Cassava production and sustainable livelihoods of smallholders in Dak Lak

Mid-Term review
Vientiane, Laos
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Australian Government
Australian Centre for International Agricultural Research

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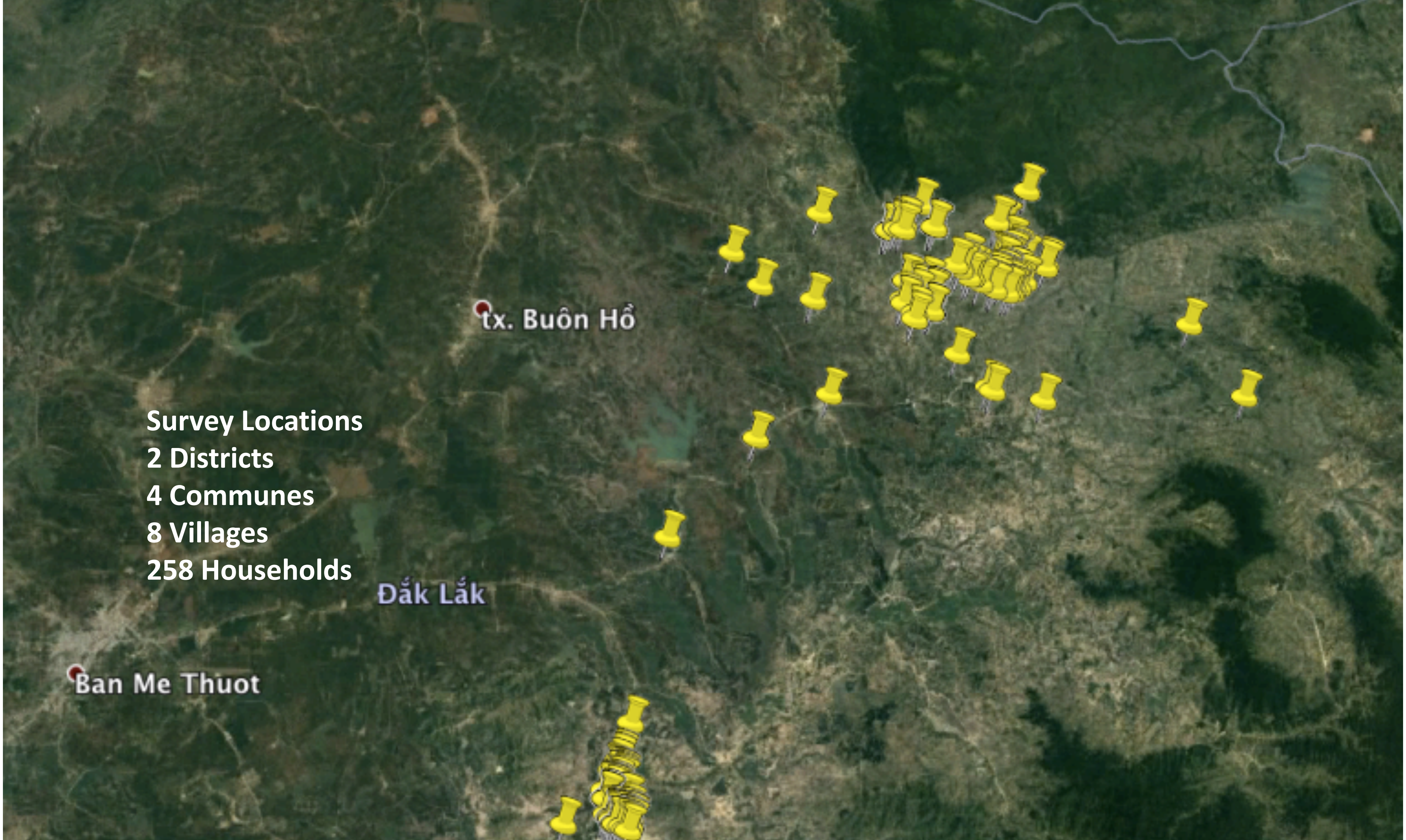
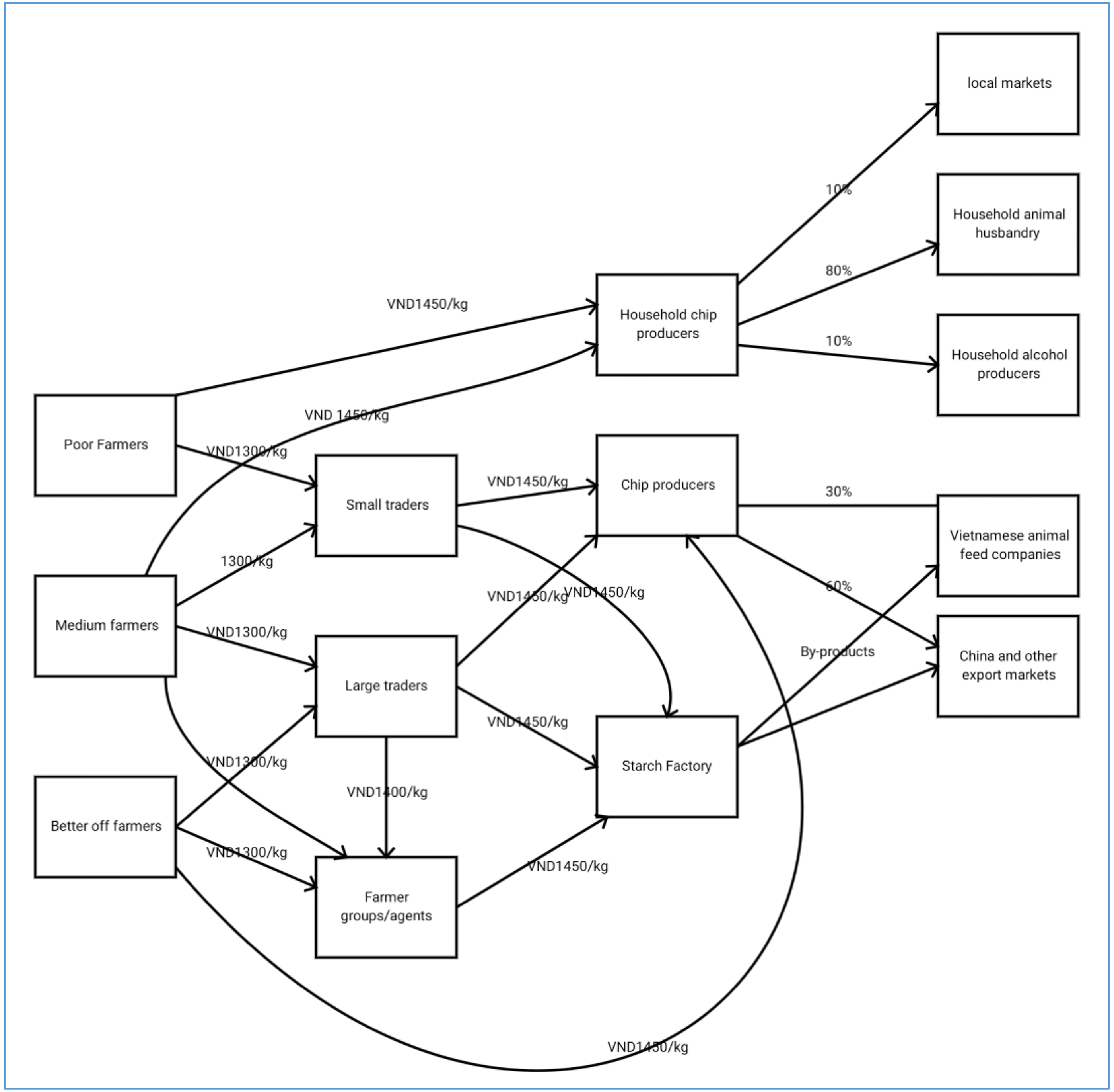
Outline

