

ProPoor Horticulture

in Uganda and Vietnam

Qualitative assessment of the impact of the rose sector on poverty in North Vietnam: The case of Me Linh District

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The ProPoor Horticulture Project

This research project aims to present policy makers insight in how horticulture can be an important vehicle for pro-poor growth and development. The focus of governments and development assistance to agriculture in East Africa and in South East Asia should include fruit, vegetables and flowers. This focus should include development of the domestic market, away from the often dominant attention for export orientation only.

Governments and donor countries have the opportunity to support horticulture in the rural and peri-urban areas in developing countries, by means of trade policy and development policy instruments. Effective assistance measures should be embedded in the trends and trade-offs ranging from the local to the international level. The project aims to provide this insight and use it as a basis for recommendations on pro-poor development assistance.

Specific objectives are:

- To assess the conditions for fruit, flower and vegetable production, distribution and marketing to serve as a pro-poor activity.
- To assess current outlet opportunities for fruit, flower and vegetable products from the study, both on the domestic and international market, and to formulate expectations for the next decade.
- To predict the impact of the upcoming of supermarkets in the distribution of food, and the increased scope of quality and safety demands on the scale and organisation of horticulture supply in the study regions.
- To determine whether horticultural growth results in environmental degradation or high risk consumption due to pollution in the production environment.
- To suggest interventions for pro-poor growth of fruit, flower and vegetable production, distribution and marketing
- To suggest how EU trade policy and development assistance with regard to horticulture in developing countries can be made to work for the poor.

More information about the project and all realised outputs can be found on the website: www.growoutofpoverty.nl.

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Executive Summary

In 2004, a group of ProPoor researchers travelled to Me Linh Commune, Me Linh District, Vinh Phuc Province to learn more about the rose marketing channels and their impact on livelihoods and poverty alleviation of this highly productive rose growing region in northern Vietnam. They interviewed five district officers, nine communal officers, and held group discussions with rose traders, rose producers, and households that did not produce roses. They also interviewed groups of leaders in Duong, Lieu Tri and Hoi hamlets and more than 60 individual households. This report details their findings.

ME LINH

Me Linh District includes 17 communes, of which flowers (mainly roses) are grown in 10. Me Linh Commune was chosen as the research site because rose production had the largest impact on poverty reduction compared to other communes in Me Linh District. Currently, Me Linh Commune has 240 hectares of roses, accounting for 70 percent of the total farming land. The population of 10,652 persons reside in 11 hamlets. Three hamlets, Duong, Hoi and Lieu Tri, were selected for sampling and interviewing because of their change in wealth rankings due to rose production.

In the 1980's, Me Linh mainly cultivated vegetables for domestic and Eastern European markets. After Eastern European export markets decreased, farmers began to grow roses. They started with 20 ha in 1995 and grew to 240 ha in 2004. The expansion of rose production has contributed considerably to the growth of Me Linh from 18.7 billion VND in 1991 to 55 billion VND in 2002.

The number of households in Me Linh Commune involved in rose production has increased from 10-15 percent in 1990 – 1993 to 95 percent in 2004. Likewise, only four percent of the total agricultural land in Me Linh commune was cultivated in roses from 1990-1993 which rose to 70 percent in 2004. In 2004, about 300 households specialized in rose production, 300 were involved in rose production and rose trading, 1500 were involved in rose and cash crop production and 50 households were involved in rose production and other trade (working as hired labour, and grocery). In 2004, Me Linh Commune had 15 households with large areas of rose production (1.5 'mau'¹ to 5 'mau'). About 1,700 households had medium areas of rose production (5 'sao'). The remainder of households had small areas of only 1 to 2 'sao' of land for rose production.

To improve quality of roses, farmers replaced their local variety with the Da Lat rose in 1997. In 1999, the Da Lat rose was replaced by the French and Italian roses which had thicker rose petals and stronger branches. Some households have learned how to propagate the rose seedlings by grafting the buds of roses onto eglantines, which are strong enough to resist the harsh weather.

The main investments of rose production are in pesticide, fertilizer and rolling paper. Farmers only invest in seedlings during the first year. Farmers spray pesticides without any advice or consultation from any organization, but rather base the amount sprayed on their experience or what they have learned from their neighbours. A lot of people do not wear the gauze masks and protective body clothes when they spray pesticides. Their only safety precaution is to spray the pesticide following the wind.

Since 2000, the provincial and district leaders have organized 12 IPM training courses on environmentally friendly farming practices for flowers and the District People's Committee have invited researchers from Agricultural Genetic Institute to train the farmers in good agricultural practices of flower production (GAP).

¹ One 'mau' equals 10 'sao'. 1 sao=360 m².

ROSE PRODUCTION HISTORY OF ME LINH

From 1992-1993, roses were mainly sold in the local markets with a few households selling roses directly to Ha Noi. In 1994, roses were primarily sold to rose wholesalers in the Quang Ba market who would go to Me Linh to purchase roses or farmers would bring the roses to Hanoi. From 1995-1996, roses began to be sold to northern provinces. In 1997, both the area and the quantity of roses increased, the first rose collectors appeared, and roses were first transferred to Vinh and Ho Chi Minh City. In 1998, roses were sold to some other central and southern provinces. The Ha Loi market for roses was established in the commune and increased the quantity of rose collectors and traders considerably. Before 1996, farmers only sold their flowers along the main road of Me Linh commune. In 2001-2002, a large quantity of Me Linh roses was first exported to the China by trucks. Chinese wholesalers only demanded Me Linh roses when it was snowing in China and bought them at the price of from 4000 to 6000 VND per rose. In 2004, Me Linh roses were no longer exported to China.

MARKETS

Me Linh is located close to Ha Noi where the flower market is large (50% of its roses were sold there in 2004) and usually produces roses of higher quality than its competitors in Dong Anh, Tay Tuu - Tu Liem. In 2004, 20 percent of Me Linh rose production was sold to some northern provinces, 20 percent to some central provinces, six percent to Ho Chi Minh City and four percent was exported to China.

ROSE PRICES

In the summer, the productivity of roses is high but the quality is poor so the price is usually cheaper than in winter (50 to 80 VND per rose). In the winter, fewer flowers are produced, but at a higher quality (1,800 – 2,000 VND per flower). The highest prices are received on anniversary days, mainly in November, January, February. On these days the average selling price per rose in Ha Loi and Quang Ba markets in 2004 were from 1500 to 2000 VND and from 2000 to 3000 VND, respectively.

The average income in 2004 from producing flowers was about 3 to 5 million VND per sao per year while income from vegetables was only 1.2 million VND per sao per year. In recent years, the profit has gradually decreased because of several factors. Pests appear more frequently due to long-term rose cultivation, therefore, the input costs have increased. Meanwhile the selling prices of roses have declined since several varieties of other flowers were sold in the market. It is estimated that by 2010 the profit from roses will reduce to between 3 and 4 million VND per 'sao'.

COLLECTORS/BIG TRADERS/WHOLESALERS

In 1992, there were 10 rose collectors mainly selling their products in the Ha Noi market. In 1993, the number of rose collectors increased to 40. Roses collected were sold in the Quang Ba and Nhat Tan markets and the rest were sold in local markets. Currently, there are about 300 rose wholesalers in Me Linh commune of which 60-70 of them are considered big traders. Normally, wholesalers can buy and sell 3,000-5,000 roses/day on average and big traders can buy 4-5 times as much. Those who bought roses in small quantities often use motorbikes to transport them. Big collectors pack and transfer roses by trucks, trains and by airplanes.

STORAGE AND PRODUCTION

Rose producers normally preserve roses by putting them on the humid floor, watering, or soaking them in water containers as soon as they are carried back from fields and/or using a chemical to preserve them while in storage. Roses are often harvested in the afternoon and sold in the markets in the morning. There were 43 cold storage units of households and traders, which can preserve roses for 12 days, in Me Linh in 2004. Although many cold storages have been built recently, their capacity is not large enough to preserve all of roses

produced each year. Therefore, some rose producers still have to carry their products to Ha Noi for preservation. A cold storage unit is about 15m² and 3-3.5m high and can hold 80,000 to 90,000 roses. It costs 40 million VND to build one of these structures from brick and costs 700,000 VND per month per storage unit to supply electricity.

IMPACT OF ROSE PRODUCTION ON ME LINH COMMUNE

According to communal officers, rose production decreased the percentage of poor people from 12% in 1990 to 0.9% in 2003. As a result of improved livelihoods, birth rates have decreased and child schooling rates have increased. Seven percent of high school graduates enrolled in colleges and universities of the commune in 2003, up 2-3% in 2000.

The community relationship is better and infrastructure systems have been upgraded because of rose production. In 2000, people in Me Linh commune contributed to build an inter-hamlet road, the commune committee supported 20% the costs. In 1997, Ha Loi market was established by the commune People's Committee which created a place for wholesalers to meet farmers.

Growing roses over a long time period causes the appearance of many kinds of insects and their resistance to chemical pesticides. Hence, many farmers have increased use of pesticides and chemical fertilizer. Overuse and incorrect use affects the environment and people's health, directly, through headaches and sore eyes, and indirectly, through the ground water. Local farmers have requested government support for techniques to drill deeper wells to prevent the water from absorbing the chemicals.

1 Introduction

1.1 Objectives and research location

1.1.1 Objectives

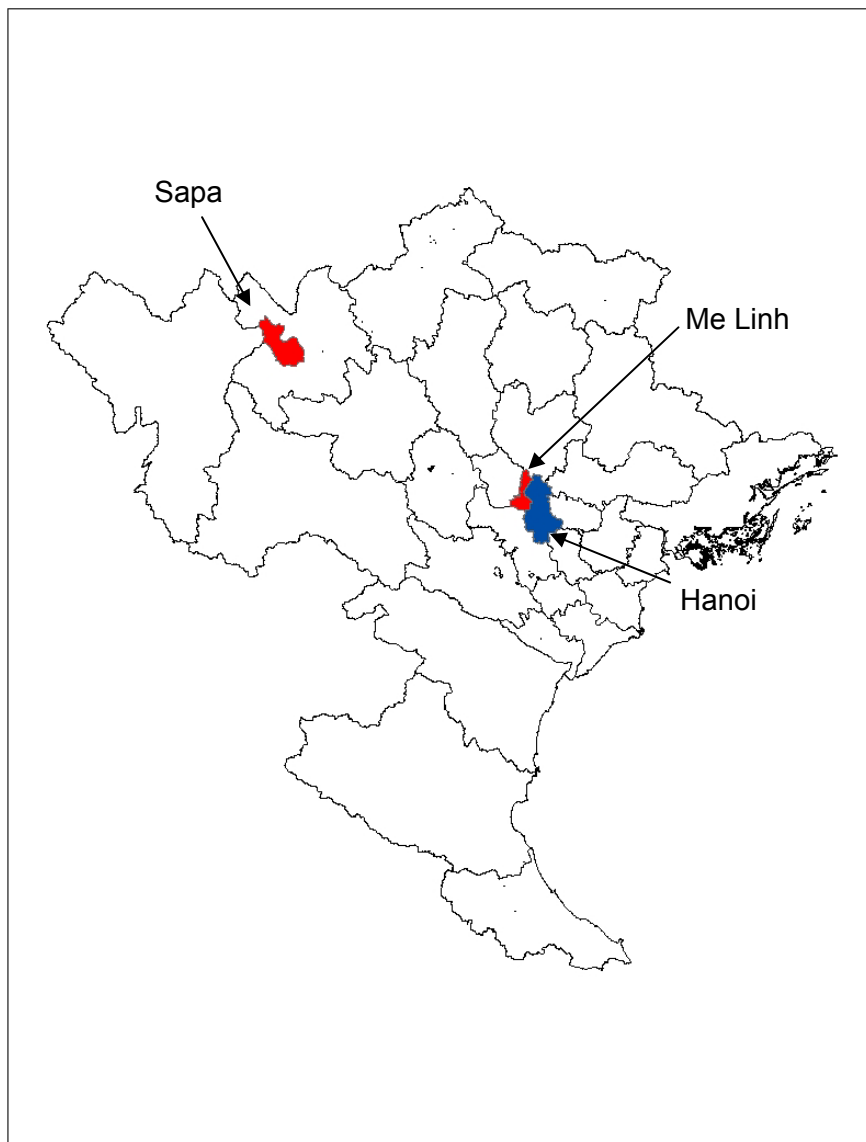
Within the contents of pro-poor horticulture project in Vietnam, the main goals of this field trip were to identify the following issues:

- How important is rose production to sustain the livelihoods of the farmers in Me Linh?
- How has rose production been in the past and what is expected of the future?
- Which livelihood assets are required to engage in rose production?
- What is the level of vulnerability of livelihoods which are based on rose production?

1.1.2 Me Linh district

1.1.2.1 Location

Figure 1: Research location



Before, Me Linh district included 22 communes and 2 towns. Since the January 1st, 2004, five communes and 2 towns were separated from the district. At present, the district consists of 17 communes with an area of over 14.000 ha and a total population of around 184.000 people.

Table 1: The list of communes in Me Linh district

No	Name
1	Trang Viet
2	Tien Phong
3	Dai Thinh
4	Me Linh
5	Van Khe
6	Hoang Kim
7	Thach Da
8	Tam Dong
9	Lien Mac
10	Chu Phan
11	Tien Thinh
12	Van Yen
13	Tu Lap
14	Tien Thang
15	Thanh Lam
16	Kim Hoa
17	Quang Minh

According to the decree No. 03 issued by Provincial People's Committee, Me Linh will be built up as a large urban area and a targeted economy area. Me Linh will be divided into three zones: (1) industrial zone with approximately 200 projects being implemented, (2) urban zone, (3) and the area close to the Red River which will be planned to become ecological tourism and hi-tech agricultural zone.

The office of Me Linh District People's Committee is going to be moved to Dai Thinh commune. It is next to Me Linh commune, the largest flower growing area and the original flower cultivation location of this district.

1.1.2.2 Me Linh Commune

Me Linh commune is located in the south of Me Linh district, in Vinh Phuc province. It is 586.9 ha of which 372.2 ha is agricultural land. The population of 10,652 persons reside in 11 hamlets which can be divided into one big and two small villages.

In the 1980s, population density increased and generated a huge labour force. It transformed the cropping pattern of Me Linh from mainly cultivated rice with low yield into a region of vegetables which it supplied to Hanoi and other provinces, and exported onions, tomato etc. to Eastern European Countries².

² Cited from the manuscript of records of Me Linh commune.

Table 2: Gross outputs of Me Linh commune over the periods*Unit: million VND*

Year	Roses	Onions	Rice&vegs	Livestock	Services	Gross outputs	Income per capita
1991	0	4,500	10,200	3,500	500	18,700	1.8
1995	1,000	5,000	14,000	3,000	2,000	25,000	2.7
2000	21,184	4,000	6,100	6,100	11,800	49,184	4.7
2002	24,880	5,000	6,569	4,904	13,600	54,953	5.4

Source: People's Committee of Me Linh Commune

According to the report of People's Committee of Me Linh commune, the rose production in Me Linh increased from 20 ha in 1995 to 210 ha in 2000 and 240 ha in 2004. The expansion of rose production has contributed considerably to the growth of Me Linh from 18.7 billion VND in 1991 to 55 billion VND in 2002 (table 2).

1.2 Methodology

We have applied a Rapid Diagnostic Analysis (RDA) to collect qualitative data and used questionnaires to gather quantitative data. The field trip, therefore, was divided into two stages. During the first days, we focused on interviewing the local officers and farmer groups at the district, commune and village levels by the different prepared guidelines through group discussion and key informant interviews. During the later days, we asked each individual farm household to complete a prepared questionnaire during structured interviews. We have interviewed 5 district officers, 9 communal officers, 3 group discussions including trader group, rose production group and non-rose production group. Additionally, we had interviewed the group of leaders in Duong, Lieu tri and Hoi hamlets: in which Quang and Lan were in charge of Duong hamlet, Phuong and Thao were responsible for Hoi hamlet, Dr. Dung and Huong interviewed the Leaders of Lieu Tri. Regarding to the structured interview, we has meet more than 60 individual households to interview them through the designed questionnaire (for more detail in the planning of field trip and list of respondent, see annex 2).

