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

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

18/08/2018

1

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## Main Contents

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1. Introduction
2. Methodology
3. Main research findings
4. Solutions
5. Recommendations

18/08/2018

2

## 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

18/08/2018

3

## 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.

18/08/2018

4

## Objective

- An economic comparison of Sengcu rice production between lowland and upland zones in Lao cai province

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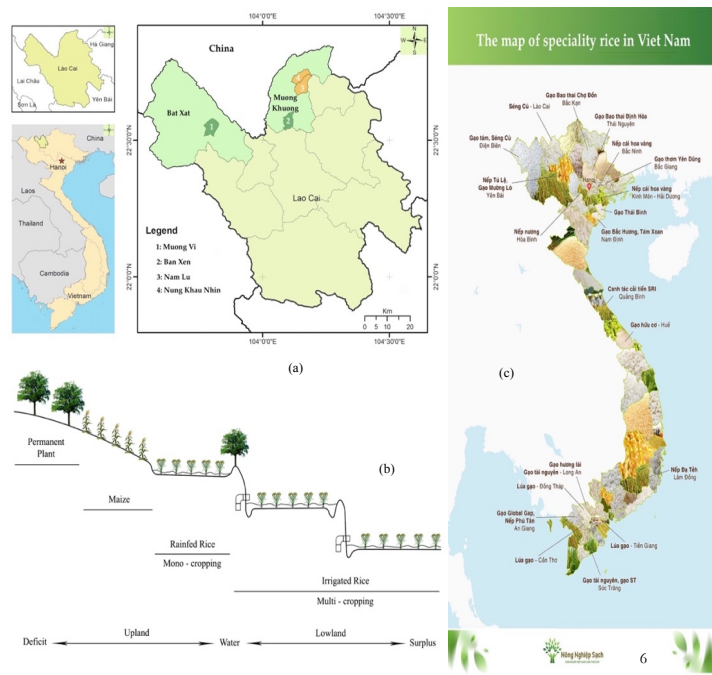
5

## 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/ rainfed 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).
- Seng Cu is the unique rice specialty in Viet Nam, it has the highest selling price in the domestic market.

<https://vnexpress.net/thoi-su/ban-do-cac-loai-gao-dac-san-o-viet-nam-3768497.html>

18/08/2018



6

## Upland ecological zone: terraced plots



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7

## Lowland ecological zone: flat and bigger



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8

## 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.

18/08/2018

9

## Methodology: data collection

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

Name of commune	Upland (Rain-fed)	Lowland (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

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10

## 3. Research findings

3.1 Describe the Seng cu rice production in Laocai

3.2 Economic comparison of Seng cu rice production

18/08/2018

11

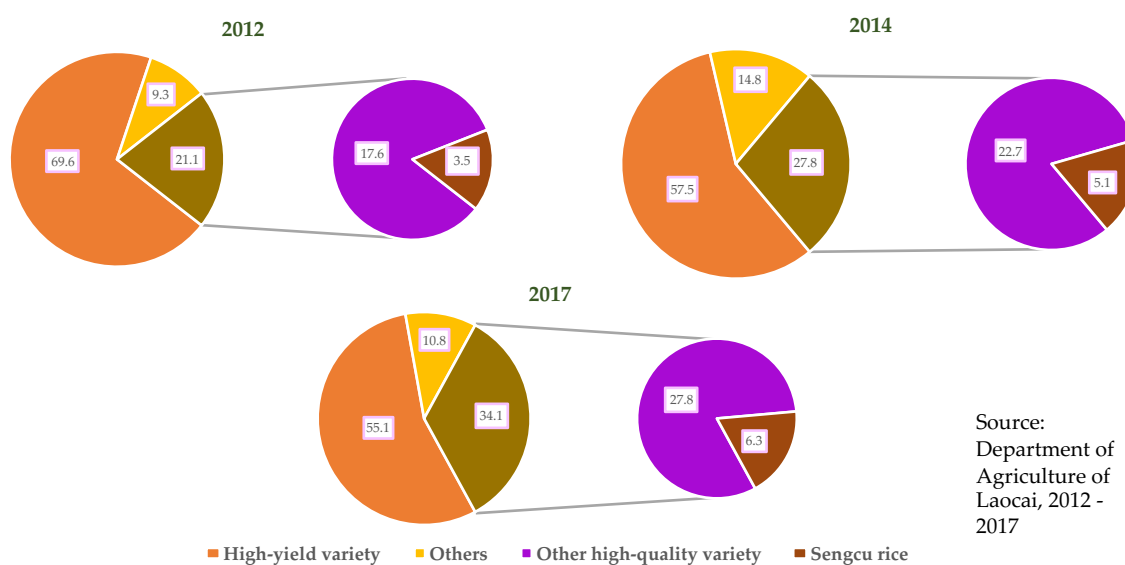
### 3.1 Describe the Seng cu rice production

