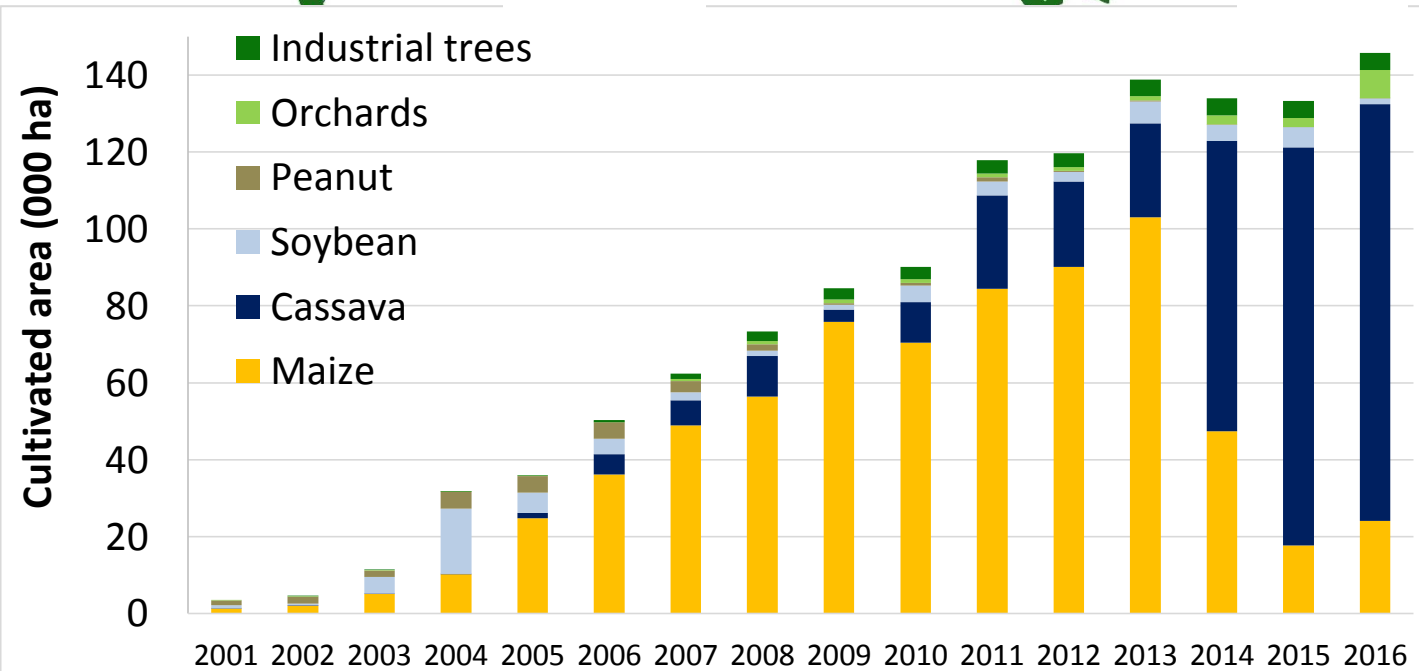
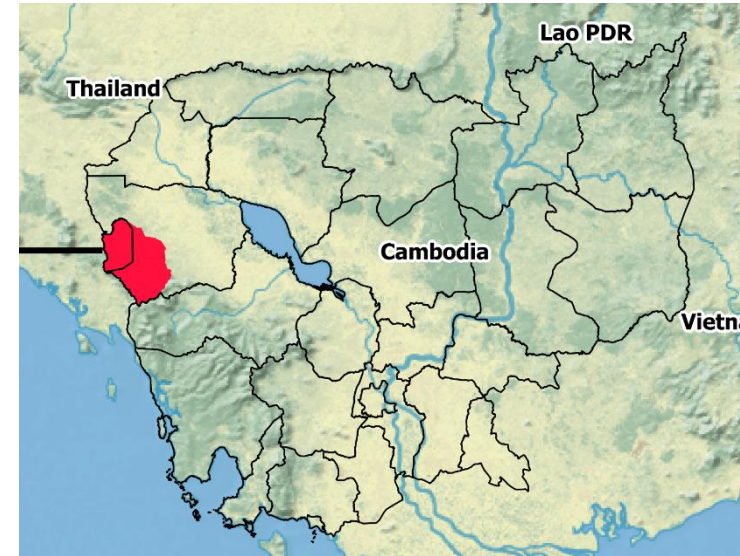
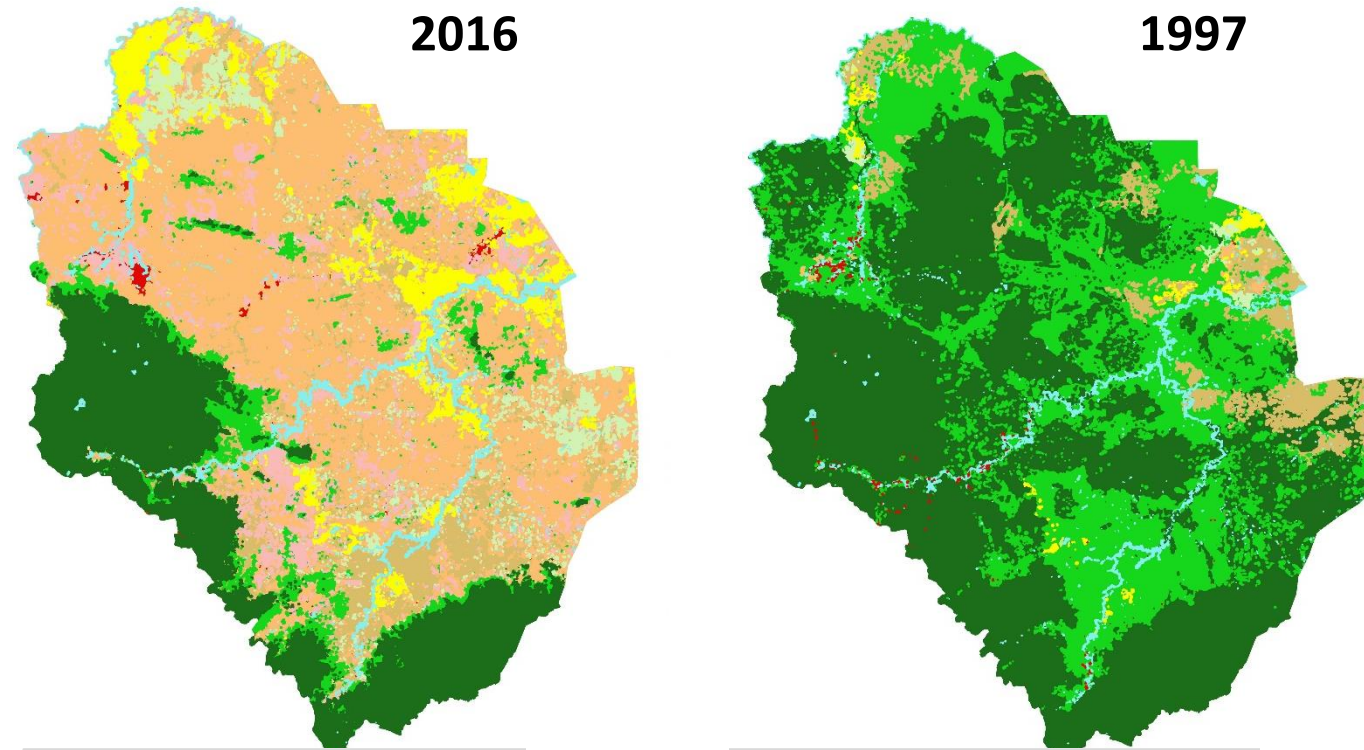
# Using gaming approach to understand farmer's decision making on land uses and CA adoption in the north-western uplands of Cambodia



