

# RESEARCH ON FINANCE FOR AGRICULTURAL VALUE CHAIN IN MOUNTAINOUS AREAS OF VIETNAM: A CASE STUDY IN LAO CAI PROVINCE

*PhD student: BUI Thi Lam*

*Promotor: Prof. Philippe LEBAILLY*

*Co-Promotor: TRAN Huu Cuong*

Topic: An economic comparison of  
Sengcu rice production models at  
farm-level in Laocai province

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2. Methodology
3. Main research findings
4. Solutions
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# 1. Introduction

## ❑ Laocai province:

- One of six **broader mountainous provinces**; diversity of **25 ethnic minority** groups; **high poverty rate**;
- In 2017, agricultural output accounted 15.6% of GRDP;
  - Nearly 80% population engaged to agricultural activities;
  - More 90% of households are cultivating rice.
- The province has many favorable conditions for cultivating SC rice

# 1. Introduction

## ❑ Sengcu rice (SC) production in Laocai

- Good variety;
- Cultivated in two kinds of ecological zone (i.e., lowland and upland).
- One of spearhead products because of its high economic value.
- However, the share of SC rice remains low and increase slightly because there are many challenges in production (i.e., pre- and post- harvest) and marketing regarding financing shortage.

# Objective

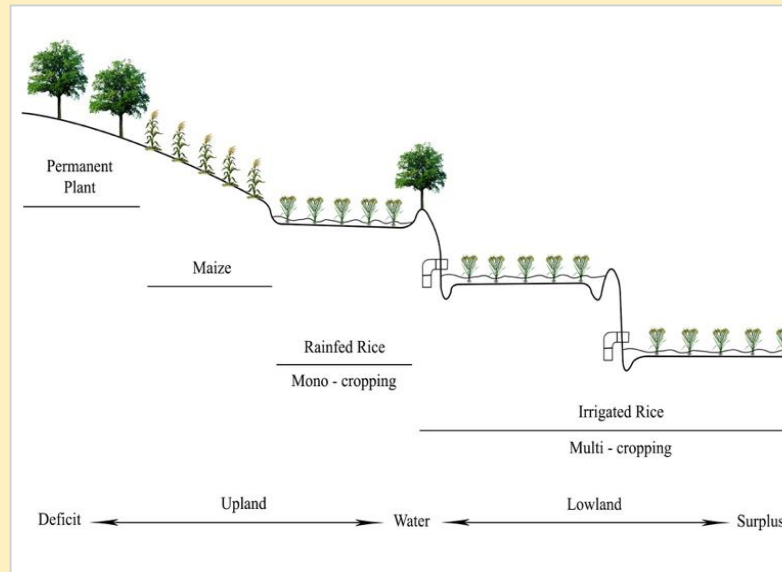
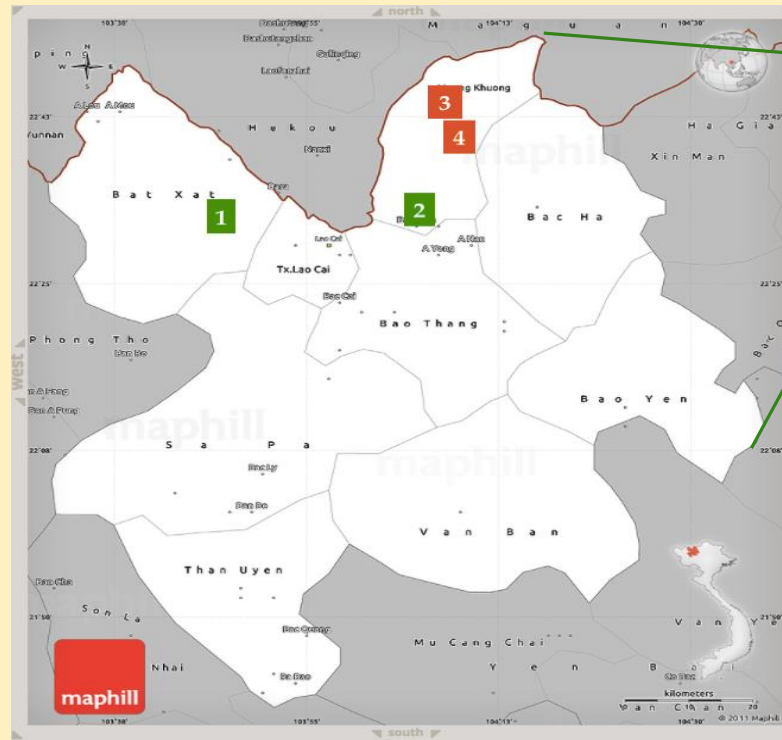
- An economic comparison of Sengcu rice production between lowland and upland models in Laocai province

