Regional Forum Agroecology Futures

6th-8th, November 2018, Siem Reap, Cambodia

Toward Annual Crop Production under Conservation Agriculture Innovative-based Systems

Vira Leng, Florent Tivet, Vuthy Sous, Sovannara Chhoeng, Ouddom Chet, Reaksmey Sen, Sokphea Prum, Samnang Yen, Lyhong Hok, Sovanda Son, Rada Kong, and Ra Koy

Supported by:

From cropping systems design to empower farmers and engagement with private sector

- Designing diversified no-till cropping systems: building knowledge, know-how and ability to master agronomic components
- Fit to the context and diversity of farms. Simplify the message on-farm, a step-by-step process
- Shift from a R4D project to a service provider approach
- Introduce simple elements in the landscape with the community (collective learning and knowledge sharing)
- Engage with private sector and develop a demand-creation process

Soil & natural resources are under the pressure of intensification processes

- Soil erosion
- Biodiversity degradation and huge removal amount of nutrients from soil
- Erratic rainfall
- Environmental pollution caused by excessive use of agro-chemicals

For animal feeds & bio-ethanol…….

Mechanization = a mining process in the uplands!
Need for alternatives

Designing diversified NT cropping systems

Main components:

i. Cropping system engineering
ii. Genetic bank (55 sp., 335 cultivars)
iii. Scientific experiments (5 art. published)
iv. Integrated short-term cattle Fattening-Soil fertility management
v. Large-scale demo + grain/CC seed production

A range of cropping systems under CA management

Rice

Soybean

Cassava

Maize, sowing on green cover crops

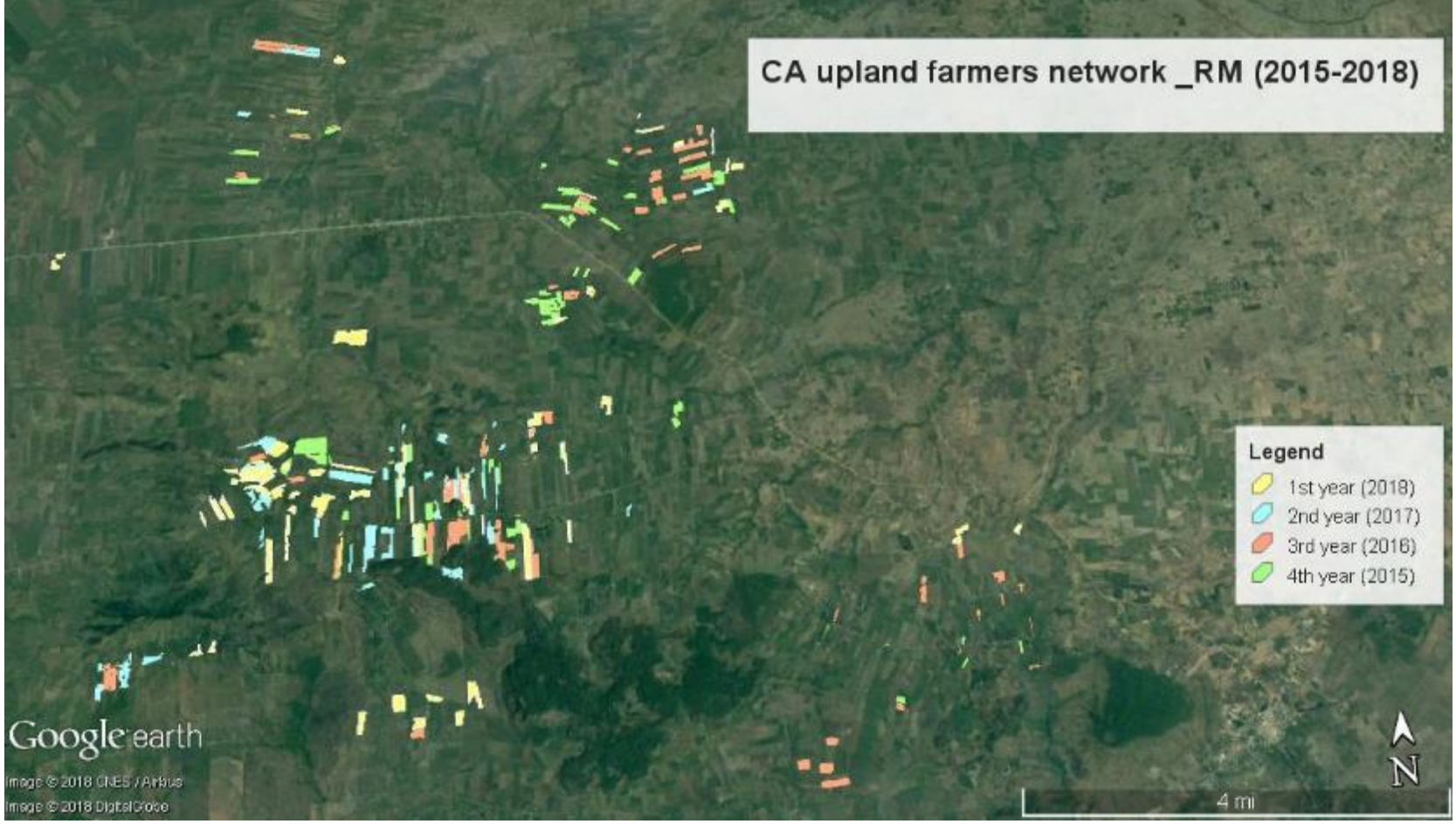
On-farm adaptation process: CA transition

