Participatory Action Research on Soil Fertility Management in Mountain of Thailand

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Highland Research and Development Institute (Public Organization)

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- HRDI was established in 2005 to support the Royal Project initiated by King Bhumibol Adulyadej in 1969
- The Royal Project aims at
  - stopping opium poppy
  - improving hill tribe people livelihood and rehabilitating watershed areas
- HRDI extends the Royal Project knowledge and model to other highland areas

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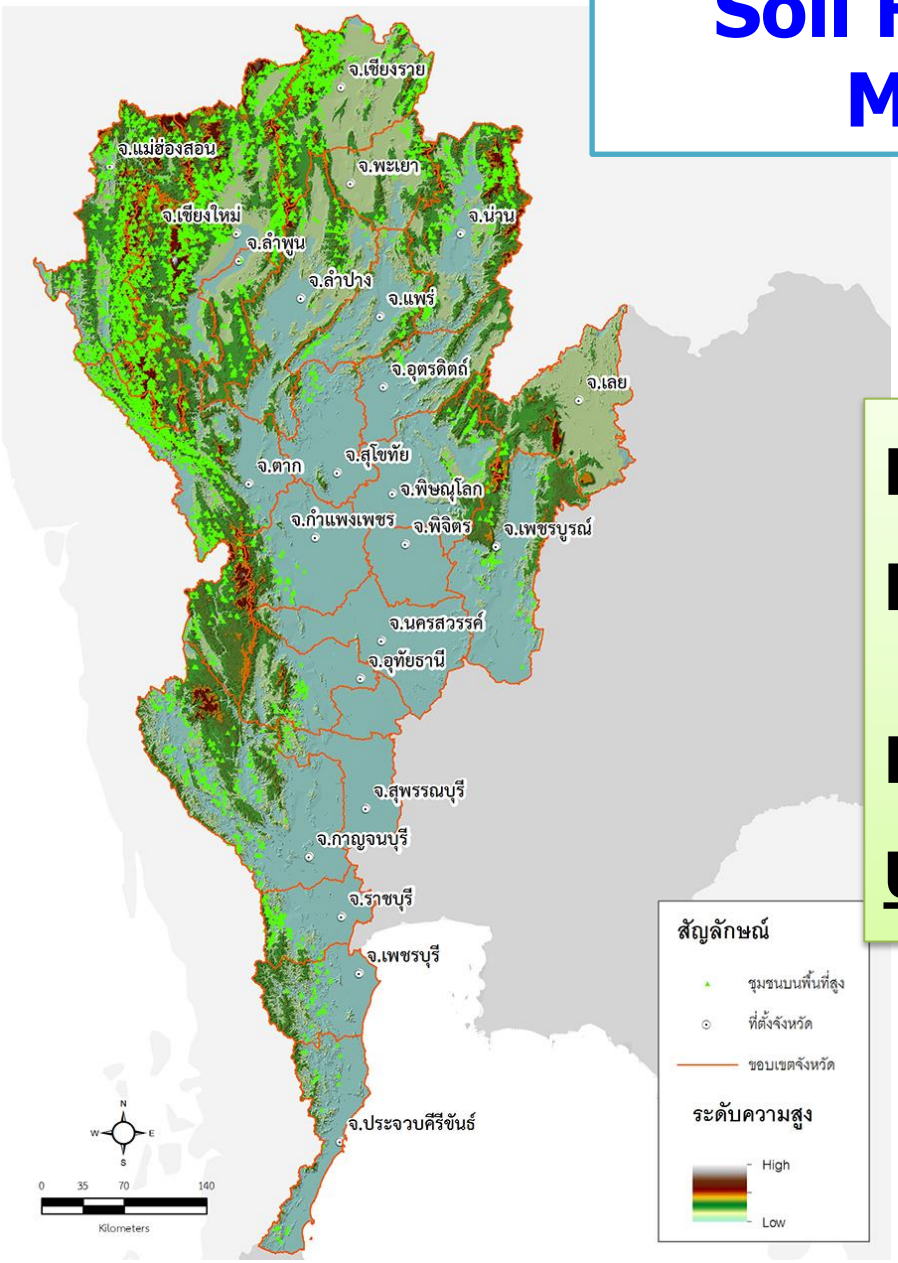


Thai Highlands

Highland agriculture

Elevation : 500 – 1,400 MSL.