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## > 1. Background: Rapid land use and land cover changes

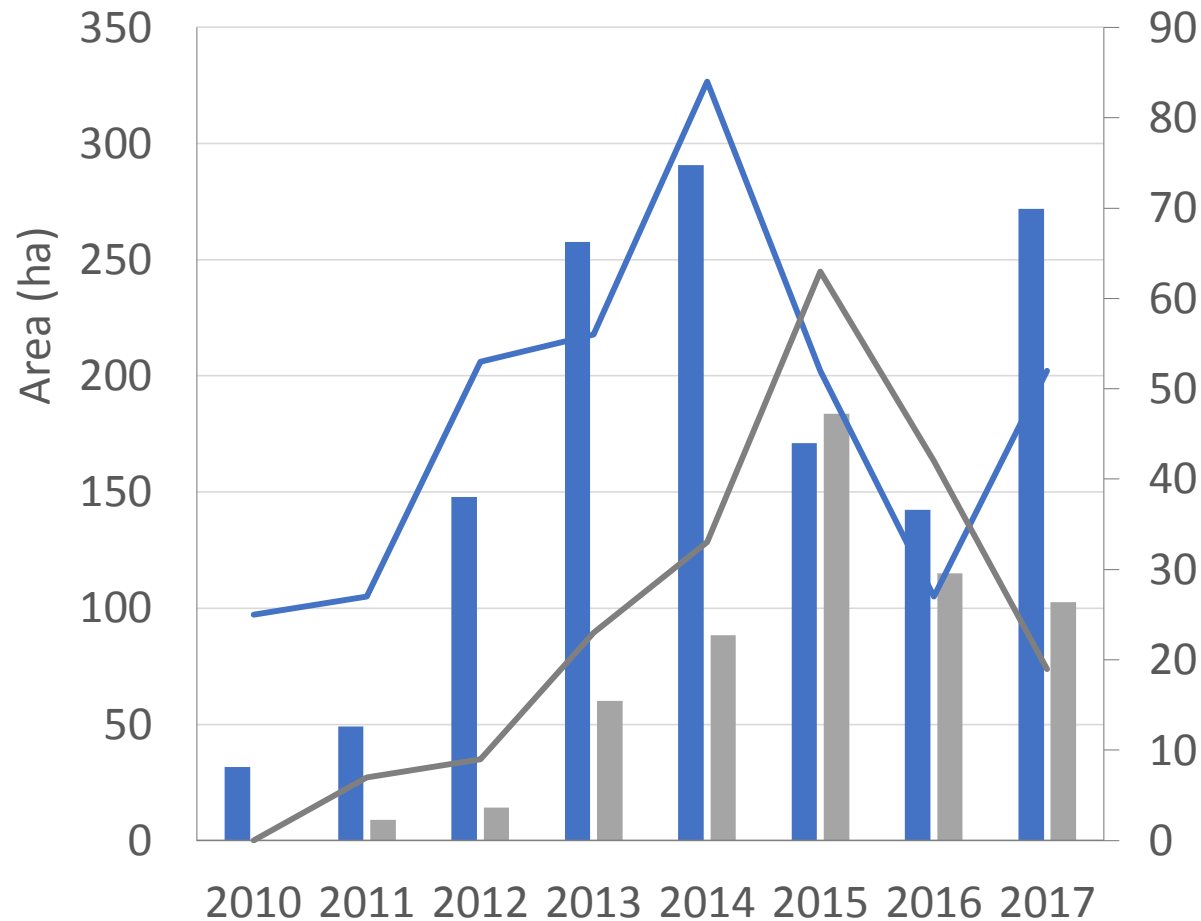


- 65% forest cover is lost to agricultural land in 15 years
- Transition farming shifting from one crop to another



## > 1. Background: CA project intervention

## Evolution of pilot extension network for CA maize



- Why is the adoption rate fluctuated?