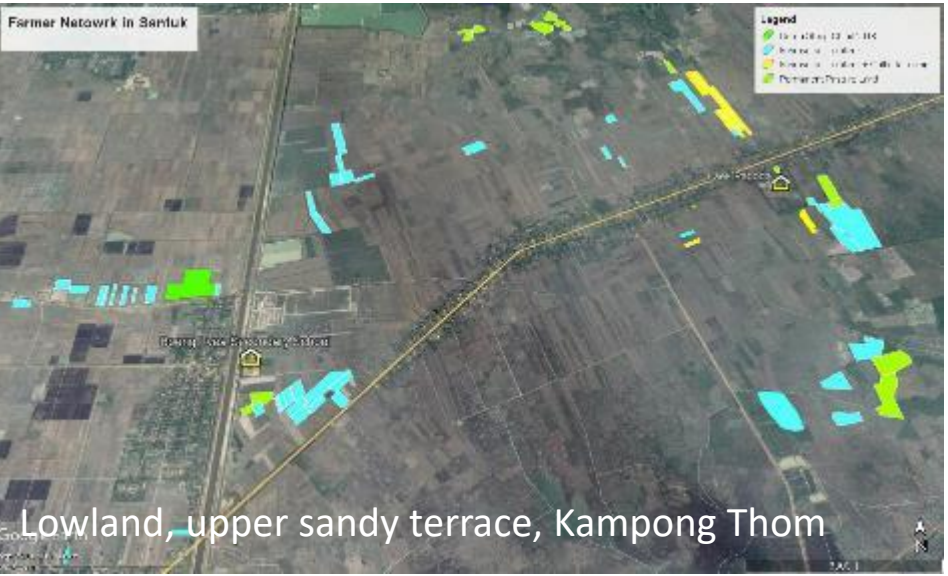
- Simplify the message on-farm, a step-by-step process
- Shift from a R4D project to a service provider approach
- Introduce simple elements in the landscape with the community (collective learning and knowledge sharing)
- Engage with private sector and develop a demand-creation process

