

Midterm ACIAR Project Review (ASEM/2014/053)

Vientiane Lao PDR, 15-19 Jan 2018

Developing cassava production and marketing systems to enhance smallholder livelihoods in Cambodia and Lao PDR



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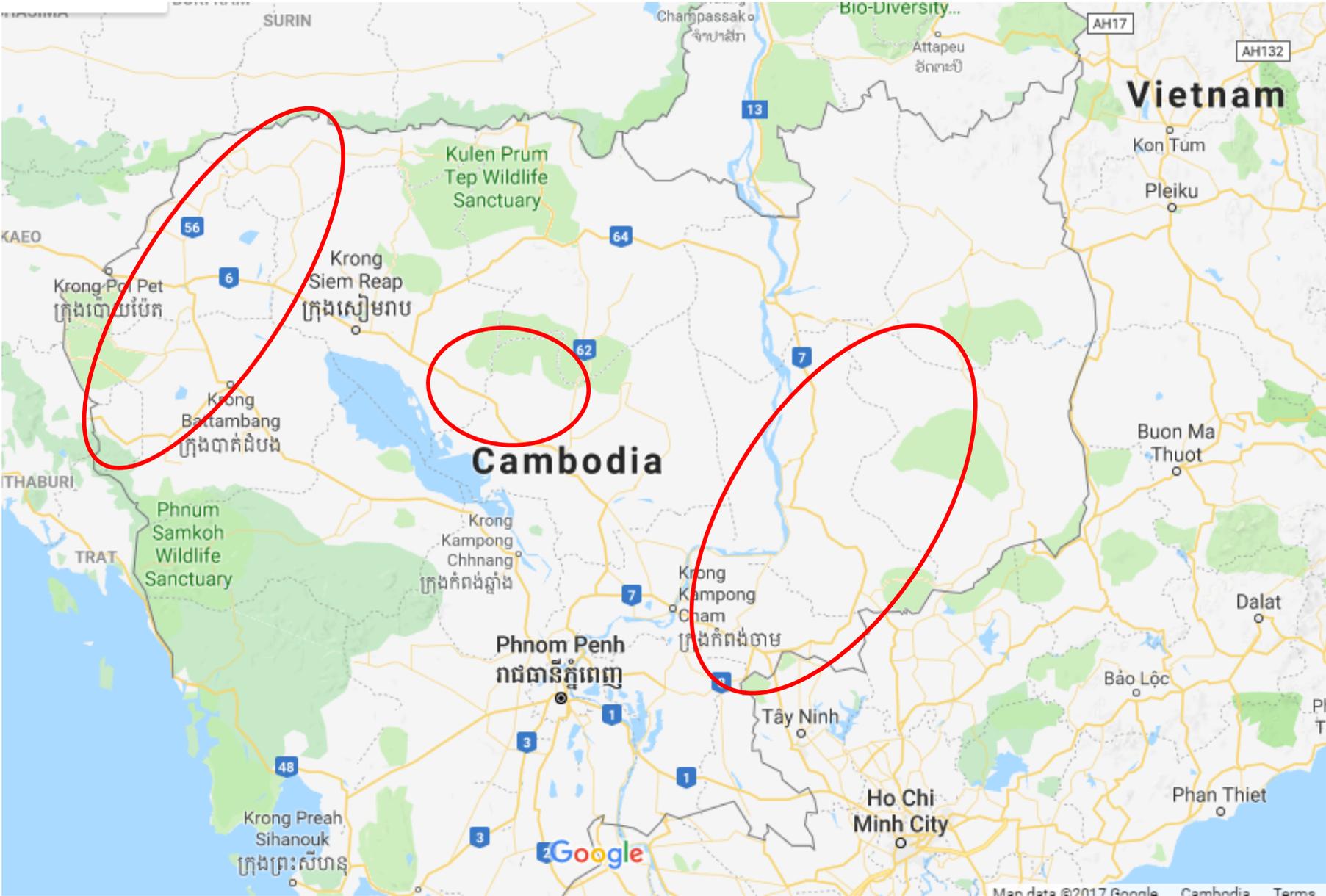


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Outline

1. National level production statistics
2. Focus group discussions
3. Value chain assessment
4. Household survey

Main cassava production locations



Major cassava production

Province	Planted area (ha)	Harvested area (ha)	Production (t)	Planted area (ha)	Harvested area (ha)	Production (t)
	2013-2014			2016-2017		
Cambodia	421,375	377,239	7,933,382	684,070	675,126	14,820,249
Banteay Meanchey	55,666	48,264	953,125	108,252	108,100	2,235,756
Battambang	61,695	47,157	1,699,123	134,385	125,593	3,769,266
Pailin	25,648	24,217	433,575	59,087	59,087	1,477,175
Oddar Meanchey	25,125	22,850	528,631	60,132	60,132	1,151,240
Kampong Thom	36,725	36,600	530,379	54,039	54,039	1,176,919
Kampong Cham	67,625	67,446	1,327,847	23,110	23,110	337,114
Tboung Khmum				53,690	53,690	1,159,870
Kratie	46,810	46,810	1,042,378	66,102	66,102	1,420,387