## 2. Methodology: Research site

- Selection of districts and communes: the largest areas of SC rice production, existing two kind of ecological zones (i.e. upland/ rain-fed and lowland/ irrigated).
- The number 1 and 2 are lowland communes (Muongvi and Banxen), The number 3 and 4 are upland communes (Lungkhaunhin and Namlu communes).

<http://irri.org/resources/publications/books/rice-almanac-4th-edition>

<http://www.maphill.com/vietnam/lao-cai/simple-maps/gray-map/free/>



1 green dot = 500 ha of rice cultivating



# Upland ecological zone: terraced plots





# Lowland ecological zone: flat and bigger





# Methodology: data collection (con't)

## Household survey

- Year of collection: 2016
- The structured questionnaire on:
  - (i) the specific characteristics of the household;
  - (ii) SC rice farming practices and input management;
  - (iii) Costs and income generated from SC rice production as well as other activities (e.g., breeding livestock, wages, salary, and business);
  - (iv) the farmers' feedback on two important services, agricultural credit and extension.

# Methodology: data collection

**Table 1.** Number of interviewees in the household survey

| Name of commune  | Upland<br>(Rain-fed) | Lowland<br>(Irrigated) | Total |
|------------------|----------------------|------------------------|-------|
| Muongvi (1)      | 0                    | 41                     | 41    |
| Banxen (2)       | 39                   | 39                     | 39    |
| Nungkhaunhin (3) | 35                   | 0                      | 35    |
| Namlue (4)       | 45                   | 0                      | 45    |
| Total            | 80                   | 80                     | 160   |