Major agriculture crops :

<u>Upland rice, Maize</u> and Fruit tree

upland rice

- Food crop for Karen & Lua tribes and local Thai people
- shifting cultivation
- common practice : slash and burn

maize

- cash crop for hill tribes and local Thai people

- cultivation on the some area every year

- cultivation method
  - slash and burn before planting
  - intensive uses of herbicides and chemical fertilizers

Existing problems for Highland areas

Slash and burn → **environmental pollution**

Unproper Land use and not suitable soil management → **soil fertility declination**

HRDI soil fertility restoration research for upland rice

farmer field in Tak province

Land preparation without burning

cultivating upland rice in combination with soil and water conservation system

using the water harvesting ditches

growing vetiver grass and cowpea strips across the slope

growing rice bean – upland rice rotation

HRDI soil fertility restoration research for <u>maize</u>

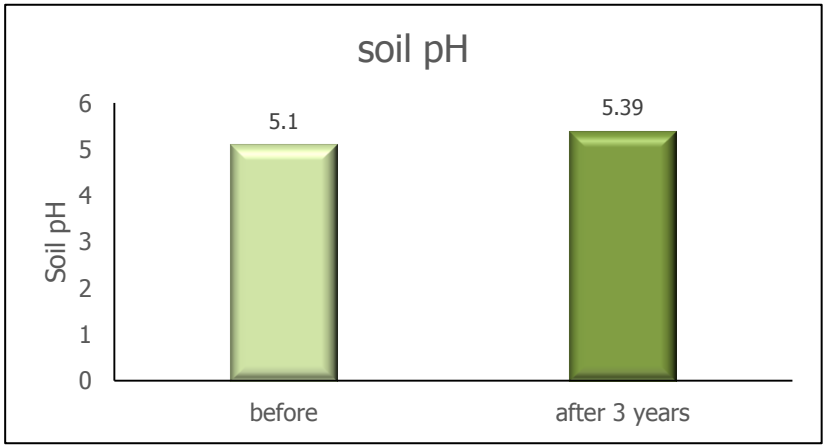
Land preparation without burning

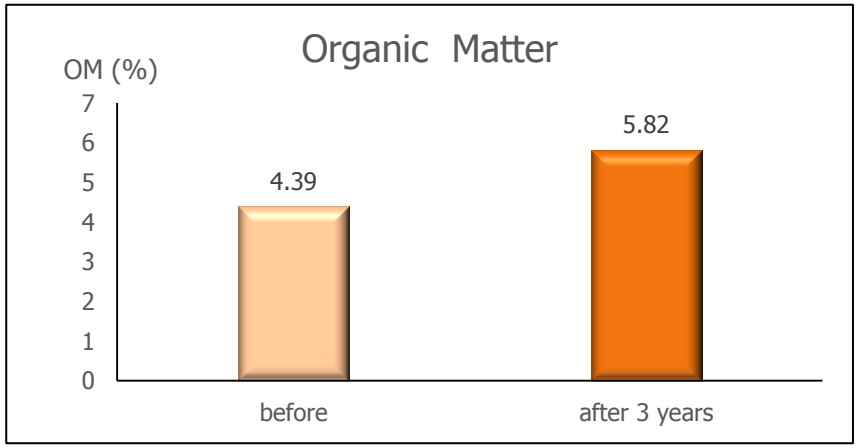
farmer field in Nan province

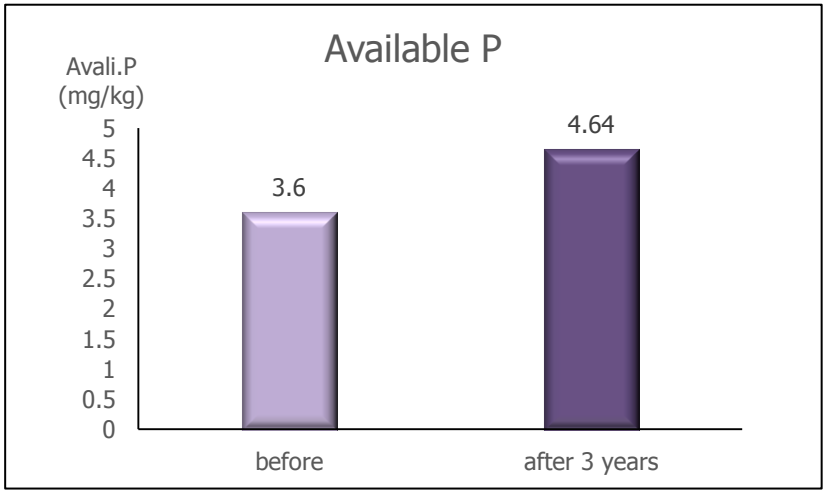
using water harvesting ditches in combination with vetiver grass strips across the slope

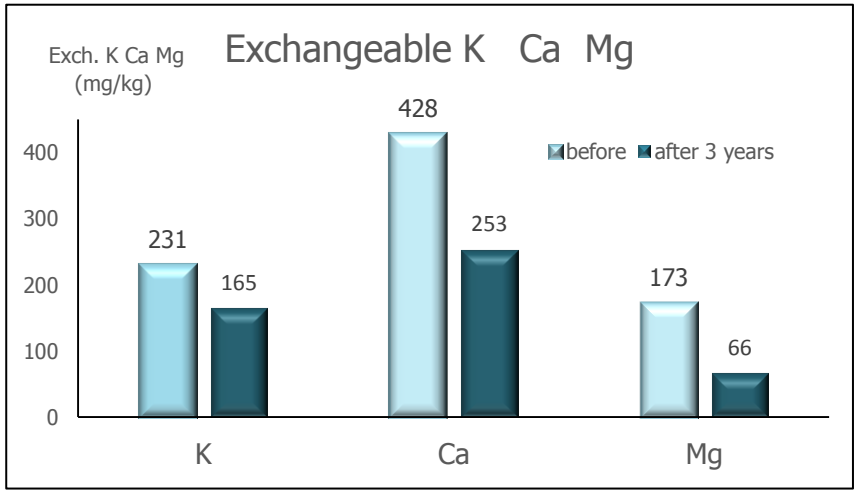
growing maize legume relay cropping

Effects of soil fertility management on soil chemical properties after 3 years in upland rice cultivated plot