In order to identify the wealth of each commune, village and individual household in the selected village, we have applied the well-being ranking to local participants at district, commune and household level. At first, we took the list of communes, villages or households. Secondly, we explained and required the respondents to classify the communes and the households into different piles in terms of wealth level. Each pile represented the wealth level of a group of households/communes or villages. The wealth of household in each pile has been quantified by the value of 0 to 1 depending on number of piles ranked by respondent. For example, three piles were created, the rich household in the first pile was 3/3, which gives each household or commune in that pile the value 1. The poor household in the third pile was 1/3, which gives each household or commune in that pile the value 0.333. The results of different respondent sum up into a finale table to identify the wealth of each household or commune (e.g. table 3)³. The criteria used to classify the households, as well as the communes, into different groups were completely based on the ideas of key informants.

1.2.1 Criteria of district officers to classify the commune by wealth

At the Me Linh District People's Committee, in addition to collecting the primary date on rose production and marketing, we had district officers classify the communes by wealth ranking at two different periods, present and before 1992.

³ For further detail, read "A Trainer's Guide for Participatory Learning and Action", International Institute for Environment and Development, 1995, p.253 – p.259

The first respondent, Mr. Khanh, head of the statistics department, divided the commune into three groups (rich, moderate and poor groups) based on the income level and equality. According to him, the rich commune has households with many valuable properties (i.e. television, motorbike, cassettes, freezer, large house, etc). The moderate communes had households with televisions, motorbikes and normal house etc. The property of households in poor communes was not considered valuable.

The second respondent, Mr. Ngu, Vice President of Farmer's Union, divided the communes into three groups. According to him, the group 1 included communes with high income, economic growth and living standard. These communes are located along the Thang Long Highway, and Road No 23. This area is closed to the industrial zones. Group 2 included the communes with moderate income, better living standard than group 3, and a slower economic transformation than group 1. These communes were not closed to the national roads. Group 3 included the communes with low income, no development of the industrial zones, and only agriculture development. These communes are located close to the Red River and the Ca Lo River.

The third person interviewed was Ms. Minh, the head of Plant Protection Station of this district. Before 1992, she divided the communes into three groups: Good, moderate and disadvantaged groups. The good group of communes, before 1990, included households doing non-farm activities, such as hired labour or doing business. Thus, they had better houses and economic ability. In the moderate group of communes, the households had enough food and also did non-farm activities including hired labour and construction. The third group included the poor communes which faced many challenges. The farmers in these communes were mainly living on agricultural activities. They did not have opportunities to do non-farm or off-farm activities. Moreover, these communes were located in the lowland. The farmers were faced with disadvantages in agricultural production. In these communes, the irrigation system was not upgraded, fewer children went to schools and the drop-out rate was higher than that of communes in other groups. However, in 2004, the communes were divided into two groups: good and moderate. The good group includes the communes where the living standard of local farmers is considerably improved in the recent years. They have better food and earnings from off-farm activities such as buying-selling of goods and construction. Additionally, the households in these communes also have money to purchase to good equipment for agricultural production. In the moderate group of communes, the households have stable income, average living standard, the children go to school and they can purchase the assets such as televisions and freezers.

The result of wealth ranking shows that the wealth of each commune in Me Linh district has significantly changed compared to that of the year before 1990.

In addition to the wealth raking, we also asked the respondent compare the effects of rose production on poverty reduction between two communes. Which commune had better effects on poverty reduction, the letter represented that commune would been recorded (table 4)

Table 3: Wealth ranking result of the communes in Me Linh District

STT	Communes	Before 1990				2003-2004			
		1	2	2	Total	1	2	3	Total
1	Tien Phong	1.000	1.000	1.000	3.000	1.00	1.00	1.00	3.00
2	Dai Thinh	1.000	1.000	1.000	3.000	1.00	1.00	1.00	3.00
3	Me Linh	1.000	1.000	1.000	3.000	1.00	1.00	1.00	3.00
4	Thanh Lam	0.667	0.667	0.667	2.000	0.67	1.00	1.00	2.67
5	Quang Minh	0.667	0.667	0.667	2.000	0.67	1.00	1.00	2.67
6	Trang Viet	0.333	0.667	0.667	1.667	0.67	0.67	1.00	2.33
7	Thach Da	1.000	0.333	1.000	2.333	1.00	0.33	1.00	2.33
8	Tu Lap	0.667	0.333	0.667	1.667	0.67	0.33	1.00	2.00
9	Van Khe	0.667	0.333	0.333	1.333	1.00	0.33	0.50	1.83
10	Tam Dong	0.333	0.667	0.333	1.333	0.67	0.67	0.50	1.83
11	Lien Mac	0.667	0.333	0.333	1.333	1.00	0.33	0.50	1.83
12	Kim Hoa	0.667	0.333	0.667	1.667	0.67	0.67	0.50	1.83
13	Tien Thang	0.333	0.333	0.667	1.333	0.33	0.33	1.00	1.67
14	Chu Phan	0.667	0.333	0.333	1.333	0.67	0.33	0.50	1.50
15	Tien Thinh	0.667	0.333	0.667	1.667	0.67	0.33	0.50	1.50
16	Van Yen	0.667	0.333	0.333	1.333	0.67	0.33	0.50	1.50
17	Hoang Kim	0.333	0.333	0.333	1.000	0.33	0.33	0.50	1.17

Table 4: The effects of rose production on poverty reduction in Me Linh district

Commune	A	B	C	D	E	G	H	I	K	L	M	Results
A. Kim Hoa		A	A	A	E	G	H	A	K	L	A	10
B. Thach Da	A		B	B	E	G	H	I	K	L	B	6
C. Tien Thang	A	B		D	E	G	H	I	K	L	C	2
D. Quang Minh	A	B	D		E	G	H	I	K	L	D	4
E. Thanh Lam	E	E	E	E		G	H	E	K	E	E	14
G. Dai Thinh	G	G	G	G	G		H	G	G	G	G	18
H. Me Linh	H	H	H	H	H	H		H	H	H	H	20
I. Van Khe	A	I	I	I	E	G	H		K	L	I	8
K. Tien Phong	K	K	K	K	K	G	H	K		K	K	16
L. Trang Viet	L	L	L	L	E	G	H	L	K		L	12
M. Hoang Kim	A	B	C	D	E	G	H	I	K	L		0

Source: This is the result of pair-wise ranking by Nguyen Van Khanh and Tran Thi Mai at District People's Committee.

According to the results in table 4, the effect of rose production on poverty reduction at Me Linh commune is the biggest. The second effect is Dai Thinh. Therefore, Me Linh commune was selected for in-depth survey.

1.2.2 Criteria to classify hamlets in Me Linh commune

Within Me Linh commune we classify the wealth of hamlets by using wealth ranking methods with the participating farmers.

Hamlets were ranked based on their wealth in two periods: before 1990 and 1990-2004. There is a great difference in the rankings of Lieu Tri, Duong and Hoi hamlet for each period. In the earlier period, Lieu Tri was ranked 9th out of 11 hamlets. Nevertheless, because of many reasons such as being located in a depression area, difficulties in shifting cropping pattern, and difficulties in trading due to its geographical location, it is now ranked 11th. Duong hamlet, in the past, due to bad quality of land which led to low crop productivity, ranked last. However, since 1994-1995, some households in the hamlets have improved their land to plant roses and have become rich. Therefore, it is now standing at the 6th place of the wealth ranking.

Table 5: Respondents to classify hamlets

Number	Name	Criteria
1	Chuong (A villager)	Depends on trade. Hamlets engaging more in trade will be wealthier.
2	Bay (Agricultural officer)	Depends on soil and plants. Hamlets with good soil quality and high crop productivity will be wealthier.
3	Thuan (Old person working at Communal People's Committee)	Depends on the number of rich households and poor households. Hamlets with more proportion of rich households will be wealthier.

Table 6: Wealth ranking of hamlets before 1990
(Before growing roses)

Number	Name	Respondents			Total
		1	2	3	
1	Xanh hamlet	1.00	1.00	1.00	3.00
2	Cau hamlet	1.00	1.00	1.00	3.00
3	Ao Sen hamlet	1.00	1.00	0.67	2.67
4	Cho hamlet	1.00	1.00	0.67	2.67
5	Bang hamlet	1.00	0.50	0.67	2.17
6	Dinh hamlet	0.67	0.33	0.67	1.67
7	Chua hamlet	0.67	0.33	0.67	1.67
8	Hoi hamlet	0.67	0.33	0.33	1.33
9	Lieu Tri hamlet	0.33	0.33	0.33	1.00
10	Ap Ha hamlet	0.33	0.33	0.33	1.00
11	Duong hamlet	0.33	0.33	0.33	1.00

Table 7: Wealth ranking of hamlets at present (2004)

Number	Name	Respondents			Total
		1	2	3	
1	Xanh hamlet	1.00	1.00	1.00	3.00
2	Cau hamlet	1.00	1.00	1.00	3.00
3	Cho hamlet	1.00	1.00	0.75	2.75
4	Ao Sen hamlet	1.00	1.00	0.50	2.50
5	Bang hamlet	1.00	1.00	0.50	2.50
6	Duong hamlet	1.00	1.00	0.50	2.50
7	Hoi hamlet	0.50	1.00	0.75	2.25
8	Chua hamlet	0.50	1.00	0.50	2.00
9	Ap Ha hamlet	0.50	0.50	1.00	2.00
10	Dinh hamlet	0.50	0.50	0.50	1.50
11	Lieu Tri hamlet	0.50	0.50	0.25	1.25

Three hamlets, Duong, Hoi and Lieu Tri, are selected for sampling and interviewing because of their change in wealth rankings.

1.2.3 Criteria to classify households in Duong hamlet

1.2.3.1 Respondent 01: Ms. Quang (Farmer)

Rich households:

- Rich households are those who profit from their work such as planting rose and planting crops.
- Rich households have beautiful rose gardens which bring high revenue because they have money and facilities to support the rose production.
- Rich households can also buy household belongings such as televisions, refrigerators and motorbikes.
- Rich households invest in their children's education and they can go to school by bicycle and motorbike.
- Rich households have large houses, at least one story maybe more.
- Rich households have money saved in banks and can contribute money to groups that they enrol in.

Fairly rich households:

- Fairly rich households do not have a lot of money; however, they still have some money in bank accounts.
- They all have items such as televisions, pumps or motorbikes that help in planting and selling roses.
- Their children all go to school.
- They mainly have a flat roof house or two-floor building.

Moderate households:

- They do not have money saved but they have enough money to support their family through income from crops and roses.
- However, they do not have sufficient material items. Only some households have motorbikes. They also lack machines used for agricultural production.
- Most of them do not have much money so they cannot invest in their children's education.

Poor households:

- Most of them have special conditions (i.e. lack of labour, alone, widow or aged) that prevent them from doing agricultural activities. They have to borrow money from others.

1.2.3.2 Respondent 02: Ms. Vui (farmer)

Rich households:

- They can buy cars, motorbikes, households' items (e.g. television, fridge). They also build a big house.
- They earn a lot of money from agricultural activities and trade.
- They invest more in their children, hence their children become better off
- They also have other sources of income such as poultry, livestock or animal husbandry.

Fairly rich households:

- They have capital to do agricultural activities but not enough money that it needed to be sent to banks
- They have nice houses.
- Their children are sent to school

Moderate households:

- Although they do not save money, they have enough money for their everyday life and do not have to borrow from others.

Poor households:

- They do agricultural activities but have to borrow money from others.
- Low levels of production lead to insufficient productivity.
- They lack labour.

1.2.3.3 Respondent 3: Mr. Hau – head of Duong hamlet*Rich households:*

- They succeed in their business, save money, build houses and buy valuable assets

Fairly rich households:

- They are successful in doing business, and have stable income, build house and buy valuable assets. However, compared to rich households, they have a lower level of savings.

Moderate households:

- They have normal income. They also build houses and buy assets but fewer than the rich or fairly rich households.

Poor households:

- They do not have sufficient capital to invest in agricultural production, and still have difficulties in their household economy.

1.2.4 Criteria to classify households in Hoi hamlet**1.2.4.1 Respondent 1+3**

Depending on income and assets, the households are divided into four categories:

Rich:

- They have houses, transport facilities (motorbike), land, stable income, and do not have to borrow money from others.

Moderate:

- They are temporarily stable in economy. They should try more to develop.

Below moderate:

- They have difficulties in life. They do not have enough land and have to borrow money from others.

Poor:

- They lack food.

1.2.4.2 Respondent 2: Ms. Khanh, head of the Women's Union*Rich:*

- They build big houses and have household assets such as motorbike, television, and refrigerator.

Moderate:

- They have enough belongings for their everyday life and medium income.

Below moderate:

- They have low income.

Poor:

- They lack food and labour.

1.2.5 Classify households in Lieu Tri hamlet

Households in this hamlet are divided into three main categories: rich, moderate and poor.

Rich households:

- They have mainly planted rice in the past but have moved to planting or selling flowers.

Moderate households:

- Only a small part of them plant flowers. They also have secondary occupations making 'banh cuon'.

Poor households:

- They mainly have older heads of the households, lack labour and are not self-motivated. They live on paddy-rice production. Some households plant crops.

