



Regional Forum Agroecology Futures
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Toward Annual Crop Production under Conservation Agriculture Innovative-based Systems

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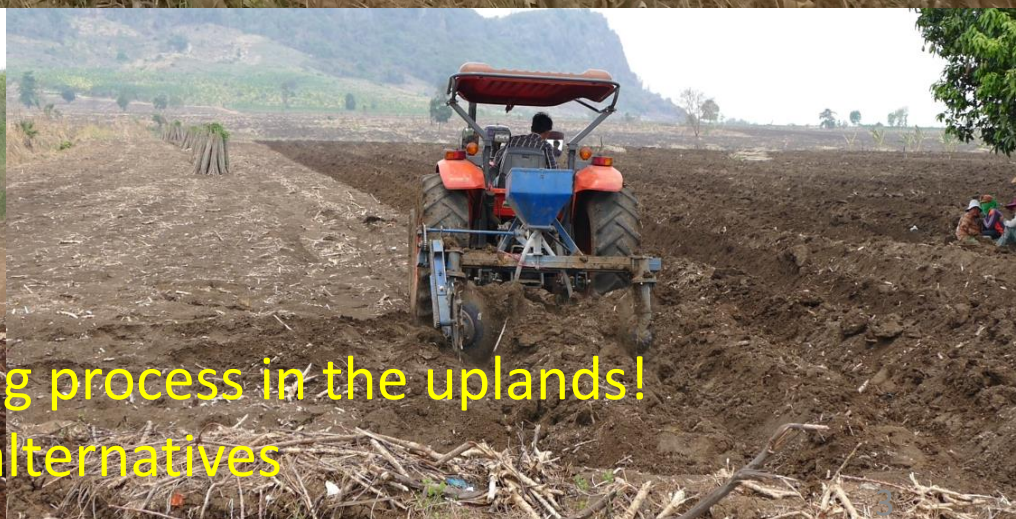
From cropping systems design to empower farmers and engagement with private sector

- 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

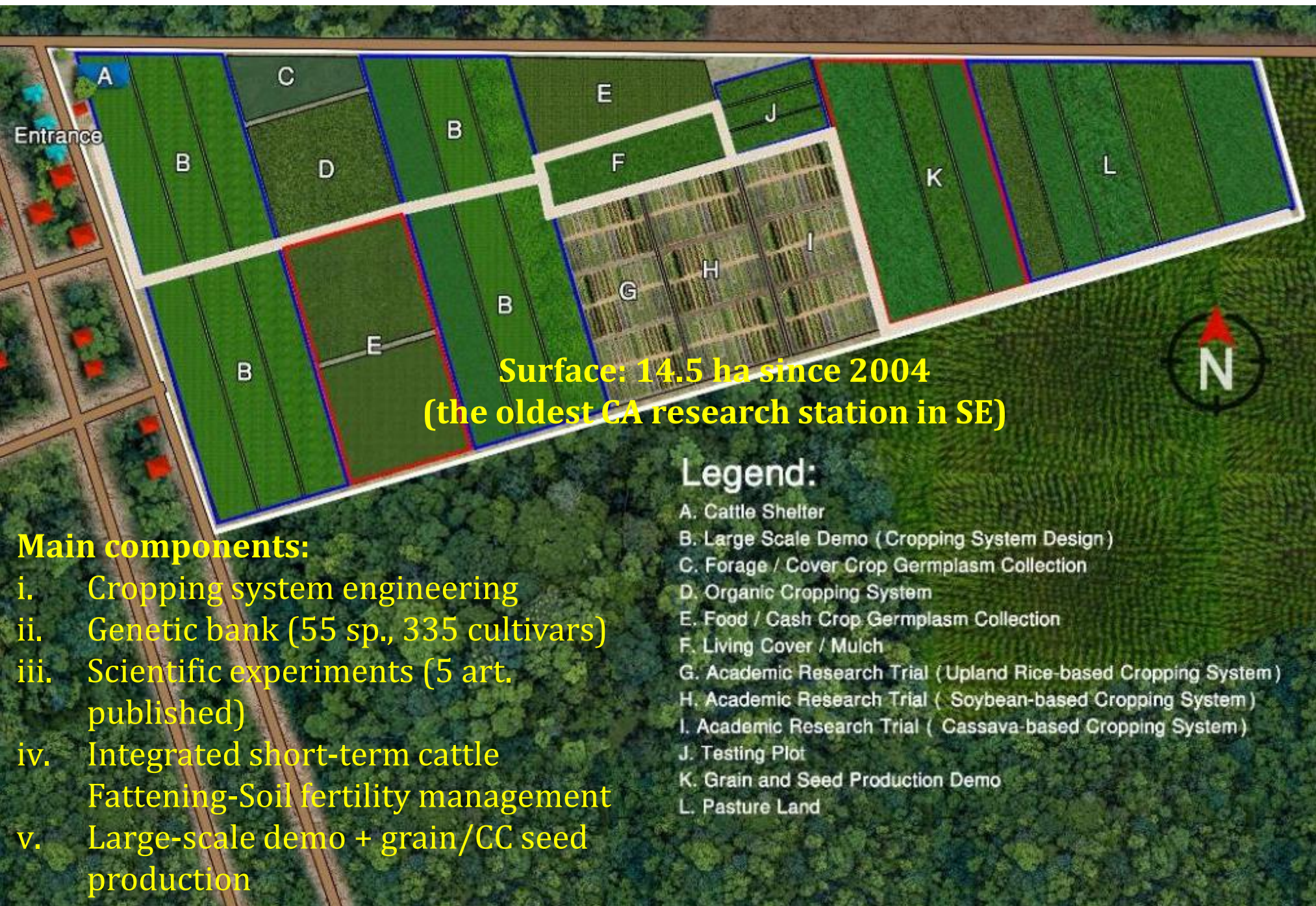
- Soil erosion
- Biodiversity degradation and huge removal amount of nutrients from soil
- Erratic rainfall
- Environmental pollution caused by excessive use of agro-chemicals

