Drivers and impacts of swidden intensification in DRC

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Problem

- Swidden seen as obstacle to sustainable land use
- REDD+ policies aiming to intensify land use
- Drivers, impacts and feedbacks not well understood

Context

Study area

Objectives

Drivers of change

State and impact

Ecosystem functioning

Perceived impact

Management responses

Swidden intensification reduces biomass regrowth

Methods

Drivers of change

- 27 villages
- Socio-economic survey
- Land use change analysis

Ecosystem functioning

- Survey in 98 plots in 3 villages
- Management history
- Func. biod. and structure
- Biomass regrowth rate

Local cognitions

- Survey in 3 focus villages
- Household survey (n=82)
- Focus groups

Confirmatory path analysis

Population growth and development needs drive agricultural output demand

Swidden intensification reduces biomass regrowth

- Aboveground biomass in function of fallow age at measurement (n=98), per cycle
- Annual biomass increment decreases with repeated cropping cycles. Path diagram of best model based on fallows aged 5 to 10 years (n=58)

Perceived importance of problems affecting agricultural performance

Pests and weeds perceived as main problems

- Local perceptions of problems in agriculture differ from external perceptions
- Population growth and increasing marketing increase agricultural demands
- Increasing forest distance induces agricultural intensification
- Increasing cropping frequency most important intensification practice
- Repeated cropping leads to reduced fallow ecosystem functioning

Experience with intensification techniques

- Gradual decline in landscape carbon and biodiversity
- Target interventions in function of local pressure
- Include local demands in interventions
- Productive fallows and perennials can be a win-win in high-density villages

Conclusion & implications: opportunities for sustainable land use

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