2 Me Linh district and its rose production

2.1 The history of flower cultivation in Me Linh District

Figure 2: Timeline of flower production in Me Linh District

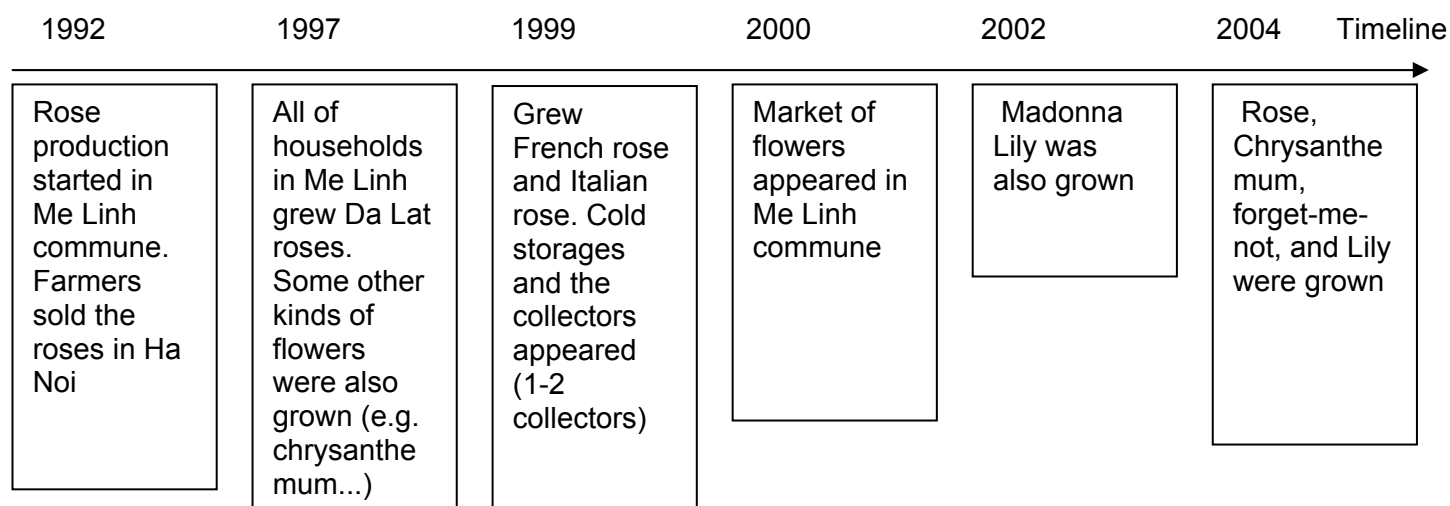
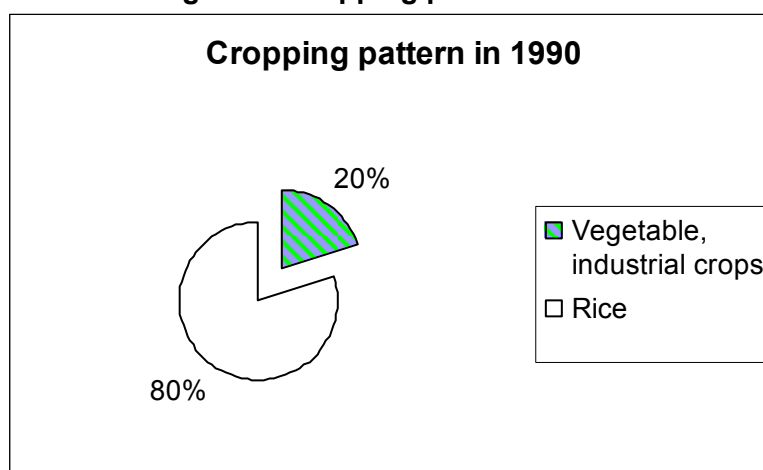
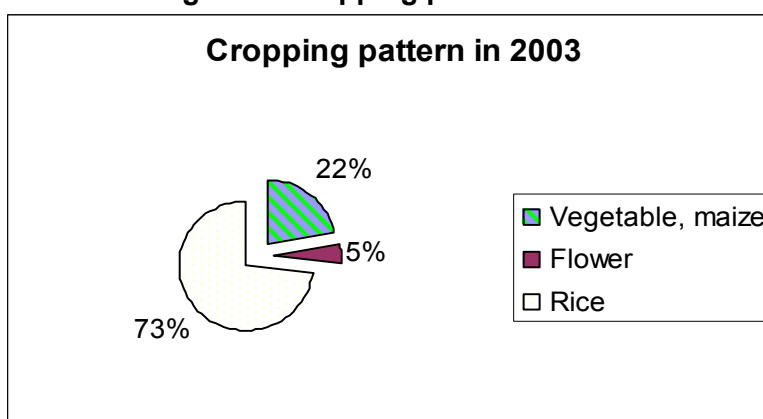


Table 8: Areas of rose cultivation in Me Linh district (ha), 1994-2004

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Area (ha)	18	21	66	171	244	266	272	283	344	356	371

Figure 3: Cropping pattern in 1990**Figure 4: Cropping pattern in 2003**

Rose production was started at the beginning of the 1990's by some energetic young people who brought the rose seedlings from Ha Noi. Before growing roses, the main crops in Me Linh were vegetables, which were supplied to domestic markets and exported to Eastern European countries. At that time, Eastern European markets were narrowed. Vegetable Marketing faced many difficulties because the supply was larger than the demand. The local people, therefore, transformed a part of land to grow roses near the road and preliminarily got good results in terms of economic efficiency. The farmers in this commune were able to easily change their cropping pattern because they already had experiences in vegetable production. Moreover, they also had good relations with their friends in other places, from which they could observe the high demand of flowers in Ha Noi.

Around 1997, farmers realized that their local roses could not satisfy the consumer's preference for quality. Farmers replaced their local variety with the Da Lat rose (three young people in Me Linh went to Da Lat to find the new variety of rose). In those years, the growing area of roses was nearly 200 ha, of which was concentrated on Me Linh commune.

However in 1999, the quality of Da Lat rose also declined (rose petals were very thin and branches were weak). The Dalat rose, therefore was replaced by the French rose and the Italian rose. The growing area of roses was rapidly spreading out to neighbouring communes, Tien Phong and Dai Thinh, due to good economic efficiency of these rose. In these years, some households have learned how to propagate the rose seedling by grafting the buds of roses onto eglantines, which are strong enough to resist harsh weather. Thus,

some households had focused on planting eglantine and providing them to other households who produced rose seedlings in the nursery.

In 2001, the Provincial People's Committee issued the decree No. 03 to shift the cropping pattern in all communes and divided Me Linh district into 3 economic zones including: vegetable and rice, flower and industrial zones. At this time, flower area was extended to Thanh Lam, Thach Da, Quang Minh, Tu Lap, Trang Viet and Van Khe. Another commune did not grow flowers due to low land and far distance from the market (the centre of flower market is in Me Linh commune).

In 2002, Madonna lily appeared in this district. By this production, farmers were able to get higher incomes. Some households gave up roses to grow Madonna lily.

In 2004, the growing area of rose in Me Linh district is estimated at about 371 ha, of which 200 ha concentrating in Me Linh commune, accounted for 85% of total land for rose production in the district.

The land for rose currently accounts for 90% of total land for flowers. The Government and some research institutes in the agriculture sector introduced some types of flowers. Independently, the farmers also found some new varieties, but these flowers were not suitable to the land in Me Linh. Only roses still exist. Roses blossom year-round and are used much more, especially on anniversary and festival days and Tet holidays. For this reason, farmers always get stable income. Another reason is they can get high income on the fifteenth of each lunar month⁴. In Me Linh commune, the main income of farmers is generated by rose production. From 2002 to 2004, income from rose production was 3 or 4 times higher than any other form of production. From 1992 to 1997, income from rose production was 5 to 6 times higher than any other form of production. Income from 1992 to 1997 was higher because of high rose prices, fewer flowers were sold in the market and fewer farmers growing flowers.

At present, farmers invest much in rose production. The main investments are in pesticide, fertilizer and rolling paper. Farmers only invest in seedlings during the first year. Now that, farmers can make the seedlings themselves, they do not have to invest much when planting new rose fields. Farmers spray pesticides by themselves without any advice or consultation from any organization. They based the amount sprayed on their experiences or have learned from their neighbours. They control the pest and disease themselves. A lot of people do not wear the gauze masks and protective body cloths when they spray pesticides. Their only prevention method is to spray the pesticide following the wind.

Productivity of roses has increased through out the years because of intensive farming and high investment. In addition to organic fertilizers (e.g. chicken droppings and quail droppings), farmers mainly soak soybeans in water and apply to fertilize the soil. In summer, the productivity of roses is high but the quality is bad so the price is usually cheaper than in winter. In this season selling price is only 30 to 40 VND per flower. In winter, the quantity of flowers is less, but the quality is better than in summer, so the price is higher, 1,800 – 2,000 VND per flower.

2.2 Commercial flower production in recent years

Flower growing area has increased slowly in recent years because the demand of flowers in the market has not increased. Me Linh rose has mainly been sold in Northern provinces

⁴ Traditionally, the Vietnamese often make the ceremonial offering on the first day and middle of lunar month. In these occasions, they buy the fruits and flower, bring to pagoda or put on the altar then burn the incenses.

down to Hue where it has to compete with Sa Pa rose in summer. Sometimes, Chinese traders buy Me Linh roses when the weather has been too cold and snowy.

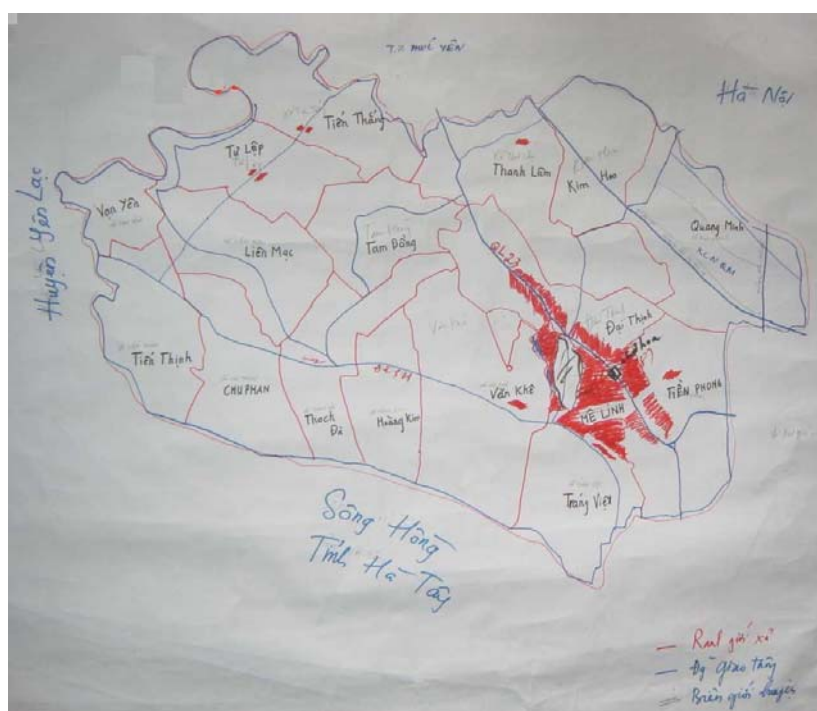
The advantages of Me Linh: Me Linh located close to Ha Noi where the flower market is large. Nhat Tan now has lost the land for growing flowers. The roses grown in Dong Anh, Tay Tuu - Tu Liem are not able to compete with Me Linh's roses due to their quality.

Since the market of flowers has been expanded, some rose-farmers in Me Linh moved to Sa Pa to produce roses.

In Me Linh commune, income from flowers is 3 to 4 times higher than income from vegetables. Average income from flowers is about 3 to 5 million VND per sao per year while income from vegetables is just only 1.2 million VND per sao a year.

2.3 The area of rose production in Me Linh district

Figure 5: Spatial map of rose production in Me Linh District



The red patterns in the figure are the areas of flowers in Me Linh district. Me Linh district includes 17 communes, of which flowers are grown in 10 communes (mainly roses). Flower areas of communes are as follows:

- Me Linh: 240 ha
- Dai Thinh: 63 ha
- Tien Phong: 46 ha
- Thach Da: 7 ha
- Thanh Lam: 5 ha
- Quang Minh: 5 ha
- Van Khe: 4 ha
- Trang Viet: 3 ha
- Tu Lap: 2 ha
- Toan Thang: 1 ha

In these communes, Me Linh, Dai Thinh and Tien Phong have the largest area of flowers because they have a larger market and more trading partners. Consequently, flower cultivation in these communes is highly commercialized. In other communes, because they do not have markets and trading partners, the main purpose of flower cultivation is for provincial domestic consumption.

2.4 Current varieties of flowers planted in Me Linh district

2.4.1 Roses varieties

People in Me Linh have changed rose varieties rapidly. At first, the local rose was changed to Da Lat rose variety, then to French and Italian roses. However, people currently realize that French and Italian roses are only suitable to climate conditions of the winter. Thus, they expect to use the Indian rose variety, which has the ability to grow better in summer.

2.4.2 Other kinds of flower

Besides rose (accounting for 70% of total land for flowers), the farmers in Me Linh district are still growing other kinds of flowers, such as chrysanthemum, gerbera and double gerbera (the variety of double gerbera has been imported from Van Nam province, China).

Support of Government organizations to flower farmers

2.4.3 Farming practice

Since 2000, the provincial and district leaders have organized 12 IPM training courses on environmentally friendly farming practices for flowers. Each course had 30 trainees on average. The training fee was funded by the Provincial People's Committee and the District People's Committee. In addition, the Provincial People's Committee and the District People's Committee invited researchers from Agricultural Genetic Institute to train the farmers in good agricultural practices of flower production (GAP).

2.4.4 Capital

Agricultural banks located inside the Vinh Phuc province and in Me Linh district have financed the credit of flower farmers, who need capital for flower production since 1994.

2.4.5 Infrastructure

The Provincial People's Committee and the District People's Committee additionally invested to upgrade the transport system in the area of commercial flower production. This action aimed to create favourable conditions for both flower producer and the actors in marketing channels.

2.4.6 Credit loan for flower production in Ha Loi village

In 1996, 50% or 60% of flower farmers had borrowed money due to the difficult livelihood and moreover they did not have enough capital to invest in flower production. At that time, people could borrow from local credit organizations, for example People Credit-Fund, and Agricultural Bank, for less than 50 million VND. Furthermore, Women's Union and Farmer's Union also provided credit with amount from 500 thousand to one million VND/household.

In 2003, the number of farmers who borrowed credit to transform from growing roses to growing Madonna lily and peony flower, accounted for 10% total number of households. The investment per one sao of Madonna lily was really high. The households who still keep growing rose did not have to borrow credit since they have enough accumulative capital.

In 2003, the Agricultural Genetic Institute did a trial on one ha of flower to disseminate the good agriculture practice to the farmers. This program provided financial support of 100 to 200 thousands VND for fertilizer, pesticide and seedlings per sao. Besides, up to the present, rose farmers have not received any support for fertilizer, capital and technique from agricultural extension department.

The Plant Protection Station in this district only provides pesticide services and informs the situation of pest and diseases to the farmers through the loudspeaker system in the commune. Since flower production appeared in this place, there have not been any training courses on rose farming practice. All rose farming practices have been disseminated by farmers themselves or through the television, books or newspapers.

2.5 The difficulty of flower farmers

- Lack of flower varieties that can grow well in summer.
- No trademarks for Me Linh rose.
- The farmers do not actively look for the foreign markets
- The unstable prices

3 Agricultural Production in Me Linh Commune

3.1 Events Related to Rose Production in Me Linh Commune

Before 1975, paddy and cash crops including kohlrabi, cabbage, and squash were mainly planted.

In the 1980s, the area of cash crops increased and a new variety of tomato was first cultivated. Meanwhile, there was no change in the area of paddy. At that time, cash crops such as onions and squash were primarily exported to East Europe markets.

During the 1990 – 1993 period, kohlrabi and cabbages were replaced by tomatoes and roses (mainly Da Lat roses).

Dutch roses began to be cultivated at the end of 1993. Additionally, Ha Loi market – the main one for flowers in Me Linh commune – was established.

From 1995–1996, due to the poor resistance of Dutch roses to physical conditions and pests, farmers decided to select some high quality varieties of roses from France, Italy and China.

From 2002 – 2003, French roses were still maintained and some types of colourful roses began to be cultivated.

3.2 The Area and Quantity of Roses of Households

The quantity of households involved in rose production has increased over the time. In the 1990 – 1993 period, only 10 to 15 percent of households of the commune cultivated roses. In 1996-1997, the number of households involved in rose production increased considerably to about 75 percent. Currently, 95 percent of the households involved in rose production.

In the 1990 – 1993 period, roses only occupied around 4 percent of total farming land in Me Linh commune. In 1996, areas of rose production equalled about 45 percent. Currently, Me Linh commune has 240 hectares of roses, accounting for 70 percent of the total farming land.