For animal feeds & bio-ethanol.....



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

Designing diversified NT cropping systems



Surface: 14.5 ha since 2004
(the oldest CA research station in SE)

Legend:

- A. Cattle Shelter
- B. Large Scale Demo (Cropping System Design)
- C. Forage / Cover Crop Germplasm Collection
- D. Organic Cropping System
- E. Food / Cash Crop Germplasm Collection
- F. Living Cover / Mulch
- G. Academic Research Trial (Upland Rice-based Cropping System)
- H. Academic Research Trial (Soybean-based Cropping System)
- I. Academic Research Trial (Cassava-based Cropping System)
- J. Testing Plot
- K. Grain and Seed Production Demo
- L. Pasture Land

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
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Maize sowing on previous crop residues without soil tillage

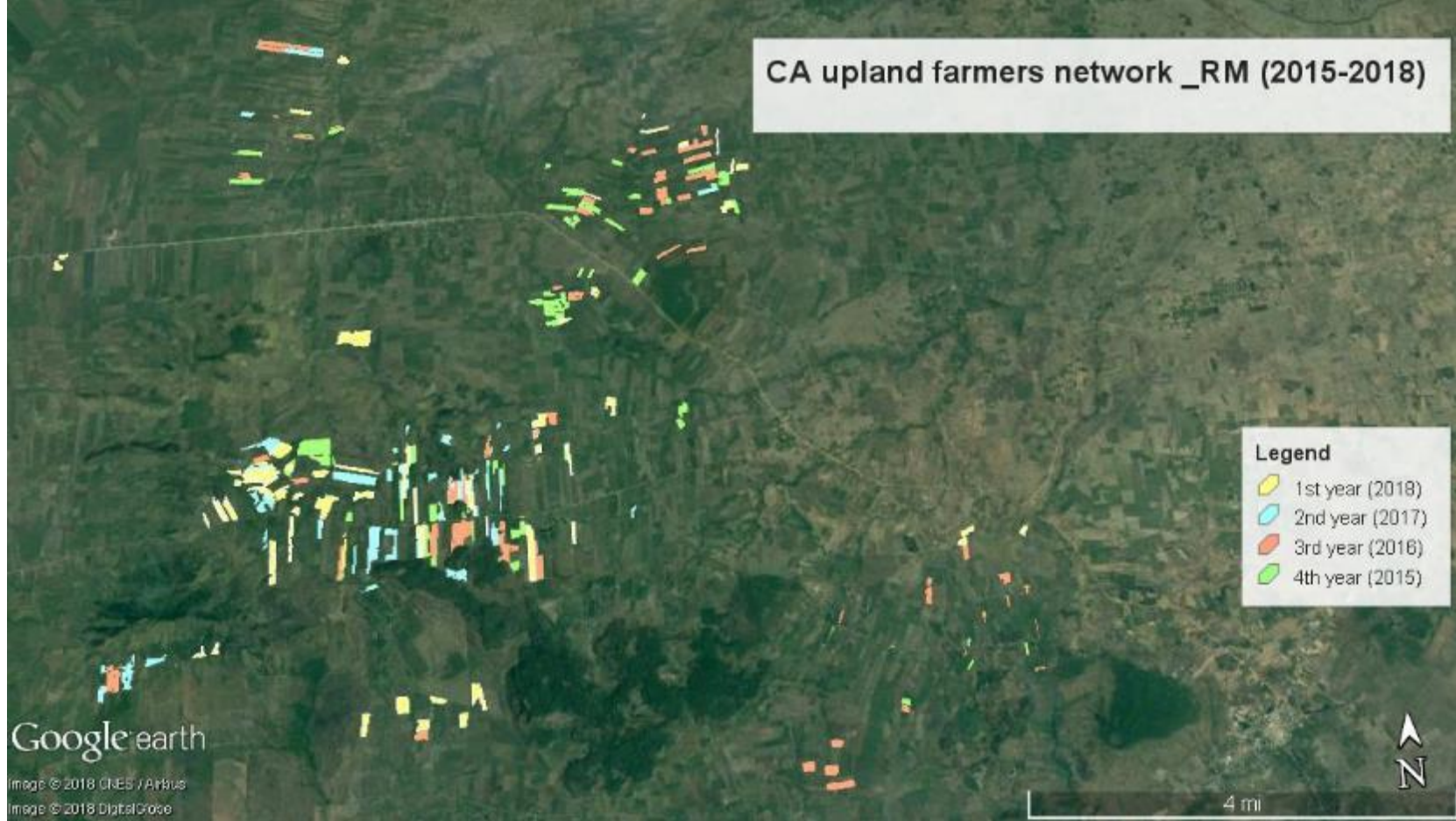


Sowing Sunnhemp for seed production on maize stalks, Sangha, Ratanak Mondul

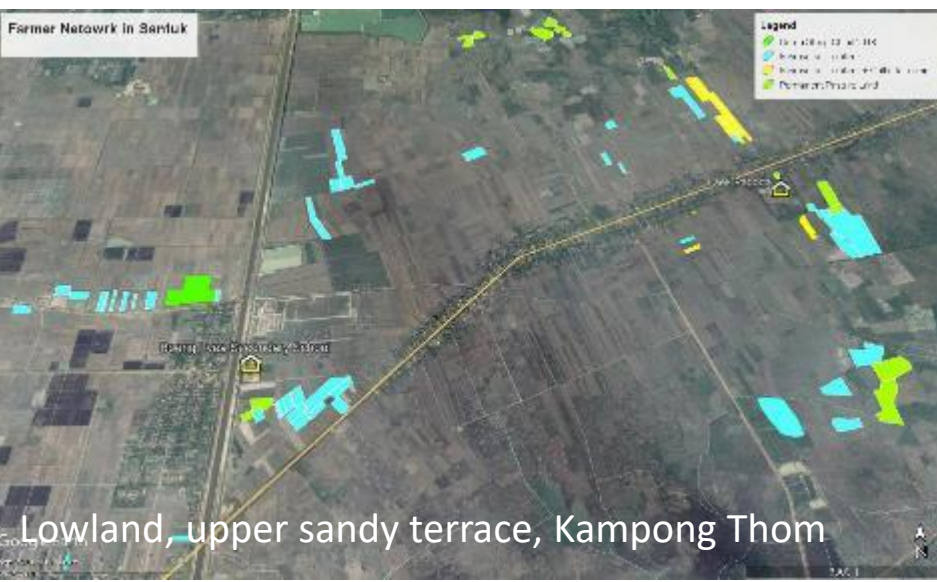


Maize direct seeded on former crop residues

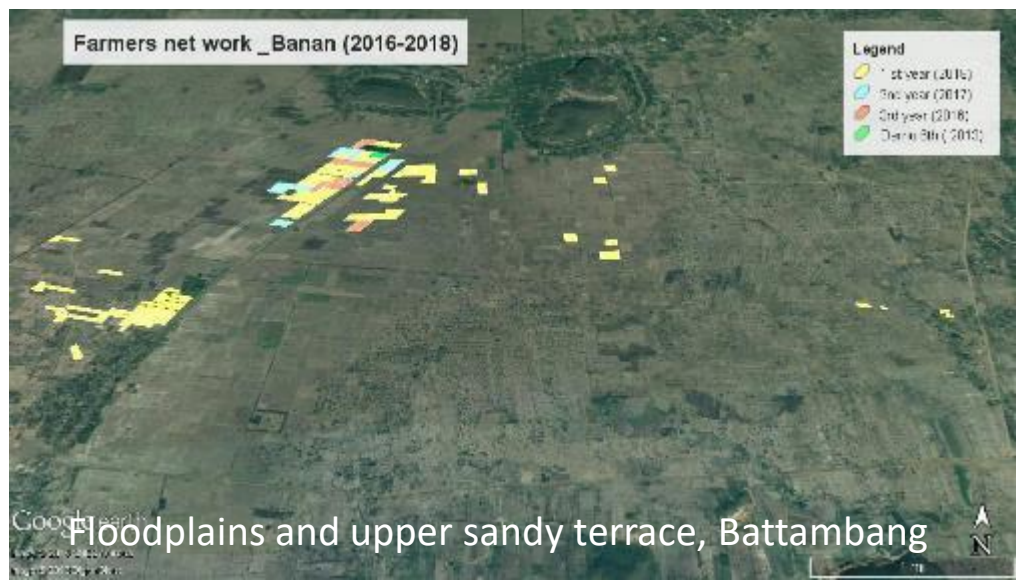
CA upland farmers network_RM (2015-2018)



