

**School of Management**

**Cluster Farming: A Vegetable Marketing Strategy for Smallholder  
Vegetable Farmers in Southern and Northern Mindanao**

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This thesis is presented for the Degree of  
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of  
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## **Declaration**

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To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.

Signature : .....

Date : .....

## **Abstract**

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With increasing population, rising household income and greater urbanisation in the Philippines, markets are emerging for the vegetable industry to supply hotels, hospitals, supermarkets, restaurants and fast food chains. These institutional buyers, who need more vegetables for their menus, are looking for reliable suppliers who can provide a constant supply at a good price and maintain good quality. Smallholder vegetable producers acting independently are generally unable to meet the quality specifications or to supply the institutional market at a competitive price. More recently, their inability to supply has been exacerbated by increasing competition from imported products. As the majority of the vegetable farmers in the Philippines cultivate less than 3 hectares, producers must collaborate to consolidate their products. One of the many alternatives for collective vegetable marketing is to form clusters.

Cluster farming involves grouping farmers who work together to consolidate products to sell to the market. Two cluster farming approaches have been identified: an area based and a commodity based approach. In the area-based approach, farmers come together based on proximity of farms and trading posts, while in the commodity based approach, farmers plant the same vegetable and combine their product to achieve a larger volume of more consistent quality produce. The main objectives of cluster farming are to consolidate smallholder farmers' produce, deliver in bulk to save on transportation and transaction costs, and to increase income.

For the three cluster groups studied, the monthly income for smallholder farmers was found to increase for only one cluster. Nevertheless, most cluster members believed that they were financially better off after joining the cluster. After joining the cluster, smallholder farmers received other substantial, mostly non-monetary benefits such as access to markets, market information, market and production linkages, technical and financial support, and production inputs.

Institutional support in the form of training, building and enhancing network capacity, market information, material support and access to markets are required to facilitate the success of the clusters.

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## **Abbreviations**

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CDA	–	Cooperative Development Authority
CMG	–	Collaborative Marketing Groups
CRS	–	Catholic Relief Service
DA	–	Department of Agriculture
DA AMAD	–	Department of Agriculture Agribusiness and Marketing Assistance Division
DOLE	–	Department of Labor and Employment
DTI	–	Department of Trade and Industry
FGD	–	focus group discussions
FIES	–	Family Income and Expenditure Survey
GEM 2	–	Growth with Equity in Mindanao Program 2
GMA	–	Ginintuang Masaganang Ani
GTM	–	Gulayan ng Timog Mindanao
Kasilak	–	Kasilak Development Foundation, Inc.
KI	–	Key informants
MAO	–	Municipal Agriculturist's Office
MAVARD	–	Maragusan Valley Area Resource Development Project
MLEDC	–	Maragusan Livelihood and Enterprise Development Center Project
Normin Veggies	–	Northern Mindanao Vegetable Producer's Association, Inc.
NSO	–	National Statistics Office
SEC	–	Securities and Exchange Commission
SFMP	–	Small Farms Marketing Project (SFMP)
USAid	–	United States Agency for International Development
USDA	–	United States Department of Agriculture
VICSMIN	–	Vegetable Industry Council of Southern Mindanao

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# **Chapter 1. Introduction**

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## **1.1 Background**

In 2007, some 372,260 hectares in the Philippines were planted to vegetable crops, from which some 1.6 million tonnes were produced, with an estimated value of PhP 3.3 billion (Espino 2008). With a population of 88.6 million (as of August 2007), that was growing at an annual rate of 2.0% (National Statistics Office 2005), the annual per capita consumption of fresh vegetables was only 16.2 kilograms in 2006 (Bureau of Agricultural Statistics 2006), well below the level of consumption recommended by the Food and Agriculture Organization and the World Health Organisation (FAO/WHO). WHO (2003) suggest that the per capita consumption of vegetables should be in the region of 400 grams/day or 146 kilograms per annum.

While the production of vegetables (excluding root crops) in the Philippines has been steadily increasing, production is highly variable. This is largely due to the regular occurrence of typhoons and the monsoon rains, particularly in Benguet Province in the Cordillera Administrative Region (CAR), the country's main producer of vegetables.

Mindanao, the Philippines' second largest island, currently produces 15% of all the fresh vegetables cultivated in the country. Both Northern and Southern Mindanao (Region 10 and 11, respectively) have great potential to cultivate temperate and tropical vegetables due to favourable soil and weather conditions, abundant agricultural lands and an extensive research, development and extension network (Infante 2003). The major constraint facing Mindanao, however, is its distance from the national capital (Metro Manila), the country's most important consumer market with a population in excess of 10 million.

Despite this, fresh produce from Mindanao is becoming more accessible through improved air, sea and land transport to urban centres (including Metro Manila) and the Visayas (i.e. Cebu, Samar, Leyte and Panay). In 2002, the government established the RO-RO (roll-on, roll-off) nautical highway, which has significantly reduced travel time and transport costs from Mindanao to Luzon (National Statistics Office 2005). In the Medium-Term Philippine Development Plan 2004-2010, Mindanao was foreseen to be the country's main agriculture and fisheries export zone (NSO 2005).

In the Philippines, fresh vegetables are predominantly sold in wet markets and trading posts. Here, fresh vegetables are sold by wholesalers, retailers and financiers who buy the produce from farmers or from local small-scale collector agents. While this practice continues today, other markets such as the supermarkets, hotels, hospitals, restaurants and fast-food chains have emerged. Ramos (2006) revealed that the market for vegetables is being profoundly

influenced by changing definitions of quality, a global and highly competitive market, changing lifestyles among young professionals and the fast growth of supermarkets. Reardon et al. (2003) suggested that the growth of supermarket retailing was being fuelled by an increase in disposable household income (including greater female participation in the workforce), greater urbanisation and infrastructure development. Some of the reasons for the proliferation of supermarkets in the Philippines are convenience and the changing lifestyles of the consumers who are becoming more health conscious.

Irrespective, these large institutional buyers need consistent quality, reliable delivery, a competitive price and a wide range of products (Reardon 2003). This presents a significant problem, for the majority of smallholder farmers in the Philippines (81%) cultivate less than three hectares of land (Republic Act 7607). Because of their small farm size and lack of financial capacity, it is difficult for smallholder farmers to meet the demands of the institutional buyers.

