



# Innovations in forage production and conservation for enhanced Beef Cattle Fattening in Vietnam

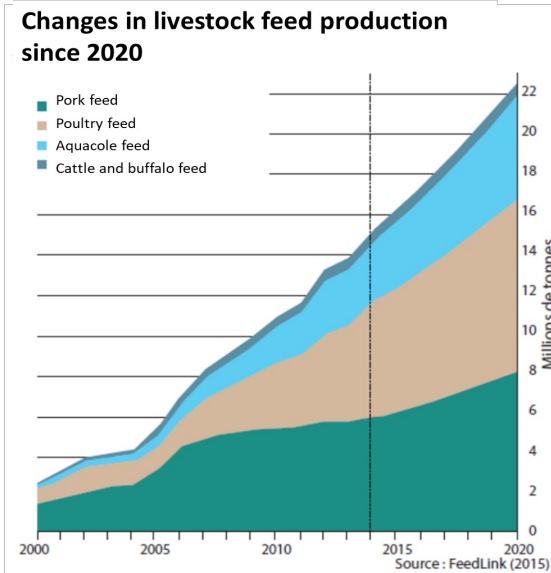
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Profitable forage and fattening systems Session, in Australia-Vietnam Beef Cattle Symposium  
*“Reimagining innovation and development of the Vietnam-Australian beef cattle sectors :  
Strengthening technical collaboration, trade, and investment”*, 13-15 Nov, Hanoi (Vietnam)

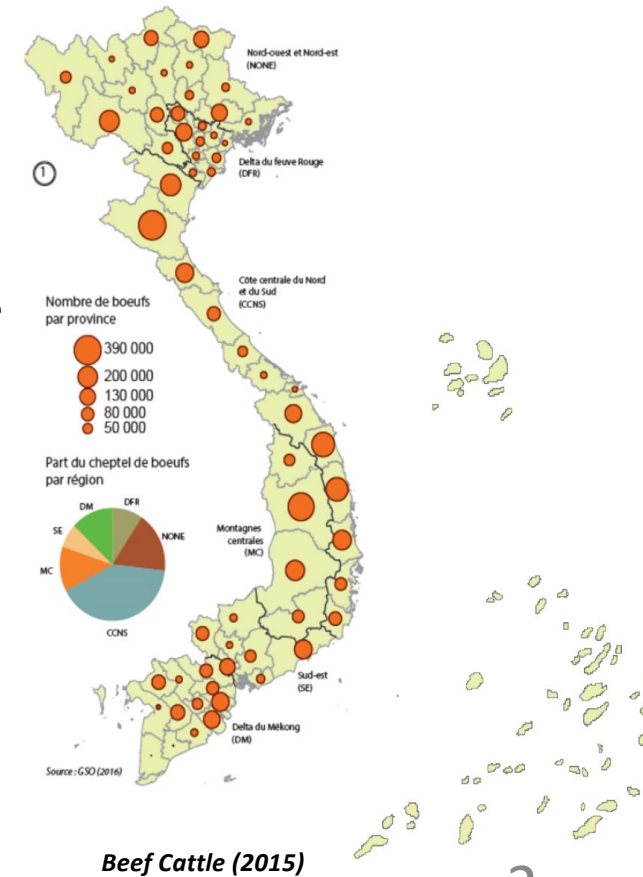
# Beef cattle part of farming systems in Vietnam

- Beef cattle (and buffalo) in the Northern Mountains and the Northern and Southern Central Coast (beef, social value)
- Beef cattle predominantly raised by smallholders