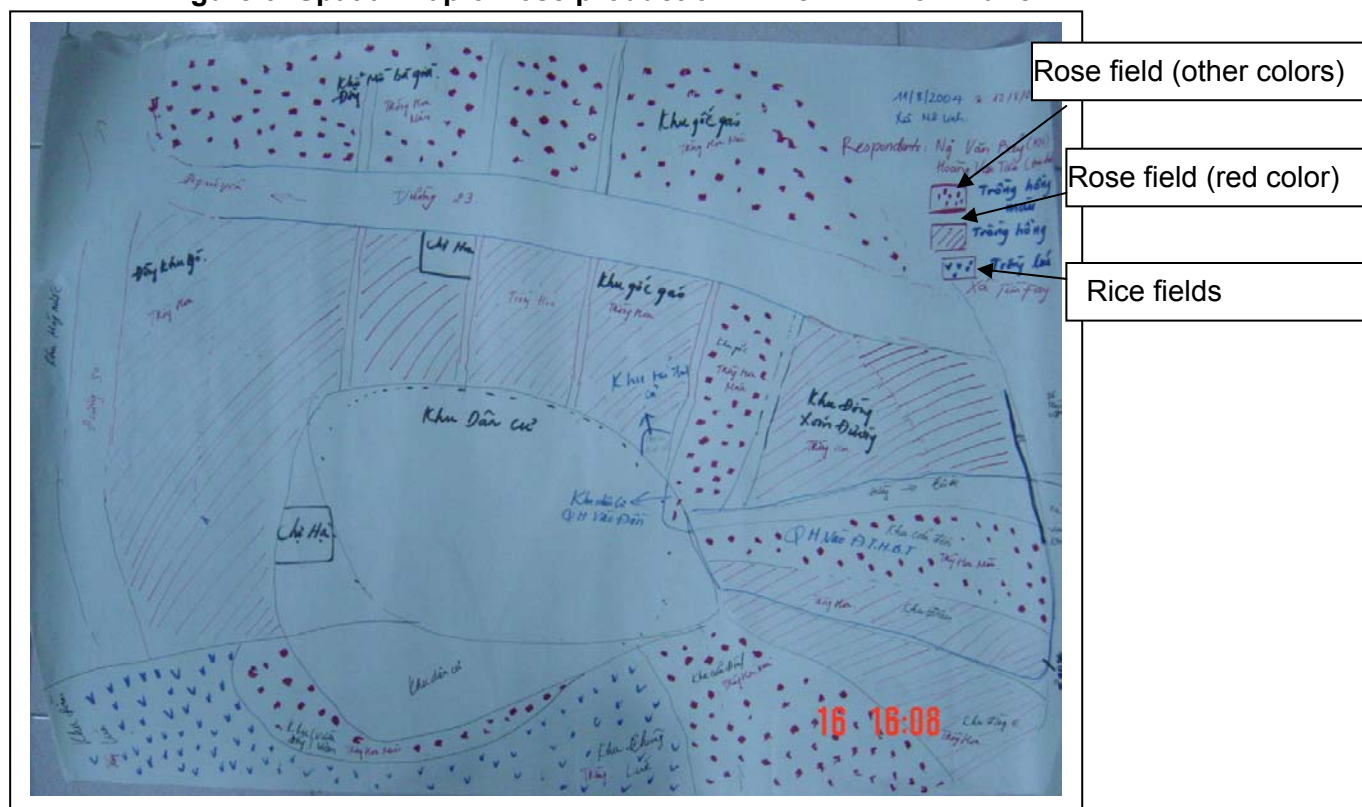
3.3 Locations of Rose Fields in Me Linh Commune

The map shows the names and locations of rose fields, paddy fields, flower markets, roads, and residential areas.

Roses and cash crops are cultivated in some fields, but areas of cash crops are much smaller than those of rose crops. Farmers cultivate paddy and cash crops in order to improve soil fertility before growing roses. Most areas of rose production belong to Ha Loi village. Roses are cultivated in great quantities in this village because of the high returns they bring.

Me Linh commune has two paddy fields, namely: the 'Dong' field and the 'Trung' field. They belong to Lieu Tri and Ap Ha hamlet. Roses are not cultivated in these fields for the following reasons:

- These fields are lowland.
- Even being well aware of benefits from rose production, local farmers choose not to cultivate flowers. Farmers in Ha Loi village turn ponds into fields for rose production; while, farmers in Lieu Tri village do not.
- Local farmers lack production capital.
- At Ap Ha hamlet, Farmers come from different regions and they retain paddy farming habits.
- Some households lack farmland and labour; while several households have large areas of land, but rent land to villagers because they prefer to be traders.

Figure 6: Spatial map of rose production in Me Linh Commune

At the end of 2005, land acquisition and compensation for the Hai Ba Trung Temple Building Project will be finished. 28.3 hectares of land including 8.3 hectares of residential land and 20 hectares of farming land⁵ will be acquired. Thirty one households losing residential land will move to the resettlement areas. The compensation price per 'sao'⁶ of farming land will be from 20 to 21 million VND. In addition, so-called "service land" located near planned areas will also be allocated to households.

3.4 Rose Producer Typology

3.4.1 Two Types of Rose Production Households (according to officials of Me Linh district)

Households specialized in rose production: located mainly in Me Linh commune.

Households involved in rose – vegetable – paddy production

3.4.2 Production Typology (according to officials of Me Linh commune)

Rose production in Me Linh commune was introduced by farmers and has been developed over the time. Rose producers can be classified into the following four main types of production.

Type 1: Households specialized in rose production account for about 15 percent of the total rose producers (about 300 households). They spend most of their time producing roses.

⁵ Marked by the green color on the map

⁶ 1 'sao' equals 360 m²

Type 2: Households involved in rose production and rose trade occupy 15 percent (300 households of the total). Twenty percent of their time is spent producing roses and the rest is for collecting and selling roses.

Type 3: Households involved in rose and cash crop production account for 65 percent (about 1500 households). Seventy-five percent and 25 percent of their time are used for rose and cash crop production, respectively.

Type 4: Households involved in rose production and other trade (working as hired labour, and grocery) occupy 3 percent (50 households) of the total producers. However, only 10 percent of their time is used for rose production.

3.4.3 Land Size used for Rose Production Typology (Me Linh Commune)

Type 1: Households with large areas produce roses in areas from 1.5 'mau'⁷ to 5 'mau'. Currently, Me Linh commune has only 15 such households. These households often rent land of neighbouring communes and use a large amount of capital.

Type 2: Households with medium areas have about 5 'sao'. These households do not often rent land for rose production. There are about 1.700 such households.

Type 3: Households with small areas have from only 1 to 2 'sao' of land for rose production. They typically also have small capital, and shortage of labour.

According to local people's opinion, the income per capita of households with large areas is often 1.3 times and 1.5-2 times higher than that of households with medium and small areas.

3.5 Household Typology in Lieu Tri village

In terms of production types, households in Lieu Tri village can be classified into the following three main types.

Type 1: Households involved in rose and paddy production, and rose trade. This village has only 10 such households.

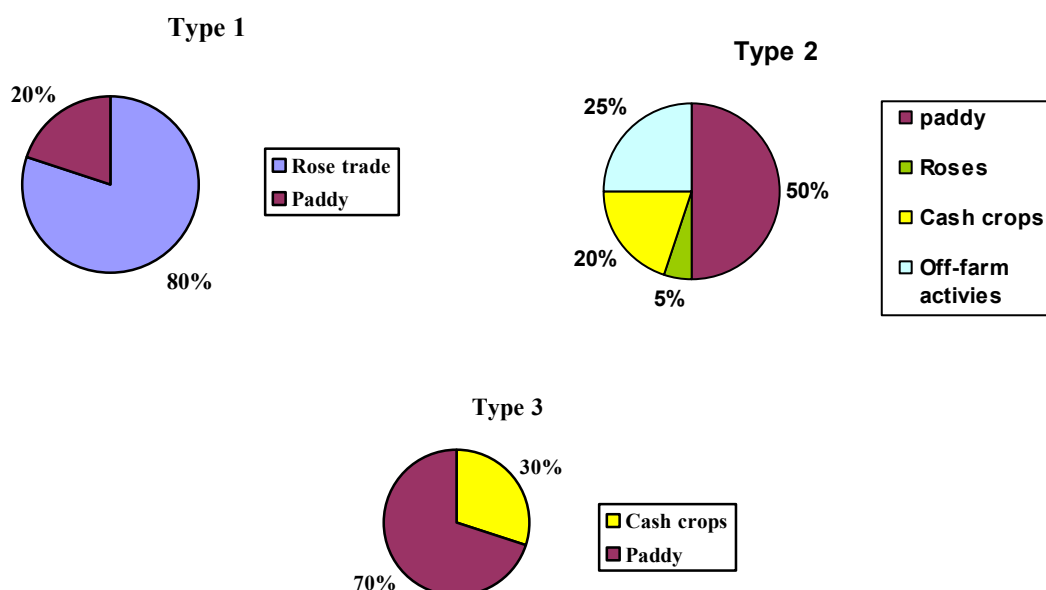
Type 2: Households involved in rose, cash crop, and paddy production and secondary jobs occupy 70 percent of the households in the village.

Type 3: Households involving in paddy and cash crop production. They occupy 20 percent of households in the village.

Most rich households, medium households, and poor households are in Type 1, Type 2, and Type 3, respectively.

Figure 7: Household income by typology

⁷ 1 'mau' equals 10 'sao'



Households in Type 1 have the main source of income from rose trade, accounting for 80 percent of the total. They cultivate paddy to maintain soil fertility and, most importantly, for subsistence. Local people in Me Linh commune can make additional income from rose trade because of rose production. This source of income has quickly improved the living standard of households. There are two households involved in rose production and rose trade.

3.6 Technology, Investment and Other Necessary Factors in Rose Production

3.6.1 Factors needed in Rose Production

Table 9: Factors needed in rose production

Factors	A	B	C	Đ	D	E	F	Total	Ranking
1. Weather (A)	■	A	A	Đ	A, D	E	A, F	4 (A)	3
2. Soil fertility (B)		■	C	Đ	D	E	B, F	1 (B)	5
3. Water (C)			■	Đ	C, D	E	C, F	3 (C)	4
4. Knowledge (Đ)				■	D	Đ, E	Đ	5 (Đ)	2
5. Pesticide (D)					■	E	D, F	5 (D)	2
6. Market (E)						■	E, F	6 (E)	1
7. Capital (F)							■	5 (F)	2

The above table shows the pair-wise ranking of seven important factors in rose production. The importance of each factor can be seen as follows:

3.6.1.1 Market demand

According to local people's opinion, the market demand plays the most important role as a factor in rose production. Consumer preferences should be included in the market factor. Some years ago, due to the low living standard and the shortage of sources and types of roses, people in Ha Noi and neighbouring provinces often bought flowers from Me Linh in great quantities. In recent years, many other kinds of flowers appear in addition to roses. The living standard of people in big cities has improved; therefore, consumers pay much more attention to the quality of roses. Due to a decrease in the quality of roses in Me Linh, especially in summer, the price of roses also decreased. Local people are active in finding markets for roses in the Southern, Central, and Northern provinces (e.g. Yen Bai, Ha Giang,

etc.). Moreover, they also advertise their products via mass media, check different prices, and sell them at the highest prices.

3.6.1.2 Capital

Local people often invest from six to seven million VND into one 'sao' of roses. These investments are from different sources, including those from previous savings, the Bank for Agriculture and Rural Development or the Bank for the Poor, friends, relatives, and other funds. In order to improve the household economy, local people are willing to get loans to develop rose production.

3.6.1.3 Knowledge

The ability to learn about and adopt new technologies and techniques ranked high as an important factor in rose production. The Association of Farmers at communal level organized training courses to disseminate the farming process of roses and other crops. A representative of each hamlet was chosen to enter such training courses and in turn they would educate their neighbours. In addition, some villagers also participated in training courses on fresh rose production in the district. Being aware of the importance of techniques related to cultivation, local people invest more in education for children in recent years.

3.6.1.4 Pesticides

In recent years, the area of roses has increased and large areas of roses are cultivated for a long time. They are main causes behind the increase in crop diseases and the misuse of pesticides. Local people do not know how to use pesticides properly. Most people use pesticides mainly according to their villager's experiences rather than how they are advised to by the Agricultural Extension Association and the Farmer's Association.

3.6.1.5 Weather

Weather is an exogenous factor; therefore, local people are only able to partly overcome the bad weather based on their long-standing experiences. For example, if it is warm before Tet holiday, producers will reduce a large amount of fertilizer in order to limit the maturity of roses and estimate appropriate points of time for pruning that stimulate roses bloom in Tet days. If it is cold, they supply more stimuli for the growth in order to make roses bloom in Tet days.

3.6.1.6 Water

Roses are irrigated from wells drilled in the fields. Two or three households may share a well.

3.6.1.7 Soil fertility

According to local people's opinion, soil fertility is the least important factor involved in rose production. Most farming land in the commune is available for cultivating roses. Several households rent farm land from other households to expand their area of roses.

3.7 Season calendar in rose production

Farming activities for rose production can be carried throughout the year.

- Cultivation: January and February are the most appropriate months for cultivating roses.
- Land is prepared one month before planting (in December).
- Foliage is created two months after planting.
- Weeding is done mainly in March and April
- Fertilizer is applied two times per season: two months and eight months after cultivation.
- Water is used to maintain soil moisture and is reduced during the rainy season.
- Pesticide is sprayed normally every 7-10 days.
- Roses are pruned every six months.
- Roses are harvested in great quantities from September to the next January.

Table 10: Seasonal calendar

Month/ Items	1	2	3	4	5	6	7	8	9	10	11	12
1. Land preparation												
2. Planting												
3. Foliage creation												
4. Weed control												
5. Application of Fertilizers			(1)					(2)				
6. Irrigation												
7. Spraying pesticide	Every 7 – 10 days											
8. Pruning and thinning												
9. Harvesting (including paper rolling and flower cutting)												

3.8 Labour

The average number of working days for rose production is about 200 per 'sao' per year.

- Cultivation: 4 working days
- Land preparation: 3 working days
- Making leaf canopies: 20 working days
- Weeding: 16 working days
- Fertilizing: 24 working days
- Sprinkling fertilizers: 18 working days
- Pruning: 21 working days
- Spraying pesticides: 36 working days
- Irrigating water: 18 working days
- Harvesting: 40 working days

Local people hire labour for irrigating water, sprinkling fertilizers, weeding and preparing land. The wage for a working day of irrigating water, spraying pesticides or weeding is from 25000 to 30000 VND (including lunch). Most hired labour come from neighbouring communes.

The cost for renting a tilling machine is 50000 per 'sao'. Local people often rent other villagers' tilling machines. In the case of hiring labours with milling machines, the cost is 70000 per 'sao'.

3.9 Investment in rose production per 'sao'

Table 11: Production costs

Materials	Quantity/'sao'	Price (VND/unit)	Cost/'sao' (VND)	Places to buy
Seedlings				
French Seedlings	2000-3000 seedlings	600	1,2 – 1,8 million	Nursery gardens of villagers, Da Lat
Italian Seedlings	2000-3000 seedlings	1300	2,6 – 3,9 million	Nursery gardens of villagers, Da Lat
Fertilizers				
Urea	20 kg	4000/kg	80000	Agricultural material shops in the commune or district, factories
Super Phosphate	100 kg	1500/kg	150000	Lam Thao Phosphate Factory
Bio Phosphate	20 kg	9000/kg	180000	
Soybean	60 kg	7000/kg	420000	
Chicken droppings	2000 kg	400000/ton	800000	Neighbouring villages
Quail droppings	200 kg	450000/ton	900000	Neighbouring villages
Ash (optional)	30 bag	7000/bag	210000	
Grinded soybean	Every month	100000/time	1,2 million	
Pesticide	70000 /month		840000	Agricultural material shops in the commune or district, factories
Paper and string			90000	
Water	30 times	10000/time	300000	wells
Drilled well		150000/well	150000	
Others			200000	

The average cost per 'sao' is from 5.5 to 6 million VND. Costs for seedlings and wells are fixed costs spent in the first year of the cycle. In later years, costs for investing rose production per year are approximately equivalent. The growing cycle of roses is from 5 to 6 years.

3.10 Information of Rose Output

3.10.1 Total production of rose

An increase in rose area in Me Linh makes a considerable increase in total products of rose. Total products of roses from 1997-1998 was from 70 to 80 times higher than that in 1993. The total products of roses increased slowly to 2003 and where it was from 80 to 90 times higher than that in 1993 due to the slow increase in area. According to local people's opinion,

the current quality of roses can meet the needs and the preferences of consumers in big cities.

