



MOUNTAIN TERRACES PROJECT, ICARDA/AREA, YEMEN

Rural Livelihood Assessment

"Results of formal survey"

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The Mountain Terraces Project (MTP) in Yemen has the aim of improving rural livelihoods and increasing the chances of maintaining mountain terrace land.

The project attempts to use community-based integrated natural resources management research approach, which involves the use of participatory research methods in problem identification and technology development, generation of direct benefits to farmers in a short time horizon and linking with development.

One objective of this project is analyzing household investment behavior and the socioeconomic factors affecting it.

The main research methods used for this component are:

- **Participatory Rural Appraisal**
(Draft reports are ready)
- **Formal Survey of Households**

The main objectives of the formal survey are:

- **To collect relevant socioeconomic data and determine the association between terrace degradation (investment) and the socioeconomic variables.**
- **To examine the impact of farmers' income, labor constraints, and security of access to land on production and investment decisions.**

3 Watersheds were selected for this study:

- **Yasqum (Yafa District) in Lahag Province**
- **Al- Qimmah in Hajja Province**
- **Alnaqelain in Ibb province**

A formal questionnaire was developed and tested. It focused on the following topics:

- **Measurement of (Human, Financial, Natural, Physical, Social) capitals.**
- **Subjective assessment of livelihood by households' themselves.**
- **The agricultural innovations that farmers learned for the last 5 years.**
- **The major expenditures of the family for the last year (12 months).**
- **Migration and sending money from abroad.**
- **Source of energy.**

A formal questionnaire was developed and testes. It focused on the following topics: (cont.)

- **Land tenure and property rights.**
- **Land degradation.**
- **Productivity and factor affecting the productivity of crops and livestock.**
- **Food security**
- **Rural investment**
- **Gender issues**
- **Household objectives**

176 households were interviewed, their distribution were:

Province	Location in watershed			Total
	Top	Moderate	Bottom	
Lahag	7	21	9	37
Hajja	20	20	20	60
Ibb	25	29	25	29
Total	52	70	54	176

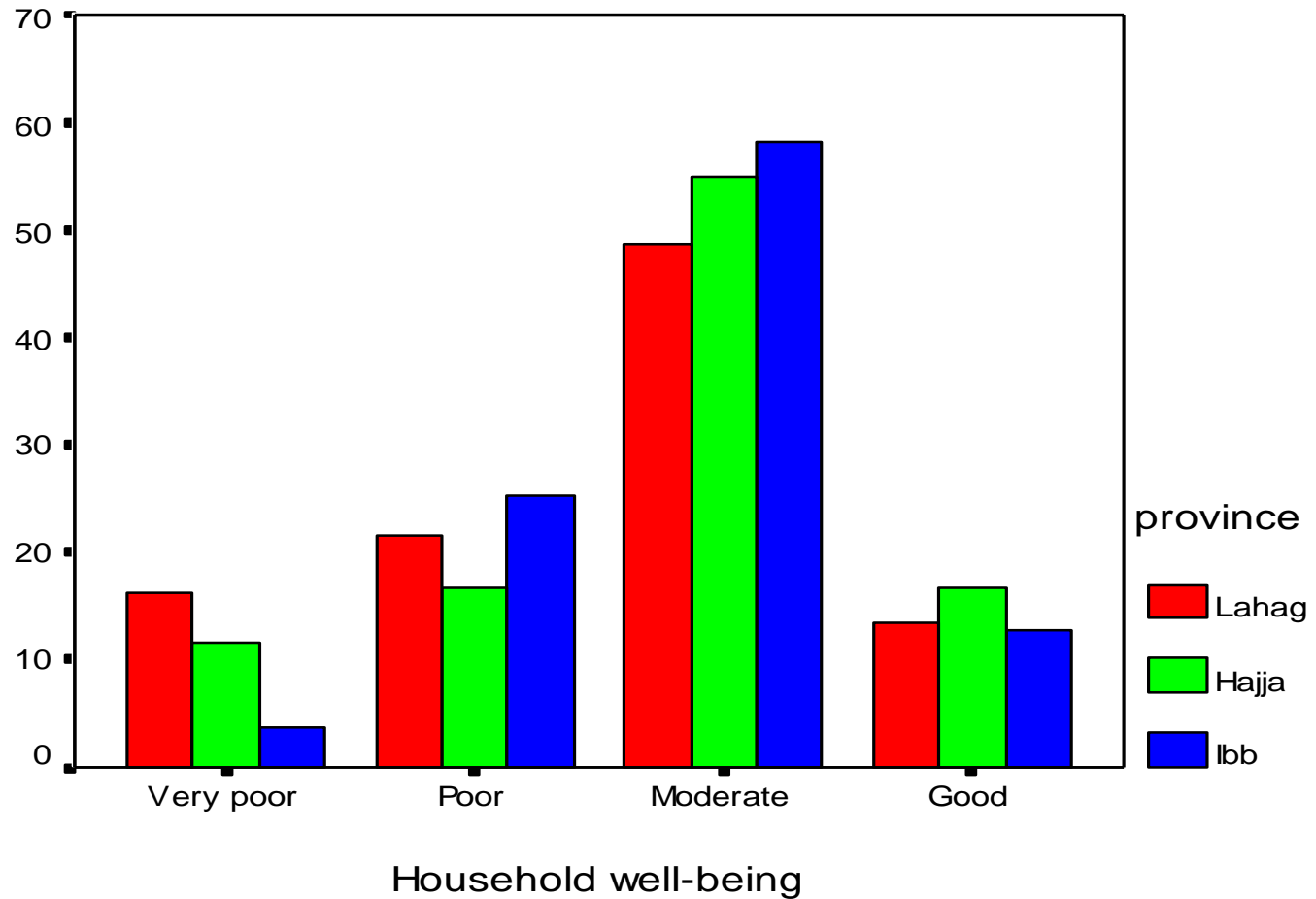
Some results

Household well-being by province

Household well-being	Province			Total	% Total
	Lahag	Hajja	Ibb		
Very poor	6	7	3	16	9
Poor	8	10	20	38	22
Moderate	18	33	46	97	55
Good	5	10	10	25	14
Total	37	60	79	176	100

No significant differences

Percentage of Household Well-being by Provinces



Creating the Average Income Quartiles

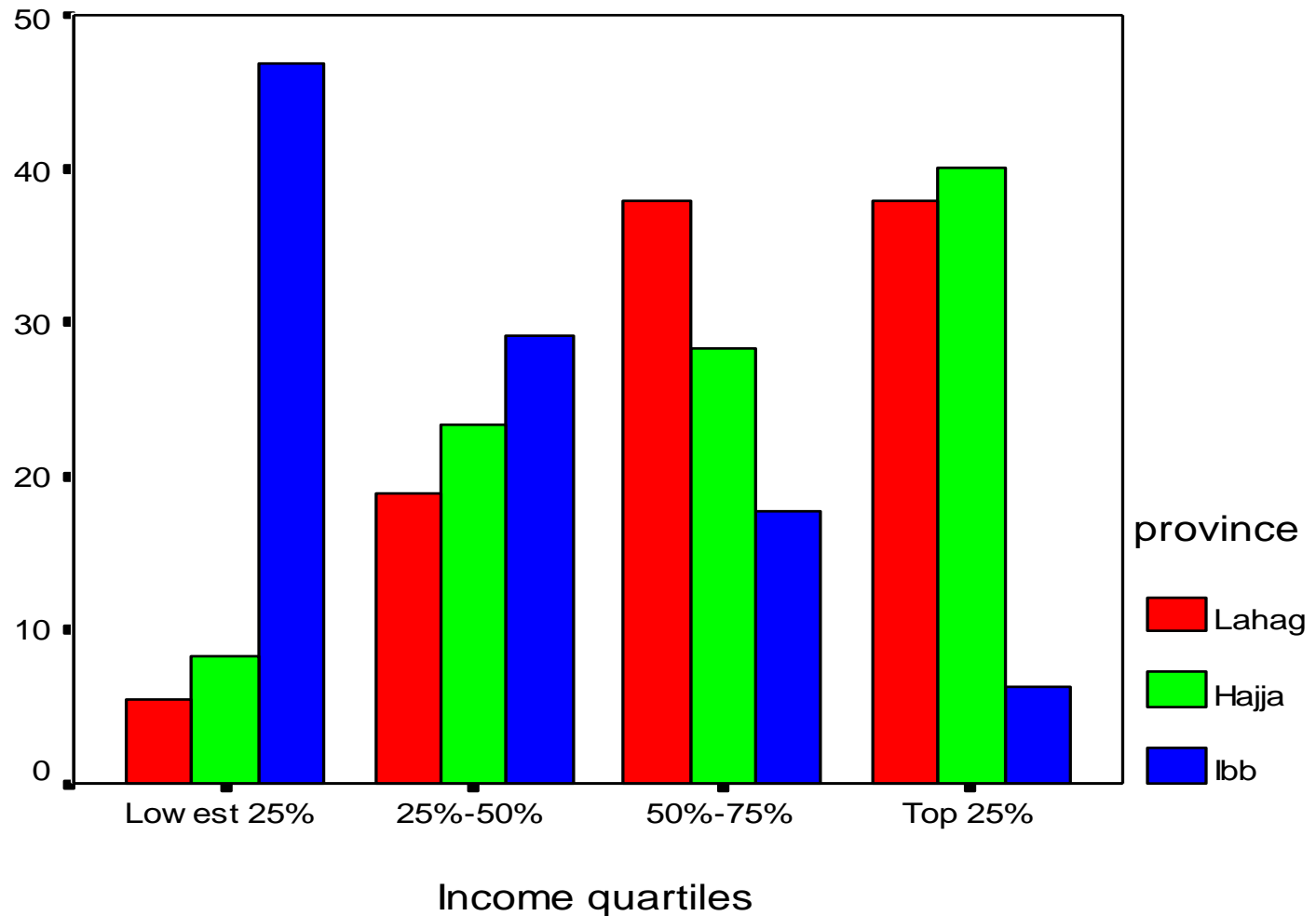
Cross-tabulation between Income Quartiles and Household Well-being

Income Quartiles	Household well-being (%)				N
	Very poor	Poor	Moderate	Good	
Lowest 25%	14	34	48	5	44
25%-50%	18	16	48	18	44
50%-75%	2	31	64	2	45
Top 25%	2	5	60	33	43
Total	9	22	55	14	
N	16	38	97	25	176

Averages of annual income quartiles (Riyal/year)

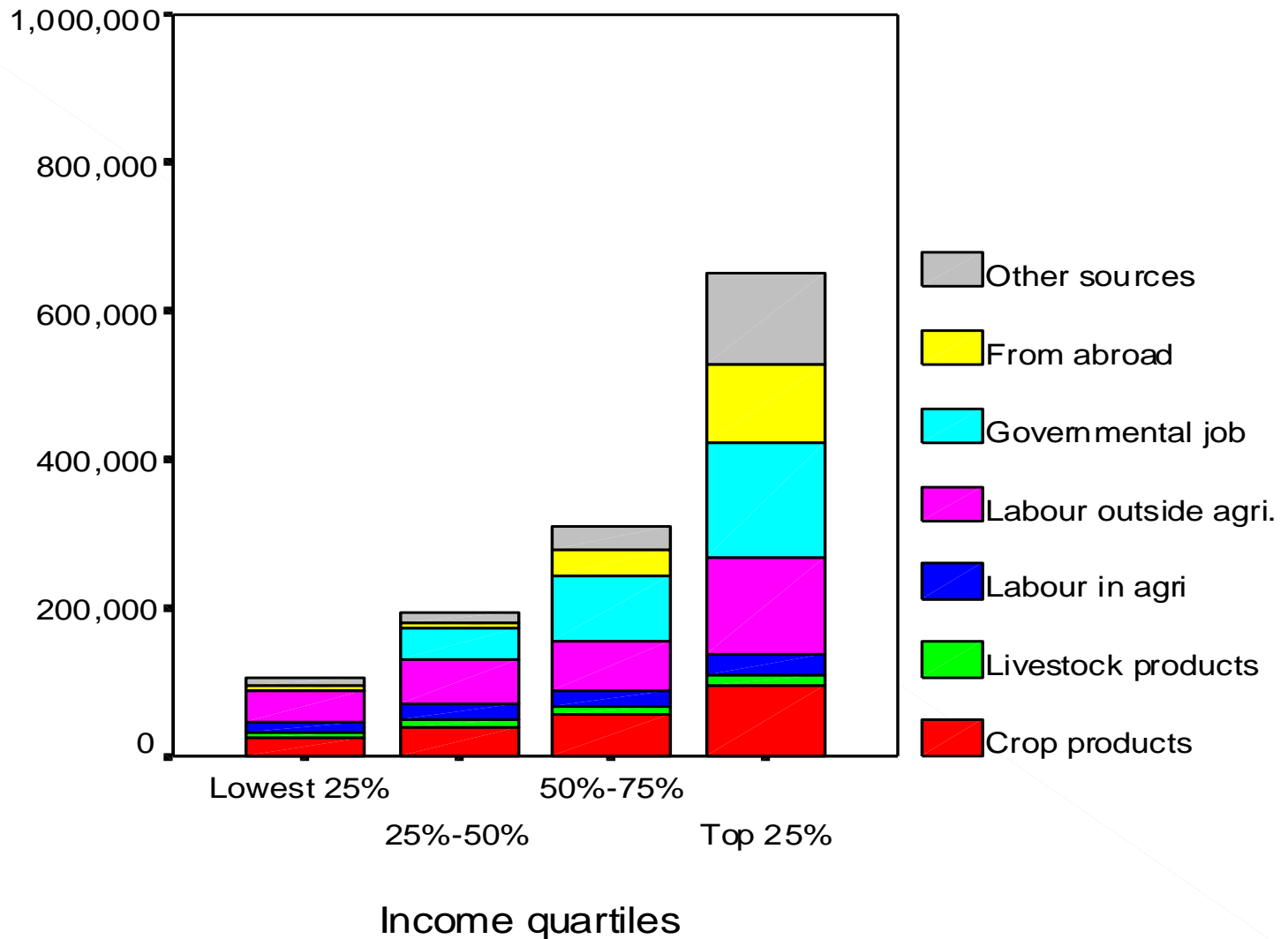
Group	Lahag	Hajja	Ibb	Average
Lowest 25%	91540	109000	104397	104336
25%-50%	216429	199357	184230	194166
50%-75%	309836	312176	310429	310904
Top 25%	764693	587567	653600	652914
Average	452472	379077	198911	313637