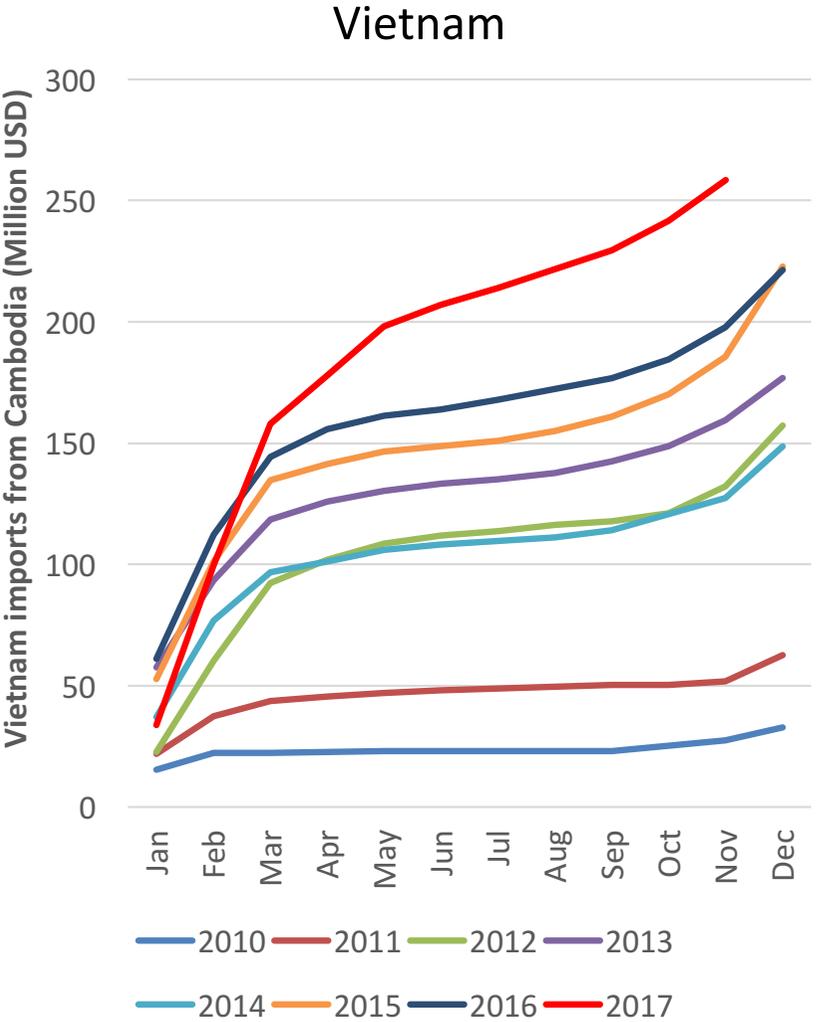
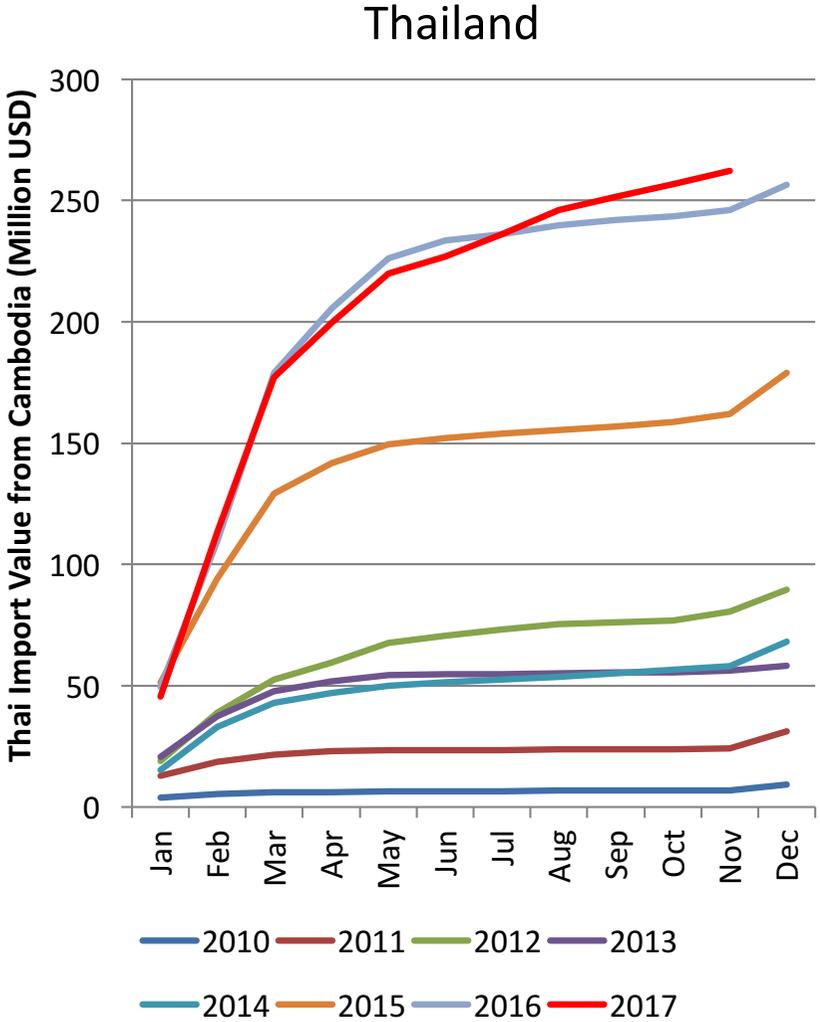
Source: MAFF

Export of cassava product

Product form	Quantity (t)		Countries
	2015	2016	
Dried cassava chip	2,266,261	2,431,617	Thailand, Vietnam, China, Austria
Fresh cassava	570,520	438,250	Vietnam, Thailand
Cassava starch		24,098	
Cassava residue		16,211	China

Source: MAFF

Import value from Thailand and Vietnam



HS Code: cassava (fresh and dried)

Working sites

- Prek Ta Am, Bos Leav, Chit Borei
- Chrava (Kohdach), Ko loab, Chit Borei
- Kbal Trach, Sre Cha, Snuol
- Trapeang Sre/Hoa Lu border gate



Interview activity: focus group



Proportion of households undertaking various livelihood activities (%)

Activity	Prek Ta Am	Kbal Trach	Chrava Kohdach
Cropping			
Cassava	50	100	90
Maize	80	10	2
Rice	90	30	70
Cashews	20	90	-
Rubber	5	20	-
Banana	100	-	10
Vegetables	100	100	100
Livestock and Fishing			
Cattle	90	10	10
Poultry	100	100	70
Pigs	70	30	5
Fishing	90	90	30
Labour oriented activities			
Seasonal labourer	70	90	100
Government staff	20-30	30	3
Small retail store	20	30	4
Migrate and remittance	-	30	7

Key events in Cassava production: Prek Ta Am

Year	Event
1800s	Village established hundreds of years ago
2002	Some farmers from the village begin to grow cassava in another village.
2008	Cassava production begins in the village. Farmers saw people growing cassava and getting high yields and high income Sales of fresh roots and dry chips
2013-14	Witches broom noticed and impacts yield. Impact on planting material available for next season Bacterial blight 40-60% decrease in yields in impacted areas
2-3 years ago	Unpredictable climate. Dry season is long. Then sometimes too much rain.
2016	Fresh roots make up 80% and chips 20% Yield is now less than 15 t/ha Price decrease – worst price

Key events in Cassava production: Kbal Trach

Year	Key Event
2002	A few farmers start to grow cassava
2005	Many farmers grow cassava 30t/ha
2011	Big drought and many farmers lose their planting material. 4FGF project supported the new planting material
2012-2013	Outbreak of cassava witches broom and Mealy bug
2015	Drought Price drops Fresh roots 170-180 Riel/kg Chips 450 Riel/kg Most farmers sold at 260-270 before the price drop Soil fertility is declining 15t/ha
2016	Chip price fall to 350 Riel/kg Long dry season, rains come late Cassava growth not too bad after the rain

Key events in Cassava production: Chrava

Year	Event
1958	Village established
before 2006	Mainly producing rice and maize
2006	3 families began to produce cassava, but there are not many buyers at that time
2009	Mealybugs
2010	Change variety of cassava to increase pest and disease resistance, Fresh root price 300 to 380 riel/Kg Chip price 700 to 800 riel/kg Yield 10 - 22 Ton/ha
2012	No buyers for fresh roots Chip price 800 to 900 Riel/kg
2014	Fresh root price 380 riel/kg
2016	Fresh root price fell to 160 riel/kg Chip price 520 riel/kg Sales: fresh root 70% - Chip 30%
	Received support from 4FGF project on Cassava cultivation techniques, Land Preparation, Stake Cut, Fertiliser application and Harvesting

Cassava budget in three locations (USD/ha)

	Prek Ta Am		Kbal Trach	Chrava Kohdach
	Without fertilizer	With fertilizer	With fertilizer	With fertilizer
Material cost	240	316	306	436
Labour cost	418	655	609	690
Total cost	657	971	915	1,126
*Return	1,125	1,875	1050	1,725
Net return	468	904	135	599
NRHR	885	1,559	744	1,289

* 18 t/ha x 250 riel/kg; 30 t/ha x 250 riel/kg
 20 t/ha x 210 riel/kg
 30 t/ha x 230 riel/kg

Continue to do participatory budgeting and scenario analysis with experimental results