### 3. Research findings

3.1 Describe the Seng cu rice production in Laocai

3.2 Economic comparison of Seng cu rice production

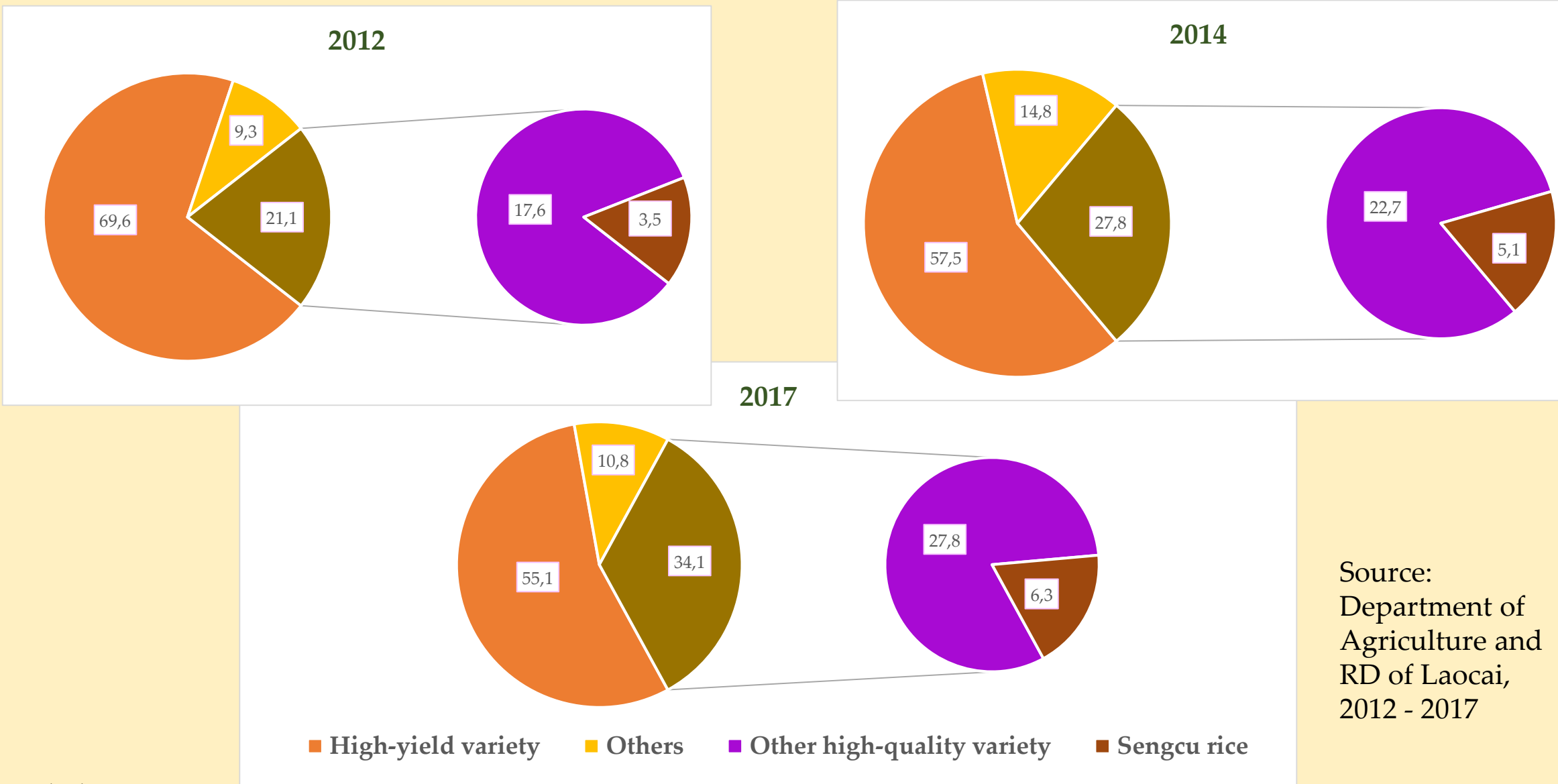


### 3.1 Describe the Seng cu rice production

Farmers' are facing many challenges, causing low agricultural outputs and threatening sustainable livelihoods.

- Unsuitable farming practice
  - ❖ **Lowlanders** overuse chemical inputs to maximum yield → directly increase cost production; reduce the quality and partly damage ecosystem.
  - ❖ **Up-landers** invest much lower than the optimum dosages suggested by extension office because of **financing shortage**.
- Financing management
  - Upland: Financing shortage → inputs trade credit with high interest rate and sell paddy with lower price.
  - Lowland: ineffective investment.