Percentage of Income Quartiles by Provinces

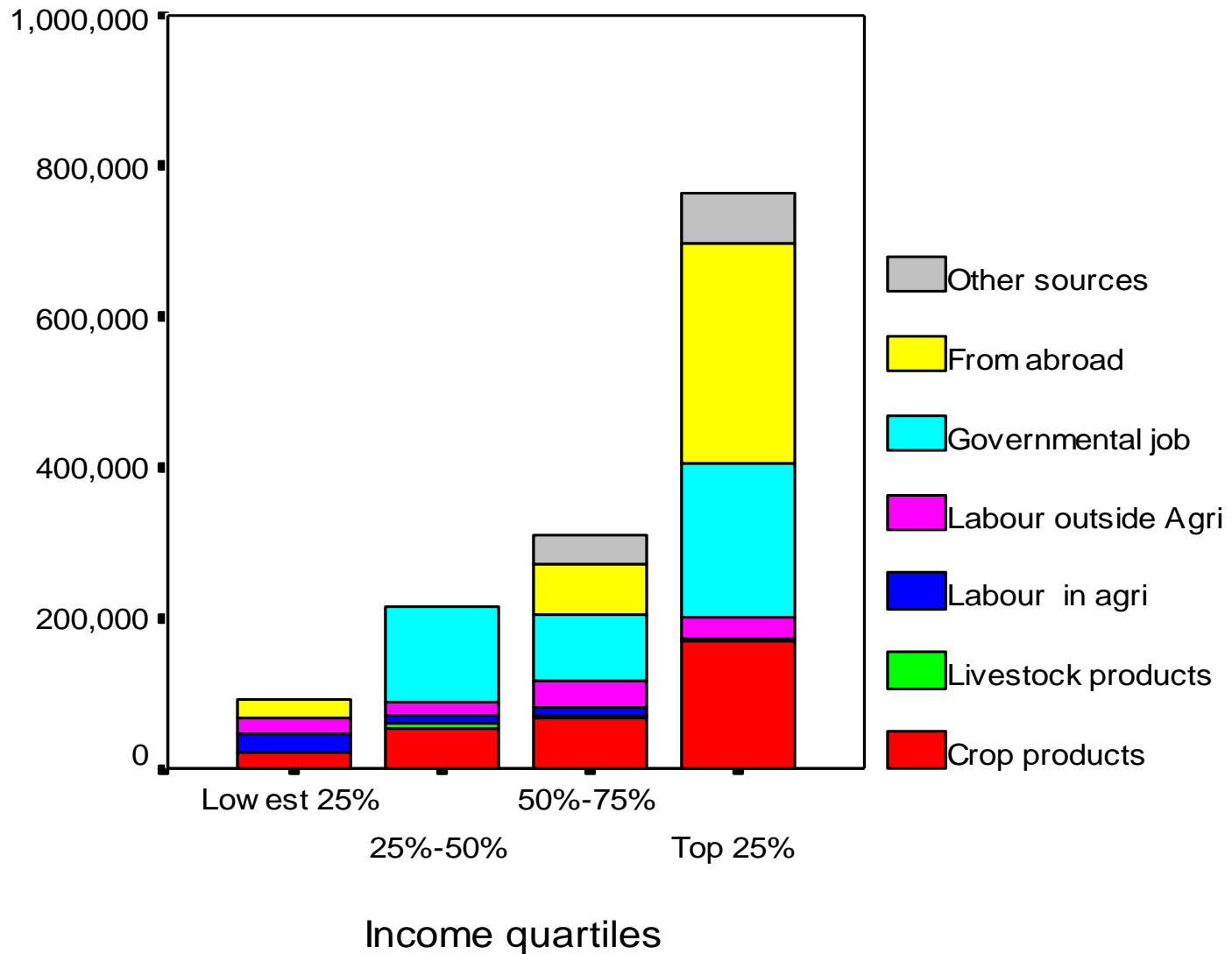


Financial Capital

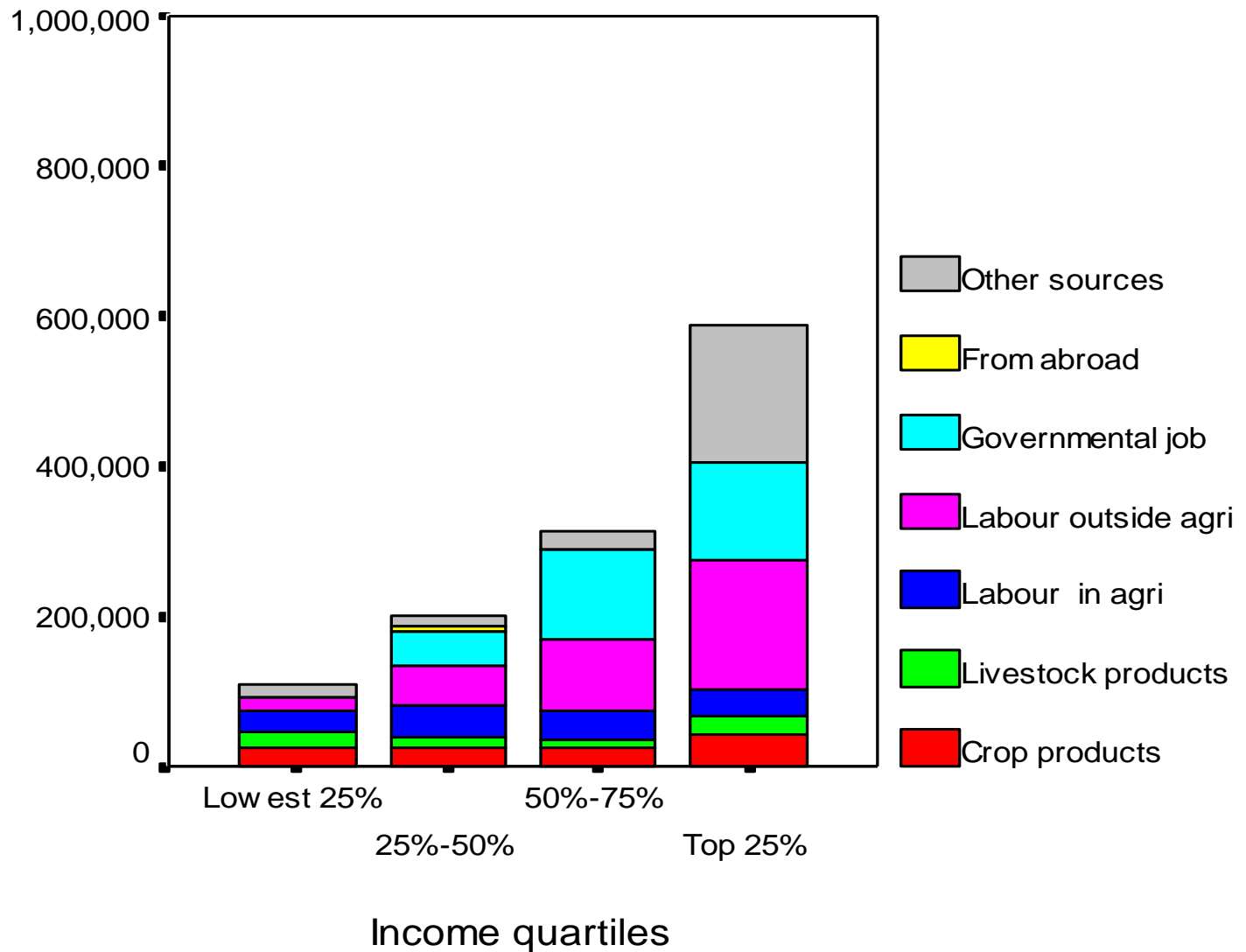
Income Quartiles (Average 3 Provinces)



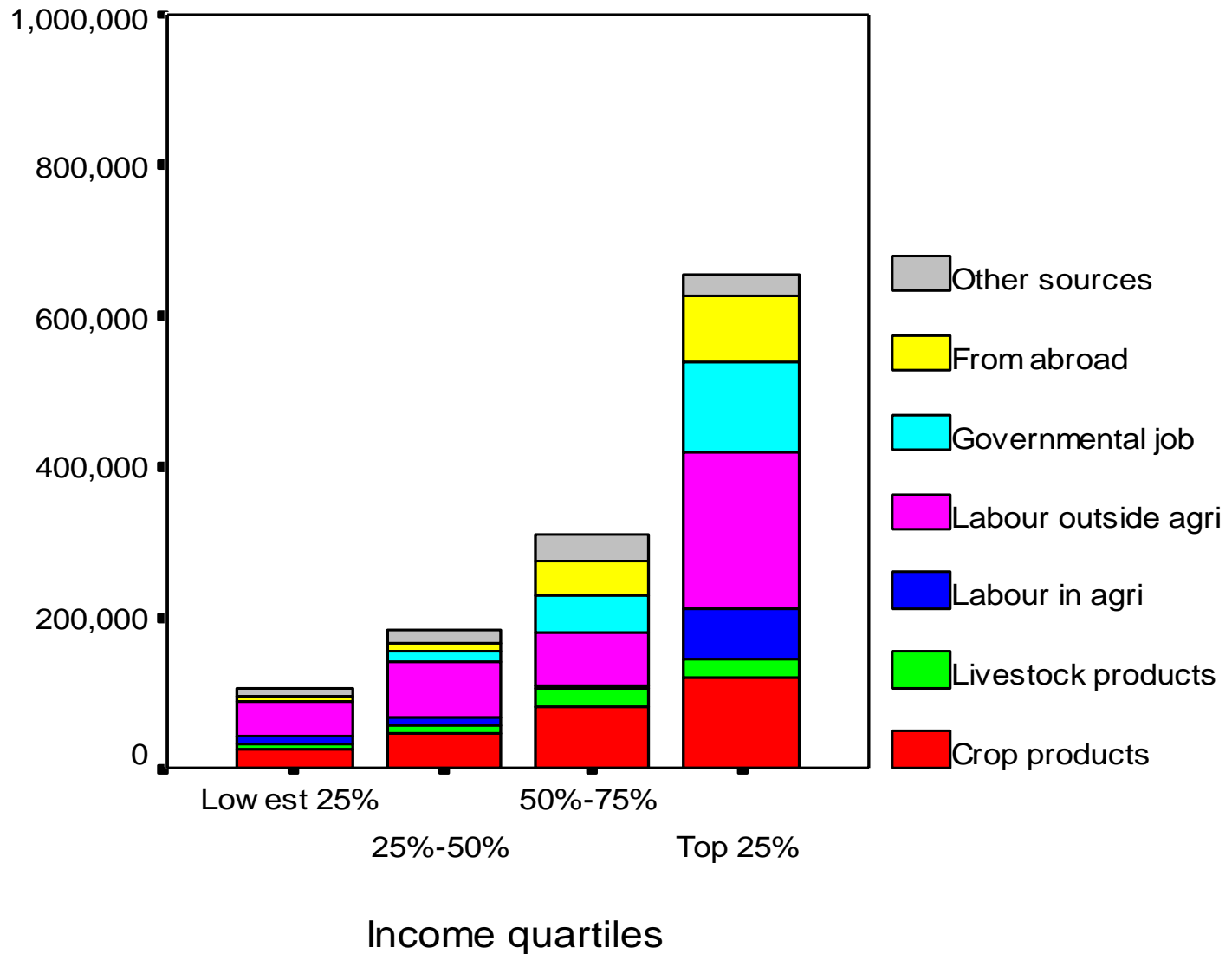
Income Quartiles (Lahag Province)