### The 3 principles of CA

- 1/ No tillage
- 2/ Permanent soil cover
- 3/ Diverse species

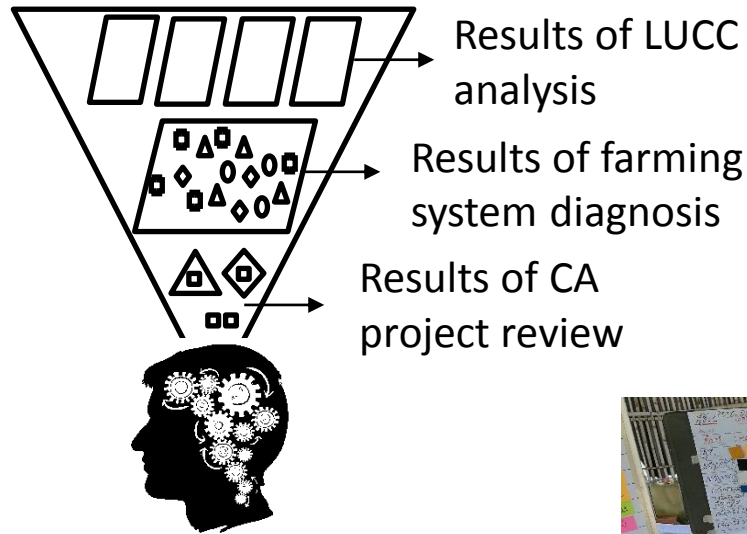
## > 1. Background: Objectives

- To understand the farmer's decision related to historical land uses and CA adoption
- To explore development pathways and draw lessons for intervention





# > 2. Methodology



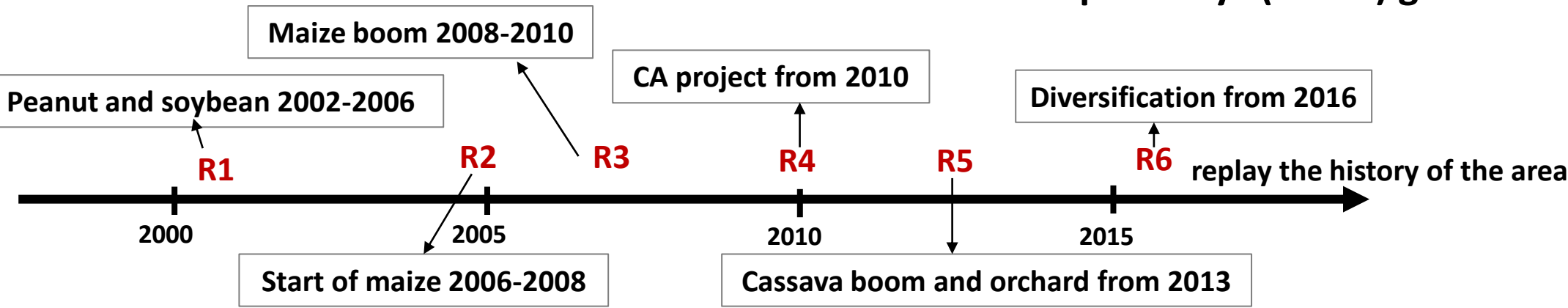
Integrating knowledge



Conceptualizing role playing game (RPG) model



Co-design and play (3 CA villages and 3 non CA villages) **Resilient Agriculture through co-Design Agroecology pathways (RADA) game**



How was the game implemented?