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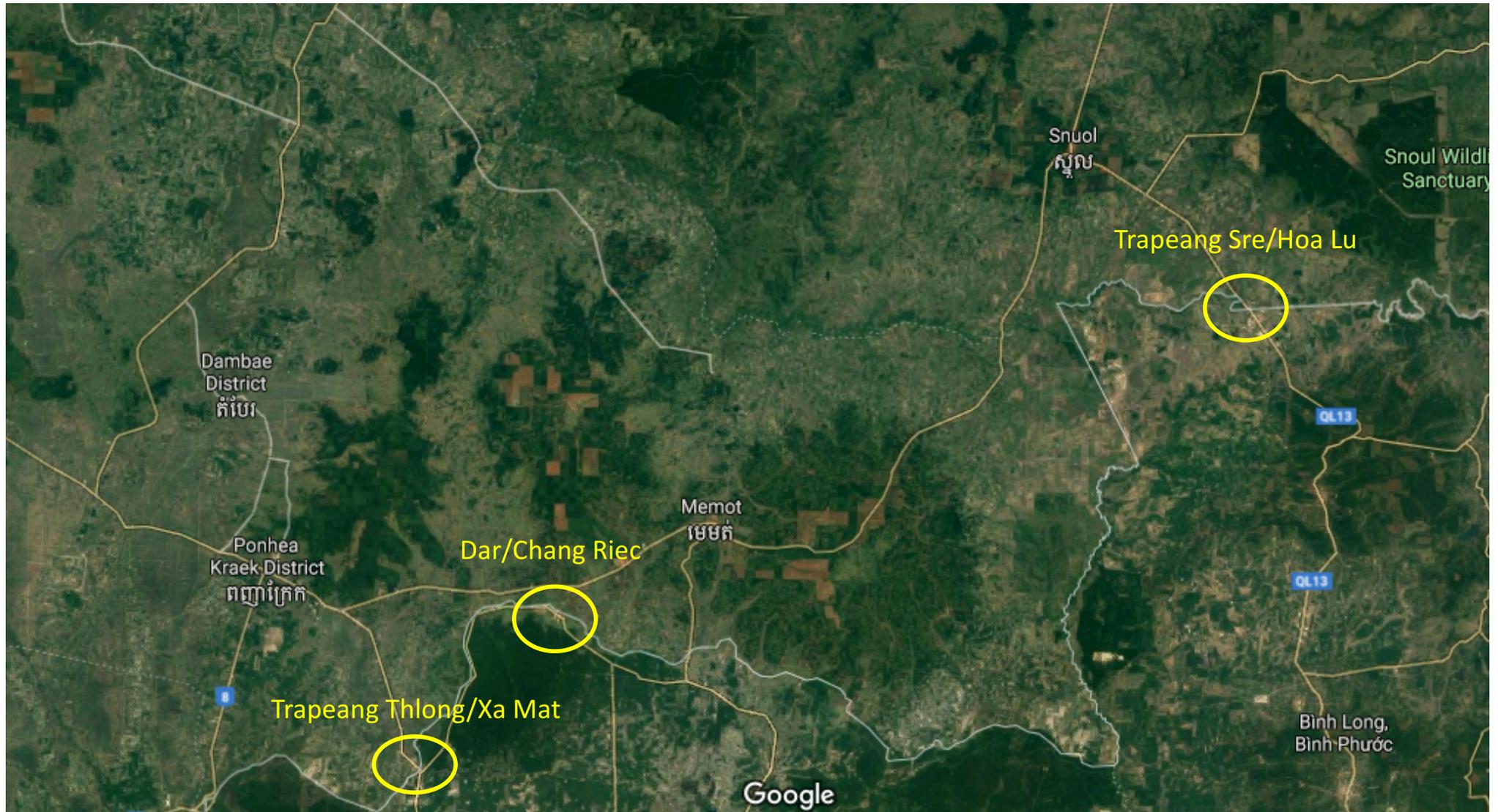
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Value chain assessment

