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**MARKET PROSPECTS FOR  
UPLAND CROPS IN VIETNAM**

**Dao Huy Chien**

# 1. Introduction

Vietnam is located in South East Asia with population of 74,000,000 (1995) and a land area of 331,130 km<sup>2</sup>. Vietnam is divided into seven ecological regions:

- North Mountain and Midland: Hagiang, Tuyenquang, Caobang, Langson, Laichau, Laocai, Yenbai, Bacthai, Sonla, Hoabinh, Quangninh, Vinhphu and Habac.
- Red River Delta: Hanoi, Haiphong, Hatay, Haihung, Thaibinh, Namha and Ninhbinh.
- North Central Coast: Thanhhoa, Nghean, Hatinh, Quangbinh, Quangtri and Thuathien-Hue.
- South Central Coast: Quangnam - Danang, Quangngai, Binhdin, Phuyen, Khanhhoa, Ninhthuan and Binhthuan.
- Central Highlands: Gialai, Kontum, Daclac and Lamdong.
- North East South: Ho Chi Minh City, Songbe, Tayninh, Dongnai and Baria-Vungtau.
- Mekong River Delta: Longan, Dongthap, Angiang, Tiengiang, Bentre, Vinhlong, Travin, Cantho, Soctrang, Kiengiang and Minhhai.

Vietnam remains a relatively poor country still suffering from the effects of prolonged war. GDP per capita was estimated at US \$ 211 in 1994 and US \$ 273 in 1995 (Table 1.1).

In recent years, the government's economic reform policy, *doi moi*, has moved the country away from central planning toward a more market-oriented economy. In general, the *doi moi* policy has been successful in generating strong growth in GDP (8.8% in 1994 and 9.5% in 1995). Total export value increased from US \$ 2,404 million in 1990 up to US \$ 4,054 million (1994) and US \$ 5,200 million in 1995 (Table 1.1).

## 1.1 Overview of Vietnamese agriculture

Before 1989, Vietnamese agriculture was heavily characterized as a subsistence agriculture. During that time, the country experienced food shortages for many years. Fortunately, as a result of changes in land use and production policies, agricultural production has increased dramatically. Since 1989, Vietnamese agriculture has shifted to a new situation. Vietnam now produces not only enough food for domestic consumption but also for export.

The total export value of agricultural products was US \$ 783.2 million for 1990, increasing to US \$ 2,005.0 million in 1995, (Table 1.2).

Agricultural products constituted 31% and 39% of the total export value of Vietnam in 1994 and 1995 respectively (Tables 1.1 and 1.2). At current prices, agriculture, forestry and fishery accounted for 29.04% of GDP in 1995 (Table 1.3). At constant 1989 prices, in 1995, crop production accounted for 77.72% gross output of agriculture while animal husbandry accounted for only 22.28% of that (Table 1.4). Also at constant price of 1989, in 1995, food crops accounted for 63.78%, industrial crops accounted for 19.66%, fruit trees accounted for 7.50% and vegetable crops accounted for 6.37% of gross output of crop production (Table 1.4).

In agriculture, the products of upland crops such as rice, maize, soybean, cassava, coffee, cashew nut, sugarcane, fruits and vegetables are of vital importance and there is a need to study their market prospects.

This report presents the results of the study on "Market prospects of upland crop products and policy analysis in Vietnam". The study is under the international project "Market prospects of Upland Crop Products and Policy Analysis in Selected Asian Countries" (MPUPA) funded by the ESCAP-CGPRT Centre.

## Chapter 1

**Table 1.1 Main economic indicators of Vietnams national economy.**

Indicator	Unit	1990	1991	1992	1993	1994	1995
1. Population	Million	66.2	67.8	69.4	71.0	72.5	74.0
2. Population growth	%	-	2.3	2.4	2.3	2.1	2.0
3. GDP per capita	US \$	-	118	142	182	211	273
4. Exchange rate	VND/US \$	-	9,628	11,176	10,583	11,125	11,029
5. Consumer goods price index	%	67.1	67.5	17.5	5.2	14.4	12.7
6. GDP growth rate	%	-	6.0	8.6	8.1	8.8	9.5
7. Agriculture growth rate	%	-	2.9	8.4	6.6	4.8	6.5
8. Food crop production growth rate	%	-	2.3	10.1	5.3	2.7	5.2
9. Total value of export	Million US \$	2,404	2,087	2,581	2,985	4,054	5,200
10. Export growth	%	-	-13.2	23.7	15.6	35.8	28.3
11. Total value of import	Million US \$	2,752	2,338	2,541	3,924	5,826	7,500
12. Import growth	%	-	-15	8.7	54.4	48.5	28.7

Source: General Statistical Office. Statistical Year Book 1995. Statistical Publishing House 1996.

**Table 1.2 Export and import value (million US \$) of agricultural products in Vietnam, 1990-1995.**

Item	1990	1991	1992	1993	1994	1995
Export						
Agricultural products	783.2	628.0	827.6	919.7	1,252.6	2,005
Aquatic products	239.1	285.4	307.7	427.2	551.2	600
Import						
Food	46.1	62.2	53.9	53.5	61.5	-
Foodstuff	68.2	75.8	86.2	152.3	164.3	-

Source: 1990-1994: General Statistical Office. Statistical Year Book 1995. Statistical Publishing House 1996.

1995: General Statistical Office. Statistical Data of Agriculture, Forestry and Fishery .985-1995;Statistical Publishing House, Hanoi 1996.

**Table 1.3 The role of agriculture, forestry and fisheries in the national economy of Vietnam, 1991-1995.**

	1991	1992	1993	1994	1995
Gross Domestic Product (at current prices) billion dongs	76,707	110,535	136,571	174,670	222,840
Contribution of: agriculture, forestry and fishery: billion dongs	31,058	37,513	40,796	51,173	64,719
percentage	40.5	33.9	29.9	29.29	29.04
Gross Domestic Product (at constant 1989 price) billion dongs	31,286	33,991	36 735	39,982	43,797
Contribution of: agriculture, forestry and fishery: billion dongs	12,264	13,132	13 634	14,619	14,841
percentage	39.2	38.6	37.1	35.4	33.9

Source: General Statistical Office. Statistical Data of Agriculture, Forestry and Fishery, 1985 - 1995. Department of Agriculture, Forestry and Fishery. Statistical Publishing House, Hanoi 1996.

**Table 1.4 Structure of gross output of agriculture (at constant price of 1989).**

	1991	1992	1993	1994	1995
Total (%)	100	100	100	100	100
Crop production	78.10	77.20	77.41	77.29	77.72
- Food crops	65.51	67.15	66.34	65.21	63.78
- Vegetables	6.56	6.26	6.25	2.20	6.37
- Industrial crops	16.62	15.44	16.37	17.92	19.66
- Fruit crops	8.40	8.14	8.07	7.83	7.50
Animal husbandry	21.90	22.80	22.59	22.71	22.28
- Livestock	61.98	62.09	62.86	64.44	64.01
- Poultry	19.14	18.98	19.38	17.59	17.37
- Non meat products	13.88	14.23	14.09	13.44	14.28

Source: General Statistical Office. Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Department of Agriculture, Forestry and Fishery. Statistical Publishing House, Hanoi 1996.

## 1.2 Objectives of the study

The objectives of the study are:

- to analyze dietary patterns and determine how changes in consumption patterns relate to income and urbanization;
- to analyze changes in the domestic demand and external trade performance of rice, maize, soybean and cassava;
- to make demand projections for rice, maize, soybean and cassava; and
- to review and analyze domestic market-processing systems, policy impacts, the export situation and suggestions for improving market prospects of selected commodities.

## 1.3 Scope of the study.

The domestic demand study includes:

- dietary pattern studies of all major food items;
- review and analysis of utilization of four commodities: rice, maize, soybean and cassava;
- discussion of policy impacts related to rice, maize, soybean and cassava; and
- demand projections of rice, maize, soybean and cassava.

The market potential study includes:

- review of market - processing systems of rice, maize, soybean and cassava;
- review of external trade performances of rice, maize, soybean and cassava;
- survey on new emerging commodities/markets, such as cashew nut, orange and dried cassava chips; and
- case studies on successful (coffee, groundnut and sugarcane) attempts and unsuccessful (potato, sweet potato and tomato) market promotion attempts for selected commodities. The terms failure and unsuccessful used in this report are very relative.

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## 2. Domestic Demand

### 2.1 Dietary pattern

The dietary pattern of Vietnamese people is reflected in the way they live and eat. In this section, the daily diet, changes in protein and energy intake, food consumption composition, and composition of consumption expenditure are discussed.

Table 2.1 shows that in total consumption expenditure, during 1992-1993, Vietnamese spent 56.16% for food, with people in rural areas spending 60.29% for food while people in urban areas only spent 48.29% for food. Among food items, rice and other cereals are the most important, contributing 42.3%. Meat contributed 15.9%, fish and shrimp accounted for 10.2% and vegetables accounted for 6.5% in total food expenditure. However, the percentage shares in total food expenditure for eggs, fat, fruits and beverages were low at 1.2%, 1.6%, 3% and 1.9%, respectively (Table 2.2).

**Table 2.1 Composition of consumption expenditure (%) by rural and urban area in Vietnam.**

Expenditure Item	Area		Total
	Rural	Urban	
Food	60.29	48.29	56.16
Education	2.01	3.91	2.66
Health	6.96	4.53	6.13
Clothing and footwear	7.17	4.93	6.40
Fuel, light and water	3.05	6.28	4.16
Transportation, communication	1.73	4.03	2.52
Housing	4.52	13.98	7.78
Others	14.27	14.05	14.19
Total consumption expenditure	100	100	100

Source: General Statistical Office. Vietnam Living Standards Survey 1992-1993. State Planning Committee. Hanoi 1994.

**Table 2.2 Per capita food expenditure by food group in Vietnam.**

Food Group	Composition ('000 VND)	Percentage
Cereals	316.0	42.3
Meat	118.5	15.9
Eggs	9.4	1.2
Fat	12.3	1.6
Fish and shrimp	76.5	10.2
Confections	23.5	3.2
Fruits	22.3	3.0
Seasoning	30.0	4.0
Vegetables	48.3	6.5
Tea and coffee	12.7	1.7
Beverages	14.1	1.9
Others	63.7	8.5
Total food expenditure	747.3	100

Source: Vietnam Living Standards Survey 1992-1993. State Planning Committee-General Statistical Office. Hanoi 1994.

On average, Vietnamese people consumed 458.8g/capita/day of rice, 193.3g vegetables, 3.9g fruits, 30.5g meat, and 33g fish during 1987-1989. There were differences in dietary patterns of urban people, rural people and mountain-dwelling people. Rice consumption was

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421.3, 457.1 and 498 grams/capita/day for urban, rural and mountain people, respectively. Rural people and mountain people consumed more rice than urban people. However, meat consumption was 49.3, 13.7 and 28.5g/capita/day for urban, rural and mountain people, respectively; fish consumption was 62.2, 29.3 and 8.1 g/capita/day; eggs and milk consumption was 9.6, 1.4 and 2.0 g/capita/day and fruit consumption was 10.2, 1.2 and 0.2g/capita/day for urban, rural and mountain people, respectively. It is obvious that people in urban areas consumed much more meat, fish, eggs and milk and fruit than people in rural and mountain areas (Table 2.3).

**Table 2.3. Daily dietary intake (g/capita/day) in Vietnam during 1987-1989.**

Food Group	Urban Area (n=1,655)*	Rural Area (n=9,135)	Mountainous Area (n=1,634)	Average
Rice	421.3	457.1	498.0	458.8
Other cereals	14.2	3.7	7.4	8.4
Tubers	11.8	47.5	38.8	32.7
Beans and peas	2.4	1.6	4.0	2.7
Tofu	16.5	4.9	8.7	10.0
Sesame and nuts	4.2	3.0	9.4	5.5
Vegetables	147.9	194.6	237.5	193.3
Fruit	10.2	1.2	0.2	3.9
Sugar	1.8	0.3	0.1	0.7
Sauce	22.3	30.2	23.5	25.3
Meat	49.3	13.7	28.5	30.5
Eggs and milk	9.6	1.4	2.0	4.3
Fish other aquatic animals	62.2	29.3	8.1	33.2
Fat and oil	6.4	2.6	2.7	11.7

Source: Ha Huy Khoi, Some issues on Nutrition in transition Period. Medical Publishing House, Hanoi 1996.

\* n = number of households surveyed.

There were changes in energy and protein intake during 1965-1989 in Vietnam. Total energy intake increased from 1,872 Kcalories to 1,966 Kcalories. Total protein intake increased from 47g to 58g. Of that, protein from animal sources increased from 6.5 to 13.9 g. Total fat intake changed from 14.5 to 20.5g. In terms of energy composition, most energy originated from carbohydrate intake (83% in 1964-1965 and 77.9% in 1987-1989) (Table 2.4).

**Table 2.4 Changes in daily energy and dietary intake during 1965-1989 in Vietnam.**

Item	1964-66	1970-75	1981-85	1987-89
Energy (kcalories/capita)	1872.0	1912.0	1925.0	1966.0
Total protein (g/capita)	47.0	60.0	52.0	58.0
Protein from animal sources (g/capita)	6.5	12.0	10.0	13.9
Protein from animal sources/totalprotein	14.4	21.9	18.0	23.6
Total lipid (g/capita)	14.5	12.7	12.8	20.5
Lipid from animal sources (g/capita)	4.4	4.6	5.4	-
Energy composition:				
Protein (%)	10.0	13.0	11.0	12.2
Lipid (%)	7.0	6.0	6.0	9.7
Carbohydrate (%)	83.0	81.0	83.0	77.9

Source: Ha Huy Khoi, Some issues on Nutrition in Transition Period. Medical Publishing House, Hanoi 1966.



From 1985 to 1990, a survey for 12,789 households in different regions of Vietnam was conducted (Tu Giay 1993). The survey indicated that rice consumption was more than 400g/capita/day for all regions surveyed (average 453g/capita/day). Rice accounted for 84.6% of daily energy intake of Vietnamese people. This figure is very high in comparison to that for South East Asian Countries (65%), Japan (41.8%) and Australia (23.5%). Therefore, energy from other food items was low, 2.3% for roots and tubers, 6.8% for animal food products, 1.5% for fat and oil, 1.1% for sesame and groundnut, 0.6% for beans and peas, and 2.2% for fruits and vegetables. The average daily energy intake per capita was 1,932 Kcal during 1987-1989, which is 16% lower than the 2,300 kcal/capita/day generally recognized as the minimum requirement. Moreover, the average was only 1,822 Kcal and 1,800 Kcal for Northern and South-Central regions, respectively. The dietary patterns varied from region to region of the country. The nature of the energy intake and the composition of diet are also important.

Protein intake including protein from rice was generally adequate (59.7g/capita/day) in comparison to the recommended 60g/capita/day. However, in the Red River Delta and the North Central Coast, protein intake was roughly 10% lower than the minimum level recommended (Tu Giay et al. 1991).

The annual average per capita intake of animal food products was low, for example 7 kg of meat, 24 kg of fish, 16 eggs and almost no milk. The proportion of the protein intake originating from animal products was more or less adequate in southern Vietnam (at 33% of total protein intake) but deficient in northern Vietnam (at less than 20% of total protein intake (Tu Giay et al. 1991).

People in northern Vietnam consumed much more vegetables, roots and tubers and soybean than people in southern Vietnam where more fish and sugar was consumed (Tu Giay et al. 1991).

In comparison of food consumption composition between rural and urban areas, people in rural areas consumed more rice (159.84 kg/capita/year) than people in urban area (126.76 kg/capita/year). However, for meat, eggs, fish and shrimp, tofu, fruit, sugar, milk and coffee, people in urban areas consumed much more than people in rural areas (Table 2.5).

**Table 2.5 Food consumption rural and urban areas in Vietnam (kg/capita/year).**

Food Item	Rural Area	Urban Area	Average
Rice (kg)	159.84	126.76	143.3
Other food crops (kg)	13.98	14.33	14.2
Meat (kg)	8.33	14.75	11.5
Fat and oil (kg)	1.13	2.30	1.7
Eggs (piece)	9.30	35.31	22.3
Fish and shrimp (kg)	12.40	17.48	14.9
Sauce (litre)	5.76	5.67	5.7
Salt (kg)	5.50	3.20	4.4
Monosodium glutamate (kg)	0.69	0.79	0.7
Vegetables, beans (kg)	27.66	32.51	30.1
Tofu (kg)	2.55	4.92	3.7
Fruit (kg)	16.66	46.25	31.5
Sugar (kg)	2.43	3.59	3.0
Milk (kg)	0.07	0.07	0.4
Tea (kg)	0.45	0.26	0.4
Coffee (kg)	0.08	0.21	0.1
Beverage (litre)	3.80	4.36	4.0

Source: General Statistical Office. Vietnam Living Standards Survey 1992-1993. State Planning Committee Hanoi 9 1994.

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With respect to food expenditure per capita by food group and region, people in region 6 (South East) had the highest level of food expenditure/capita (1,070,900 VND/year) followed by region 7 (Mekong River Delta, 798,600 VND/year) and region 2 (Red River Delta, 717,900 VND/year). However, region 3 (North Central) had the lowest level of food expenditure per capita of 582,500 VND/year (Table 2.6).

**Table 2.6 Per capita food expenditure by food group and region (thousand VND).**

Food Group	Region*							Average
	1	2	3	4	5	6	7	
Cereals	336.4	335.7	300.8	301.9	331.1	314.1	297.8	316.0
Meat	120.1	126.0	70.5	89.1	74.6	192.5	118.2	118.5
Eggs	6.4	10.1	3.9	6.0	6.1	22.6	8.9	9.4
Fat	2.2	7.3	11.2	19.4	19.3	25.0	13.1	12.3
Fish, shrimp	28.6	43.0	64.8	101.0	65.9	113.9	117.4	76.5
Confections	10.6	16.9	16.0	27.9	21.2	34.4	35.2	23.5
Fruits	13.6	21.2	9.0	24.9	17.6	35.5	29.4	22.3
Seasoning	25.3	27.8	34.7	35.2	28.1	35.5	27.5	30.0
Vegetables	51.9	47.1	36.0	47.0	54.3	79.1	36.1	48.3
Tea, coffee	12.0	14.5	17.5	9.0	10.1	14.9	9.9	12.7
Beverages	14.6	16.7	11.4	9.8	7.6	22.8	11.4	14.1
Others	18.8	51.6	6.9	41.5	18.2	180.6	93.7	63.7
Total	640.5	717.9	582.5	712.6	654.1	1,079.9	798.6	747.3

Source: General Statistical Office. Vietnam Living Standards Survey 1992-1993. State Planning Committee Hanoi 9 1994.

\* Region: 1 North Mountain and Midland; 2 Red River Delta; 3 North Central Coast; 4 South Central Coast; 5 Central Highlands; 6 North East South; 7 Mekong River Delta.

It is necessary to mention that in the period 1990-1995, with the *doi moi* economic reform program, Vietnam was successful in generating strong economical growth, especially on GDP. This has had a clear impact on the dietary pattern of Vietnamese people. A large scale survey on food consumption has not yet been conducted. However, recent surveys on food consumption of one commune in the Red River Delta (commune YS in Hatay) and one commune in Hanoi City (commune CD in Hanoi) gave some preliminary information (Tables 2.7 and 2.8).

**Table 2.7 Changes in daily dietary intake in Commune YS, Hatay in 1994 vs 1985 (g/capita/day).**

Component	1985	1994	Change (%)
Rice	476.9	421.9	-12
Other cereals	7.0	10.4	49
Roots and tubers	12.7	7.3	-43
Tofu	6.7	34.1	409
Beans and peas	1.5	2.1	40
Nuts and oil	3.5	10.6	203
Fat and oil	8.5	13.4	58
Meat	10.0	36.6	266
Milk and eggs	0.6	3.1	417
Fish	12.0	26.9	124
Vegetables	288.1	141.6	-51
Sauce	38.7	23.4	-40
Sugar	2.0	8.1	305
Fruits	11.6	38.8	234
Energy (Kcal)	1,969	1,935	-2

Source: Ha Huy Khoi. Some issues on Nutrition in Transition Period Medical Publishing House. Hanoi 1996.

During the 10 years from 1985 to 1994, there were considerable changes in daily dietary intake in commune YS, Hatay (Khoi 1996). Dietary intake (g/capita/day) decreased for rice by 12%, roots and tubers by 43%, and vegetables by 53%. However, consumption increased for meat by 266%, fish by 124%, milk and eggs by 417%, tofu by 409%, nuts with oil by 203%, sugar by 305% and fruits by 234%. However, total energy intake decreased slightly from 1,969 to 1,935 Kcal/day (Table 2.7,)

**Table 2.8 Changes in dietary intake in commune CD, Hanoi in 1995 vs 1984 (g/capita/day).**

Component	1984	1995	Change (%)
Rice	429.0	364.0	-15
Other cereals	0.7	30.0	328
Roots and tubers	7.4	7.4	0
Toufu	31.0	72.0	132
Beans and peas	0.7	5.0	614
Nuts and oil	4.5	3.7	-18
Fat and oil	10.5	12.4	18
Meat	36.7	94.0	156
Milk and eggs	6.8	24.3	257
Fish	34.1	43.7	28
Vegetables	199.4	182.2	-9
Sauce	18.2	13.5	-26
Sugar	2.7	15.6	477
Fruits	19.8	140.6	610
Energy (Kcal/person/day)	1,867	1,916	3

Source: Ha Huy Khoi. Some issues on Nutrition in Transition Period.  
Medical Publishing House. Hanoi 1996.

For 11 years, from 1984 to 1995, in Commune CD, Hanoi, changes in dietary intake were also considerable. Daily per capita intake was decreased for rice by 15%, nuts with oil by 18%, vegetables by 9%, and sauce by 26%, while it was increased for meat by 156%, milk and eggs by 257%, fish by 28%, sugar 477%, fruits by 610% and tofu by 132%. However, other cereals increased by 328%. Total energy intake increased slightly from 1,867 to 1,916 Kcal per day (Table 2.8).