Traditionally, in order to achieve some economies of scale, smallholder farmers in the Philippines have joined or formed cooperatives. The International Cooperative Alliance defines a cooperative as ‘an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically-controlled enterprise’ (International Cooperative Alliance n.d.). Cooperatives are formed to access loans, improve income and conduct marketing activities (Digby and Gretton 1955; Republic of the Philippines 2006). However, Clammer (cited in Wong 1979) suggested that cooperatives are more of an ideology than a universal solution for all development issues. In particular, Clammer noted that it was dangerous to form a cooperative where it was externally driven. Parnell (1999) suggested that problems often arose when outsiders initiated the formation of a cooperative to satisfy their own agenda, which was often different from the members.

In the Philippines, most farmers have had a bad experience with cooperatives. Farmers organized themselves into cooperatives primarily to access loans from the government and other funding agencies. However, in the absence of effective management and corruption, most of these cooperatives went bankrupt, leaving most members distrustful of cooperatives (Digby and Gretton 1955). Furthermore, most smallholder farmers do not commit themselves to cooperatives because of more lucrative opportunities to sell their produce at a higher price elsewhere (Batt et al. 2006).

To participate in the emerging institutional market, small farmers must learn to adjust or unify themselves to prevent further marginalization (Boselie et al. 2003). One consolidation effort that needs further investigation is cluster farming. According to the Department of

Agriculture (n.d.), 'A typical farm cluster involves small farm holders and cooperatives within at least 400 hectares of contiguous lands with a cropping intensity of 200%'. Uy (2005, p. 2) defines cluster farming as 'individual growers who commit to work together for marketing'.

Cluster farming is not a new concept to the Philippines. The Department of Agriculture (DA) facilitated the formation of clusters in the corn industry through its Ginintuang Masaganang Ani (GMA) Program. Efforts to improve the Southern and Northern Mindanao vegetable industry have been made through the Vegetable Industry Council of Southern Mindanao Inc. (VICSMIN) and the Northern Mindanao Vegetable Producers Association Inc (Normin Veggies)(Digal and Concepcion 2004; Shepherd 2005). There is also on-going support from government, through the Department of Agriculture, non-government organizations (NGO), private individuals, and academia.

## **1.2 Aims and objectives**

This study will explore cluster farming as an alternative vegetable marketing practice and identify its key success factors and challenges. The research will identify the costs and benefits derived from clustering for smallholder vegetable farmers and identify the institutional support needed to facilitate the success of clusters.

The general objective of the study is to investigate the factors that make cluster farming a viable marketing alternative for smallholder vegetable farmers in the Philippines.

Specifically, the project seeks to answer the following questions:

1. What marketing strategies and approaches within cluster marketing groups are most effective?
2. What are the socio-economic advantages and disadvantages of cluster farming for smallholder vegetable farmers?
3. What institutional support is required to facilitate the success of clusters?

The study will document the experiences of selected farm clusters in Southern and Northern Mindanao.

## **1.3 Significance of the study**

There is a need to study the various means for structuring farm clusters, and to determine if this strategy is effective in consolidating the farmers' produce, thereby enabling them to become more competitive in the market. By providing access to markets, farmers should be able to improve their livelihood. Other farmers may want to replicate the cluster farming model in their areas and other vegetable industry stakeholders may wish to use this approach to improve the vegetable industry. Policy makers can advocate a marketing strategy for

vegetables that works. Government and non-government organisations can use the data to support their research, extension and advocacy efforts. Cooperatives and other farmer organisations may improve their competitiveness through the lessons learned from cluster farming. Finally, students and professionals may be able to use the outcomes of this study as a springboard for future research.

## **1.4 Overview of the research methodology**

This study had two phases, involving qualitative and quantitative methods. Phase One involved exploratory research where key informant interviews were conducted. Farmer leaders and support agency staff were interviewed using a semi-structured interview guide. Their responses were used to draft a structured questionnaire to interview the cluster members. Exploratory research was necessary to determine the specific questions needed for the survey. Certain constructs from the respondents were included in drafting the questions for the survey instrument. This ensured the applicability of the questions to be asked to the cluster members. This was also the basis for the three case studies. Phase Two of the study was a survey of cluster members which sought to quantify the member's participation and thoughts about their clusters. Qualitative and quantitative methods were applied in this study since limited literature could be found that specifically discussed cluster farming. Prior to this thesis, farmer groups were described as collaborative farms, cooperatives, associations and the like.

## **1.5 Outline of the thesis**

Chapter Two describes the Philippine vegetable industry. The chapter reviews the Philippines' agriculture sector, with a focus on vegetables. It discusses the contribution Mindanao makes to the national vegetable industry and the various issues and constraints vegetable farmers in Mindanao face in consigning fresh produce to other markets. Chapter Three identifies and reviews the collective marketing literature, consumer trends, what the buyers want and what the farmer has to offer, the gaps and the need for the smallholder farmers to coordinate their activities if they are to enter into the institutional markets. Chapter Four discusses the exploratory research framework and the results of key informant interviews. Chapter Five presents the cases of the Maragusan Vegetable Farmers' Cluster, the Northern Mindanao Vegetable Producers Association Inc., and the Vegetable Industry Council of Southern Mindanao, Inc.

Chapter Six discusses the methodology for the study with particular emphasis on the survey instrument and the means by which the data was analyzed. Chapter Seven presents the results of the survey, contrasting and comparing the results across all three cluster groups. Chapter Eight discusses the research conclusions and implications.

# **Chapter 2. The Philippine vegetable industry**

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## **2.1 Chapter introduction**

This chapter provides a snapshot of the vegetable industry in the Philippines. The first part gives an overview of the Philippines: its geography, population and economy. It presents a brief background of agriculture in the Philippines, followed by a comprehensive review of the vegetable industry including production, marketing and consumption, setting the scene for this study.

## **2.2 An overview of the Philippines**

### **2.2.1 Geography**

The Philippines is an archipelago located between latitude 4°23'N and 21°25'N and longitude (approximately) 112°E and 127°E. The total land area is 299,764 square kilometres, which is composed of 7,107 islands (Figure 2.1). The two biggest islands are Luzon, where the capital city of Manila is located, and Mindanao in the Southern Philippines. Starting near the Southern tip of Taiwan and ending close to North Borneo, the country is 1,850 kilometres long and 965 kilometres wide. Collectively, the country's coastline adds up to 17,500 kilometres. The Philippines is surrounded by several bodies of water - the Pacific Ocean on the east, the South China Sea on the west and north, the Sulu Sea on the south-west and the Celebes Sea to the south. The topography of Luzon and Mindanao is characterised by alluvial plains, narrow valleys, rolling hills and high mountains (Republic of the Philippines, 2008). The country's highest peak, Mt. Apo, which rises 2,954 metres above sea level, is located in Mindanao.