- Survey Characteristics
- Value Chain for Cassava
- Contribution of Cassava to smallholder livelihoods
- Key Agronomic Characteristics
- Implications for project interventions



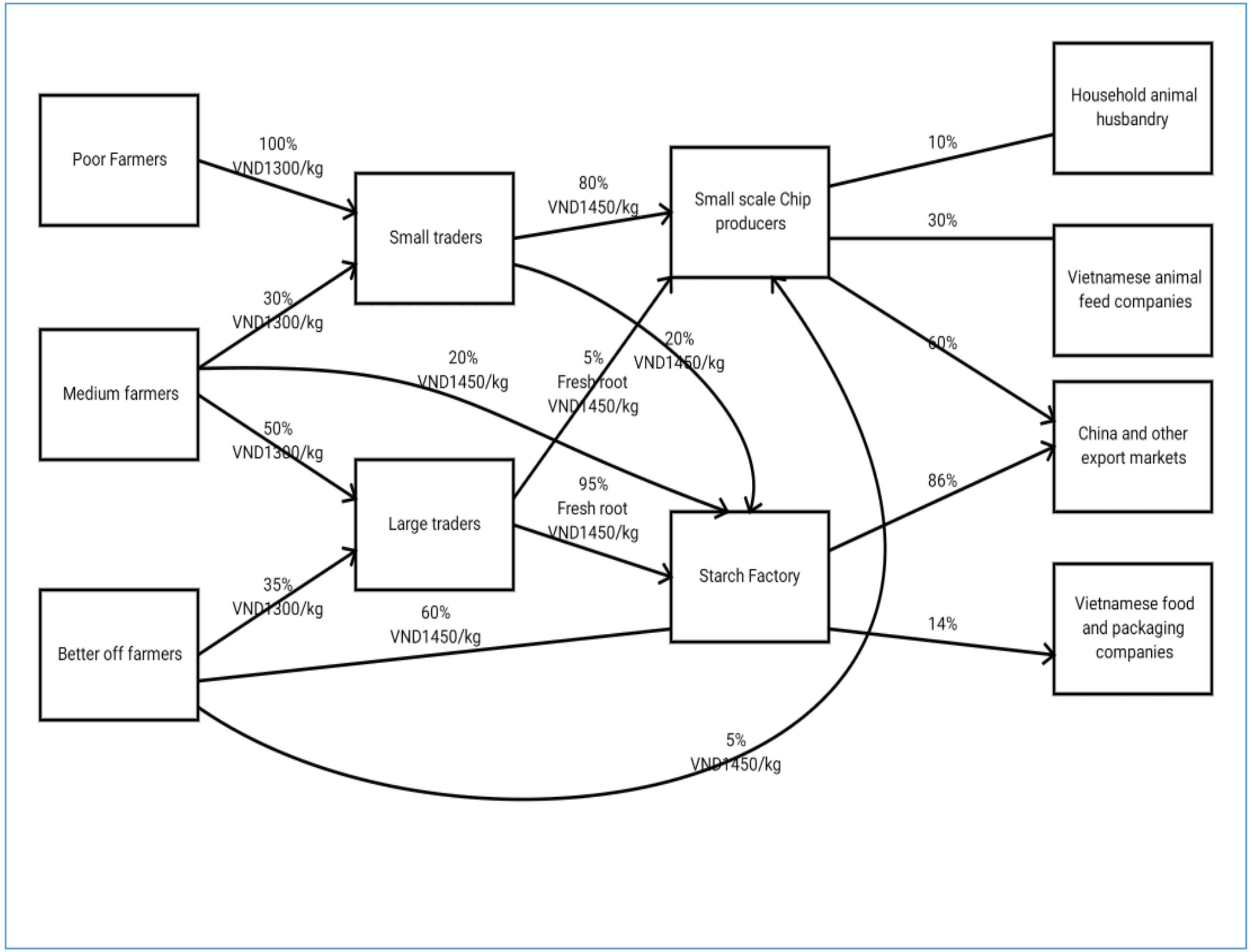
Survey Locations
2 Districts
4 Communes
8 Villages
258 Households



The majority of the 150,000 tons of cassava produced in the district are used by the DAKFOCAM starch factory in Dang Kang commune, with a small proportion being utilized by household scale dry chip producers and medium scale dry chip producers.