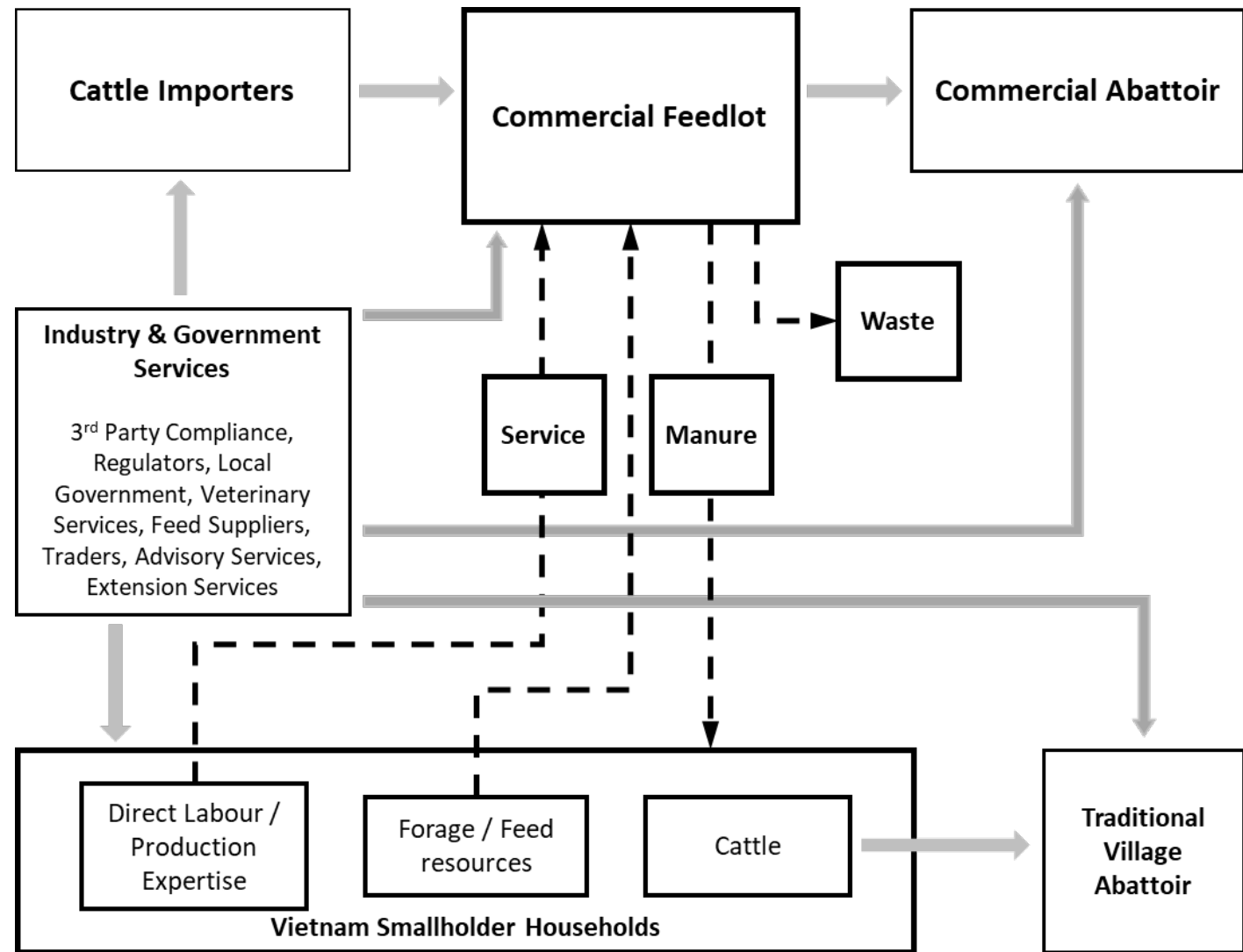
- High proportion of cross bred beef cattle with AI (but less in remote)
- Commercial farms involved in live cattle importation with slaughter-ready cattle: an opportunity for farmers in nearby areas to supply feed

Cesaro et al., 2019



## Challenges for commercial supply chain stakeholders in Vietnam:

- High imported cattle and feed costs
- Seasonal roughage shortage



Commercial beef supply chain integrating smallholder households (ACIAR AGB/ 2020/189)