According to the Philippine Atmospheric, Geophysical and Astronomical Services Administration or PAGASA (2008), the Philippines' climate is tropical and maritime. The climate is characterised by relatively high temperature, high humidity and abundant rainfall. The average annual temperature in the country is 26.6°C. The coolest month is January, while the warmest month is May. In the mountains, which have an elevation of more than 1,000 metres, the temperature is cooler compared to the rest of the country.



**Figure 2.1: Map of the Philippines (Republic of the Philippines 2008)**

In the Philippines, the relative humidity is high due to high temperatures and the surrounding bodies of water. The average annual rainfall ranges from 965 mm to 4,065 mm. There are two major seasons: rainy and dry. The rainy season is from June to November. On the other hand, the dry season is subdivided into cool dry (December to February) and hot dry (March to May).

There are four predominant climate types in the Philippines (PAGASA 2008). Type I has two pronounced seasons: dry from November to April and wet during the rest of the year. Areas near the South China Sea and Sulu Sea have this type of climate. Those areas nearest to the Pacific Ocean mostly have a Type II climate, with no dry season and experience heavy rainfall from November to January. A Type III climate means the seasons are not very pronounced: relatively dry from November to April and wet during the rest of the year. A Type IV climate has the rainfall evenly distributed throughout the year.

## 2.2.2 Population

The Philippines is one of the largest English-speaking countries in the world (Republic of the Philippines 2008) and has one of the highest literacy rates among the developing countries (Department of State 2008). The country is divided into three geographic areas: Luzon,

Visayas and Mindanao. In 2007, it had 17 regions, 81 provinces, 136 cities, 1,494 municipalities and 41,995 *barangays*<sup>1</sup>.

**Table 2.1: Population and annual growth rate, by Region, 1995, 2000 and 2007.**

Provinces	Total population, in millions			Annual population growth rate, in %		
	1 Aug 07	1 May 00	1 Sep 95	2000-2007	1995-2000	1995-2007
Philippines	88.6	76.6	68.6	2.0	2.4	2.2
National Capital Region	11.6	9.9	9.4	2.1	1.1	1.7
Cordillera Administrative Region	1.5	1.4	1.2	1.5	1.8	1.7
Region 1-Ilocos	4.5	4.2	3.8	1.1	2.2	1.5
Region 2- Cagayan Valley	3.1	2.8	2.5	1.1	2.2	1.6
Region 3-Central Luzon	9.7	8.2	7.1	2.4	3.1	2.7
Region 4A-CALABARZON	11.7	9.3	7.8	3.2	4.0	3.6
Region 4B- MIMAROPA	2.6	2.3	2.0	1.49	2.7	2.0
Region 5- Bicol	5.1	4.7	4.3	1.2	1.7	1.4
Region 6-Western Visayas	6.8	6.2	5.8	1.3	1.6	1.4
Region 7-Central Visayas	6.4	5.7	5.0	1.6	2.8	2.1
Region 8-Eastern Visayas	3.9	3.6	3.4	1.1	1.5	1.3
Region 9-Zamboanga Peninsula	3.2	2.8	2.6	1.8	2.1	1.9
Region 10- Northern Mindanao	3.9	3.5	3.2	1.7	2.0	1.8
Region 11-Southern Mindanao	4.2	3.7	3.3	1.7	2.4	2.0
Region 12-SOCCSKSARGEN	3.8	3.2	2.8	2.4	2.7	2.5
Autonomous Region for Muslim Mindanao	4.1	2.8	2.4	5.4	3.7	4.8
CARAGA (Region 13)	2.3	2.1	1.9	1.2	1.6	1.4

Source: National Statistics Office: 1995 and 2007 Census of Population and 2000 Census of Population and Housing

In 2007, the country had a population of 88.6 million, an increase of 12 million from 2000 (Table 2.1) or an average population growth rate of 2.0% per annum. The National Statistics Office (2008) reported that it was the lowest population growth rate recorded since the 1960's.

Three regions in Luzon Island were the most highly populated areas. The largest population was in Region 4A (Cavite, Laguna, Batangas, Rizal, Quezon or CALABARZON) with 11.7 million. Second was the National Capital Region (NCR) where Metro Manila is located, with a population of 11.6 million, followed by Region III or Central Luzon with 9.7 million. The three least populated regions were the Cordillera Administrative Region (1.5 million), CARAGA (2.3 million) and Region 4B (2.6 million).

<sup>1</sup> *Barangay* or Village is the basic unit of the Philippine political system.

Between 2000 and 2007, the Autonomous Region for Muslim Mindanao (ARMM) had the highest annual population growth rate at 5.4%, followed by Region 4A (3.2%) and Region 12 (2.8%). On the other hand, the regions with the least annual population growth rate (1.1%) were Regions 1, 2 and 8.

### **2.2.3 Economy**

There are three important sectors in the Philippine economy: (1) agriculture, forestry and fishery; (2) industry; and (3) service. Under the industry sector are mining and quarrying; manufacturing; electricity, gas and water, and construction. The service sector includes: wholesale and retail trade; repair of motor vehicles; motorcycles and personal and household goods; hotels and restaurants; transport, storage and communication; financial intermediation; real estate, renting and business activities; public administration and defense, compulsory social security; education; health and social work; other community, social and personal service activities; private households with employed persons; and extra-territorial organisations and bodies (Republic of the Philippines 2008).

The National Economic and Development Authority (2008), the country's independent planning and economic development agency, reported that the 2007 Gross National Product (GNP) at 1985 constant prices amounted to PhP1.5 trillion<sup>2</sup>. In 2006-2007, the GNP growth rate was 7.1%.

In 2007, around 21% of the total Gross Domestic Product (GDP) at 1985 constant prices was from the manufacturing sub-sector while the agriculture and fishery sub-sector contributed 16.6% (Table 2.2). During the first half of 2007, the Philippine GDP increased by 7.3%, the highest among the middle income countries of South East Asia (World Bank 2007). In May 2008, the inflation rate was 9.6%.