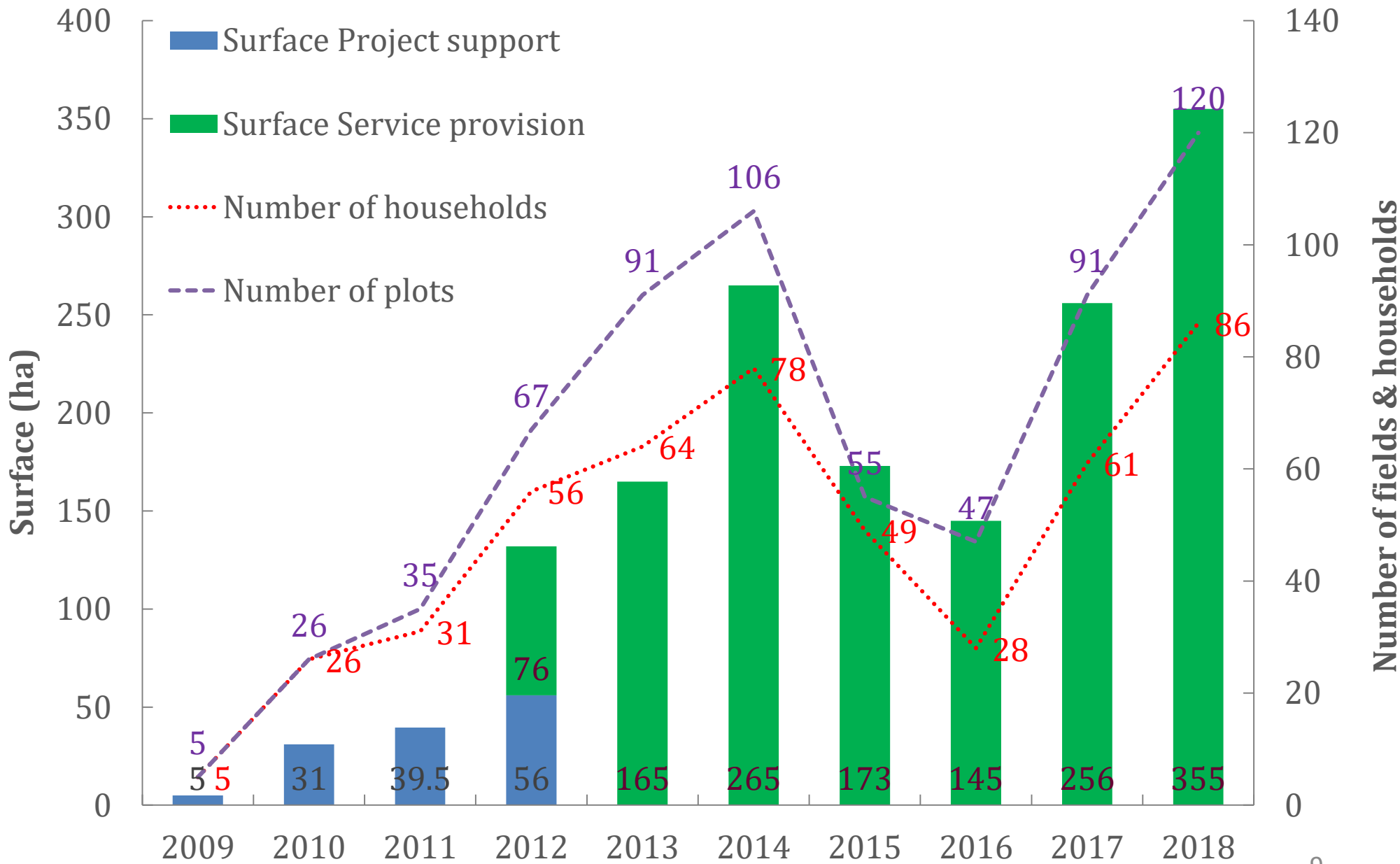
Farmer Network in Santuk



Farmers net work_Banan (2016-2018)