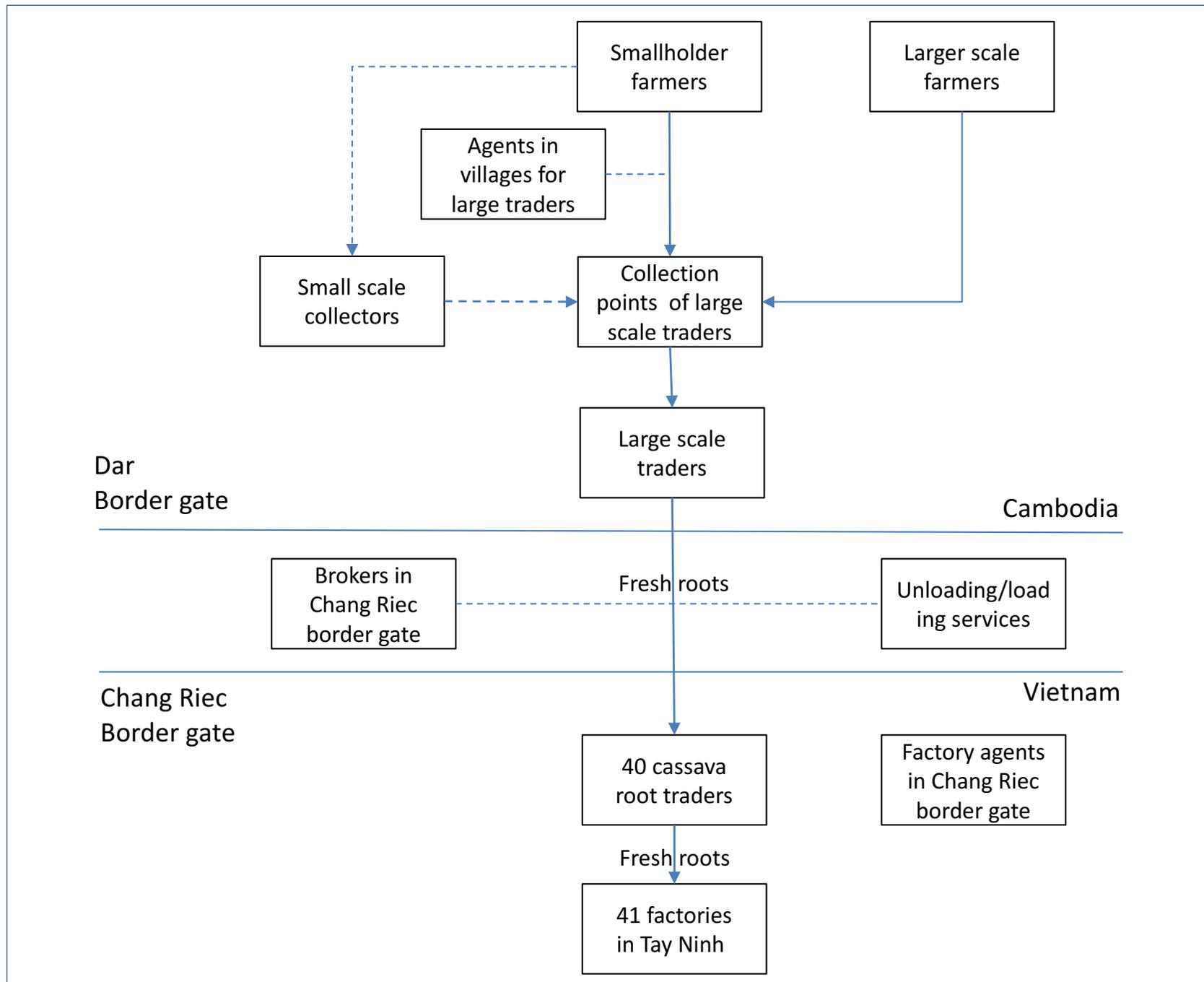
Interview activity: trader



Major border gates for Kratie cassava



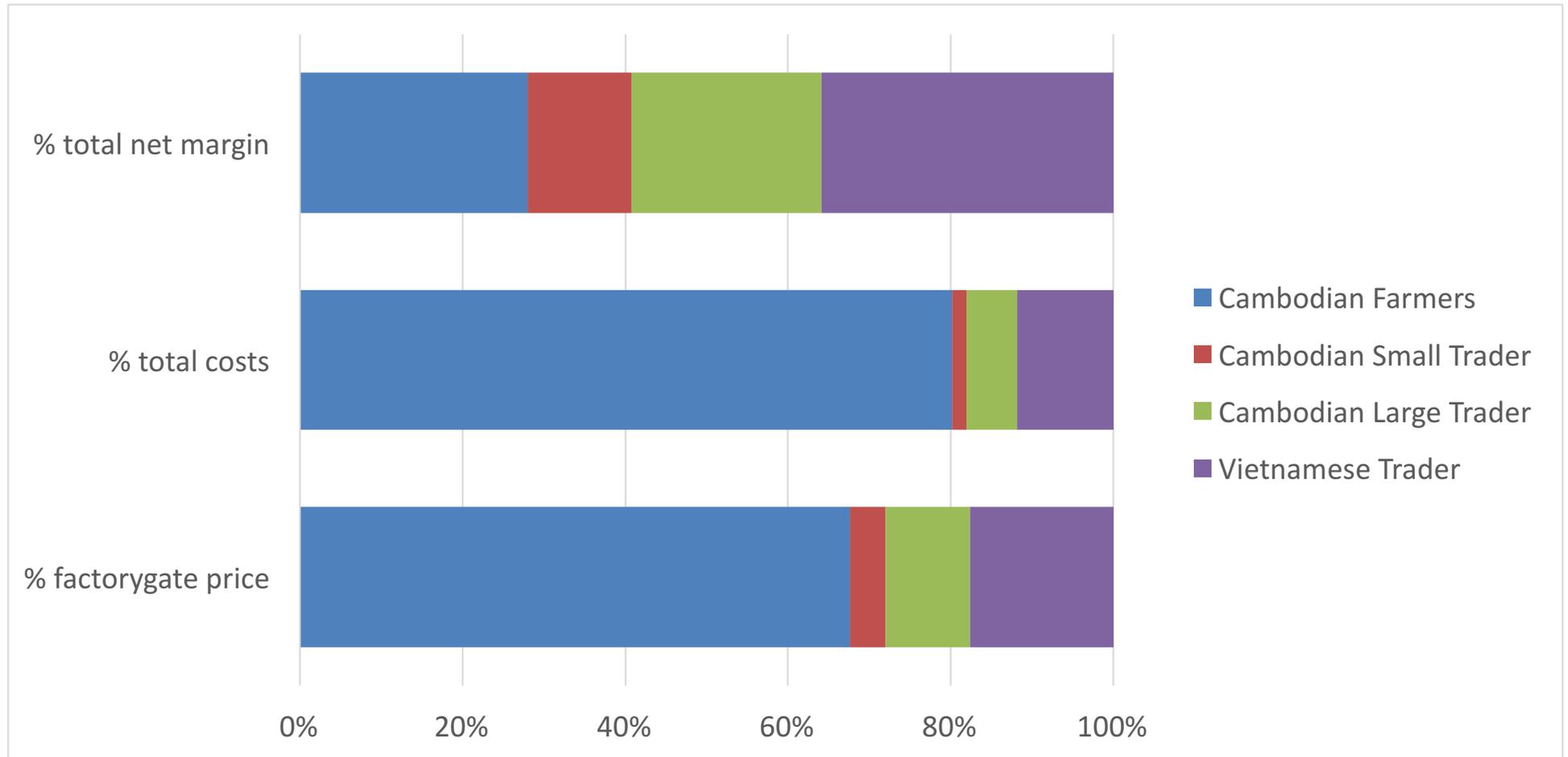
Value chain of Kratie fresh root cassava



Prices and margins along the fresh cassava root value chain, Kratie-Tay Ninh (USD/t)

	Purchase Price	Costs	Selling Price	Gross Margin	Net Margin
Cambodian Farmers		45.74	50.80	50.80	5.06
Cambodian Small Trader	50.80	0.00	54.11	3.31	3.31
Cambodian Large Trader	54.11	3.51	61.84	7.73	4.22
Vietnamese Trader	61.84	6.76	75.09	13.25	6.49
Vietnamese Factory	75.09				
Total net value added (USD/ton)					19.08

Distribution of net margin, costs and proportion of factory gate price



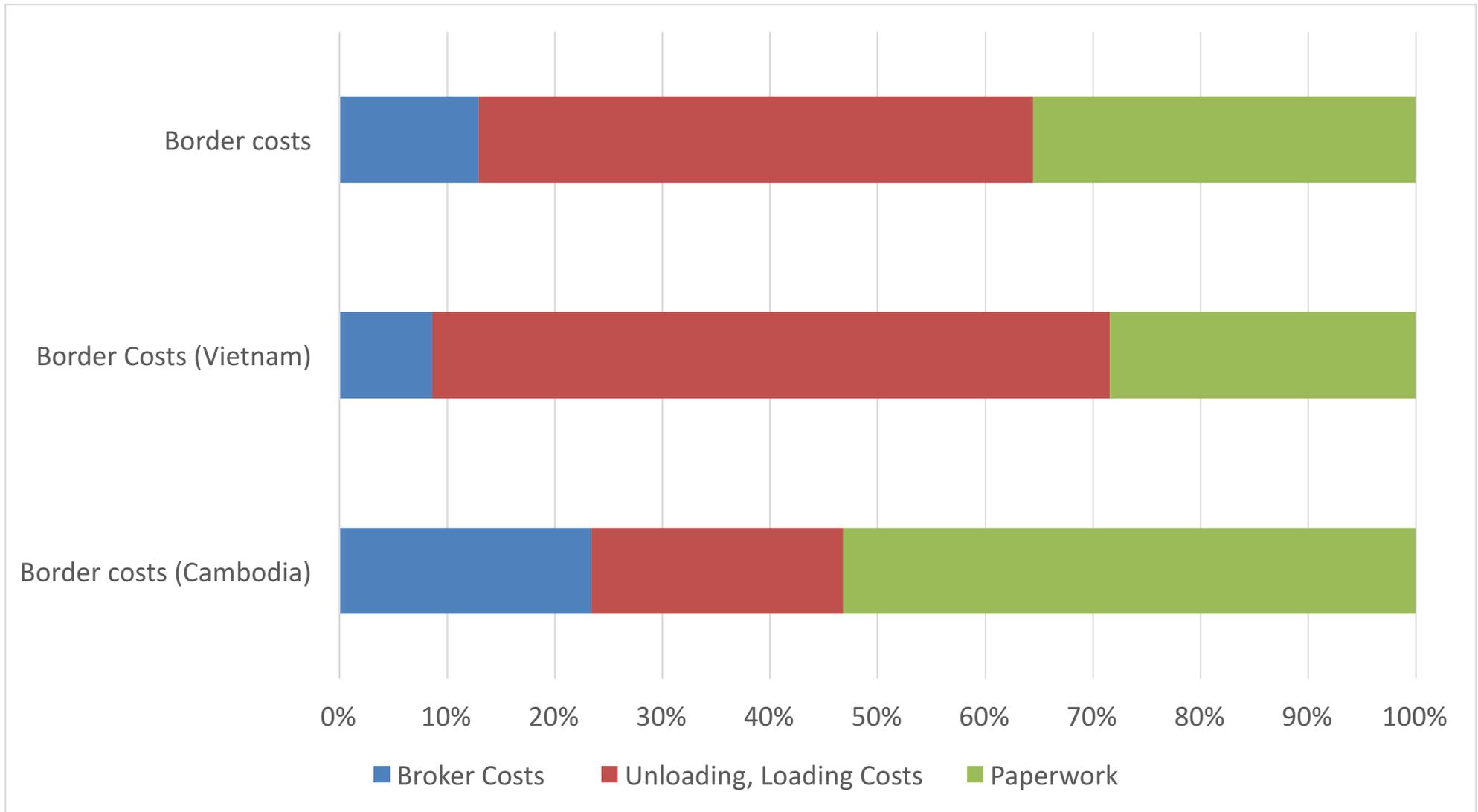
Border costs (Cambodia-Tay Ninh)