3.10.2 Markets and the quantity of roses sold

Roses in Me Linh have been sold throughout the country and exported to other countries. Ha Noi city is considered to be the largest market for roses in Me Linh. In 2004, roses consumed there occupied 50 percent of the total. Some Northern provinces such as Thai Nguyen, Thai Binh, Quang Ninh, Bac Giang, Lao Cai, and other provinces received 20 percent of the total. The remaining 20 percent was sold in the Central provinces including Vinh, Thanh Hoa, Hue, etc. Six percent of roses were sold in Sai Gon and the rest (four percent) was exported to China.

3.10.3 Selling prices

The price of roses varies not only in terms of points of time, but also selling places. Normally, the selling prices in winter are higher than those in summer. In anniversaries, mainly in November, January, February, the average selling price per rose in Ha Loi and Quang Ba markets was from 1500 to 2000 VND and from 2000 to 3000 VND, respectively. The highest price per rose in Ha Loi and Quang Ba markets was 3500 VND and 5000 VND, respectively. Due to the hot weather in summer, the reduction in the quality of roses was a cause in the great reduction of prices. At that time, roses were sold in Me Linh at from 2000 to 10000 VND per 100 roses; meanwhile roses were sold in the Quang Ba market at 300 VND per rose. Roses were transferred to other provinces at the price of from 2000 to 10000 VND per 100 roses. Roses were mainly exported to China during the Tet holiday at 2500 VND per rose.

3.11 Risks, Difficulties and Solutions

Agricultural production in general and rose production in particular cannot avoid risks caused by internal and external factors. They include risks caused by the bad weather, pests, and market prices.

3.11.1 Risks caused by the bad weather

The weather is not often propitious in summer; soil in Me Linh is often flooded every three years (mainly in May or June). These are main causes behind the reduction of 10 percent of rose productivity, or about seven percent of returns. Local farmers overcome difficulties by bailing out the rose fields.

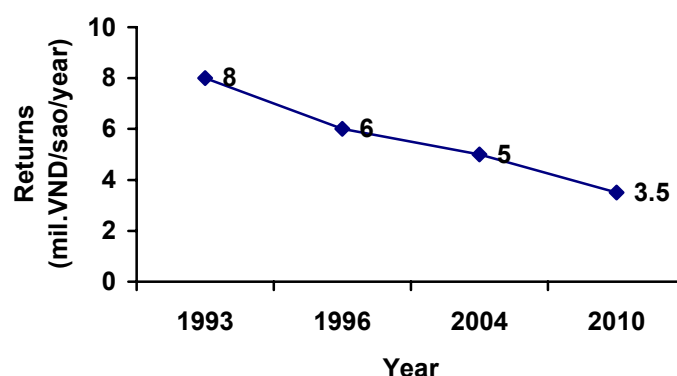
3.11.2 Risks caused by pests

Pests often appear in January or in the summer months. The longer the roses are cultivated, the more pests arise. In 2003, pests and diseases such as powdery mildew, aphids, thrips and red spider arose three times and reduced 30 percent of rose yield, accounting for 20 percent of returns. Due to the frequency of the appearance of pests, local people have misused pesticides.

3.11.3 Risks caused by market prices

In April, May and June 2004, the price of roses dramatically reduced to 1000 VND per 100 roses. This resulted in the great reduction of 30-40 percent reduction in returns. The farmers tried to overcome this situation by concentrating on the care taking in order to increase the quality of roses. Additionally, they actively sought new markets for roses.

Figure 8: Returns of rose production

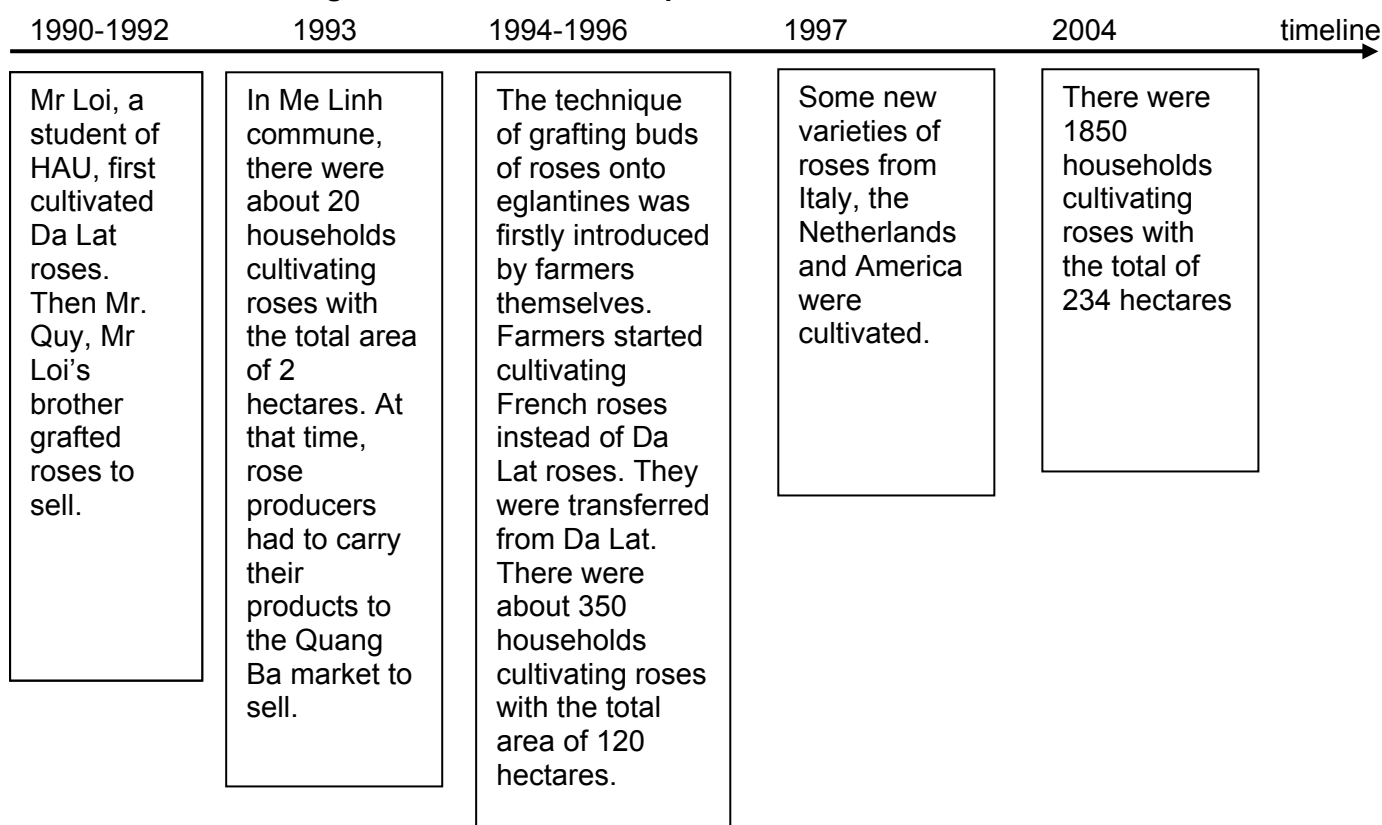


In 1993, roses began to be cultivated; due to a small number of rose sellers and few types of other flowers, each household could gain a profit of 8 million VND per 'sao' of roses. In subsequent years, the profit has gradually decreased. The decrease in profit can be explained by several factors: pests appear more frequently due to long-term rose cultivation; therefore, the input costs have increased; and the selling prices of roses have declined since several varieties of other flowers were sold in the market. It is estimated that by 2010 the profit of roses will reduce to between 3 and 4 million per 'sao'.

3.12 Milestones Regarding Rose Production in Me Linh Commune

In the 1990-1992 period, Da Lat roses began to be cultivated by Mr. Nguyen Van Quy in Me Linh commune. At first, he only tried cultivating them. Then for the high profit he with his brother, Mr Loi, bought and produced seedlings to sell and simultaneously widened the area of roses.

Figure 9: Timeline of rose production in Me Linh Commune



Nguyen Dinh Sang, one of the first people to cultivate roses in Me Linh commune, has been cultivating one 'sao' of Da Lat roses since 1992. Ta Van Luu has been cultivating two 'sao' of Da Lat roses since 1992. Nguyen Thi Ha has been cultivating two 'sao' of Da Lat roses since 1993. Seedlings and capital were supplied by Mr. Quy. Dang Thi Binh has been cultivating five 'sao' of French roses since 1995.

Eglantine (*rosa canina*) is a type of wild rose, also known as sweet-briar. Its flowers are small and a dark red colour. In the first years, the farmers in Me Linh collected this species from the forest and planted on their own land. Nevertheless, at present they are able to propagate the eglantines by themselves.

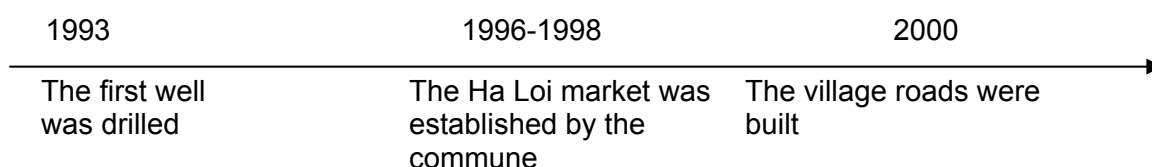
At first, farmers themselves select the good branch of eglantines. They cut the eglantine branches into the segments of 18 cm. The segments of eglantine are treated by chemical right after cutting to stimulate the growth of roots. After 10 minutes of chemical treatment, they put those segments into the sand and start watering. After one month, when the roots appear in the foot of eglantine segment, they transplant those segments on the fields. Two month later, they start grafting the node of rose onto the foot of eglantine.

The material for grafting includes a safety razor, thin-small nylon bands and rose nodes. The rose nodes are selected from the flower branch.

Farmers normally use a razor to open a slot (3cm in length and 0.1cm in wide) on the foot of eglantine plant without foliage and graft the node into this slot. After putting the rose node into the slot, they use the nylon band rolling around and upward to the top as the shape of tile roof. After 20 days, they take the nylon band off and cultivate the young plant as normal. Two month later, they are able to get the real seedlings which can be sold.

Source: Bay, extension officer in Me Linh commune

Figure 10: Milestones Regarding to Rose Production in Me Linh Commune



In 1993, the first well was built by the pooled money of 5 households.

In 1996-1998, the Ha Loi market was established by the commune. Before 1996, farmers only sold their flowers along the main road of Me Linh commune.

In 2000, the village roads were built by the money of local farm-households.

3.13 Changes in Rose Varieties, Rose Area, and Numbers of Rose Producers in Lieu Tri Village

1994 – 1995: Da Lat roses began to be cultivated in 5-6 'sao' since some farmers in Ha Loi village realized that profits of roses were higher than those of other flowers. At that time only 5 households decided to cultivate roses.

1996 -1997: French roses and some varieties of other colour roses began to be cultivated. Twenty percent of the households were rose producers and the area of roses increased to 20 'sao'.

1999 – 2000: The number of rose producers decreased to 10 percent of the total households. Some households gave up rose production because of their land flooded but the total area of roses was still 20 'sao'.

2003: Some households reduced their areas of roses because they changed their occupations to traditional cake making. According to local people, traditional cake making generated the higher incomes.

3.14 The reasons why there are few households involved in rose production in Lieu Tri village:

- The selling price of roses is unstable.
- Local people lack knowledge of rose production.
- Rose production requires intensive labour.
- Local people prefer secondary jobs.

4 Rose Marketing in Me Linh Commune

4.1 Milestones in Developing Rose Market

In 1992-1993, roses were mainly sold in the local markets. Only a small number of households sold roses directly in Ha Noi. The main market for roses was in Me Linh district.

In 1994, roses were primarily sold in Ha Noi market. The rose wholesalers in the Quang Ba market went to Me Linh to purchase roses or roses were directly transferred to Ha Noi by local farmers.

In 1995-1996, roses were sold in the Northern provinces such as Nam Dinh, Thai Binh, Hung Yen, Hai Duong, Phu Tho, Lao Cai, Yen Bai and Quang Ninh.

In 1997, both the area and the quantity of roses increased. The first rose collectors appeared and roses were first transferred to Vinh and Sai Gon.

In 1998, roses were sold in some other Central and Southern provinces such as Thanh Hoa, Ha Tinh, Quang Tri, Hue, and Da Nang. At that time, Me Linh commune was considered to have the largest area of roses. The market for roses, named Ha Loi, was established in the commune and was opened from 5 to 9 am everyday. This market created a considerable increase in the quantity of rose collectors and traders.

In 2000, the market was carefully built on the area of 0.5 hectare. Since then, many wholesalers from Quang Ninh, Hai Phong, and some Southern provinces come to Me Linh to purchase roses directly.

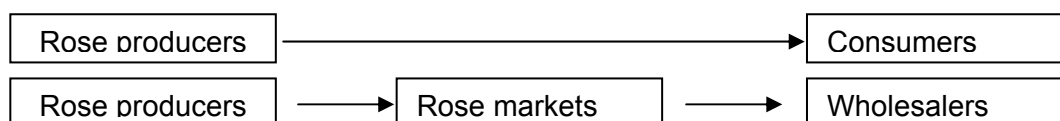
In 2001-2002, a large quantity of Me Linh roses were first exported to China. Roses were often transferred by trucks. However, Chinese wholesalers only demanded Me Linh roses when it was snowing in China. Roses were irregularly transferred to China at the high price of from 4000 to 6000 VND per rose. Currently, Me Linh roses are not exported to China any more (*No reason*).

Me Linh is considered to have great potential for rose production in the North. It has annually supplied a remarkable number of roses to the Ha Noi market. Additionally, roses are also supplied to other provinces such as Nam Dinh, Hai Phong, Hai Duong, some Central provinces, and Sai Gon.

Those who bought roses in small quantities often use motorbikes to transport them. Those who purchased roses in considerable quantities often order via big traders called 'Ong trum' in the commune. Roses are collected, packed and transferred by trucks, trains and by airplanes.