Figure 1: The share of SC rice rice variety



Source:  
Department of  
Agriculture and  
RD of Laocai,  
2012 - 2017

## 3.2 Economic comparison of Seng cu rice production

**Table 2. Descriptive statistics of productivity and inputs used of SC rice production**

| Items                           | Unit                          | Upland (n = 80) | Lowland (n = 80) | All (n = 160) | T-Test Ratio |
|---------------------------------|-------------------------------|-----------------|------------------|---------------|--------------|
| <b>Y: Productivity</b>          | Kg/ha                         | 4,378           | 5,318            | 4,848         | 0.00         |
| <b>X<sub>1</sub>: Seed rate</b> | Kg/ha                         | 55.72           | 48.00            | 51.86         | 0.00         |
| <b>X<sub>2</sub>: Manure</b>    | Kg/ha                         | 4324            | 3833             | 4078          | 0.06         |
| <b>X<sub>3</sub>: NPK</b>       | Kg/ha                         | 768.2           | 1019             | 893.6         | 0.00         |
| <b>X<sub>4</sub>: Urea</b>      | Kg/ha                         | 134.7           | 138.6            | 136.6         | 0.32         |
| <b>X<sub>5</sub>: Pesticide</b> | 000 VND/ha                    | 1209            | 4082             | 2686          | 0.00         |
| <b>X<sub>6</sub>: Labor</b>     | Man-day for optional works/ha | 37.71           | 31.51            | 34.61         | 0.05         |

Source: Household survey, 2016.