It is obvious that the total energy intake per capita per day was almost unchanged. However, the dietary composition improved over the past 10 years in the two communes surveyed. This is in agreement with the general tendency of socio-economic improvement of the country.

From 1991 to 1995, the gross output of food (paddy equivalent) per capita per year increased from 324.9 kg to 372.5 kg (Table 2.9).

In recent years, with socio-economic development, eating outside the home has become very popular in Vietnam, especially in urban areas which contain with 20% of the total population.

In the coming years, the national average dietary intake of 1,950 Kcal/person/day should be raised to 2,100 Kcal/person/day and then to 2,300 Kcal/person/day (Tu Giay 1993).

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**Table 2.9 Gross output of food in paddy equivalent\* (kg/person/year) by region.**

Region	1991	1992	1993	1994	1995
Whole country	324.9	348.9	359.0	360.9	372.5
North	231.3	271.4	312.7	265.9	287.7
North Mountain and Midland	190.1	223.4	251.6	242.8	238.3
Red River Delta	256.5	346.4	389.8	326.6	355.1
North Central Coast	222.1	233.7	236.4	238.7	252.8
South	418.7	431.1	402.9	460.4	469.2
South Central Coast	289.8	257.4	234.7	269.7	258.4
Central Highlands	225.7	220.6	217.4	218.9	212.2
North East South	129.0	115.3	130.4	134.8	144.8
Mekong River Delta	703.1	727.3	721.3	777.4	808.7

Source: General Statistical Office. Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi 1996.

\* 1 kg of rice = 3 kg of cassava, sweetpotato and potato.  
= 1 kg of maize.

## 2.2 Demand composition

### 2.2.1 Rice

Rice is the most important food crop in Vietnam. In 1995, the total rice production area was 6,765,600 ha with total production of 24,963,700 tons (Table 2.10). The Mekong River Delta in the South is the largest production area with 3,190,600 ha accounting for 47% of the total rice production area. The Red River Delta in the North is the second most important production area with 1,042,100 ha, accounting for 15% of the total rice production area.

**Table 2.10 Area planted, yield and production of rice in Vietnam, 1980-1995.**

Year	Area (‘000 ha)	Yield (tonsha)	Production (‘000 tons)
1980	5,600.2	2.080	11,647.4
1981	5,651.9	2.197	12,415.2
1982	5,711.3	2.520	14,390.2
1983	5,611.0	2.628	14,743.3
1984	5,675.0	2.732	15,505.6
1985	5,703.9	2.783	15,874.8
1986	5,688.6	2.813	16,002.9
1987	5,588.5	2.702	15,102.6
1988	5,726.4	2.969	17,000.0
1989	5,895.8	3.222	18,996.3
1990	6,027.7	3.189	19,225.2
1991	6,302.7	3.113	19,621.9
1992	6,475.4	3.334	21,590.3
1993	6,559.4	3.482	22,836.6
1994	6,598.6	3.566	23,528.2
1995	6,765.6	3.690	24,963.7
Average annual growth rate (%)	1.27	3.6	5.3

Source: General Statistical Office. Statistical Year Book, 1994. Statistical Publishing House 1995.

General Statistical Office. Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi 1996.

The Mekong River Delta and Red River Delta are two biggest rice production regions of the country. In rice production, in 1995, the Mekong River Delta accounted for 51% (12,831,700 tons) and the Red River Delta accounted for 18.5% (4,623,100 tons) of the total

rice production of the country (24,963,700 tons) (Table 2.11).

Rice production greatly improved from 1980 to 1995, rice production area increased from 5,600,200 ha to 6,765,600 ha with increments of yield from 2.080 tons/ha to 3.690 tons/ha and of production from 11,647,400 tons to 24,963,700 tons. During the past 15 years, the average annual growth rate was 1.27% for rice area planted, 3.6% for yield and 5.3% for production (Table 2.10).

From 1991 to 1995, domestic consumption accounted for 87% on average of rice production. Domestic consumption includes direct consumption, simple traditional processed products, feed and seed. In 1994, total domestic consumption of rice was 20,528,200 tons (Statistical Division, Department of Planning and Projection, Ministry of Agriculture and Rural Development (MARD)).

**Table 2.11 Rice production (thousand tons) by region in Vietnam, 1991-1995.**

Region	1991	1992	1993	1994	1995
Whole country	19,612.9	21,590.3	22,836.5	23,528.2	24,963.7
North	6,257.5	7,885.1	8,973.2	8,242.4	9,017.7
North Mountain and Midland	1,584.0	2,013.5	2,299.9	2,206.9	2,253.8
Red River Delta	3,038.3	4,101.6	4,843.3	4,121.4	4,623.1
North Central Coast	1,635.2	1,770.0	1,830.0	1,914.1	2,140.8
South	13,364.4	13,705.2	13,863.3	15,285.8	15,946.0
South Central Coast	1,749.2	1,583.1	1,472.0	1,787.9	1,749.4
Central Highlands	431.7	429.7	443.5	448.7	429.5
North East South	832.6	744.5	881.4	928.3	935.4
Mekong River Delta	10,350.9	10,947.9	11,066.4	12,120.9	12,831.7

Source: General Statistical Office. Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi 1996.

## 2.2.2 Maize

Maize is the second most important food crop in Vietnam. In 1995, total planted area was 556,800 ha with a production of 1,177,200 tons. North Mountain and Midlands with 234,200 ha was the most important maize production area, accounting for 42% of total production area. North East South with 81,300 ha was the second important production area, accounting for 15% of the total production area (General Statistical Office 1996).

From 1980 to 1995, maize production improved considerably. The total planted area increased from 389,600 ha to 556,800 ha with a yield increase from 1.10 tons/ha to 2.11 tons/ha and total production increased from 428,800 tons to 1,177,200 tons (Table 2.12). The average annual growth rate was 2.8% for production area, 4.7% for yield and 7.2% for total production from 1980 to 1995.

From 1992 to 1995, domestic consumption accounted for 91% of total maize production. In 1994, total domestic consumption of maize was 1,035,240 tons. Domestic consumption involves direct consumption as food, feed, traditional processed products and seed.

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**Table 2.12 Area planted, Yield and production of maize in Vietnam, 1980-1995.**

Year	Area (‘000 ha)	Yield (tons/ha)	Production (‘000 tons)
1980	389.6	1.10	428.8
1981	384.6	1.12	429.6
1982	331.4	1.15	438.1
1983	378.3	1.24	468.0
1984	386.5	1.38	532.2
1985	397.3	1.48	587.1
1986	400.9	1.42	569.8
1987	405.6	1.38	561.0
1988	510.5	1.60	814.8
1989	509.4	1.64	837.9
1990	431.8	1.55	671.0
1991	447.6	1.50	672.0
1992	478.0	1.56	747.9
1993	496.5	1.78	882.2
1994	534.7	2.14	1,143.9
1995	556.8	2.11	1,177.2
Average annual growth rate (%)	2.8	4.7	7.2

Source: General Statistical Office. Statistical year Book, 1995 Statistical Publishing House 1996.

**Table 2.13 Maize production (‘000 tons) by region in Vietnam, 1991-1995.**

Region	1991	1992	1993	1994	1995
Whole country	671.0	672.0	747.9	882.2	1,143.9
North	452.9	455.0	519.4	622.2	686.3
North Mountain and Midland	246.5	278.1	282.9	352.0	379.8
Red River Delta	148.1	113.2	166.3	191.4	200.1
North Central Coast	58.3	63.7	70.2	78.8	106.4
South	218.1	217.0	228.5	260.0	457.6
South Central Coast	29.3	28.3	30.9	31.4	54.3
Central Highlands	91.5	90.7	92.9	94.4	109.4
North East South	71.7	72.0	76.5	93.8	209.5
Mekong River Delta	25.6	26.0	28.2	40.4	84.4

Source: General Statistical Office. Statistical Year Book, 1995. Statistical Publishing House 1996.

### 2.2.3 Soybean

Soybean is an important food crop in Vietnam. The area planted increased from 102,000 ha in 1995 to 121,100 ha in 1995 while total production increased from 79,100 tons to 125,500 tons (Table 2.14).

In 1995, the total area of soybean production was 121,100 ha with a yield of only 1.03 tons/ha and total production of 125,500 tons (Table 2.14). The total soybean production increased from 80,000 tons in 1991 to 125,500 tons in 1995.

**Table 2.14 Area planted, yield and production of soybean in Vietnam, 1985-1995.**

Year	Area ('000 ha)	Yield (tons/ha)	Production ('000 tons)
1985	102.0	0.78	79.1
1986	106.5	0.80	84.7
1987	118.1	0.81	95.8
1988	103.0	0.83	85.3
1989	100.2	0.81	82.0
1990	110.0	0.79	86.6
1991	101.1	0.79	80.0
1992	97.3	0.82	80.0
1993	120.1	0.87	105.7
1994	132.0	0.94	124.5
1995	121.1	1.03	125.5

Source: General Statistical Office. Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi 1996.

North Mountain and Midlands is the most important soybean production region, followed by the Red River Delta with soybean production in 1995 of 41,400 tons (accounting for 33% of the total production) and 29,400 tons (accounting for 23% of the total production), respectively. In 1995, soybean production was 72,900 tons for the North and 51,600 tons for the South (Table 2.15).

**Table 2.15 Soybean production ('000 tons) by region in Vietnam, 1991-1995.**

Region	1991	1992	1993	1994	1995
Whole country	80.0	80.0	105.7	124.5	125.5
North	38.7	38.2	56.3	67.8	72.9
North Mountain and Midland	21.8	23.2	32.9	35.0	41.4
Red River Delta	14.4	13.0	21.4	31.0	29.4
North Central Coast	2.5	2.0	2.0	1.8	2.1
South	41.3	41.8	49.4	56.7	51.6
South Central Coast	1.2	0.7	1.0	1.6	1.9
Central Highlands	5.5	7.4	7.8	8.0	12.3
North East South	19.1	18.6	17.7	18.2	10.3
Mekong River Delta	15.5	15.1	22.9	28.9	28.1

Source: General Statistical Office. Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi 1996.

Almost all of the soybean production is for domestic consumption. For the past four years, from 1992 to 1995, domestic consumption accounted for 98% of total soybean production. There was only 2% of total soybean production for export.

Domestic consumption of soybean involves traditional processing products as food, feed, processing industry and seed.

## 2.2.4 Cassava

Cassava is an important food crop in Vietnam. In 1995, total area of cassava production was 277,500 ha with total production of 2,211,500 tons. North Mountain and Midland region is the major production area. This region accounted for 29% (636,100 tons) of total production (Table 2.17).

From 1980 to 1995, cassava production declined from 442,900 ha to 277,500 ha and 3,323,000 tons to 2,211,500 tons (Table 2.16), respectively. The average growth rate was -3.0%

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for production area and -2.5% for total production. This decline in cassava production was primarily due to lack of a processing industry. The other reason is that, with great improvement in rice production and the progress in social economic development, people have changed their dietary patterns, and the consumption of roots and tubers has decreased (Table 2.17). However, with the recent development of the processing industry, cassava production has remained stable.

From 1991 to 1995, cassava production in the North decreased from 1,268,100 tons to 917,000 tons while that in the South increased from 1,186,800 tons to 1,294,500 tons (Table 2.17). In the South, cassava processing has recently developed with some large scale processing plants such as the cassava processing plant of Vedan Company in Dong Nai near Ho Chi Minh City.

Most cassava production is for domestic consumption. For the past four years, from 1992 to 1995, 96% of total cassava production was for domestic consumption. Of total cassava production, only 1% was exported in 1992 and 1993, and 3% in 1994. However, cassava for export accounted for 9% of total production in 1995, indicating that there is a tendency of growth in cassava exports.

Domestic consumption of cassava consists of the processing industry, traditional processed products such as dried chips, flour, starch, maltose and noodles, direct consumption as food and use for feed in both fresh and dried form.

**Table 2.16 Area planted, yield and production of cassava in Vietnam, 1980-1995.**

Year	Area (‘000 ha)	Yield (tons/ha)	Production (‘000 tons)
1980	442.9	7.50	3,323.0
1981	379.4	7.82	2,969.0
1982	365.5	7.83	2,860.7
1983	343.0	8.47	2,905.7
1984	345.8	8.79	3,039.0
1985	335.0	8.78	2,939.8
1986	314.7	9.16	2,882.3
1987	298.9	9.16	2,738.4
1988	317.7	8.94	2,834.3
1989	284.6	9.08	2,585.4
1990	256.8	8.86	2,275.8
1991	273.2	8.99	2,454.9
1992	283.8	9.05	2,567.9
1993	278.0	8.81	2,450.0
1994	279.4	8.44	2,358.3
1995	277.5	7.97	2,211.5
Average Annual growth rate (%)	-3.0	0.8	-2.5

Source: General Statistical Office. Statistical Year Books, 1994 and 1995. Statistical Publishing House 1995.



**Table 2.17 Cassava production (thousand tons) by region in Vietnam, 1991-1995.**

Region	1991	1992	1993	1994	1995
Whole country	2,454.9	2,567.9	2,450.0	2,358.3	2,211.5
North	1,268.1	1,373.6	1,274.4	991.1	917.0
North Mountain and Midland	815.8	957.8	900.9	646.9	636.1
Red River Delta	149.5	72.3	70.0	59.1	49.2
North Central Coast	302.8	343.5	303.5	285.1	231.7
South	1,186.8	1,194.3	1,175.6	1,367.2	1,294.5
South Central Coast	542.2	517.8	479.4	516.0	370.4
Central Highlands	162.3	186.8	187.2	239.2	383.7
North East South	390.7	399.3	421.2	527.1	560.8
Mekong River Delta	91.6	90.4	87.8	84.9	79.6

Source: General Statistical Office. Statistical Data of Agriculture, Forestry and Fishery 1985-1995.  
Statistical Publishing House, Hanoi 1996.

## 2.3 Major policy measures and impacts

The major policies directly related to rice, maize, soybean and cassava are discussed in this section and summarized in Table 2.18. The discussion centers on new policies launched by the government to promote, protect and regulate the production, processing and trading of agricultural commodities.

**Table 2.18 Policy measures concerning major upland crops, 1995.**

Measures	Rice	Maize	Soybean	Cassava
<b>Farm Level</b>				
1. Input subsidies				
Fertilizer	-	-	-	-
Seed	-	-	-	-
Cheap credit for inputs	+	+	+	+
2. Investment grants				
Machinery	-	-	-	-
Irrigation systems	+	+	+	+
Land development	+	+	+	+
3. Production or acreage controls	-	-	-	-
4. Compulsory food requisition	-	-	-	-
5. Production subsidy	-	-	-	-
6. Deficiency payment	-	-	-	-
7. Guaranteed price	-	-	-	-
8. Price regulation	+	-	-	-
<b>Marketing and Processing Level</b>				
1. Intervention buying or price support program	+	+	+	-
2. Food subsidies to consumers	-	-	-	+
3. Excise taxes	-	-	-	-
4. Investment of state of industry	+	+	+	+
5. Public investment: research, extension and training	+	+	+	+
<b>International Trade</b>				
1. Import tariff or surcharge	-	+	+	+
2. Import / export quota	+	+	+	+
3. Export subsidies or tax	+/-	+	+	+

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The new policies related to agriculture along with a series of other macro policies in recent year have had a great impact on agricultural production in Vietnam, particularly on rice production. Rice yield increased from 2.08 tons/ha in 1980 to 3.22 tons/ha in 1989 and to 3.57 tons/ha in 1994. Rice production grew from 11,647,400 tons in 1980 to 18,996,300 tons in 1989 and to 23,528,200 tons in 1994. Basically, this has facilitated Vietnam to move from a position of serious food shortage to become a country with enough food for its population, with enhanced food security and a food surplus that allows rice exports of 1.5 to 2.0 million tons a year. This is also somewhat similar to the case of maize and soybean. A series of major agricultural policies are responsible (Nguyen Cong Tan 1995).

### *Farm household economy of agriculture*

During period of the centrally planned economy, the state and collective economic sectors were the base of the agricultural economy of the country. The role of the farm household economic sector was not properly recognized. Since 1988, each farm household has been considered as an independent, self-directed economic unit that has the right to plan and operate its own farm and business. The state has also reformed management of state enterprises and agricultural cooperatives, encouraged development of a private economy in agriculture and created a favourable environment for development of all economic sectors.

### *Land*

Since 1988, especially after the New Land Law was approved by the National Assembly of Vietnam, land has been allocated to farmers on a long term and stable basis. Farmers consider land as sacred property and the potential capacity of tens of millions of farmers has been fully mobilized for producing more wealth for themselves and society when they become the real owners of their land.

### *Agricultural land utilization tax*

Previously, the agricultural tax was one of the important sources of national income. Recently, the state enacted a new law of agricultural land utilization tax to facilitate farmers to improve their farming and living conditions. Under this new law, the rate of tax paid by farmers to the state is about 60% of what it was previously and it is stable for a long term.

### *Credit for farm households*

Recently, a policy on rural credit for farmers was adopted by the state. In 1993, 4,000 billion VND credit (equivalent to US\$ 360 million) was available for over 3 million farm households. This has helped farmers to avoid high interest loans from noninstitution sources.

### *Science, technology and agricultural extension.*

Many varieties and new technologies of rice, maize, soybean and cassava have been introduced to farmers to improve their production and business efficiency.

### *Circulation of agroproducts and agricultural input materials*

“Commodity checks and barriers” applied previously have been eliminated. The state has enacted a new mechanism of agro-product distribution that allows free circulation for selling products and buying input materials. However, in the market economy practice, the state has applied policies to stabilize prices of agro-products and input materials with a balance acceptable for both producers (or sellers) and consumers. To facilitate these policies, the state

established a national reserve fund and a price stabilization fund to regulate supply and demand relationships of agro-products and input materials. For example, the state uses part these funds annually to regulate the prices of rice and urea in favor of farmers.

### *Rice*

In the agriculture of Vietnam, rice was, is and will continue to be the most important food crop. Rice is a staple food for Vietnamese people. Therefore, priority continues to be given to rice production.

During 1989 to 1993, 160,000 ha of newly reclaimed land in Dong Thap Muoi and Long Xuyen Triangle within the Mekong River Delta was put into rice production. This has contributed considerably in rice production of the country.

During the past 40 years, around 24,000 billion VND (at current prices) was invested for irrigation and drainage systems in agriculture, basically for rice production.

Previously, there were many rice exporters, which had a negative effect on buying and selling prices of the exporters. Therefore, in 1995, the state decided to allow only 15 rice exporters. From July 1, 1996, tax for rice export was reduced from 3% to 0%.

### *Maize*

The Ministry of Agriculture and Rural Development recently established a maize program which focuses on improvement of maize production using improved varieties, especially hybrid varieties, and improved cultural practices. The state has allowed importers to import hybrid maize seed, and at the same time, the state encourages hybrid seed production in Vietnam. In North Vietnam, if the maize is planted as a winter crop, there is no irrigation fee and agricultural tax for this crop. As a result of these measures, the production of maize has improved considerably.

### *Soybean*

Soybean is actually an important food crop in Vietnam, but, it is not considered as a principle commodity in the market.

Like maize, if soybean is planted as a winter crop, the irrigation fee and agricultural tax are free for this crop season. From 1989 up to now, there were no measures to regulate the soybean market and market development for soybean was not promoted. This commodity has been totally directed by the market.

### *Cassava*

According to a cassava survey conducted in 1990-1992, the major constraints for cassava production are low profitability, low soil fertility, large price variation and market demand problems (Binh et al. 1992).

There are some possible solutions for these constraints. In terms of policy measures, under the policy for encouraging agricultural development by various sectors of the economy, foreign companies and individuals are encouraged to make direct investments or establish joint-ventures with different economical sectors of Vietnam to develop agriculture, particularly food processing. Recently, Vedan Company invested in a cassava processing factory in Dong Nai province. The factory has a capacity to process 800 tons of fresh cassava root per day. After construction of this factory, cassava production in South Vietnam has developed dramatically.

## 2.4 Demand projection

### 2.4.1 Rice

The total domestic demand for paddy rice consists of seed demand and demand for rice and rice products. For 1996 to 2001, the planted area of rice was estimated based on the growth rate of planted area of rice from 1990 to 1994. Quantities demanded for seed are estimated by multiplying the planted area by the seed rate of 0.120 ton per ha (Table 2.19).

**Table 2.19 Projected demand for seed of rice, 1996-2001.**

Year	Planted Area (ha)	Seed Rate (t/ha)	Seed Demand (t)
1996	6,952,160	0.120	834,259
1997	7,092,010	0.120	851,041
1998	7,231,860	0.120	867,823
1999	7,371,710	0.120	884,605
2000	7,511,560	0.120	901,387
2001	7,651,410	0.120	918,189

In Vietnam, most rice is used for domestic consumption, which has an increasing trend through time. The projection of domestic demand for rice was based on the domestic usage from 1990 to 1994. A simple linear regression was applied in this projection:

$$QDR_t = 15,175,110 + 988,193 T$$

$$r^2 = 0.978$$

Where:

$QDR_t$  = Quantity demanded for rice in year t

T = time

Year 1990 = 1

Table 2.20 shows the quantities demanded of paddy rice for domestic consumption from 1996 to 2001. Demand of rice and rice products will be 22,092,463 tons in 1996 and will increase to 27,033,429 tons in 2001. Seed demand of rice will be 834,259 tons in 1996 and will increase to 918,169 tons in 2001. Total demand for paddy rice will be 22,926,722 tons in 1996 and will increase to 27,951,598 tons in 2001.

**Table 2.20 Projected demand for paddy rice in tons, 1996-2001.**

Year	Demand of Rice and Rice Products	Seed Demand	Total Demand
1996	22,092,463	834,259	22,926,722
1997	23,080,657	815,041	23,931,698
1998	24,068,850	867,823	24,936,673
1999	25,057,043	884,605	25,941,648
2000	26,045,237	901,387	26,946,624
2001	27,033,429	918,169	27,951,598

### 2.4.2 Maize

The domestic demand of maize involves seed demand and demand for maize and maize products. For the projection of domestic demand of maize from 1996 to 2001, the planted area is estimated based on growth rate of planted area from 1990 to 1994. Quantities demanded for seed are estimated by multiplying the planted area by the seed rate of 0.030 ton per ha. The projection of domestic demand for maize was based on the domestic utilization from 1990 to 1994.