4.2 Market Channels of Roses

- Those who bought roses in small quantities:



- Those who bought roses in considerable quantities:

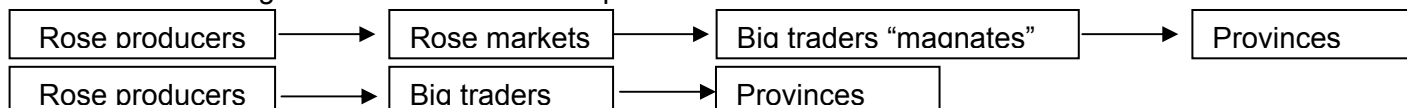
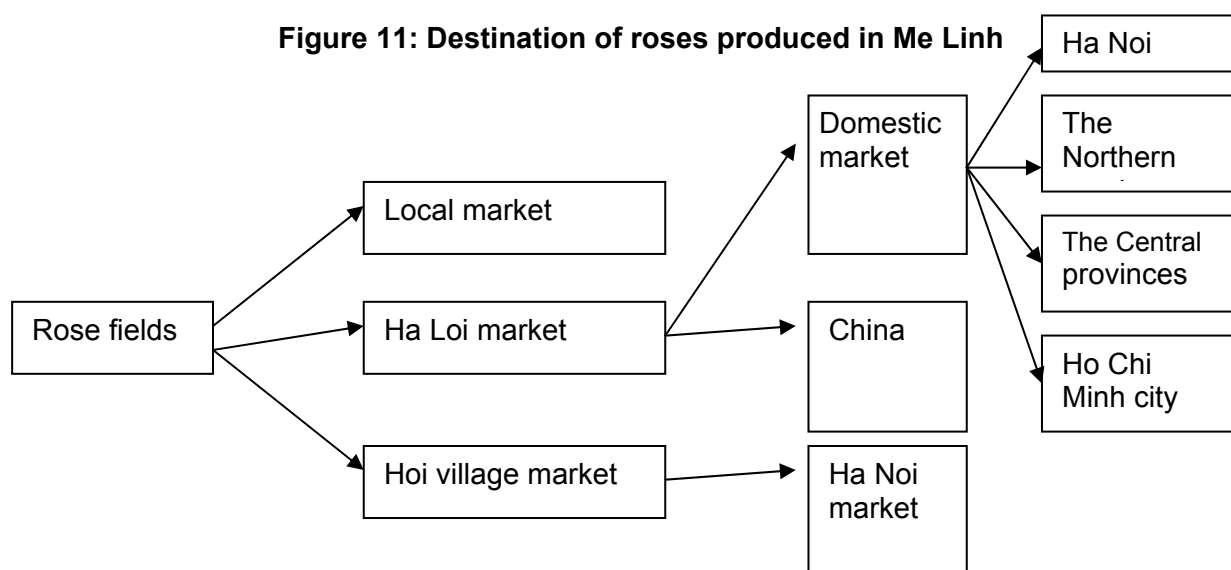


Figure 11: Destination of roses produced in Me Linh



4.2.1 The number of rose collectors

In 1992, there were 10 rose collectors mainly selling their products in the Ha Noi market. In 1993, the number of rose collectors increased to 40. Roses collected were sold in the Quang Ba and Nhat Tan markets and the rest was sold in local markets. Currently, there are about 300 rose wholesalers in Me Linh commune in which 60-70 of them are big traders. Normally, wholesalers can buy and sell 3,000-5,000 roses/day on average. The quantity of roses big traders can buy is 4-5 times as much as a wholesaler can. Actually, the big traders are the wholesalers who have their own cold storage. They can preserve the huge quantity of roses in the longer period.

4.2.2 The market for roses

The market for roses included ones inside and outside the country. Rose markets in Ha Noi, Hai Phong, Nam Dinh and Thai Binh constituted 25 percent of the total produced. 30 percent of roses were sold in the Northern frontier provinces. 20 percent were transferred to Ho Chi Minh City and Da Nang. Fifteen percent was sold in the Central provinces. Roses were exported to China during the Tet holiday, accounting for 5 percent. The rest remaining up 5 percent was exported to Cambodia and Laos markets.

4.2.3 Rose markets

Currently, Me Linh commune has two rose markets, namely Ha Loi market and Hoi market. Ha Loi is the market where the majority of roses are sold annually. Hoi market was established in 2003 and is often held in the afternoon. Roses are mainly collected here before being transferred to Ha Noi. Local farmers formerly sold their products along the main road. Rose trade has become more advantageous because of these markets.

4.2.4 Expectations of local farmers on the market for roses

The number of rose producers has increased not only in neighbouring communes but also in other provinces such as Hai Duong, Thai Binh, Hung Yen, and other Northern provinces. As a result, the market for roses in Vietnam is virtually saturated; meanwhile, the exportation of roses to China is unstable. Local people expect to extend the market for roses to other countries in order to enhance the selling prices. Additionally, they also expect to learn high-tech flower production techniques to increase the quality of their products and most importantly to meet the demand for roses in other countries.

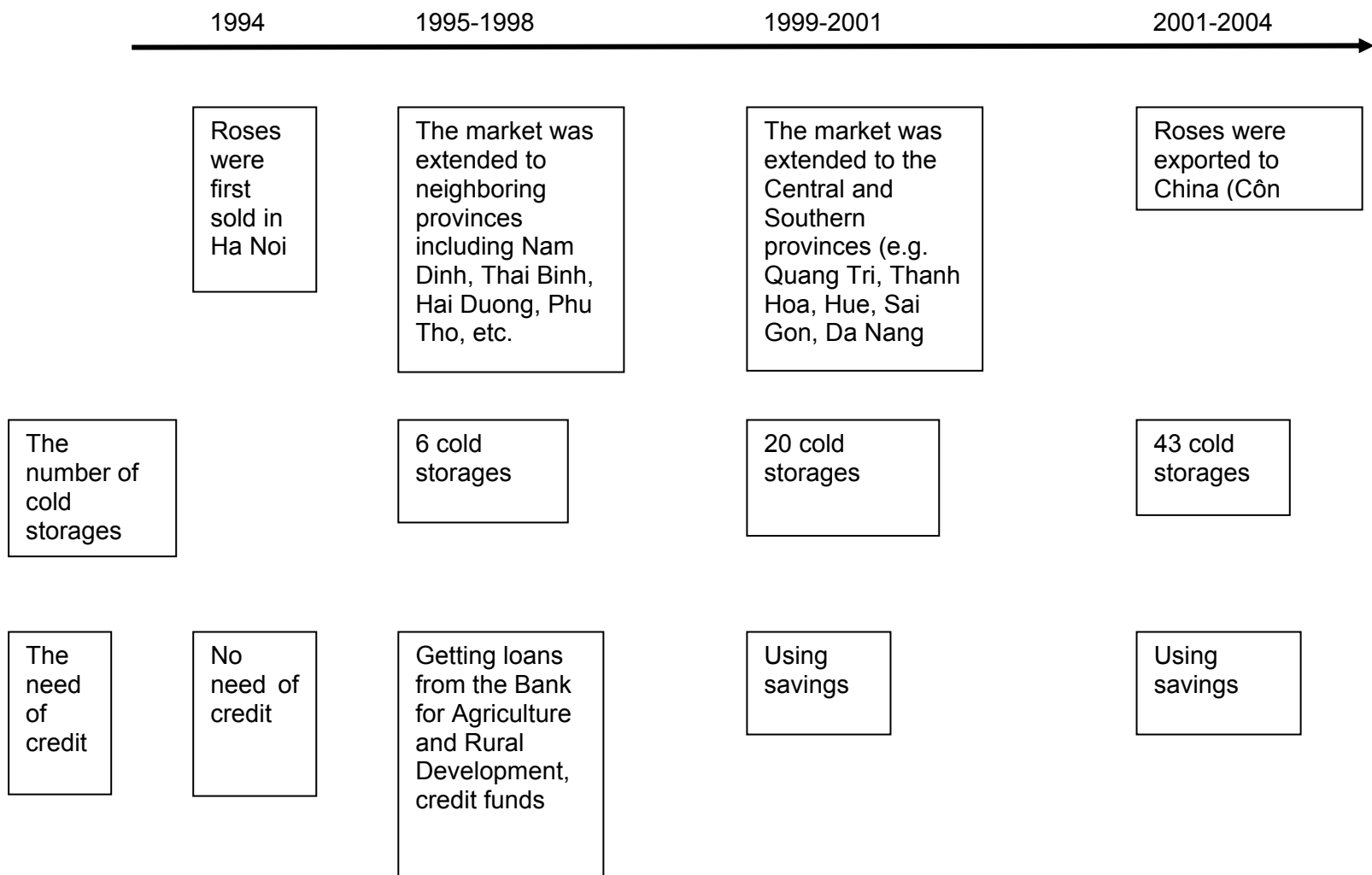
4.3 Rose Preservation

Local people normally preserved roses by putting them on the humid floor, watering, or soaking them in water containers as soon as they are carried back from fields. Roses are often harvested in the afternoon and sold in the markets in the morning. Large traders often have cold storage units to preserve roses, especially roses for special anniversaries. Roses can be kept in cold storage for 12 days. Local people use one kind of chemical to preserve roses in storage (They do not remember the name of that chemical).

In 1997, one household in Me Linh commune changed an old house into a cold storage unit to preserve roses. Six other cold storage units were then built. The number of cold storage units in Me Linh commune has gradually increased as rose production has developed. There were 20 cold storage units in 2001 and there are 43 in 2004. Although many cold storages have been built in the locality, their capacity is not large enough to preserve all of roses produced each year; therefore, some rose producers still have to carry their products to Ha Noi for preservation.

The investment cost for one cold storage unit with the capacity of 80,000 to 90,000 roses is approximately 40 million VND. During months with special anniversaries, these cold storage units work constantly and the cost for electricity amounts to around 700,000 VND per month per storage unit. The cold storages in Me Linh are built by bricks similar to an airtight brick house. According to estimation of communal officers, a cold storage is about 15m² in large and 3-3.5m high. Inside this house, the owners often install the equipment for freezing and the shelves for keeping roses. A cold storage can be built by one, two or group of wholesalers.

Figure 12: Timeline of rose marketing in Me Linh commune



4.4 Trading performance:

Collectors gather roses in the markets or buy roses as “Mua Le” directly from farmers at their houses. “Mua Le” and “Ban Le” are the local Vietnamese indicate the activities of selling and buying rose, in which these activities are regularly performed between a seller and some specific buyers. In this performance of trading, the products of rose must be good quality and the prices are three times higher than the price in normal markets. Therefore, the farmers who produce roses in order to sell their products as “Ban Le” often carefully sort roses from the fields. Not many producers sell their products to collectors by this way.

Rose trade is based mainly on oral contracts or via telephones. Wholesalers order roses via telephone, then collectors will gather, pack, and transfer them to wholesalers. After one week, the money will be paid to collectors by transfer.

Collectors independently seek the market for roses. There is no connection among collectors unless there is a large and pressing demand of roses (e.g. exporting to China).

4.5 The need of credit

In the 1990-1994 period, the initial period of rose trade, traders had no need of credit due to the small size of trade.

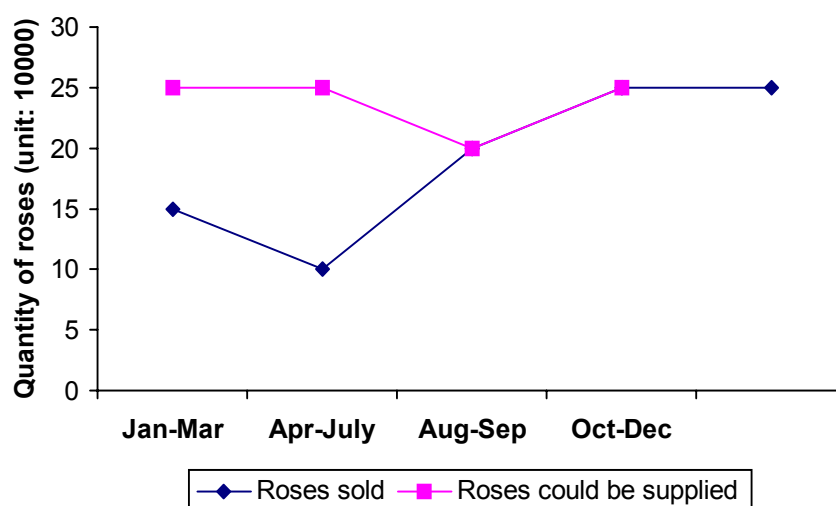
In the 1995-2000 period, the need of credit increased due to the increased amount of trade. Credit mainly came from the Bank for Agriculture and Rural Development and credit funds. The size of a loan per household was from 20 to 50 million VND.

From 2001 onwards, most rose traders had no need of credit and mainly used their savings.

4.6 The Quantity of roses sold to the market in Me Linh commune

The graph below shows the quantity of roses that were sold and could be supplied to the market in 2003.

Figure 13: Rose quantity sold by collectors and wholesalers



From January to March, roses were sold at the high price, especially on Valentine’s Day and International Women’s Day. There were around 100 collectors at that time. The average quantity of roses sold was about 150,000 roses per month per production household; meanwhile, the supply of roses to the market reached 250,000 roses per month per collecting household.

From April to July, the quality of roses declined due to the propitious weather; therefore, the average quantity of roses sold was 100,000 roses per month per household. Roses were mainly sold on the first and fifteenth days of the lunar month. In fact, roses that could be supplied amounted to from 200,000 to 250,000 roses per month per household. As the result, the number of collectors reduced to 40.

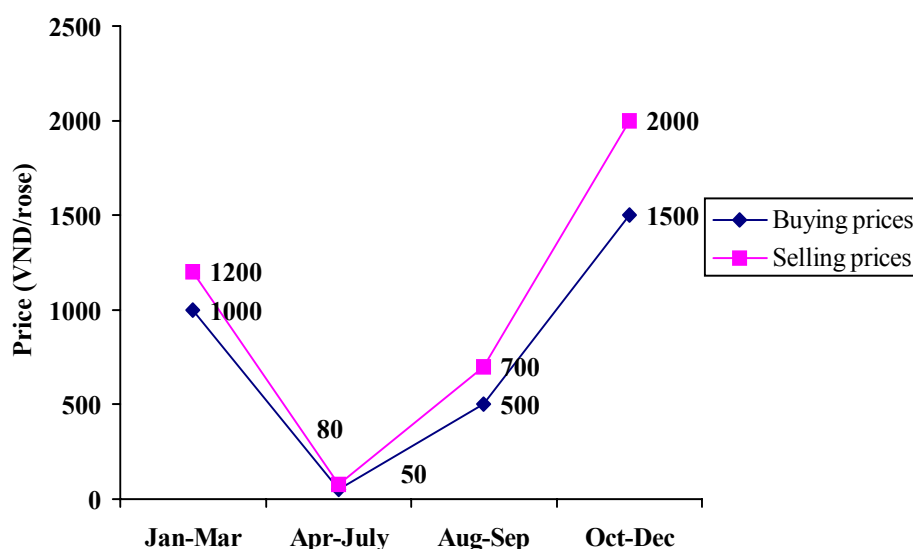
In August and September, the number of roses sold and those that could be collected were the same, 200,000 roses per month per collector. That was the time for pruning and limiting the maturity of roses in order to save them for October, November, and December.

From October to December rose sold best because of the high quality and demand was high because of many special anniversaries at the time of year. The number of roses sold and those that could be collected were the same, 250,000 roses per month per collector.

4.7 The Rose Prices

The selling price fluctuated each quarter increasing during holidays such as Tet days, and on the first and fifteenth days of the lunar month.

Figure 14: Buying and selling price of rose by wholesalers



From October to December, roses sold at the highest price; whereas, from April to July, the buying and selling prices were very low, fluctuating from 50 to 80 VND per rose. The difference between selling prices and buying prices were normally 30 percent.

4.8 Characteristics of Collectors/Wholesalers

Collectors/Wholesales must be the ones who have the will power of getting rich, are clear-headed in business, and most importantly must be willing to accept risks and enterprising. Additionally, they must be able to obtain capital from 3 to 10 million VND at the start, build a large business relationship, and be prestigious in business.

4.9 Risks in rose trade

In addition to the risks in table 12, wholesalers sometimes did not pay money after receiving roses. According to key informants, rose traders can believe in wholesalers that require the quality of roses before placing an order. Those who have no requirement of rose quality often pay money late or not enough.