Poor farmers sell fresh roots to small traders or directly to household level dry chip producers, while medium farmers sell to small traders, larger traders and also through farmer groups or agents directly to the starch factory. Better off farmers are able to sell to large traders and also through farmer groups or agents directly to the starch factory.

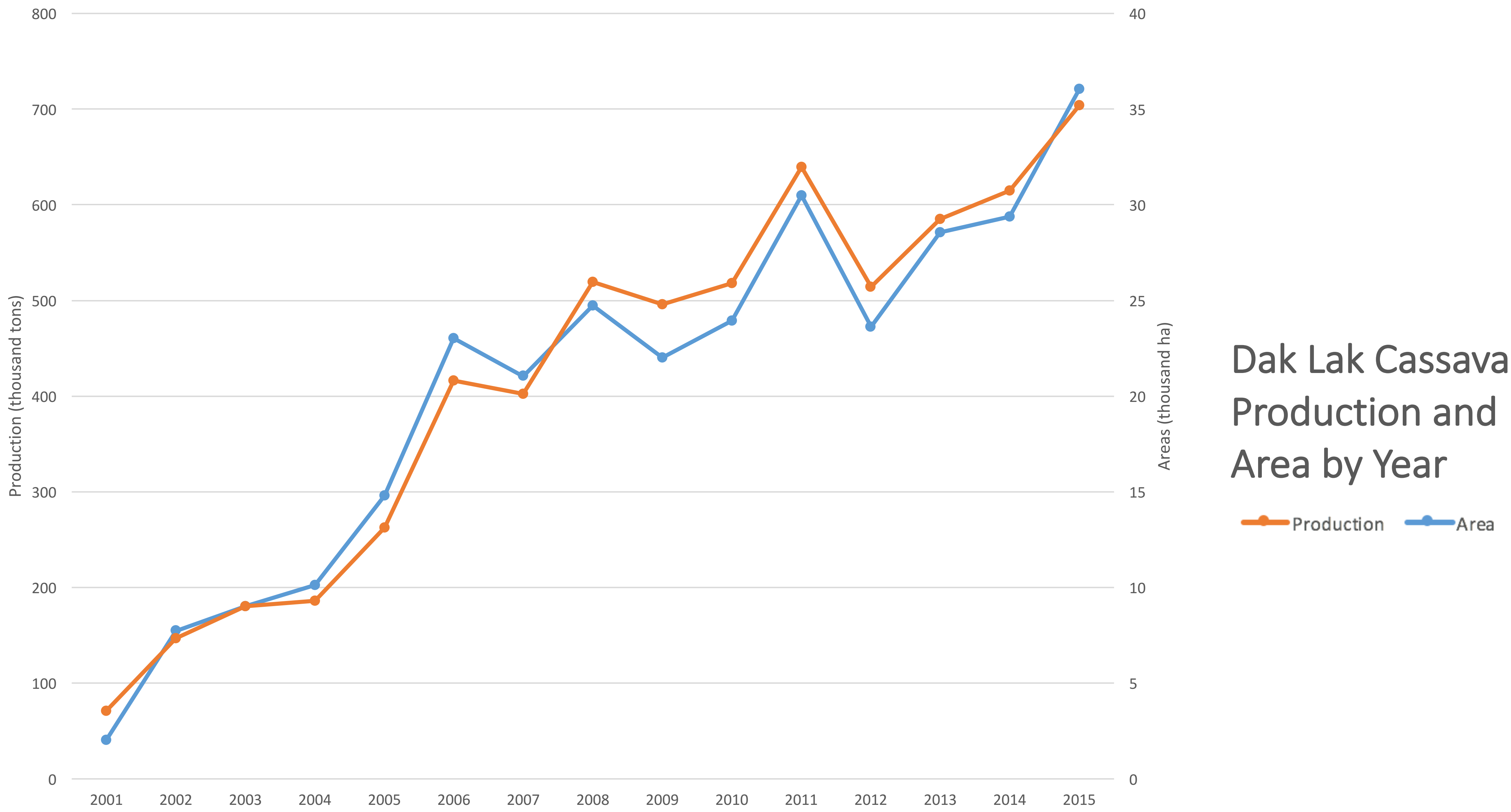
The Krong Bong starch factory has credit arrangements with around 750 farmers from 5 communes close to the factory (Dang Kang, Hoa Thanh, Cu Kty, Hoa Tan and Ea Trul)