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.

18/08/2018

12

**Figure 1: The share of SC rice variety**

18/08/2018

13

### 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
Y: Productivity	Kg/ha	4,378	5,318	4,848	0.00
X <sub>1</sub> : Seed rate	Kg/ha	55.72	48.00	51.86	0.00
X <sub>2</sub> : Manure	Kg/ha	4324	3833	4078	0.06
X <sub>3</sub> : NPK	Kg/ha	768.2	1019	893.6	0.00
X <sub>4</sub> : Urea	Kg/ha	134.7	138.6	136.6	0.32
X <sub>5</sub> : Pesticide	000 VND/ha	1209	4082	2686	0.00
X <sub>6</sub> : Labor	Man-day for optional works/ha	37.71	31.51	34.61	0.05

Source: Household survey, 2016.

18/08/2018

14

### 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
Constant	8.50 ***	0.45	8.51 ***	0.24	8.24 ***	0.31
<b>On-farm factors</b>						
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
X <sub>6</sub> : Labor	0.02	0.02	0.06 **	0.02	0.04 **	0.02
<b>Specific-farm factors</b>						
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	

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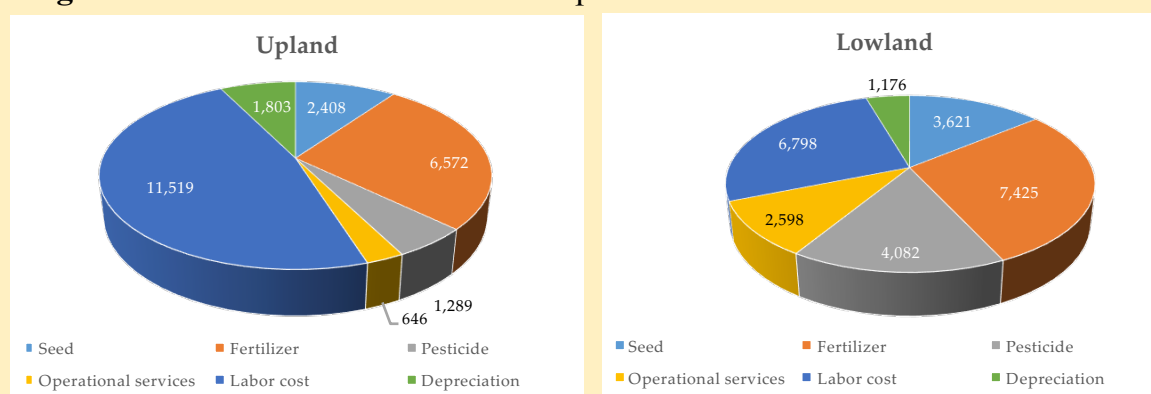
Note: \*\*\*, \*\*, and \* indicates the statistically significance at 1%, 5% and 10%, respectively.

15

### 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.

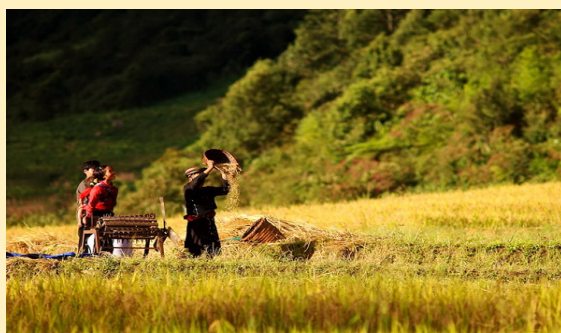
- Lowlanders invest much higher than uplanders.
- Fertilizers is the main physical cost in both of production models.
- Highlanders have to use much more labor for farming activities without mechanization.