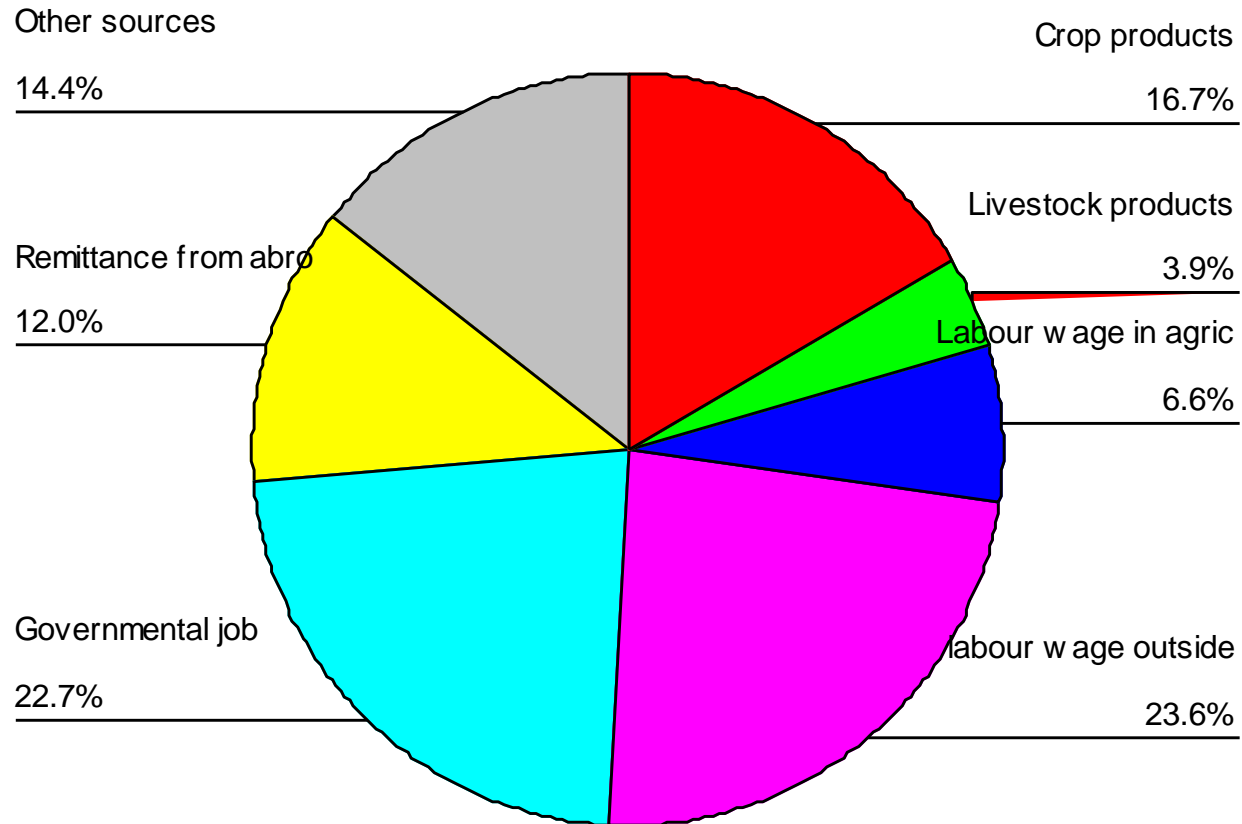
Income Quartiles (Hajja Province)



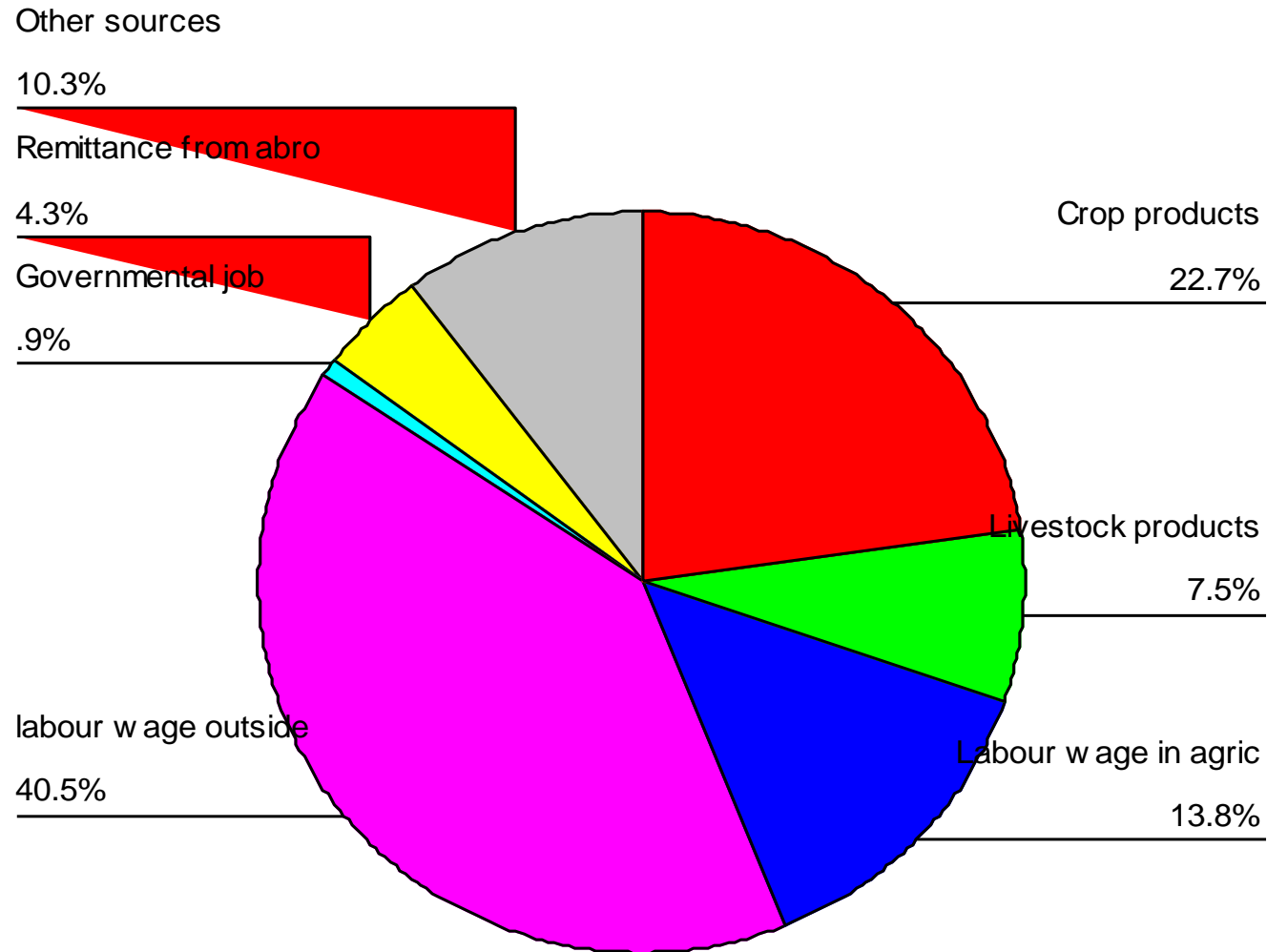
Income Quartiles (Ibb Province)



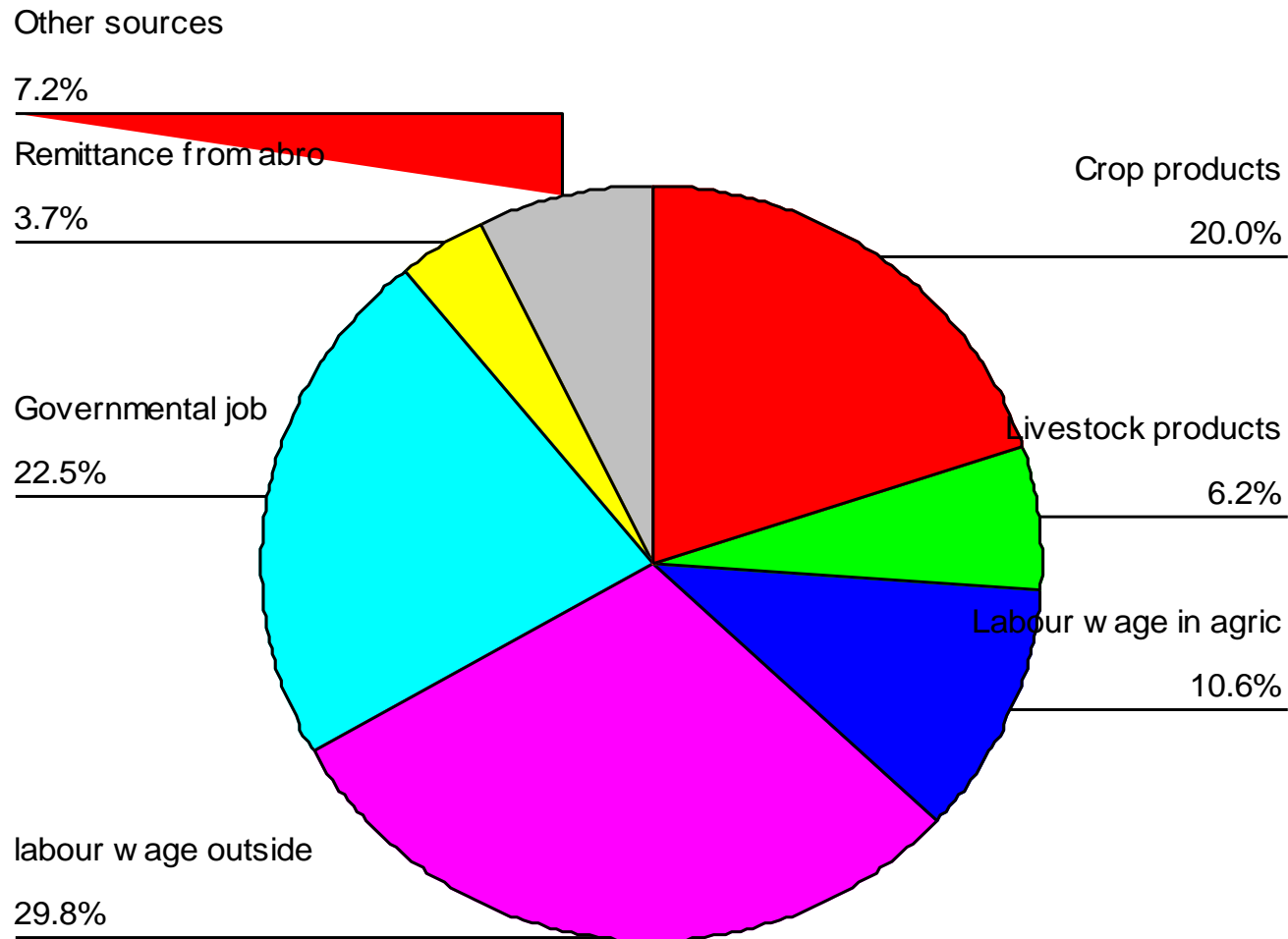
Income sources (Average All Groups)