Maize sowing on previous crop residues without soil tillage

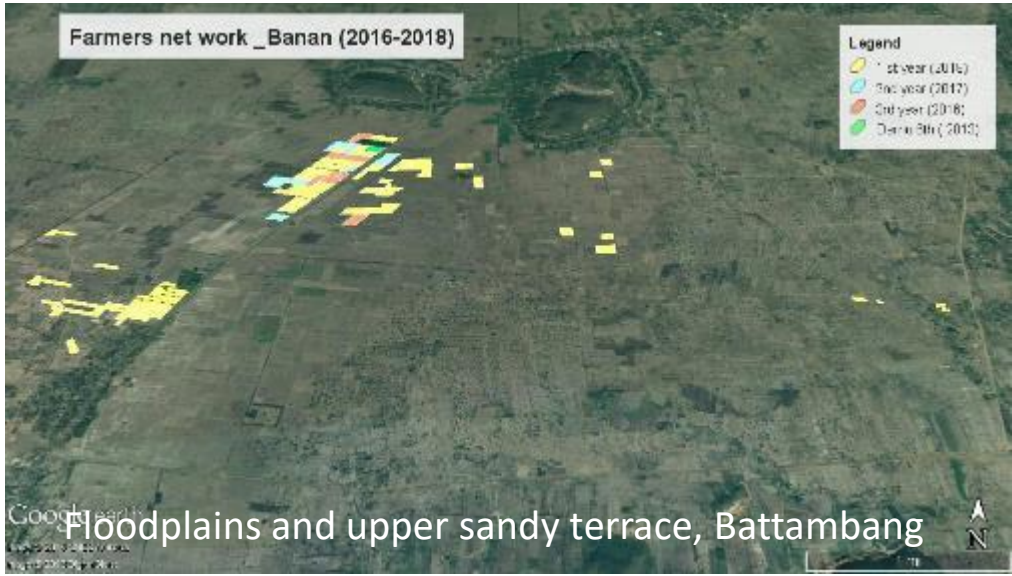
Sowing Sunnhemp for seed production on maize stalks, Sangha, Ratanak Mondul