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<sup>2</sup> P20.40 to USD1 at 1985 constant prices

**Table 2.2: GDP by industrial sector (at constant 1985 prices), (Million Pesos)**

Item	Amount	Total
<i>Gross Domestic Product</i>		1,370,018
Growth rate (2006 - 2007)	7.30%	
Agriculture, fishery and forestry		252,010
Agriculture and fishery	250,522	
Forestry	1,488	
Industry sector		442,352
Mining and quarrying	23,516	
Manufacturing	317,074	
Construction	58,805	
Electricity, gas and water	42,957	
Service sector		675,656
Transportation, communication, and storage	120,582	
Trade	127,128	
Finance	80,838	
Occupied dwellings and real estate	63,333	
Private services	116,718	
Government services	57,056	

Source: National Statistical Coordination Board, National Economic Development Authority, 2007

The earliest trade records, which date back to 1880, indicate that the Philippines have tended to import more than the country exports. It is not surprising that this trend has continued. Since 2001, more than 50% of the country's foreign trade are imports. In 2007, imports amounted to USD55.3 million, while exports amounted to USD50.2 million (National Statistics Office 2008).

In April 2008, 33.5 million people were in the workforce. Almost half (49.6%) of the employed were in the services sector, 35.5% were in the agriculture sector and 14.9% were in the industry sector (Table 2.3). Although employment increased from April 2006 to April 2007, it declined in 2008. In April 2008, unemployment in the Philippines was 8% while underemployment was estimated to be 19.8%.

**Table 2.3: Employed person by industry, April 2007 and April 2008 (In %)**

Selected Indicators	April 2005	April 2006	April 2007	April 2008
Employed persons (in thousands)	32,221	33,024	33,704	33,536
<i>Industry Sector</i>				
Agriculture, fishery and forestry	34.1	34.6	35.2	35.5
Industry sector	16.2	15.7	15.6	14.9
Service sector	49.6	49.6	49.3	49.6

Source: National Statistics Office

More than one quarter of the Philippine population remain poor. In 2003, the annual per capita poverty threshold was PhP 12,309, which increased to PhP 15,057 in 2006 (Table 2.4). This resulted in an increase in the incidence of poverty, from 24.4% in 2003 to 32.9% in 2006. In 2006, 11% of the families fell below the food threshold.

**Table 2.4: Annual per capita poverty and food thresholds, 2003, 2004 and 2006  
(preliminary estimates as of 03 March 2008)**

Indicator	2003	2004	2005	2006
<i>Poverty Threshold and Poverty Incidence</i>				
Annual Per Capita Poverty Threshold (in Pesos)	12,309	13,113	14,196	15,057
Poverty Incidence of Families (%)	24.4	...	...	26.9
Poverty Incidence of Population (%)	30.0	...	...	32.9
<i>Food Threshold and Subsistence Incidence</i>				
Annual Per Capita Food Threshold (in Pesos)	8,149	8,734	9,350	10,025
Subsistence Incidence of Families (%)	10.2	...	...	11
Subsistence Incidence of Population (%)	13.5	...	...	14.6

Source: National Statistics Coordination Board 2008

### 2.3 Agriculture in the Philippines

Since the Philippines has climate types that bring plenty of rain, agriculture plays a major role in the country's economy. There are four sub-sectors in Philippine agriculture: agricultural crops, livestock, poultry and fishery. From 2001 to 2007, the gross value of production in agriculture at constant prices increased (National Statistics Office 2008). Fishery and agricultural crops posted the largest increase, while livestock and poultry rose at a more modest rate.

Agriculture in the Philippines is predominantly composed of smallholder farmers with less than three hectares of land (81% of the total number of farms in 2002)<sup>3</sup>. While the number of farms increased from 1991 to 2002, the area of each farm decreased. One explanation for these changes was the awarding of land to farmers under the comprehensive agrarian reform

<sup>3</sup> Every ten years, the National Statistics Office conducts a census in agriculture. The latest census was in 2002.

program that commenced in 1988. Some of the big farms were subdivided into smaller areas and allocated to smallholder farmers. Some of these farms are involved in contract farming. In 1991, the average farm size was 2.2 hectares, but it decreased to 2 hectares in 2002 (National Statistics Office 2002).

Luzon has the highest number of farms with 41% of the total, followed by Mindanao (34%) and the Visayas (25%). However, Mindanao has the largest farm areas perhaps in part because the number of farms has decreased since 1991.

For the past five years, a third of the country's total employment has come from the agriculture sector. This includes farmers, farm workers, and employees of companies engaged in agriculture (Bureau of Agricultural Statistics 2008). In 2006, the average wage of farm workers was PhP 122 per day. On average, most farmers earn less than PhP 180,000 per annum (Republic Act 7607).

## **2.4 Vegetable industry situation**

Vegetables in the Philippines are classified as tropical and semi-temperate. The main vegetable producing areas in the Philippines are Benguet Province, Ilocos Norte and Cavite, all in Luzon Island, which collectively contribute 76% of the country's total production.

Semi-temperate vegetables are grown in higher elevation areas, while the tropical vegetables are mainly grown in the lowland areas. Semi-temperate vegetables are mainly grown in Benguet, Mountain Province, Nueva Vizcaya and Northern Mindanao (Estigoy 2006).

Vegetables in the Philippines come from both local and imported sources. China supplies carrot, dried mungbean, garlic, tomato and onions, while Australia is the top supplier of lettuce, celery, cauliflower and broccoli (Ramos 2006). However, this review will only describe the domestic vegetable industry.

### **2.4.1 Production**

In 2006, around 2.1 million metric tonnes of vegetables and tubers were produced in the Philippines (Table 2.5). The top ten vegetables produced were camote (sweet potato), squash, eggplant, tomato, gourd, gabi (taro), cabbage, chayote, ampalaya (bitter gourd) and onion. The priority high value commercial crops in the country are asparagus, broccoli, carrots, cauliflower, native pechay, Chinese pechay, ginger, gabi, gourd, white potato, habitchuelas, lettuce, okra and ubi.

**Table 2.5: Vegetable, rootcrops and tubers production in the Philippines, 2006**

Vegetables	Production, in metric tons
Camote (Sweet potato)	566,773
Squash	257,705
Eggplant	191,911
Tomato	175,596
Gourd	113,421
Gabi	111,942
Cabbage	91,243
Chayote	78,102
Ampalaya (Bitter gourd)	77,894
Onion	75,978
White potato	69,461
Chinese-Native	43,077
Pechay-Chinese	37,171
Carrots	35,694
Ubi	30,074
Ginger	27,261
Okra	26,709
Mongo	25,955
Asparagus	21,938
Habitchuelas	13,493
Patola (Loofah)	12,747
Garlic	12,581
Bell Pepper	11,614
Cauliflower	10,489
Others	33,569
<b>TOTAL</b>	<b>2,152,398</b>

Sources: CountryStat-Philippines, Bureau of Agricultural Statistics, 2008

In the Philippines, the Bureau of Agricultural Statistics (BAS) records the gross value output (GVO) of five major vegetables: tomato, garlic, onion, cabbage and eggplant. Since 2003, only the GVO for garlic has decreased (Table 2.6).