## 3.2 Economic comparison of Seng cu rice production (con't)

**Table 3. Main characteristics in Sengcu rice production. (extracted)**

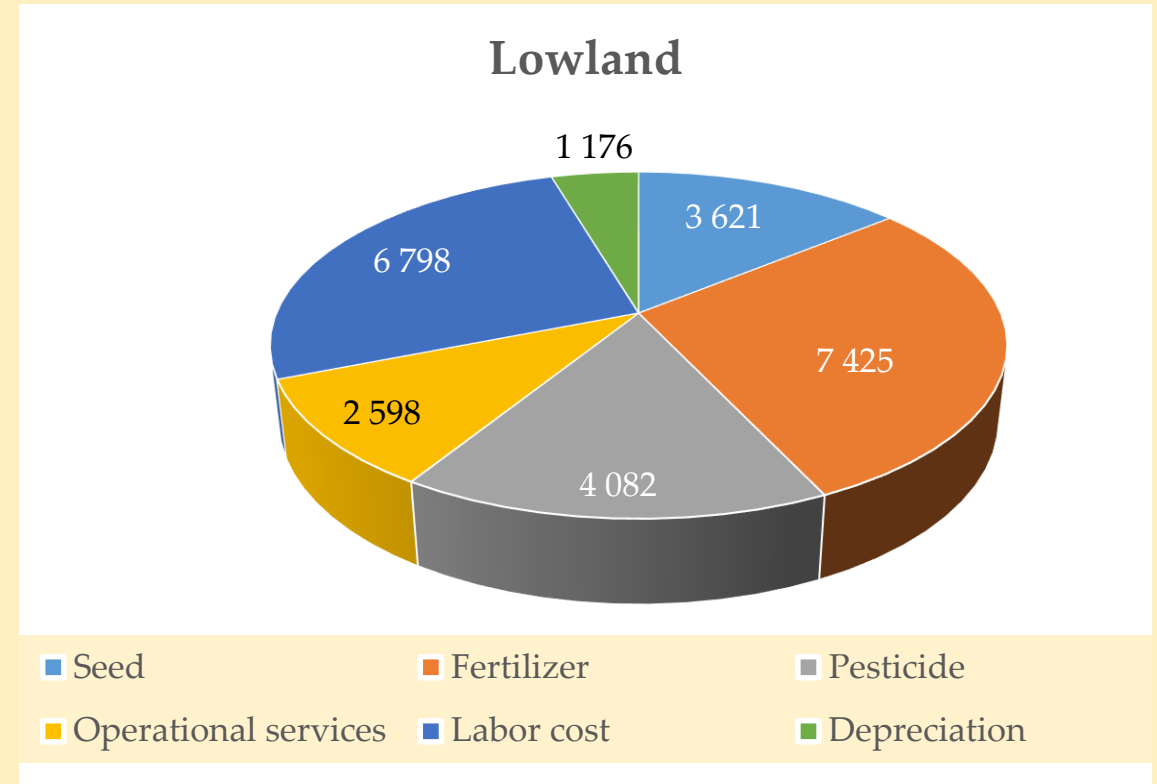
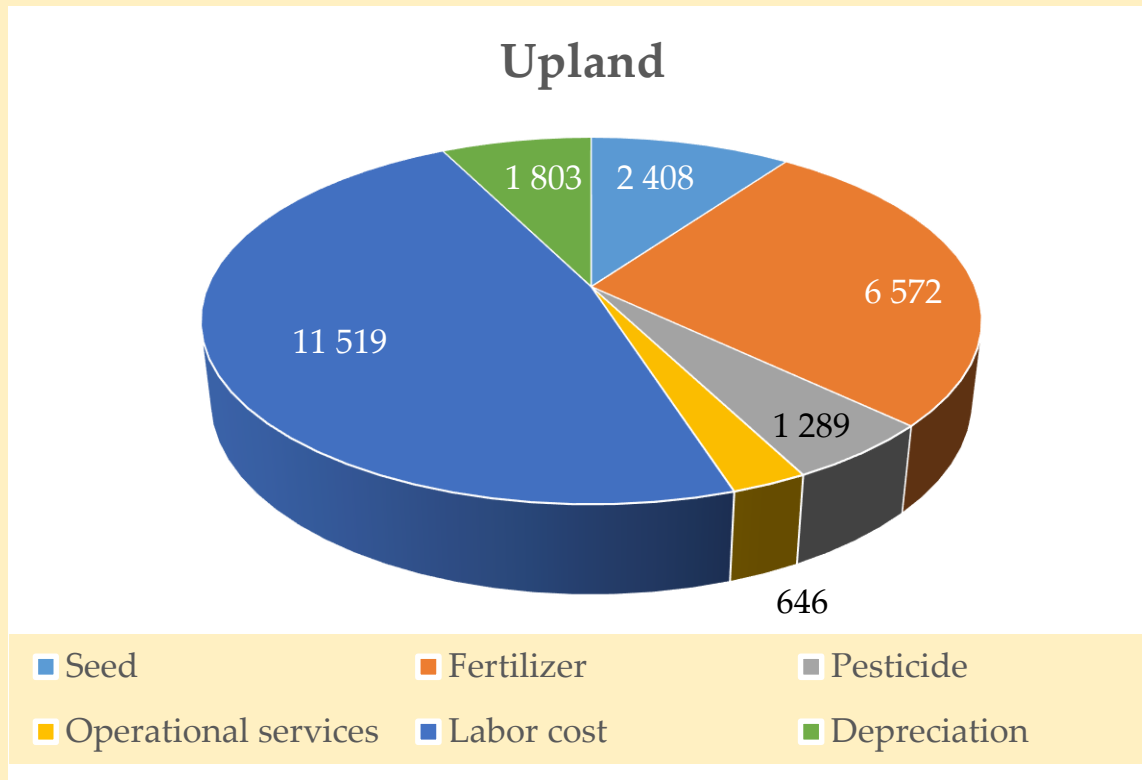
| Variables             |                                      | Upland (n = 80) |      | Lowland (n = 80) |      | Combined (n = 160) |      |
|-----------------------|--------------------------------------|-----------------|------|------------------|------|--------------------|------|
|                       |                                      | Coefficients    | SE   | Coefficients     | SE   | Coefficients       | SE   |
| On-farm factors       | Constant                             | 8.50 ***        | 0.45 | 8.51 ***         | 0.24 | 8.24 ***           | 0.31 |
|                       | X <sub>1</sub> : Seed rate           | -0.17 ***       | 0.05 | -0.16 ***        | 0.01 | -0.21 ***          | 0.05 |
|                       | X <sub>2</sub> : Org. fertilizer     | 0.05 **         | 0.02 | 0.01 ***         | 0.00 | 0.02 **            | 0.01 |
|                       | X <sub>3</sub> : NPK composite       | 0.13 ***        | 0.03 | -0.02            | 0.05 | 0.10 ***           | 0.02 |
|                       | X <sub>4</sub> : Urea fertilizer     | -0.08 ***       | 0.03 | -0.03 **         | 0.01 | -0.02              | 0.02 |