Maize direct seeded on former crop residues



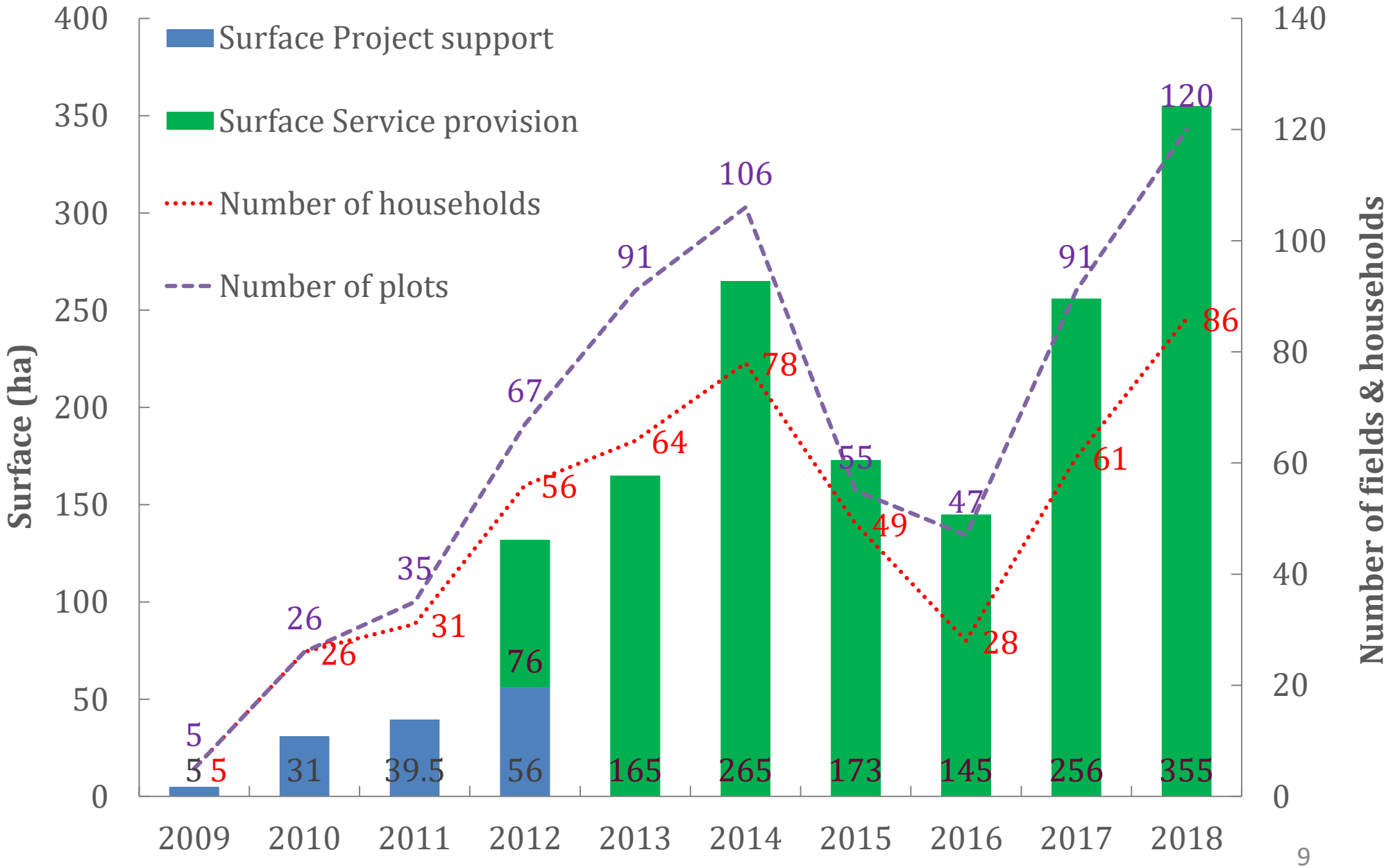


Lowland, upper sandy terrace, Kampong Thom

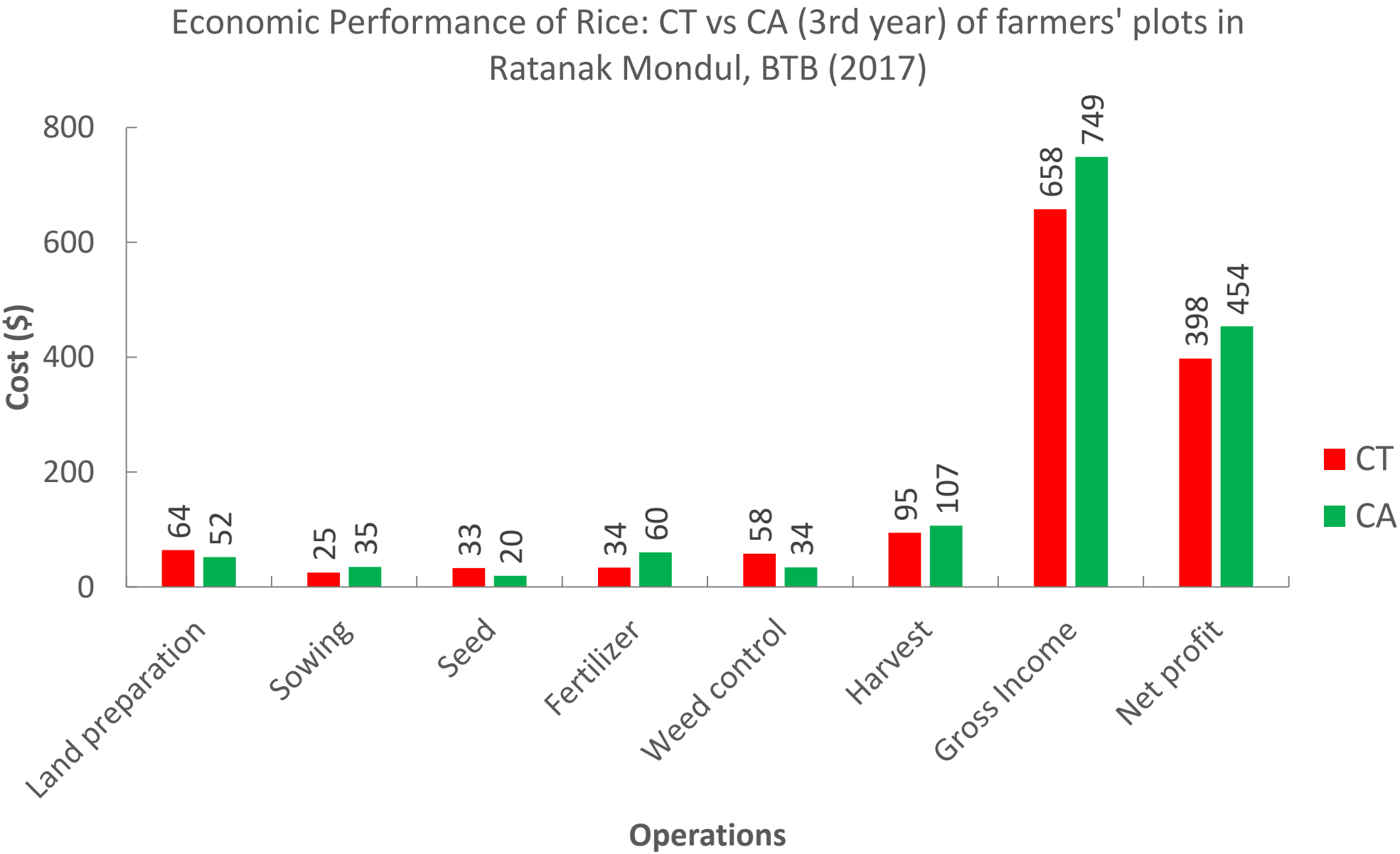


