Marketing Channel Choice and Marketing Timing of Peri-Urban Vegetable Growers in Vietnam

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Abstract
Agriculture is an important sector in the peri-urban area of Hanoi. It supplies 62 to 80% of vegetable consumption, of which 28% comes from Dong Anh district, which borders Hanoi City. Growing vegetables is an important income source for the farmers in Dong Anh as it contributes about 30% to their family earnings. Marketing channel choice and marketing timing affects farmers' profit by the obtained output price and the necessary (transaction) costs. This study focuses mainly on these factors' impact on output price. The influence of marketing channel choice and marketing timing on the output price has been analysed by performing One Way ANOVA and Post Hoc Bonferroni Tests with data of 63 households in Dong Anh collected in 2003 and 2004 by the VEGSYS project. The three most important vegetables in the area were selected: kohlrabi (*Brassica oleracea*), wrapped heart mustard (*Brassica juncea* var. *rugosa*), and wax gourd (*Cucurbita hispida*). To analyse which household characteristics influence the choice of marketing channel and marketing timing, T-tests and logistical regressions have been performed, next to qualitative interviews with farmers and traders. Output prices are significantly different between marketing channels. Farmers receive significantly higher kohlrabi and wrapped heart mustard prices from the farm gate collector than when they sell it at the local market. Farmers receive the highest wax gourd price at the Hanoi wholesale market, which requires good quality contrary to the local market. Farmers with high opportunity costs sell to the collector or at the local market. Farmers with large quantities will sell to the collector or at the Hanoi wholesale market. Timing of marketing also influences output price. Vegetables sold in the early season receive significantly higher prices than in the rest of the year. The profit however, is often not higher in the early season due to higher labour and capital costs. Farmers selling in the early season have a significantly higher education level than those selling in regular season.

INTRODUCTION

Vietnam's economy has grown rapidly during the last 15 years. At the same time, urbanisation increased. Due to more market oriented adopted policies farmers were able to respond to the growing demand of vegetables. Farmers in the peri-urban area of Hanoi increased their vegetable production substantially (Son et al., 2003). Vegetable production is one of their livelihood strategies to increase farm household income. Within this livelihood strategy farmers have to decide when to grow and harvest vegetables (marketing timing) and where to sell vegetables (marketing channel choice) in order to optimise farm household income. Impact of seasonality of vegetables on price in Vietnam has been researched mainly qualitatively (An et al., 2003). Marketing decisions depend partly on the output price of vegetable production. The objective of this work is firstly to

quantify the influence of the choice of marketing channel and of marketing timing on output prices. Secondly, this study aims to determine which household characteristics and assets influence the choice of marketing channel and of marketing timing.

MATERIALS AND METHODS

Nutrient and monetary data of 63 randomly selected farm households in Son Du and Tang My have been gathered from September 2002 until November 2003. More qualitative data have been gathered by interviewing 21 farmers using structured questionnaires and 17 traders using semi-structured questionnaires.

Oneway ANOVA and Post Hoc Bonferroni tests have been used to quantify the influence of marketing channel choice and marketing timing on the output price. To determine which household characteristics and assets influence the marketing channel choice and marketing timing T-tests were used. For marketing channel choice, logistical regressions have been performed as well. The logistical regression the researchers used is:

$$Y = f(\beta_i X_i + u)$$

where Y is a dummy of the marketing channel; β is the coefficient being estimated for i=1, 2…; X denotes the different household characteristics; and u is a constant term.

For this research the researchers selected kohlrabi (*Brassica oleracea* var. *gongylodes*), wrapped heart mustard (*Brassica juncea* sp.) and wax gourd (*Benincasa hispida*) because they are very common in the area and have a high economic importance. Kohlrabi can be grown two or three times per year in the winter season from late August to early January. Wax gourd first crop is in spring and the second in the summer starting May. Wrapped heart mustard can be grown throughout the year with four to six crops per year. For each of these three vegetables, prices vary considerably throughout the season.

RESULTS

Main marketing outlets of vegetable farmers in Son Du and Tang My are local markets, Hanoi wholesale market, and collectors (Table 1). The local market is in the vicinity of farmers' fields. At the local market, farmers mostly sell directly to consumers. Hanoi wholesale market is 20 to 25 km away from farmers' fields, where both farmers and collectors sell to wholesalers. Collectors come to the field or the producers' house to collect vegetables.

Marketing Channel Choice

The price that farmers receive for their kohlrabi and wrapped heart mustard from the farm gate collector is significantly higher than at the local market. Farmers selling wax gourd at Hanoi wholesale market receive a significantly higher price than when sold at the local market. Prices obtained by the farmers from selling at the Hanoi wholesale market are not significantly different than selling to the collector for each of the three selected vegetables (Table 2).