**Table 2.6: Gross value output of selected vegetables and year (At constant prices) in Million Pesos.**

Vegetable	2003	2004	2005	2006	2007
Tomato	532.68	611.81	615.08	621.59	668.18
Garlic	718.73	694.65	613.14	582.12	522.84
Onion	590.32	546.46	507.70	470.32	904.36
Cabbage	424.03	427.72	432.51	431.57	583.92
Eggplant	844.24	873.50	897.68	917.33	1,004.56

Source: Bureau of Agricultural Statistics (BAS)

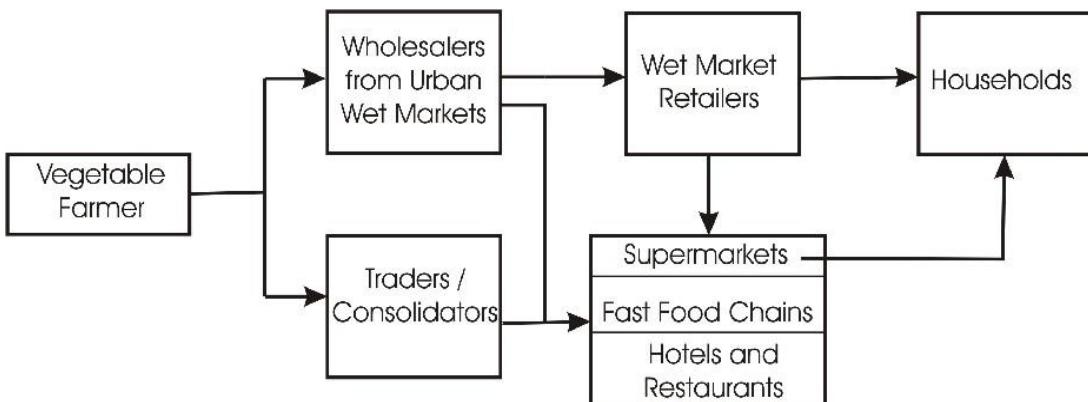
Almost all (97%) of the asparagus is grown in SOCCSKSARGEN (South Cotabato, Cotabato Province, Sultan Kudarat, Sarangani and General Santos City) where the main buyer is Dole Philippines Inc. Broccoli, lettuce and Chinese pechay were produced mainly in CAR. Native pechay were grown in the Bicol Region, CALABARZON (Cavite, Laguna, Batangas, Rizal, Quezon), Cagayan Valley and CAR. Although tomatoes were mostly grown in Luzon, particularly in the Ilocos Region, Northern Mindanao's production has increased

from 21,374 tonnes in 2001 to 40,262 tonnes in 2006. Cabbage and carrots are abundant in CAR, Central Visayas and the Davao Region. Almost 78.9% of the country's eggplants are produced in Luzon. Gourd is mainly produced in Luzon, with CALABARZON emerging as the top producer. White potatoes are produced in CAR, Northern Mindanao and Davao Region. Okra was abundant in the Cagayan Valley and Central Luzon.

#### 2.4.2 Marketing

Traditionally in the Philippines, fresh vegetables are sold in the wet markets and trading posts. Librero and Rola (2000) identified seven marketing channels, starting from three layer channels to nine-layer channels. An example of a three layer channel is the farmer-retailer-consumer. However, vegetable channels in the Philippines usually have five or six layers arising from the presence of multiple collector agents, traders and wholesalers.

Vegetable farmers usually sell their produce through local traders, collector agents and consolidators. Some farmers sell to wholesalers in nearby urban wet markets (Figure 2.2).

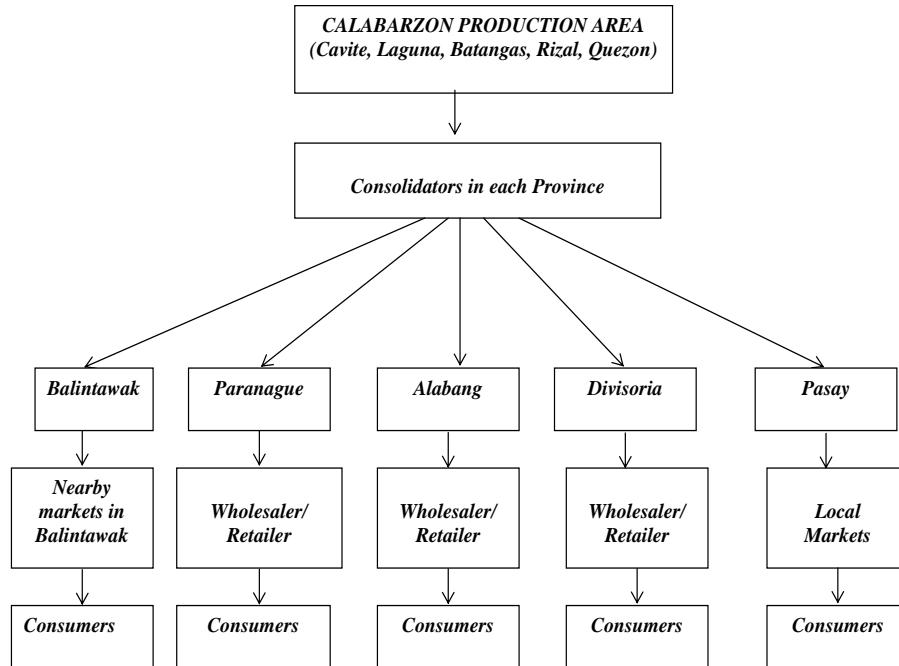


**Figure 2.2: The Philippine vegetable industry supply chain**

Source: Digal and Concepcion, 2004

In turn, these wholesalers sell to retailers in the wet markets. Others sell to institutional buyers such as supermarkets, hotels and restaurants, fast-food chains and food processors. The dominant retail market in the Philippines for fresh vegetables is the wet market because the produce is generally cheaper, fresher and there is a greater variety of vegetables (Concepcion and Digal 2006).