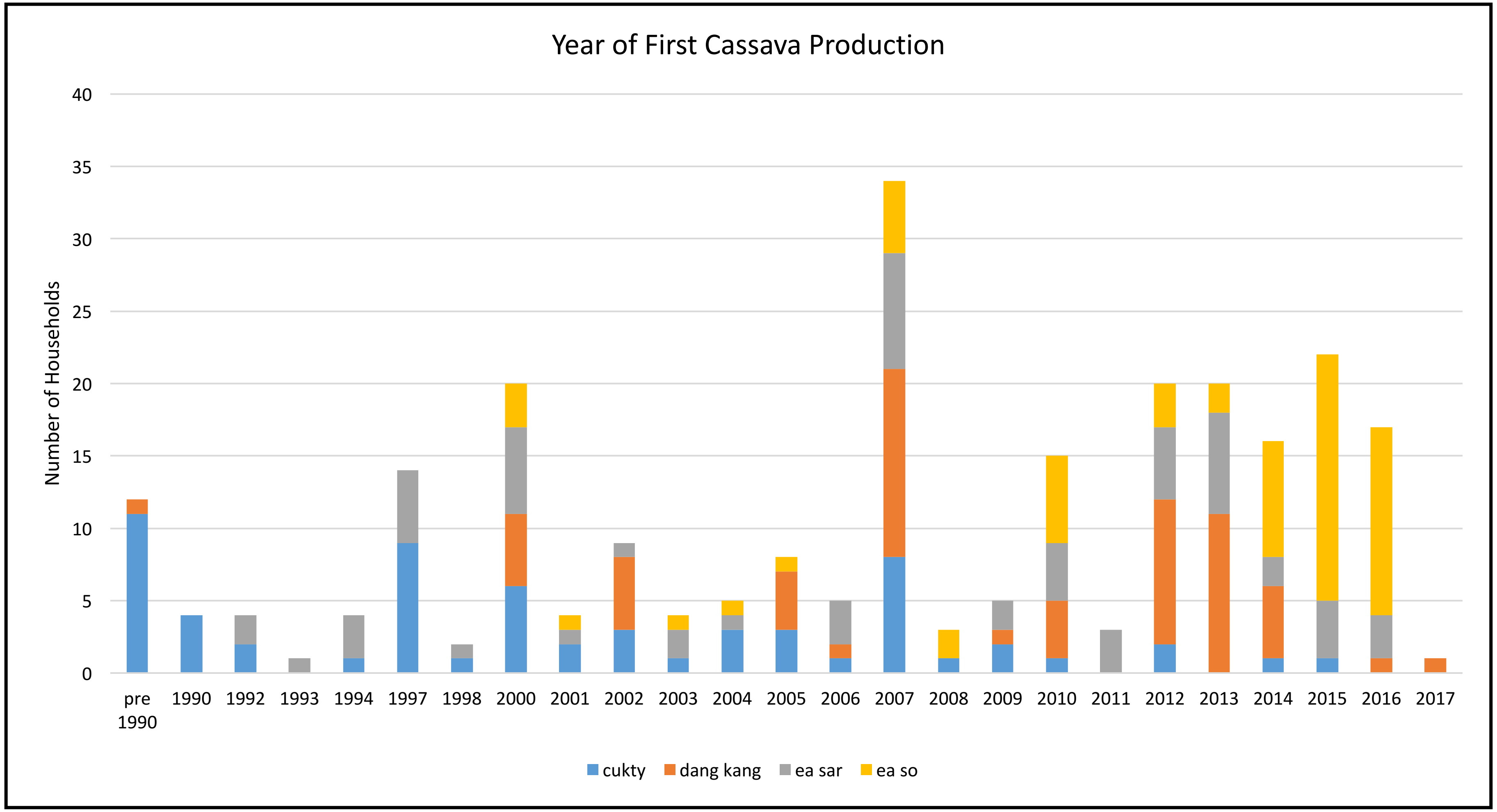
In Ea Kar, the majority of cassava production is utilized by the DAKFOCAM factory with only a small proportion of fresh roots being used by small-scale chip producers.

Poor farmers sell fresh roots to small traders while medium farmers sell to small traders, larger traders and also directly to the starch factory. Better off farmers are able to sell to large traders and also to sell products directly to the factory.

Unlike the Krong Bong factory, the DAFOKAM factory in Ea Kar does not enter into credit arrangements or have supply contracts with farmers or traders and buys on a spot market basis.



