



## Ex-post Coping Strategies to Production and Marketing Shocks among African Leafy Vegetable Farmers in Kenya

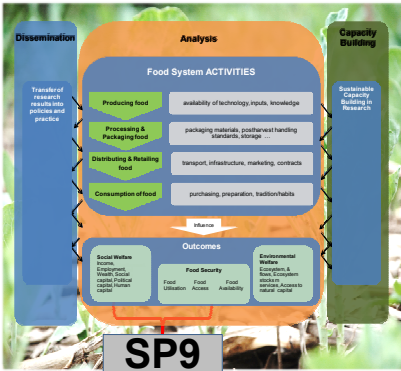
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### HORTINLEA Framework



### Background

- ❖ Smallholders are more vulnerable and less able to escape poverty due to shocks (Gloede *et al.*, 2012).
- ❖ They have limited resources and capacity to cope with shocks (Herberich and List, 2012).
- ❖ Individual farmers, household, and communities have build capacities and coping strategies to withstand and recover from different shocks.
- ❖ However, coping depends largely on assets endowment and household characteristics

### Sampling Design, Data, and Methods



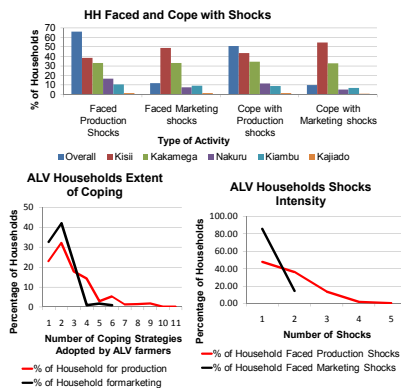
HORTINLEA interview (own picture)

- ❖ Multi-stage and proportionate random sampling technique used
- ❖ Data from 1232 smallholder African Leafy Vegetables (ALV) farmers interviewed were used in the analysis.
- ❖ Heckman Two-step Selection model was used (Probit and OLS model in the first and second stages, respectively).

Type of Shock	Examples/Factors	Effects
<b>Production Shocks</b>	Drought, Shortage of water, Flood, Unusually heavy rain, storm, Landslide/erosion, Pest and diseases on crops, crop failure	Lower yields, Loss of productive assets or income, Loss of productivity, and increased cost
<b>Marketing shocks</b>	Food price increase, Input price increase, Fuel price increase.	Changes in costs, taxes, and markets access; changes on trade policies; market Changes in supply or demand; changes in demand for quantity or quality attributes, food safety requirements, or timing of product delivery; changes in enterprise or supply chain reputation and dependability

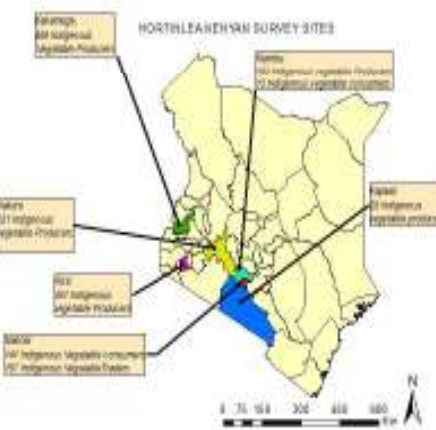
**Objective: To determine factors influencing the decision and the extent of adopting coping strategies to production and marketing shocks among smallholder ALV farmers in Kenya.**

### Descriptive statistics



### Descriptive statistics

- ❖ A total of 818 and 145 smallholder ALV farmers faced production and marketing shocks respectively.
- ❖ Only 629 and 119 cope with production and marketing shocks respectively.
- ❖ Coping strategies ranged from 1-12 (up to 5 shocks), and 1-6 (up to 2 shocks) for production, and marketing shocks respectively.
- ❖ Working more, diversifying agricultural portfolio, and substituting crops are the most common coping strategies for production shocks
- ❖ Substituting crops, diversifying agricultural portfolio, and working more are the most common coping strategies for marketing shocks



### Econometric results

Variable Name	Heckman Two-step Selection Estimates for Production and Marketing Coping Strategies in Kenya			
	Coping with Production Shocks		Coping with Marketing Shocks	
	Probit (Coping)	OLS (Coping Extent)	Probit (Coping)	OLS (Coping Extent)
Constant	-0.4521 0.3762	0.4304 0.1639***	-1.2908 1.1180	0.8063 0.1846***
Rural region	0.8769 0.1541***	0.1597 0.0683**	0.7043 0.5111	-
Household size	0.0607 0.0257**	0.0071 0.0058	0.0830 0.0767	-0.0099 0.0117
Male-headed Household	0.0076 0.1849	-	0.4219 0.5646	-
Age (Years)	-0.0038 0.0043	-0.0016 0.0009**	0.0019 0.0132	-0.0022 0.0019
Married-headed Household	-0.1564 0.1829	-	-0.2934 0.6013	-
Education (Years)	-0.0024 0.0128	-0.0002 0.0029**	-0.0099 0.0402	-0.0038 0.0065
Farmer Occupation	0.0099 0.1184	0.0243 0.0222	0.6667 0.3326**	-0.0883 0.0613
High-valued Market Participation	0.4363 0.1518***	0.0193 0.0376	0.9373 0.5491*	-0.0875 0.0732
Land Size (Acres)	0.0361 0.0425	-0.0037 0.0039	-0.0233 0.0522	0.0012 0.0057
Land Ownership	0.2133 0.1716	0.0062 0.0378	-	-
Ln Livestock Value (KSh)	-0.0023 0.0118	0.0045 0.0022**	0.0223 0.3685	0.2913 0.0500***
Number of Enterprises	0.0252 0.0267	-0.0019 0.0049	0.1325 0.0833	-0.0177 0.0106*
Extension Service contacts	0.0724 0.0228***	0.0067 0.0051	0.0225 0.0814	0.0007 0.0081
Ln Distance to Market (KM)	0.0265 0.0232	-	-0.0603 0.0632	-
Distance to water (KM)	0.0208 0.0410	-0.0073 0.0046	-	-
Formal Credit access	0.3777 0.1419***	0.0006 0.0329	-0.0048 0.4039	-0.0602 0.0602
Market information access	-0.0546 0.1198	0.0427 0.0223*	0.6998 0.3764*	0.1014 0.0561*
Modern irrigation type	0.0094 0.1682	-0.0453 0.0325	-0.7739 0.4336*	-0.2242 0.0911**
Group membership	-0.1011 0.1201	0.0050 0.0217	-0.2336 0.3512	0.0208 0.0494
Number of Observation	818	145		
Wald Chi²(16) / (13)	44.09		45.17	
Mills Lambda	0.0368 0.1612		-0.2041 0.1631	
Rho	0.1541		-0.8543	

### Conclusion and policy recommendation

- ❖ Coming from rural areas increases the likelihood of using ex-post coping strategy against production shocks. It also increases the extent of coping strategies.
- ❖ ALV producers who participate in high value markets have a higher likelihood of using coping strategies against both production and marketing shocks. Hence, efforts to promote marketing of ALVs increases producers capacity to undertake Ex-post coping strategies.
- ❖ Increased contact with extension services and access to formal credit both increase likelihood of coping against production shocks, while using traditional irrigation methods decreases the likelihood of using ex-post coping strategies against marketing shocks.
- ❖ Increasing access to market information and livestock ownership increase the extent of coping against both production and marketing shocks.
- ❖ In general, linking ALV producers to markets and improving ways of accessing market information are key factors that increase the likelihood and extent of coping against production and marketing shocks.

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