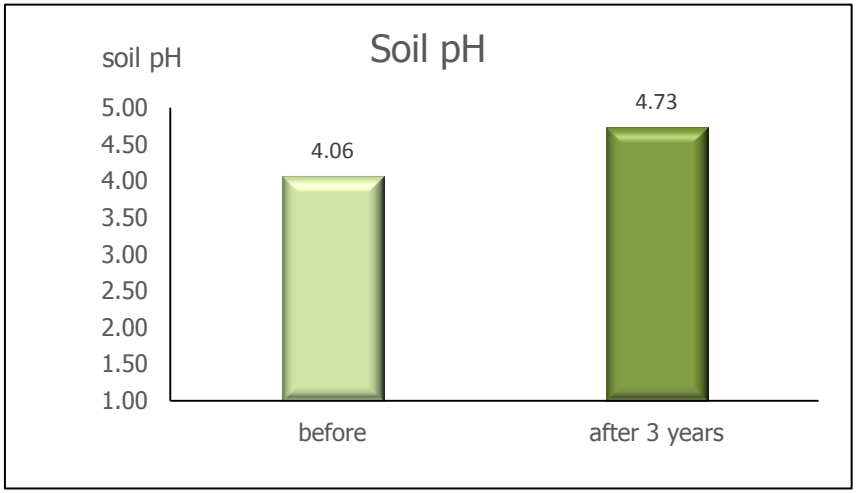


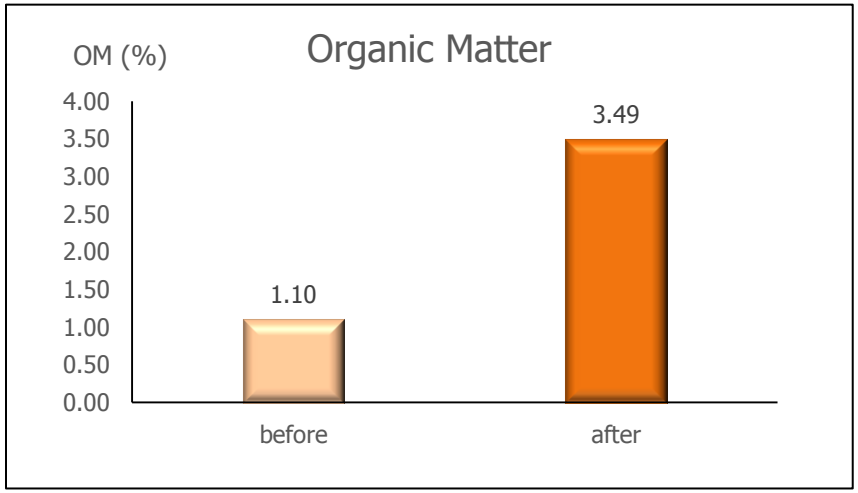


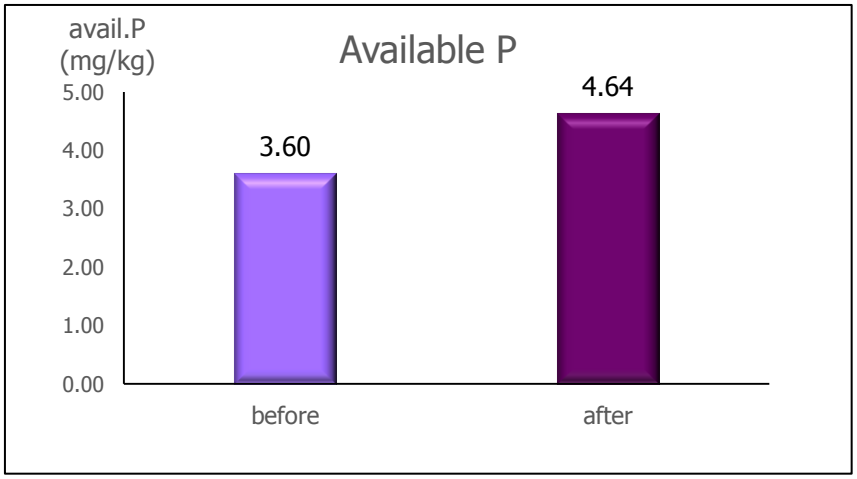


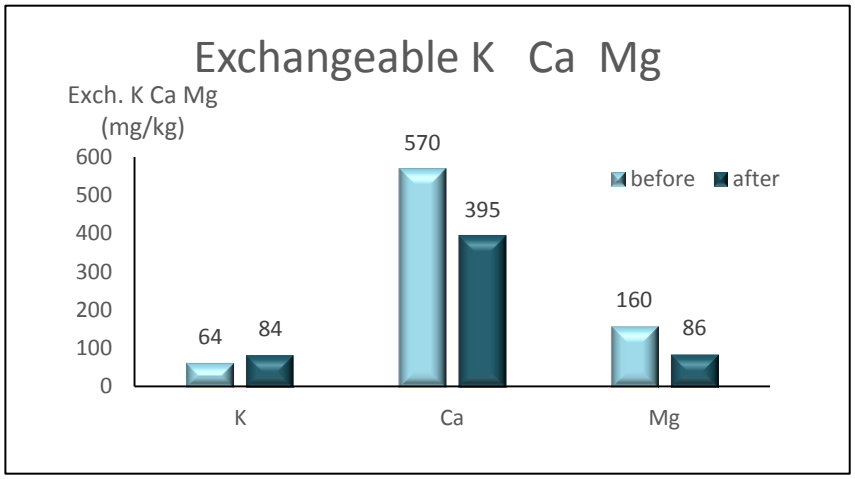


Effects of soil fertility management on soil chemical properties after 3 years in maize cultivated plot









Impacts on the participated farmers

- The farmers realized the benefit and usefulness of the crop residues
- The learned how to grow crop together with soil conservation
- They learned how to restore soil fertility by using integrated physical and biological methods which fit well with their traditional lifestyles

Thank you for kind attention