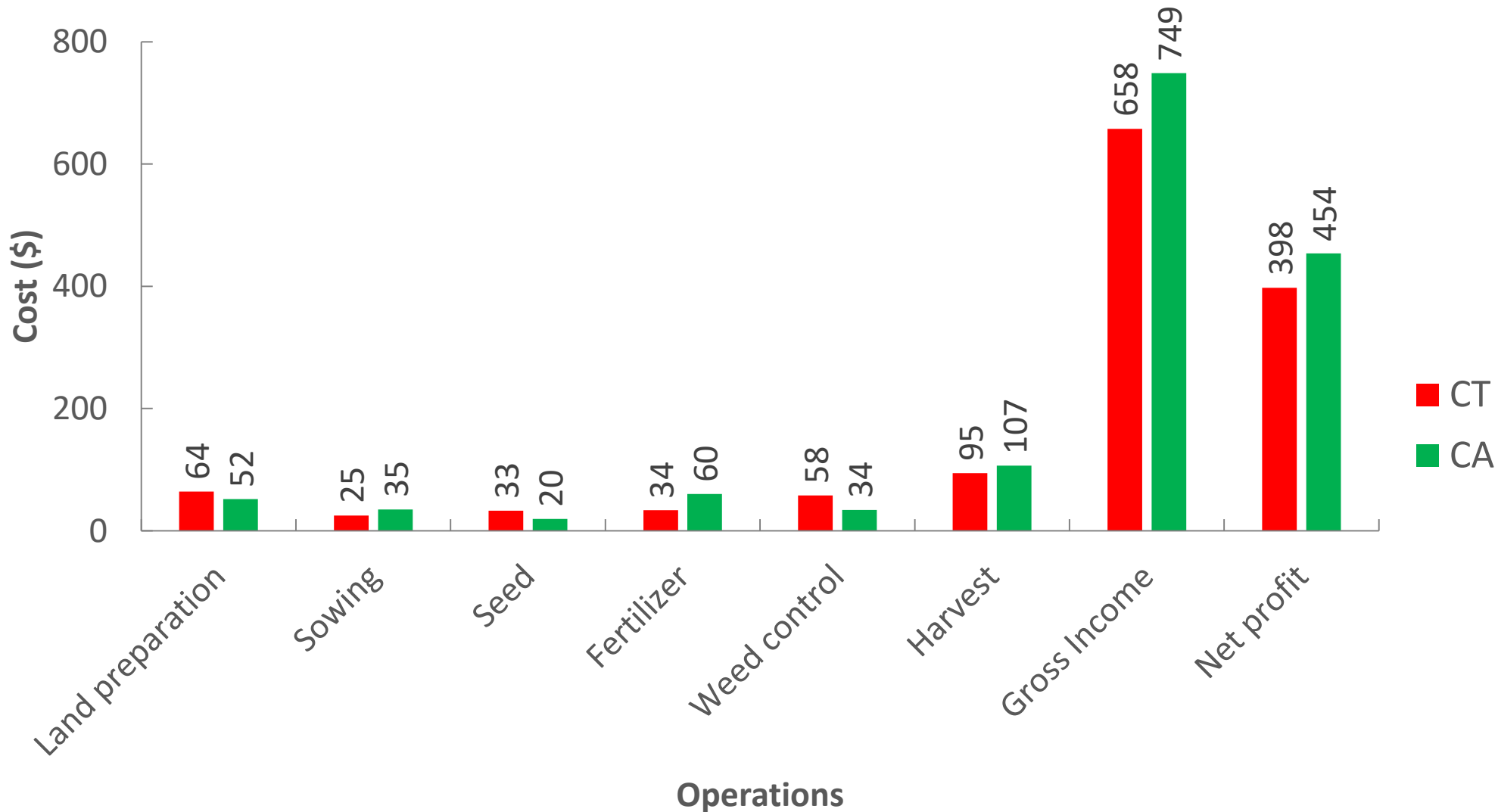


Shift from a R4D project to a service provider approach (2009-2018)