Floodplains and upper sandy terrace, Battambang

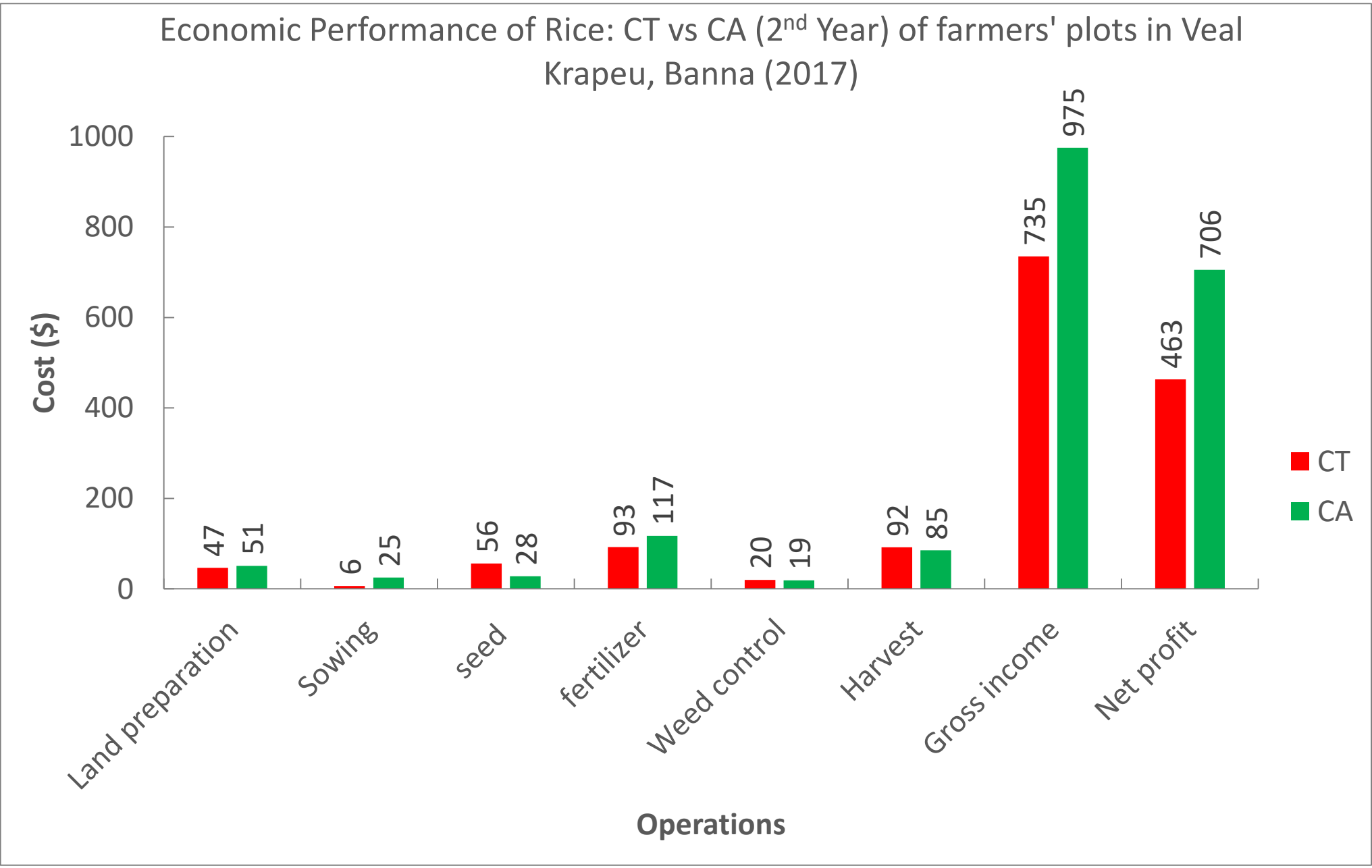
Shift from a R4D project to a service provider approach (2009-2018)