Dak Lak Cassava Production and Area by Year

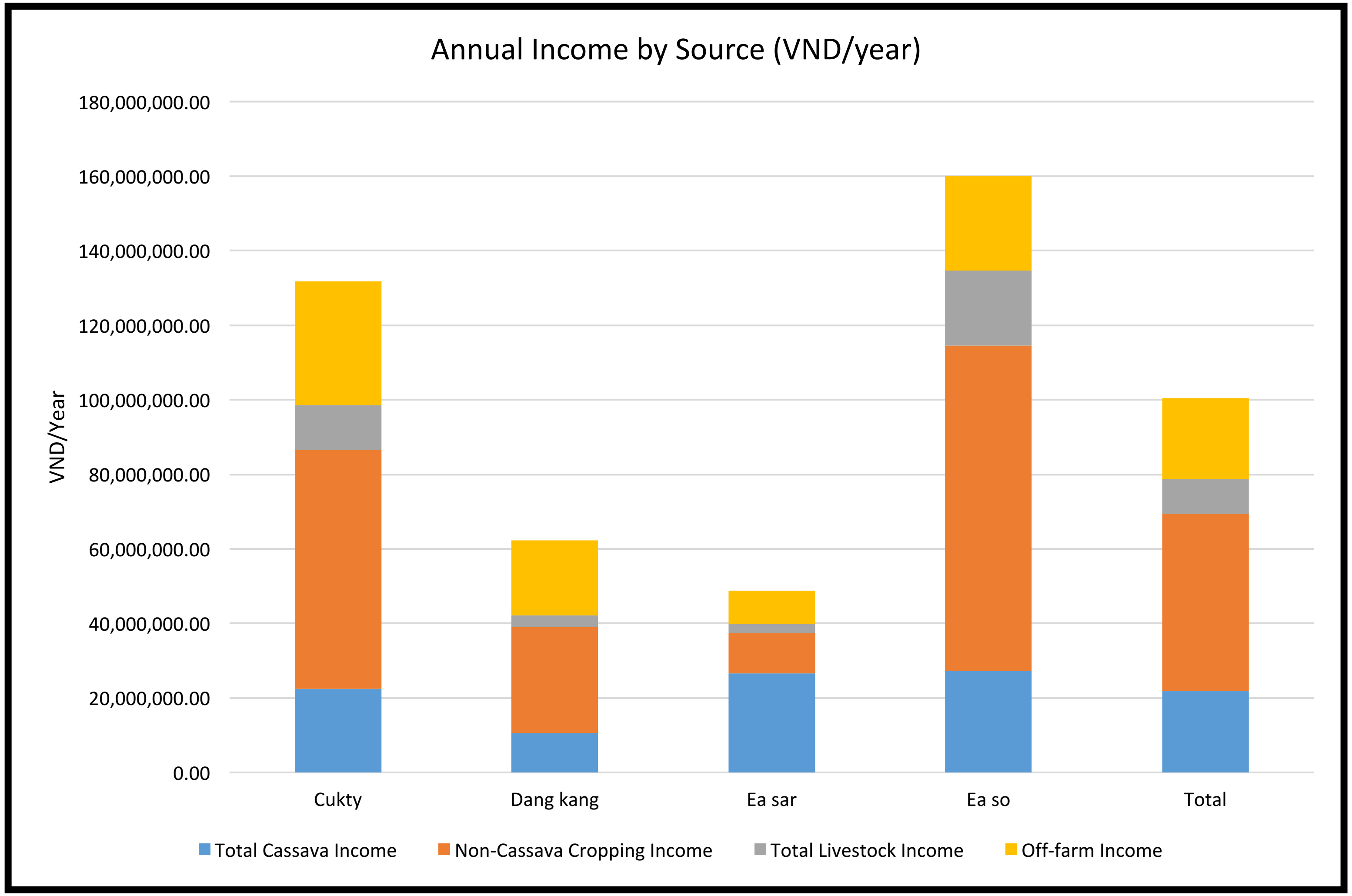


Significant proportion started production before 2000

First peak in 2007

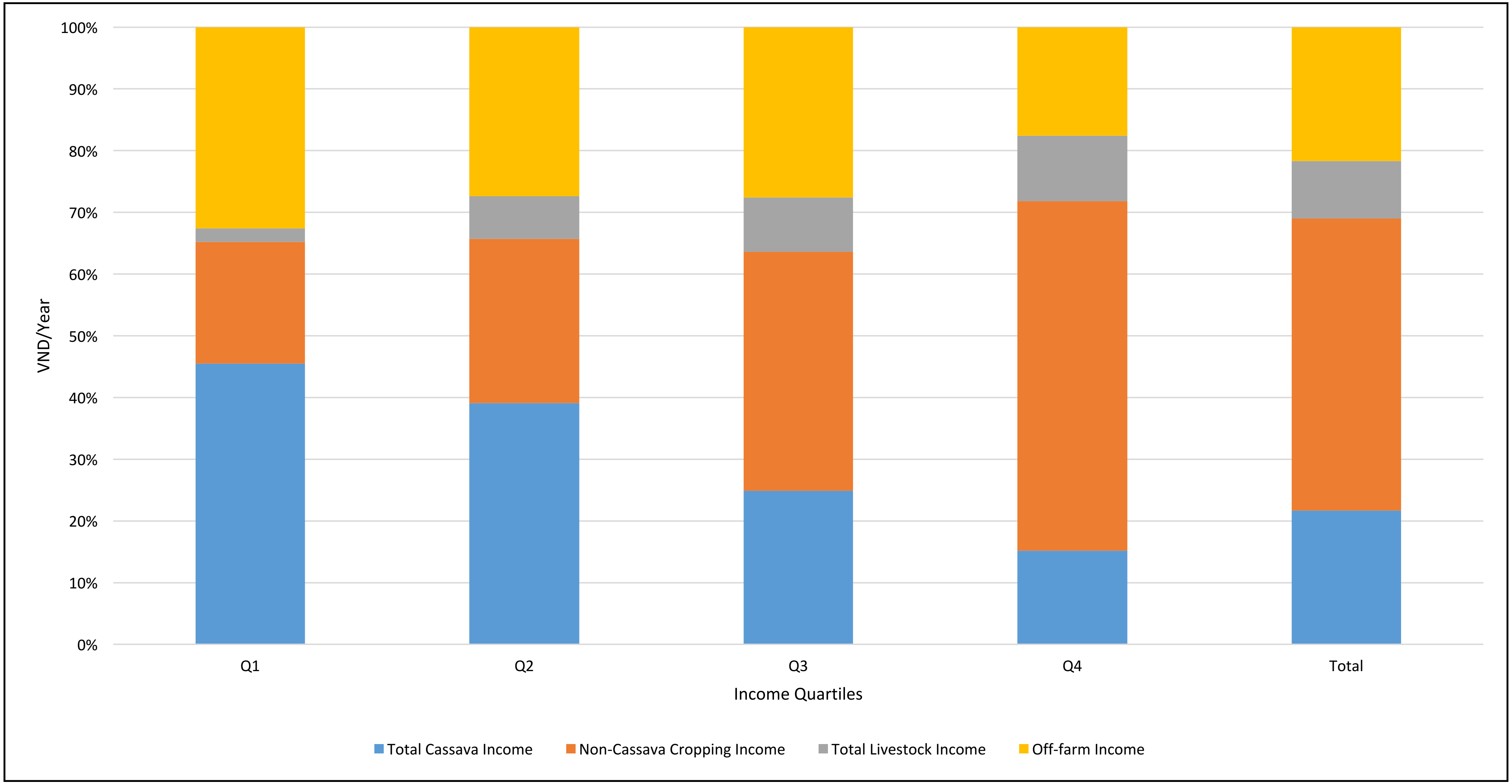
New entrants in Ea So in 2014-2016

Livelihoods of smallholder cassava farmers

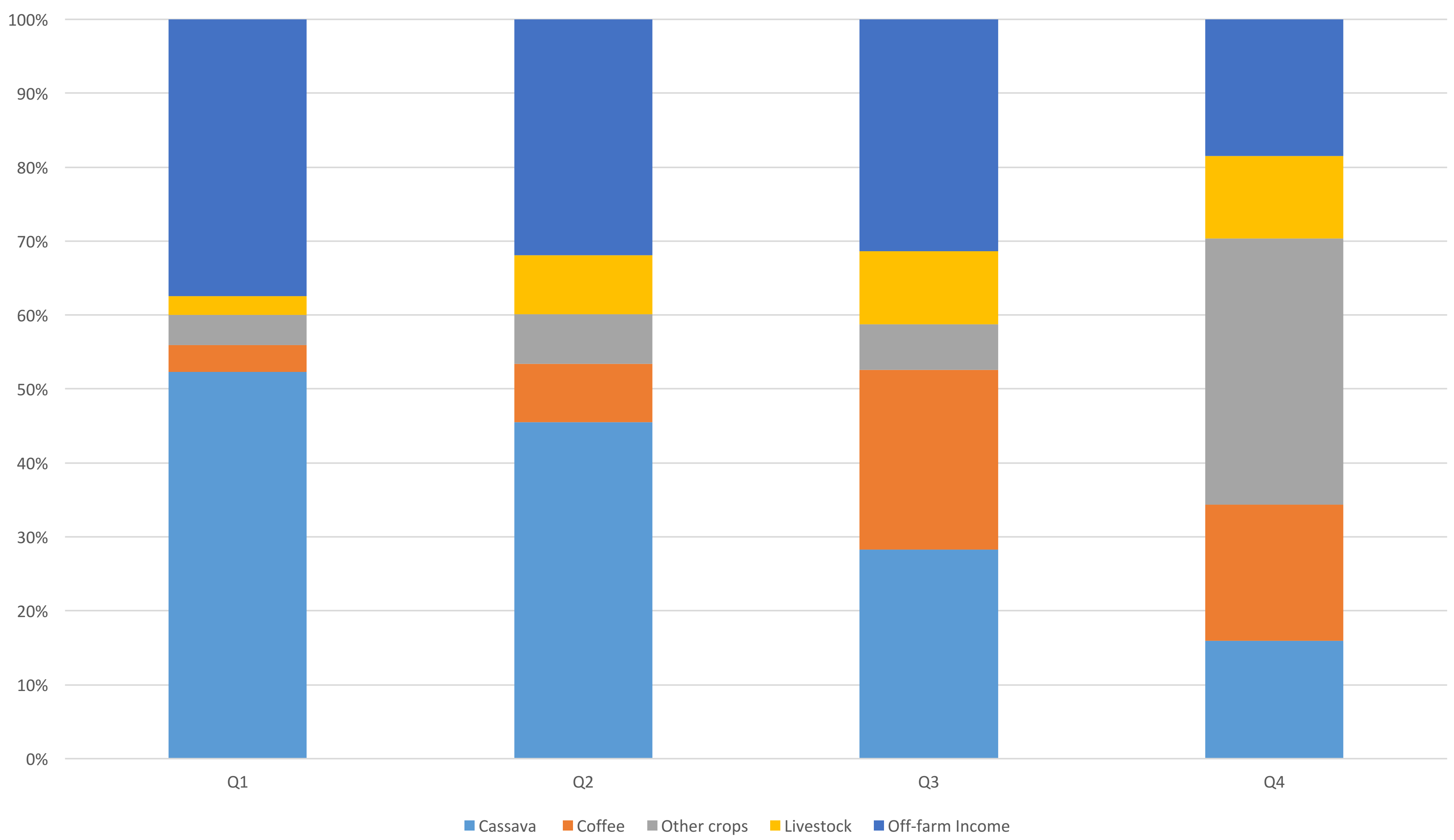


Livelihoods dominated by non-cassava cropping income in Cu Kty (coffee) and Ea So (sugarcane)