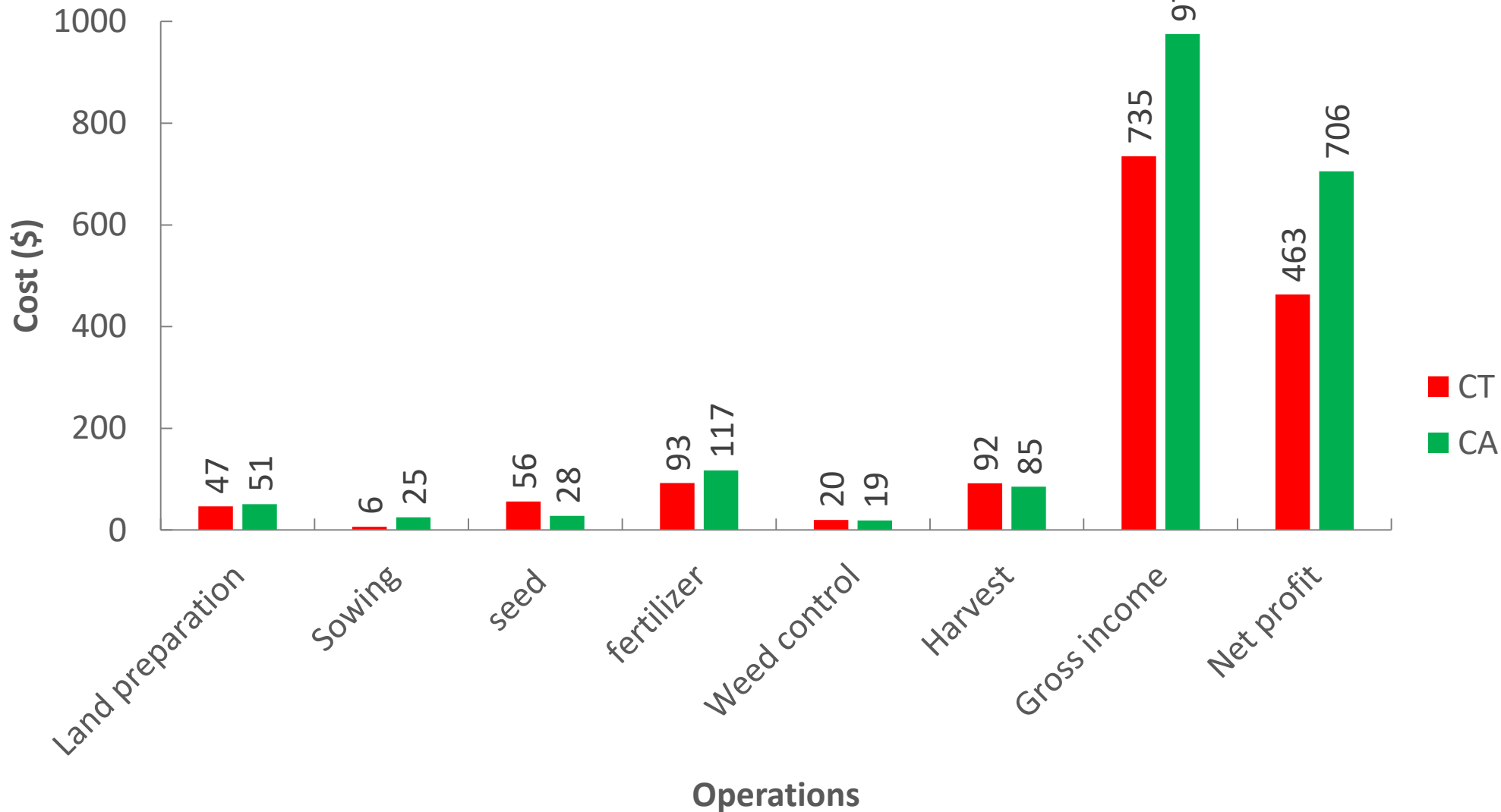
Economic Performance: maize on farmers' plots (CA vs CT)

