

## *Research Briefing*

# The Economic Development Impact of Rose Value Chains in North Vietnam

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### Introduction

Within the last decade two important trends within the agriculture sector of Vietnam have been taking place. These are diversification, which resulted in many different agriculture sub sectors, and the development of different types of value chains. The Vietnamese government, its bilateral and multilateral donors have various instruments to stimulate certain sub sectors and types of value chains. To allocate resources in an efficient manner it will be helpful to select those sub sectors and supply chains which have the largest economic development and poverty reducing impact. Is it for example, more rewarding to develop policies and allocate resources for the dairy sector in Vietnam or the floriculture sector? Should the emphasis be on creating enabling environment for small farmers or larger more commercial agriculture enterprises?

The information needed to answer these kind of questions is often lacking. Many times the analysis is only undertaken at farm level, instead of analysing the whole supply chain of farmers, collectors, wholesalers and retailers. In this policy brief we present the main results of a study which developed and implemented a methodology that was aimed to provide answers to these questions.

### ProPoor Horticulture

The study was carried out within the framework of the ProPoor Horticulture project which aimed to quantify the poverty reduction impact by the horticulture sector in Uganda and Vietnam. The criteria used for the selection of the commodity for the value chain research were:

- Different types of value chains should exist for the commodity
- Production taking place in both peri-urban, and remote rural areas
- A commodity in which the poor are expected to participate
- A commodity with a research gap

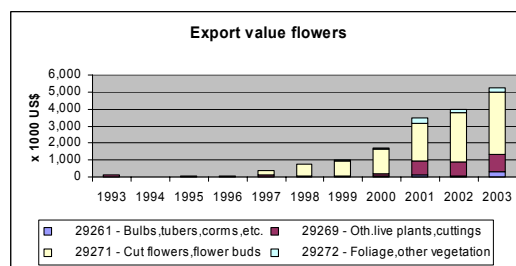
Based on these criteria the choice was made to focus on the flower sector and especially on roses because:

- Both large companies and smallholders are involved
- Produced in both peri-urban areas as well as in rural mountainous areas
- So far little value chain research has taken place within the flower sector

### Flower sector Vietnam

Worldwide consumption of cut flowers was estimated around US\$ 35 billion at the end of the nineties. In 2003 the value of the world wide exports of flowers was US\$ 11.3 billion, with Vietnam only exporting US\$ 5.2 million in 2003 according to ITC/WTO data. Despite this very modest values, exports are growing rapidly, 38% per year since 1993.

Figure 1 Export value of flowers



Compared with the export market, the domestic market is much more important and also growing rapidly, from an estimated 3,500 hectares of flowers and ornamental plants in 1999 to 12,100 hectares in 2003. Consumption data are not available, but this increase in production area can be considered as a proxy for the increase in consumption.

Within the cut flower sector roses, chrysanthemum and gladiolus, carnation and lily are the most important cut flowers. No individual crop data are available, but according to key-informants, roses cover 35% of the cut flower area. The most important production areas are the Red River Delta in the North, especially Vinh Phuc Province, Tu Liem district (Hanoi Province) and Dalat district in the Central Highlands. A relatively new trend is the increase in flower production area at high altitude (1600 m) in Sapa district. This district is supplying high

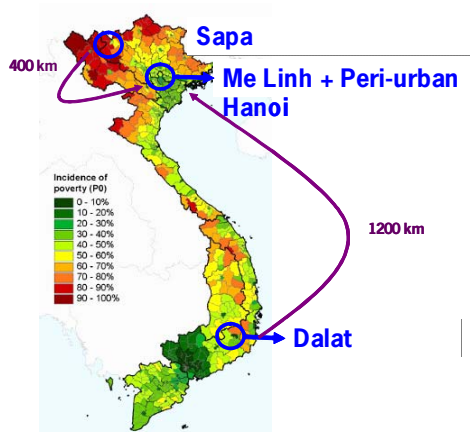
quality roses during the hot summer season, from March to October.