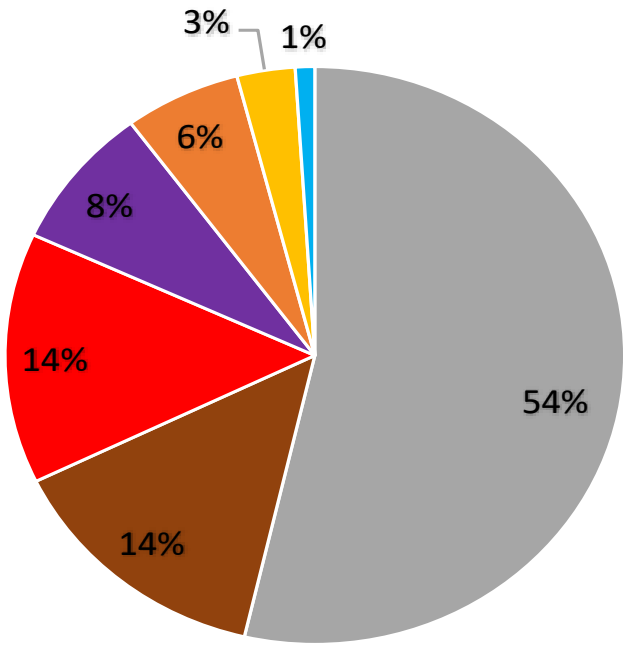
Economic Performance: maize on farmers' plots (CA vs CT)



Economic Performance: Floodplain of Banan, BTB (CT vs CA)



Farmers' feedback on CA adaptation (after subsidy)

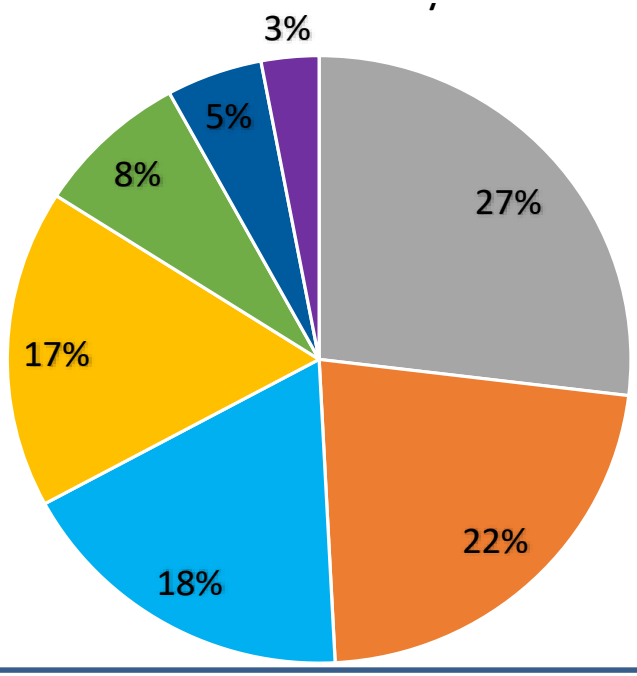


Reasons to drop-off:

- Lower yield
- Higher cost
- Shifting to cassava
- Weed issues
- Small land
- Others
- Technical complexity
- Shifting to orchard
- Planter accessibility issues

Main challenge

Limited access to appropriate machineries based on cropping systems



Reasons to continue:

- Better density
- Higher yield
- Saving seed
- Technical consultation
- Improving soil
- Saving labor
- Others

Advantages

Increase of agronomic, soil health, profits

Introducing simple element/tool in the landscape



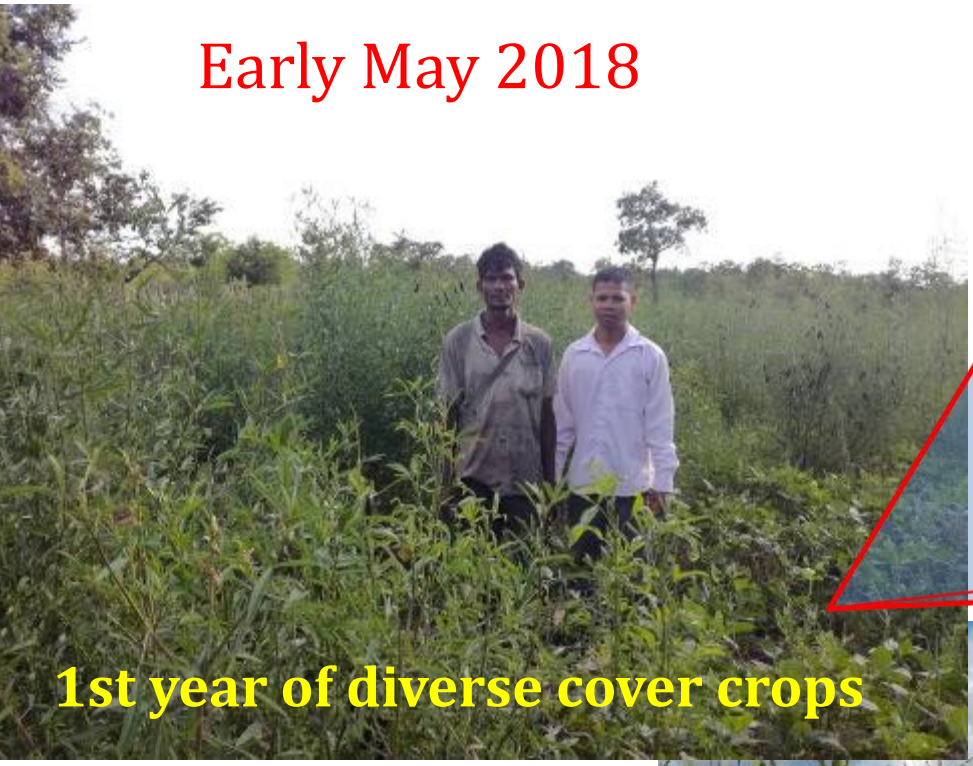


- **Sharing resource** within the community
- **Collective learning**, sharing knowledge and know-how
- **Empower smallholder farmers** to produce seed of under-utilized species and to share seeds within their communities
- Plan to establish community seed banks where germplasm is preserved, seeds produced and distributed + explore local markets

On-farm cover crops establishment

Organic rice inside wildlife sanctuary, Preah Vihear (Sandy upper-terrace)

Early May 2018



1st year of diverse cover crops

Golden ants search for food on CC

18th October 2018

Jasmine rice transplated on residues of CC incorporated into the soil as green manure