Cambodian Side			
Item	Riel/t	VND/t	USD/t
Unloading truck	2,000	11,320	0.50
Paperwork Cambodia	4,520	25,470	1.13
Broker	2,000	11,320	0.50
Total Cambodia	8,520	48,110	2.13
Vietnamese Side			
Broker	1,760	10,000	0.44
Paperwork	5,880	33,333	1.47
Share of unloading Cambodian truck	5,320	30,000	1.33
Loading Vietnamese truck	7,080	40,000	1.77
Collection point rental per ton	520	3,000	0.13
Total Vietnam	20,560	116,333	5.14



Photo: Thuy Cu Thi Le (CIAT)

Proportion of border costs by cost component (%), Cambodia, Vietnam and total





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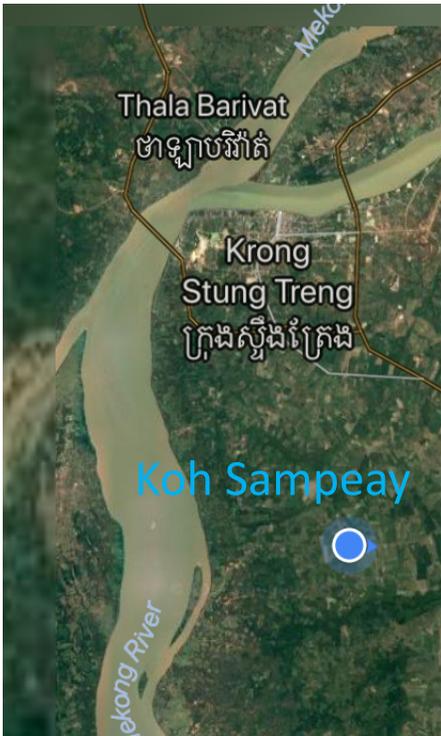
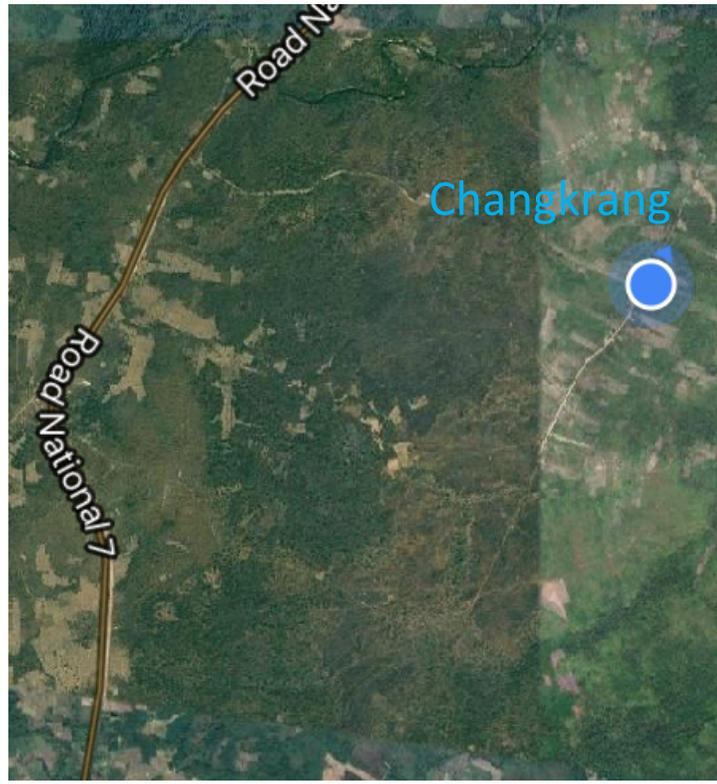


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Livelihoods of Cambodian cassava farmers







Surveyed household information

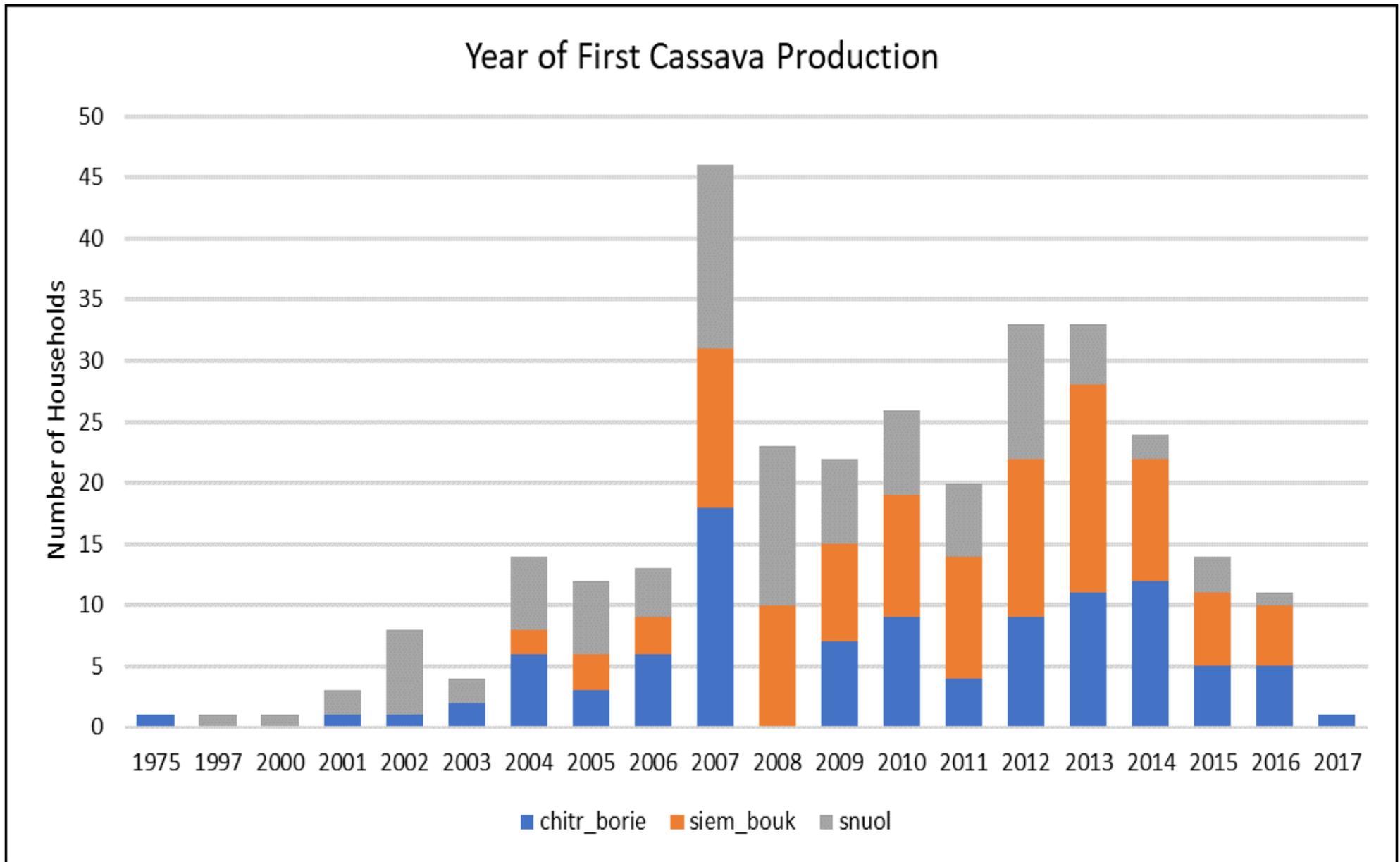
	Snuol	Chit Borei	Siembouk	Total
Household (no.)	100	101	110	311
Female (%)	56	44	56	52
Primary school (%)	53	59	51	54
Age (yr)				
- Avg	44	44	40	43
- Min	22	18	18	18
- Max	76	73	71	76
Household size (no.)				
- Avg	5	5	4	5
- Min	1	2	2	1
- Max	9	10	10	10
Family labour (no.)				
- Avg	3	3	3	3
- Min	1	1	1	1
- Max	8	8	6	8