Table 12: Risk of rose traders

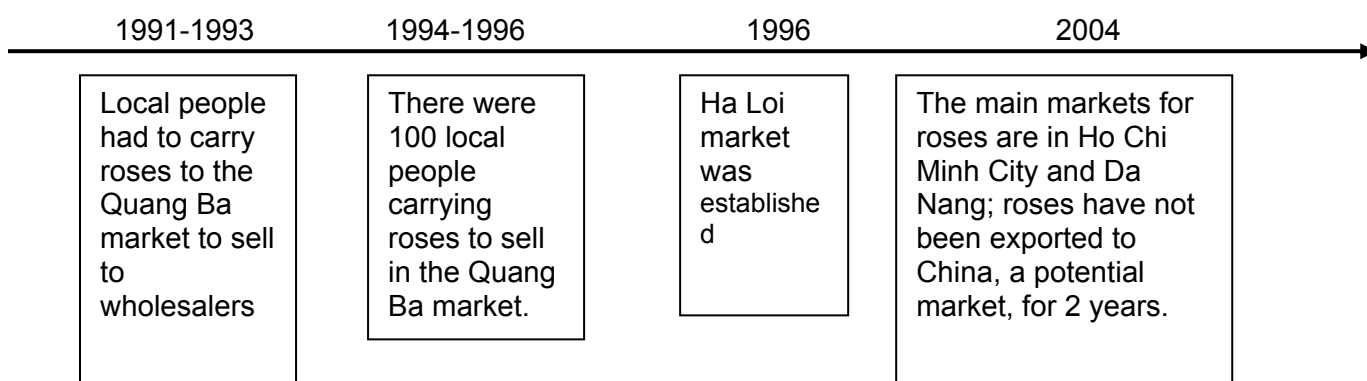
Items	Reduction in profit (%)	Frequency/year
In the hot weather, roses transferred by trucks often deteriorated. Sometimes they were transferred late according to the plan.	100	10
Unstable selling prices	20	10
Large number bad quality roses	50	40

Some measures to limit risks:

- Buy flowers from acquaintances, checking carefully.
- Buy flowers according to the form of 'Mua Le'.

Some measures to increase profits:

- Estimate appropriate points of buying and selling, buying flowers at the low prices and keep them in cold storage units and wait for the high prices to sell.
- Seek prestige in businesses.

4.10 Rose Traded in Ha Loi Village**Figure 15: Timeline of rose trading in Ha Loi Village****Table 13: Frequent Markets for Roses in the Village**

No	Markets	Means of Conveyance	Ranking the destination of rose
1	Ho Chi Minh City	Airplane	1
2	Da Nang	Airplane	2
3	Hai Phong	Trucks	2
4	Hue	Airplane	3
5	China (*)	Trucks	0
6	Lang Son	Trucks, trains	3
7	Quang Ninh	Trucks	3
8	Ha Noi	Trucks, motorbikes	1
9	Thai Nguyen	Trucks	2
10	Vinh-Nghe An	Trucks	1
11	Thanh Hoa	Trucks	3
12	Bac Giang	Trucks	3

1: Big city, 2: moderate city, 3: others

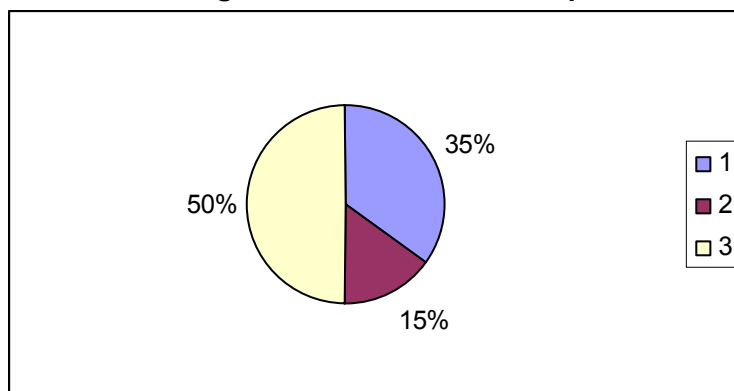
In 2004, there are from 60 to 70 big traders of rose in the commune. These traders often buy roses in local markets or at houses of producers whose roses are considered 'Hang Le'.

'Hang Le' roses are carefully selected and have high quality and are exclusively sold to some given collectors at the higher prices compared to the market prices.

Roses were sold in big cities in larger quantities, accounting for 35 percent of the total produced.

In recent years, the quantity of roses exported to China has reduced

Figure 16: Percentage of roses sold in some provinces in 2003



Where: (1) Ho Chi Minh City, Ha Noi, Vinh-Nghe An
 (2) Da Nang, Hai Phong, Thai Nguyen
 (3) Hue, Lang Son, Quang Ninh, Thanh Hoa, Bac Giang

Of the market for roses in Ha Loi village, Ha Noi is the largest market, followed by the Ho Chi Minh City and Vinh market. The next largest is the market for roses in Da Nang, Hai Phong and Thai Nguyen. The smallest quantities of roses were sold in Hue, Lang Son, Quang Ninh, Thanh Hoa, and Bac Giang.

The interview with Ms. Hoa:

On special anniversaries, she usually sold about 100,000 roses per day. She owns a cold storage unit with the capacity of 80,000 to 90,000 roses. The investment cost for her storage was approximately 40 million VND. Her roses were exported to China in 2001 and 2002.

Currently, her roses are transferred to Dong Ha (Quang Tri province), Ninh Binh, Thanh Hoa, Ha Noi, and Lang Son. According to her, due to the fact that roses in Me Linh cannot be compared with those in Da Lat, they are presently not able to export the roses to Ho Chi Minh City.

The first rose traders are Mr. Huan and Ms. Xuan in the 'Cho' hamlet (a couple). On four special holidays per year, Mrs. Hoa often uses about 20 hired labors per day with the wage of 40,000 per day per person. (Special holidays include International Women's Day, Valentine's Day, and Tet holiday)

She uses one hired labor everyday with the wage of 50,000 VND per day.

4.11 Rose marketing in Lieu Tri Village

4.11.1 Rose collectors:

The number of collectors varies over time. There were no collectors in 1995. In 1996, there were 10 collectors and 14 in 1999-2004.

4.11.2 The market for roses:

According to the Lieu Tri village officials, roses in Me Linh commune were consumed in many provinces, mainly in Ha Noi, which accounted for 40 percent of the total. 10 percent of roses were sold in Hai Phong. The Northern and Central provinces occupied 20 percent and 10 percent, respectively. These markets consumed roses all year around; meanwhile, the market in Sai Gon and Da Nang only consumed roses during winter, accounting for 10 percent of the total. Only 5 percent of roses were exported to China on Tet holiday.

4.12 Opinions of non-rose producing households on rose production in Me Linh

4.12.1 Labour hired for rose production

In the 1995-1997 period, rose producers often hired labour every year because of high profit from rose production. These hired labours were mainly from Ha Loi village. They were trying to make additional income.

In some recent years, however, due to the fact that rose production is saturated and the selling price has reduced, rose producers only hire labour in the winter season when roses require the most caretaking. The average wage is 25,000 VND per day. The main work of hired labour was weeding and fertilizing. Rose producers do other jobs such as foliage creation and pruning themselves because these jobs require good techniques. Thus, labours are only hired from 8 to 10 days per year.

4.12.2 Time spent for rose production

Rose production is a hard and time-consuming work in the field. In addition to applying fertilizers, spraying pesticides, or doing other work, they often roll papers around rose buds every morning, harvest and bind roses every afternoon.

4.12.3 Risks for rose producers

Rose producers often face few risks because they usually save an amount of capital for rose production. Moreover, they often sell their products to given collectors at local markets or other provincial markets.

4.12.4 Risks for hired labours

One of the risks hired labours often suffer is the direct impact of pesticides and herbicides to their health. Additionally, sometimes they trod on broken glass that was thrown away in the fields by careless people.

5 The income of rose farmers and non-rose farmers

5.1 Outputs and Income of Me Linh commune

5.1.1 Household Income in Me Linh commune:

The proportion of average communal household income has changed over time due to restructuring cropping systems from rice to flowers.

Before 1978, the main income sources of local people were rice and cash crops with each composing 25 percent of the total income. Salary and labour wage accounted for 20 percent of total income. Livestock and other sources contributed equal shares of 15 percent to total income.

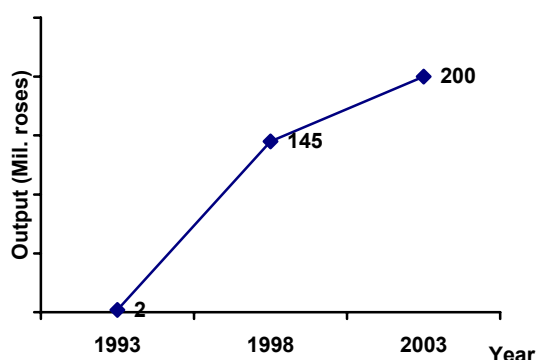
In the period 1990-1993, farmers began growing roses. Income generated by rose production contributed to 15 percent of total income. The proportion of rice in total income dropped to 20 percent. The proportion of vegetable and crop income increased to 30 percent due to growing crops with higher economic values such as green squash, tomato and onion. Service and other income sources contributed to 25 percent of total income. The proportion of livestock reduced to 10 percent.

Currently, the proportion of income from the production sector has changed greatly. Rose production accounted for 55 percent of total producing income in the whole commune, whereas other production witnessed 45 percent in which rice was 5 percent, livestock, 5 percent, vegetables and cash crops, 10 percent, and service and other income sources. 25 percent.

5.1.2 Output of Roses:

During the period from 1993 to 2003, rose production changed dramatically as well as expanded growing areas. In 1993 about two million roses were produced in the whole commune. From 1997 to 1997, 145 million roses were produced from 1997 to 1998. In 2003, rose production reached 200 million roses.

Figure 17: Total production of rose in Me Linh Commune

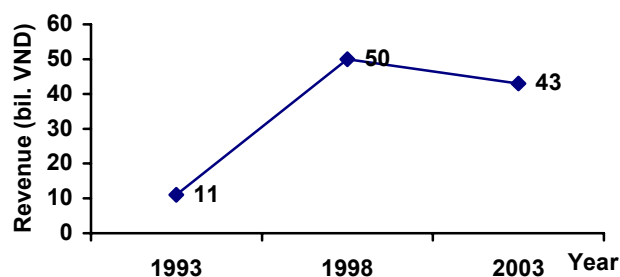


5.1.3 Income generated by rose production

Rose production increased gradually but total revenue from roses in the whole commune fluctuated. For instance, rose revenue grew from 11 billion VND in 1993 to 50 billion VND in 1998 due to expanding rose-growing area. In 2003 revenue from rose production dropped to

about 43 billion VND due to a decline in price. In particular, the rose price was 1,500 VND per flower in 1998 and at 160 VND per flower in 2003.

Figure 18: Gross outputs of rose production in Me Linh commune



Source: Communal Officers (group discussion)

5.2 Household income in Ha Loi Village

Figure 19: Change of crops in Ha Loi Village over the times

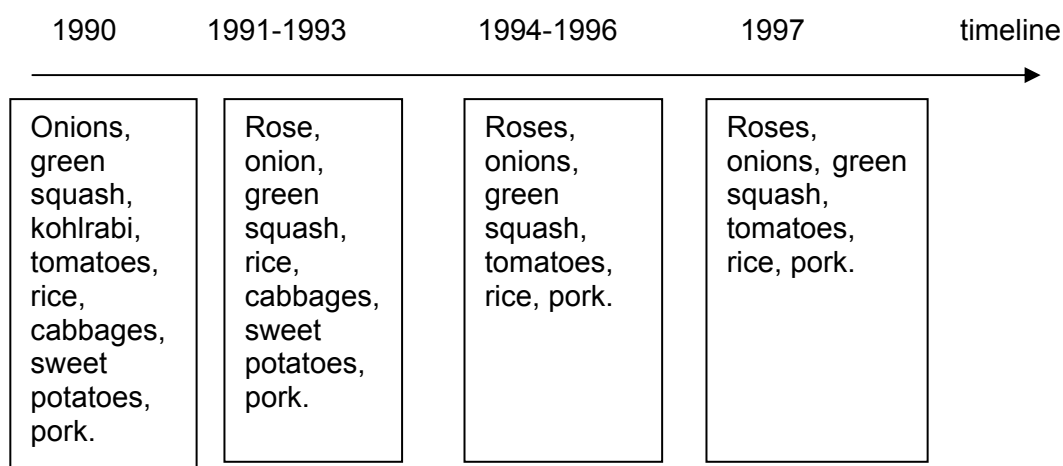


Figure 20: Income Sources in 1990

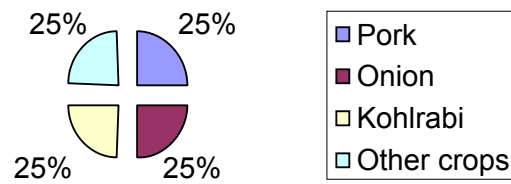


Figure 21: Income Sources in 1991 to 1993

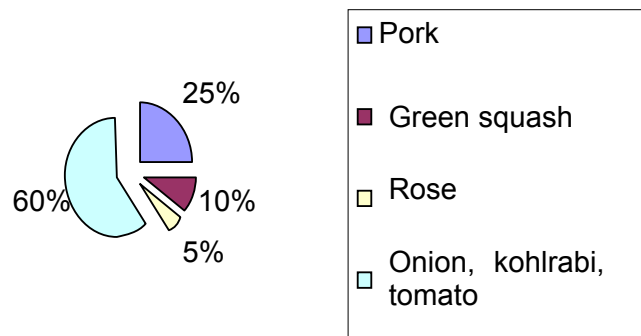
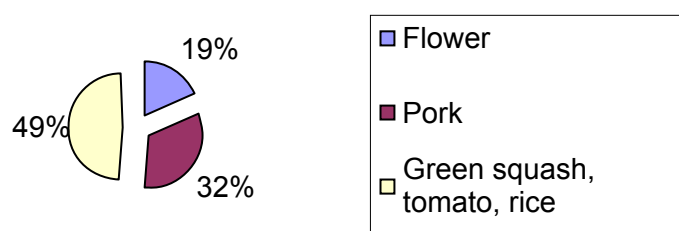
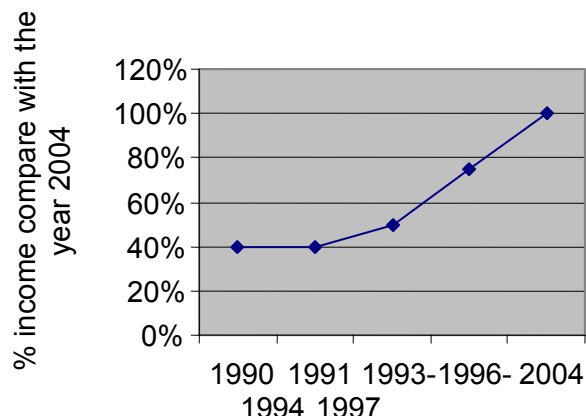


Figure 22: Income Sources 1994 to 1996



The proportion of agricultural income has changed greatly. The proportion of different income sources was quite equal in 1990. Income from onion, kohlrabi, tomato accounted for 60 percent in the period 1991 to 1993. At that time rose production was just beginning so that income from roses accounted for 5 percent. Rose production income increased to 19 percent of total income and cash crops were the largest contributor to household income from 1994 to 1996. However, rose production income grew to 80 percent in 1997, or 16 times compared to the beginning rose production. Consequently, proportion of other income sources decreased.

Figure 23: Average Income



Note: Average income is 8 million VND per household in 2004

Other income sources

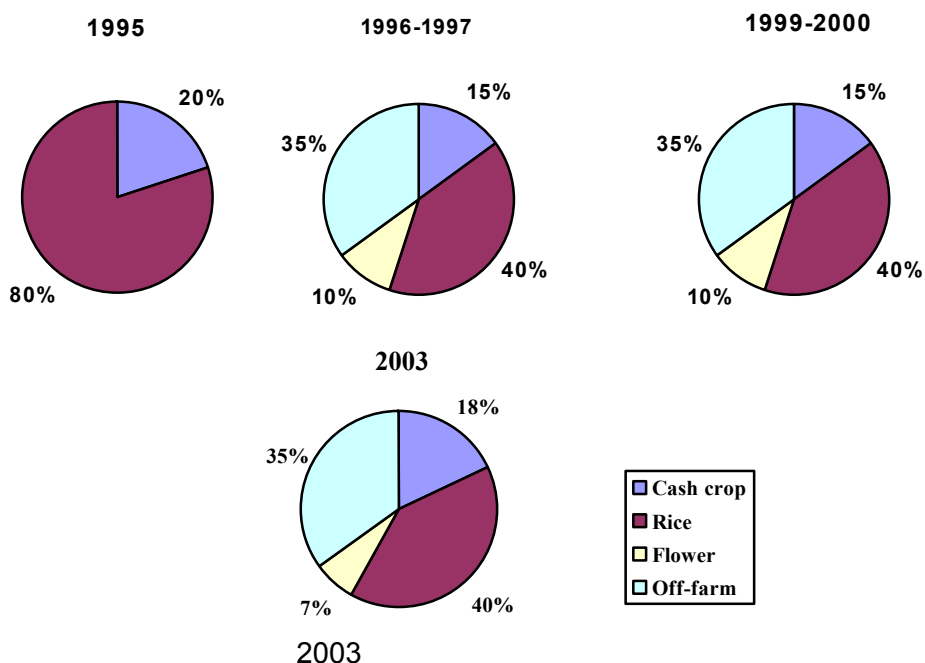
For non-rose producing households in Me Linh commune, their main income sources are cash crops such as tomatoes, onions, green squash, and rice.