# Forage development & roughage availability

## Northern Mountain

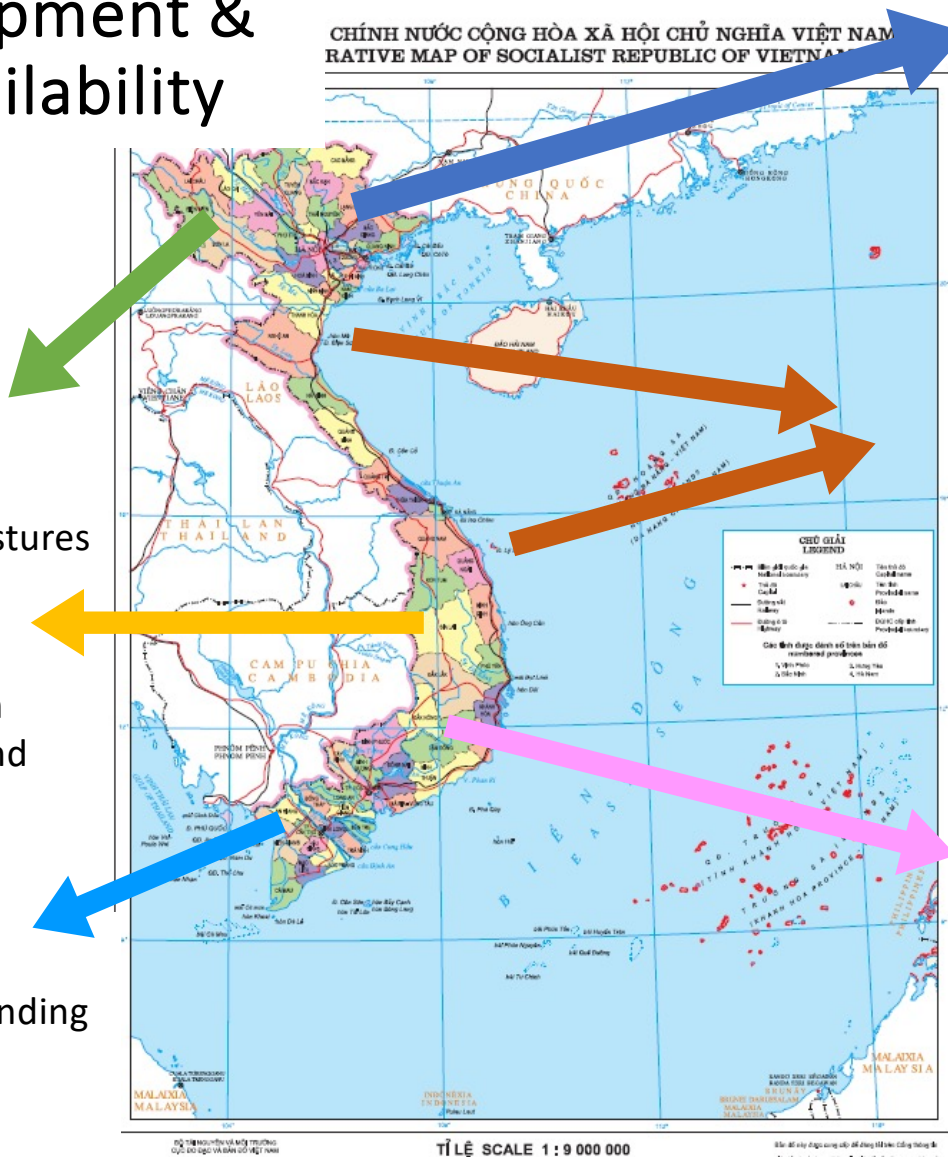
- Modest forage extension
- Land still available for pastures

## Central Highlands

- Modest forage extension
- Vary crop-by products and forest land

## Mekong River Delta

- Small forage areas, depending on specific provinces
- Crop residues



## Red River Delta

- Inefficient rice paddies area used for growing of forages
- High yield and quality forage
- Rice straw, crop residues

## Northern & Southern Central Coastal

- Inefficient rice paddies area used for growing of forages
- High yield and quality forage
- Vary crop-by products