### Methodology

Based on the importance of roses, both domestically and international, the study focused on rose value chains. The study limited itself to analysing the most important rose value chains that supplied Hanoi.

Both qualitative and quantitative research methods were used. Qualitative methodologies included interviews with key-informants and focus group meetings with all value chain actors and local government authorities. For the quantitative study surveys were held among 65 flower producers, 66 retailers, 15 wholesalers, 1 large company, 6 workers of flower company and 15 workers of flower retailers.

Figure 2 Main rose production areas



Selected production areas were Me Linh district in Vinh Phuc province and Sapa district in Lao Cai Province. Due to research budget limitations Dalat district was not included into the investigation.

### History of rose sector development in Me Linh

The main rose producing areas in North Vietnam were almost nonexistent in the early nineties. In Me Linh district, for example, the area for rose cultivation increased from just 18 hectares in 1994 to 371 hectares in 2004. By 2004 about 2100 households in Me Linh commune cultivated roses, of which 1% had large farms of between 5,400 m<sup>2</sup> and 18,000 m<sup>2</sup>, 81% had about 1800 m<sup>2</sup> of roses, and 18% 360-720 m<sup>2</sup>. According to the Me Linh commune officials the percentage of poor people declined from

12% in 1990 to less than 1% in 2003 because of roses. As a result of the increased “rose wealth”, birth rates dropped and higher education levels increased.

Innovations took place both within cultivation and marketing. Farmers experimented themselves to find out which rose varieties were most suitable. Farmers obtained these varieties from Dalat, towards which some of the innovators travelled back and forth. An important farmer innovation was the grafting of French, Dutch and Italian rose varieties on wild roses (eglantine) which farmers collected at first from the forest.

Changes in marketing also took place in a relatively short time. While in 1992 Me Linh roses were only sold on local markets by farmers, in 2004 a large flower market has developed with 230 collectors/wholesalers, 70 large scale traders and 43 cold storage warehouses. Fifty percent of Me Linh roses are now sold in Hanoi, 20 percent to other Northern Provinces, 20 percent to several central provinces, 10 percent to other destinations such as HCMC and China.

In the initial phase of the rose sector development in Me Linh, small loans to fund the shift from rice and vegetable cultivation to rose cultivation played an important role. In 1996/1997 an estimated 60% of farmers borrowed amounts ranging from VND 500,000 to a maximum VND 50 million from the agricultural bank, the People Credit Fund, the Women's union and the Farmer union.

Extension on flowers has been offered since 2000, when the first IPM courses were organised by the district and provincial authorities. Later the PPC's and DCC's invited researchers from the Agriculture Genetics Institute to develop GAPs for flower cultivation. But most information was obtained from other farmers, television, newspapers and books.

The biggest obstacle considered by Me Linh farmers is the lack of suitable rose varieties which can be cultivated during the hot summer season. Some farmers are now planning to experiment with rose varieties from India. Related to this lack of suitable varieties and the misuse of pesticides, managing pests and diseases has become

very difficult. According to estimates by farmers, this caused yields to decline in 2003 with 30 percent.

### **History of rose sector development in Sapa**

In 1991/1992 French researchers carried out an experiment on producing the first commercial roses on 200 m<sup>2</sup>. They had the idea that the climate in Sapa from March to November was very suitable for rose cultivation. Despite this, these trials were not very successful. Until 1997, nothing happened until an innovative farmer from Me Linh rented one hectare and successfully started to cultivate roses, using the innovation of grafting foreign varieties on wild roses. The grafted roses were much more successful according to the farmers, because of the far better developed rooting system of the wild roses. After this success, many other farmers from Me Linh followed, who would grow roses in Sapa during the summer and roses during the winter in Me Linh.