Bigger amounts of the studied vegetables (550 to 750 kg per transaction) are more likely to be sold to the collector or at the Hanoi wholesale market than at the local market (Table 3). Households with more livestock are more likely to sell kohlrabi at the local market than at the Hanoi wholesale market or to the collector (Table 3). Second-graded vegetables are commonly sold at the local market, not to the collector or at the Hanoi wholesale market. Households that spend a large share of their labour on off-farm activities are more likely to sell kohlrabi or wrapped heart mustard to the collector than at the Hanoi wholesale market or at the local market respectively. However households which own motorcycles are not likely to sell kohlrabi to the collector (Table 3). Selling to the collector is expected to be the least time consuming, as the household does not spend any transportation time.

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Marketing Timing

Farmers received significantly higher price for early kohlrabi harvest in September compared with any other month of the year. Farmers still received a significantly higher price in October than in November or December. Early wax gourd production in March received a significantly higher price than any other month of the year, except for September which is already late in season. Field cabbage is produced throughout the year, but received significantly higher price in September (Table 4).

Early or late production of the selected vegetables was not as profitable for the farmers as the high output price might assume. The gross margin of kohlrabi, wax gourd, and wrapped heart mustard during early and late season was not high (Fig. 1). Farmers have difficulties producing vegetables during early or late season due to unfavourable climate conditions. Temperature and water availability were suboptimal and lead to poor development of vegetables and increase in pest and disease pressure. Early production required more labour due to continuous fetching of water, more spraying, transplanting, more intensive caretaking, covering or uncovering the vegetables, and more weeding. Early production also required more capital due to higher needs in fertilisers and pesticides, and more expensive seedlings.

Heads of household selling kohlrabi in early season had significantly higher education levels than heads of household selling in normal season.

DISCUSSION

Farmers who are producing high quality vegetables are able to sell to the collector or at the Hanoi wholesale market and receive a higher price than when they would have to sell their crop at the local market which has lower quality standards. It is therefore recommended to continue providing training to farmers who are not yet achieving the required quality of marketing outlets with high output prices, assuming the higher output price will offset possible higher production and transaction costs. Indeed, further research is recommended on the transaction costs of each marketing channel. The researchers assume that households with a higher value of livestock spend more time taking care of their livestock, resulting in producing lower quality vegetables and therefore selling these vegetables more often at the local market. From the research results, the researchers conclude that the labour return of off-farm activities is higher than the labour return of selling vegetables at the local or Hanoi wholesale market, unless the household owns a motorcycle. Access to transportation is then to be considered as a key factor that affects quantity and quality of harvested vegetables, as well as amount of off-farm activities for explaining the choice in marketing channel.

Farmers receive significantly higher prices when selling kohlrabi, wax gourd, or wrapped heart mustard in the early season. However, the gross margin of vegetable production that farmers achieve with these vegetables in early season is not particularly high. This is mostly due to a substantial increase of labour and capital costs during early production. The higher education level of household heads selling kohlrabi in early season compared to those selling in regular season may indicate that selling vegetables in early season requires higher knowledge and technical know-how than average. In order for farmers to benefit from the high output prices in early season, more research and training on how to reduce the costs of early (and late) vegetable production and the transaction costs are required.

ACKNOWLEDGEMENTS

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Tables

Table 1. Use of marketing channel by farmers for the selected vegetables.

Marketing channel	Share of transactions (in % of total)		
	Wrapped heart mustard	Wax gourd	Kohlrabi
Farm gate collector	49	50	39
Farm gate consumer	0	2	2
Hanoi retail market	3	2	3
Hanoi wholesale market	4	11	15
Local market	40	25	34
Outside market	2	0	4
Restaurant/factory/company	1	6	3
Other provinces	0	5	0
Total	100	100	100

Table 2. Mean output prices of selected vegetables in the marketing channels and their significant differences.

Vegetables	Mean prices (in \$/kg)[z]		
	Hanoi wholesale market (HW)	Local market (L)	Collector (C)
Kohlrabi	8.19 E-02	7.11 E-02[x]	8.79 E-02[x]
	(2.91 E-02)	(3.24 E-02)	(4.50 E-02)
Wax gourd	10.83 E-02[y]	7.44 E-02[y]	8.67 E-02
	(5.38 E-02)	(3.17 E-02)	(2.93 E-02)
Wrapped heart mustard	n.a.	5.38 E-02[w]	6.50 E-02[w]
		(2.49 E-02)	(3.31 E-02)

Standard deviations are shown in parentheses
[z]Calculated with Oneway ANOVA and Post Hoc Bonferroni tests
[y]The mean difference between prices at the Hanoi wholesale market and the local market is significant at the 0.05 level measured with Oneway ANOVA and Post Hoc tests
[x]The mean difference between prices at the collector and the local market is significant at the 0.05 level measured with Oneway ANOVA and Post Hoc tests
[w]The mean difference between prices at the collector and the local market is significant at the 0.10 level measured with Oneway ANOVA and Post Hoc tests

Table 3. Importance of household characteristics and assets in marketing channel choice of selected vegetables.