|                       | X <sub>5</sub> : Pesticide           | -0.03           | 0.02 | -0.02 **         | 0.01 | 0.04 ***           | 0.01 |
| Specific-farm factors | X <sub>6</sub> : Labor               | 0.02            | 0.02 | 0.06 **          | 0.02 | 0.04 **            | 0.02 |
|                       | Z <sub>2</sub> : Gender              | 0.20 ***        | 0.08 | 0.01             | 0.05 | 0.14 ***           | 0.05 |
|                       | Z <sub>3</sub> : Education           | -0.02           | 0.01 | -0.01 *          | 0.01 | -0.01              | 0.01 |
|                       | Z <sub>5</sub> : Experience          | -0.05 **        | 0.02 | -0.01            | 0.01 | -0.04 ***          | 0.01 |
|                       | Z <sub>6</sub> : Financial situation | -0.20 **        | 0.08 | -0.07            | 0.05 | -0.18 ***          | 0.07 |
|                       | Z <sub>9</sub> : Extension           | -0.01           | 0.07 | -0.13 *          | 0.08 | -0.04              | 0.06 |
|                       | Z <sub>10</sub> : IPM adaptation     | -0.04           | 0.06 | -0.12 **         | 0.06 | -0.14 **           | 0.06 |
| Technical efficiency  |                                      | 0.855           |      | 0.883            |      | 0.869              |      |