Ramos (2006) described the vegetable marketing system as multi-layered. Problems such as inefficient handling, high post-harvest losses and high marketing costs reduce the efficiency of the vegetable marketing system. An example of such complexity is the vegetable distribution flow in the Calamba, Laguna, Batangas, Rizal and Quezon (CALABARZON) Region (Figure 2.3).



**Figure 2.3: Vegetable distribution flow in CALABARZON**

Source: Ramos 2006

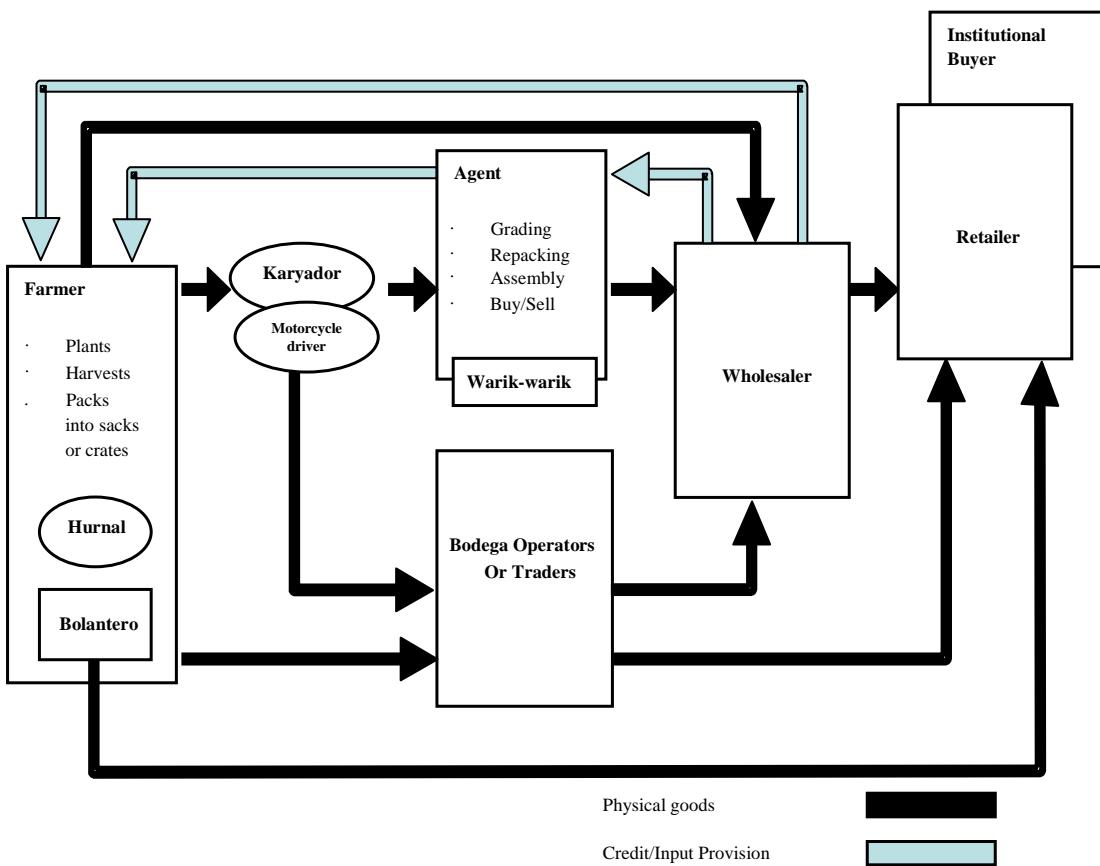
From the production areas, there are consolidators in each province who bring the vegetables to wet markets in Metro Manila. The Divisoria is one of the largest wholesale markets in the Philippines. Products, including fresh vegetables, which come from as far as Southern Mindanao, are traded here on a daily basis.

The price of vegetables at the farm-gate is substantially less than what the consumers pay. This is largely because of the additional costs associated with transport, packaging, grading and sorting and wastage, as fresh vegetables are highly perishable. The retailers generally get higher margins than wholesalers and traders because of the higher marketing costs incurred by retailers (Elcana 2005).

In Kapatagan, Digos City, there are many actors in the supply chain (Figure 2.4). The farmers not only produce vegetables, but they may also become either labourers (or *hurnal*) for other farmers, or they choose to sell directly to the retail markets (as *bolantero*) (Digal 2005; Concepcion 2005; Murray-Prior et al. 2006). A *karyador*<sup>4</sup> (or motorcycle driver) brings the packed vegetables to the trading posts where an agent (or a *warik-warik*<sup>5</sup>) receives the vegetables. They can also bring the fresh vegetables to *bodega* or warehouse operators. The vegetables are then transported to the wholesalers or sold directly to retailers and institutional buyers.

<sup>4</sup> A person who use horses for carrying the produce.

<sup>5</sup> Sporadic buyer



**Figure 2.4: Kapatagan vegetable supply chain**

Source: ASEM 2000/101 2004

### 2.4.3 Consumption

Fresh vegetables are abundant in the Philippines. Vegetables can be sourced from wet markets and supermarkets, backyard gardens, neighbour's gardens and from the farm (Concepcion 2005). In 2003, the typical daily diet of a Filipino consisted mainly of rice (34.2%), vegetables (12.5%) and fish (11.7%). The average daily intake of green leafy vegetables and other vegetables was 31 grams and 80 grams, respectively (Food and Nutrition Research Institute 2003). Region 1 consumed the most vegetables (171 grams), while the Autonomous Region for Muslim Mindanao (ARMM) ate the least with only 80 grams per day (Table 2.7). Since 2001, per capita vegetable consumption has fluctuated from 13.8 kg in 2001 to 16.2 kg in 2006 (Table 2.8).

**Table 2.7: Mean per capita per day vegetable consumption by region, 2003 (grams)**

Region	Mean
Philippines	111
National Capital Region (NCR)	88
Cordillera Administrative Region (CAR)	171
1. Ilocos Region	155
2. Cagayan Valley	132
3. Central Luzon	99
4A. CALABARZON	88
4B. MIMAROPA	129
5. Bicol Region	118
6. Western Visayas	128
7. Central Visayas	108
8. Eastern Visayas	93
9. Zamboanga Peninsula	84
10. Northern Mindanao	131
11. Davao Region	101
12. SOCCSKSARGEN	139
13. CARAGA	121
Autonomous Region in Muslim Mindanao (ARMM)	80

Source: FNRI, 2003

#### **2.4.4 Focus on Mindanao**

Climate and weather conditions greatly influence vegetable production in the Philippines. Typhoons mostly originate from the Marianas Region and Caroline Islands in the Pacific Ocean, which have the same latitude as the island of Mindanao. The typhoons generally follow a north-westerly direction, sparing Mindanao from being directly hit by the majority of typhoons that cross the Philippines. This favourable condition, according to PAGASA (2008), makes the southern Philippines very desirable for agriculture and industrial development.