Livelihoods of smallholder cassava farmers

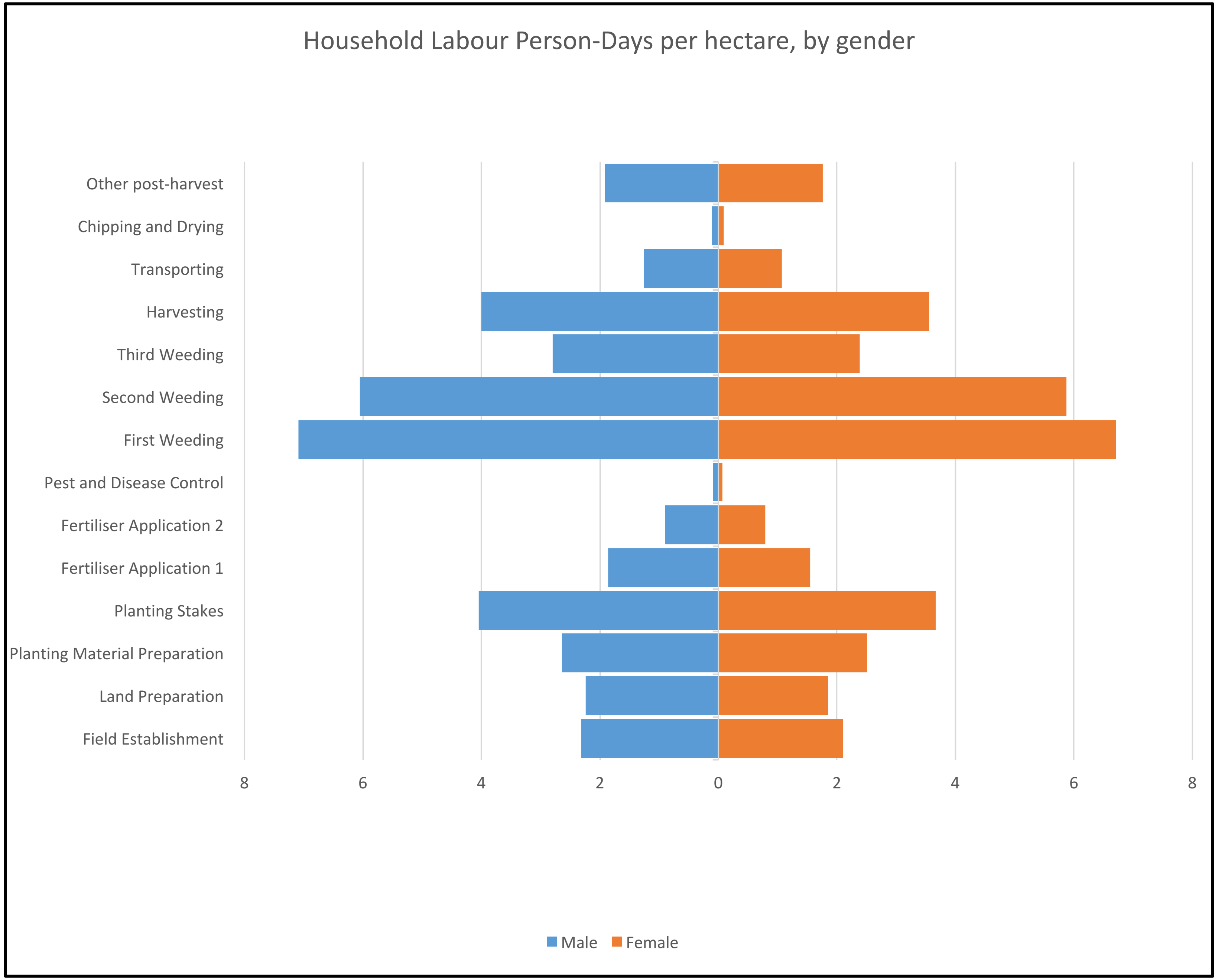


Cash Incomes of smallholder cassava farmers



Agricultural labour force of cassava households

	Average Number of Family Members		
Employment status in Agriculture	**Males**	**Females**	**Total**
Full time	**1.23**	**1.11**	**2.34**
Never	**0.86**	**0.88**	**1.75**
Part time	**0.12**	**0.08**	**0.20**
Rarely	**0.04**	**0.08**	**0.13**
Total	**2.26**	**2.15**	**4.42**