Note: \*\*\*, \*\*, and \* indicates the statistically significance at 1%, 5% and 10%, respectively.

## 3.2 Economic comparison of Seng cu rice production (con't)

**Figure 2:** The structure cost of SC rice production

Unit: 1000. VND/ha



Source: Household survey, 2016.

- Lowlanders invest much higher than uplanders.
- Fertilizers is the main physical cost in both of production models.
- Highlanders have to use much more labor for farming activities without mechanization.



**Losses in  
post -  
harvesting:  
Reaping,  
Drying,  
Threshing  
in the field**





## 3.2 Economic comparison of Seng cu rice production (con't)

**Table 4.** Economic comparison of Sengcu rice production at farm-level in Laocai

| Indicators                      | Upland farmers | Lowland farmers | T-test   |
|---------------------------------|----------------|-----------------|----------|
| Turnover/ Price (VND/kg)        | 14,920         | 14,310          | 0.001*** |
| Intermediate cost (IC) (VND/kg) | 2,494          | 3,569           | 0.000*** |
| Value Added (VA) (VND/kg)       | 12,506         | 11,111          | 0.001*** |
| % IC                            | 68.44          | 43.52           |          |
| % VA                            | 61.32          | 50.97           |          |

**Note:** figures calculated for 1 kg of dried paddy  
IC including the cost of intermediate goods and services

Source: HH survey, 2016

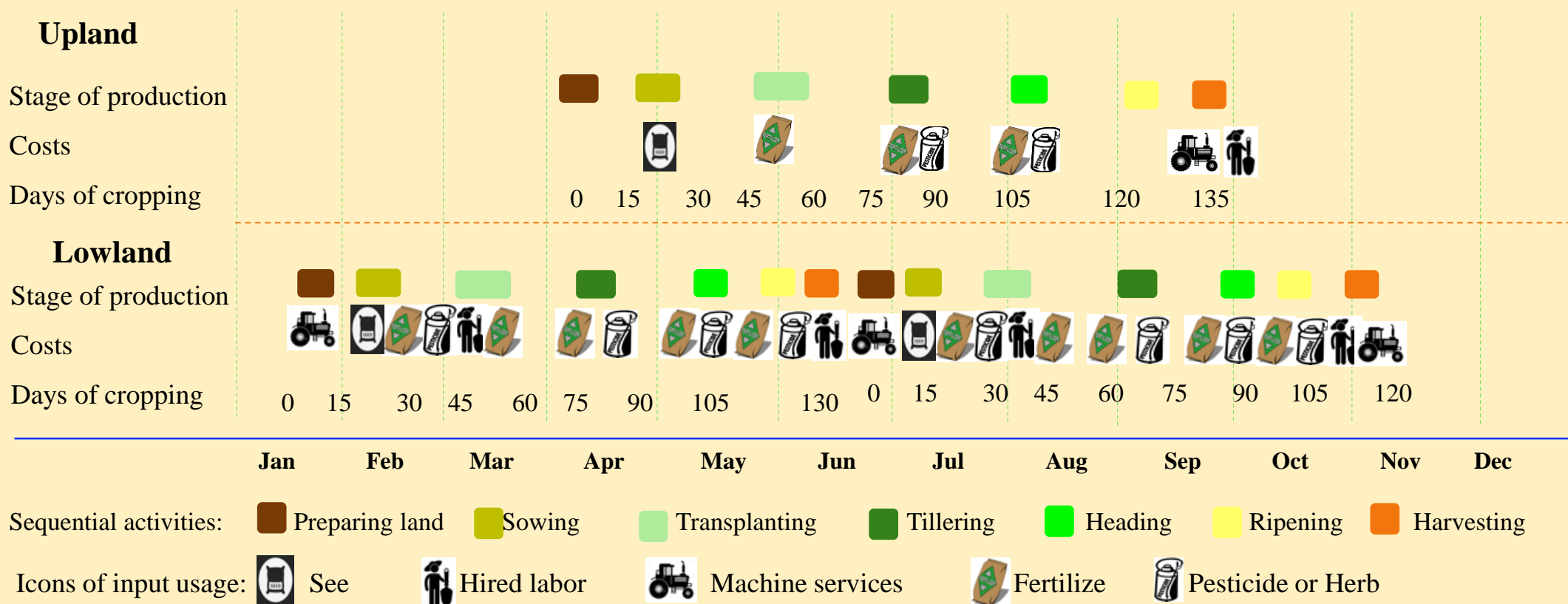
Upland rice: much better quality but its price is slightly higher than others because of their limited capacity of marketing skill and financing shortage.

→ Enhance their market knowledge and diversify forms of credit or suitable credit schedule.

## 3.2 Economic comparison of Seng cu rice production (con't)

Agricultural credit based on the seasonal demand of customers (growers).

