# Trade-off and synergies of integrating intensive Livestock production with AGroecology in Mountainous regions



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# Mountain Regions of North West Vietnam with strong constraints

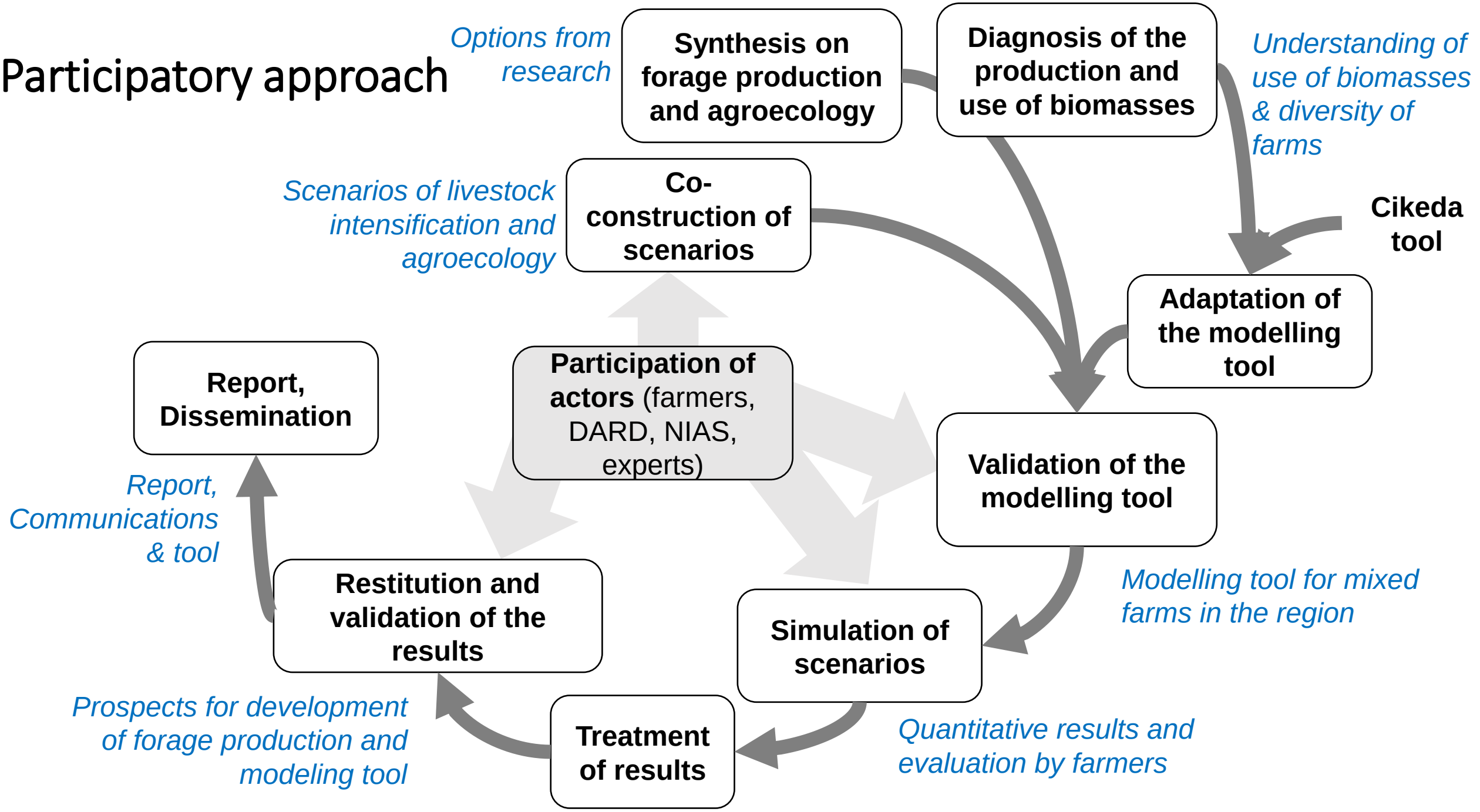
- High poverty of rural populations
- Predominant mixed family farming
- 1st buffalo production region, 2nd cattle production region
- High biophysical constraints

Source : wikipédia.fr, 2018

- Sloping soil erosion questions the sustainability of cropping systems
- Winter feed gap (cold & dry) is an obstacle to livestock development
- Eco-intensification of production systems and agroecology
- Strong competition for the management of biomass between the feeding of extensive livestock farming and soil cover

➢What synergies in the management of biomass between intensification of livestock and agroecological practices?