In 2001 a foreign owned company decided to invest in rose cultivation at large scale, cultivating 14 hectares of roses. From 2002 also local Sapa residents realised how profitable rose cultivation was. They hired rose producers from Me Linh at relatively high salaries (VND 1.5 million/month) to work for them and to learn rose cultivation techniques. In 2003 two more Vietnamese companies started rose farms and four rose cooperatives were established. This increased the cultivated area of roses to 55 ha in 2003 and is expected to further increase to 110 ha by 2010.

Roses are transported to Hanoi by truck, every two days trucks leave at 6 pm from Sapa and arrive at Quang Ba wholesale market at around 1 or 2 am in the morning. The trucks belong to a few households who can transport the roses for all farmers at a cost of 100 VND/rose.

All rose farmers are still Kinh Vietnamese, so far H'mong are only involved as workers on rose farms, but this might change soon. Some of the interviewed cooperatives had plans to expand through setting up an out grower scheme of roses with H'mong farmers. Also the Lao Cai PPC has plans to

fund the flower company to start a rose out growers scheme with the ambitious goal of 100 hectares. The company would train the H'mong in rose cultivation and market their roses.

The major obstacle for farmers in rose cultivation is the difficulty to obtain more land for expansion. Suitable land for rose cultivation belongs to the H'mong, who do not want to rent out their land and who are still hesitant to switch to rose cultivation. But some H'mong, who worked as hired labourers on rose farmers, were planning to start with rose cultivation themselves. Therefore, we expect that in the near future an out grower scheme among H'mong farmers will develop.

Another obstacle are the heavy rains and mist which have a negative impact on flower quality. No (plastic) green houses are used yet for flower production, but the company was experimenting with them and has plans to use them on a large scale in the near future.

### **Value chains**

With the Hanoi consumers as end point the following different types of value chains were identified:

- a) Farmers → wholesalers → flower hawkers → consumers
- b) Farmers → wholesalers → flower stalls → consumers
- c) Farmers → wholesalers → flower shops → consumers
- d) Farmers → flower shops → consumers
- e) Farmers → flower market stalls → consumers
- f) Farmers → consumers
- g) Company → wholesalers → flower shops → consumers
- h) Company → flower shops → consumers

The company value chains only take place from Sapa and Dalat, while value chains a), b) and c) can start from all rose cultivation areas. Chains d), e) and f) predominantly start in Me Linh and Tu Liem districts.

### **Rose consumption and market shares**

Based on our study we estimate the total rose consumption in Hanoi to be about 261 million roses per year. With a population of 3 million this would mean about 87 roses per person per year. The largest share of these roses are supplied by Tu Liem (50%) and Me Linh (30%), followed by Sapa (6%).

## Profitability

Roses produced in Me Linh have much smaller flowers and shorter branches than the roses from Sapa, which results in lower prices for Me Linh roses. But due to the high temperatures rose productivity is very high, which compensates the lower prices. Furthermore, rose cultivation in Sapa stops from November to March, when temperatures are too low, while in Me Linh production can be year round, even though the quality in summer becomes very low due to the heat.

Table 1 Rose cultivation indicators

Indicator	Me Linh	Sapa	
	Farmers (n=45)	Farmers (N=6)	Company <sup>a</sup> (n=1)
Productivity (1000 roses/ha)	900 (small)	230 (large)	170 (large)
Gross value (US\$/ha)	16,077	17,982	10,038 - 16,477
Fixed cost (US\$/ha)	1,095	1,511	397
Variable cost (US\$/ha)	6,190	10,142	5,626
Gross Margin (US\$/ha)	9,888	7,839	4,412 - 10,851
Cost price US\$/rose	0.01	0.05	0.03

<sup>a</sup> For reasons of confidentiality the company data were not very detailed, so these figures should be seen as a crude estimate

Variable costs are so much higher in Sapa because of all the hired labour. In Me Linh only family labour is used which is not included in the gross margin. The gross value and gross margin for the company is a range because no exact price data was provided, but instead was calculated based on prices received by other large farmers from Sapa. For both producers in Sapa and Me Linh, pesticides were the most expensive cost item, about 25 and 42% of the total costs (including fixed costs). As farmers mostly use cheap pesticides this indicates what huge amounts farmers are using.