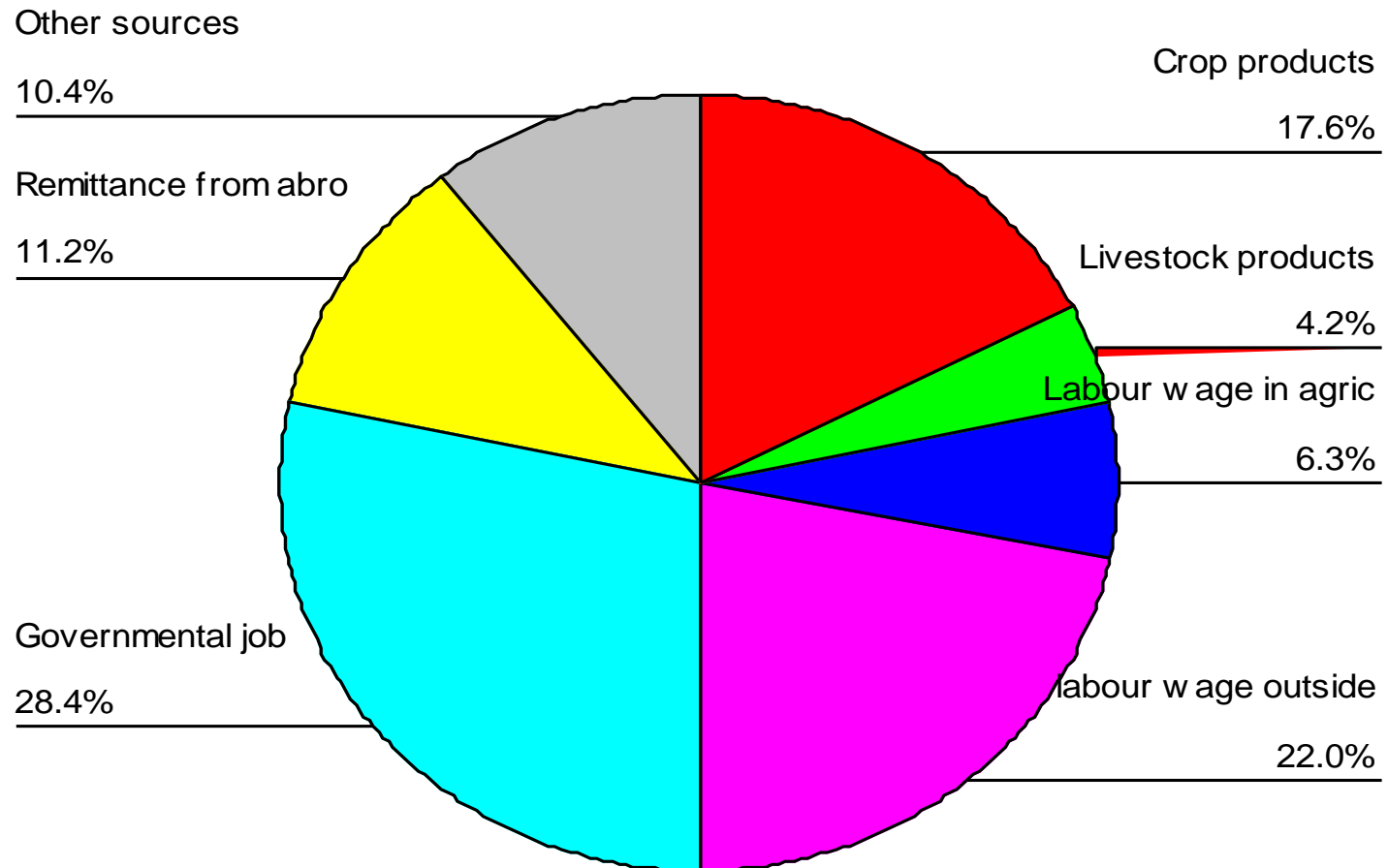
Income sources (Lowest 25% Group)



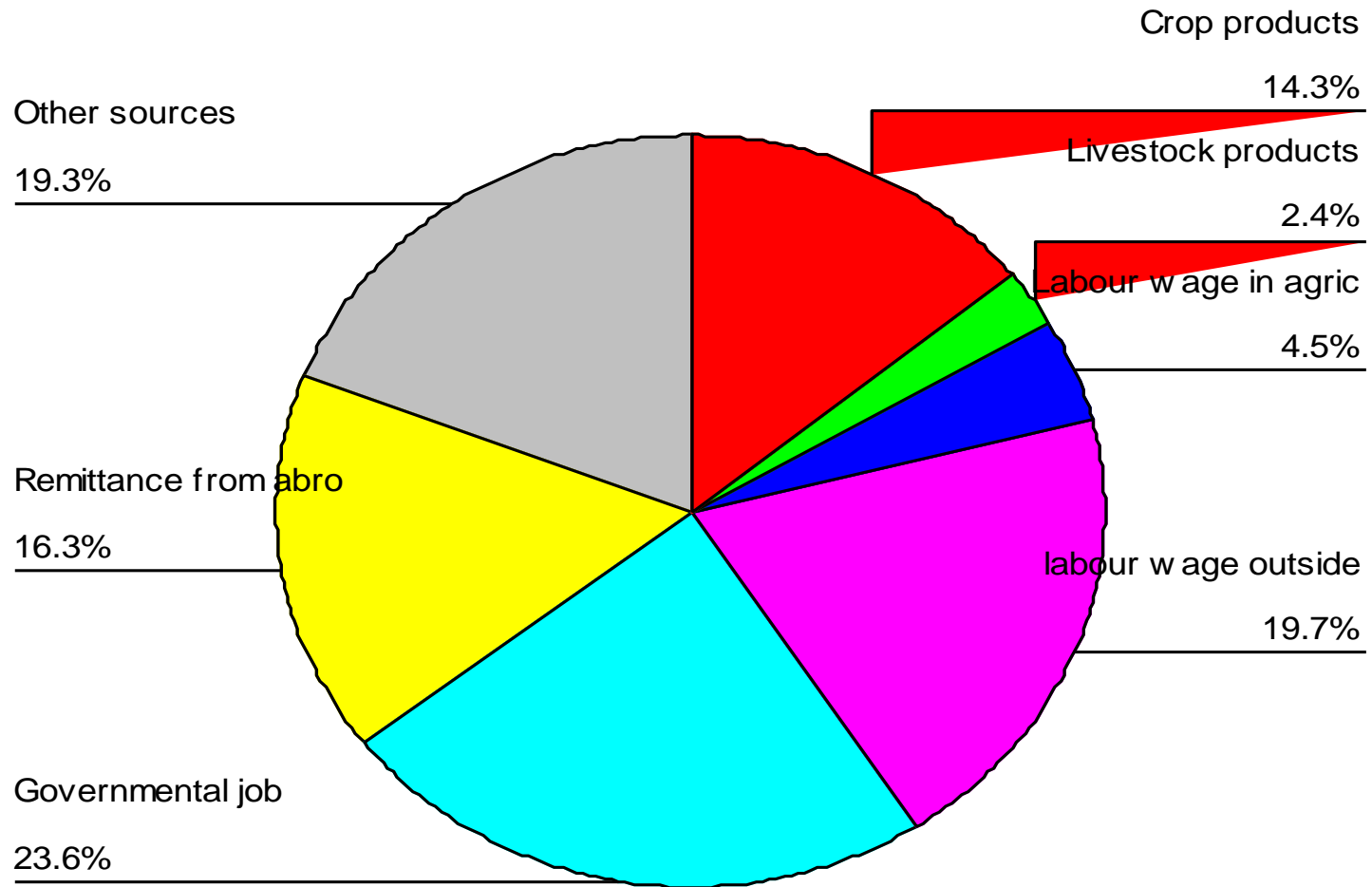
Income sources (Average 25% - 50% Group)



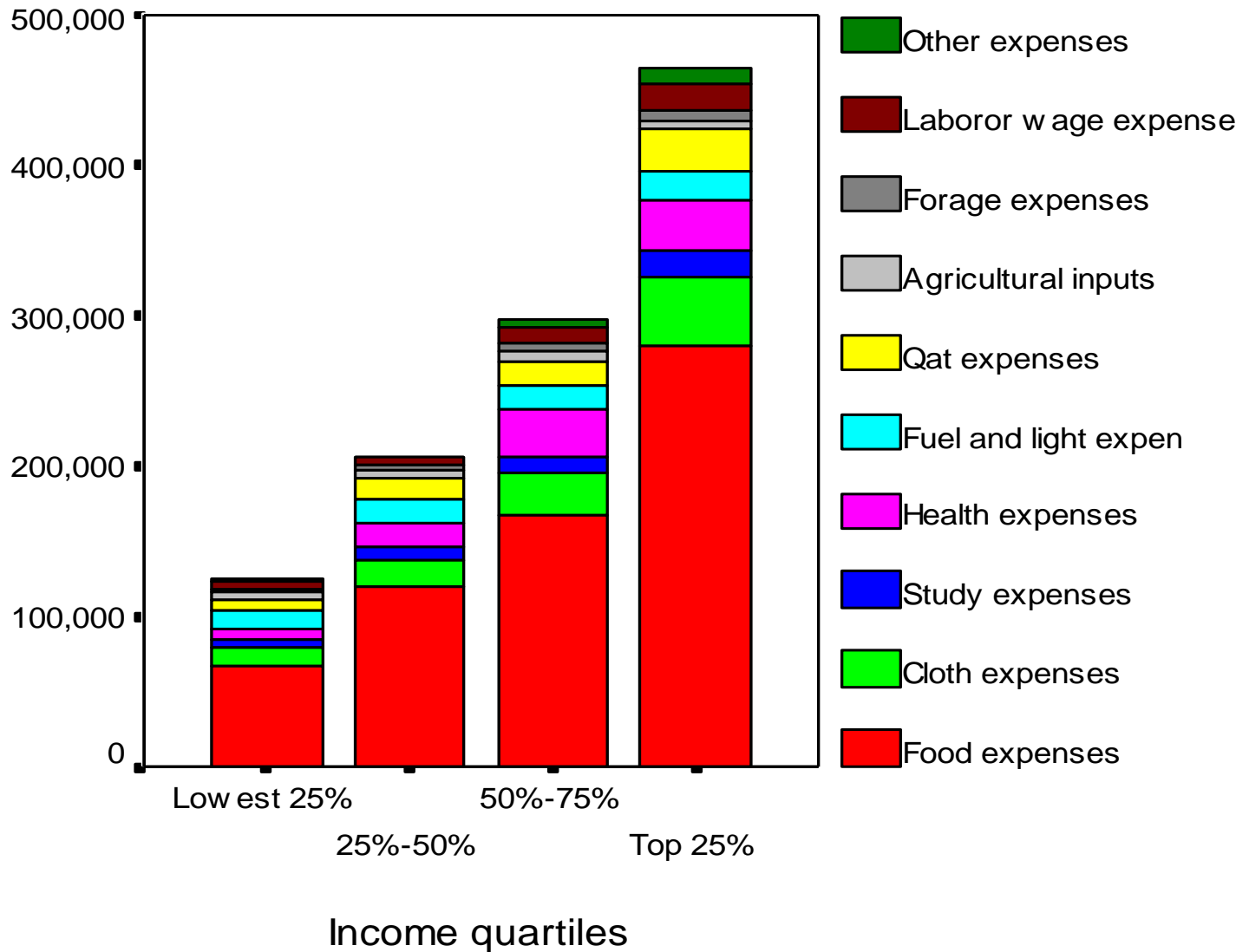
Income sources (Average 50% - 75% Group)



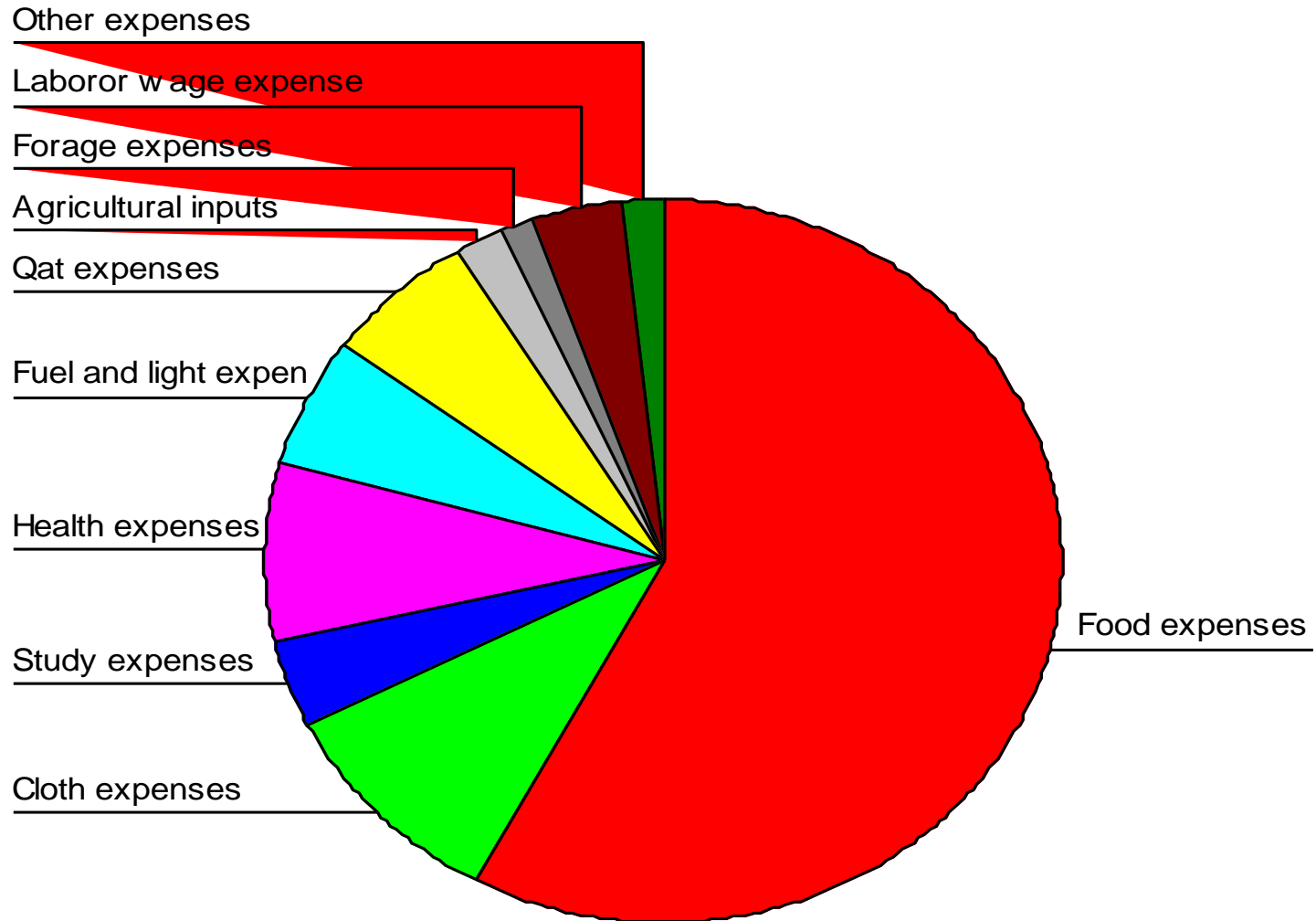
Income sources (Average Top 25% Group)