# Participatory approach



# 4 scenarios co constructed with the actors

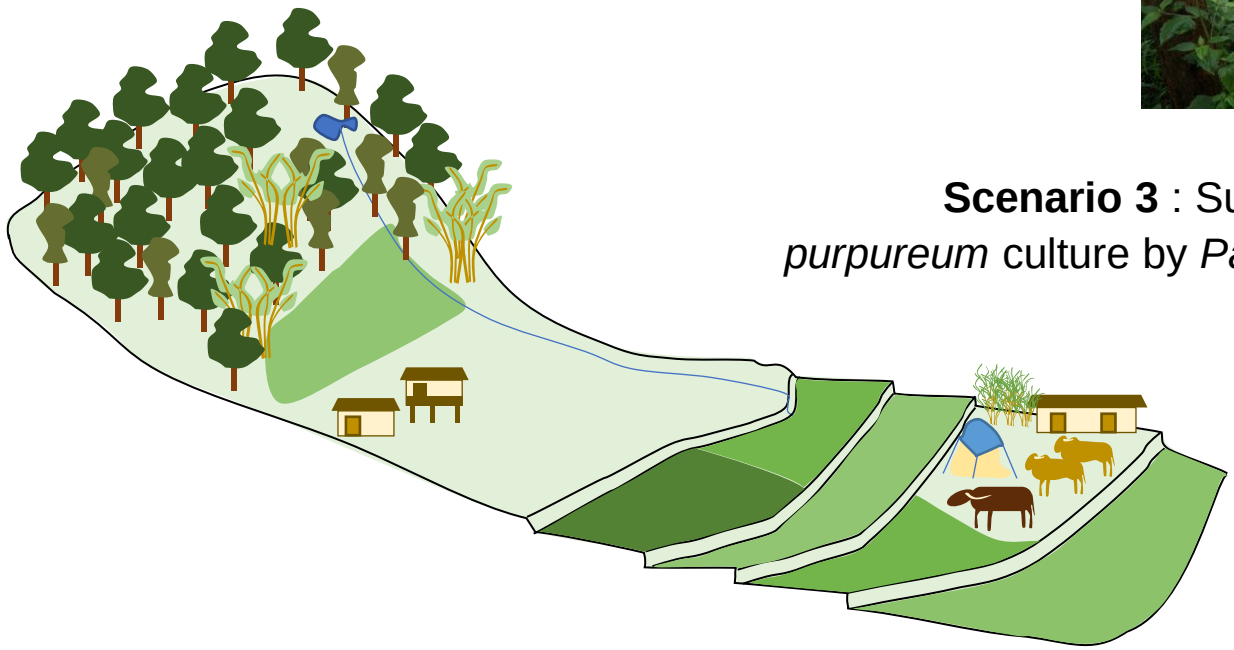
*Type A : Intensive farm*
*Type B1 : Farm & a strong crop-livestock integration*
*Type B2 : Farm & a poor crop-livestock integration*
*Type C : Extensive farm*

Source : Van Moere, 2018

**Scenario 1:** Establishment of a forage crop of *Pennisetum purpureum, Types B2 et C*

**Scenario 2**: Intensification of the forage crop of *Pennisetum purpureum, Types A et B1*

Source : Van Moere, 2018



**Scenario 3** : Substitution of *Pennisetum purpureum* culture by *Panicum maximum Types A, B1, B2 et C*

Source : Tropseeds.com, 2018

**Scenario 4:** Establishment of an intermediate culture of *Stylosanthes guianensis* after the 2nd cycle of rice (cover cropping of rice)
*Types A, B1, B2 et C*

# The modeling tool for mixed farms *Tìm ra mô hình*

Simple tool under excel

- Indicators and graphs of interest and understandable
  - Agricultural and livestock productions
  - Maintenance of fertility
  - Gross margin of marketed products
  - Monthly coverage of herd needs (& availability)