## Employment generation

To be able to compare how much employment is generated by the different chains we calculated how many Full Time Employment (FTE) units were needed to produce and market 10,000 roses. One FTE was defined as 240 adult labour days per year. Calculations were made for 14 different chains and for each chain it was estimated how many labour days each actor in the chain had to invest to handle 10,000 roses. The difference between chains 4 and 5 in Sapa are that chain 4 are large rose

farms (>2 ha) and chain 5 are small rose farms (<1 ha). Actually their marketing does not differ so we could have combined them into one chain, but because of their difference in production intensity we separated them.

Table 2 Labour generation by each chain per 10,000 roses

Chain	Me Linh (FTE/10,000 roses)						Sapa (FTE/10,000 roses)							
	1A	1B	1C	2A	2B	2C	3	4A	4B	4C	5A	5B	5C	6
Worker														0.49
Producer	0.32	0.32	0.32	0.43	0.43	0.43	0.51	0.32	0.32	0.32	0.88	0.88	0.88	0.02
Wholesaler	0.01	0.01	0.01					0.02	0.02	0.02	0.02	0.02	0.02	0.02
Flower shop	0.880			0.23				0.88			0.88			0.88
Flower stall		0.24			0.14				0.24			0.24		
Hawker			0.14			0.14				0.14			0.14	
<b>Total</b>	<b>1.21</b>	<b>0.57</b>	<b>0.47</b>	<b>0.65</b>	<b>0.57</b>	<b>0.56</b>	<b>0.51</b>	<b>1.22</b>	<b>0.58</b>	<b>0.48</b>	<b>1.78</b>	<b>1.14</b>	<b>1.04</b>	<b>1.41</b>

Of all actors farmers in chain 5a, and flower shops (in chains 1a, 2a, 4a, 5a, 6) need most labour per 10,000 roses. Overall 5a is the most labour intensive requiring 1.78 FTE/10,000 roses, followed by chain 6 and chains 4a and 1a.

Based on the total rose consumption in Hanoi and the market shares of the different chains, the total employment generated by rose value chains supplying Hanoi was estimated to be about 17,000 FTE.

## Net value

For each actor in each chain the net value per 10,000 roses was calculated. Flower shops added the highest net value per 10,000 roses. On a per unit basis company workers added more net value than farmers. Overall it is estimated that chain 6 added the highest net value.

Table 3 Net value added per 10,000 roses per chain

Chain	Me Linh (net value in USD/10,000 roses)						Sapa (net value in USD/10,000 roses)							
	1A	1B	1C	2A	2B	2C	3	4A	4B	4C	5A	5B	5C	6
Worker														252
Producer	97	97	97	150	150	150	62	158	158	158	337	337	337	236
Wholesaler	41	41	41					57	57	57	57	57	57	57
Flower shop	406			185				406			406			406
Flower stall		96			199				96			96		
Hawker			133			106				133			133	
<b>Total</b>	<b>544</b>	<b>234</b>	<b>271</b>	<b>334</b>	<b>349</b>	<b>256</b>	<b>62</b>	<b>622</b>	<b>312</b>	<b>348</b>	<b>801</b>	<b>490</b>	<b>527</b>	<b>951</b>

Me Linh farmers who sell directly to flower shops get US\$53 more per 10,000 roses, compared with farmers selling to wholesalers. But as we will see in Table 4, this takes more time than selling to wholesalers, therefore, the net value per FTE is lower. Farmers who sell directly to consumers obtained lower prices per 10,000 roses, which one would not expect, unless they sold the lower quality roses to consumers.

