**Concrete lesson**

- The study proposed to use the “Grassland Multifunctionality” ontology to improve the baseline on livestock system in the North West of Vietnam.
- This approach can help to answer at a general issue “What weight of grazing system for the different categories of actors in the territory and for the different dimensions (production, local development, and ecosystem, social)?”.

**Study area**

- Quăi Nua commune (Tuyên Giáo district, Diên Biên province- North West Vietnam).
- Total area of 5210 ha: agricultural area including highlands and lowlands (48%), forests (20%). The population of 3730 people with different ethnic groups (Thai, Kinh, H’Mong and Kho Mu).
- Livestock production: 2623 cattle and buffaloes kept by 46% and 70% of farms, respectively; 1215 goats kept by 20% of farms; 4450 pigs kept by 88% of farms; and almost 20 thousand poultry kept by 92% of farms. The density of ruminants is 50.3 head/km² with a diversity of livestock system (zero grazing and intensive, semi intensive with grazing a part of the year, and grazing).

**Approach and tool**

Based on farm typologies of previous surveys, a deep survey was carried out on the 48 selected farms of different representative farm types in the 7 villages of Quăi Nua commune and stakeholder interviews of beef value chain (local authorities, slaughter men, collector, beef dry processor, and retailer) to assess the impacts of grazing livestock.

**Initial results**

**Characteristics of farm types**

<table>
<thead>
<tr>
<th>Farm &amp; small crop area</th>
<th>Farm &amp; large herd</th>
<th>Farm &amp; large crop area</th>
<th>Farm &amp; slope lands only</th>
<th>Farm &amp; ruminants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Familly (people)</td>
<td>5</td>
<td>7</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Crop area (ha)</td>
<td>0.8</td>
<td>1.03</td>
<td>1.7</td>
<td>1.9</td>
</tr>
<tr>
<td>Forage area (m²)</td>
<td>400</td>
<td>600</td>
<td>1200</td>
<td>0</td>
</tr>
<tr>
<td>Cattle (head)</td>
<td>6</td>
<td>11</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Buffalo (head)</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Pig (head)</td>
<td>2</td>
<td>13</td>
<td>3</td>
<td>8</td>
</tr>
</tbody>
</table>

**Adapted 29 indicators from the 4 dimensions**

**Production**

- Acres production
- Livestock production
- % permanent grassland

**Local development**

- Livestock services
- Added value
- Livestock services
- Employment by farm type

**Ecosystem**

- % pasture loss for livestock
- Grazing pressure
- Intensity of GHG emission
- contribution of grazing system

**Social indicators**

- Farmers keep different livestock
- Food security
- Total number of farms

**Multi-functions of livestock systems and contribution of grasslands**

**Implications**

- Use of this ontology, the multi-functions of grassland for different livestock systems could be accessed.
- Pastoral production has big contribution in the farms with small agricultural areas and also those with large herds of ruminants.
- Largest share of farm income is from sale of ruminants; an important role of livestock is as gift and for sacrifice, especially monogastric; Self-consumption mainly come from crop and monogastric productions;
- High other value of ruminants comes from stock value (as bank saving/live bank security) and the use of animal traction and manure for crop production.