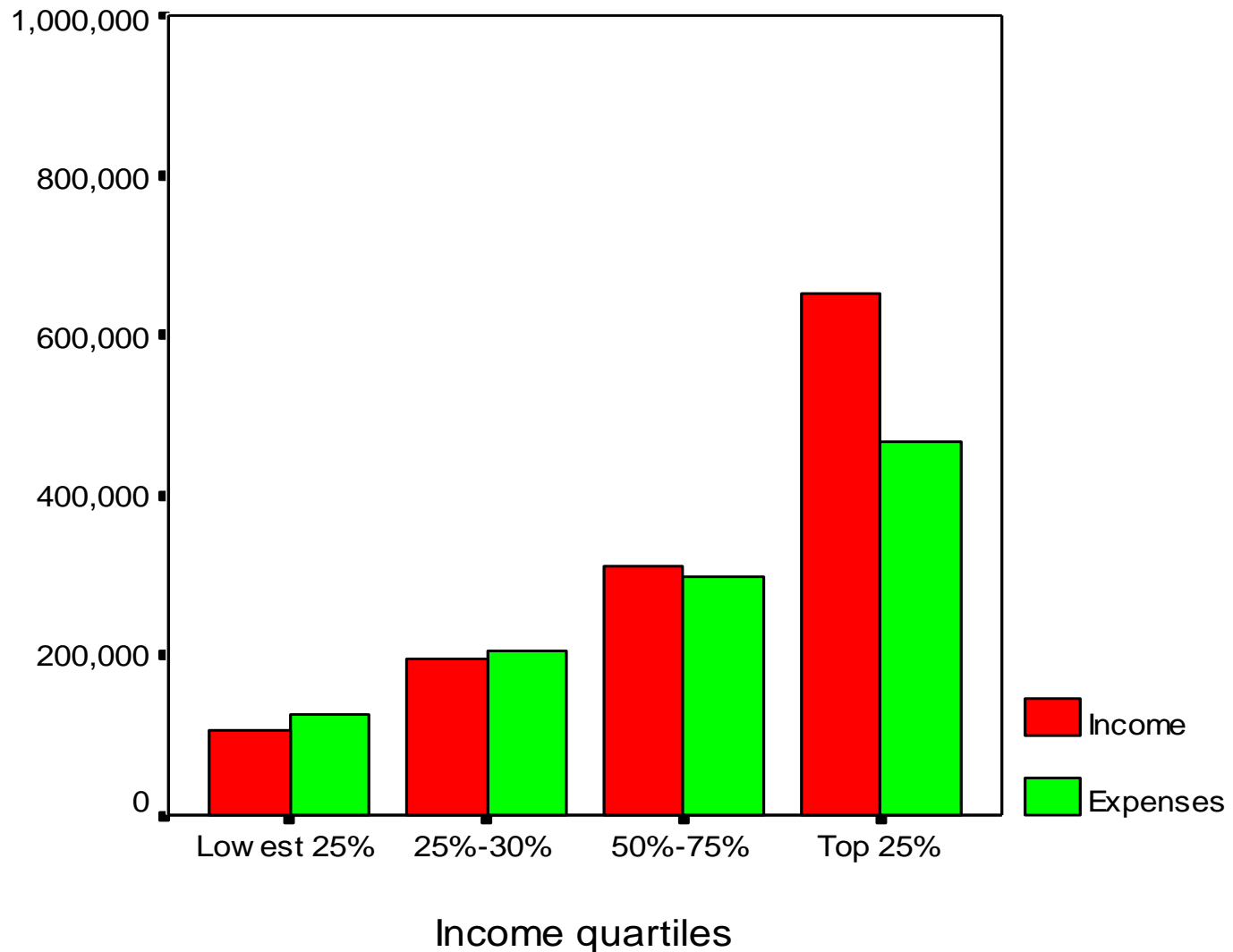
Average Expenses (Average all Provinces)



Average Expenditures (Average all Groups)



Average Income and Expenditures (All Groups)



Natural Capital

Total owned area and no. of pieces

Income quartiles		Total area of the owned land (ha)	Having irrigated or supp. Irrig. Land (%)	No. of pieces
Lowest 25%	Mean	0.3	36.4	7.3
	Std. Deviation	0.4		14.8
25%-50%	Mean	0.9	42.9	25.9
	Std. Deviation	1.2		50
50%-75%	Mean	1	57.8	23.3
	Std. Deviation	1.1		32.9
Top 25%	Mean	2.2	53.5	39.2
	Std. Deviation	3.2		63.7
Average	Mean	1.1	47.7	23.7
	Std. Deviation	1.9		45.1

Total owned area by provinces

province		Total area of the owned land (ha)	Having irrigated or supp. Irrig. land (%)	No. of pieces
Lahag	Mean	2.4	83.3	28.5
	Std. Deviation	3.6		54.7
Hajja	Mean	1.3	31.0	45.7
	Std. Deviation	1.0		57.4
Ibb	Mean	0.4	43.0	5.0
	Std. Deviation	0.3		3.6
Average	Mean	1.1	47.7	23.7
	Std. Deviation	1.9		45.1

Total owned area by location in watershed

Location in watershed		Total area of the owned land (ha)	No. of pieces	Having irrigated or supp. Irri. land (%)
Top	Mean	0.9	22.6	25.5
	Std. Deviation	1.1	46.3	
Moderate	Mean	1	25	56.5
	Std. Deviation	1.1	47	
Bottom	Mean	1.6	23.1	57.4
	Std. Deviation	3	42.3	
Average	Mean	1.1	23.7	47.7
	Std. Deviation	1.9	45.1	

% of households having livestock

	Yes	No
<u>Income quartiles</u>		
Lowest 25%	68	32
25%-50%	83	17
50%-75%	93	7
Top 25%	90	10
<u>Province</u>		
Lahag	94	6
Hajja	90	10
Ibb	75	25
Total	84	16

Livestock owned numbers

Income Quartiles		Number of goats	Number of cows	Number of ox	Number of sheep	Number of donkeys	Number of poultry
Lowest 25	Mean	0.1	0.6	0.1	0.3	0.5	0.8
	Std. Deviation	0.3	0.8	0.3	1.3	0.7	1.8
25-50	Mean	0.6	0.7	0.2	1.3	0.4	1.3
	Std. Deviation	1.3	0.7	0.5	2.9	0.6	1.7
50-75	Mean	1.0	0.5	0.1	2.2	0.5	1.9
	Std. Deviation	2.0	0.6	0.3	4.3	0.6	2.9
Top 25	Mean	2.2	1.0	0.2	5.8	0.9	1.8
	Std. Deviation	3.6	0.9	0.4	10.4	0.8	2.8
Average	Mean	1.0	0.7	0.1	2.4	0.6	1.4
	Std. Deviation	2.3	0.7	0.4	6.1	0.7	2.4

Soil Depth (% of households)

	Shallow (< 40cm)	Medium (40-100 cm)	Deep (> 100 cm)
<u>Income quartiles</u>			
Lowest 25%	11	50	39
25%-50%	22	51	27
50%-75%	17	64	19
Top 25%	23	62	15
<u>Province</u>			
Lahag	22	58	19
Hajja	31	57	12
Ibb	8	56	37
<u>Location in the watershed</u>			
Top	23	48	30
Moderate	22	60	18
Bottom	9	59	31
<u>Average</u>	18	57	25

Soil Fertility (% of households)

	Good	Medium	Poor
<u>Income quartiles</u>			
Lowest 25%	27	68	5
25%-50%	34	64	2
50%-75%	36	64	0
Top 25%	27	71	2
<u>Province</u>			
Lahag	26	71	3
Hajja	36	64	0
Ibb	29	67	4
<u>Location in the watershed</u>			
Top	33	63	4
Moderate	24	75	1
Bottom	38	60	2
<u>Average</u>	31	67	2

Natural pastures surrounding the villages (% of households)

	Availability of natural pasture	Natural pasture ownership			Notice degradation in the pastures
		Private	Public	Both	
<u>Income quartiles</u>					
Lowest 25%	55	71	25	4	39
25%-50%	77	43	49	9	62
50%-75%	87	26	61	13	73
Top 25%	95	13	75	13	78
<u>Province</u>					
Lahag	92	13	53	34	61
Hajja	100	0	97	3	91
Ibb	56	96	2	2	40
<u>Location in the watershed</u>					
Top	71	38	51	11	55
Moderate	80	33	51	16	69
Bottom	83	33	64	2	67
Average	78	34	55	10	64

Relationship between natural pasture ownership and notice degradation in the natural pastures

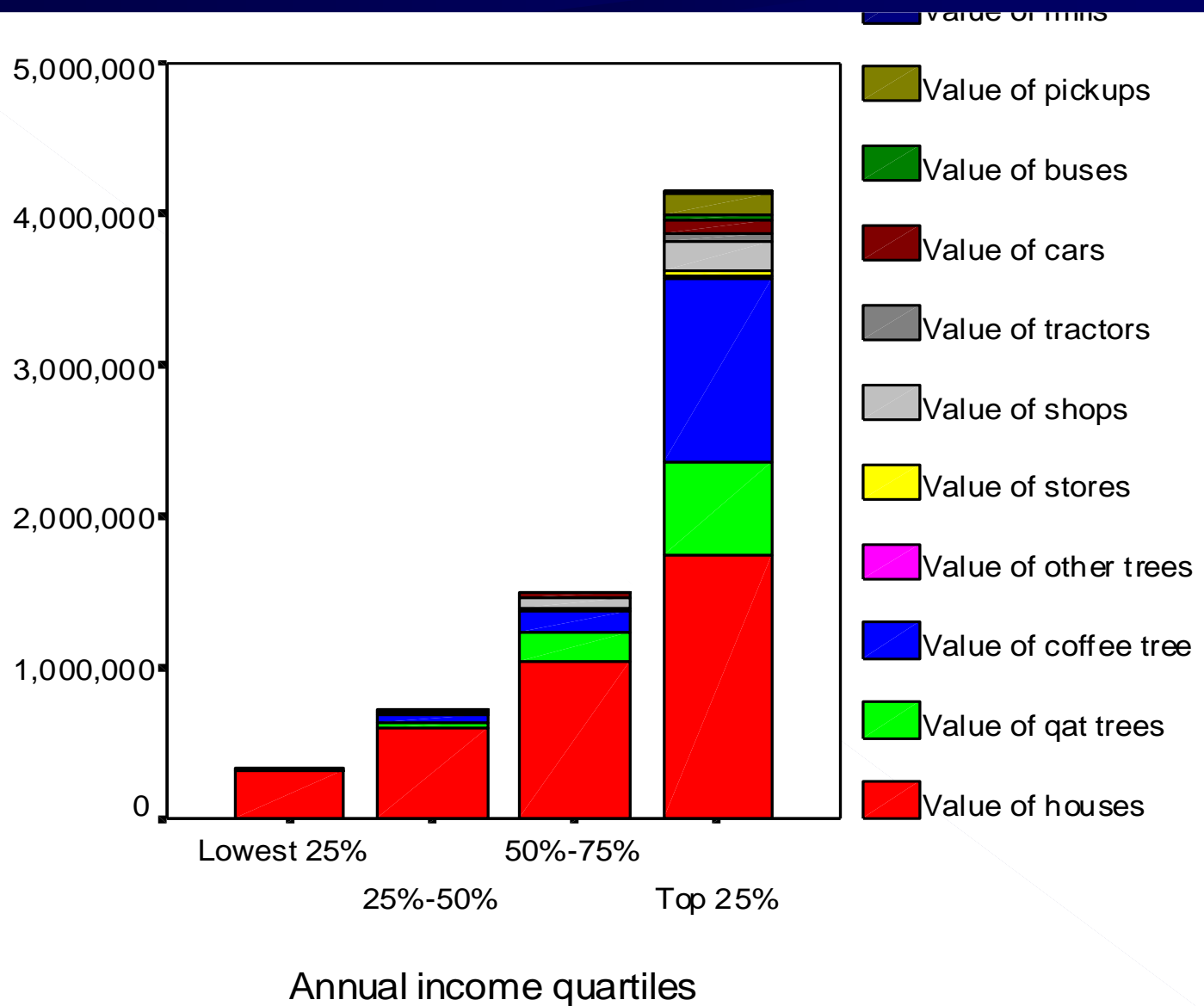
			Notice degradation in the natural pastures			Total
			Yes	No	Do not know	
Natural pasture ownership	Private	Count	25	7	14	46
		Row %	54.3%	15.2%	30.4%	100.0%
		Column %	27.5%	70.0%	53.8%	36.2%
	Public	Count	58	3	9	70
		Row %	82.9%	4.3%	12.9%	100.0%
		Column %	63.7%	30.0%	34.6%	55.1%
	Both	Count	8	0	3	11
		Row %	72.7%	.0%	27.3%	100.0%
		Column %	8.8%	.0%	11.5%	8.7%
Total	Count		91	10	26	127
	Row %		71.7%	7.9%	20.5%	100.0%
	Column %		100.0%	100.0%	100.0%	100.0%