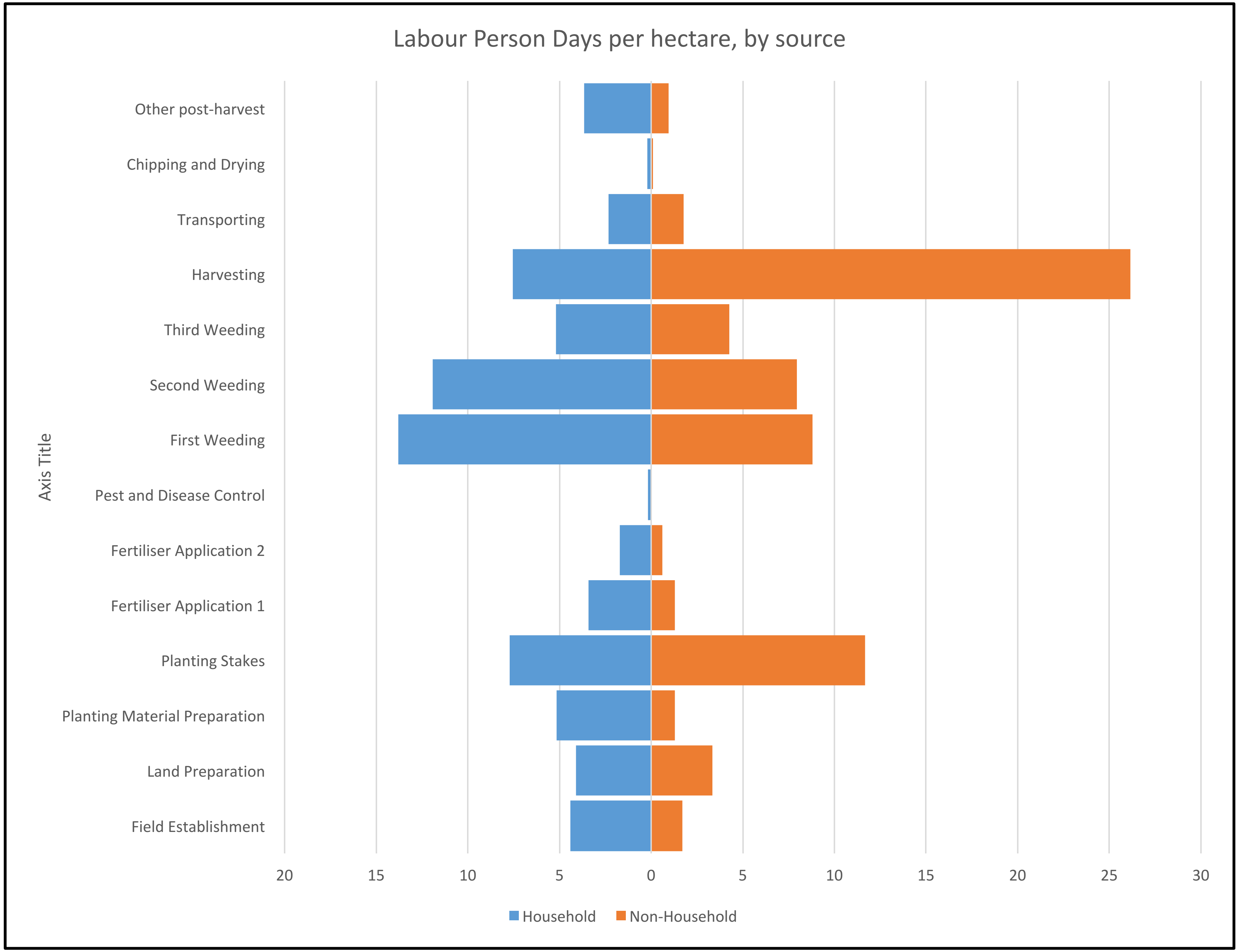


Even distribution of labour by gender

Harvesting

Weeding

Establishing and preparing fields



Mainly using household labour

Harvesting using some outside labour

Planting using some outside labour

Access to Credit

Access to Credit	Q1	Q2	Q3	Q4	Total
Percent of households that received a loan in the past 12 months	63.49%	71.88%	77.78%	69.84%	70.75%
% households with 1 loan	52.38%	56.25%	63.49%	52.38%	56.13%
% households with 2 loans	11.11%	15.63%	14.29%	14.29%	13.83%
% households with 3 loans	0.00%	0.00%	0.00%	3.17%	0.79%
Average value of total loans received (VND)	21,066,666	30,765,625	39,698,413	72,924,762	41,072,964

Source of Credit

Source of Loan	Proportion(%)
Bank for Social Policies	39.8%
Agribank	33.7%
Input supplier/trader	14.8%
Dong A Bank	1.0%
Sacombank	1.0%
ACB	0.5%
Eximbank	0.5%
other bank	4.1%
Womens Union	0.5%
Factory	0.5%
family/friend/neighbor	3.6%

Source of Production Information

Source of Information	Frequency
Friends and neighbours in the village	241
Family	157
TV	137
Friends and neighbours outside the village	121
Farmer group	64
Cassava Traders	44
District government extension	27
Province government extension staff	13
Cassava processors	13
Researchers	9
Non government organisation	7
Radio	7
Other	5
Internet	1