## Southeast

- Small forage areas
- Crop residues

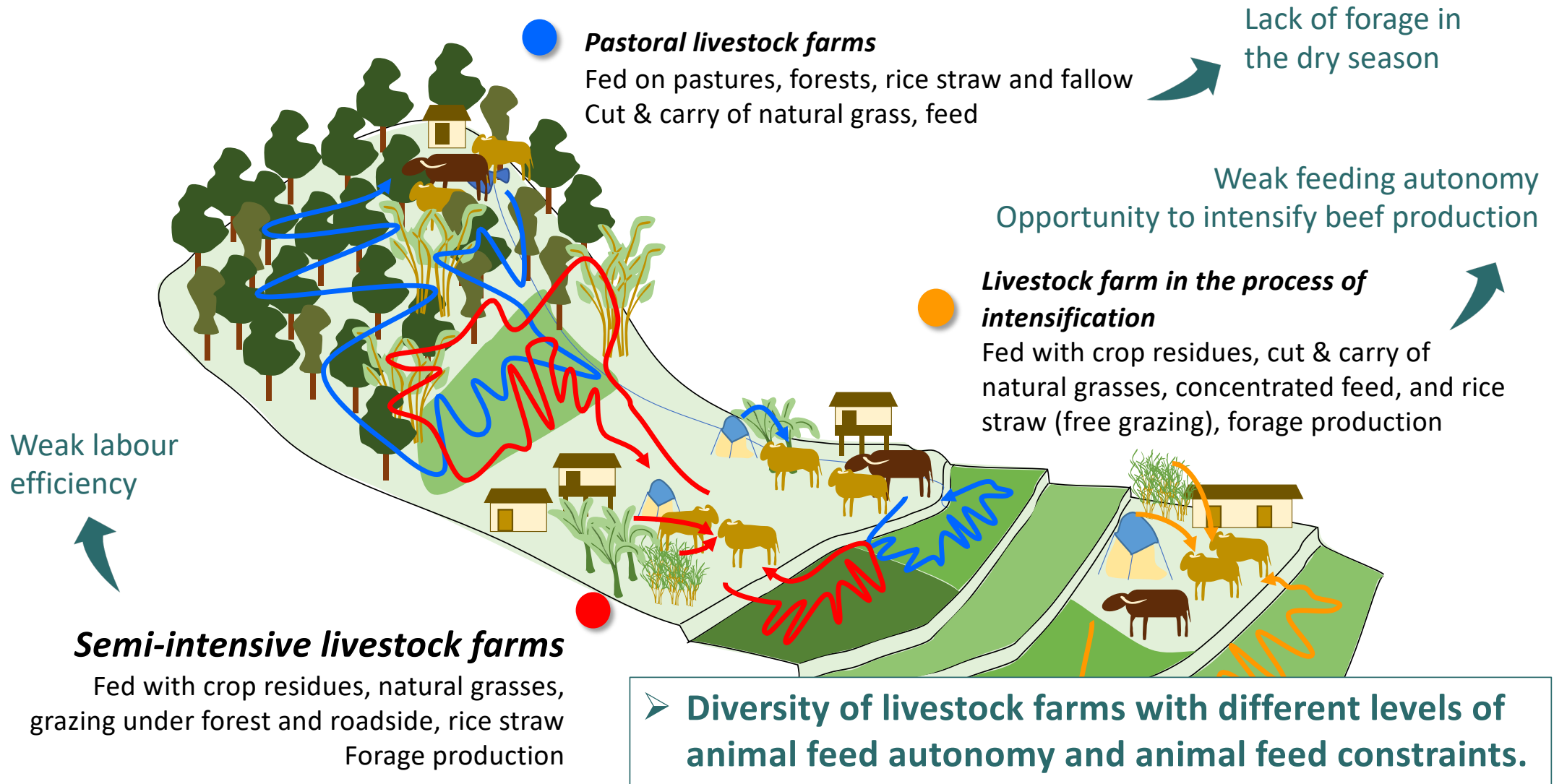


# Diversity of farms & livestock systems

- Specialized livestock farm with ruminant livestock system *versus* mixed farm with ruminant & monogastric systems
- Meeting varied production goals: sustaining or expanding herds, capitalization, self-sufficiency, and fattening
- Diversity of feeding needs: quantity and quality
- Adapting to seasonal needs: supporting animal nutrition during challenging seasons *versus* optimizing fattening for Têt
- Diversity of available and accessible forage resources
- Different access to land resources (surface, location)



# Diversity of livestock systems in North West Vietnam



# Seasonality of forage and feed resources



## Seasonal forage production

- Grasses and Pulses
- Influenced by factors such as fertilization, irrigation, and harvesting
- Varies based on the production system: perennial crop, annual crop, intercrop crops, integration with trees, etc.