**Figure 3: Crop calendar of SC rice production and cash costs generated in Laocai province**



# 4. Conclusions and recommendations

## ■ **Farmers:**

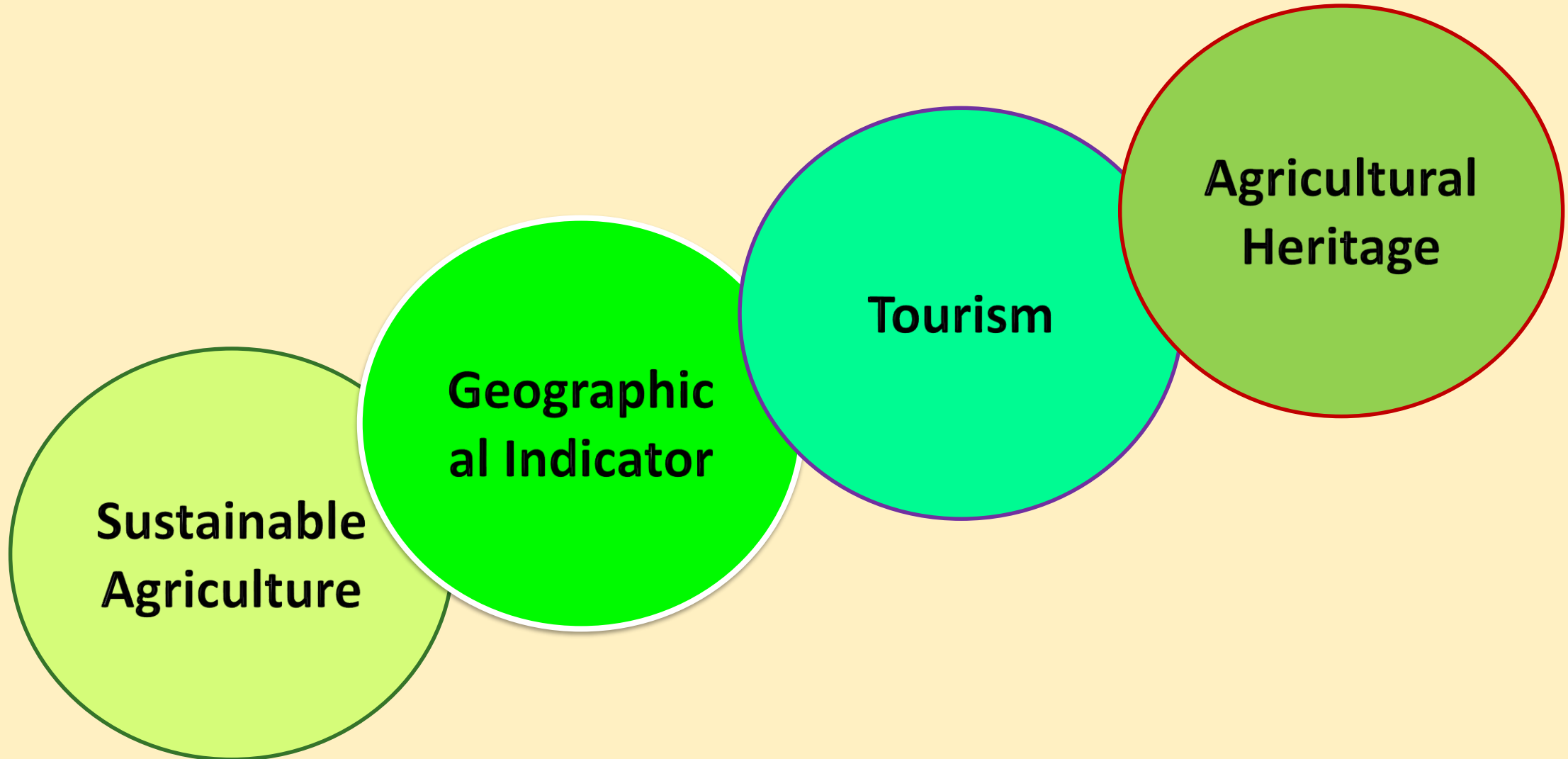
- ❑ Lowlanders has higher the economic benefit than up-landers, although their quality of rice seems lower.
- ❑ Reduce seed rate, nitrogenous fertilizer, and pesticides, concurrently increasing organic manure and time for applying advanced techniques in order to increase paddy productivity.

## ■ **Policy-makers:** provide effectively three kinds of agricultural services.

- ❑ Irrigation: invest more in uplands.
- ❑ extension: update and localize the demand of specific production zone.
- ❑ Credit: design to meet with the seasonal demand of crop calendar.



# Economic value of rice production in mountainous areas in the Northern of Vietnam



# Terraced plots in Batxat, Laocai





# Terraced plots in Mucangchai district, Yenbai province





# Terraced plots in Sapa district, Laocai province

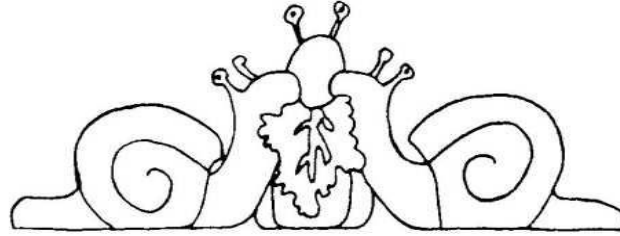


<https://travel.com.vn/tin-tuc-du-lich/cung-duong-vang-mua-lua-chin-dep-nhat-mien-bac-v10977.aspx>









***Thank you for your attention!***