A simple linear regression was used in the projection of domestic demand for maize.

$$QDM_t = 423,127 + 100,927 T$$

$$r^2 = 0.6162$$

Where:

$QDM_t$  = Quantity demanded for maize in year t

T = time

Year 1990 = 1

Projected quantities demanded for domestic consumption from 1996 to 2001 are shown in Table 2.22. Demand for maize and maize products will be 1,112,134 tons in 1996 increasing to 1,612,854 tons in 2001. Seed demand for maize will be 17,487 tons in 1996 and 21,406 tons in 2001. Total demand for maize will be 1,129,621 tons in 1996 and will increase to 1,634,260 tons in 2001.

**Table 2.21 Projected demand for seed of maize 1996-2001.**

Year	Planted Area (ha)	Seed Rate (t/ha)	Seed Demand (t)
1996	582,900	0.30	17,487
1997	609,030	0.30	18,271
1998	635,160	0.30	19,055
1999	661,290	0.30	19,839
2000	687,420	0.30	20,623
2001	713,550	0.30	21,406

**Table 2.22 Projected demand for maize in tons, 1996-2001.**

Year	Demand of Maize and Maize Products	Seed Demand	Total Demand
1996	1,112,134	17,487	1,129,621
1997	1,212,278	18,271	1,230,549
1998	1,312,422	19,055	1,331,477
1999	1,412,565	19,839	1,432,404
2000	1,512,709	20,623	1,533,332
2001	1,612,854	21,406	1,634,260

### 2.4.3 Soybean

The total domestic demand for soybean includes seed demand and demand for soybean and soybean products. For the period 1996 to 2001, the planted area of soybean is estimated based on the growth rate of planted area of soybean from 1989 to 1994. Quantities demanded for seed are estimated by multiplying planted area by the seed rate of 0.030 ton per ha (Table 2.23).

Most soybean in Vietnam is used for domestic consumption, which has increased strongly. The utilization of soybean from 1990 to 1994 is the base for projection of domestic demand for soybean.

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The projection was carried out using a simple linear regression:

$$QDS_t = 30,116.2 + 20,968.2 T$$

$$r^2 = 0.9820$$

Where:

QDS = Quantity demanded for soybean in year t

T = time

Year 1990 = 1

Table 2.24 indicates that domestic demand for soybean and soybean products will be 172,924 tons in 1996 and will increase to 277,012 tons in 2001. Seed demand for soybean will be 3,970 tons in 1996 and 4,723 tons in 2001.

**Table 2.23 Projected demand for seed of soybean, 1996-2001.**

Year	Planted Area (ha)	Seed Rate (t/ha)	Seed Demand (t)
1996	132,348	0.30	3,970
1997	137,362	0.30	4,120
1998	142,376	0.30	4,271
1999	147,390	0.30	4,422
2000	152,405	0.30	4,572
2001	157,419	0.30	4,723

**Table 2.24 Projected demand for soybean in tons, 1996-2001.**

Year	Soybean and Soybean Products	Seed Demand	Total Demand
1996	172,924	3,970	176,894
1997	193,742	4,120	197,862
1998	214,559	4,271	218,830
1999	235,376	4,422	239,798
2000	256,194	4,572	260,766
2001	277,012	4,723	281,735

Total domestic demand for soybean will be 176,894 tons in 1996 and it will increase to 281,735 tons in 2001.

### 2.4.4 Cassava

The total area of cassava production for 1996 to 2001 is projected based on data from 1990 to 1994 with the following simple linear regression equation:

$$QDC_t = 257.8 + 5.72 T$$

$$r^2 = 0.6747$$

Where:

QDC<sub>t</sub> = Total cassava production area at year t

T = time

Similarly, the total production of cassava for year 1996 to 2001 is projected based on data from 1990 to 1994 with the following simple linear regression equation:

$$QDC_t = 2,309.07 + 48.15 T$$

$$r^2 = 0.4735$$

Where:

$QDC_t$  = Total cassava production at year t

T = time

In the same way, the cassava quantity for export for 1996 to 2001 is also projected based on data from 1992 to 1995 with the following simple linear regression equation:

$$QDC_t = -91,212 + 78,724.8 T$$

$$r^2 = 0.8299$$

Where:

$QDC_t$  = Quantity demanded for cassava export at year t.

T = time

Table 2.25 shows that the total area of cassava production will be 297,840 ha in 1996 and 326,440 ha in 2001. Correspondingly, total cassava production will be 2,646,120 tons in 1996 and 2,886,870 tons in 2001. The quantities demanded for domestic consumption will be 2,343,708 tons in 1996 and 2,190,834 tons in 2001.

**Table 2.25 Domestic demand of cassava for 1996 to 2001.**

Year	Production Area (ha)	Total Production (t)	Export* (t)	Domestic Demand (t)
1996	297,840	2,646,120	302,412	2,343,708
1997	303,560	2,694,270	381,137	2,313,133
1998	309,280	2,742,420	459,862	2,282,558
1999	315,000	2,790,570	538,586	2,251,984
2000	320,720	2,838,720	617,331	2,221,389
2001	326,440	2,886,870	696,036	2,190,834

\*Although most of the cassava export during 1992-1995 was in the form of dry chips, the projected export is reported here as fresh root equivalent.





### 3. Market Potential

The domestic marketing situation, as well as the external trade performance and relevant policies, for rice, maize, soybean and cassava are discussed in this section.

#### 3.1 Market/processing constraints and policies

##### 3.1.1 Rice

###### *Marketing participants and marketing channels*

Since 1988, with new government policies, marketing/processing participants have diversified in both public and private sectors. The key participants are farmers, state companies and private traders. After Resolution 10 was adopted in 1988, farmers received full rights to transport and sell their surplus rice. This has encouraged farmers to sell their surplus rice and new rice circulates freely. This is favourable not only for farmers (producers) but also for traders, processors, exporters and consumers. A large difference in rice prices among different regions of the country existed until 1988 (Table 3.1).

**Table 3.1 Regional rice prices in VND/kg, 1988-1993**

Region	1988	1990	1992	Sept. 1993
Mekong River Delta	400	950	1,800	1,800
Ho Chi Minh City	550	1,100	2,100	2,000
Hanoi	750	900	900	1,800

Source: Ministry of Agriculture and Food 1994.

The system of state companies operates at the central level (Vinafood I in the North; Vinafood II in the South; Vinafood III in the Central); at the provincial level (each province, in general, has one food company); and at the district level (each district, in general, also has one food company).

Since 1988, the state companies have no longer had financial support from the government. The state companies faced difficulty competing with private traders in the rice market. For example, there were more than 3,000 rice stores of state companies in Ho Chi Minh City before 1988, but only around 300 rice stores in 1994. Private rice stores supply higher quality rice to consumers at the same price as the state stores. Since 1994, the 300 state rice stores in Ho Chi Minh City have changed to doing business with many other commodities than rice.

In the domestic rice market, provincial state companies and central state companies are not able to compete with private companies. Therefore, the private sector plays a principal role in the domestic rice market. At present, the state companies are primarily involved in rice export.

Private traders include the following participants:

- Village assemblers, who buy rice from farmers and then sell to consumers. This is very popular in the North and Central parts of Vietnam.
- Local assemblers, who buy rice from farmers and then sell to assembly stations of state companies. In Vinh Long province in 1993, 10-47% of the rice went to this channel (Figure 3.1).
- Local Rice Millers who buy rice from farmers, mill the rice then sell their rice to the

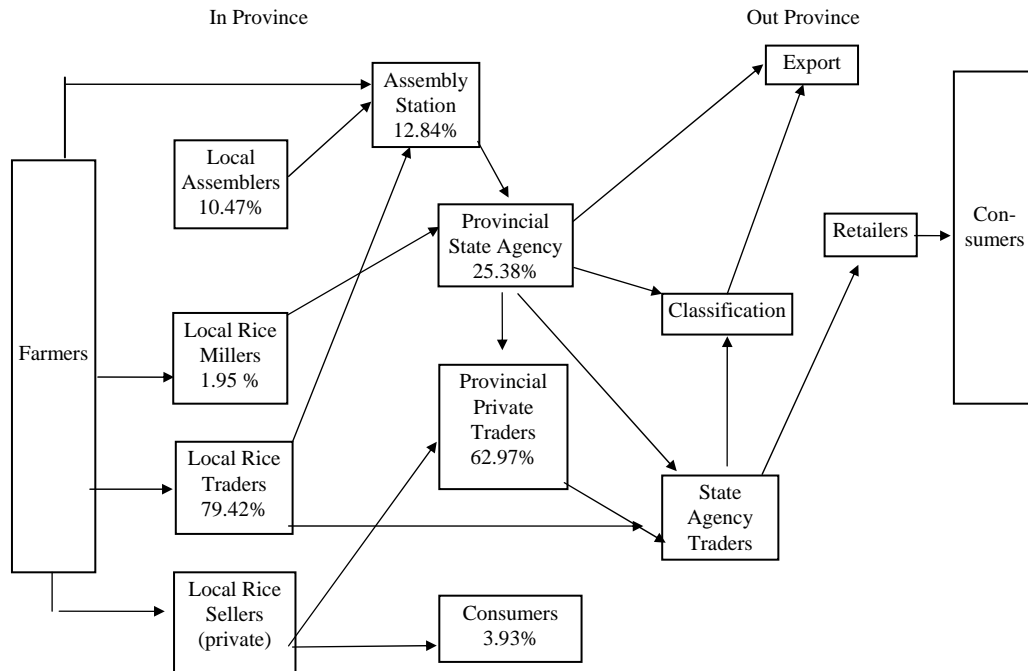
state companies. According to a survey conducted in 1993, in Vinh Long province, 1.95% rice went to this channel.

- Local rice traders who buy rice from farmers and then sell to other traders. The results of the survey conducted in Vinh Long in 1993 indicate that 79.42% of the rice was in this channel.
- Local rice sellers who buy rice from farmers and then sell to consumers or other traders. There was 7.98% of Vinh Long rice in this channel.
- Provincial state agencies that buy rice from rice millers, then export (or export after classification) or sell to other traders in other provinces. In Vinh Long 25.35% of the rice was in this channel.
- Provincial traders who buy rice from local rice millers, local rice traders, and local rice sellers and then sell their rice to state agencies that export the rice after classification or sell the rice to retailers. In 1993, in Vinh Long, 62.97% of the rice was in this channel.

### Rice processing

In most cases, the surplus rice of farmers is bought by private traders, who then sell the paddy rice to processors (private processors or state processors).

Figure 3.1 Rice marketing channels, Vinh Long, 1993.



*Constraints*

- With the recent improvements in the rice processing industry, rice quality for export has improved. However, grain color is not uniform.
- For rice exports, the facilities for packaging, loading and unloading, storage are not very good.
- Rice exporters lack experience in rice marketing and in establishing long term relationships with international traders and markets.
- In past years, organization of rice exports and management of export quotas were poor. Floor prices for rice export were not flexible. The management of rice marketing is shown in Figure 3.2.
- Prices fluctuate widely, especially after the harvest when low prices prevail.

### **3.1.2 Maize**

*Marketing participants and marketing channels*

Market participants include farmers, local assemblers, traders, processors, and feed processors. Like rice, after Resolution 10 was adopted in 1988, farmers received full rights to transport and sell their surplus maize. Maize is freely circulated (Figure 3.3). In the maize production area, farmers usually sell their surplus maize to local assemblers or to local consumers. Many farmers in mountainous areas consume maize as their staple food, particularly in the North Mountain and Midland region.

Local assemblers buy maize from farmers and then sell to local processors or traders. Local assemblers can be village assemblers, commune assemblers or district assemblers. Traders buy maize from local assemblers and transport it to areas where animal husbandry is intensive for feed processing. Traders also sell maize to exporters for export.

Most maize processors are in the intensive animal husbandry area. Processors buy maize from traders, process it into maize flour and sell it to farmers raising animals. Feed processors buy maize from traders and process it into animal feed.

*Constraints*

In the North of Vietnam, North Mountain and Midland region accounted for 46% of the total maize production area in 1993 (226,100 ha/496,500 ha). However, the infrastructure in this region is very poor. Therefore, transportation of surplus maize to other regions is difficult.

**Figure 3.2 Management of rice marketing, 1995.**

In general, the facilities for packaging, storing, loading and unloading maize are inadequate. Prices fluctuate from year to year and farmers lack market information.

### **3.1.3 Soybean**

#### *Marketing participants and marketing channels*

Soybean is mainly for domestic consumption and partly for export. Private traders, state traders and state firms and food processors are the key participants in the soybean market (Figure 3.4).

Private traders are the principal participants in domestic market. Moreover, private traders play a major role in the unofficial import of soybean from China and Cambodia. Surplus soybean of farmers is mainly circulated in the domestic market. The soybean is usually sold in village markets, and district markets. Private traders buy soybean from farmers and then sell to state traders, food processor and feed processors. State traders basically buy soybean from private traders and then export the soybean.

Food processors buy soybean from private traders and also from farmers. Food products from soybean in Vietnam are diverse, including tofu, soy milk, soy curd, soy sauce, and *tuong*. Most of these products are from traditional simple processing, except soybean oil which comes from processing plants. The processors sell their products to retailers and consumers.

Feed processors buy soybean from private traders and from farmers and sell feed to feed retailers and animal raisers.

#### Constraints

- It is estimated that around 90% of the total soybean production is marketed. However, the soybean supply is not stable.
- North Mountain and Midland region is the biggest production area of soybean accounting for 36% of the total soybean production area of the country in 1993. However, the infrastructure in this region is still poor. Therefore, transportation of soybean is not easy.
- Facilities for packaging, storing, loading and unloading are inadequate. Market information services are not available.

### 3.1.4 Cassava

#### Marketing participants and marketing channels

Cassava is mainly for domestic consumption and partly for export. Usually, cassava serves as a buffer food. When farmers loss their rice crops because of typhoon, flooding, etc., cassava in the upland areas becomes very important. Most cassava is used as food for people in that case. When farmers have success in rice harvests, cassava is mainly used for animal feed or for processing (Table 3.2)

**Table 3.2 Cassava utilization in different regions of Vietnam (%) in 1991.**

Region	Human consumption	On-farm Animal Feed	Processing	Fresh Root Sale
North Vietnam	19.1	34.9	7.0	39.0
North Mountainous Region	15.4	39.4	6.5	38.7
Red River Delta	22.0	23.8	3.4	50.8
North Central Coast.	27.5	28.8	11.2	32.5
South Vietnam	6.7	13.7	24.4	55.2
South Central Coast	10.9	19.4	40.0	29.7
Central Highlands	2.1	12.2	32.7	53.0
Southeastern Region	5.2	11.8	8.8	74.2
Total Vietnam	12.2	22.4	16.8	48.6

Source: Cassava survey in Vietnam, 1991. A benchmark study on cassava production, processing and marketing in Vietnam. Proceedings of a workshop held in Hanoi, Vietnam. Oct. 29-31, 1992. MAFI-CIAT.

**Figure 3.4 Soybean marketing channels in Vietnam, 1995.**

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**Figure 3.5 Fresh cassava roots marketing channels in South Vietnam, 1991.**

Source: Socio - economic aspects of cassava production, marketing and rural processing in Vietnam. Pham Thanh Binh, Nguyen Minh Hung, Le Cong Tru and Guy Henry. 1992. A bench mark study on cassava production, processing and marketing in Vietnam. Proceedings of a workshop held in Hanoi, Vietnam, Oct. 29-31, 1992. MAFI-CIAT.

**Figure 3.6 Fresh cassava root marketing channels in North Vietnam, 1991.**

Source: Nguyen Van Thang, 1992. A benchmark study on Cassava Production, Processing and Marketing in Vietnam. Proceedings of a workshop held in Hanoi, Vietnam, Oct. 29-31, 1992. MAFI-CIAT.

Different market participants are involved depending on the kind of cassava product. In the fresh root market, the key marketing participants are local assemblers, traders, village processors and processing plants. Local assemblers buy fresh roots from farmers and then sell them to traders. Traders bring fresh roots to the processing area for sale to village processors (in North Vietnam) or processing plants and rural processors (in South Vietnam). Village starch processors buy fresh roots from traders and then process them into starch. Village maltose processors buy starch from starch processors and process it into maltose. Village noodle processors buy starch from starch processors and process it into noodles. Village alcohol processors buy fresh roots or dry chips from traders and process them into alcohol.

Village dry chip processors buy fresh root from farmers and make dried chips. In many cases, cassava producers (farmers) make dried chips themselves acting as chip processors. Chip processors sell dried chips to state traders for export or to cassava flour processors and alcohol producers.

In Vietnam, cassava is a most complicated commodity in processing and marketing. There are many kinds of cassava products: fresh root, dry chips, flour, dry starch, wet starch, maltose, alcohol, noodles, monosodium glutamate, etc. Since 1988, like other agricultural products, cassava products have circulated freely, which is favourable for cassava production, processing and marketing. Government has encouraged in-country investment as well as foreign investment for the cassava processing industry.

### Constraints

- Low profitability, limited market demand, and fluctuation in price were the major constraints to cassava production in Vietnam reported in 1991 (Table 3.3).
- The lack of price information and fluctuation in price due to inequilibrium of supply and demand result in market inefficiency.
- In cassava exports, the export price was not flexible due to lack of updated world price and trading inefficiency.
- Fluctuation in raw material supply and quality are constraints to cassava processing.

**Table 3.3 Relative importance of constraints to cassava production in Vietnam, 1991.**

Province	Low Yield	Low Soil Fertility	Typhoon Damage	High Labour Requirement	Marketing	Price Variation	Profitability
Ha Tuyen	1						
Hoang Lien Son	4	1			2		3
Bac Thai						1	
Vinh Phu	1		2	3		4	
Ha Bac	2	1					
Ha Son Binh		1	3		4	2	
Hai Hung				1		2	
Nghe An/Ha Tinh	3	4	3	2	1	5	
Quang Binh		1			2		1
Dac Lac					1		
Lam Dong	1				2		
Song Be	4			2	1	3	
Tay Ninh				2	1	3	
Dong Nai				1	2		

Source: Vietnamese Benchmark Study, 1991. Pham Thanh Binh, Nguyen Minh Hung, Le Cong Tru and Guy Henry. A bench mark study on Cassava Production, Processing and Marketing in Vietnam. Proceedings of a workshop held in Hanoi, Vietnam, Oct. 29-31, 1992. MAFI-CIAT.

Note: high importance = 1; low importance = 5.

### 3.2 External trade performance and policies

In Vietnam, rice, maize, soybean and cassava are very important commodities for export. Export organization, export price and export taxation are the major policies impacting on their external trade performance.

#### 3.2.1 External trade performance

##### *Rice*

Before 1989, Vietnam annually imported a large quantity of rice, with a peak import of 482,000 tons in 1986 (Table 3.4). Fortunately, with new policies and *doi moi*, Vietnam became an important rice exporter in 1989. In 1995, Vietnam exported 1,921,955 tons of rice with a value of US\$ 495,849,916 or US\$ 257/ton.

**Table 3.4 Rice export and import of Vietnam, 1976 to 1995.**

Year	Export		Import	
	Volume (‘000 tons)	Value (‘000 US\$ )	Volume (‘000 tons)	Value (‘000 US\$ )
1976	5		148	
1977	4		182	
1978	17		34	
1979	5		117	
1980	33		201	
1981	10		29	
1982	17		185	
1983	94		46	
1984	83		322	
1985	59		336	
1986	132		482	
1987	120		322	
1988	91		199	
1989	1,420.2		55	
1990	1,624.4			
1991	1,033.0			
1992	1,753.946	327,987.902		
1993	1,692.921	360,592.173		
1994	1,870.000	413,270.000		
1995	1,921.955	495,849.916		

Source: Statistical Year Book, 1993, 1994. General Statistical Office. Statistical Publishing House. 1994, 1995. General Bureau of Custom. Dept. of Planning and Projection, Min. of Agriculture and Rural Development.

Despite typhoons and heavy flooding in many areas, from January 1 to October 31, 1996, Vietnam exported 2.52 million tons of rice. It is expected that Vietnam is going to reach more than 3 millions tons of rice export in 1996.

Rice export quantity has increased. At the same time, with improvement in the rice processing industry and accumulated experience in marketing and organization, rice quality has also improved as has the export price.

##### *Maize*

Since 1976 to 1980, Vietnam imported maize (Table 3.5). The quantity of maize imported was highest in 1978, at 104,900 tons. However, in 1980, only 4,800 tons of maize was imported.



In 1983, Vietnam exported 20,600 tons of maize. The peak of maize export was 119,985 tons in 1992, followed by 109,760 tons in 1994. However, in 1995, only 42,616 tons were exported (Table 3.5).

**Table 3.5 Maize export and import of Vietnam, 1976-1995.**

Year	Export		Import	
	Volume (‘000 Tons)	Value (‘000 US\$ )	Volume (‘000 Tons)	Value (‘000 US\$ )
1976			9.4	
1977			95.9	
1978			104.9	
1979			20.7	
1980			4.8	
1981				
1982				
1983	20.6*			
1984	13.2*			
1985	8.2*			
1986	25.7*			
1987	53.6*			
1988	49.6*			
1989	150.7*			
1990	36.0*			
1991	60.7*			
1992	119.985**	14,590.678**		
1993	62.103**	7,519.063**		
1994	109.760**	13,973.378**		
1995	42.616**	7,721.219**		

Source: \* Division of Statistics, Dept. of Planning and Projection, Min. of Agriculture and Rural Development.

\*\*General Bureau of Customs.