Although Mindanao is not the country's top producer of fresh vegetables, it has great potential to cultivate temperate and tropical vegetables because of favourable weather and soil conditions, abundant agricultural lands, and an extensive research, development and extension network (Infante 2003).

**Table 2.8: Per capita utilisation of vegetables (kilograms)**

Vegetable	2001	2002	2003	2004	2005	2006
Squash	1.34	3.25	3.18	3.04	2.94	2.73
Eggplant	2	2.08	2.01	2.03	2.03	2.03
Tomato	1.46	1.46	1.44	1.63	1.59	1.57
Onion	1.09	0.98	0.79	0.7	0.95	1.28
Gourd	0.41	1.49	1.46	1.38	1.3	1.2
Cabbage	1.06	1.06	1.04	1.03	0.98	0.96
Peanut	0.88	0.85	0.71	0.71	0.7	0.85
Chayote	0.46	0.86	0.84	0.84	0.82	0.83
Ampalaya	0.56	0.86	0.84	0.87	0.86	0.82
Mongo	0.88	0.81	0.82	0.78	0.67	0.65
Garlic	0.25	0.31	0.32	0.33	0.34	0.5
Pechay	0.44	0.46	0.47	0.46	0.47	0.46
Carrots	0.4	0.41	0.41	0.4	0.38	0.38
Soybean	1.07	0.86	0.95	0.91	0.46	0.33
Ginger	0.28	0.26	0.26	0.27	0.27	0.29
Okra	0.3	0.29	0.26	0.28	0.28	0.28
Asparagus	0.05	0.09	0.13	0.22	0.24	0.19
Habitchuelas	0.14	0.14	0.13	0.13	0.13	0.14
Bell Pepper	0.12	0.12	0.12	0.12	0.12	0.13
Patola	0.14	0.14	0.14	0.14	0.14	0.13
Cauliflower	0.15	0.14	0.14	0.13	0.11	0.11
Cucumber	0.1	0.1	0.1	0.11	0.1	0.1
Radish	0.11	0.11	0.11	0.11	0.11	0.1
Black Pepper	0.06	0.06	0.06	0.05	0.05	0.04
Celery	0.04	0.04	0.04	0.04	0.04	0.04
Broccoli	0.02	0.02	0.02	0.02	0.02	0.02
<b>TOTAL</b>	<b>13.8</b>	<b>17.2</b>	<b>16.8</b>	<b>16.7</b>	<b>16.1</b>	<b>16.2</b>

Source: Bureau of Agricultural Statistics 2006

The one major constraint facing Mindanao is its distance from the national capital (Metro Manila), the country's most important consumer market with a population in excess of 10 million. However, Mindanao is becoming more accessible through improved air, sea and land transport to urban centres (including Metro Manila) and the Visayas (i.e. Cebu, Samar, Leyte and Panay). In 2002, the government established the RO-RO (roll-on, roll-off) nautical highway, which reduced travel time and transport costs from Mindanao to Luzon (National Statistics Office 2005). In the Medium-Term Philippine Development Plan 2004-2010, Mindanao was foreseen to be the country's main agriculture and fisheries export zone (NSO 2005). Three of the fastest growing cities in the Philippines are found in Mindanao.

Concepcion (2005) found that the average weekly household purchase of vegetables in these three cities was 9 kg. With a population of almost 400,000, there is a significant market for locally produced vegetables.

Most smallholder vegetable farmers in the Philippines are poor. These farmers often face difficulty in accessing opportunities in high value markets because they are less educated, have lack access to contaminant-free irrigation water and have inadequate access to infrastructure and capital goods such as cold chains, greenhouses, packing sheds, road and vehicles (World Bank 2007). They also have limited access to reliable and accurate market information (Lantican 2000).

## **2.5 Summary**

The vegetable industry in the Philippines is composed of both tropical and semi-temperate vegetables. Different areas in the Philippines specialize in the production of these crops. However, the vegetables are traded in similar chains from the farmers to wholesalers, retailers and ultimately to the consumers. However, in order to compete in the market against the larger farmers and increasing imports, the next chapter will discuss the need for smallholder farmers to collaborate and consolidate their produce prior to sale.

# **Chapter 3. Review of literature**

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## **3.1 Chapter outline**

This chapter discusses the traditional and emerging institutional market for fresh vegetables in the Philippines. The drivers for much of the change observed in the market including urbanisation and the need for greater convenience are discussed. The principles of institutional purchasing are outlined, which leads to a discussion of the means by which smallholder farmers can access the emerging institutional markets.

## **3.2 Markets**

A market is defined as a group of potential customers with comparable needs who are ready to trade something of value (Perreault and McCarthy 1996). According to Stanton (1971), in a marketing system there are many environmental constraints that cannot be controlled. These include market demand (economic and behavioural), political and legal forces, social and ethical influences, competition, distribution structure and technology. However, there are also controllable forces within an organization such as non-marketing resources and the marketing mix (product, distribution, price and promotion).

In agribusiness, marketing is defined as ‘all business activities that help satisfy consumer needs by coordinating the flow of goods and services from producers to consumers and users’ (Beierlein and Woolverton, 1991, p. 36). Unlike other consumer products, agricultural commodities are bulky, low in value (per unit of weight), perishable, produced far from consumers and often seasonal (Seperich, Woolverton and Beierlein 1994).

Murray-Prior et al. (2001) first introduced the concept of a dual agribusiness system in Mindanao, namely: the price driven system and the value driven system. In the price driven system, vegetables are sold to the traditional wet markets. On the other hand, in the value driven system, fresh vegetables are sold to supermarkets and other institutional buyers.