Some households do not grow roses because:

- They lack capital: land and labour.
- Some households own large land and adequate capital but they are engaged in trading flowers or do other services and lease land.

5.3 Household income in Lieu Tri village

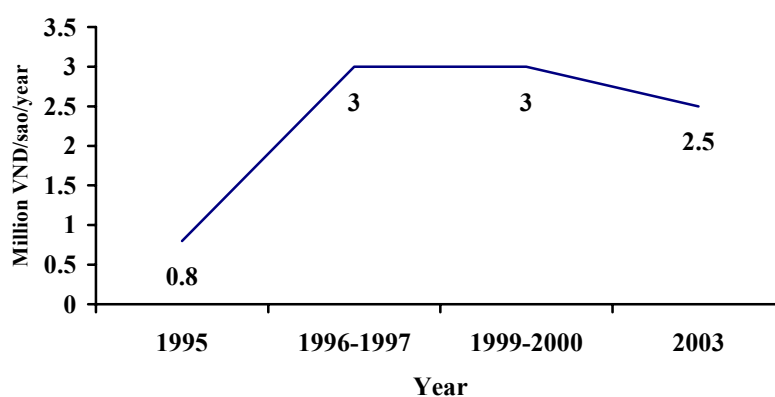
Figure 24: Income Sources of farm-households in Lieu Tri village



Flowers were first grown in Lieu Tri village in 1995. After 1995, income from rose production increased. In 1996 to 1997, farmers realized that they could also receive high income from growing high value cash crops such as tomatoes, kohlrabi, onions and green squash. At the same time, off-farm activities such as well digging, rice pancake making and rose trading developed strongly and accounted for 30 percent of village GDP. According to farmers' opinion, off-farm income sources are stable and higher than other sources.

In 2003, several households stopped growing roses due to inappropriate soil. Therefore, they grew cash crops in those areas. The proportion of rose production income declined at 7%. The proportion of cash crop income declined 18% while other income resources remained unchanged.

Figure 25: Income generated by Rose Production



As shown in the above graph, rose production income per sao in the period 1996 to 1997 was higher than that of the year 1995 due to high prices for higher quality roses. Farmers consider the period from 1996 to 2000 the most prosperous period in the rose production history in Lieu Tri village with average income 3 million VND per sao. In 2003, however, average income from rose production decreased due to low price and various types of other flowers in the market.

An increase in rose production income has improved local farmers' living standard. In general, the living standard of Lieu Tri people in 2003 increased by five times that of the year 1995.

5.4 Income of non-rose planting Households in Me Linh District

From 1998 to 2003, three main income sources of non-rose planting households in Me Linh district were cash crops, livestock and off-farm activities. Most of non-rose planting households planted cash crops such as onions, tomatoes, Dong Du mustard, sweet cabbage, kohlrabi, spring onions, and lettuce on their land. Cash crop income accounted for about 75 % of total household income.

Before the 1990s, high value crops such as onions and tomatoes were exported to Eastern European countries but presently there is no foreign market for these products, only a domestic one. Local farmers can sell vegetable products at local markets, to collectors, or at Hanoi markets.

Non-rose planting households also raise livestock such as pigs, buffalo and chicken to increase household income. However, those income sources contribute little to household income. In addition, off-farm activities such as trade and hired labour also contribute a small amount to household income, 25 percent.

Even though cash crop income is the main income source of non-rose planting households, it is still quite low. Their average income varies from 1 to 1.5 million VND per year and some of them do not care to save but just want to have enough money for their everyday life.

Table 14: Pair-wise ranking of Three Income Sources for non-rose planting in Me Linh

	Cash crops	Trading	Livestock	Result
Cash crops		Cash crops	Cash crops	Cash crops:4
Trading	Cash crops		Trading	Trading:2
Livestock	Cash crops	Trading		Livestock: 0

In three above income sources, non-rose planting households could receive higher income from cash crop cultivation than trade and raising livestock. Cash crop cultivation requires little capital. Those households can multiply seeds or seedlings. Moreover, cash crops require little fertilizer and pesticide. Therefore, cash crops offer higher benefit than trading and raising livestock.

Furthermore, non-rose planting households often raise livestock with a small scale because they lack capital to buy great quantities of varieties and feed. They raise livestock to take advantage of vegetable, bran, rice, and maize food residues. Therefore, raising livestock supplements income.

Table 15: Pair-wise ranking associated with three Income sources

	Cash crops	Trading	Livestock	Result
Cash crops		Cash crops	Cash crops	Cash crops: 4
Trading	Cash crops		Livestock	Livestock: 2
Livestock	Crop	Livestock		Trading: 0

In fact, agricultural producers not only depend upon internal conditions but also other factors such as pests and insects. However, these factors depend on different seasons and years. In some years, inhospitable weather such as heavy rain, huge storms, and hot weather happens so that pests and insects develop quickly, thus affecting crop productivity and quality. Farmers face more risk in growing cash crops than trading or raising livestock.

Farmers also face risk in raising livestock such as diseases and plagues. Those diseases could cause death or transmit disease to herd of poultry and cattle of households. These risks often occur to each household, thus effecting household economy.

Non-rose planting households face less risk with trading because they do small businesses with little capital. Their business could lose but it is marginal. Therefore, household economy is less affected by trading.

Table 16: Pair-wise ranking of labour requirement

	Crop	Trade	Livestock	Result
Crop		Crop	Crop	Crop: 4
Trade	Crop		Livestock equals trade	Trade equal livestock
Livestock	Crop	Livestock equals trade		

Cash crop cultivation requires less heavy loaded labour than rose production but requires more labour time in the season for soil preparation, sowing, etc. In Table 11, rose production takes up the majority of time and labour. Rose planting households have little capital to hire labour so they primarily use their family.

After harvesting, farmers take advantage of labour to raise livestock and do business that needs less labour and time.

5.4.1 The reasons that some households in Me Linh commune do not cultivate roses:

Although rose production offers quite high benefits, it also requires high investment capital and labour. One of the most important reasons these households do not cultivate roses is that they do not have much money to invest in rose production. In several households, family members are old. Furthermore, those households lack labourers or have little knowledge about rose production so that they can not cultivate roses.

Some households do not know how to estimate timing date to start producing roses and time to sell them so they can not gain high benefits. They sold products at low prices and got losses.

Therefore, for rose production these households face a lot of difficulties in investment capital, labour force as well as rose production techniques. With lack of capital and lack of marketing knowledge they cannot produce roses although they really want to because they could receive higher benefits from rose production than those of other cultivated crops.

5.4.2 How to Create Income for These Households?

Recently, very few rose producing households have money to invest in producing rose. It is difficult for these households to get a loan from banks because of difficult procedures such as mortgaging their house and other requirements that they can not meet. In addition, they cannot borrow from other commune credit sources because of high interest rates. Hence, it is necessary to create credit sources with simple procedures and low interest rates. They could then be confident to change cropping patterns, invest in rose production, and then gradually create investment capital by themselves.

6 Effects of Rose Production on the Commune Economy

According to District authorities' opinions, increases in the number of rose producing households results in decreases of the number of poor households.

6.1 Effects of Rose Production on the Commune Economy

According to communal officers, due to high economic effectiveness of rose production, local people started growing rose in 1990s, thus leading to decreasing the rate of poor people from 12% to 0.9% in 2003. With better livelihoods resulting from rose production, local people's understanding has improved. Birth rates have been lowered and children schooling rates have increased. The community relationship is better and infrastructure systems have been upgraded. In general, the living standard has increased progressively. In contrast, there are some negative effects on environment such as land, water and air pollution caused by over using insecticide and other chemicals

6.2 Effects of Rose Production on Economic Development in Ha Loi village

People in Cho hamlet grow roses in small areas because people do off-farm activities and agricultural area is small. It was the first hamlet to cultivate roses in Me Linh commune but now people do other business or have moved to another place such as Sapa to do rose business because of no land.

In Duong hamlet, they have changed the cropping pattern dramatically in the past three years. This hamlet is abundant in labour with a large agricultural area. Therefore, they changed to rose production when they realized that they can receive high benefits. In this hamlet, soil is fertile so the quality of roses is better than other hamlets' roses. Formerly, because of lack of capital people did not dare to invest in rose production. Investment capital is about 10 million per sao. People in this hamlet have cultivated roses for 4-5 years. Other hamlets have cultivated roses for 11 years.

6.3 Effects of Rose Production on Household Economy

According to group interviews, after a decade of changing crop patterns to rose production, the primary benefit is increased household income. The living standard of households has increased and they pay attention to investing in education for their children. Hence, education level of future generations will be increased. Now, the rate of students enrolling in colleges and universities of commune 2003 was 7% of high school graduates. This rate is an increase from 2-3% enrolling in 2000.

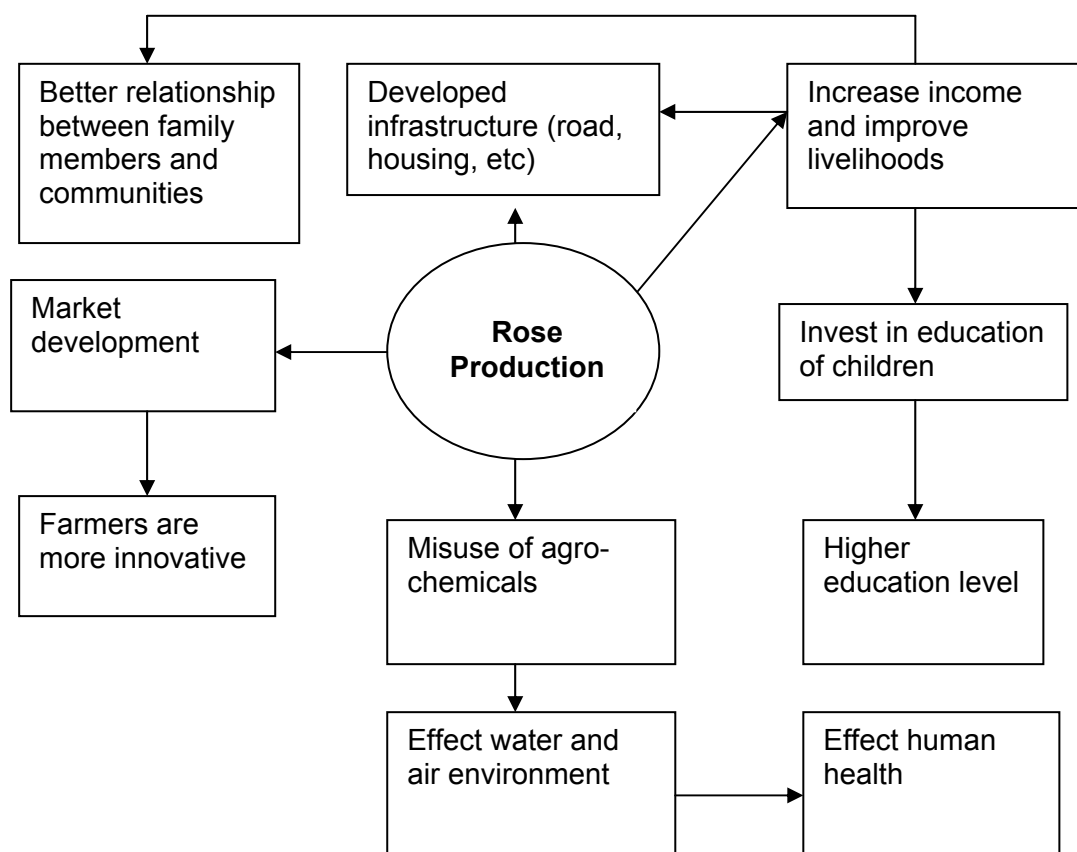
Local people invested in building infrastructure such as roads and markets to create favourable conditions for producing and selling roses. In 2000, people in Me Linh commune contributed to build an inter-hamlet road, the commune committee supported 20% to build the road after it had been used. In 1997, Ha Loi market was established by the commune People's Committee. This market has created favourable conditions for local people. It reduced the monopsonistic power of traders, wholesalers and collectors. The market has been opened to other provinces and people are more dynamic in looking for new markets.

Due to increase in income, people's livelihoods have been improved so the relationship in family and society is better. Rich households help poor households with capital and seedlings.

However, rose production also creates negative effects. Growing roses for a long time causes many kinds of insects. Hence, many farmers have abused pesticides and chemical fertilizer. Formerly, they use chemical fertilizers three times a month, but now some

households use them eight times a month. It pollutes water and air. It also directly affects human health through headaches and sore eyes because of contact with pesticides. Local farmers required government support for techniques to drill wells deeper to prevent the water from absorbing chemical.

Figure 26: Effects of rose production to the livelihoods



6.4 Effects of Rose Production under the Viewpoint of Non-rose producers

Advantages:

Most rose production households have higher average income than non-rose producing households. These households can afford to buy durable goods such as televisions, freezers, motorbikes, and other equipment necessary for agricultural production, some of them can afford to buy cars or build villas. In addition, rose producing households with high income have invested in education for their children.

Disadvantages:

Many people borrowed money from banks to invest in rose production to become better off. However, with little experience in rose production, they could not produce roses profitably. Their products could not be sold or were sold at a cheap price, and many people faced failures in rose production. Because of these failures in rose production, they also faced difficulty in finance and became poorer.

One of the most serious consequences of rose production is the environmental pollution from pesticide use. These pesticides not only directly affect rose producing households but also the health of local people. Rose production requires regular application of much pesticide, so the local farmers have to live in polluted air caused by pesticides. Additionally, soil absorbs pesticides and this pollutes the underground drinking water.

The above factors seriously affect people's health, especially old people, women and children. Some old people get lung cancer while some women get migraines or face difficulties when they give birth. However, local people wonder about the effect on children's nervous systems. They think their memory may decrease and this can cause difficulties for their study.

7 Expectation of people

7.1 Expectation of rose planting households:

- High price
- Rose is the strategic plan of Me Linh commune
- Having net house for rose production with modern technology
- To be supported investment capital for net house is about 30 million VND and green house is 100 million VND. When it's implemented all of households have to follow to avoid the germs from other households
- To be supported about techniques
- A large amount of people want to have stable marketing and stable price
- The district or commune authorities organize training courses about pesticides to provide better knowledge for farmers in using them.
- Create a brand name for Me Linh rose

7.2 Expectation of Collectors, Businessman

- If the farmers can produce stably so that the buyers can have stable source
- Stable price
- A market for flowers in future
- To avoid saturating the flower market the number of rose-producing households should decrease by 50%. These households should change and cultivate cash crops instead.

7.3 Expectation and short term solutions of non rose planting households

To solve the above problems, people hope that rose producers have better awareness of protecting environment to avoid bad effects on living environment. Besides, they also hope that pesticide companies use plastic bottle to contain pesticides. However, the best solution keep health is to avoid contact with poison from rose production.