**Table 3.6 Soybean export and import of Vietnam from 1982-1995.**

Year	Export		Import	
	Volume (‘000 tons)	Value (‘000 US \$)	Volume (‘000 tons)	Value (‘000 US \$)
1982	6.2*			
1983	6.0*			
1984	4.7*			
1985	8.3*			
1986	56.9*			
1987	28.6*			
1988	68.6*			
1989	39.6*			
1990	31 *			
1991	12.6*			
1992	1.398**	322.804	10***	
1993	1.978**	732.697	15***	
1994	4.720**	1,672.704	15***	
1995	1.178**	675.814		

Source: \* Ministry of Agriculture and Rural Development.

\*\* General Bureau of Customs.

\*\*\* Estimated by Tran Cong Sach, Ministry of Trade

### *Soybean*

Soybean export was peaked at 68,600 tons in 1988 (Table 3.6). However, since then soybean exports have declined drastically to a low of 1,178 tons in 1995. In 1986, almost 70% of soybean production was for export (56,900 tons). However, in 1993, soybean export

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accounted for only 0.2% (1,978 tons) of the total production (105,700 tons).

It is clear that soybean export has declined drastically. The reason for this is that the price of soybean is higher in Vietnam than in the international market. During 1992-1994, the price of soybean in the domestic market fluctuated between 4,000 to 4,500 VND/kg while the price in the international market was US \$ 210-220/ton, FOB. Moreover, unofficial import of soybean has increased (10,000 tons for 1992, 15,000 tons for 1993 and also for 1994, Table 3.6). The domestic demand of soybean for both food processing and feed processing has increased rapidly.

#### *Cassava*

Cassava export of Vietnam is mainly in the form of dry chips. Table 3.7 shows that cassava export increased from 5,598 tons in 1992 to 66,602 tons in 1995 worth US\$ 688,796 and US\$ 8,524,280 respectively. It is evident that cassava export has increased dramatically. The export of this commodity seems to be very promising.

**Table 3.7 Cassava Export of Vietnam from 1992-1995.**

Year	Volume (tons)	Value (US \$)
1992	5,598	688,796
1993	9,800	705,600
1994	23,600	1,710,000
1995	66,602	8,524,280

Source: General Bureau of Custom, 1996.

### 3.2.5 Major policies affecting external trade

#### *Rice*

- Since Resolution 10, 1988, rice has freely circulated. Both public and private sectors are allowed to trade in the rice market, which limits fluctuation of rice price over time and between locations.
- Rice enterprises are supported by favourable interest rate loans from the government to purchase surplus rice from farmers.
- If the price of rice in the domestic market and international market is low and the surplus rice of farmers is not yet sold, farmers lack capital for rice production. In this case, farmers can get low interest loans from the government to maintain their rice production.
- The government has a national reserved rice source to insure the rice supply when natural calamity occurs.
- For rice export, the floor price is fixed.
- In 1992, there were more than 40 rice exporters. Competition among these exporters resulted in a low export price. Even some inexperienced exporters participated in rice exporting. Therefore, some contracts were signed but were difficult to implement. In late 1995, only 15 exporters were allowed to handle rice exports.
- Recently, the government decided to reduce the tax for rice exports from 3% to 0%, effective from July 1, 1996. This decision has prompted exporters to buy surplus rice from farmers for export.
- Previously, export quotas were distributed to rice exporters at the beginning of the year. Since 1992, in principle, the export quota can be issued only after signing an export contract.
- Since 1993, based on proposals from the Ministry of Agriculture and Rural

Development, the Ministry of Trade and the Ministry of Planning and Investment, the Premier decided to approve the total volume of rice for export. The Ministry of Trade is responsible for supervision of rice exports and imports.

- The Ministry of Trade in cooperation with the Ministry of Agriculture and Rural Development, and State Price Committee determine the floor price for export.

### *Maize*

Like rice, after Resolution 10, maize has circulated freely, which limits fluctuation of maize prices. Production of maize has been promoted, especially by the use of hybrid seed. It is estimated that in 1995, total area of maize production using hybrid seed was around 200,000 ha accounting for 36% of total production area (556,800 ha). Total maize production increased from 428,800 tons in 1980 to 1,177,200 tons in 1995 (Table 3.12). Both public and private sectors are allowed trade in the maize market.

Maize producers are supported by the government with low interest rate loans; especially for producers planting hybrid maize.

### *Soybean*

During the 1980s, soybean was an important export commodity of Vietnam. However, soybean export has declined strongly as discussed in the previous section. In general, soybean is not considered a major commodity.

Export marketing and identifying markets for export have been done completely by state enterprises. Organization of exports is weak and not active.

The domestic market of soybean is dominated by the private sector.

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## 4. New and Emerging Products or Market

### 4.1 Cashewnut

Cashewnut has been planted in Vietnam since the 16<sup>th</sup>-17<sup>th</sup> century. In the 1980's, cashewnut became a good cash crop. Especially since 1990, cashewnut has been accepted as a very promising commodity for export. Now the majority of cashewnut production is for export. Domestic consumption is for baked goods, candies, and processed cashewnut nut.

**Table 4.1 Area planted to cashewnut in Vietnam, 1992 - 1995.**

Region / Province	1992	1993	1994	1995
Whole Country (hectares)	78,983	122,530	172,742	187,553
South.	78,983	122,530	172,742	187,553
South Central Coast	2,051	18,350	18,963	21,212
Quang nam - Da nang	-	-	-	-
Quang ngai	-	-	-	265
Binh dinh	2,051	3,537	4,008	5,657
Phu yen	-	2,313	-	-
Khanh hoa	-	-	2,313	1,864
Ninh thuan	-	-	142	446
Binh thuan	-	12,500	12,500	12,980
Central Highlands	554	13,760	20,569	28,451
Gia lai	554	3,228	5,905	11,482
Dac lac	-	4,551	7,502	9,627
Lam dong	-	4,981	7,162	7,342
North East South	76,378	90,420	133,210	137,414
Dong nai	21,774	27,365	31,946	32,990
Song be	44,089	57,928	78,563	77,539
Tay ninh	1,700	4,606	4,556	7,506
TP. Ho Chi Minh	521	-	2,283	2,133
Baria - Vung tau	8,815	-	15,862	17,246
Mekong River Delta	-	-	-	476
Long an	-	-	-	476

Source: General Statistical Office, Statistical Data of Agriculture, Forestry and Fishery, 1985-1995- Statistical Publishing House, Hanoi 1996.

#### 4.1.1 Production

In 1992, the total area of cashewnut was 78,983 ha with the North East South the leading production region (76,378 ha). Supprisingly, by 1995, the total area of cashewnut hed increased to 187,553 ha with the North East South still the leading production region with 137,414 ha (Table 4.1).

The total cashewnut production was 23,730 tons in 1992, increasing to 50,676 tons in 1995 (Table 4.2). Since 1993, Vietnam has ranked number 3 in the world in cashewnut production after Brazil and India.

**Table 4.2. Havested Area, Yield and Production of Cashewnut in Vietnam, 1992-1995**

Year	Havested Area (ha)	Yield (kg/ha)	Production (tons)
1992	32,009	741	23,730
1993	69,089	674	46,550
1994	87,957	590	51,885
1995	92,512	548	50,676

Source: General Statistical Office. Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi 1996.

#### 4.1.2 Processing

At present, Vietnam has 52 cashewnut processing plants with a total capacity of 100,000 ton/year. Most of the processing plants are concentrated in Song be, Dong nai, Tay ninh and Ho Chi Minh City. Unfortunately, several processing plants were build in provinces with only small areas of cashewnut production. Therefore, only 40-45% of total processing capacity has been utilized for processing. Moreover, there is strong competition in buying raw material for processing.

The cashewnut processing industry has concentrated only on cashewnut nut processing. High value added cashewnut products have not yet received much attention. However, recently, the quantity of high value added cashewnut products has been increased. For example, Cashewnut oil production was 380 tons in 1990 increasing to 7,500 tons in 1994 (Table 5.3).

**Table 4.3 Changes in cashewnut processing.**

Year	Cashewnut	Cashewnut oil
1990	480	380
1991	1,200	950
1992	2,400	1,900
1993	8,400	6,700
1994	8,900	7,500

Source: Agricultural Economic Institute. Economy of oil Crops. Agricultural Publishing House, 1995. Nguyen Tien Manh, Nguyen Dinh Long, Nguyen Huu Tien, Vu Ngoc Quyet, Ngo Hai and Duong Ngoc Thi.

#### 4.1.3 Efficiency of production

In comparison with other crops, net income for cashewnuts (1,200,000 VND) was lower than that for rubber (2,420,000 VND/ha), coffee (1,472,000 VND/ha) and tea (1,472,000 VND/ha). Nevertheless, the net income of cashewnut was much higher than that of groundnut (998,000 VND/ha), soybean (217,000 VND/ha), spring rice (431,000 VND/ha) and winter maize (503,000 VND/ha) (Table 4.4).

The value of a manday of labor was 19,800 VND for cashewnuts, much higher than that of coffee (12,000 VND), tea (12,000 VND), peanut (7,619 VND), soybean (5,368 VND), spring rice (6,236) and winter maize (7,294) (Table 4.4).

Moreover, the greatest advantage of cashewnut is that this crop can be planted in poor and relatively dry soil.

**Table 4.4 Economical efficiency of different crops.**

Parameter	Unit	Industrial Crops				Annual Crops			
		Cashewnut	Rubber	Coffee	Tea	Ground-nut	Soybean	Spring Rice	Winter Maize
Value of production	'000 VND/ha	3,900	9,305	8,700	8,950	5214	2742	3630	3080
Net in come	'000 VND/ha	1,200	2,420	1,472	1,472	998	217	431	503
Value per manday	VND/manday	19,800	18,500	12,000	12,000	7619	5368	6236	7294

Source: Agricultural Economics Institute, 1992-1993.

#### 4.1.4 Marketing

The demand of cashewnut for domestic market is still low. Estimatedly, less than 10% of the total production was for domestic market. This also means that more than 90% of the total production was for export.

Export volumes have varied over the years (Table 5.5) India was the biggest market for cashewnut export of Vietnam. Recently, China has also become a market for cashewnut export. From January to April 1996, Vietnam exported 287 tons cashewnut to Hongkong, 203 tons to USA and 131 tons to Australia (Table 4.6). The USA is potentially a very important market for the cashewnut export of Vietnam.

**Table 4.5 Cashewnut Export of Vietnam from 1990 to 1995.**

Year	Volume (ton)	Value ( )
1990*	24,700	
1991*	30,600	
1992**	43,886	30,706,200
1993**	39,285	54,331,155
1994**	47,961	47,193,624
1995**	16,88	37,594,482

Source: \* Statistical Year Book, 1994. General Statistical Office. Statistical Publishing House, 1995.

\*\* General Bureau of Custom, 1996

**Table 4.6 Cashewnut export of Vietnam from January to April, 1996.**

Country	Volume (tons)	Value (US\$)
Hongkong	287	1,219,589
USA	203	865,843
Australia	131	558,692
Canada	91	412,152
Netherland	58	250,076
Japan	26	112,630
England	14	38,222
Philippines	11	47,406
Libanon	4	13,502

Source: General Bureau of Custom, 1996.

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Basically, nutritious content of Vietnamese cashewnut is the same as that of cashewnut from other country. However, because of post harvest and processing technology, the quality of Vietnamese cashewnut products is not high. This results in a low export price. For example, in May, 1993, the price of cashewnut at the international market was US\$ 800 to 830/ton while the cashewnut export price of Vietnam was only US\$ 730 to 790/ton (Trade Information Center, Ministry of Trade, August, 1993).

### 4.1.5 Constraints

#### *Production*

- Cashewnut is not yet intensively farmed. Therefore, cashewnut productivity is still low.
- Lack of high yielding cultivars and uniform planting materials.
- The problems result in small sized, not uniform of cashewnuts.

#### *Processing*

- Only 40-45% of total capacity of cashewnut processing plants has been utilized.
- There is a strong competition in buying raw material for processing.

#### *Marketing*

- Market information is not always available for exporters, processors and farmers.
- Cashewnut price in the international market fluctuates over time.
- There is also a strong competition among exporters in the export cashewnut.
- The cashewnut export price of Vietnam is lower than that of other countries in the international market. The small size of Vietnamese cashewnuts is one of the reasons.

#### *Research*

- Not much attention has been given to cashewnut with respect to varietal improvement, cultural practices, socio-economic aspects and marketing.
- There is a lack of budget for research on cashewnut.

### 4.1.6 Government policies

- Low interest rate loans have been given to cashewnut farmers.
- The government of Vietnam has established Program 327, which provides green cover for hilly areas. Over 1991-1995, hundreds of billions of VND were invested for this program, which will continue until the year 2000. Farmers can obtain credit to expand the treed area, including cashewnut to cover the marginal land.
- The government invested in the construction of a series of cashewnut processing plants during past 15 years. At present, there are 52 cashewnut processing plants with around 50,000 workers who are mainly women.

### 4.1.7 Production and Market Potential

In South Vietnam, hundreds of thousands of hectares of marginal land can be planted by cashewnut. Cashewnut is an easy crop, so there is a great potential for development of this crop in Vietnam. With the socio-economic development progress, it may be expected that the demand for domestic consumption of cashewnut will increase. Furthermore, during recent years, cashewnut demand of the world market has increased, so there is a great potential for cashewnut development in Vietnam. It is expected that USA will be a very important market for cashewnut from Vietnam.



#### **4.1.8 Recommendations**

- Intensive farming practices should be applied to cashewnut cultivation.
- Improved varieties and uniform planting materials for farmers are required.
- More research needs to be done on varietal improvement, multiplication of uniform planting materials, cultural practices, socio-economic aspects and marketing.
- The volume of value added products for export should be increased through the processing industry.
- Financial support is required for cashewnut farmers, particularly in areas which have many poor farmers.
- More attention should be given to market information services.
- A more reasonable system for production, processing and marketing should be organized.

## **4.2 Cassava dry chips**

### **4.2.1 Cassava production**

Cassava is an important food crop in Vietnam. However, as presented in Table 3.16, the total production area decreased from 442,900 ha in 1980 to 256,800 ha in 1990 and then increased up to only 277,500 ha in 1995. Correspondingly, the total production decreased from 3,323,000 tons in 1980 to 2,211,500 tons in 1995.

The fluctuation of production was due to the major constraints such as low profitability, limited market demand, fluctuation in price and poor soil.

However, with considerable improvement in processing industry and market development recently, cassava production has increased, especially in the South of Vietnam (Table 3.17)

### **4.2.2 Cassava Processing**

#### *Simple processing*

Cassava is a buffer food crop in Vietnam. In the case of a rice crop failure, people consume more root crops including cassava and sweet potato. When farmers have a successful rice crop, most of the cassava and sweet potato is used for animal feed.

Traditionally, cassava has been simply processed into many kinds of cakes, boiled cassava and other forms at the household level. Recently, with the great improvement in rice production, the proportion of cassava utilized directly for food consumption for humans has decreased.

Approximately 50% of the cassava produced is processed into dry chips. In most areas, cassava is thinly sliced and then dried by sunlight for 2 to 3 days. Despite the introduction of various kinds of chipping machines, farmers prefer to use a simple chipping knife. The reason is that the average cassava production area per household is only 0.27 ha (Cassava Benchmark Study 1991) so this simple way of processing is more convenient and economical.

#### *Village scale cassava processing*

Village scale cassava processing is characterized by the organization of production and consumption of products at the village scale (Nghiem 1992). With village scale cassava processing, cassava is processed into wet starch, dry starch, maltose, noodle, alcohol, and cassava flour. There are a number of cassava processing villages such as, Duong Lieu (for starch, noodle and maltose), Laphu (maltose), VanHa (alcohol) in the North and Tra Co (for starch and flour) in the South.

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### *Cassava Processing Industry*

At present, there are several cassava processing plants in Vietnam. The cassava processing plant in Dong Nai is the largest. This plant, built in 1994 with investment from Taiwan, has a capacity of 800 tons of fresh cassava root per day. A series of products are produced by this plant including starch and monosodium glutamate.

A cassava processing plant was built in An Khê as a joint venture between Vietnam and Thailand. The capacity of this plant is 200 tons fresh cassava root per day. In Tay Ninh, there is also a cassava processing plant built by joint venture between Thailand and Vietnam. This plant has also a capacity of 200 tons fresh root a day. There is another cassava processing plant in Tay Ninh with a capacity of 400 tons fresh root per day.

In Kon Tum, there is one cassava processing plant with a capacity of 2,500 tons of cassava pellet per year.

#### **4.2.3 Cassava dry chips**

Equipment investment for dried chip processing is very low. The equipment involves very simple tools such as a chipping knife, storage baskets, drying facilities, etc. Of all the kinds of cassava processing, dried chip processing is the most simple. Raw material (fresh root) accounts for 79.1% of the investment in dried chip processing (Table 5.7).

Table 4.7. Production cost (dong/kg product) for cassava chipping, as well as starch, noodle, alcohol and maltose processing in selected provinces in Vietnam,1991.



**Table 4.8: Efficiency of cassava dried chips, starch, noodle, alcohol and maltose processing in selected provinces of Vietnam in 1991.**

Note: 1 US\$ = 7,000 VND

*Source:* A Benchmark study on Cassava Production, Processing and Marketing in Vietnam. Proceedings of a Workshop held in Hanoi, Vietnam. Oct. 29-31, 1992. MAFI - CIAT.

Table 5.7 shows that, production cost was 787 VND/kg for dried chips, 1,054 VND/kg for alcohol, 1,258 VND/kg for starch, 1,823 VND/kg for noodle and 1,901 VND/kg for maltose. Thus, the production cost for dried chips was the lowest. However, as indicated in Table 5.8 profit was only 113,860 VND/ton for dried chips while it was 130,750 VND/ton for starch, 417,000 VND/ton for noodle, 607,650 VND/ton for alcohol and 1,024,000 VND/ton for maltose.

Nevertheless, dried chip processing is the most popular processing method in Vietnam. As mentioned in previously, it has been estimated that around 50% of the total cassava production is usually processed into dried chips. The reason is that the majority of cassava farmers in Vietnam are small and poor. Dried chip processing is the simplest low cost technology suitable for them.

Fortunately, with export market developments, the dried chips export has increased recently. The volume and value of cassava export were 5,598 tons worth US\$ 688,796 for 1992 and 66,602 tons worth US\$ 8,524,280 for 1995 respectively (Table 4.6). The cassava export was mainly based on cassava dried chips.

#### **4.2.4 Marketing of cassava dried chips**

##### *Domestic Market*

In the local market, dried cassava chips are sold for household consumption for both human food and animal feed (Figure 5.1). During the rice shortage years, dried cassava chips are cooked in a mixture of rice and cassava dried chips for food. Recently, because of the surplus rice production, most dried cassava chips have been used for animal feed and other purposes.

Dried cassava chips can also be processed in to cassava flour and from cassava flour, various kinds of cakes can be processed by farmers for their home consumption or for sale in the local market. In many villages, dried cassava chips are processed into alcohol for home

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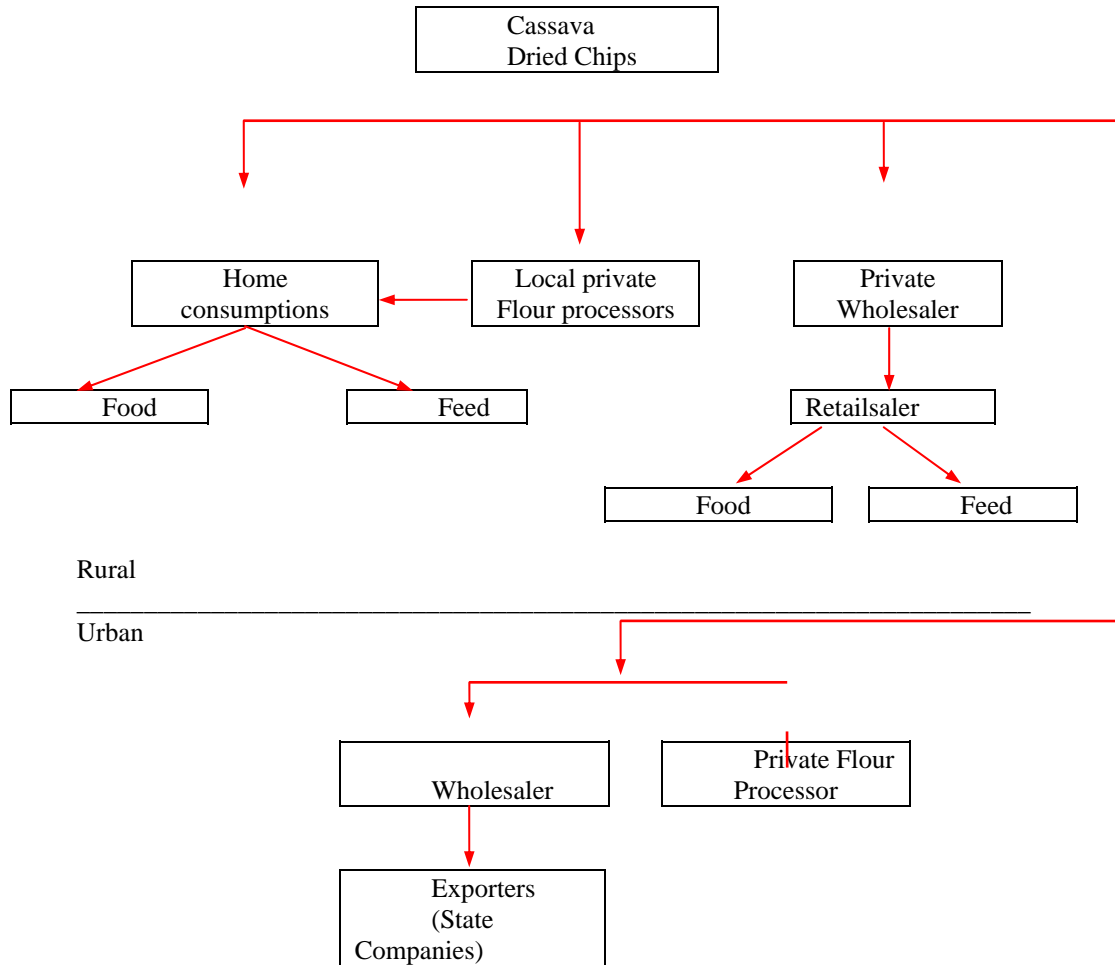
consumption or selling in the local market.