Physical Capital

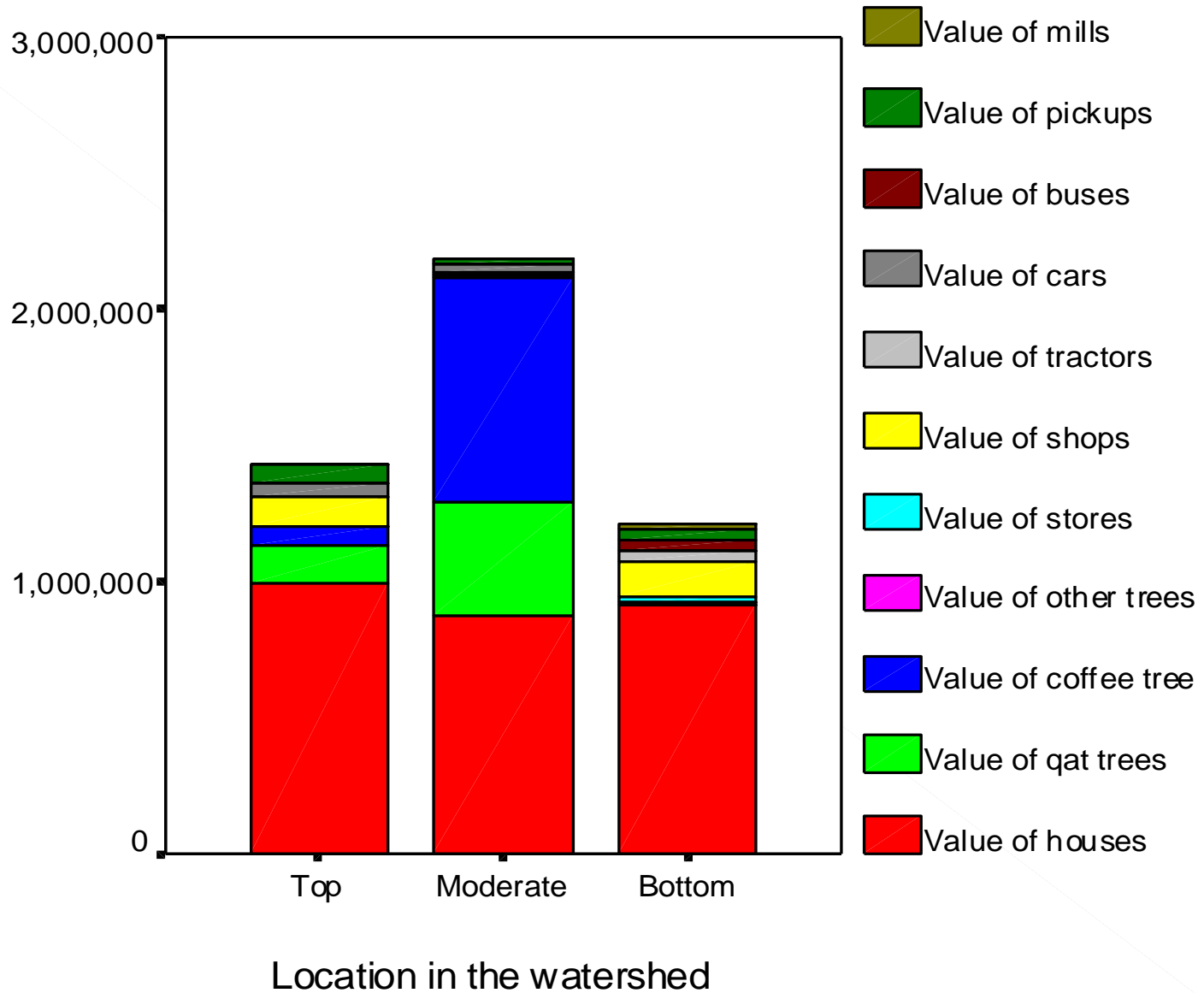
Average numbers of physical capital per household

	Number of								
	Qat trees	Coffee trees	Stores	Shops	Tractors	Cars	Buses	Pickups	Mills
<u>Income quartiles</u>									
Lowest 25%	2.27	22.95	0.02	0.02	0.00	0.00	0.00	0.00	0.02
25%-50%	51.75	16.48	0.11	0.05	0.00	0.00	0.00	0.05	0.00
50%-75%	112.96	199.56	0.11	0.18	0.00	0.11	0.00	0.00	0.00
Top 25%	221.86	584.12	0.14	0.40	0.02	0.23	0.05	0.23	0.05
<u>Province</u>									
Lahag	309.78	786.89	0.22	0.16	0.00	0.14	0.05	0.00	0.00
Hajja	92.30	111.95	0.15	0.20	0.00	0.13	0.00	0.18	0.02
Ibb	0.00	0.00	0.00	0.13	0.01	0.03	0.00	0.01	0.03
Total	96.59	203.59	0.10	0.16	0.01	0.09	0.01	0.07	0.02
<u>Village location in watershed</u>									
Top	68.90	7.31	0.04	0.29	0.00	0.12	0.00	0.12	0.00
Moderate	111.96	432.03	0.17	0.04	0.00	0.09	0.00	0.03	0.00
Bottom	103.33	96.48	0.06	0.19	0.02	0.06	0.04	0.07	0.06
<u>Average</u>	96.59	203.59	0.10	0.16	0.01	0.09	0.01	0.07	0.02

Value of Physical Capital by income quartiles



Value of Physical Capital by location in the watershed



Human Capital

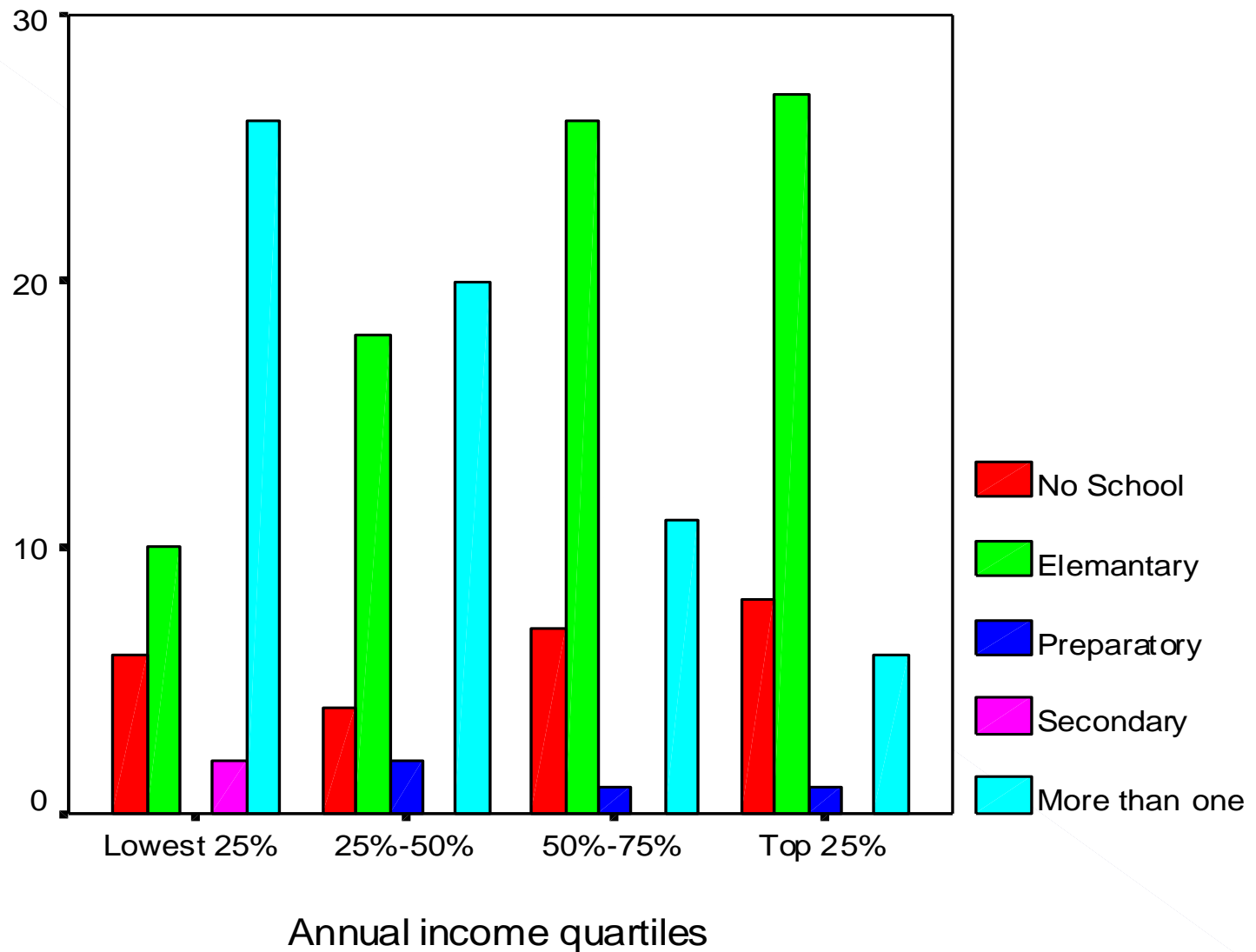
Averages of household number and income

	Average number of Household (Person)	Average HH members who contribute money to the family (Person)	Average household income (Riyal)	Average household expenditure (Riyal)
<u>Income quartiles</u>				
Lowest 25%	8.0	1.4	104336	124496
25%-50%	9.6	1.8	194166	206615
50%-75%	9.5	1.9	310904	296887
Top 25%	15.1	2.5	652914	465348
<u>Province</u>				
Lahag	12.3	2.1	452472	327328
Hajja	12.1	2.0	379077	351068
Ibb	8.5	1.8	198911	186881
<u>Location in the watershed</u>				
Top	11.3	1.9	301385	266828
Moderate	10.1	1.8	284074	259006
Bottom	10.2	2.0	363757	295062
<u>Average</u>	10.5	1.9	313637	272380