***Farm module***

Limited input data

***Crops module***

***Livestock module***

***Feeding module***

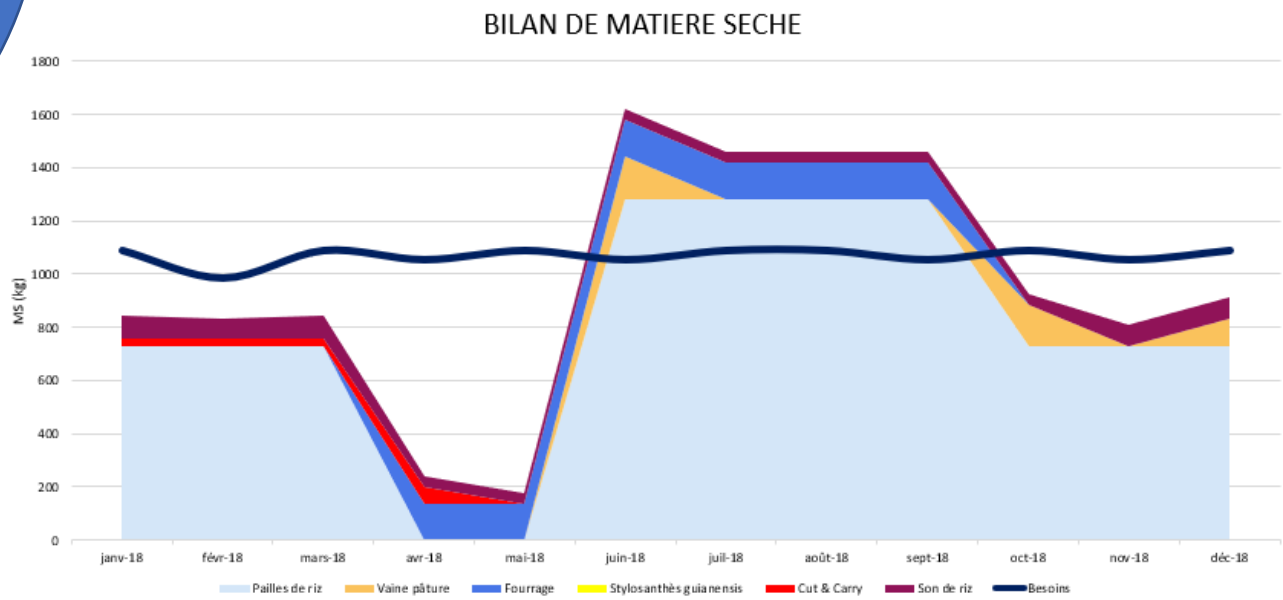
***Fertilisation module***

***Organic matter module***

***Economic module***

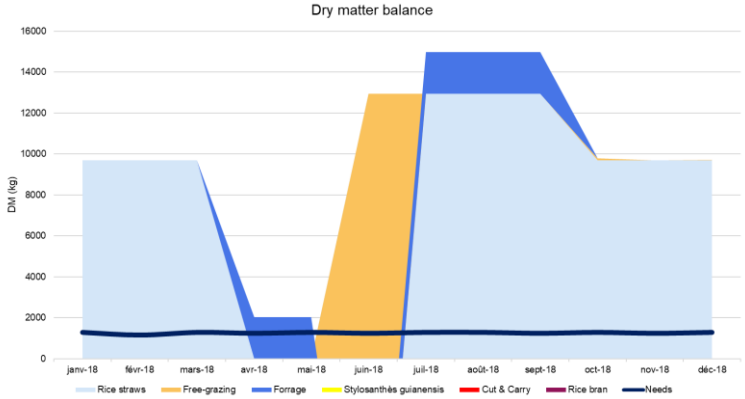
***Balance sheet***

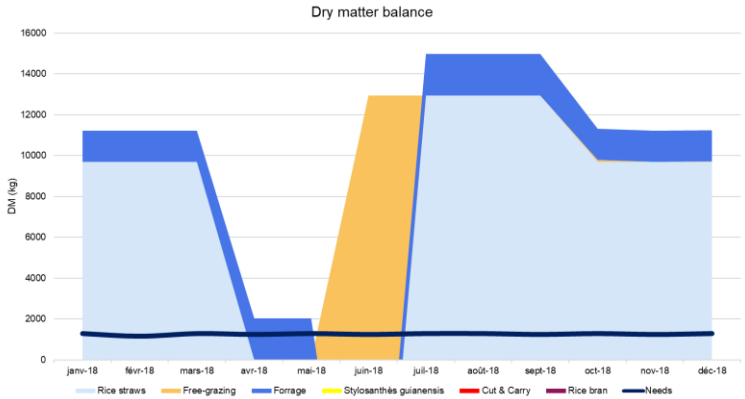
***Graphics***



# Modelling scenarios with farmers

- Modelling of the current situation & 2 scenarios
  - Discussions of indicators of interest to farmers
  - Evaluation of the compatibility of the workload
  - Evaluation of the technical, material and economic feasibility according to farmer




►Highlight prospects, some recommendations and identify some limiting factors for adopting practices

# Results of the participatory approach

- Farmers classify the scenarios according to their level of risk-taking criteria
  - prior knowledge, known practices in the area,
  - accessibility to management
- The scenario 4 seems unthinkable for the farmers
  - “*we do not change practices on irrigated rice cultivation easily* “
- Improvement of forage production via *Pennisetum purpureum* is the most popular among farmers (known, in the process of spreading)
- The *Panicum maximum can better cover the winter deficit but little known*

# Perspectives

- Broaden the range of possible options (beyond farmers' options, restricted)
- Co-design of crop-livestock systems adapted : Experimentation with & by farmers
- Access to seeds or cuttings and training program
- Show evidences of the success of new options at field to farmers (forage trials)
- Program of accompaniment of the farmers for an intensification of crop-livestock integration

# Thank you for your attention
# Xin cảm ơn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