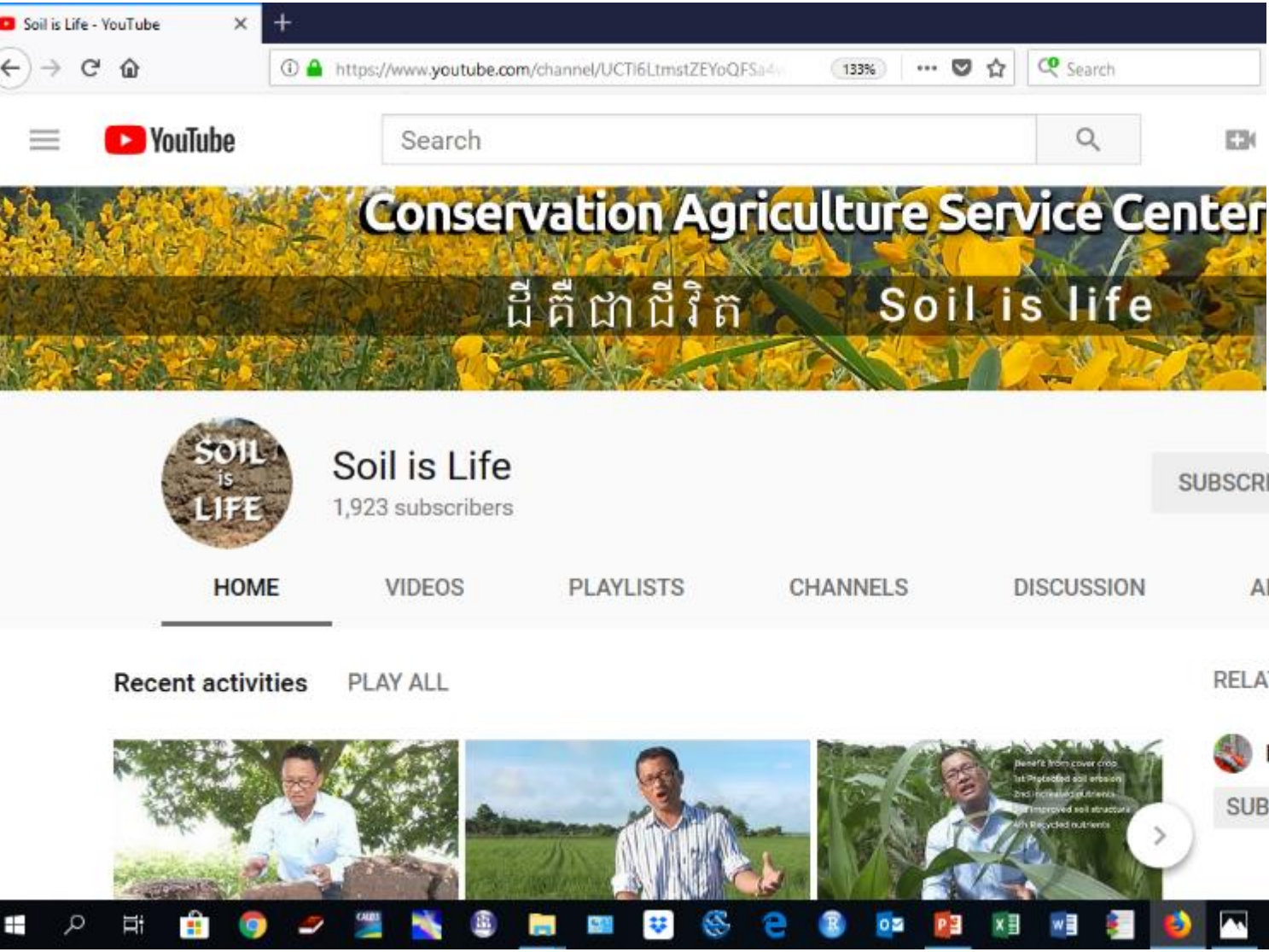
Engage with private sector, demand-creation process

- Need to enlarge the range of 'regular' partners. Partnership established with Swisscontact
- Assess economic models and explore how a new implement (NT planter) can fit with current strategy and economic model
- Building connections between smallholder farmers and service providers. Show to service providers the demand from farmers and market potential for no-till planters
- Organize demo pooling together retailers, service providers, farmers (private demonstration)

Experience sharing: use & benefits of NT planters

Local-made NT planter (DAEng)

Find us



SCAN ME

Thanks for attention!!