Family labour use

Employment status in Agriculture	Average Number of Family Members		
	Females	Males	Total
Full time	0.77	1.10	1.87
Part time	0.30	0.22	0.52
Rarely	0.33	0.18	0.52
Never	0.93	0.85	1.78
Total	2.33	2.36	4.69



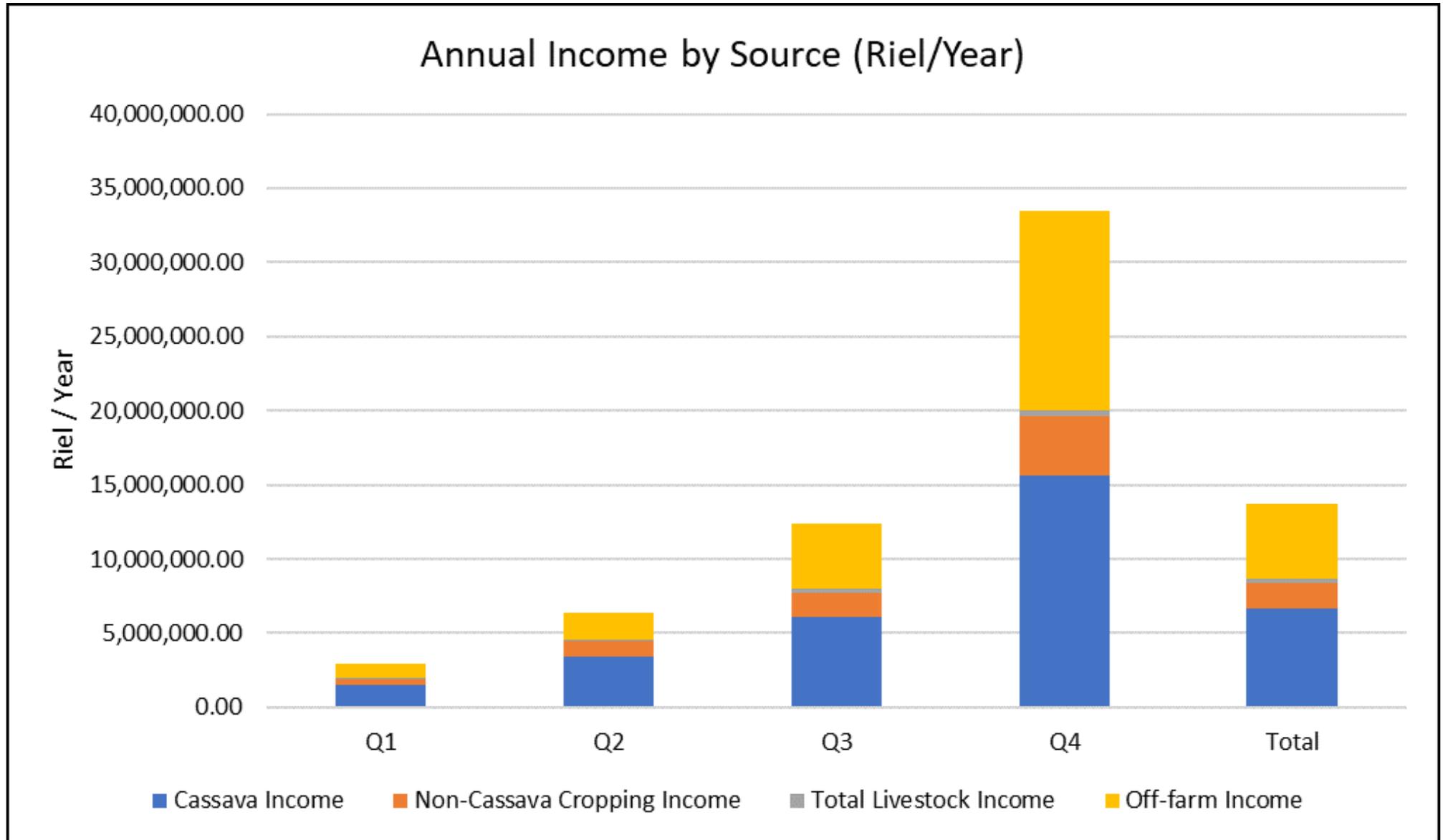
Adoption of cassava production



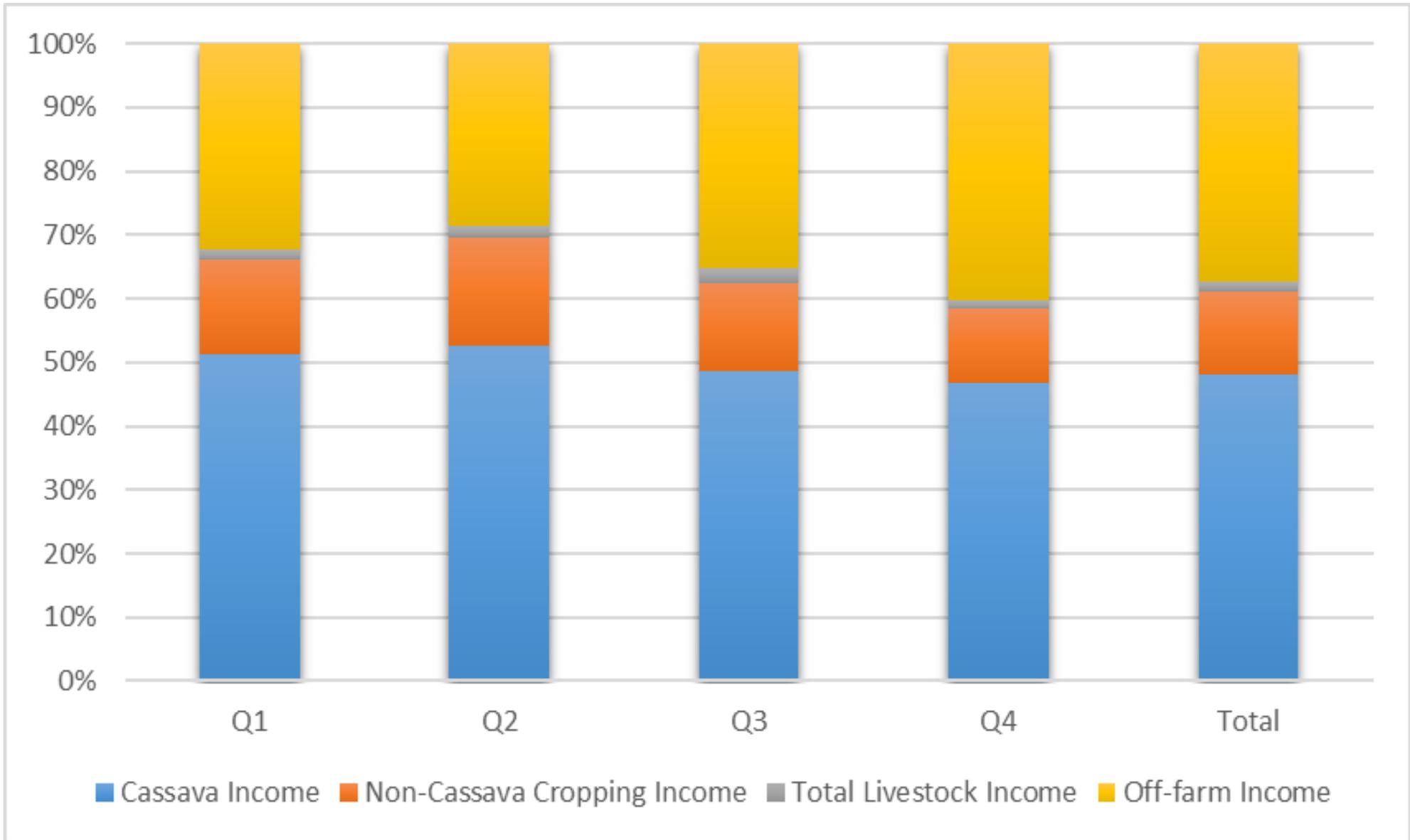
Average household incomes from various sources (riel/year)

District	Snuol	Chit Borei	Siembouk	Total