Economic Performance of Rice: CT vs CA (3rd year) of farmers' plots in Ratanak Mondul, BTB (2017)

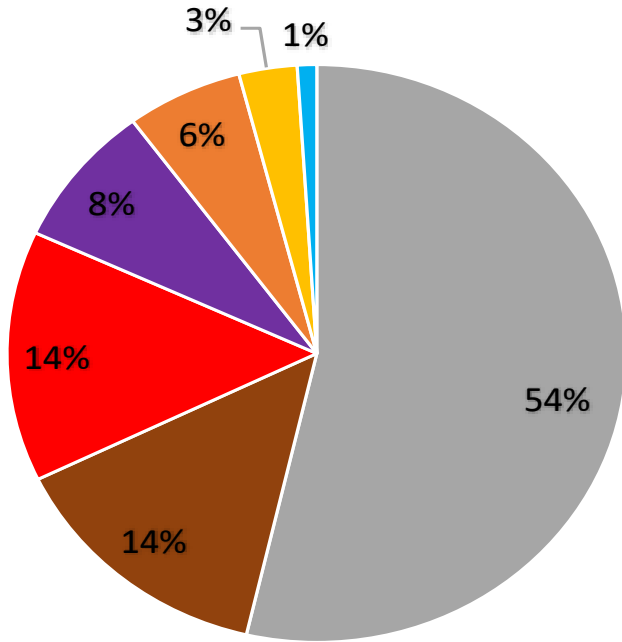


Economic Performance: Floodplain of Banan, BTB (CT vs CA)

Economic Performance of Rice: CT vs CA (2nd Year) of farmers' plots in Veal Krapeu, Banna (2017)

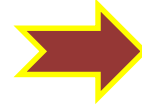


Farmers' feedback on CA adaptation (after subsidy)

