Landscape Approaches to Agroecology

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What is agroecology?

- Ecologically intensive agriculture
- Doubly green revolution
- Integrated farming
- Climate smart agriculture
- Ecoagriculture
- Clean agriculture
- Agroecology
- Permaculture
- Sustainable intensification

How to avoid confusion?

- Agreement on objectives
- Agreement on principles
- Agreement on practices
What is agroecology?

A science
Ecology science applied to the study, design and management of sustainable agroecosystems

A movement
Support to smallholder farming as opposed to industrial agriculture

A set of practices
Practices mimicking natural processes and harnessing biological interactions in agroecosystems

Agroecology principles
(Altieri, 2012)

- Enhance the recycling of biomass with a view to optimizing organic matter decomposition and nutrient cycling over time,
- Minimize losses of energy, water, nutrients and genetic resources by enhancing conservation and regeneration of soil and water resources and biodiversity,
- Diversify species and genetic resources in the agroecosystems over time and space at the field and landscape level,
- Enhance beneficial biological interactions and synergies among the components of agro biodiversity, thereby promoting key ecological processes and services.
Which practices belong to agroecology?

- Agroforestry
- Conservation Agriculture
- Organic Agriculture
- System of Rice Intensification (SRI)
- Home garden / VAC
- Integrated Farming / IPM
- Permaculture
- System of Rice Intensification (SRI)
- Home garden

Agreement on practices  Common objectives  Common principles

How to make it work?

A landscape approach to agroecology

1. Water quality, siltation
2. Lowland Rice
3. Terraces Rice
4. Residential areas, Home Gardens
5. Upland crops, forest

Diversification of agricultural income
- Pest pressure, soil fertility, water and labor scarcity
- Weed control, soil fertility, erosion
- Alternatives to burning and/or tillage, pesticide use
- Stop deforestation
Some agro-ecological options according to LANDSCAPE UNITS

- Fish/duck-rice production systems
- Dry season production cycles
- IPM, compost, SRI

- Diversification
- IPM, compost

- Uncultivated buffer zone (5-10m)
- Protection of rivers banks (trees, bamboos, vetiver, grasses...)

River bank protection with Vetiver (e.g. WASWAC, Thailand)

River bank protection with trees (e.g. SOCO, France)

Some agro-ecological options according to LANDSCAPE UNITS

- Fish/duck-rice production systems
  Mainly promoted in Vietnam

Fish / duck/ rice production systems

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- IPM, compost

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- System of Rice Intensification (SRI):

  Principles:
  - Early transplanting,
  - Limited rice population density (to facilitate rice tillering),
  - Intermittent and temporary irrigation (regular water drainage).

  In Cambodia, Laos, Myanmar, and Vietnam SRI was initially promoted by NGOs in the early 2000s, then was incorporated by agricultural services in government extension strategies.

(GRET, feasibility study ACTAE, 2013)

Some agro-ecological options according to LANDSCAPE UNITS

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- Diversification
- IPM, compost
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- Integrated Pest Management (IPM):

  Principles:
  Pest management using agronomic techniques and biological / physical / chemical methods that take into account the health of people (i.e. farmers and consumers) and of the environment.

  FAO introduced IPM concepts through Farmer Field School (FFS) in Mekong countries (Thailand, Laos, Vietnam and Cambodia) – since early 1990s.

  Followed-up with the support of development projects and NGOs in the 2000s – successes in Laos, Vietnam, Cambodia.

(GRET, feasibility study ACTAE, 2013)
Settlement area - Gardens

Diversification of agricultural income

- Organic vegetable
- Crop post-processing (dryer, silo)
- Forage plots (cut and carry)
- Dry season fodder (silage, urea treatment...)
- Agricultural diversification (frogs, mushrooms, trees, honey...)

Some agro-ecological options according to LANDSCAPE UNITS

- Organic Agriculture (OA):
  Principles:
  - Principle of Health (e.g., avoid the use of fertilizers, pesticides, animal drugs and food additives)
  - Principle of Ecology (e.g.: production to be based on ecological processes, and recycling).
  - Principle of Fairness (e.g.: natural resources used should be managed in a way that is socially and ecologically just)
  - Principle of Care (e.g.: no MGO)

Main products: rice, vegetable, coffee, tea, and fruit trees

(GRET, feasibility study ACTAE, 2013)
Some agro-ecological options according to LANDSCAPE UNITS

Conservation Agriculture (CA):
Principles:
- Minimum soil disturbance (no-tillage),
- Permanent organic soil cover (crop residues and cover crops),
- Diversification of crop species grown in sequences and/or associations.
Promoted by CIRAD in Cambodia, Laos, Vietnam, etc.

Agroforestry
Principles:
Land-use systems where woody perennials (trees, shrubs, palms, bamboos, etc.) are deliberately used on the same land-management units as agricultural crops and/or animals, in some form of spatial arrangement or temporal sequence.

- Coffee + shading trees (CIRAD)
- Maize + trees (Honduras)
- Rubber + coconut (Indonesia, ICRAF)
Some agro-ecological options according to LANDSCAPE UNITS

- NTFPs resources management: bamboo shot, cardamom, rattan...
- Forest and NTFPs resource management
  - Forests protection and regeneration
  - Development and protection of NTFPs resources

Sustainable intensification of agriculture through agroecology

- Engaging the whole village community in landscape level management of agricultural innovations

Diagnosis  Visualization  Learning

- Improved negotiation
- Participatory landscape design
Sustainable intensification of agriculture through agroecology

- Engaging the whole village community in landscape level management of agricultural innovations
- Overcoming organizational constraints to the adoption of agroecological practices
  - Productivity gains from conservation agriculture reinvested in expansion of agricultural land (forest encroachment)
  - Roaming livestock damage cover crops during the dry season and prevent large adoption of agroecological practices
  - Mechanized tillage service and use of chemical herbicides constrain the development of alternative cropping systems

Sustainable intensification of agriculture through agroecology

- Engaging the whole village community in landscape level management of agricultural innovations
- Overcoming organizational constraints to the adoption of agroecological practices
- Scaling-up and dissemination of innovative practices through coordination mechanisms and partnerships with multiple stakeholder groups (e.g. development projects, NGOs, universities, research institutions)
Thank you for your attention!

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