Table 4 Net value added per FTE per chain

Chain	Me Linh						Saga							
	1A	1B	1C	2A	2B	2C	3	4A	4B	4C	5A	5B	5C	6
Worker														516
Producer	437	437	437	358	358	358	192	647	647	647	548	548	548	482
Wholesaler	3,832	3,832	3,832					4,176	4,176	4,176	4,176	4,176	4,176	4,176
Flower shop	977			815				977						977
Flower stall		827			1,856				827				827	
Hawker				1,244			941				1,244			1,244
Total	5,246	5,096	5,513	1,173	2,214	1,299	192	5,799	5,650	6,067	5,701	5,551	5,988	6,151

Per FTE wholesalers have by far the highest net value added. This is quite logical, as they handle large volumes per FTE, which compensates their low net value added per 10,000 roses. Also hawkers have quite high net values per FTE, higher than flower shops, because flower shops are quite labour intensive. A lot of work has to be done before one rose is sold. Company worker's net value per FTE was almost the same as for farmers.

Based on the total rose consumption in Hanoi and the market shares of the different chains, the total net value of rose value chains supplying Hanoi was estimated to be about US\$ 7.5 million per year. Much higher than the total flower exports of Vietnam.

### Dependence on roses

Household income from roses ranged from US\$ 540 for company workers to US\$ 8,201 for large farmers in Chain 4. From these data it would seem that company workers are worse off than farmers. This seems conflicting with results of net value added per FTE. The reason for higher incomes for farmers than for company workers is that producer incomes are based on work by several household members. The company worker is just working alone, but still has her household members also obtaining income from other activities.

Table 5 Dependence on roses for various actors

Actor	Estimated mean share of household income generated by roses (%)	Average income from roses (US\$/year)
Producers in Chains 1, 2, and 3	79	1,611
Producers in Chain 4	75	8,201
Producers in Chain 5	61	4,947
Company workers	-	580
Wholesalers	42	5,111
Flower shops	23	2,020
Workers in flower shops	-	843
Flower stalls	29	1,385
Hawkers	33	1,003

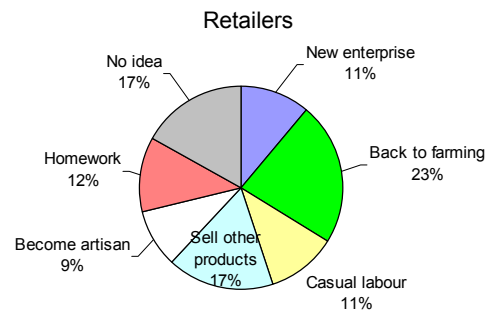
In addition, this income is earned in just nine months, while the other 3 months the company worker can undertake other activities. Off all actors, farmers depend

most on roses for their family income. The percentage of family income dependence of roses flower shops is estimated at just 23%, because they obtain income from other flowers as well. Their total flower dependence for family income is about 67%, for flower stalls this is 43% and for hawkers 50%.

### Poverty reduction impact

To assess the impact of participation in rose value chains on poverty reduction, we asked actors what their best other option would be if they were not able to participate in the rose value chain. These answers were used to develop different scenarios, where the resources used for roses (labour, land) were allocated to the best alternative. All other resources and income of the household were held constant. Most of the farmers would switch to other crops, mostly vegetables or even go back to rice, switch to livestock rearing, find off-farm job (15%), selling land (2%) or could really not think of any viable alternative (24%).

Figure 3 Best alternative to rose retailing



Most retailers (esp. hawkers) would switch back to farming, followed by selling other products or starting a new enterprise. Seventeen percent of the retailers had no idea what they would do if they could not sell roses.

For farmers we calculated various scenarios. Switching to vegetable based farming system, which included 2 vegetable harvest per year and one rice harvest. A rice based scenario, which included 2 rice harvest per year and one vegetable harvest. For off-farm work scenarios we used data from the Government Statistic Office about income levels of different types of off-farm labour in different provinces and districts.