For many years in the past, dried cassava chips were stored and served as reserve food for farmers. This is of vital importance when farmers loss their rice due to natural calamity.

### *Foreign Market*

EU, China, Philippines, Hongkong are the major markets for cassava export of Vietnam.

**Figure 4.1 Cassava chips marketing channels in Vietnam, 1995.**



### 4.2.4 Constrains

#### Production.

- In many areas of cassava production, the soil is poor. In Northern Mountainous Region, soil erosion is big problem, because in many areas, cassava is planted in high slope land.

#### Processing.

- Recently, investment for cassava processing is limited only in South Vietnam.

- During harvesting time, in North Vietnam, lack of sunshine for drying cassava chips.

*Marketing*

- Lack of market information, fluctuation in price are the problems for cassava export.

*Research*

- Lack of funding for cassava research in all aspects such as varietal improvement, cultural practices, socio-economic aspects, processing and marketing.

**4.2.5. Government Policies.**

- Farmers can borrow favorable interest loan from Bank system of government such as Vietnam Bank for Agriculture, Bank for the Poor, etc.
- Recently, investment for cassava processing has been increased. Particularly, a series of cassava processing plants were recently built in South Vietnam as mentioned in previous section.

**4.2.6. Recommendation.**

- Soil improvement through intensive farming methods is required for cassava production.
- Soil erosion should be controlled by suitable cultural practices, farming system and others.
- There is a need to increase budget for cassava research and development.
- Investment for cassava processing needs to be in relative balance for both North and South Vietnam.
- Marketing information services for cassava is needed.

**4.3. Orange.**

Orange is one of the most popular fruit crops in Vietnam. With renovation (doi moi) policy, the living standard of people has been improved. This has resulted in increase in demand of fruits for domestic consumption. Orange is very promising commodity for domestic market.

**Table 4.9 Area and Production of Orange in Vietnam, 1985 – 1995**

Year	Area (ha)	Production (tons)
1985	12 720	99 302
1986	14 212	112 024
1987	14 164	102 980
1988	14 454	103 163
1989	14 132	100 998
1990	14 458	119 238
1991	21 198	121 094
1992	25 529	160 111
1993	44 535	249 699
1994	55 433	285 614
1995	59 516	379 405
Growth Rate (%)	18.7	15.8

Source: General Statistical Office. Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi-1996.

**4.3.1. Production.**

Total production of orange was 99 302 tons in 1985, increased up to only 119 238 tons in 1990. Surprisingly, it increased up to 379 405 tons in 1995. From 1985 to 1995, annual

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growth rate of orange production was 15.8% (Table 4.9). Orange production of the North was 31 944 tons in 1991 and 72 022 tons in 1995 with an increment of 125%. At the same time that of the South was 89 150 tons in 1991 and 307 383 tons in 1995 with an increment of 245% (Table 4.10). Mekong River Delta with production of 301 308 tons in 1995 accounted for 79% of total production of orange was the biggest orange production region of the country in 1995 .

**Table 4.10 Orange Production by Regions in Vietnam, 1991-1995.**

Region	1991	1992	1993	1994	1995
Whole Country	121,094	160,111	249,699	285,614	379,405
North	31, 944	32,295	46,319	58,639	72 ,022
North Mountain and Midland	10,862	11,968	14 ,084	20,012	24 ,871
Red River Delta	14,112	11,464	21,759	19,364	23,908
North Central Coast	6,970	8,863	10,476	19,263	23,243
South	89,150	127,816	203,380	226, 975	307,383
South Central Coast	1,298	1,318	1,773	1,795	2,247
Central Highlands	345	393	266	277	359
North East South	2,455	3,754	514	3,530	3,469
Mekong River Delta	85,052	122,351	200,827	221,373	301,308

Source: General Statistical Office. Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi-1996.

### 4.3.2. Processing

The orange processing industry is not yet developed in Vietnam. Most of orange production is consumed in fresh form. Orange is popularly planted all over the country. That is a good cash crop for farmers.

Table 4.11 shows that, net in come was 9 297 950 VND/ha for orange while it was only 4 942 000 VND/ha for banana. Net income of orange production was 98.0% higher than that of banana production

**Table 4.11 Economic efficiency of orange production in comparison with banana production.**

Item	Orange (VND/ha)	Banana (VND/ha)
Value of production	20,000,000	25,400,000
Total cost of production	10,702,050	20,458,000
Net Income	9,297,950	4,942,000

Source: Derived from data Vegetable and fruit Research Institute.  
US\$= 11,000VND

### 4.3.3 Marketing.

#### *Foreign Market*

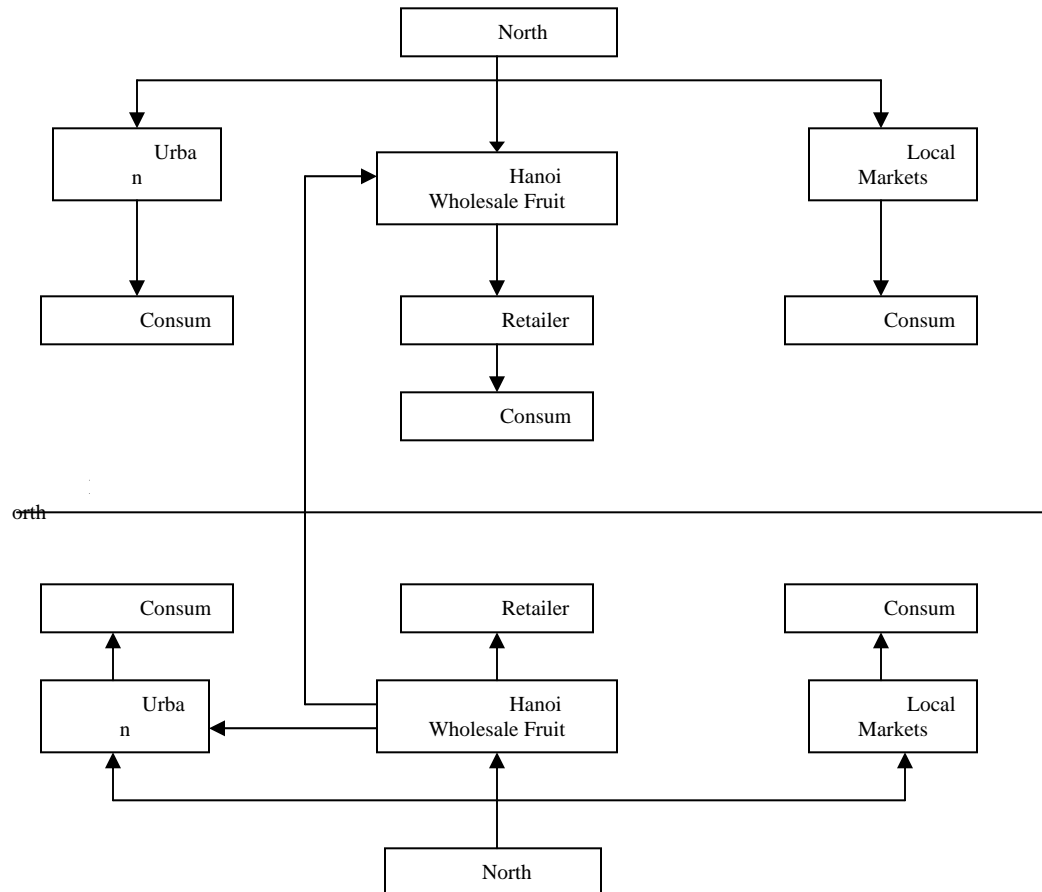
Traditionally, the former Soviet Union and Eastern Europe were the markets for orange export from Vietnam. Until 1991, Vegetexco was only a single Company responsible in Vegetable and fruit export in Vietnam. After 1991, with renovation policy, export business of vegetable and fruits involves not only Vegetexco but also others. However, export of vegetable and fruit has not well been developed.

Table 4.12 indicates that, fresh orange export from Vegetexco to the former Soviet Union and Eastern Europe was 4 612 tons in 1986, 3 821 tons in 1987, 5 809 tons in 1988, 2 904 tons in 1989 and only 1 381 tons in 1990. The fresh orange export from Vegetexco to Russian Federal was 626 tons in 1991 and 252 tons in 1992. After that, there was no more export of orange from Vegetexco to Russian Federal and Eastern. Europe. That was due to



changes in socio-economy of those markets.

**Figure 4.2 Market flows of orange in Vietnam 1995**



**Table 4.12. Export of Fresh Orange from Vegetexco, Vietnam.**

Year	Export Volume (ton)	Market
1986	4 612	Former Soviet Union and Eastern Europe
1987	3 821	do
1988	5 809	do
1989	2 904	do
1990	1 481	do
1991	626	Russian Federal
1992	252	dp
1993	12	Hongkong, Taiwan
1994	0	
1995	0	

Source: Vegetexco, Vietnam, 1996

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In 1993, Vegetexco exported 12 tons fresh orange to Hongkong and Taiwan. After that, there was also no more fresh orange export to these new markets by Vegetexco. Poor marketing quality of fresh orange and poor facility of export industry are the major limiting factors of fresh orange export to the new international markets.

Recently, Vietnam imports annually a considerable quantity of fresh orange from China for domestic consumption. However, this import is unofficial. There is a strong growth of domestic demand for orange in Vietnam.

### *Domestic market.*

During the past 5 years, the fact has proved that, in the process of social economic development, the living standard of people has been improved. Therefore, the domestic demand of high quality food products has been increasing. This is just the case of orange.

The total orange production was 379 405 tons in 1995 with an increase of 282% in comparison to 1985, 99 302 tons. The orange export was almost not considerable. This means that, all of orange was for domestic consumption.. More over, annually, thousands tons of orange are unofficial imported from China for domestic consumption. It is clear that there was a strong growth rate in domestic demand for orange. Orange is very promising commodity for domestic consumption.

Orange is usually sold at local markets for local consumption, a big quantity of orange is transported by traders from local markets to provincial markets and City for consumption in urban area. There is a strong and big market flow from Ho Chi Minh City or Mekong River Delta to Hanoi and other Cities of the North.

In the North, there is a strong market flows of orange from Northern Mountainous areas such as Ha giang, Tuyen quang to Ha noi and from North Central areas such as Thanh hoa, Nghe An to Ha noi (See Figure 4.2).

Seasonal fluctuation is very strong for orange. For example, in 1995, at the peak of harvesting time from November to January, the retail price of Ha giang Orange in Ha noi was 6 000 to 8 000 VND/kg, but at the end of harvesting time, February to March, that was 12 000 to 15 000 VND/kg.

### **4.3.4 Constrains**

#### *Production*

- Existing orange varieties in production are not good quality for international markets.
- Propagation of planting materials for good varieties did not yet satisfy supply requirements of production.
- Cultural practices are still poor for almost production areas. Orange production is not yet in intensive farmed.
- In many areas, virus diseases of orange are still big problem for orange production.
- All of those resulted in poor marketing quality of orange.

#### *Processing*

- Processing industry of orange is almost not yet developed.
- Storage facilities are poor, modern stores for orange storage are very limited.

#### *Marketing.*

- Long distance from production areas to consumption centers and poor road system are

the major constraints for orange marketing.

*Research*

- Not much attention was given to research on orange. Budget for research work is extremely limited.

**4.3.5 Government Policies.**

Through various different development projects and programs, low interest rate loans have been given to farmers involving orange farmers. The Government established a long term program, program 327, for greening of hilly areas. As presented in previous section, during 1991-1995, hundreds of billions VND was invested for this program. The program has been existing for the period 1996-2000. Farmers can be invested for their expansion of trees involving orange under this program.

**4.3.6 Recommendations.**

- Varietal improvement is needed for orange production.
- More attention should be given to research such as varietal improvement, propagation of planting materials, cultural practices, socio-economic aspects and marketing in order to increase productivity, marketing quality and economical effectiveness of orange.
- There is a need to improve storage facilities for orange. Cold stores are needed for orange to lengthen the supply period and limit fluctuation in price.

## 5. Successful and Unsuccessful Market Promotion Attempts

### 5.1 Coffee (successful)

Coffee is a very important crop in Vietnam. Recently, total area planted and production of coffee have rapidly increased. Almost all coffee produced in Vietnam is for export. Vietnam now ranks number seven in the world and number two in Asia in coffee export.

#### 5.1.1 Production

In 1995, the total planted area of coffee was 186, 449 ha (Table 5.1), of which harvested area was 99,900 ha. The average annual growth rate in planted area is 17.5%. It is clear that the increase in planted area was rapid and continual. Daclac accounted for the largest proportion of the total harvested area (53.6% or 53,530 ha/99,900 ha). Other provinces with significant shares in harvested are one Dongnai and Lamdong (Tables 6.2 and 6.3). The Central Highlands is the most important production area of coffee.

The total production of coffee was only 12,300 tons in 1985 increasing to 218,100 tons in 1995. From 1985 to 1995, the average annual growth rate in total production of coffee was 36.5% (Table 5.1). It is evident that the total production of coffee has greatly increased in the past 10 years.

**Table 5.1 Planted area and production of coffee in Vietnam, 1985-1995.**

Year	Area (ha)	Production (tons)
1985	43,885	12,300
1986	65,630	18,500
1987	91,970	20,500
1988	111,894	31,300
1989	123,107	40,800
1990	119,314	92,000
1991	115,052	100,000
1992	103,727	119,000
1993	101,295	136,100
1994	123,871	180,500
1995	186,449	218,100
Average Annual Growth Rate (%)	17.5	36.5

Source: General Statistical Office. Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi 1996.

#### 5.1.2 Processing

In general, coffee processing in Vietnam is not yet well developed. It is limited only to simple processing. Most of the coffee is processed into seed form. So far, there is only one coffee processing plant in Dong Nai for processing refined coffee; however, the capacity of this plant is only 100 tons per year.

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Usually, Vietnam exports coffee in the form of raw materials. Therefore, the export price is low. There is an urgent need to invest in coffee processing to increase the volume of value added products of coffee so that Vietnam can export coffee with much higher price.

### 5.1.3 Economical efficiency of production

In comparison with other crops, net income was 1,472,000 VND/ha for coffee, lower than that for rubber (2,420,000 VND/ha). However, the net income of coffee was higher than that of many other crops such as cashew, groundnut, soybean, spring rice and winter maize. Net income from coffee is equal to that of tea (Table 4.11).

**Table 5.2 Planted area (ha) of coffee in Vietnam, 1991-1995.**

Province	1991	1992	1993	1994	1995
Whole country	115,052	103,727	101,295	123,871	186,449
Nghe An and Ha Tinh	1,936	1,697	1,770	1,970	2,100
Quang Tri	666	673	696	882	1,380
Ninh Thuan and Binh Thuan	690	692	600	328	400
Gia lai		6,008	6,781	8,000	18,559
Kon Tum	11,400	2,039	2,039	2,140	3,270
Dac Lac	52,117	49,891	52,418	67,983	87,170
Lam Dong	17,382	15,868	14,058	17,920	38,410
Dong Nai	25,900	18,013	14,028	15,005	17,863
Song Be	613	432	231	884	4,607
Ba Ria - Vung Tau	3,581	2,984	2,856	3,237	4,872

Source: General Statistical Office. Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi 1996.

The value of a manday was 12,000 VND for coffee, lower than that of cashew (19,800 VND) and rubber (18,500 VND). Nevertheless, the value of a manday of coffee was higher than that of many other crops such as groundnut, soybean, spring rice and winter maize. The value of a manday for coffee was equal to that of tea (12,000 VND) (Table 4.11).

**Table 5.3 Harvested area of Coffee in Vietnam, 1991-1995.**

Province	1991	1992	1993	1994	1995
Whole country	73,154	81,791	82,134	99,886	99,900
Nghe An and Ha Tinh	990	1,147	939	1,239	1,322
Quang Tri	215	188	450	552	565
Ninh Thuan and Binh Thuan	300	300	320	196	205
Gia lai		4,866	4,845	5,461	5,756
Kon Tum	600	1,341	1,371	1,420	1,490
Dac Lac	30,147	37,261	43,310	58,504	53,530
Lam Dong	13,788	13,869	12,693	14,418	16,562
Dong Nai	19,400	18,013	13,302	13,576	14,501
Song Be	298	259	149	394	464
Ba Ria - Vung Tau	2,260	2,038	2,188	2,342	3,071

Source: General Statistical Office. Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi 1996.

The value of production per ha was 8,700,000 VND for coffee, lower than that of rubber (9,305,000 VND) and tea (8,950,000 VND). However, the value of production per ha of coffee was higher than that of many others such as cashew, groundnut, soybean, spring rice and winter maize (3,080,000 VND) (Table 4.11).

### 5.1.4 Marketing

#### *Domestic market*

The demand of coffee for the domestic market is still low. Vietnamese consumed approximately 15,000 tons of coffee per year, equivalent to nearly 10% of total coffee production in 1994 and 1995. This means that more than 90% of total coffee production was for export. As shown in Table 3.5, coffee consumption per capita per year was only 0.1 kg on average, 0.08 kg for the rural area and 0.21 kg for the urban area. It is expected that with social economical development, the demand of coffee will increase over time.

**Table 5.4 Major foreign markets for coffee of Vietnam in 1991-1992 and 1992-1993.**

Market	Volume Imported October 1, 1991 to September 30, 1992 (tons)	Volume Imported October 1, 1992 to September 30, 1993 (tons)
Singapore	68,417	59,767
Australia	8,154	-
Poland	6,446	8,232
Italy	6,293	8,103
France	4,218	2,333
Germany	4,180	16,548
Japan	1,897	2,767

Source: VICOFFEE 1996.

#### *Foreign market*

Almost all coffee produced in Vietnam is for export. Before 1990, the former Soviet Union and Eastern Europe were the major traditional markets for coffee exports of Vietnam. In the early 1990s (1992 and 1993), Singapore was the biggest market for coffee export of Vietnam. At that time, around 65% of the total coffee export of Vietnam was for the Singapore market. Singapore usually imports coffee from Vietnam and then exports to other markets such as EU. However, recently, the situation have changed; Vietnam has begun exporting coffee directly to EU and others, even the USA market. The volume of coffee exported to Singapore has been decreasing and the volumes of coffee exported to USA, EU, Australia and others have been increasing. Table 5.4 shows that in 1991/92, the exported volume of coffee was highest for Singapore (68,417 tons), followed by Australia, Poland, Italy and so on. In 1992/93, the exported volume of coffee was still greatest for Singapore (59,767 tons). There was a dramatic increase in Germany's imports in 1992/93 compared to 1991/92.

**Table 5.5 Coffee export of Vietnam from Oct. 1, 1995 to March 31, 1996.**

Order	Market	Volume (tons)	Percentage (%)
	Total of 32 import markets	148,634	100
1	USA	49,667	33.42
2	Germany	16,837	11.33
3	Poland	10,567	7.11
4	UK	8,560	5.76
5	Italy	7,252	4.88
6	French	6,195	4.17
7	Japan	5,983	4.04
8	Algeria	5,776	3.89
9	Singapore	5,295	3.56
10	Australia	4,627	3.11

Source: VICOFA 1996.

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The foreign market shares for coffee exports of Vietnam have dramatically changed. Table 5.5 shows that in 1995/96, among a total of 32 foreign markets, USA ranked number one in importing coffee from Vietnam Germany ranked number two, and Singapore ranked only number nine in importing coffee from Vietnam.

According to data from the General Bureau of Customs, as presented in Table 5.6, from January 1 to April 30, 1996, 85,434 tons of coffee was exported to 30 countries. Among them, Singapore imported 21,590 tons with a value of US \$ 36,554,789, ranking number one, followed by Switzerland.

**Table 5.6 Coffee export and markets of Vietnam from January 1 to April 30, 1996.**

Market	Export Volume (tons)	Percentage of Total Volume	Value (US \$)
Singapore	21,590	25.3	36,554,789
Switzerland	10,062	11.8	16,532,728
Thailand	8,124	9.5	13,639,598
USA	8,119	9.5	13,830,023
China	7,514	8.8	14,258,930
France	6,227	7.3	8,973,314
England	5,499	6.4	8,872,247
Japan	4,065	4.8	6,897,833
Germany	2,922	3.4	5,072,027
Belgium	1,604	1.9	2,719,383
Spain	1,569	1.8	2,608,911
Australia	1,471	1.7	2,121,082
Italy	1,026	1.2	1,754,080
Netherlands	935	1.1	1,610,193
Hong Kong	852	1.0	1,553,910
Malaysia	804	0.9	1,419,157
Sweden	673	0.8	922,338
New Zealand	332	0.4	508,258
South Korea	302	0.4	509,566
Taiwan	274	0.3	317,516
South Africa	259	0.3	399,963
Macao	216	0.2	382,667
Iceland	216	0.2	365,912
Russian Federation	176	0.2	339,891
Marocco	162	0.2	284,784
Algeria	153	0.2	249,666
Poland	144	0.2	240,698
Hungary	72	0.1	103,982
Canada	36	0.04	64,138
Bulgaria	36	0.04	55,851
Total	85,434	100	

Source: General Bureau of Customs 1996.

The volume of exported coffee increased from 89,600 tons in 1990 to 240,534 tons with value of US \$ 564,789,728 in 1995 (Table 5.7). Surprisingly, in 1995, the value of exported coffee was higher than that of exported rice (US \$ 495,849,916, Table 4.3). This means that coffee is a very important export commodity of Vietnam.

### *Marketing channels*

Marketing participants include farmers, state farms, traders, processors and exporters. As presented in Figure 6.1, 80% of coffee is produced by the farmers while only 20% is produced by state farms. Farmers sell their coffee to traders and then traders sell it to exporters. Usually

after cleaning and classification, exporters ship coffee to foreign markets under signed contracts.

State farms collect coffee from their members. After primary processing, cleaning and classification, they export the coffee to foreign markets according to signed contracts. Also, some state farms collect coffee from their members, and sell this to exporters after cleaning and classification.

In addition, around 15,000 tons of coffee is for the domestic consumption market. This volume of coffee is provided by coffee retailers and processors.

The domestic price of coffee fluctuates through time and depends upon the price of coffee in the international market. Table 5.7 indicates that the price of export coffee was 756 US \$/t in 1992 increasing to 2,348 US \$/t in 1995.

**Table 5.7 Price and value of coffee export of Vietnam, 1990-1995.**

Year	Volume (tons)	Average Price (US \$/t)	Value (US \$)
1990	89,600		
1991	93,500		
1992	105,020	756	79,395,120
1993	115,239	756	87,120,684
1994	148,600	1,200	178,320,000
1995	240,534	2,348	564,789,728
Average Annual Growth Rate (%)	23.4		110.4

Source: General Bureau of Customs 1996.

### **5.1.5 Constraints**

#### *Production*

- In the South, most coffee is planted on fertile land. Further expansion of coffee to remote areas faces lack of water and low soil fertility.
- In the coffee production area in the North, the soil is not very fertile and in the middle of winter the air temperature is sometimes too low for coffee.
- The organization of coffee production is poor, which results in expansion of coffee planting area without planning, and destruction of natural resources such as forest and water sources.
- In the South, lack of water is the most serious constraint for coffee production.

#### *Processing*

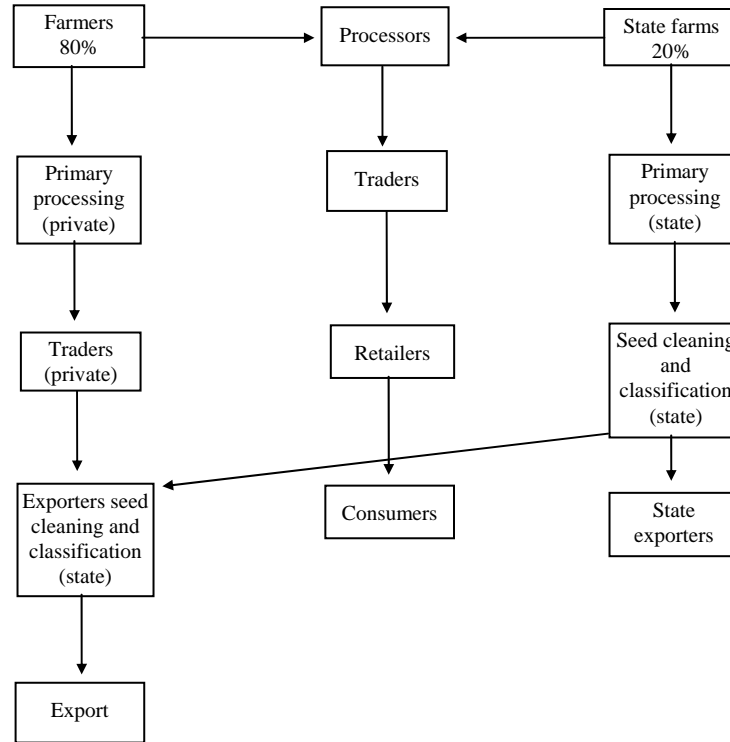
- Basically, coffee processing is only seed cleaning and seed classification. So far, there is only a single refined coffee processing plant in Dongnai with a capacity of only 100 tons per year.
- At present, VINACAFE has proposed a project with 8 million US \$ investment to improve the Bienhoa coffee processing plant in Dongnai.

#### *Research*

- Like the situation for many other crops, the budget for coffee research is limited.



**Figure 5.1 Market flow of coffee in Vietnam 1995.**



### 5.1.6 Government policies

As presented in section 4.3.1.8 for cashew, the government established a long term program, program 327, for greening of hilly areas. Farmers can invest in expansion of coffee trees under this program. For the newly reclaimed areas, farmers are exempt from agricultural tax for 5 years.

To promote coffee export, coffee export is tax free (0%). In the past, when exporters shipped coffee with very high value (over US \$ 2,000/t), the government collected around US \$ 600 to 800/t from them for a price regulation fund. Recently, the export price has been going down, and there is no longer such a surcharge for coffee export.

In 1992, there were more than 80 coffee exporters. At present, only 32 coffee exporters are permitted by the government. The limitation of coffee exporters is in order to increase quality of coffee for export, to reduce fluctuation of the domestic price of coffee and to improve relationships between exporters and importers of coffee.

Vietnam has been a member of the International Coffee Organization (ICO) since 1991. However, Vietnam has not yet taken part in the Association of Coffee Producing Countries (ACPC).

### 5.1.7 Production and market potential

- At present, Vietnam ranks number seven in the world and number two in Asia in terms of coffee production.

- The area of coffee production was 186,449 ha in 1995 (Table 5.1) and it is projected to reach around 280,000 ha in the year 2000. In the long term, coffee production area may reach up to 500,000 ha (VICOFA 1996).
- With social economic development in Vietnam, domestic demand for coffee consumption will increase.
- In the past, Singapore was the biggest market for coffee export of Vietnam. Recently, USA, Canada, EU, Australia and China have become important markets for coffee export of Vietnam
- The Russian Federation and Eastern Europe are traditional markets for coffee export of Vietnam. In the long term, Vietnam may be able to recover these traditional markets.

#### **5.1.8 Recommendations**

- A Vietnam General Coffee Company was established in 1995, but, some major coffee companies have not yet joined. There is a need to strengthen this important coffee industry organization.
- More investment is needed for coffee processing to obtain more value added coffee products.
- Storage facilities are too limited and most coffee stores are small. It is necessary to build several large stores for coffee.
- More marketing activities are needed to recover traditional markets of coffee export such as the Russian Federation and Eastern Europe.
- The recent unplanned expansion of coffee by farmers in the South has resulted in destruction of natural resources such as forest and water resources. There is an urgent need to establish suitable policies and measures to improve this situation.

#### **5.1.9 Reasons for success of coffee development in Vietnam**

- Vietnam has suitable land areas and favourable climatic conditions for coffee growth and development, especially in the Central Highland region.
- Since 1976, after unification of the country, much attention has been given by the government to coffee development.
- In the recent years, the price of coffee in the international market was high. This is the most favourable condition for rapid growth of coffee production in Vietnam.
- Investment for coffee development has originated not only from government but also from farmers.

### **5.2 Groundnut (successful)**

#### **5.2.1 Production**

Groundnut is an important food crop in Vietnam, popularly grown throughout the country. The total planted area and total production were 106,100 ha and 95,200 tons in 1980, increasing to 259,900 ha and 334,400 tons in 1995 (Table 5.8). From 1980 to 1995, the annual growth rate of planted area was 6.5% and that of total production was 8.3%.

In 1993, total planted area was 217,200 ha, of which 58,600 ha was in the North East South, 51,100 ha was in the North Central Coast, 35,900 ha was in North Mountain and Midland, 21,900 ha was in the South Central Coast, 19,500 ha was in Central Highland, 17,500 ha was in the Red River Delta and only 12,600 ha was in the Mekong River Delta. It is clear that North East South is the most important production area, followed by North Central

**Table 5.8 Area, yield and production of groundnut in Vietnam, 1980-1995.**

Year	Area (ha)	Yield (t/ha)	Production (t)
1980	106,100	0.897	95,200
1981	120,200	0.884	106,300
1982	130,800	0.909	118,900
1983	141,100	0.894	126,200
1984	170,400	0.973	165,800
1985	212,700	0.952	202,400
1986	224,500	0.940	211,100
1987	237 800	0.974	231,600
1988	224,400	0.953	213,900
1989	208,600	0.987	205,800
1990	201,400	1.058	213,100
1991	210,900	1.113	234,800
1992	217,300	1.043	226,700
1993	217,200	1.194	259,300
1994	248,200	1.186	294,400
1995*	259,900	1.287	334,400
Average Annual	6.5		8.3
Growth Rate (%)			

Source: Tran Hoang Kim, 1996. Vietnam's Economy, the period 1945-1995 and its perspective by the year 2020. Statistical Publishing House 1996.

\* General Statistical Office. Statistical Data of Agriculture Forestry and Fishery, 1985-1995. Statistical Publishing House, Hanoi-1996.

### 5.2.2 Processing

The groundnut processing industry is not yet developed. Processing facilities are backward. Therefore, most of the groundnut for export and domestic markets is in grain form. For domestic markets and household consumption, groundnut is processed only in traditional simple ways such as fried groundnut, boiled groundnut, groundnut candy, etc.

### 5.2.3 Economical efficiency of production.

As presented in Table 4.11, in comparison with other annual crops, net income was highest for groundnut (998,000 VND/ha), followed by winter maize (503,000/ha), spring rice (431,000 VND/ha) and soybean (217,000 VND/ha). Value per manday was also highest for groundnut (7,619 VND/manday), followed by winter maize, spring rice and soybean.

Unlike many other crops, groundnut can grow well in relatively poor soil.

### 5.2.4 Marketing

#### *Domestic market*

From 1993 to 1995, around 45% of total groundnut production was for export. The remaining 55% of total production was for domestic consumption in several forms of food for humans. Groundnut is popularly used for household food consumption. Throughout the country, it is sold at local markets, district markets, provincial markets, and small and large markets in the cities. Groundnut is commonly kept as reserved food at the household level not only for rural areas but also for urban areas.

### Foreign market

Singapore, Indonesia, Laos, Malaysia, the Philippines, and Thailand are important markets for groundnut export of Vietnam (Table 5.9). Table 5.10 shows that volume and value of export groundnut were 58,760 tons and US \$ 28,204,800 in 1992, increasing to 93,266 tons and US \$ 56,250,993 in 1995, with a growth rate of 43.4%.

The groundnut export price of Vietnam is equal to only 60-70% of that of USA and China, because, groundnut quality of Vietnam is lower than that of USA and China, especially in terms of grain weight and oil content. The average export price of groundnut was US \$ 480/t in 1992, increasing US \$ 603/t in 1995 (Table 5.10).

**Table 5.9 Groundnut export of Vietnam from January to April, 1996.**

Market	Volume (tons)	Value (US \$)
Laos	614	90,769
Singapore	219	133,382
Indonesia	90	56,301
Malaysia	54	34,862
Thailand	36	27,236
Philippines	36	10,810

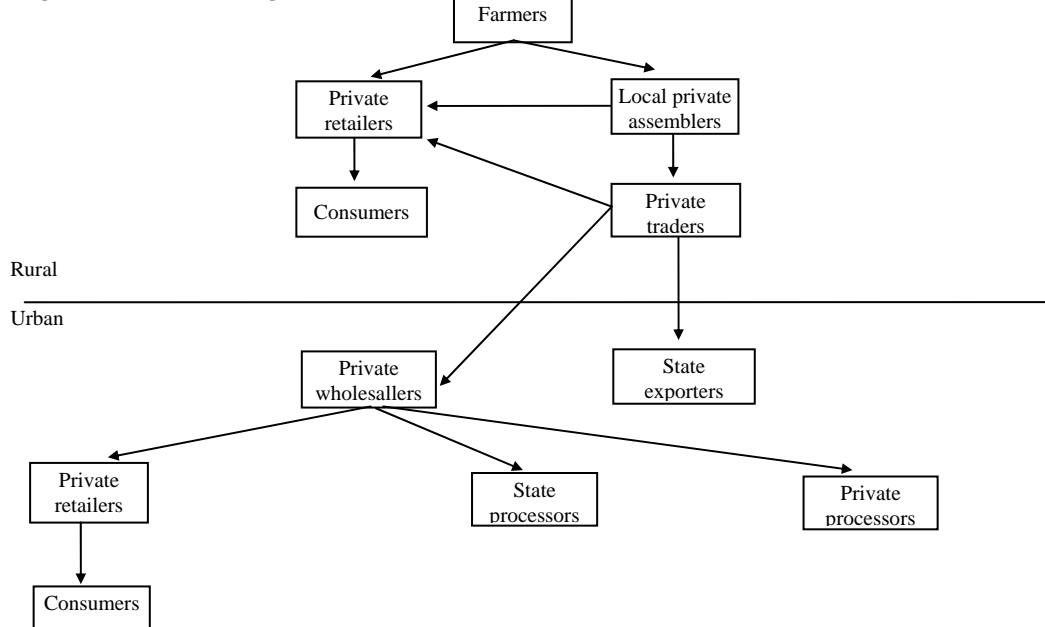
Source: General Bureau of Customs 1996.

**Table 5.10 Groundnut export of Vietnam, 1992-1995.**

Year	Volume (tons)	Price (US \$/t)	Value (US \$)
1992	58,760	480	28,204,800
1993	98,550	539	53,091,500
1994	97,880	-	30,440,680
1995	93,266	603	56,250,993
Average Annual Growth Rate (%)	20.8		43.4

Source: General Bureau of Customs 1996.

**Figure 5.2 Market flows of groundnut in Vietnam 1995.**



### *Marketing channel*

Marketing participants of groundnut include farmers, local assemblers, traders, retailers, processors and exporters. As presented in Figure 5.2 farmers sell their groundnut to local assemblers and retailers. Traders buy groundnut from local assemblers and then sell groundnut to processors or exporters.

### **5.2.5 Government policies**

Groundnut is an important crop for both export and domestic consumption. However, not much attention has been given to this crop. It is still considered a minor food crop.

There is still no specific measure to promote groundnut production and export. However, through the system of government banks such as the Bank for Agriculture, the Bank for the Poor, etc. and various social organizations, farmers can borrow low interest rate loans to plant groundnut.

### **5.2.6 Production and market potential**

- As presented in Table 5.8, in 1995, the total planted area of groundnut was 259,900 ha and total production of groundnut was 334,400 tons. There is a possibility to increase both total planted area and total production.
- With social economical development and the growing population, the demand of groundnut for domestic consumption will increase.
- South East Asian Countries, Japan, Hong Kong, Germany and France are important markets for export groundnut of Vietnam.
- In the long term, Vietnam can recover traditional markets for export groundnut such as the Russian Federation and Eastern European countries.

### **5.2.7 Problems**

#### *Production*

- Groundnut is not yet intensively farmed. Therefore, the productivity is still very low. On average, the productivity of groundnut is less than 1.2 tons/ha.
- Farmers lack high yielding cultivars with high oil content and large grain size.
- Irrigation systems have not yet been developed in several important groundnut production areas.

#### *Processing*

- Groundnut processing is not yet well developed and the processing industry is still limited in scale. Traditional processing of groundnut is very popular at the household level, for production of candy, fried groundnut, etc.

#### *Marketing*

- There are still too many exporters, which results in strong competition in buying and selling groundnut.
- The export price of groundnut is lower than that of groundnut in the international market.
- Storage and transport facilities for groundnut are still poor.

#### *Research*

- Groundnut research is weak and the budget for groundnut research is limited.

#### **5.2.8 Recommendations**

- To increase productivity and economical efficiency of groundnut production, intensive farming should be applied for groundnut cultivation.
- Improved varieties with high oil content and large grain size should be supplied to groundnut farmers.
- Research should focus on varietal improvement and intensive farming technologies.
- There is a need to establish policy measures to promote groundnut production and export.
- More investment is needed for the processing industry, and storage and transport facilities for groundnut.
- It is important to reorganize the export system to increase efficiency.

#### **5.2.9 Reasons for success of groundnut development in Vietnam**

- Natural conditions such as land, temperature, sunlight, rainfall, water sources, etc. are very favourable for groundnut growth and development. Groundnut is popularly grown throughout the country.
- Groundnut is an important and valuable food crop in Vietnam. Demand of groundnut for domestic consumption has increased.
- The export price of groundnut increased considerably (US \$ 480/ton in 1992, to US \$ 603/ton in 1995).
- Groundnut is a traditional export commodity of Vietnam. Therefore, the marketing system is fairly good. Facilities for storage, packaging and transport are simple for groundnut.
- Groundnut is a good cash crop for farmers. It also can provide a very valuable food convenient for household consumption.

### **5.3 Sugarcane**

#### **5.3.1 Sugarcane production**

Sugarcane is an important food crop in Vietnam. Total planted area and production of sugarcane was only 109,800 ha and 4,358,900 tons in 1980, but it increased 224,800 ha and 10,711,200 tons in 1995 (Table 5.11).

Total production of sugar and molasses was 175,400 tons in 1980, increasing 393,000 tons in 1995. From 1980 to 1995, the annual growth rate was 5.6% for total planted area of sugarcane, 7.2% for total production of sugarcane and 7.0% for total production of sugar and molasses.

#### **5.3.2 Processing**

Sugarcane is processed into sugar and molasses. A small part of sugarcane is consumed in fresh form. Sugar is processed by sugar plants while molasses is processed by farmers at the household level. The current total capacity of all sugar processing plants is 1.7 million tons of sugarcane per day.

**Table 5.11 Area, yield and production of sugarcane and molasses in Vietnam, 1980-1995.**

Year	Area (ha)	Yield (t/ha)	Production (tons)	
			Sugarcane	Sugar and molasses
1980	109,800	39.71	4,358,900	175,400
1981	110,100	35.97	3,963,700	246,000
1982	120,800	37.87	4,576,900	222,000
1983	145,800	39.01	5,689,500	305,800
1984	165,200	39.74	6,566,600	438,200
1985	143,200	38.83	5,559,700	401,700
1986	125,200	39.65	4,964,600	345,900
1987	136,900	39.96	5,470,300	323,000
1988	142,100	40.13	5,700,400	336,000
1989	131,300	40.69	5,344,600	375,500
1990	130,600	41.33	5,397,600	323,000
1991	143,700	42.66	6,130,900	372,000
1992	146,500	43.94	6,347,000	365,000
1993	143,000	43.16	6,183,200	369,000
1994	166,600	45.33	7,550,100	364,100
1995*	224,800	47.64	10,711,200	393,000
Average Annual Growth Rate (%)	5.6		7.2	7.0

Source: Tran Hoang Kim, 1996. Vietnam's Economy the Period 1945-1995 and its perspective by the year 2020. Statistical Publishing House, 1996.

\* General Statistical Office. Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi, 1996.

### 5.3.3 Marketing

#### *Domestic market*

All of the sugarcane production is for domestic consumption.

As presented previously the total production of sugar and molasses was 393,000 tons in 1995. However, the annual production of sugar and molasses was not sufficient for domestic demand. Therefore, sugar has to be imported (Table 5.12).

**Table 5.12 Import of sugar into Vietnam, 1994-1995.**

Year	Volume (tons)	Value (US \$)
1994	134,043	39,393,122
1995	109,858	44,525,077

Source: General Bureau of Customs 1996.

Farmers, village processors, traders, industrial processors and sugarcane retailers are the marketing participants of sugarcane (Figure 5.3). Farmers sell their sugarcane to village processors, industrial processors, traders or fresh sugarcane retailers. Traders buy sugarcane from farmers and sell to industrial processors and fresh sugarcane retailers.

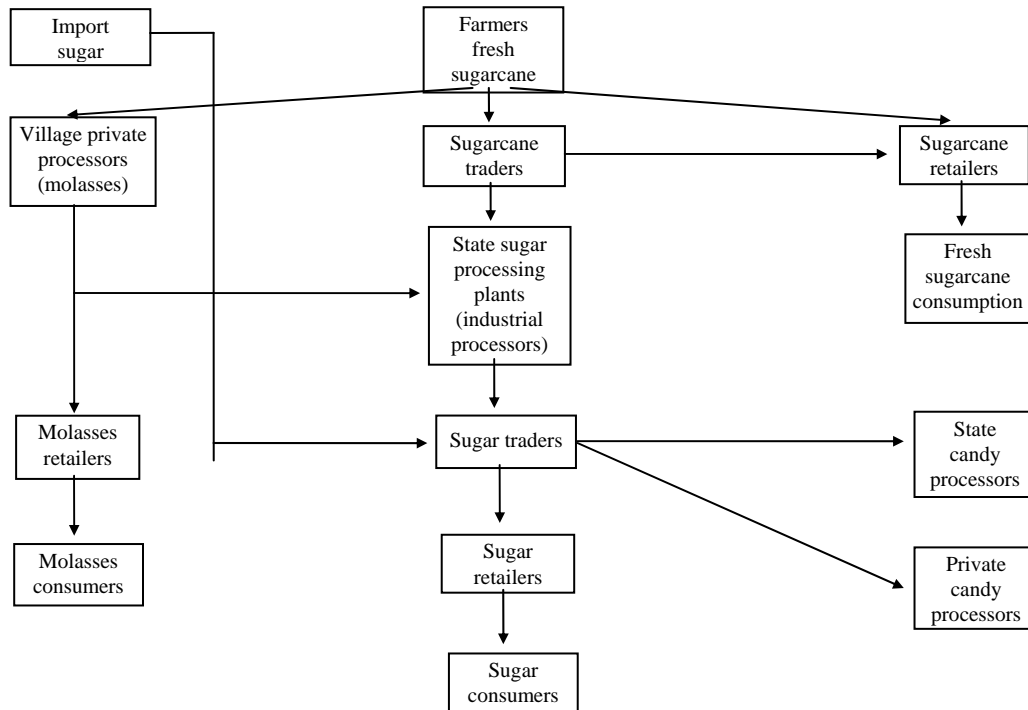
#### *Price*

The sugarcane price fluctuates over time. Price fluctuation was particularly serious in early 1996. In the Mekong River Delta, the price of sugarcane was extremely low during March, 1996, dropping to only 140,000 to 150,000 VND/t. In one area, it was only 100,000 VND/t (Vietnam Economic Times No. 12, 1996).

The government has launched a sugarcane and sugar program. According to this program, Vietnam will try to produce 1 million tons of sugar in the year 2000. The planting area

has been rapidly developed. In the sugar cane season of 1995/96, there was around 205,000 ha sugarcane with a total production of 8.5 to 9.0 million tons sugarcane. The total production of sugarcane was greater than the total capacity of the sugar processing industry, which resulted in an imbalance between supply and demand of sugarcane. This why the sugarcane price was too low in the Mekong River Delta during early 1996.

**Figure 5.3 Market flow of sugarcane and sugar in Vietnam, 1995.**



### **5.3.4 Production and market potential**

There is a great potential for sugarcane production in Vietnam. The government of Vietnam has launched a sugarcane and sugar program with the objective of producing 1 million tons of sugar in the year 2000. In addition, with socio-economic development and the growing population, domestic demand for sugarcane and sugar will increase greatly.

### **5.3.5 Government policies**

Much attention has been paid by government to sugarcane production and development of the sugar processing industry. Through the Bank for Agriculture, the Bank for the Poor and various development programs directed by non-governmental organizations, farmers can borrow money with favourable interest for investment in sugarcane production. In addition, the government of Vietnam have a plan for development of sugarcane production and the sugar processing industry. Strong investment has been given to the sugar processing industry. For example, in Tay Ninh province, a sugar processing plant with investment of US \$ 95 million is under construction.



### 5.3.6 Problems

#### *Production*

- Recently, the expansion of sugarcane planting area was so rapid that the total sugarcane production exceeded the total capacity of sugar processing plants. This resulted in extremely low prices of sugarcane.
- Old varieties of sugarcane are still popular in sugarcane production areas.

#### *Processing*

- The existing sugar processing facilities and equipment are backward.
- Molasses is popularly processed at the household and village level. Therefore, the quality of molasses is not uniform.

#### *Marketing*

- The sugarcane price fluctuates considerably over time.

#### *Research*

- The budget for research on sugarcane is limited.

### 5.3.7 Recommendations

- Sugarcane production and the sugar processing industry need to be developed in balance.
- Stronger extension is needed for introduction of new sugarcane varieties to farmers.
- Modern facilities and equipment are needed for the sugar processing industry.
- There is a need to increase the annual budget for research on sugarcane.

### 5.3.8 Reasons for success of sugarcane development in Vietnam.

- Land and climatic conditions in Vietnam are very suitable for sugarcane growth and development. It is popularly grown throughout the country.
- Domestic demand of sugar has increased considerably over time.
- Sugarcane development has been strongly supported and encouraged by the government, especially in investment for sugar processing. This is very clearly reflected in the program for production of one million tons of sugar by the year 2000.

## 5.4 Potato (unsuccessful)

### 5.4.1 Production

Table 5.13 shows that the total planted area and total production were 93,900 ha and 872,200 tons in 1980, decreasing to 30,000 ha and 300,000 tons in 1995. From 1980 to 1995, the growth rate of total planted area of potato was -5.1% and that of total production was -2.4%. Red River Delta accounts for 95% of total potato planted area. The remaining 5% was in North Mountainous and Midland and Dalat in Central Highland.

### 5.4.2 Processing

The processing industry for potato is not yet well developed. Recently, some potato chip processing factories each with a capacity of less than 10 tons per day were established. There is a need to develop the potato processing industry to promote production, marketing and consumption of potato.

### 5.4.3 Marketing

#### *Domestic market*

Most of the potato production is for domestic consumption. Recently, several thousands tons of potato have been unofficially imported each year from China during August to December for domestic consumption. The reason is that during this time, domestic potato is not available.

The price of potato fluctuates greatly over time. For example, in 1995, the price of potato was only around 2,000 VND/kg for January to February, but it was up to around 4,000 VND/kg from May to June in Hanoi.

**Table 5.13 Area, yield and production of potato in Vietnam, 1980-1995.**

Year	Area (ha)	Yield (t/ha)	Production (tons)
1980	93,900	9.289	872,200
1981	71,900	8.011	576,000
1982	45,100	9.284	418,700
1983	32,100	8.143	261,400
1984	31,200	9.330	291,100
1985	23,600	7.992	188,600
1986	33,200	9.199	305,400
1987	39,900	12.489	498,300
1988	37,800	9.172	346,700
1989	33,000	10.021	330,700
1990	36,700	9.954	365,300
1991	31,700	8.931	285,000
1992	25,700	10.089	259,300
1993	27,200	9.537	259,400
1994	34,000	9.500	323,000
1995	30,000	10.000	300,000
Average Annual			
Growth Rate (%)	-5.1		-2.4

Source: Tran Hoang Kim, 1996. Vietnam's Economy the period 1945-1995 and its perspective by the year 2020.

#### *Foreign market*

The volume of potato export to the former Soviet Union was 7,337 tons in 1986, 15,937 tons in 1987 (the peak of potato export), and then it decreased steadily (Table 5.14). In 1992 Vietnam exported 24 tons of potato to Singapore (a new market). In 1995, Vietnam exported 1,072.6 tons of potato to the Russian Federation and 25.5 tons to Germany (Table 5.14).

The Russian Federation is a traditional market for potato export of Vietnam. However, since 1991, because of major changes in socio-economy, Vietnam has faced great difficulty in exporting potato to this traditional market.

Singapore and Germany are new markets for potato exports of Vietnam. However, for the new markets, export potato needs to have high quality such as large tuber size, uniformity in size and tuber quality, etc.

**Table 5.14 Potato export of Vietnam, 1986-1995.**

Year	Volume Exported (t)	Market
1986	7,337	Former Soviet Union
1987	15,937	do
1988	11,790	do
1989	10,666	do
1990	6,171	do
1991	0	
1992	24	Singapore
1993	0	
1994	0	
1995	1,072.6	Russian Federation
	25.5	Germany

Source: Vegetexco 1996.

As mentioned above, potato exports declined for traditional markets and have faced difficulties entering new markets, which need to be supplied by high quality potato.

#### **5.4.4 Government policies**

In the Red River Delta, the main potato production area, potato is usually planted in the winter crop season, from October to February. Like other winter crops, potato cultivation is promoted by the government free of agricultural tax and irrigation fee.

From 1986 to 1990, potato export to the former Soviet Union was promoted by the government. However, since 1991, potato exports have faced much difficulty.

#### **5.4.5 Constraints**

##### *Production*

- The red River Delta has great potential for potato production. However, seed degeneration, lack of good quality seed and the use of degenerated seed are the major constraints for potato production in this area.
- Imported potato seed is good but expensive. Local seed is degenerated and losses are high after nine hot months of storage.

##### *Processing*

- Potato processing is not yet developed. Most potato is consumed in the fresh form. This is also a limiting factor for potato production.

##### *Marketing*

- Basically, potato is used for domestic consumption. The volume of exported potato is small.
- It is difficult to export potato to traditional markets such as the Russian Federation and Eastern Europe. The new markets, such as Singapore, demand high quality potato.
- There is a need to import good quality potato seed, but this is expensive.

##### *Research*

- The budget for potato research is very limited

#### **5.4.6 Recommendations**

- The seed potato supply needs to be improved with a good domestic seed production system and possible sources of imported seed.
- It is useful to invest in construction of cold stores for seed potato storage.
- The potato processing industry needs to be developed to serve the market demand and to promote potato production.
- With good quality seed, potato productivity will increase and high quality potato, such as large tuber size with high uniformity, will be produced. It is possible to develop export markets of potato this way.

#### **5.4.7 Reasons for failure of potato export**

- Due to high production cost, the price of potato is high.
- The price of good quality seed is high. The supply system of good quality seed is still poor.
- Seed storage facilities are very poor.
- Most potato producers use degenerated seed in their potato production, which results in low productivity of potato.
- The marketing system is not yet developed.
- Facilities for storage, packaging, transport, loading and unloading are very poor.
- The processing industry is not yet developed.

### **5.5 Sweet potato, a crop in decline**

#### **5.5.1 Production**

Total planted area and total production of sweet potato were 450,000 ha and 2,417,600 tons in 1980 and they have changed little since (Table 5.15). During the past 16 years, from 1980 to 1995, the growth rate of total planted area of sweet potato was -2.4% and that of total production was -0.8%. Table 5.16 shows the distribution of planted area in 1993. The North accounted for 79.9% or 309,100 ha and only 78 000 ha was in the South (20.1%).

The yield of sweet potato in the North was almost identical to that in the South. The yield of sweet potato was highest in the Mekong River Delta (10.91 t/ha), followed by the Red River Delta at 8.00 t/ha (Table 5.16).

#### **5.5.2 Processing**

The processing industry for sweet potato is not yet developed. Sweet potato is popularly used after simple traditional processing such as boiling for fresh consumption, making dry chips as reserved food for household consumption, and boiling with rice or beans for the daily diet. In the North, sweet potato cracker is another kind of traditional resulting food from simple processing. Sweet potato is also processed into dried pellets (Quang Nam - Da nang) and various cakes such as *Banh Re*, *Banh Deo* and *Banh Thuan (Thuan Hai)*. Boiled fresh sweet potato and fresh sweet potato are popularly sold in both rural and urban areas from North to South. In Dalat City, sweet potato is processed into dried sweet form packaged in plastic bags for sale in candy shops and markets.

**Table 5.15 Area, yield and production of sweet potato in Vietnam 1980-1995.**

Year	Area (ha)	Yield (t/ha)	Production (tons)
1980	450,000	5.372	2,417,600
1981	441,200	5.962	2,630,300
1982	406,000	5.865	2,381,000
1983	357,500	5.153	1,842,100
1984	327,600	5.011	1,641,700
1985	320,000	5.555	1,777,700
1986	329,000	5.953	1,958,700
1987	332,200	6.629	2,202,300
1988	336,200	5.657	1,901,800
1989	327,300	5.833	1,909,200
1990	321,100	6.110	1,929,000
1991	356,100	6.002	2,137,300
1992	404,900	6.404	2,593,000
1993	387,100	6.212	2,404,800
1994	343,800	5.543	1,905,800
1995*	304,600	5.440	1,685,800
Average Annual Growth Rate (%)	-2.4		-0.8

Source: Tran Hoang Kim 1996. Vietnam's Economy the Period 1945-1995 and its perspective by the year 2020.

\* General Statistical Office. Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi 1996.

**Table 5.16 Planted area, yield and production of sweet potato in 1993 by region.**

Region	Planted Area (ha)	(%)	Yield (ton/ha)	Production (tons)
Total	387,100	100.0	6.21	2,404,800
North	309,100	79.9	6.20	1,918,200
- North Mountain and Midland	85,400	22.1	5.90	503,600
- Red River Delta	90,600	23.4	8.00	725,000
- North Central Coast	133,100	34.4	5.18	689,600
South	78,000	20.1	6.23	486,600
- South Central Coast	41,400	10.7	4.58	189,500
- Central Highlands	14,500	3.7	5.95	86,100
- North East South	6,100	1.3	5.67	34,400
- Mekong River Delta	16,000	4.1	10.91	176,600

Source: Statistical Yearbook, 1994. General Statistical Office. Statistical Publishing House 1995.

### 5.5.3 Domestic consumption

All of the sweet potato products are for domestic consumption after simple traditional processing as previously presented.

In Central Vietnam, 40% of sweet potato production is for household consumption, 20% is for animal feed and around 40% is for sale either as fresh root or in processed form (Bottema et al. 1991). Table 5.17 shows the proportions of sweet potato use for home consumption for animal feed, for marketing and for processing in North and Central Vietnam. In the South East Region in the South, 60% of sweet potato was sold and 40% was for home consumption and animal feed (Bottema et al. 1991).

In Central Vietnam, 40% of sweet potato tops were used for green manure and 60% of that was used for animal feed (Bottema et al. 1991). The young shoot of sweet potato is very popular as green vegetable in boiled or fried forms from North to South of Vietnam.

**Table 5.17 Use of sweet potato (% of total production) in Vietnam.**

Use	Tuloc: North (n = 18)	Hiep Hoa: North (n = 16)	Thang Binh: Central (n = 20)
Home consumption	30	30	40
Animal Feed	40	60	20
Market	25	10	20
Processing	5		20

Source: Bottema, T., Dang Thanh Ha and Pham Thanh Binh. Collective and Individual Production: Sweet Potato and North and Central Vietnam. Sweet Potato in Vietnam, Production and Markets. CGPRT Centre No. 24, 1991.

#### **5.5.4 Economical efficiency of production**

North Central is the most important region of sweet potato production in Vietnam. The survey data of 1990 (Table 6.18) indicate that the average input cost was 161,000 VND/ha for sweet potato, 223,000 VND/ha was for rice and 241,000 VND/ha for groundnut.

The average number of man-days/ha was only 227 for sweet potato but 367 for rice and 453 for groundnut. The value of output was highest for groundnut (903,000 VND/ha), following by rice (630,000 VND/ha) and then sweet potato (only 490,000 VND/ha). The average profit (output - input cost) was highest for groundnut (662,000 VND/ha) followed by rice (403,000 VND/ha) and sweet potato (only 329,000 VND/ha). The value of one man-day was 1,466 VND for groundnut, 1,463 VND for sweet potato and 1,095 VND for rice.

#### **5.5.5 Marketing**

Sweet potato is very important food crop in Vietnam, particularly in the Central Coast. All sweet potato production is for domestic consumption.

In 1992, in cooperation with Japan, several samples of sweet potato roots were sent to Japan from Vietnam to explore the possibility of exporting sweet potato to Japan. However, it was not successful, since sweet potato of Vietnam has low dry matter content. More recently, in 1995, a small quantity of sweet potato was exported from Vietnam.

#### **5.5.6 Government policy**

There is no specific policy for sweet potato. In the case of winter sweet potato, there is no agricultural tax on irrigation fees.

#### **5.5.7 Constraints**

##### *Production*

Production data from a survey conducted in 1990 show that there are three major constraints for sweet potato:

- Lack of suitable processing technology is a major constraint for sweet potato production
- Lack of irrigation infrastructure also restricts production.
- Lack of fertilizer is a general problem affecting sweet potato as well as other crops.

## Chapter 5

### *Processing*

The processing industry is not yet developed. Simple traditional processing methods are popular, such as dried chips, etc. There is a lack of high dry matter content cultivars for processing.

### *Marketing*

All the sweet potato production is for domestic consumption. There is almost no success in export of sweet potato, because of the lack of high dry matter content cultivars for export. However, dried sweet potato processed in Dalat has been exported recently.

### *Research*

- Although sweet potato ranks number three after rice and maize, not much attention has been given to this crop.
- The research budget for this crop is too low.

## **5.5.8 Recommendations**

- There is a need to develop the processing industry for sweet potato.
- Intensive farming should be applied for sweet potato to increase productivity of the crop.
- There is an urgent need to develop high dry matter content varieties of sweet potato for both processing and export.
- More attention should be given to research and the budget for research should be increased.

## **5.5.9 Reasons for failure of sweet potato development in Vietnam**

- Sweet potato is always considered an important crop but not much attention has been given it.
- All sweet potato produced in Vietnam is for domestic consumption.
- Processing and export industries for sweet potato are not yet developed.
- Sweet potato is not provided with sufficient fertilizer.
- The national average yield of sweet potato is only from 5 to 6 tons/ha.
- The root dry matter content of existing sweet potato cultivars is low. This is the main limiting factor for sweet potato processing and export.

## **5.6 Tomato**

### **5.6.1 Production**

Total tomato planted area and total production were 12,038 ha and 114,882 tons in 1986, increasing to 15,593 ha and 183,535 tons in 1995 (Table 5.19). From 1986 to 1995, the average growth rate was 2.9% for total planted area and 5.7% for total production. Table 5.20 shows that in 1995 planted area of tomato in the North was 15,187 ha accounting for 97.4% while that in the South was only 406 ha accounting for 2.6%. The Red River Delta is the biggest tomato production region with a total planted area of 9,141 ha accounting for 58%, followed by North Mountain and Midland region with 4,230 ha accounting for 27.1%.

**Table 5.18 Economic comparison of sweet potato, rice and groundnut in North Central region, 1990.**

Item	Rice	Sweet Potato	Groundnut
<b>Input Costs</b>			
Material, fertilizer, irrigation and chemical ('000 VND/ha)			
Mr. Mau	240	103	244
Mr. Mui	192	130	290
Mr. At	238	251	189
Average	223	161	241
Man-day/ha			
Mr. Mau	360	220	460
Mr. Mui	380	200	460
Mr. At	360	260	440
Average	367	227	453
Value of output ('000 VND/ha)			
Mr. Mau	700	490	850
Mr. Mui	700	420	860
Mr. At	490	560	1,000
Average	630	490	903
<b>Return to labor and land</b>			
Output-input costs ('000 VND/ha)			
Mr. Mau	460	387	606
Mr. Mui	508	290	570
Mr. At	242	309	811
Average	403	329	662
Value of one man-day (VND/day)			
Mr. Mau	1,277	1,760	1,317
Mr. Mui	1,336	1,450	1,239
Mr. At	672	1,181	1,842
Average	1,095	1,463	1,466

Source: Sweet potato in North Vietnam: Present Status and constraints. Mai Thach Hoanh, Dao Huy Chien, Trinh Khac Quang, Nguyen Thi Yen, Nguyen Thi Nguyet, Tran Duc Hoang, Nguyen Ba Lieu and Trinh Quoc My CGPRT No.24

**Table 5.19 Area, yield and production of tomato in Vietnam, 1986-1995.**

Year	Area (ha)	Yield (tons/ha)	Production (tons)
1986	12,038	9.5	114,882
1987	12,443	10.2	127,100
1988	12,545	10.1	127,167
1989	12,827	9.2	118,597
1990	13,730	10.0	136,772
1991	13,548	10.4	140,398
1992	14,335	10.3	147,424
1993	14,368	10.7	154,446
1994	14,962	9.9	148,467
1995	15,593	11.8	183,535
Average Annual			
Growth Rate (%)	2.9		5.7

Source: Nguyen Sinh Cuc, Department of Agriculture and Forestry, General Office of Statistics 1996.



**Table 5.20 Planted area of tomato by region in Vietnam, 1995.**

Country/Region	Area (ha)	Percentage (%)
Total Country	15,593	100.0
North	15,187	97.4
North Mountain and Midland	4,230	27.1
Red River Delta	9,141	58.6
North Central Coast	1,816	11.7
South	406	2.6
South Central Coast	-	
Central Highland	276	1.8
North East South	130	0.8
Mekong River Delta	-	

Source: Nguyen Sinh Cuc, Department of Agriculture and Forestry, General Office of Statistics 1996.

### 5.6.2 Economical efficiency of production

From 1986 to 1995, the national average tomato yield was only around 10 t/ha (Table 5.19). However, survey data of Fruit and Vegetable Research Institute show that the average yield of tomato from several surveyed areas was from 24.5 t/ha to 31.7 t/ha (Table 5.21). The value of production varied from 6,705,000 VND to 8,270,000 VND/ha. The cost of production varied from 6,266,000 VND to 7,245,000 VND/ha. The total income varied from 4,139,000 VND to 4,980,000 VND/ha. The net income varied from 439,000 VND to 1,027,000 VND/ha, but the selling price was too low, from only 233 VND to 327 VND/kg (Table 5.21).

### 5.6.3 Marketing

#### *Domestic market*

Tomato processing is not yet well developed. The tomato processing industry is in the initial stage of development in some provinces. Most of the tomato production is for domestic consumption in fresh form. Tomato is usually cooked with various kinds of food for daily diet.

Most of the tomato production is for domestic consumption. In the Red River Delta, at the peak of harvest from January to March, there is a surplus of tomato supply. However, also in this region, during the summer season, there is a shortage of tomato supply.

The tomato price fluctuates considerably over time and between locations. For example, in January and February 1995 at the peak of the tomato harvest in the Red River Delta, the price of good quality tomato was only around 300 VND/kg but in June and July, it was up to 5,000 to 8,000 VND/kg.

The price of tomato in the South is usually much higher than that in the North. Domestic market demand has increased because of improvement in socio-economy and the growing population. The Red River Delta has great potential for tomato production because of the rather long cold winter and the available arable land area.

### Foreign market

In 1995, tomato was exported. However, the quantity of export tomato was still low. In the long term, there is great potential for tomato export. However, almost all efforts in tomato export have not succeeded.

**Table 5.21 Economical efficiency of tomato production.**

	Unit	New Varieties		Local Variety	
		Main Crop HP-5	Late Crop P-375	Main Crop Polland	Late Crop Polland
Average yield	t/ha	31.7	25.8	28.7	24.5
Value of production	'000VND/ha	7,720	8,270	6,705	8,020
Cost of production	"	6,878	7,245	6,266	7,059
- Material cost	"	3,078	3,292	2,566	3,253
- Labor cost	"	3,800	3,953	3,700	3,806
Total Income	"	4,642	4,980	4,139	4,767
Net income	"	842	1,027	439	961
Average selling price	VND/kg	243	320	233	327

Source: Fruit and Vegetable Research Institute 1996. Survey data from 1993 to 1995.

### 5.6.4 Government Policies

- Not much attention has been given to the tomato crop.
- Like many other crops, farmers can obtain favorable interest loans from various government banks for growing tomato.
- There is no specific policy for tomato development.

### 5.6.5 Constraints

#### Production

- The price of input materials is high and the price of output products is low.

#### Processing

- The tomato processing industry is not well developed. Not much attention has been given to investment for tomato processing.

#### Marketing

- The price of tomato fluctuates considerably over time and between locations.
- The road system for transport is still poor. Facilities for packaging, storing, transporting, loading and unloading tomato are very poor.
- The linkage between production, processing and marketing is not yet well developed.

#### Research

- The research budget for tomato is limited in all aspects, such as for varietal improvement, production, processing and marketing.

### 5.6.6 Recommendations

- Intensive farming should be applied for tomato to increase its productivity.
- There is a need to invest much more in the tomato processing industry.

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- Modern facilities for transport, storage, packaging, loading and unloading tomato need to be provided and equipped.
- There is a need to increase the budget for research.

### **5.6.7 Reasons for failure of tomato export**

- The tomato processing industry is not yet well developed. Most tomato is marketed and consumed in fresh form.
- Fresh tomato is a perishable commodity. However, the transportation infrastructure is not good yet and the facilities for packaging, storing, transporting, loading and unloading are very poor.
- The marketing system of tomato is not yet well developed.

## 6 Animal Husbandry

### 6.1 Production

From 1991 to 1995, the gross output of animal husbandry increased from 3,227,271.4 million VND (accounting for 21.9% of the gross output of agriculture) to 4,237,362.0 million VND (accounting for 22.8% of gross output of agriculture) (Table 1.4 and Table 6.1).

From 1985 to 1995, the number of buffaloes increased from 2,590,200 to 2,962,800 head, cattle increased from 2,597,600 to 3,638,900 head, pigs increased from 11,807,500 to 16,306,400 head, horses decreased from 132,700 to 126,800 head, goats and sheep increased from 402,600 to 550,500 head and poultry increased from 91,200,000 to 142,100,000 birds (Table 6.2). The total quantity of feed increased from 3.0 to 5.7 million tons (Table 6.3).

**Table 6.1 Gross output of animal husbandry (million dong at constant 1989 prices).**

Year	Livestock	Poultry	Non Meat Products	Total
1985	1,577,563.8	512,918.2	320,956.1	2,551,806.9
1986	1,784,670.4	528,568.2	359,664.1	2,824,271.7
1987	1,956,217.2	529,044.4	415,823.1	3,064,919.6
1988	1,832,257.6	555,631.3	381,062.2	2,925,594.5
1989	1,982,858.8	595,569.1	390,812.4	3,129,070.7
1990	2,027,008.6	615,308.3	418,416.5	3,223,816.4
1991	2,000,186.0	617,694.2	447,990.9	3,227,271.4
1992	2,261,195.0	691,174.5	518,070.5	3,641,616.1
1993	2,418,090.0	707,200.0	542,124.0	3,847,015.0
1994	2,613,465.5	713,442.0	544,904.0	4,055,337.5
1995	2,712,221.0	736,052.0	605,059.0	4,237,362.0

Source: Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi, 1996.

**Table 6.2 Livestock and poultry ('000 head).**

Year	Buffaloes		Cattle		Pigs		Horses	Goats, Sheep	Poultry
	Total	Draft buffaloes	Total	Draft cattle	Total	Sows			
1985	2,590.2	1,734.0	2,597.6	1,006.8	11,807.5	1,489.7	132.7	402.6	91,200
1986	2,657.6	1,793.4	2,783.5	1,065.0	11,795.9	1,499.6	136.6	432.4	99,900
1987	2,752.7	1,868.4	2,979.1	1,186.3	12,050.8	1,538.7	136.0	413.8	96,000
1988	2,806.8	1,913.1	3,126.6	1,261.8	11,642.6	1,397.1	133.0	410.1	96,300
1989	2,871.3	1,946.1	3,201.7	1,361.1	12,217.3	1,450.1	142.2	387.5	104,800
1990	2,854.1	1,938.4	3,116.9	1,420.8	12,260.5	1,572.1	141.3	372.3	107,400
1991	2,858.6	1,957.2	3,135.6	1,410.8	12,194.3	1,508.4	133.7	312.5	109,000
1992	2,886.5	2,000.4	3,201.8	1,435.8	13,891.7	1,809.9	133.1	312.3	124,500
1993	2,960.8	2,065.4	3,330.0	1,508.1	14,873.9	2,015.7	132.9	353.0	133,400
1994	2,977.3	2,076.3	3,466.8	1,590.0	15,587.7	2,182.1	131.1	427.9	137,800
1995	2,962.8	2,065.3	3,638.9	1,632.3	16,306.4	2,198.3	126.8	550.5	142,100

Source: Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi 1996.

### 6.2 Projection

According to the Department of Agriculture and Forestry Extension, Ministry of Agriculture and Rural Development from 1996 to 2000, the number of pigs poultry will

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increase to 20.0 million heads to 300 million heads cattle to 4.337 million head (Table 6.4). The projection of feed demand is indicated in Table 6.5

**Table 6.3 Total quantity of feed from 1985-1995.**

Year	Feed (million tons)
1985	3.0
1986	3.3
1987	3.6
1988	3.9
1989	4.3
1990	4.5
1991	4.7
1992	4.9
1993	5.2
1994	5.4
1995	5.7

Source: Estimated by Animal Husbandry Division  
Department of Agriculture and Forestry  
Extension, Ministry of Agriculture and Rural  
Development 1996.

**Table 7.4 Projection of animal husbandary development in million head, 1996-2000.**

Year	Pig	Poultry	Cattle	Cow	Buffaloes	Goats
1996	17.4	180	3.770	0.030	3.030	0.536
1997	18.1	210	3.862	0.038	3.061	0.601
1998	19.0	240	4.054	0.046	0.091	0.674
1999	19.5	270	4.145	0.055	3.122	0.755
2000	20.0	300	4.337	0.063	3.153	0.846

Source: Department of Agriculture and Forestry Extension, Ministry of Agriculture and Rural Development 1996.

**Table 6.5 Projection of feed demand in million tons, 1996-2000.**

	1996	2000
Pig Feed	5.900	7.300
Poultry Feed	0.810	1.120
Cattle Feed	0.014	0.021
Total	6 724	8.441

Source: Department of Agriculture and Forestry  
Extension, Ministry of Agriculture and Rural  
Development 1996.

## 6.3 Recommendation

During the past 10 years (1985-1995), with socio-economic progress, the development of animal husbandary was rather strong. It is expected that animal husbandary development will be even stronger in the near future. Therefore, demand of upland crop products for feed processing will rapidly increase, particularly, for maize and soybean. Thus, it is important to give more attention for development of upland crops relating to feed industry, especially maize and soybean.

## 7 Conclusions and Recommendations

### 7.1 Market demand prospects

The results of the study on Vietnamese dietary patterns show that Vietnamese people have changed their food consumption behavior. Dietary intake (g/capita/day) decreased for rice, roots, tubers and vegetables. However, it increased for meat, fish, milk, egg, tofu, sugar and fruits. In the coming years, it will be necessary to raise the national average dietary intake.

In general, the dietary intake of Vietnamese people does not provide enough energy. Rice provides 85% of energy. Deficiency of protein, vitamins and fat are common.

It is expected that the consumption of meat and dairy products will increase in the future. This will have a great impact on the demand of upland crops especially maize and soybean.

Animal husbandry production has increased. Maize, soybean, sweet potato and cassava are becoming more important. Therefore, there is a need to further develop all aspects such as production, processing and marketing of upland crops.

Rice production increased during the last five years. Vietnam not only produces enough rice for domestic consumption but also for growing exports. Rice has contributed an important part of the total value of exports. However, the rice processing and rice marketing system need to be improved.

The growth rate of maize was rather high during the last five years, especially maize production from hybrid seed. This benefits the feed processing industry and animal husbandry development.

Soybean is very important not only for food but also for feed. However, soybean production has not been developed to meet market demand. In terms of policy, more attention needs to be given to this crop.

Cassava has good prospects for both domestic and foreign markets. The processing industry has had a great impact on cassava production in the South only. Therefore, there is a need to develop the cassava processing industry in the North.

Cashew nut is not only a good cash crop, but also a crop which is able to adapt to poor and dry soil conditions. This crop has very good prospects for export. In the South of Vietnam, there is good potential for development of cashew. Cashew is a good crop for regreening the deforested hilly areas.

Orange is an important fruit tree in Vietnam. During the past 5 years, the growth rate of orange was high, although export of orange was not great. This indicates that orange has very good prospects for the domestic market. Therefore, orange production needs to be improved with good quality orange cultivars and good crop management. There is also a need to develop the processing industry and post harvest technology for orange.

Coffee is a very good cash crop and export product. However, almost all coffee is exported in the raw material form. It would be better to develop a refined coffee processing industry in Vietnam.

Coffee has proved to be a very important export commodity. However, recently there is a growing tendency towards uncontrolled deforestation to plant coffee. This has resulted in severe negative impact on the environment, natural resources and the ecological balance. As a result, drought is more frequent now in Daclac province. In the dry season, lack of water is common not only for crops but also for human daily direct uses. This negative picture suggests that it is necessary to properly develop new coffee planting areas. The coffee development plan must consider both the economy and environment protection.

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Groundnut is a very good commodity for food and for export. In the past ten years, groundnut planting area has been extended. Groundnut is a traditional commodity for export of Vietnam. However, to improve groundnut production and export, varietal and cultural practice improvement is needed. The small nut size and low oil content make the Vietnam groundnut price lower than that of others in the international market.

Sugarcane is an important crop in Vietnam. The total area of sugarcane production has increased rapidly. Vietnam's growing population needs more and more sugar. The government gives considerable attention to sugarcane sugar production, including a program to produce 1 million tons of sugar in the year 2000. However, the development of the sugar processing industry has been slower than that of sugarcane production, which resulted in an imbalance between sugarcane supply and sugarcane demand. In late 1995 and in 1996, the sugarcane price in South of Vietnam was very low. It is necessary to regulate the growth rate of sugarcane production and the sugar processing industry to keep sugarcane supply and demand in balance to avoid economical losses to sugarcane farmers.

Potato is good crop in Vietnam. During the past 15 years, the total production and planted area decreased very much although there is a great potential for potato production in Vietnam. The lack of good quality seed supply and the use of degenerated seed are the major constraints for potato development in Vietnam. The processing industry of potato is not yet developed, and the potato export is very limited, which are constraints for potato development. To solve these problems it is necessary to develop good seed production and supply systems; the development of potato processing and marketing are also important. Recovering traditional markets and entering new markets for potato exports are also possible. All of above need to be integrated for potato development.

Sweet potato is an important crop in Vietnam. Together with cassava, sweet potato plays a buffer role in food supply and demand balance in Vietnam. It can be used as food or feed depending on the success or the failure of the rice crop. However, despite of its importance, not much attention has been given to this crop in all aspects such as production, processing, marketing, research and development. Sweet potato is a very good commodity for domestic consumption, and recently, processed sweet potato products from Dalat have been exported to Taiwan, Japan, Hong Kong, etc. This suggests that there is a potential for sweet potato export of Vietnam. However, low dry matter content is a major limiting factor of sweet potato export. Therefore, it is necessary to develop and introduce sweet potato varieties with high dry matter content.

Vietnam has great potential for tomato production, especially in the Red River Delta where the cool winter is suitable for tomato cultivation. However, tomato processing is not yet developed; moreover, facilities for packaging, transporting, storage, loading and unloading are very poor. This has resulted in failure of tomato export. Nevertheless, tomato was recently, exported in the small quantity to foreign markets, which suggests that there is promise for tomato exports. Therefore, it is necessary to give attention to tomato development including production, processing, marketing (domestic and foreign markets).

For some upland crops such as rice, maize, soybean, cassava, cashew, coffee, groundnut and sugarcane, processing industries are being developed to a certain level. However, for fruits and vegetables, the processing industry has not been developed much. Fruits and vegetables are perishable commodities, so processing industries are especially important to them.

Recently, the Ministry of Agriculture and Rural Development formulated a project for fruit and vegetable development for 1996-2000 with a total budget to US \$ 390 million, of which US \$ 160 million is for development of processing. Hopefully under this project, orange and tomato processing will be improved.

## **7.2 Policies and measures**

- It is very important to invest in processing and marketing of upland crop products such as rice, maize, soybean, cassava, cashew, orange, coffee, groundnut, sugarcane, potato, sweetpotato and tomato.
- Recently, improvement in rice processing has had a positive impact on rice marketing, particularly on exports. The export price of rice has increased. However, in general, there is a need to invest more for rice processing so that Vietnam can obtain a higher price for rice exports.
- During the process of social economic development, the growth rate of animal husbandry will become higher and higher. The feed processing industry is developing rapidly. Maize production needs to be developed much more to meet the demand of feed for development of animal husbandry.
- Similar to maize, soybean is a very important raw material for the feed industry. To meet the increasing demand of soybean for animal husbandry development, it is important to increase soybean production.
- The cassava processing industry is being developed strongly in the South. This is not the case for the North. There is a need to invest in the cassava processing industry in the North.
- Cashew nut is not only a good cash crop, but also a good tree for reforestation. In the South, there is a good potential for cashew development. Cashew has proved to be a good commodity for export. A suitable policy for cashew development is required so that cashew will be able to contribute more and more to the total annually export value of agriculture.
- Orange is a good cash crop in Vietnam. However, the marketing and eating quality of orange are poor. It is important to invest in varietal development and extension of newly improved orange varieties in order to improve orange quality.
- Coffee is a very important export commodity of Vietnam. However, there is a need to develop a coffee development policy and measures to prevent uncontrolled coffee development so that forests and the environment can be protected.
- At present, most coffee is exported in the form of raw material. It is necessary to invest more for processing coffee for both domestic and foreign markets.
- There is a need to invest in groundnut varietal development in order to develop and introduce new varieties with larger nut size and higher oil content.
- At present, there is a active program of investment for sugarcane and sugar. However, the rate of construction of sugar processing plants is slow. Moreover, the payment of interest for the loans is a challenge for the sugar processing industry. In the sugar processing industry, there is a need for further consideration of the market and price, the supply and demand of sugar and sugarcane.
- There is great potential for potato development in Vietnam. However, seed production, seed supply and processing are major limiting factors for development of potato. It is important to invest in establishment of seed potato production and supply systems and in the potato processing industry.
- In sweet potato development, there is a need to invest in sweet potato processing. Sweet potato cultivars with high dry matter content are required for production of sweet potato suitable for processing and export.
- The potential for tomato development is great in the Red River Delta and Lamdong province (where Dalat City is located). However, tomato production is limited. Therefore, it is necessary to invest in tomato processing and marketing.



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## **Appendices**

**Appendix Table 1 Agricultural land by region in Vietnam, 1985-1995.**

	1985	1987	1990	1991	1992	1993	1994	1995
Whole Country (hectares)	6,942,212	6,950,391	6,993,241	7,007,874	7,293,697	7,348,389	7,367,276	7,357,534
North	2,777,048	2,808,158	2,738,649	2,744,838	2,741,908	2,707,362	2,583,573	2,517,840
1. North Mountain and Midland	1,209,034	1,214,435	1,226,926	1,316,559	1,315,605	1,293,051	1,201,437	1,155,962
2. Red River Delta	811,442	838,261	801,023	720,843	720,910	721,266	711,813	688,941
3. North Central Coast	756,572	755,462	710,700	707,436	705,393	693,045	670,323	672,937
South	4,165,164	4,142,233	4,254,592	4,263,036	4,551,789	4,641,027	4,783,703	4,839,694
4. South Central Coast	546,352	531,012	540,370	539,126	539,528	533,232	544,513	536,205
5. Central Highlands	375,967	384,165	444,991	454,333	494,024	572,736	629,208	581,272
6. North East South	800,895	770,997	804,980	808,961	928,875	937,246	955,916	1,013,133
7. Mekong River Delta	2,441,950	2,456,059	2,464,251	2,460,616	2,589,362	2,597,813	2,654,066	2,709,084

Source: Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi 1996.

**Appendix Table 2 State investment outlays in agriculture (at current prices).**

	1986	1990	1991	1992	1993	1994
Total (billion dong)	6.07	409.16	615.4	839.8	1,207.6	1,613.1
Cultivation Land Cleaning	3.32	92.19	189.3	228.1	314.0	415.5
Reclamation	0.54	29.47	37.2	126.7	100.6	47.9
State Farms	2.71	56.56	145.5	90.5	199.0	137.0
- Rubber	1.50	20.78	60.6	30.0	43.1	101.7
- Tea	0.14	0.91	19.6	5.9	8.4	1.5
- Coffee	0.76	2.60	16.0	7.0	14.8	15.5
Services for cultivation	0.07	7.32	6.6	10.9	14.4	230.6
Animal Husbandry	0.22	16.90	20.7	30.1	35.8	105.7
State Station of Tractors	0.02	0.04	-	-	0.1	-
Water conservancy	2.51	299.83	405.0	581.6	857.8	1,091.9
- Irrigation and Drainage	2.39	244.44	345.0	438.3	673.3	-

Source: Statistical Data of Agriculture, Forestry and Fishery 1985-1995. General Statistical Office, Department of Agriculture, Forestry and Fishery. Statistical Publishing House, Hanoi 1996.

**Appendix Table 3 Gross output of agriculture (million dong at constant prices of 1989).**

Year	Crop Production	Animal Husbandry	Total
1985	9,389,740.6	2,551,806.9	11,941,547.5
1986	9,716,248.4	2,824,271.7	12,540,320.1
1987	9,508,397.5	3,064,919.6	12,573,317.1
1988	10,158,629.0	2,925,594.5	13,083,223.5
1989	10,940,308.3	3,129,070.7	14,069,379.0
1990	11,099,542.8	3,223,816.4	14,323,359.2
1991	11,511,701.5	3,227,271.4	14,738,972.9
1992	12,331,163.8	3,641,616.1	15,972,779.9
1993	13,185,702.6	3,847,015.0	17,032,717.6
1994	13,800,901.0	4,055,337.5	17,856,238.5
1995	14,785,556.0	4,237,362.0	19,022,918.0

Source: Statistical Data of Agriculture, Forestry and Fishery 1985-1995. General Statistical Office, Department of Agriculture, Forestry and Fishery. Statistical Publishing House, Hanoi 1996.

**Appendix Table 4 Index of gross output of agriculture (% change from previous year).**

Year	Crop Production	Animal Husbandary	Total
1985	102.7	101.5	102.5
1986	103.5	110.6	105.2
1987	97.9	108.5	100.3
1988	106.8	95.5	104.1
1989	107.7	107.0	107.5
1990	101.5	103.0	101.8
1991	103.7	100.1	102.9
1992	107.1	112.8	108.4
1993	106.9	105.6	106.6
1994	104.7	105.3	104.8
1995	107.13	104.49	106.53
Average Annual Growth Rate	4.51	4.91	4.60

Source: Statistical Data of Agriculture, Forestry and Fishery 1985-1995. General Statistical Office, Department of Agriculture, Forestry and Fishery. Statistical Publishing House, Hanoi - 1996.

**Appendix Table 5 Structure of gross output of agriculture, forestry and fishery (% at constant 1989 price).**

	1991	1992	1993	1994	1995
Total	100	100	100	100	100
1. Agriculture	83.19	84.15	84.39	83.06	82.65
- Cultivation	65.00	65.00	65.33	64.20	63.87
- Animal Husbandary	18.19	19.15	19.06	18.86	18.78
2. Forestry	7.99	7.30	6.80	6.59	6.41
- Afforestation and forest feeding	1.38	1.75	1.24	1.49	1.52
- Wood and Forest products	6.54	5.48	5.42	4.97	4.77
- Other forestry	0.07	0.07	0.14	0.13	0.12
3. Fishery	8.82	8.55	8.81	10.35	10.94

Source: Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi 1996.

**Appendix Table 6 The role of agriculture, forestry and fishery in the national economy of Vietnam, 1991-1995.**

	1991	1992	1993	1994	1995
Gross Domestic Product (billion dongs at current prices) Total	76,707	110,535	136,571	174,670	222,840
Agriculture, Forestry and Fishery (billion dongs)	31,058	37,513	40,796	51,173	64,719
Percent of GDP (%)	40.5	33.9	29.9	29.29	29.04

Source: Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi, 1996.

**Appendix Table 7 Gross output of crop production (million dongs at constant 1989 price).**

Year	Food Crops	Vegetables	Industrial Crops	Fruit Crops	Total
1985	6,238,229.5	620,996.8	1,377,627.4	837,131.9	9,389,740.6
1986	6,307,122.5	708,431.5	1,448,880.4	939,534.7	9,716,248.4
1987	6,053,148.8	720,298.0	1,527,457.7	926,715.3	9,508,397.5
1988	6,737,103.7	702,605.4	1,567,287.4	838,007.2	10,158,629.0
1989	7,402,315.7	756,668.4	1,544,904.4	903,120.8	10,940,308.3
1990	7,395,711.4	756,840.0	1,612,481.1	1,007,057.0	11,099,542.8
1991	7,541,856.8	755,540.0	1,913,292.7	966,775.0	11,511,701.5
1992	8,280,914.1	772,220.0	1,903,382.7	1,004,000.0	12,331,163.8
1993	8,747,234.2	823,580.0	2,158,192.6	1,064,000.0	13,185,702.6
1994	8,998,966.0	855,699.2	2,472,614.3	1,080,450.4	13,800,901.0
1995	9,430,621.0	941,549.0	2,907,524.0	1,109,462.0	14,785,556.0

Source: Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi 1996.

**Appendix Table 8 Irrigated, drained and mechanized land area of annual crops in 1994.**

	Irrigation		Drainage		Mechanization	
	Land Area (ha)	%	Land Area (ha)	%	Land Area (ha)	%
Whole country	1,998,125	41.3	1,465,501	30.3	1,631,560	33.8
North	913,533	45.7	588,319	29.4	198,412	9.9
North Mountain and Midland	206,638	33.2	83,806	13.5	11,744	1.9
Red River Delta	481,194	79.1	405,798	66.7	151,445	24.9
North Central Coast	225,701	46.0	98,715	20.1	35,223	7.2
South	584,592	19.3	877,183	29.0	1,433,149	47.4
South Central Coast	140,175	34.7	35,091	8.7	98,591	24.4
Central Highland	17,833	7.9	6,598	2.9	35,547	15.8
North East South	54,293	12.7	26,279	6.2	128,645	30.1
Mekong River Delta	372,291	47.9	809,215	44.4	1,170,366	64.2

Source: Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi 1996.

**Appendix Table 9 Water conservation projects for agricultural production.**

	1985	1990	1991	1992	1995
1. Total number of the projects	4,952	5,065	5,051	5,266	10,632
- Water works for agriculture	4,872	4,979	4,959	5,171	10,563
- Water works for hydroelectric in combination with agriculture.	80	86	92	95	69
2. Serving capacity (thousand ha)					
- Irrigation	2,533.9	2,387.2	2,431.0	2,391.0	2,640.0
- Drainage	1,344.2	1,443.9	1,689.0	1,915.0	1,593.0

Source: Statistical Data of Agriculture, Forestry and Fishery 1985-1995. Statistical Publishing House, Hanoi 1996.

**Appendix Table 10 GDP per capita and rice consumption per capita, 1991-1995.**

Year	GDP/capita (US \$) (Y)	Rice consumption (kg/capita) (R)
1991	118	160
1992	142	160
1993	182	171
1994	211	171
1995	273	177

Note: Estimated for calculating income elasticity for rice by minus export, seed use; other uses and losses.

$$\text{LnR} = 4.465 + 0.128 \text{ LnY}$$

Income elasticity for rice = 0.128