**សិក្ខាសាលាល្បែងកសិកម្ម**  
ការស្វែងរកយន្តការអន្តរាគមន៍សម្រាប់ការអនុវត្ត  
កសិកម្មអេកូឡូស៊ីនៅតំបន់ខ្ពង់រាបភាគពាយ័ព្យ  
ប្រទេសកម្ពុជា

**Simulation Game Workshop**

Exploring intervention mechanisms for agroecology  
in the Northwestern uplands of Cambodia

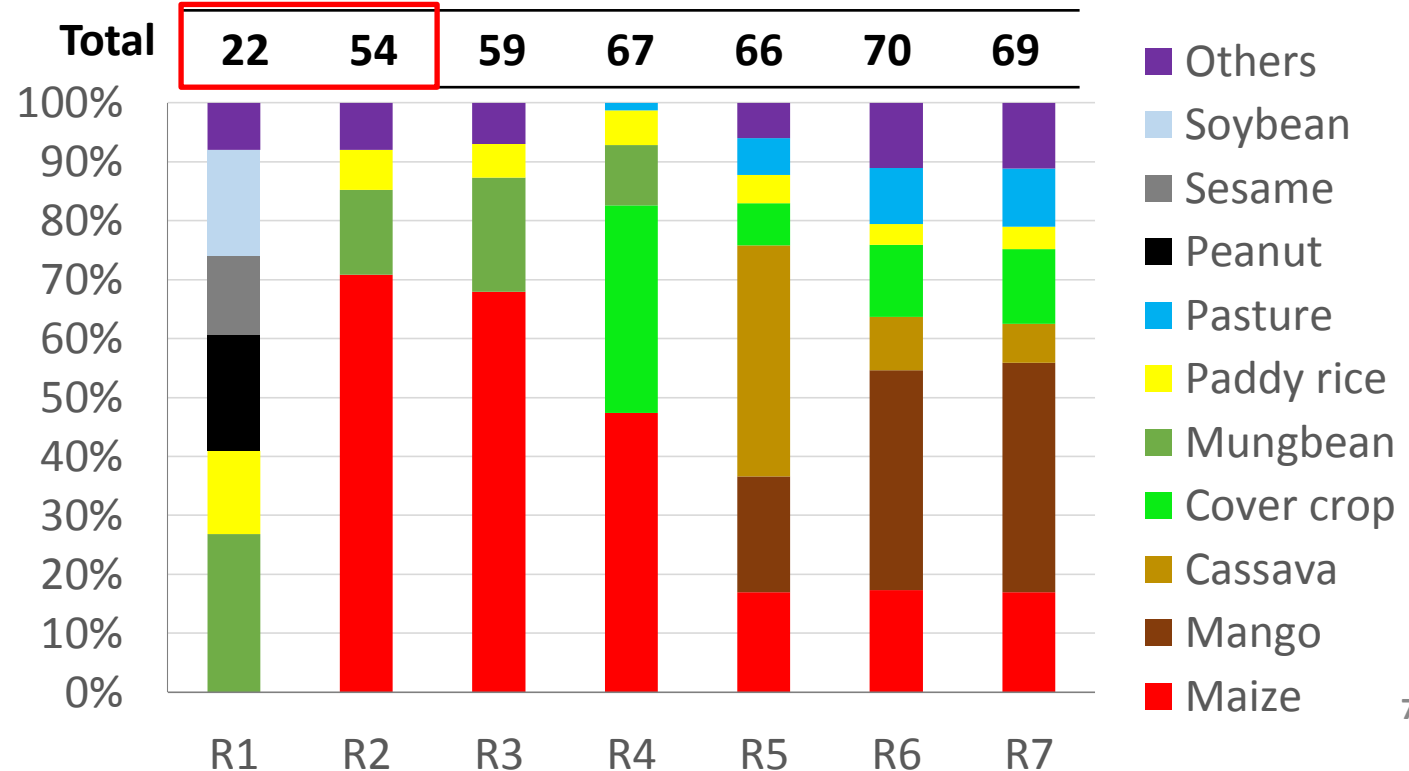


> 3 Results: Increase of cultivated land and land uses changes



**Mean cultivated area (%) of crops grown per villages**

- Rapid increase after introducing maize
- Shifting from diversified to homogenous landscape (soybean/peanut -> maize -> cassava -> mango)