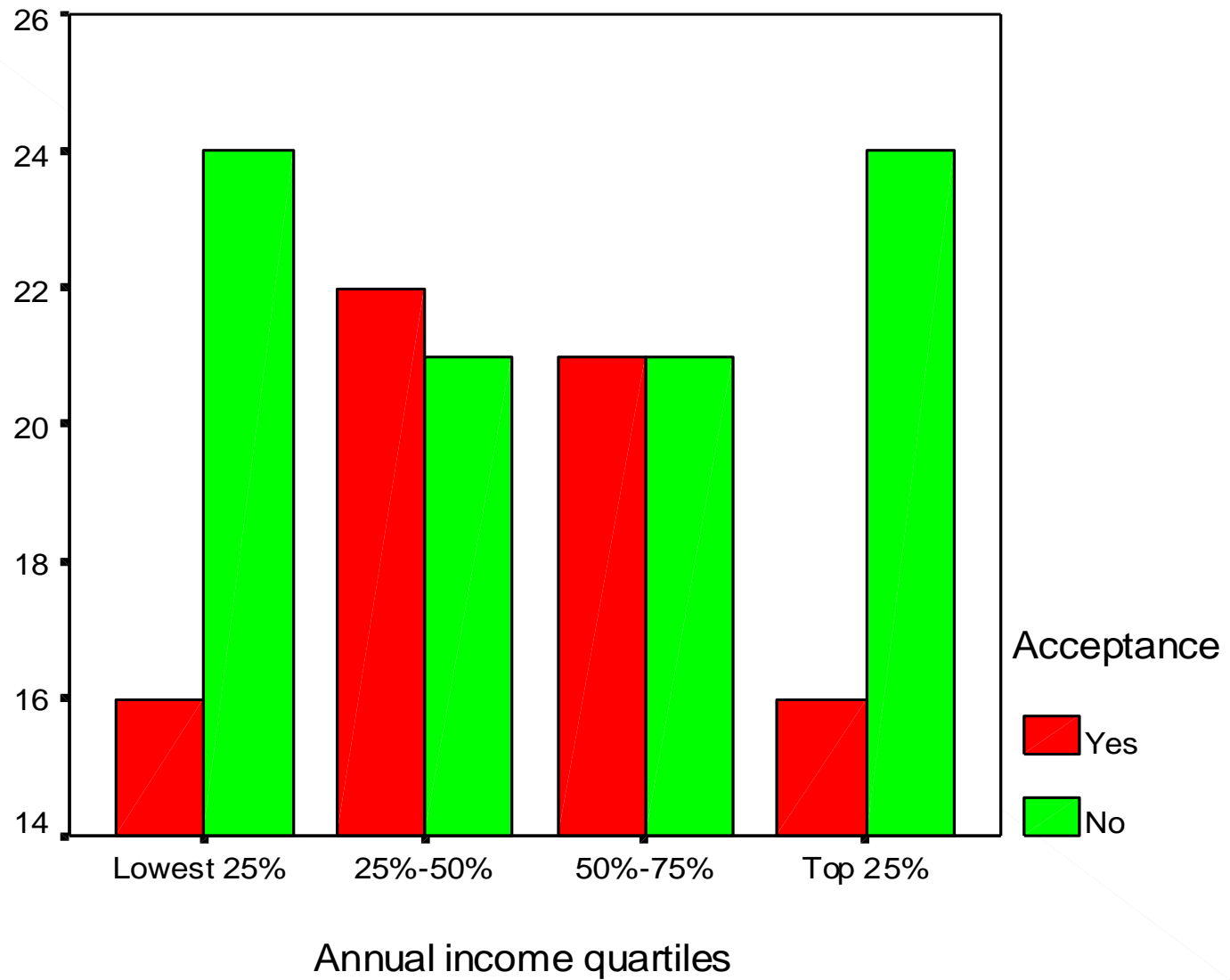
Receiving remittances from family members and saving money

	Receiving remittances from family members or a relative (%)	Average money received (Riyal/household)	Saving money during last season (%)	Borrowing money from relatives or neighbors (%)
<u>Income quartiles</u>				
Lowest 25%	18	30143	4	66
25%-50%	17	89714	9	70
50%-75%	32	138458	28	34
Top 25%	47	180950	29	39
<u>Province</u>				
Lahag	56	184528	21	0
Hajja	13	116714	15	55
Ibb	28	94333	23	71
<u>Location in the watershed</u>				
Top	23	192273	20	74
Moderate	34	80630	20	44
Bottom	26	179167	19	43
<u>Average</u>	28	133033	20	53

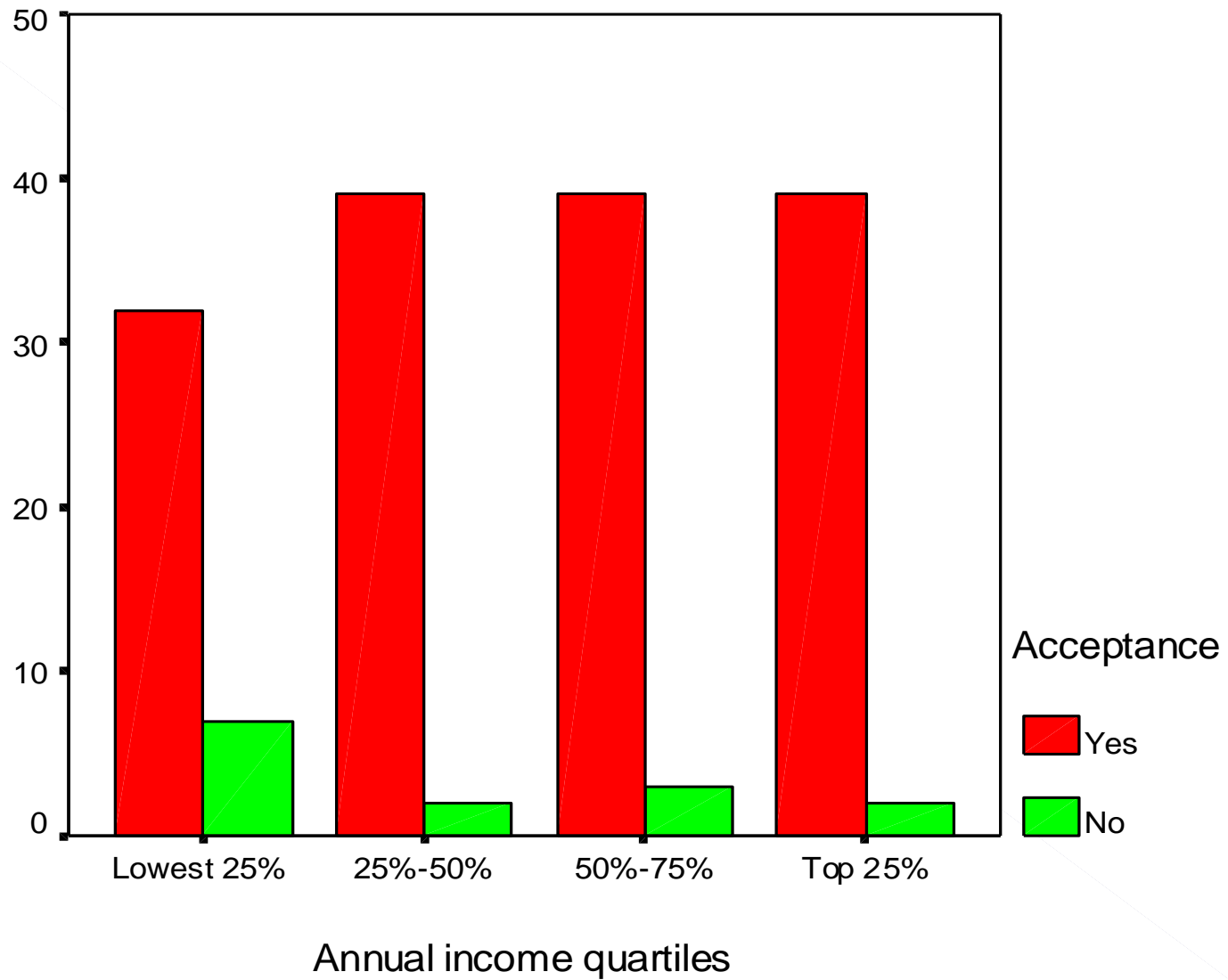
School Availability



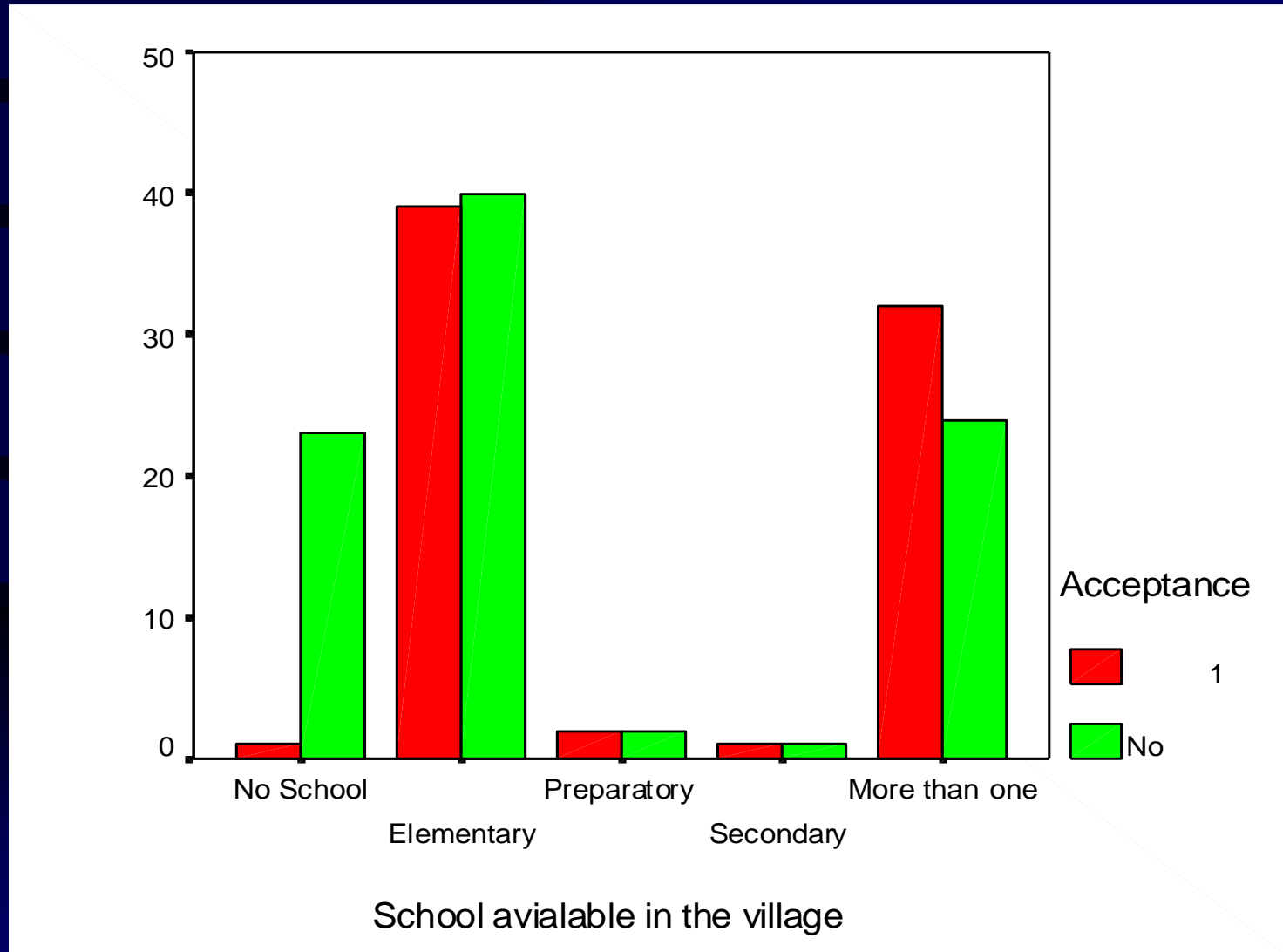
Sending daughters to Preparatory School



Sending Sons to Preparatory School



Acceptance sending daughters to preparatory school by type of school available in the village



Social Capital

Migration to outside rural areas (% of households)