Household characteristics and assets	Significant differences[1] in households selling to different market outlets[2]				
	Kohlrabi			Wax gourd	Wrapped heart mustard
	HW-L[3]	HW-C	C-L	C-L	C-L
Fresh weight of transaction	***		***	***	**
Age of household head			**	***	
Labour units available					
Cultivated area size				**	
Number of household members			**		
Value of livestock	***		***		*
Ownership of motorcycle	***			*	
Gender of household head		***			
Education level of household head		**			
% Off-farm labour of total labour					*

[1]Calculated with logistical regressions
[2]***, **, * Mean difference is significant at 0.01, 0.05 and 0.10 level, respectively
[3]HW: Hanoi wholesale market; L: Local market; C: Collector

Table 4. Output price differences between months of selected vegetables.

Months	Mean difference of prices (US$ cents/kg) between two months[1]									
	Kohlrabi									
	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.				
Oct.	3.6*[2]									
Nov.	6.3*	2.6*								
Dec.	6.0*	2.3*	-0.3							
Jan.	4.7*	1.1	-1.6	-1.2						
Feb.	7.4*	3.8*	1.1	1.5	2.7*					
Mar.	8.7*	5.1*	2.4	2.8	4.0*	1.3				
	Wrapped heart mustard									
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	May	Jun.	Jul.	Aug.
Nov.	1.7									
Dec.	2.4	0.7								
Jan.	-1.7	-3.4*	-4.1*							
Feb.	2.2	0.5	-0.1	4.0						
Mar.	2.4	0.7	0.1	4.2*	0.2					
May	3.1	1.4	0.7	4.8*	0.9	0.7				
Jun.	1.0	-0.7	-1.4	2.7	-1.3	-1.5	-2.1			
Jul.	-1.5	-3.2*	-3.9*	0.2	-3.7	-3.9*	-4.6*	-2.5		
Aug.	-1.5	-3.2*	-3.8*	0.3	-3.7	-3.9*	-4.6*	-2.4	0,0	
Sep.	-5.7*	-7.4*	-8.0*	-3.9	-7.9*	-8.1*	-8.8*	-6.6*	-4.2*	-4.2*
	Wax gourd									
	Dec.	Jan.	Mar.	May	Jun.	Jul.	Aug.	Sep.		
Jan.	-2.3									
Mar.	-12.3*	-99.4*								
Apr.	-6.1*	-3.7	6.2*							
May	-0.2	2.1	12.0*	5.8*						
Jun.	-0.4	2.0	11.9*	5.7*	-0.1					
Jul.	-2.6	-2.0*	9.7*	3.5*	-2.3	-2.2				
Aug.	-4.4	-2.1	7.8*	1.6	-4.2*	-4.1*	-1.9			
Sep.	-8.2*	-5.9	4.1	-2.1	-8.0*	-7.8*	-5.6*	-3.8		

[1]Calculated with Post Hoc Bonferroni tests
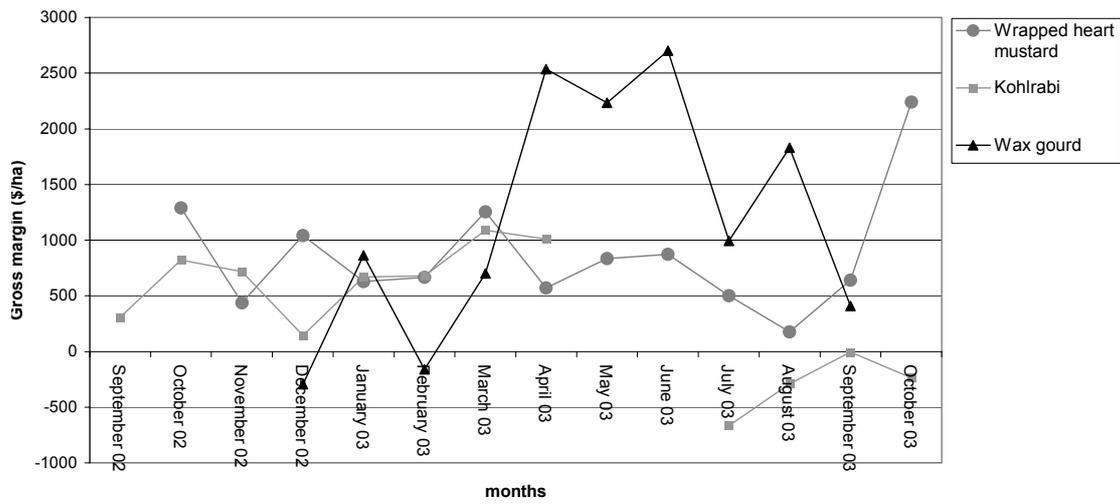[2]* The mean difference is significant at the 0.05 level

Figures

Fig. 1. Gross margin of selected vegetables in Son Du and Tang My from September 2002 until October 2003.