Source of Market Information

Source of Information	Frequency
Friends and neighbours in the village	245
Family	158
TV	146
Friends and neighbours outside the village	131
Farmer group	65
Cassava Traders	65
District government extension	21
Cassava processors	15
Radio	8
Province government extension staff	5
Other	5
Researchers	2
Non government organisation	0
Internet	0

Group Membership

Name of Organization	Frequency
Women's Union	31
Farmers Union	19
Ho Chi Minh Youth Union	4
Senior Citizens Union	4
Veterans Union	4
Saving group	3
catholic Church	3
Communist Party	2
Police	2
Ethnic minority	1
Exercise Group	1
Saving group	1
Vietnamese Family of Buddhists	1
Cultural group	1
Village group	1

Asset Ownership

Assets	Q1	Q2	Q3	Q4	Total
Truck	0.00%	0.00%	0.00%	0.00%	0.00%
car	0.00%	0.00%	0.00%	0.00%	0.00%
motorbike	**68.25%**	**87.50%**	**82.54%**	**90.48%**	**82.21%**
two wheel tractor	7.94%	21.88%	34.92%	42.86%	26.88%
four wheel tractor	4.76%	7.81%	17.46%	19.05%	12.25%
water_pump	12.70%	26.56%	34.92%	41.27%	28.85%
generator	0.00%	0.00%	1.59%	4.76%	1.58%
mobile phone	74.60%	89.06%	92.06%	90.48%	86.56%
smart phone	3.17%	3.13%	4.76%	22.22%	8.30%
tv	60.32%	73.44%	88.89%	95.24%	79.45%
dvd player	14.29%	18.75%	20.63%	28.57%	20.55%
radio	6.35%	4.69%	7.94%	11.11%	7.51%
refrigerator	0.00%	7.81%	14.29%	31.75%	13.44%

Land preparation techniques

Tractor - 75% Buffalo/Cattle - 2% Manual - 18%

Varieties of Cassava planted by farmers

Variety Name

	Frequency	Percent	Valid Percent	Cumulative Percent
cao san	65	30.4	30.4	30.4
khong biet	54	25.2	25.2	55.6
khong nho	7	3.3	3.3	58.9
km140	1	.5	.5	59.3
km18	1	.5	.5	59.8
km39	1	.5	.5	60.3
km419	1	.5	.5	60.7
KM48	1	.5	.5	61.2
km92	1	.5	.5	61.7
KM94	15	7.0	7.0	68.7
km9698	1	.5	.5	69.2
lai cu	1	.5	.5	69.6
mi do	1	.5	.5	70.1
mi lai	29	13.6	13.6	83.6
mi thuong	31	14.5	14.5	98.1
n4	1	.5	.5	98.6
nk120	1	.5	.5	99.1
rayong71	1	.5	.5	99.5
tuc nguc	1	.5	.5	100.0
Total	214	100.0	100.0	

Weeds, weeding and herbicide

60% of farmers think that weeds are a problem and limit productivity

86% use herbicides to control weeds

98.4% of farmers conduct manual weeding to control weeds

Adoption of fertiliser

High rate of adoption of chemical fertiliser – 85.4 percent of farmers use NPK

BUT Quantities used are relatively small – 200-300 kg per hectare

Lack of understanding – only 11% of farmers know what NPK means

Most common fertiliser formulation is 16:16:8

Inappropriate fertiliser formulations used

Second most common fertiliser formulation – "không biết"

Soil Erosion

64% of farmers think that Soil Erosion is a problem
19% think that the problem is serious or very serious

46% think that yields are declining

16.3% of farmers are aware of erosion control measures
Only 1.6 % have had any training on erosion control

80% are interested in participating in erosion control trials

Where do farmers sell?

Commune	cukty	dang kang	ea sar	ea so	Total
Use for own livestock	0.00%	0.00%	3.08%	0.00%	0.79%
Cassava Leaf	0.03%	6.45%	1.54%	0.00%	1.98%
Sell fresh cassava	98.41%	98.39%	100.00%	98.41%	98.81%
Sell Dried cassava	1.60%	0.00%	0.00%	1.60%	0.80%

Relationships with Fresh Root Traders

Income Quartile	Q1	Q2	Q3	Q4	Total
very strong	0.0%	0.0%	2.4%	0.0%	0.6%
Strong	22.8%	18.8%	21.4%	14.2%	19.3%
moderate	63.6%	81.2%	76.2%	81.0%	75.6%
weak	9.0%	0.0%	0.0%	4.8%	3.4%
very weak	4.6%	0.0%	0.0%	0.0%	1.1%

Do you think you will still be growing cassava in 5 years?

	Income quartile 1	Income quartile 2	Income quartile 3	Income quartile 4
Yes	71.4%	62.5%	44.4%	39.7%
No	7.9%	10.9%	4.8%	14.3%
Unsure	20.6%	26.6%	50.8%	46.0%

Significant uncertainty about the future.

Implications for Project Interventions

- Higher yields could be gained through more appropriate fertiliser formulation and increases in application rates
- Higher yielding varieties are likely to have the most potential for increasing yields and improving farmer livelihoods and present the least challenges for adoption
- Declining yields and cassava prices, and the fact that cassava only accounts for a small proportion of farmer livelihoods means that benefits of new technologies must be very significant in order to encourage any widespread adoption

Partners for disseminating innovations

- DAKFOCAM has an incentive to support farmers to increase the quality/starch content of fresh roots supplied to the factory and to balance supply levels over a longer growing/harvesting season. Interventions could make use of the existing linkages of DAKFOCAM with the small trader/farmer group networks in Ea Kar and through linkages with farmers taking credit from the Krong Bong factory
- Traders and collectors have more direct links to farmers but only have an incentive to disseminate improved varieties of cassava if (a) they are able to profitably sell planting material; and (b) they are able to collect increased quantities of cassava roots or chips from farmers using improved varieties
- Fertiliser companies have an incentive to develop more appropriate fertiliser formulations for cassava production and disseminate these formulations through networks of input supply shops

Thank You
Cảm ơn

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