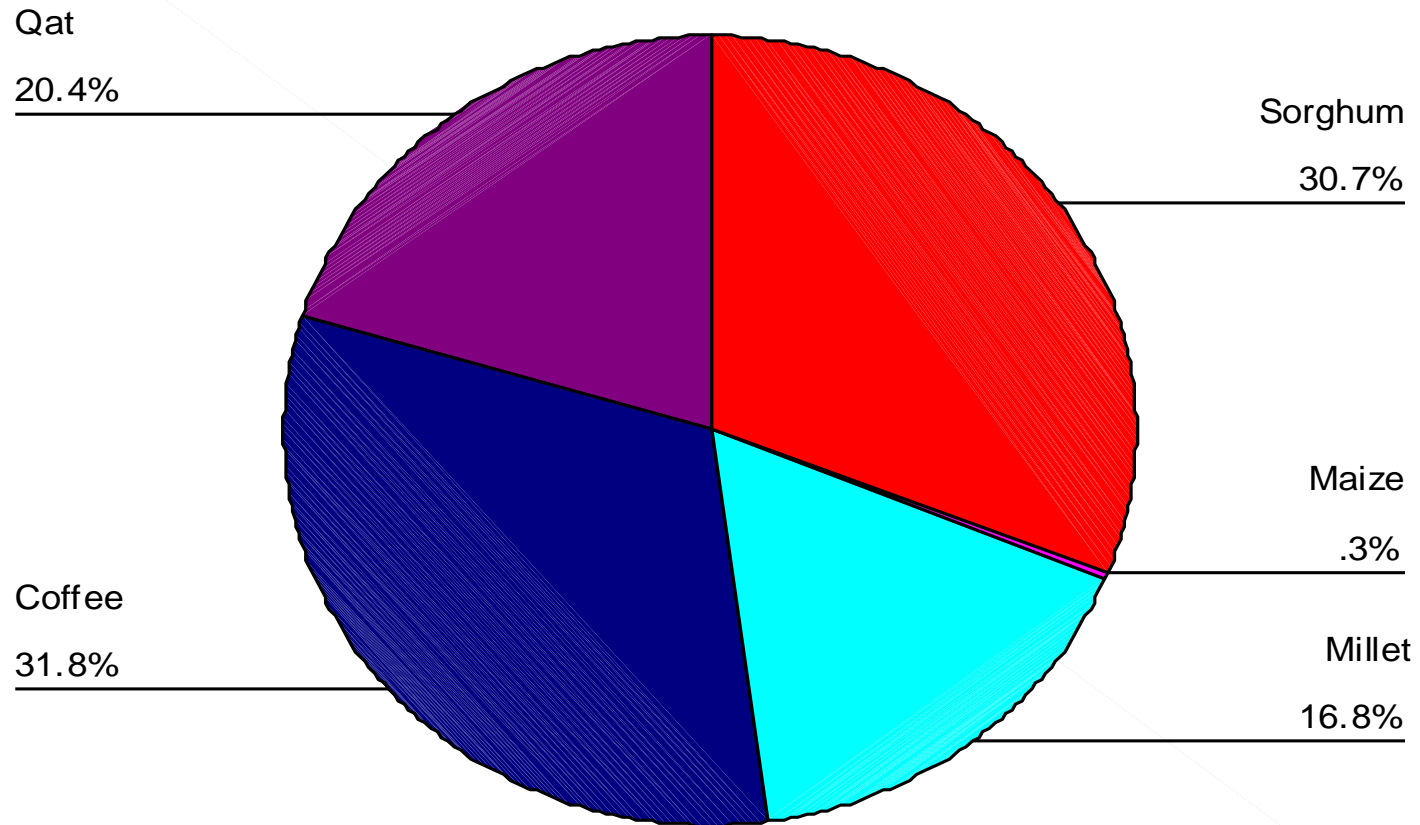
	Household had member at least working in cities	Household had member at least working outside Yemen
<u>Income quartiles</u>		
Lowest 25%	43	11
25%-50%	39	16
50%-75%	29	20
Top 25%	16	35
<u>Province</u>		
Lahag	24	65
Hajja	0	2
Ibb	59	14
<u>Location in the watershed</u>		
Top	31	17
Moderate	26	24
Bottom	41	19
<u>Average</u>	32	20

Social relationship (% of household)

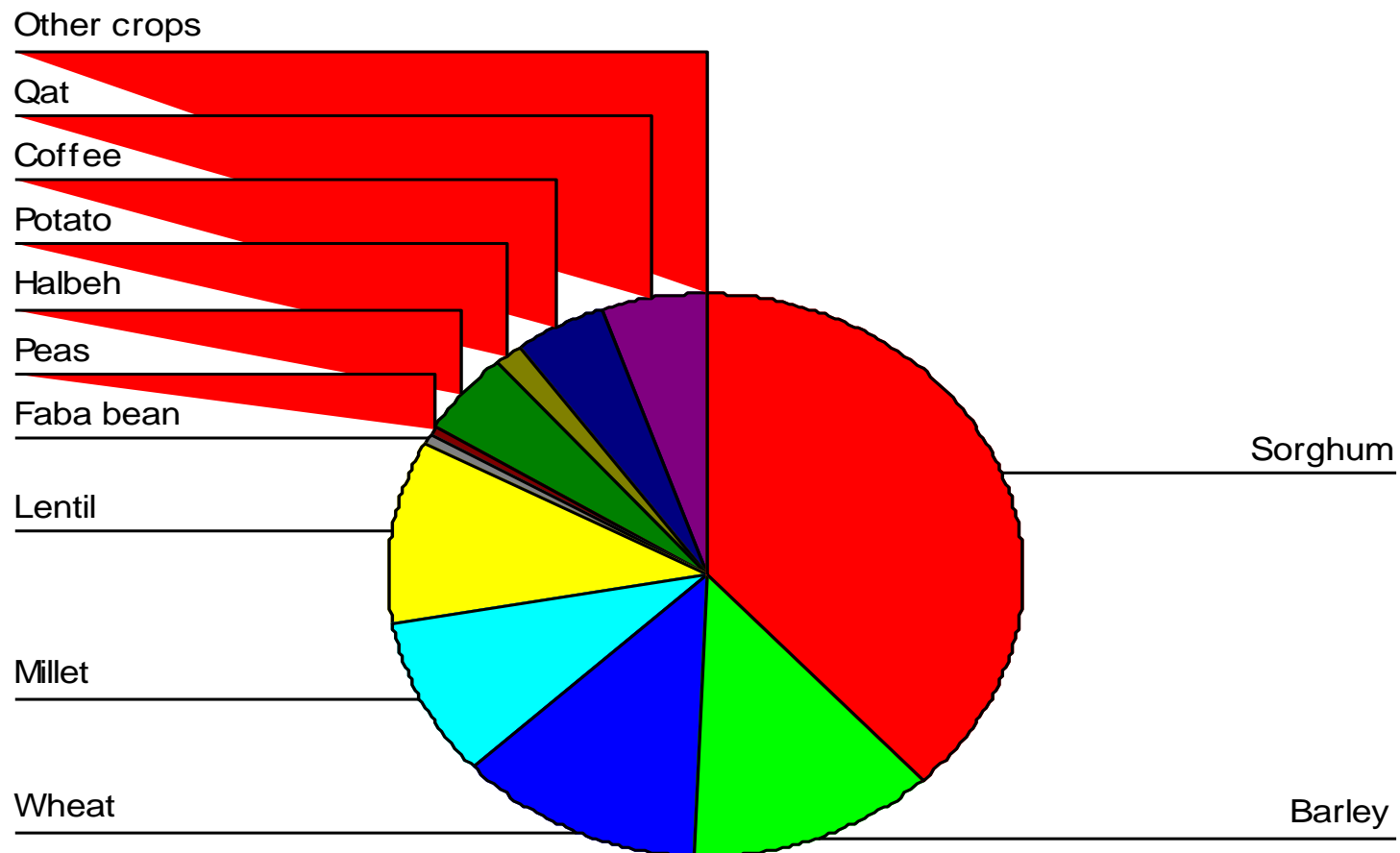
	The relatives have positive influence on the mutual work	Exchange the benefits get from their agricultural work	Trust availability among the households	Good relationship with the village head
<u>Income quartiles</u>				
Lowest 25%	16	56	82	75
25%-50%	31	77	100	91
50%-75%	39	80	91	93
Top 25%	59	78	95	93
<u>Province</u>				
Lahag	33	67	86	100
Hajja	66	85	100	92
Ibb	11	66	89	80
<u>Location in the watershed</u>				
Top	38	75	92	96
Moderate	36	77	94	87
Bottom	37	66	89	81
<u>Average</u>	37	73	92	88

Cropping Pattern

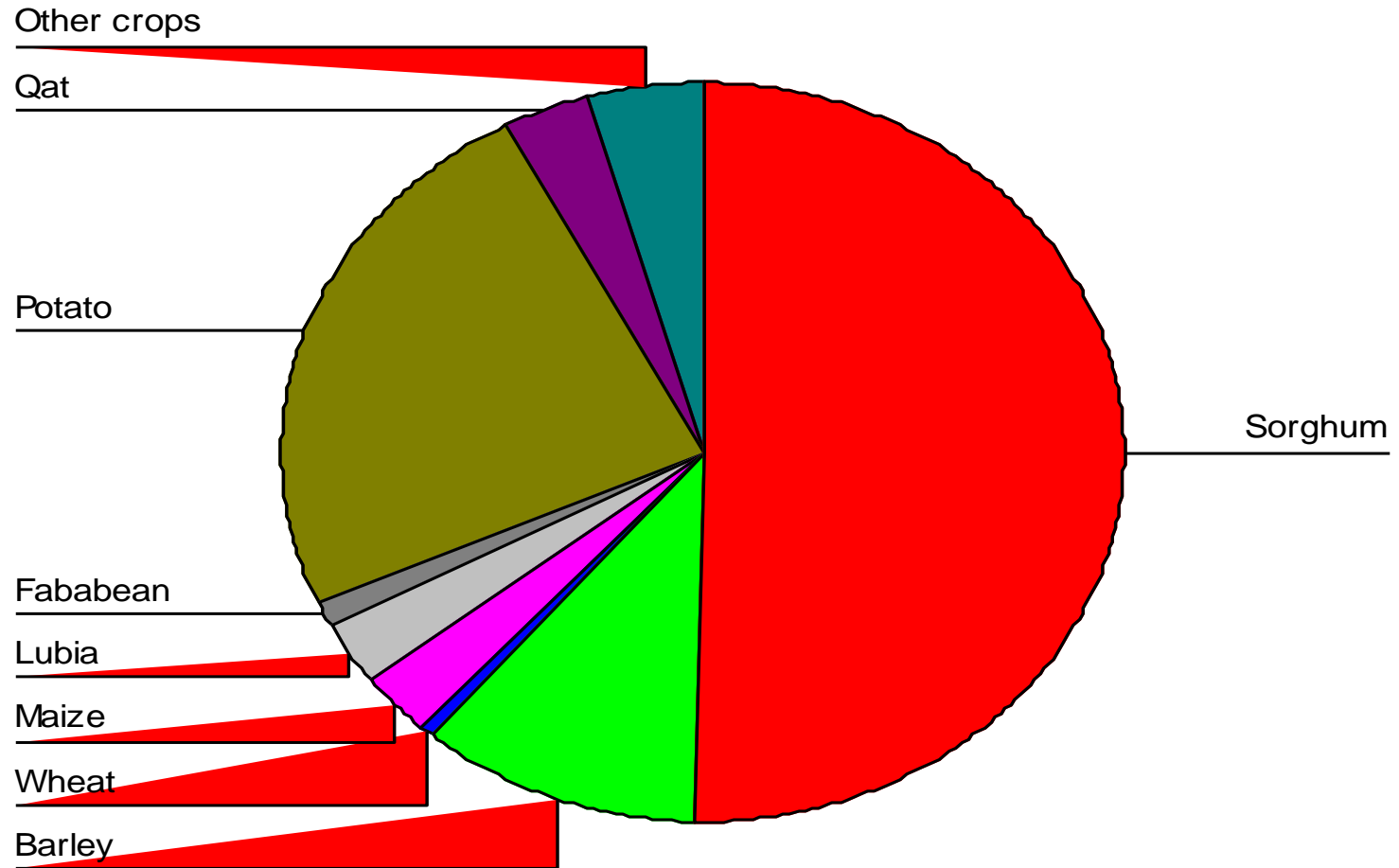
Cropping Pattern in Lahag



Cropping Pattern in Hajja



Cropping Pattern in Ibb



Farmers' Practices (% of households)

	Applying intensive cultivation	Applying inter- crop cultivation	Applying crop rotation
<i><u>Income quartiles</u></i>			
Lowest 25%	39	64	34
25%-50%	47	65	40
50%-75%	47	56	51
Top 25%	40	52	45
<i><u>Province</u></i>			
Lahag	3	26	7
Hajja	68	74	68
Ibb	43	63	35
<i><u>Location in the watershed</u></i>			
Top	60	61	65
Moderate	54	61	52
Bottom	13	56	8
<i><u>Average</u></i>	43	59	42

Inputs used on sorghum

	No. of observations	Average area (ha)	Average production (kg)	% of households		
				Using chemical fertilizer	Using improved seeds	Using pesticides
<u>Income quartiles</u>						
Lowest 25%	39	0.16	246	72	0	0
25%-50%	42	0.33	250	67	0	7
50%-75%	42	0.29	501	60	2	2
Top 25%	40	0.45	256	58	0	0
<u>Province</u>						
Lahag	27	0.38	245	0	0	0
Hajja	60	0.41	136	82	0	0
Ibb	76	0.19	522	72	1	5
<u>Location in the watershed</u>						
Top	51	0.26	426	51	0	0
Moderate	61	0.31	250	72	2	7
Bottom	51	0.35	322	67	0	0
Average	163	0.31	321	64	1	2

Next Steps

- Complete data analysis
- Prepare final report

Thank You