Cassava production	8,033,724	5,892,117	5,971,988	6,608,987
Non-cassava cropping	2,619,500	1,244,371	1,498,886	1,776,556
Total livestock	263,300	330,544	118,809	234,032
Non-farm income	5,425,750	4,776,621	5,149,511	5,117,235
Total income	16,342,274	12,243,655	12,739,195	13,736,810

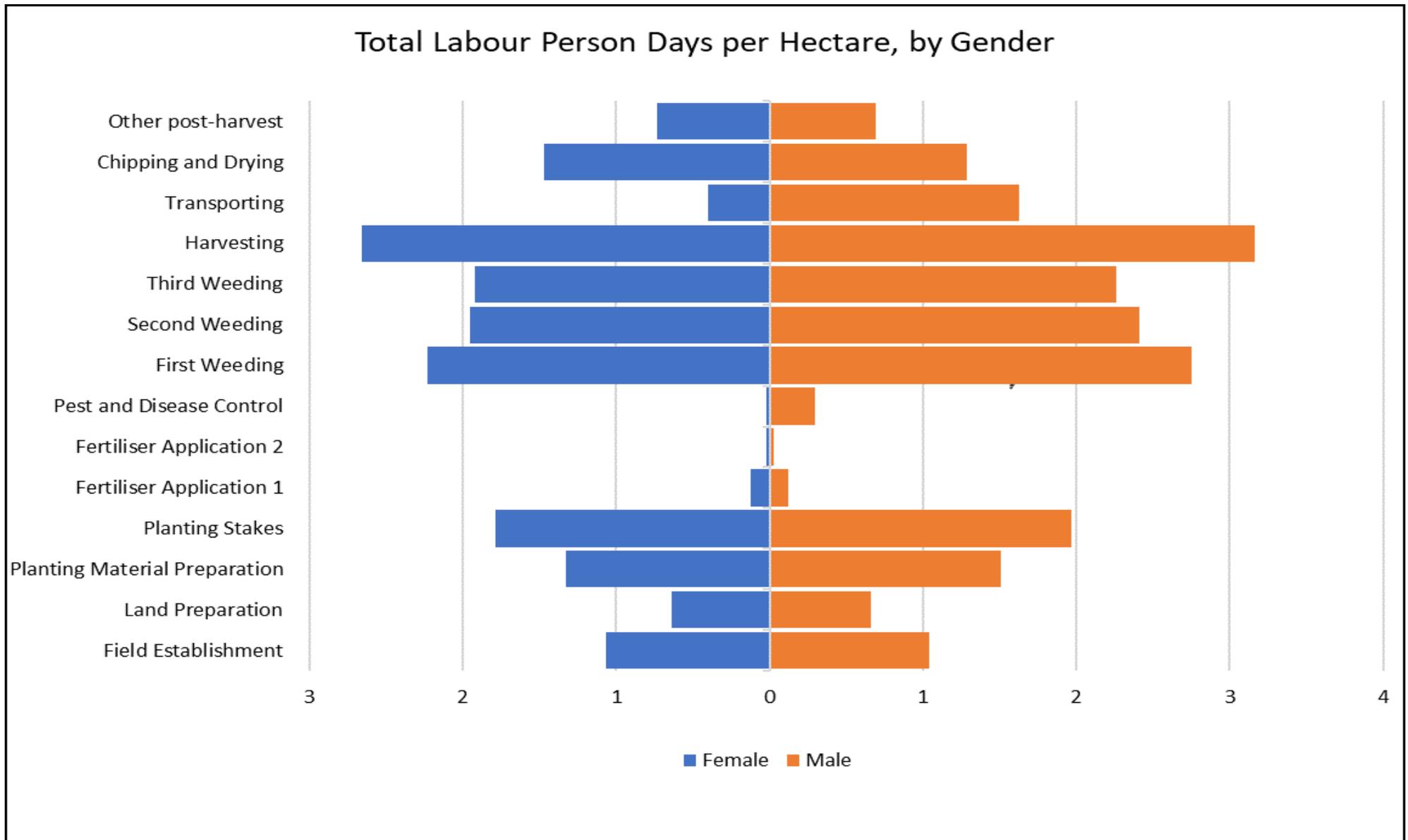
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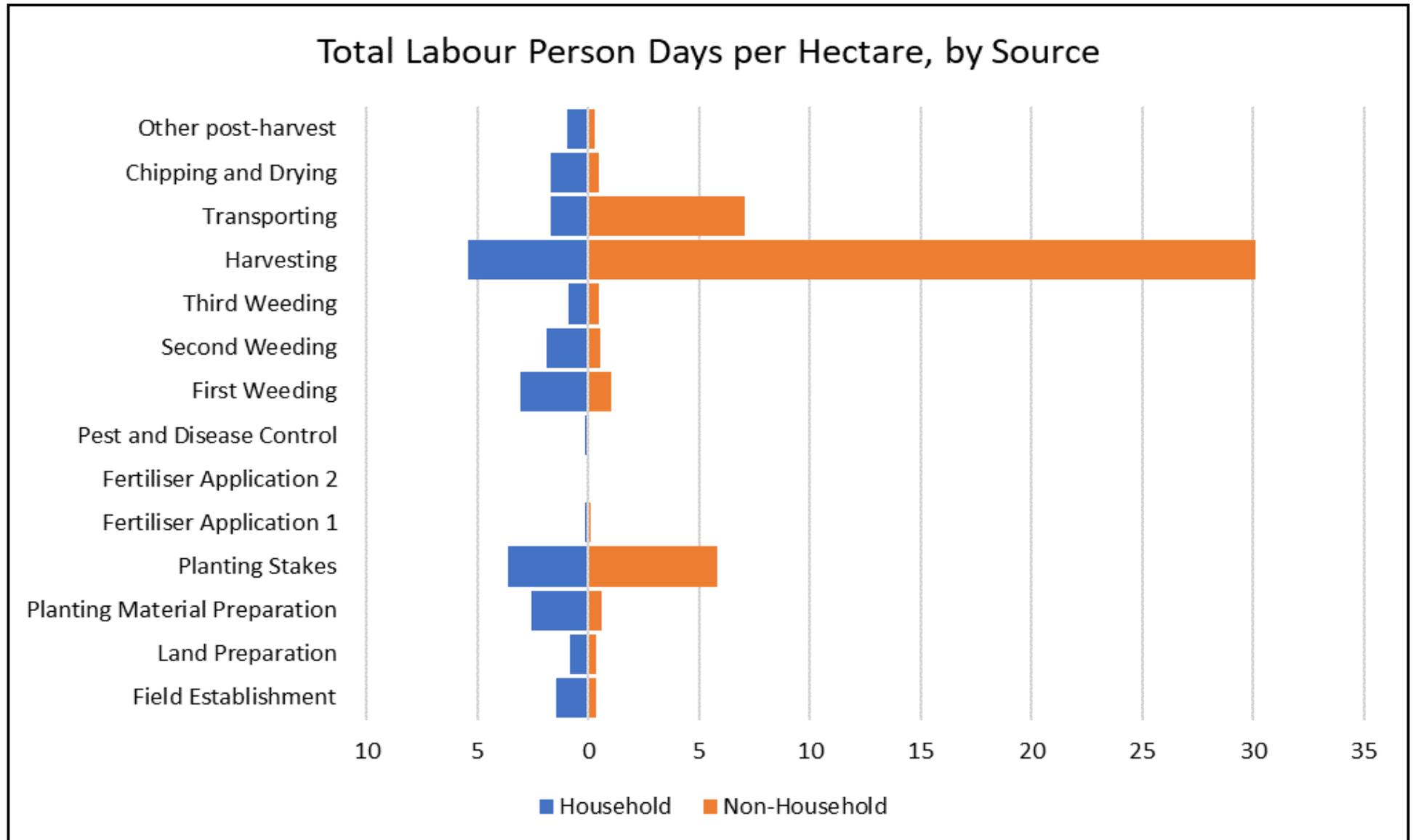
Relative importance of cassava income (by income quartile)