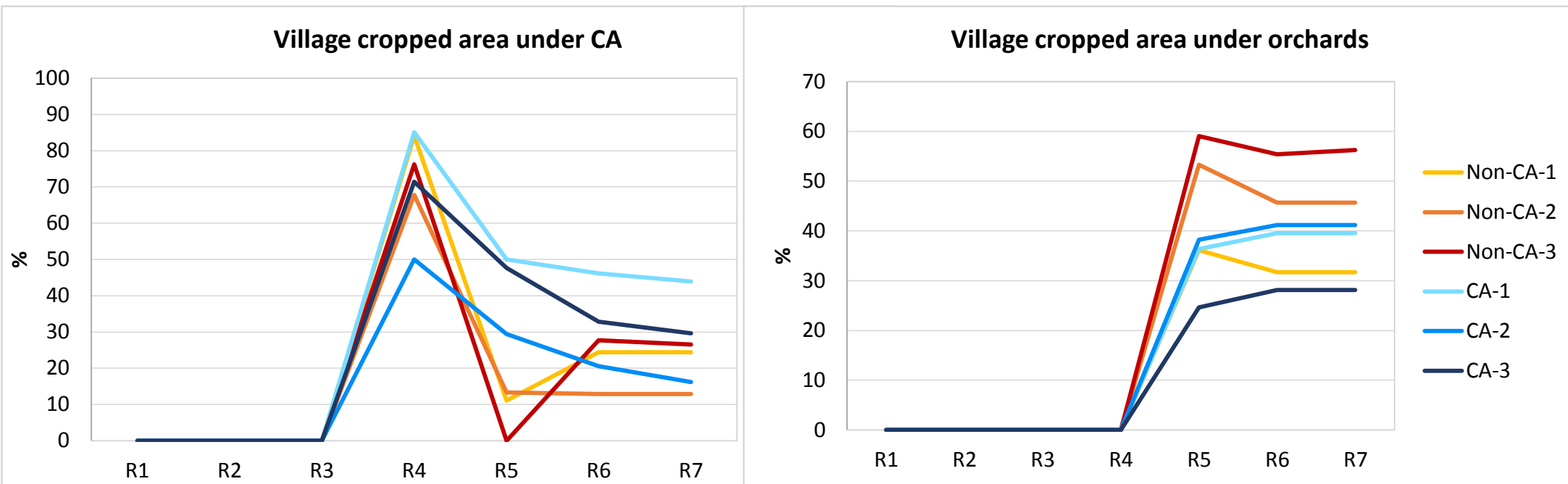
### > 3. Result: Impacts of land use changes and practices

Round	1	2	3	4	5	6	7
Capital accumulation (Million KHR)	1	7	75	127	183	246	246
Total cattle (head)	16	24	43	68	69	73	73
Pesticides use (l-kg/ha)	0.00	3.33	5.45	4.57	4.33	11.54	12.26
Return on investment (%)	328	229	144	153	140	112	111
Soil fertility accumulation (%)	-1	-16	-30	-27	-43	-42	-41
Rain and market vulnerability	0.03	0.10	0.23	0.19	0.15	0.21	0.21





### > 3. Results: Perceptions on conservation agriculture (CA)



- Players tend to play their current situation -> higher CA adoption in the game than actually achieved in the past,
- The drop in CA practice was due to land use conversion to cassava (no-till planter not available for cassava),
- CA villagers continue CA thanks to the no-till planter service provided by the project.
- Land use more diversified in CA villages,
- CA villagers are more knowledgeable on soil conservation, wild fire control...
- Non-CA villagers continue to jump from one boom crop to another: maize > cassava > orchards (mango).

## > 4. Conclusions

- Game put the context as real in time for collective reflection, discussion, sharing and learning
- Game helps researchers learning on constraints of innovation adoption
- Through game, we could identify windows of intervention for agroecology
- Games also help researchers getting their messages to the farmers in a simple and efficient way.





# Thank you for your attention!



More information on Conservation Agriculture activities in Cambodia: <http://casc.cirad.fr/>

## Acknowledgements:

