CHAPTER V

FARMERS' PRACTICES AND CONSTRAINTS IN STUDY AREA

5.1 Farmers' practices

The following description is based on the information from the investigation of vegetable production in villages where farmers' practices yard long bean and cucumber production

5.1.1 General characteristic of farmers' practices

Land preparation

The fields for yard long bean or cucumber are ploughed and harrowed 2-3 times with 10 -20 cm deep.

The soils are dried for one week at each time of ploughing. But sometimes, farmers plant their crops 2-3 days after land preparation.

Seedbed

Seedbed is prepared in the homestead or in lowland near the river. The ploughed fields are dried well before sowing the seeds. The yard long bean fields are ploughed at 1-2 times. However, most of seedbed is 60 cm wide and 4-5 m long. After harrowing, seed is sown at 2-3 cm depth with at lest 3-4 seeds per hill. The seedbed is well watered after seeding at least 2-3 days interval.

Fertilizer use

From the survey, farmers do not have uniform fertilizer application procedures. Several farmers use cow dung of 10-15 t/ha on average as basal application, while some of farmers apply 15-15-15 and Urea as basal fertilizer.

The most important fertilizers used by farmers are 15-15-15, Urea, DAP and Kcl. Farmers use a lot of chemical fertilizers with lack of understanding of the negative impact on soil and economic return. On average, farmers' fertilize management for yard long bean and cucumber consist of cow dung at an average of

12 t/ha, urea at 100-150 kg/ha for basal fertilizer and 15-15-15 at 400-500 kg/ha which they had apply 7-8 times for the crop cycle.

Pesticide application

Both yard long bean and cucumber grower are very heavily dependent on the use of pesticides for pest control. Farmers believe that pesticides are very important in increasing the crop yield. In general, farmers apply pesticides 4-5 days after planting. It is common practice amongst farmers to mix several different pesticides together as chemical cocktail for spraying their crops with high dose from 20 ml to 80 ml/17 liter of water. The frequency of application is normally one spray every 3-8 days according to intensity of damage. Farmers spray crops from 10 to 35 times depending on the type of vegetable grown and the time of cropping. None of the farmers interviewed wares protecting clothes and the methods of spray could be dangerous to their community like health and environment. Usually, the most popular pesticides used are mevinphos, methyl parathion, methamidophos, and monocrotophos. Other popular pesticide are cypermethrin, permethrin (WHO class II, pyrethroid), delthamethrin (WHO class II, pyrethroid), abamectin (WHO class III, avermectin), chlorfluazuron and fipronil (CEDAC, 2004).

Insect pests

The major problems on vegetable production are insect pests. There are many types of insect pests damaging on vegetable groups. The main insects of both vegetables are fruit fly and beetle (cucumber) and *Spodoptera litura, Helicoverpa armigera, pod borers* and Aphids (yard long bean).

Diseases

Farmers in the commune claimed that the main diseases infested in both vegetable are fusarium wilt, powdery mildew and mosaic virus for cucumber and damping off (*Rhizoctonia solani*), fusarium wilt (*Fusarium oxysporum f.sp.*), cercospora leaf spot (*Alternaria sp.*), powdery mildew, black aphid, leaf hopper thrips, and bean mosaic virus for yard long bean. So far, farmers do not have good knowledge on disease control.

Harvesting

In general, farmers harvest and sell vegetables to marker after spraying pesticide 1-2 days. The yields is normally low at 5- 10 t/ha and the economic return is also low because of the high input use for growing vegetables.

5.1.2 Farmers' practices in three villages compared

Table 5.1 provides comparisons of farmers' practices on vetable production in three village of Somroung Thom commune.

Farmers in Somroung Ker village, who were trained by the NGO, work more time on land preparation by ploughing 3-4 times; use more compost in combination with chemical fertilizers and produce highest yield than farmers receiving training from government extension official (Peak Thaker village) and from contact farmers (Chroy Thore Village), two and over three time higher, giving average yields of 7.2, 3.6, and 2.2 t/ha, respectively.

It is noted that farmers trained by NGO and trained by government extension officials used similar plant spacing, seeding depth and seeding rate. While farmers received technical information from the contact farmer plant their vegetables at closer spacing, at higher seeding rate, and at deeper level.

5.2 The characteristic of respondents at the survey villages

The result of table 5.2 shows the age and education level of sample respondents, the farmer-project ranged from 21-73 years with an average age of 45 years and the non-farmers' age ranged from 23-66 years with an average age of 44 years. Results of study show that the average year of farmers-project (Peak Thaker and Somroung Ker) were litter bit high than the non-project farmers. The age of two groups are differences so can be explained that the training by extension program would like to select the farmers who are not so young and not too old to participate in fields' school for extension program. Almost of farmers often present the confident, farming experiences and mature attitude on practices as well as the ability in communication with other farmers.

Table 5.1 Farmers' practices in three villages of Somroung Thom commune

Item	Peak Thaker	Somroung Ker	Chroy Thore
Land preparation	Dry soil 2 or 3 weeks	Dry soil 2 or 3 weeks	Dry soil 1 weeks or direct seeding
Ploughed	2 times	3 to 4 times	1 to 2 time
Seed bed	25 x 30 M	25 x 30 M	20 x 20 M
Row spacing	60 cm	60 cm	40 cm
Plant spacing	30 cm	30 cm	20 cm
Depth of seed sown	2 – 3 cm	3 cm	5 cm
Seed rate	2 – 3 seeds/pit	2 -3 seeds/pit	3 – 4 seeds/pit
Amount of fertilizer application	1. Basal cow dung: 320 kg 2. DAP: 100 kg 3. Urea: 150 kg 4. kcl: 100 kg	1. Basal compost 150 kg + 16-16-0 (50 kg) 2. Compost 150 kg + 16-16-0: 20 kg 15-15-15: 35 kg 3. Compost 30 kg 15-15-15 : 25 kg	1. Basal cow dung: 10 -12 t + 15-15-15: 134 kg 2. 15-15-15: 200 kg + Urea 44 kg 3. 15-15-15: 134 kg 4. Urea 44 kg
Crop maturity	50 – 65 days	50 – 70 days	50 – 60 days
Production average	3.6 t/ha	7.2 t/ha	2.2 t/ha

Source: Survey data, 2008

Table 5.2 The education status and farmer experiences of respondents

Item	Project-farmer (n=70)		Non-project farmer (n=35)	
	Average No.	Percentage	Average No.	Percentage
Average age	45	-	44	-
Educational levels				
Illiterate/no education	3	4.3	3	9
Primary school	34	49	19	54
Secondary school	31	44	12	34
General education	2	3	1	9
University	0	0	0	0
Farmer Experience (Year)				
2-5	13	19	7	20
5-10	14	20	10	29
› 10	43	61	18	51

Source: Survey data, 2008

The respondents of education level in both categories had differences. On the education level of the project-farmers were slightly higher than the non-project farmers on average year. For illiterate in both project-farmers and non-project were a bit difference on average level at 8.6 percent while the project-farmers only 4.3 percent average year. Most of project-farmers had education at the level of secondary school at 44.3 percent compared to non-project farmers at 34.3 percent. But primary school level, there were lower at 48.6 percent for project-farmers compared to 54.3 percent of non-project farmers on average level. ADB (2007) found that it is easier for the extension agent to work with the well-educated farmers quite than illiterates ones, who are unawares with the scientific conditions of modern farming practices. Farmers with a good general education had to be better for improved their knowledge than litter education once.

Nevertheless, the experiences farmers on vegetable production in both groups were not much difference. It was rages from more than two to five years at 18.6 percent in project-farmers compared to non-project farmers at 20 percent. But, the rages of experiences years for project-farmers from five to ten years were at 20 percent lower than the non-project farmers at 28.6 percent. The last rages from more than ten years with an average at 61.4 percent for project-farmers were a little higher, while the non-project farmers at 51.4 percent (Table 5.2).

Table 5.3 The vegetable farm size in study area

Farm size (m^2)	Project-farmer (n=70)		Non-project farmer (n=35)	
	Average No.	Percentage	Average No.	Percentage
2,500 – 5,000	39	56	28	80
5,001 – 7,500	10	14	3	9
7,501 – 10,000	8	12	2	6
› 10001	13	18	2	5

Source: Survey data, 2008

Indicated that the farm size on study areas had different cultivated like rice, vegetable and fruit tree. The size of vegetable farm, the project-farmers ranged from 2,500- 5,000 m^2 with average at 55.7 percent while the non-project farmers at average 80 percent. Only 14 percent of project farmers and 9 percent of non-project farmers had vegetable size from 5,001-7,500 m^2 and the average of project farmer had size from 7,501-10,001 m^2 at 12 percent and non-project farmer at 6 percent. But for both two groups of farmers only 18.3 percent of project farmer (government and NGOs) had farm size more then 10001 m^2 higher than while the average of farm size for non-project had only 5.7 percent. So it was small amount compared to project-farmers and it is not good also for non-project farmer want to practice the new technologies.

5.3 Constraint in farmer practice

5.3.1 Biophysical constraint

During the field survey, there were many production constraints have been identified.

Insect-pest damage was reported to be the most serious production constraints in three villages, especially Preak Thaker, where the problem was rated higher at 40% in village. While Somroung Ker and Chory Thore had face problem the same rate at 17%. Farmers in Chroy Thore were complained about poor access to technical services and they were more concerned about the lack of service (29%) as more than access to market. While farmers in Somroung Ker receiving technical services from the NGOs claimed that poor access to market was the most serious problem at 37% in this commune. But the flooding was the main concern with the higher rate in Preak Thaker at 31%, Somroung Thom at 26% and Chroy Thore at 43%, which interrupted vegetable cultivation and reduced farmers' incomes.

Table 5.4 Technical and socio-economic constraints of vegetable production in three villages

Constraint	Preak Thaker Village N=35	Somroung Ker Village N=35	Chroy Thore Village N=35
Insect pests	14	6	6
Irrigation	5	9	8
Diseases	3	3	5
High seed price	2	5	4
Flooding	11	9	15
Lack of technical supports	6	2	10
Less access to market	1	13	6
Lack of capital	6	7	5
Labor constraints	3	3	3

Source: Survey data, 2007

All three villages shared similar problem of labor constraint in vegetable production. Farmers also reported that vegetable imported from Vietnam had resulted in lower price of local vegetables (Table 5.4).

5.3.2 Farmers' use of pesticide

Recently, pesticide has been used intensively on agricultural practice in Cambodia. It is used in higher volumes on vegetable production. According to individual interviews, it was found that vegetable growers used higher dosage and had become dependent on highly toxic pesticides to control pests and diseases. Most of farmers often mixed and sprayed a cocktail of dangerous insecticide to only one vegetable crop. The majority of farmers interviewed said that they believed the use of pesticide helped them manage pests and make their vegetable look appealing, healthy and attractive to consumers and could be sold for a higher price.

The pattern was also similarly found in the application of pesticides, with majority of farmers in Somroung Ker and Preak Thaker villages used pesticides less than 400 g/ha. While farmers in Chroy Thore who received no technical advice from extension services of either government or non-government organizations, tended to use more pesticides. About 30 percent of farmers in Chroy Thore used highest doses of pesticides, almost three times higher than the other two villages (Figure 5.1).

5.3.3. Farmers' use of fertilizer

Most of farmers in Preak Thaker and Chroy Thore used compound chemical fertilizers more than 200 kg/ha annually, which was higher rate than Somroung Ker at 150 kg/ha. Farmers in those two villages also used higher rate of chemicals fertilizer up to 450 kg/ha. It seems that the non-government organizations extension program support system in Somroung Ker village worked effectively to convince the farmers to optimize the used of chemical fertilizer (Figure 5.2).

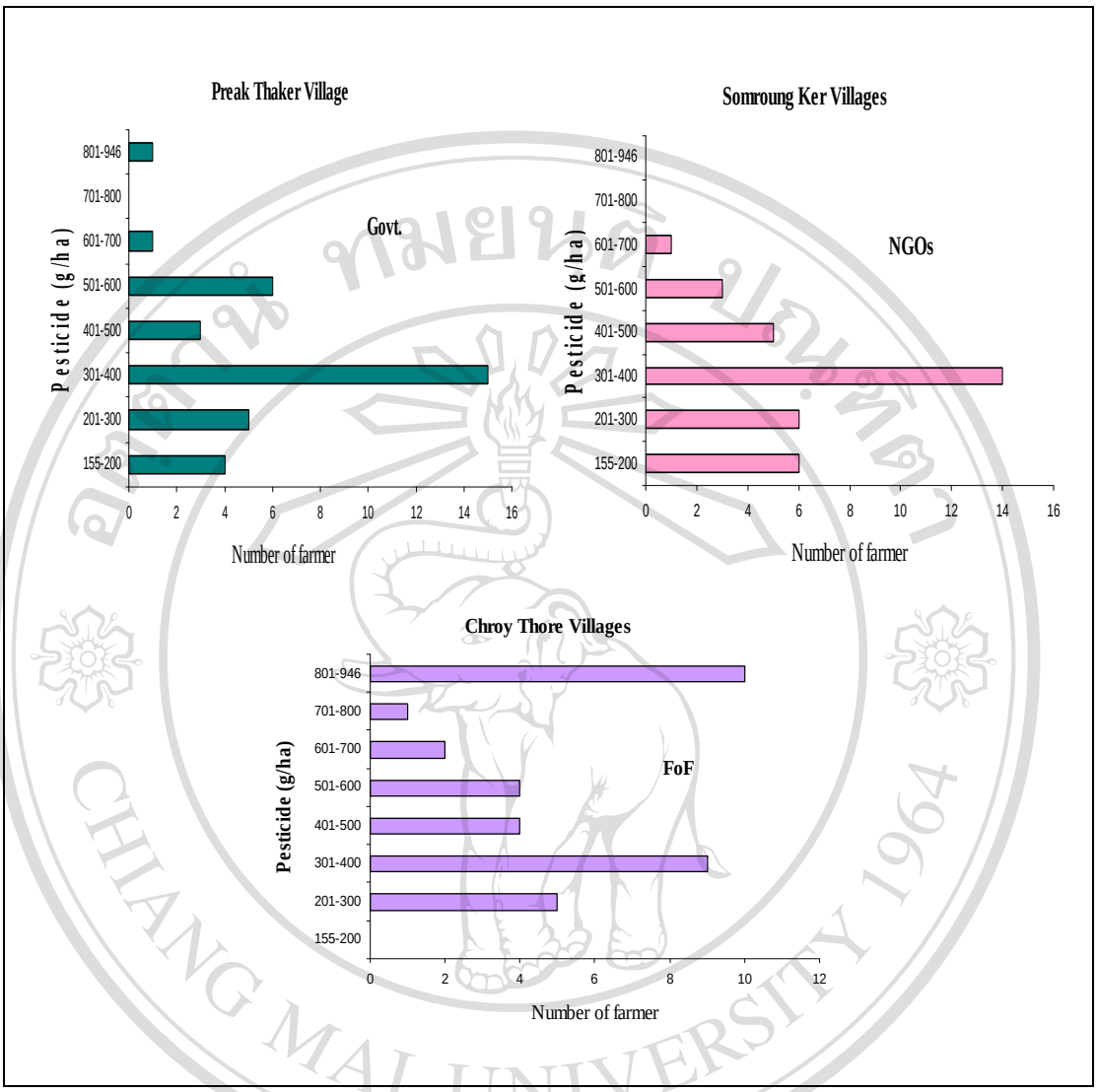

Figure 5.1 Pesticide application rate g per ha in three villages

Source: Survey data, 2008

5.3.4 Marketing channel and vegetables price

There were three types of buyers who came to villages and bought vegetables directly from farmers. The city trader had largest capacity to absorb vegetables with good quality and would pay cash at farm after delivery. The medium size traders, who commonly distributed vegetables at outskirt of the city occasionally, provided loan or input supplies to farmers. They could take lesser amount of vegetables than the city traders, and the payment was usually three days after purchasing.

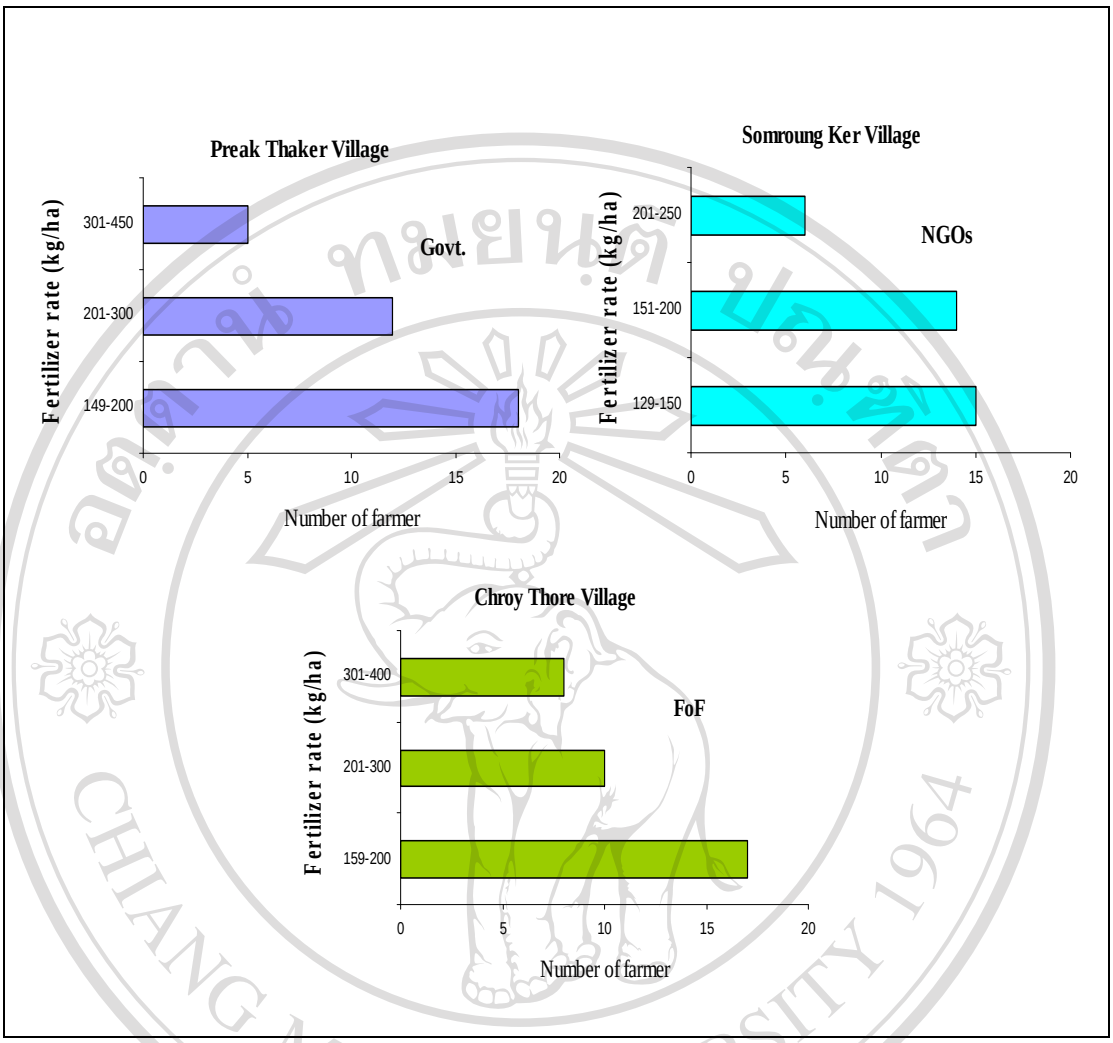

Figure 5.2 Fertilizer application rate kg per ha in three villages

Source: Survey data, 2008

The local traders who were also the residents in the villages would take up lesser amount of vegetables to the local community market. The payment was given after selling the product. The small local traders normally received lower quality of vegetables than the city traders and medium size traders. In Chroy Thore village majority of farmers (91%) preferred selling their vegetables to city traders, because they could take up large quantity and provide payment immediately. A few farmers also brought their vegetables to sell in the local market by themselves.

Table 5.5 Farmers' marketing channels of vegetable production

Type of buyer	Preak Thaker (n=35)		Somroung Ker (n=35)		Chroy Thore (n=35)	
	Average	%	Average	%	Average	%
City trader	13	37	14	40	32	91
Wholesaler (Medium trader)	12	34	12	34	1	3
Local trader	6	18	7	20	0	0
Farmer sell	4	11	2	6	2	6

Source: Survey data, 2008

However, Table 5.6 shows that farmer in Chroy Thore village sold their vegetables in high price as yard long bean at 1,100 Riel/kg, cucumber at 950 Riel/kg and tomato at 1,500 Riel/kg while farmers in other two villages, Preak Thaker and Somrong Ker, sold yard long bean from 800-900 Riel/kg, cucumber from 550-700 Riel/kg and tomato from 1,100-1,300 Riel/kg. Chroy Thore, being closen to the city, has more marketing and price advantage than the other two villages.

Table 5.6 The price of vegetables in Somrong Thom commune

Vegetables	Preak Thaker	Somroung Ker	Chroy Thore
	Price (Riel/kg)		
Yard long bean	900	800	1,100
Cucumber	700	550	950
Tomato	1,300	1,100	1,500

Source: Survey data, 2008