18/08/2018

16



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



18/08/2018

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

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

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.

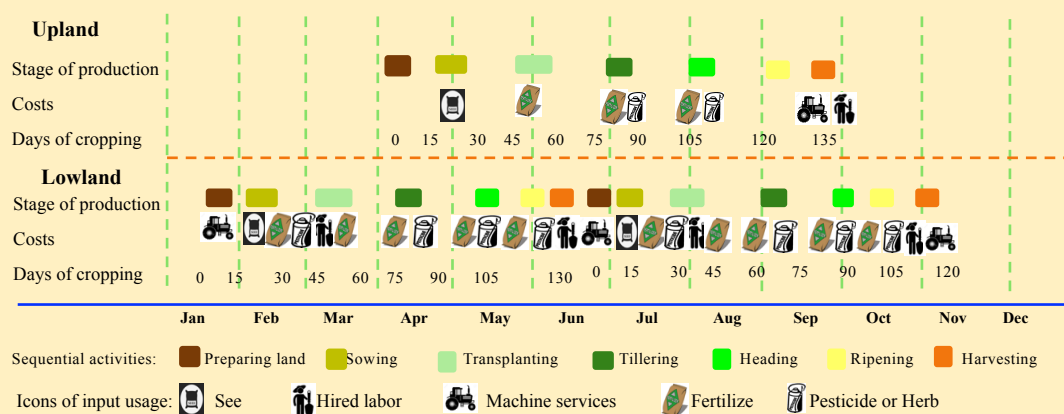
18/08/2018

18

### 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



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19

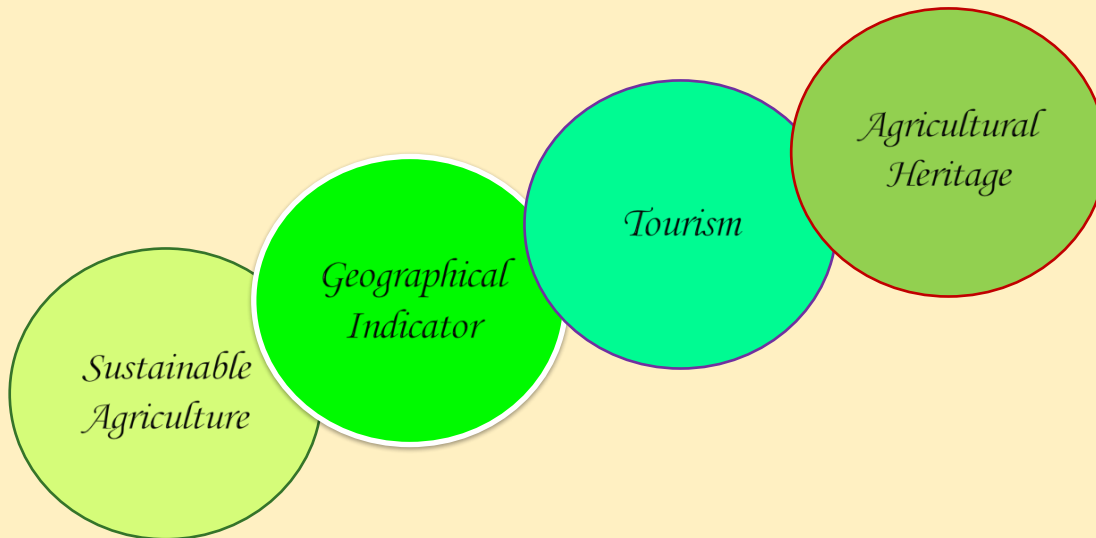
## 4. Conclusions and recommendations

- **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.

18/08/2018

20

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



18/08/2018

21

## Terraced plots in Batxat, Laocai



18/08/2018

22

## Terraced plots in Mucangchai district, Yenbai province



18/08/2018

23

## Terraced plots in Mucangchai district, Yenbai province



Source: LE Oanh  
and BUI Lam,  
2018

18/08/2018

24

## 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>

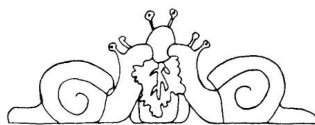
18/08/2018

25



18/08/2018

26



*Thank you for your attention!*