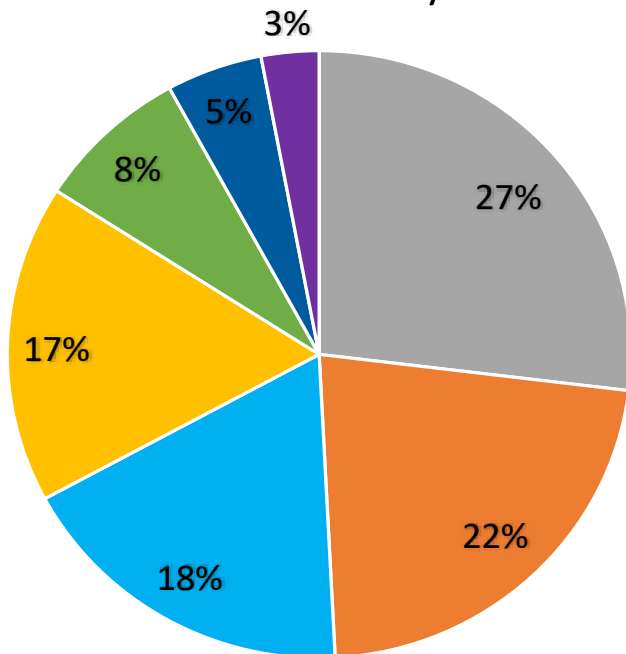


Reasons to drop-off:

- 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

Mix of Centro & rattle-pod in the floodplain (April 2018)



Cattle grazing on mix of cover crops, lowland



Mix of sunnhemp & millet on the inter-rows of mango (Ratanak Mondul, BTB)

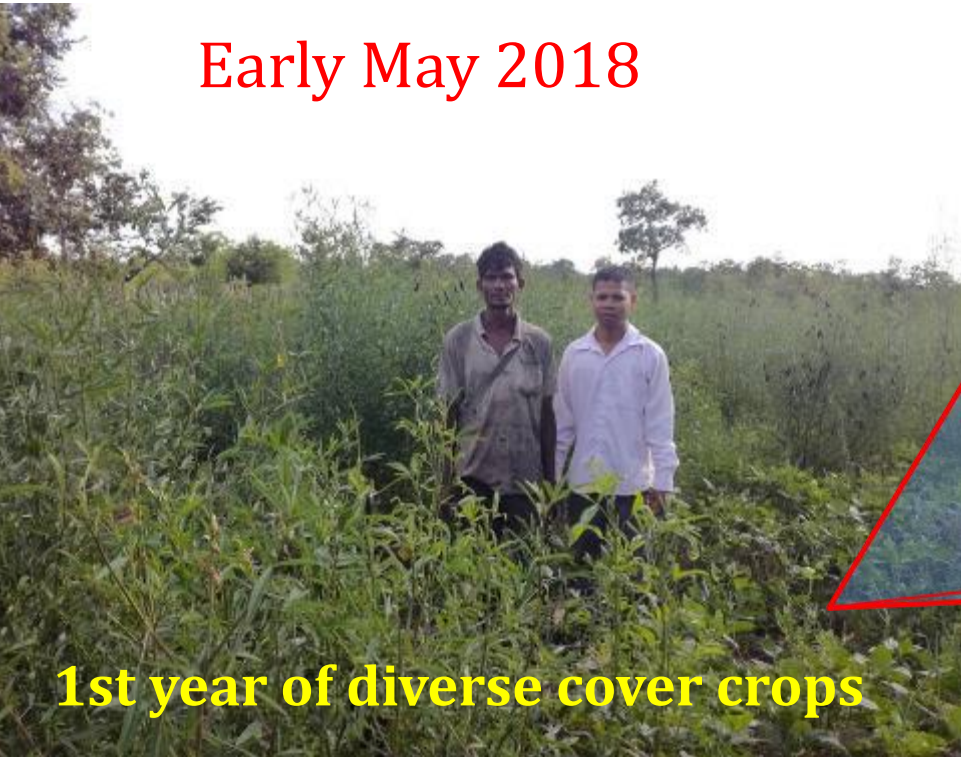


Diversification after organic rice, wildlife sanctuary, Preah Vihear



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 transplanted 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

The screenshot shows the YouTube channel page for 'Soil is Life'. The browser address bar displays the URL: <https://www.youtube.com/channel/UCTI6LtmstZEYoQFSa4v...>. The channel banner features a field of yellow flowers with the text 'Conservation Agriculture Service Center' and 'ដីគឺជាជីវិត Soil is life'. The channel profile picture is a circular logo with 'SOIL is LIFE' text. The channel name is 'Soil is Life' with 1,923 subscribers. The navigation menu includes HOME, VIDEOS, PLAYLISTS, CHANNELS, DISCUSSION, and ABOUT. Below the menu, there are video thumbnails under the heading 'Recent activities'. The Windows taskbar is visible at the bottom of the screenshot.



Thanks for attention!!