**Table 6 Percentage of sampled farmers below different poverty measures**

Scenario	Poverty Measurement	Me Linh 1, 2, 3 n=47	Sapa 4 n=3	Sapa 5 n=3
Current Status	1 PPP\$/day	11	0	0
	Expenditure Approach	15	0	0
	2 PPP\$/day	15	0	0
Vegetable scenario	1 PPP\$/day	15	0	0
	Expenditure Approach	45	0	0
	2 PPP\$/day	62	0	0
Unskilled off-farm work scenario	1 PPP\$/day	2	0	0
	Expenditure Approach	13	33	67
	2 PPP\$/day	19	33	67

Based on the income data of one year, currently 15% of the sample in Me Linh would be considered to be below the expenditure based poverty line. If farmers would not be in rose value chains and switch to a vegetable based scenario, 45% would be below the expenditure based poverty line. If farmers would switch to off-farm jobs in Vinh Phuc province they would be better off, as fewer farms would be below the expenditure based poverty line. But how difficult is it for Me Linh farmers to get an off-farm job? Especially for women and the middle aged? Only 15% mentioned this as a good alternative.

For farmers in Sapa, currently none of the sampled rose producers is in poverty. Switching to vegetables would not change that. But a switch to an unskilled off-farm in Sapa district, would bring 3 out of the 6 farms below the expenditure poverty line.

The scenarios for hired labourers in the value chains and retailers are not yet calculated. As hired labourers are probably the most vulnerable, we calculated for each value chain how much of the employment generated by 10,000 roses was used to hire labourers.

Per 10,000 roses chain 6 (large company in Sapa) generated the highest hired labour FTE. About 0.73 hired labourers per 10,000 rose, almost 52% of total FTE generation. Of these hired labourers 90% are women and 20% were ethnic minorities. But from the interviews with H'mong workers it became clear that these were not the poorest.

Actually the rose company was attracting innovative farmers who wanted to learn how to cultivate a new crop. Several of them were already quite successful farmers, but were interested to get experience so that they could start growing roses themselves in the future.

**Table 7 Hired labour FTE per chain to handle 10,000 roses**

Chain	Me Linh (Hired labour in FTE/10,000)						Sapa (Hired labour in FTE/10,000)							
	1A	1B	1C	2A	2B	2C	3	4A	4B	4C	5A	5B	5C	6
Worker														0.49
Producer	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.23	0.23	0.23	0.17	0.17	0.17	0.02
Wholesaler	0.00	0.00	0.00					0.00	0.00	0.00	0.00	0.00	0.00	0.00
Flower shop	0.22			0.11				0.22			0.22			0.22
Flower stall		0.00			0.00				0.00			0.00		
Hawker			0.00			0.00				0.00			0.00	
Total hired FTE	0.24	0.01	0.01	0.12	0.00	0.00	0.00	0.46	0.24	0.24	0.40	0.18	0.18	0.73
Total FTE	1.21	0.57	0.47	0.65	0.57	0.56	0.51	1.22	0.58	0.48	1.78	1.14	1.04	1.41
% Hired FTE of FTE	19%	2%	2%	18%	1%	1%	0%	38%	41%	49%	22%	15%	17%	52%

Another important hired labour user are flower shops. For each 10,000 roses they create an estimated 0.22 FTE for hired labourers.

### Barriers to participate in rose value chains

Compared with growing other cash crops such as vegetables, rose cultivation requires more capital. Especially the first year is hard when investments have to be made in rose seedlings and a well, if irrigation water is not reliable. In Me Linh first year investments are about 4 million VND per sao (262 US\$/sao). The poorer farmers can only take this step if they have access to credit. For Me Linh this certainly has been the case as shown in the past 10 years. This might be different for ethnic minority farmers in Sapa.

In Sapa another barrier to entry could be the need to have relations with traders in Hanoi, as currently no traders come to Sapa themselves. Orders are placed by wholesalers through telephone. Many of the current rose farmers have a background in rose cultivation in Me Linh and good links with traders. For H'mong farmers this might be a barrier as they do not yet have these links. But we expect that in the near future the current rose farmers and companies in Sapa will start out growers schemes. They will provide knowledge and buy the roses from farmers who do not have direct links with traders in Hanoi.