## Seasonal availability of crop residues and by-products

- Includes rice straw, rice bran, husks, maize straw, cassava leaves
- Considerations for transportation and storage capacity on farm
- Focus on maintaining and enhancing quality



# Innovation and adoption of forage production



- Diversity of forage species and varieties available and suitable for livestock farms and agroecological zones
- Low diversity of forage species, varieties used by farmers, project and programs
  - Napier, Pennisetum hybrids (King grass, VA06), forage maize, forage oats
  - Recently Brachiaria hybrid (Mulato II), Panicum maximum (Simuang, Mombasa)
- Mainly grasses/canes, hardy, perennial, high-yielding
- Production of pulse is very marginal
- Forage tree legumes underuse
- Seasonal : low production in the dry season
- Moderate quality of grass forage
- Shortage of arable land for forage production.
  - Land close to farms is limited in size, remote land available is difficult to access, on slopes, and not protected



# Innovation and adoption of forage production



- Towards a greater diversity of forage produced on livestock farms with introduction of legumes into the animal diets
- Removing the seasonal constraint on forage production through forage processing and conservation techniques
  - Hay making
  - Silage production
- 2 main obstacles to the adoption of silage and hay
  - Technical expertise to ensure product quality (experience, technical information and networks of practising farmers): avoids product loss (moisture, rotting)
  - Small and low-cost equipment (silage bag, manual or pump press, EM)

# Crops residues and by-products use: adoption



Significant use of rice crop residues and by-products based on

- Rice area to herd size ratio, farming practices, harvesting time and season, ability to store under good conditions
- The quality of rice straw remains poor: roughage requiring supplementation.
- Rice bran and husks are intended for monogastric animals or for manuring stables.



Underuse of annual crop residues on slopes (maize, cassava)

- Poor quality of maize straw after harvesting the ears.
- Composition of cassava leaves is indigestible without processing.
- Distant plots from the stables and challenges in transporting crop residues."





# Innovation and adoption of crops by-products use



- Improvement of harvesting and transportation capacities for crop residues and by-products
- Organization of stakeholders to enhance the utilization of accessible and unused crop residues:
  - exchange among farmers,
  - biomass collectors,
  - creation of supply chains, etc.
- Enhancement of crop residue quality: straw processing, blending with other resources, ensilage, etc.



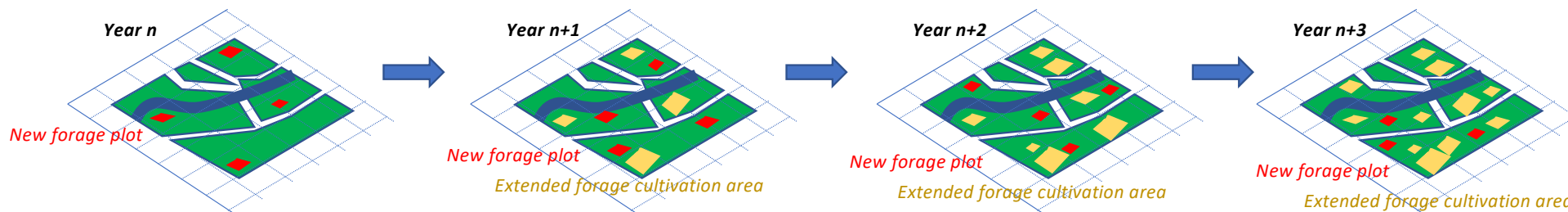
# Scaling-out forage : technical innovations needed



- Additional forage and fodder species and varieties (seasonality, yield, quality)
- Set of technologies for adaptation to different situations and farmer needs
- Depending on the context, the limiting factors and gaps for improving the sustainability of fodder will be specific
  - fertilisation, irrigation, pasture management, ...
- Adaptation of small agricultural equipment and machinery to extend the distances, the period of use, the number of users
  - harvesting, transport, conservation, storage



# Scaling-out forage : organisation & institutional innovations needed



- Involve local actors as nodes of diffusion and rely on sites with adoption and experience
- Rely on TIC to raise farmer awareness of forage production
- Strengthen access to seeds and forage / fodder diversity : Build a regional seed value chain
  - Access to a diversity of seeds, suitable quantity for diffusion, acceptable prices to farmers
  - Forage in Thailand, Cover crop & forage in Cambodia (Centrosema, Stylo), Laos (Ruzi, Mulato II)
- Value chain for fresh forage, but more likely for silage/ hay

# Takeaway message

- Diversify the forage species adopted in line with production system
  - More legumes and mixture, association and intercropping system, and interest in forage tree legumes
- Need to develop a regional forage seed market (diversity, quantity, price)
- Need for appropriate equipment and machinery for harvesting, transport, conservation and storage
- Dissemination strategy involving grassroots dissemination based on key local actors, area with adoption, TIC support and value chain development (green forage, hay, silage)





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