Use of labour by gender



Use of labour by source



Cassava production and yield

District	Snuol	Chit Borei	Siembouk	Total
Cassava Production 2016 (tons)	34.3	30.0	30.6	31.6
Cassava Harvest Area 2016 (ha)	3.16	2.78	2.54	2.82
Cassava Yield 2016 (tons/ha)	10.8	10.6	11.8	11.1
Highest Cassava Production in the last 5 years (tons)	42.0	32.4	32.3	35.4
Area Utilized for Highest Cassava Yield in the last 5 years (ha)	2.32	2.13	2.14	2.19
Highest Cassava Yield in the last 5 years (tons/ha)	18.5	15.6	16.7	16.9
Lowest Cassava Production in the last 5 years (tons)	25.1	19.3	18.1	20.7
Area Utilized for Lowest Cassava Yield in the last 5 years (ha)	2.7	2.34	2.23	2.41
Lowest Cassava Yield in the last 5 years (tons/ha)	9.1	8.2	8.8	8.7

Yield trend by district

District	Snuol	Chit Borei	Siembouk	Total
Declining rapidly	30%	37%	28%	31%
Declining moderately	46%	35%	46%	42%
fluctuating, but no clear trend	1%	0%	2%	1%
Relatively constant	11%	9%	10%	10%
Increasing	12%	19%	13%	15%
Increasing rapidly	0%	0%	1%	0.3%

Use of fertiliser

Name of District	Snuol	Chitr Borie	Siem Bouk	Total
Do you apply organic fertiliser to your cassava?	1.00%	2.97%	0.00%	1.29%
Do you apply inorganic fertiliser to your cassava?	5.00%	7.92%	4.55%	5.79%
Do you understand what the NPK values mean on the fertiliser you apply?	2.00%	1.98%	0.00%	1.29%
Have you ever seen a fertiliser trial on cassava?	34.00%	22.77%	17.27%	24.44%
Are you interested in visiting a fertiliser demonstration trial to see the result on production and returns?	91.00%	87.13%	70.00%	82.32%
Are you interested in conducting a trial on your own land?	62.00%	75.25%	58.18%	64.95%
Can you purchase fertiliser on credit in a store in your area?	14.00%	44.55%	32.73%	30.55%
Have you ever purchased fertiliser on credit?	5.00%	28.71%	21.82%	18.65%
In the last 12 months, did you get a loan?	37.00%	60.40%	26.36%	40.84%

Soil, nutrient and weed management

- Soil Erosion perceived as a problem (66%) but not severe one
- Interested in trialling conservation practices on own land (53%)
- Past practice of intercrops with your cassava and current practice
- Visiting fertilizer trials (82%) and try on own land (62%)
- Weeds as big problem (74%)
- Manual weeding (66%) and **herbicides (81%)** but low training on herbicide

Proportion of household taking loan

Access to Credit	Q1	Q2	Q3	Q4	Total
Households that received a loan in the past 12 months	31%	31%	45%	57%	41%
Households with 1 loan	26%	24%	42%	52%	36%
Households with 2 loans	3%	5%	3%	5%	4%
Households with 3 loans	3%	1%	0%	0%	1%
Average value of total loans received (riel)	4,437,500	7,305,208	7,171,429	18,335,909	10,548,071

Sources of information

- Family, friends and neighbours in the village
- Cassava traders
- Farmer group, extension, cassava processor



Relationship with traders

Income Quartile	Q1	Q2	Q3	Q4	Total
Relationship with fresh root traders					
NA	23%	12%	17%	21%	18%
Very strong	1%	0%	0%	0%	0%
Strong	9%	21%	23%	22%	19%
Moderate	40%	42%	47%	42%	43%
Weak	21%	14%	8%	12%	14%
Very weak	6%	12%	4%	4%	6%
Relationship with dry chip traders					
Very strong	3%	0%	0%	0%	1%
Strong	8%	3%	12%	13%	9%
Moderate	12%	14%	14%	17%	14%
Weak	1%	4%	4%	1%	3%
Very weak	5%	1%	1%	6%	4%
<i>NA (only fresh roots)</i>	72%	78%	69%	62%	70%

Factors on cassava growing

Yield at which you will stop growing cassava?

	Frequency
10-15 t/ha	53
Smaller than 10 t/ha	146
Never stop	81
Don't know	10
Stop grow next year	6
Total	311

Will you grow cassava in the future?

	Snuol	Chit Borei	Siembouk	Total
Yes	45%	41%	27%	37%
No	44%	21%	55%	40%
Unsure	11%	39%	18%	23%