## Conclusions

The rose sector has been developing very fast. Driven by market demand, farmers have reacted as entrepreneurs, with most innovations developed by them. Also traders with their investments in cold storage warehouses have played an important role in these fast developments.

It is estimated that the rose consumption in Hanoi has generated 17,000 FTE and a net value of US\$ 7.5 million. For Me Linh farmers we estimate that their involvement in rose value chains has lifted 30 percent of them out of poverty, compared with other agriculture based alternatives.

To determine which value chain is most “Pro Poor” it is important to know what wholesalers will do with their profit (multiplier effect). If farmers can not organise sales to flower retailers in a different way then they do now currently, farmers get a higher net value per FTE when they sell to wholesalers, compared with directly selling to retailers. At the current scale, value chain 1 seems to be most pro poor, as the hired labourers which are attracted by chain 6 are currently not the poorest. Actually the workers at the flower company are innovators who are there to learn. But when the cultivation area expands and more people will be employed, it is expected that also the poorer will join.

Therefore, developing rose value chains in cooler mountainous areas, targeting the hot summer period, has a lot of poverty reduction potential, as they generate employment in relatively remote rural areas. To make this option even more attractive, experiments should be done to see if with cheap plastic greenhouses the production period can be extend in the colder winter months. An interesting option could be to stimulate the company and out growers scheme model. Attracting foreign direct investment could speed up developments and give access to export markets.

The high use and especially misuse of pesticides for rose production is one of the most important disadvantages. This is especially a worry if this happens at large scale in the relatively unspoiled and fragile mountainous areas, where people still rely on surface water for drinking. It is crucial that

applied research with farmers develops more sustainable cultivation alternatives.

## Market saturation

Unfortunately, no domestic rose consumption data are available, so no estimate can be made of the growth of the domestic market. But when a rose sector policy is designed, market saturation should always be kept into account. According to the focus group discussions with farmers in Me Linh, profitability per sao has dropped from VND 8 million in 1993 to VND 5 million per sao in 2004. Farmers expect profitability to further decrease to VND 3.5 million in 2010. The main reasons for this decline are the increased problems with pests and diseases (lower yields and more pesticides are needed), increase in input costs and a decline in prices for roses. This decline indicates that growth in supply has been catching up with the growth in demand.

According to estimates by key-informants the price for “Sapa roses” is expected to decline when the production area reaches 70 hectares. The total demand from the Northern market is expected too be satisfied when 250 hectares of roses are cultivated in Sapa.

This market saturation can be prevented by diversifying in types, colours of roses and possible other flower cultivation. In addition export markets should also be developed. The foreign owned DALAT HASFARM has shown that this is certainly possible to do from Vietnam. Till date Vietnamese roses from Northern Vietnam have hardly been exported, only sometimes to China. Cost price per rose is very competitive, but quality will have to improve a lot. More emphasis should be on extending the vase life of the rose. There is a lot of scope for quality improvement, as till now farmers have only had very limited access to research and extension. Through variety trials, integrated pest management and developing cheap plastic green houses a lot can be done to improve.

So far this methodology has only been applied for roses. To give advice on efficient allocation of government research budgets it would be interesting to apply this methodology for other commodities as well.

## Information

This research summary was based on several project reports which can be downloaded from the project website: [www.growoutofpoverty.nl](http://www.growoutofpoverty.nl)



The research was carried out by researchers from:

- The Agriculture Economics Research Institute (LEI) part of Wageningen UR, the Netherlands.
- the Center for Agriculture Research and Ecology Studies (CARES), which is part of Hanoi Agriculture University. [www.cares.org.vn](http://www.cares.org.vn)

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For more information about these programs visit:

- [www.ec-prep.org](http://www.ec-prep.org)
- [www.north-south.nl](http://www.north-south.nl)



*Roses in the mountains of Sapa district*



*Rose production in Sapa*



*Transporting roses from Me Linh to Hanoi*



*Flower shop*



*Flower hawker*