### **3.2.1 Traditional markets**

In the Philippines, fresh vegetables are traditionally sold in wet markets and trading posts. Farmers sell their produce to traders, consolidators, vegetable processors and wholesalers and may even sell direct to traditional retailers (Concepcion and Digal 2006). According to Baniquid (2006), traders dominate the distribution of fresh vegetables. Wholesale and retail markets are accessible every day and seldom have any specific quality, volume and packaging requirements (Ramos 2006). This traditional market is not unlike a spot market where quality is seldom specified and prices are determined primarily by supply and demand (Murray-Prior et al. 2001). Because of this, prices fluctuate within the day.

### **3.2.2 Emerging markets**

While the traditional market continues to thrive, other markets such as supermarkets, hotels, hospitals, restaurants and fast-food chains are emerging. Ramos (2006) revealed that the market for fresh vegetables was being profoundly influenced by changing definitions of quality, a global and highly competitive market, changing lifestyles among young professionals and the rapid growth of supermarkets. Reardon et al. (2003) suggested that the expansion of modern retailing was fuelled by an increase in household income (including increasing female participation in the workforce), urbanisation and infrastructure development. Aside from these, the expansion of modern retailing was being driven by foreign direct investment and the modernisation of retail procurement systems (Hernandez et al. 2006).

## **3.3 Drivers for institutional markets**

The key drivers for the expansion of the modern institutional market include: urbanisation and population growth, convenience and lifestyle, and heightened consumer awareness (Concepcion and Digal 2006; Reardon 2006; Shepherd and Galvez 2006).

### **3.3.1 Urbanisation and population growth**

In the Philippines the population has urbanised rapidly. In 1986, 62% of the population was rural, but by 2004, this had fallen to only 38% (World Bank 2007). As such, an increasing number of hotels, hospitals, restaurants and fast-food chains have emerged to accommodate the influx of migrants to urban areas. Aside from the migrants, the daytime urban population is also increasing. This means that people, particularly employees, labourers and students, go to the urban centres to work or study. These transient consumers contribute to the proliferation of canteens and cafeterias.

In many first world countries, there is an over-production of food (Regni and Gehlar 2003). As trade barriers are slowly being lifted these countries can export their surplus products to more densely populated countries such as the Philippines. Domestic producers now face more competition. This is resulting in a reduction in prices and a greater product assortment. According to Brennan (2004), the smallholder farmers are not immune to the effects of the increasing liberalisation of agricultural markets.

### **3.3.2 Convenience and lifestyle**

For the past ten years, investors have been building shopping malls in the Philippines to cater to consumers from different social classes and age groups. Among the big conglomerates are Shoe Mart (SM), Robinson's (Big R) and Makro. They have spread their investments from Manila to other urban centres such as Cebu, Iloilo and Bacolod in the Visayas, and Cagayan

de Oro and Davao in Mindanao. They have created one-stop shops that capture the whole family's household needs and entertainment under one roof. As a result, more families are buying their fresh fruit and vegetables in air conditioned supermarkets, along with other food stuffs. An increasing population of young upwardly mobile professionals has also contributed to the number of buyers regularly purchasing fresh vegetables from modern retail formats. To cater for this demand, supermarkets are actively seeking local suppliers who can deliver the range, quality and quantity they require.

One of the reasons for the proliferation of supermarkets in the Philippines is convenience and the changing lifestyle of people who are becoming more health conscious. Reardon (2006) suggested that supermarkets have two objectives: (1) to increase quality and eventually the safety of the product and (2) to reduce costs and increase the volumes procured. The continued growth of supermarkets in the Philippines poses opportunities and challenges that require certain changes to vegetable quality and marketing (Johnson et al. 2008).

While there has also been a dramatic increase in the number of fast-food chains that offer unhealthy but appealing food to children, the changes in diet also contribute to the demand for new or non-traditional vegetables (Pingali 2006). Increasing income and urbanisation also contributes to these changing food habits (World Bank 2007).

These institutional buyers need a greater range of fresh vegetables and look for suppliers who can give them a lower price while maintaining their quality. Shepherd (2005) noted that direct purchasing from farmers was advantageous in terms of price and quantity negotiation, quality and traceability.

### **3.3.3 Consumer awareness**

Consumers are becoming more aware of such concepts as fair trade and organics. According to Proctor and Vorley (2008), fair trade emphasizes trading relationships that are anchored on trust, transparency and accountability. In Mexico, Gonzalez and Nigh (2005) report that the demand for organic food is growing. So also is the consumer demand for more variety and higher quality products (Hendrikse and Bijman 2002; Concepcion 2004).

According to Concepcion (2009), five criteria are considered most influential in the consumers' decision to purchase fresh vegetables. These are price, quality, phytosanitary standards, product appearance and packaging. Consumers prefer vegetables that are firm and can be stored without loss. Phytosanitary standards mean that the vegetables are free from pest or disease damage, free of mechanical and physical injury, free of soil and free of chemical residues. The upper income market segment has the highest buying power and

usually purchases high-value vegetables from supermarkets. On the other hand, the lower income market segment is very sensitive to price.

Darby et al (2006) revealed that younger consumers, regardless of gender, paid higher premiums for organic produce. The study also found that the probability of paying a premium decreased when the number of individuals in the household increased. Environmental concerns are also increasing in parallel (Walley et al. 2000; Hendrikse and Bijman 2002; Woods 2003). These require producers to give more consideration to issues such as sustainability, recycling, water use, conservation and biodiversity. However, of most significance is the consumers' growing awareness of food safety issues (Martinez et al. 2007; Murray-Prior et al. 2004; Woods 2003; Dharmaputra et al. 2003; Concepcion et al. 2003; Brennan 2003; Batt 2003; Hendrikse and Bijman 2002; Walley et al. 2000).

### **3.4 Institutional purchasing**

Generally speaking, institutional buyers want consistent quality, a wide range of product, reliable supply and a competitive price. The food industry defines quality as an integrated measure of purity, flavour, texture, colour and appearance (Satin, 1997). In the Philippines, the quality of fresh vegetables is mainly determined by the wholesalers (Digal 2004).

Although quality means different things to different people (Batt 2006), quality is often described in terms of appearance (Shepherd 2006) or characteristics such as size and shape (Concepcion et al. 2004). The consumers' demand for quality may also be based on appearance, taste/flavour, freshness, price, nutritional value and safety (López Camelo 2002).

Aside from quality, buyers also want product assortment so that downstream buyers, retailers and consumers have a variety of vegetables to choose from. Reliable delivery is also required by the buyers. To earn a profit and for the product to be affordable for the consumers, institutional buyers want reasonably priced vegetables at the farm gate level.

### **3.5 Studies in clustering**

Porter (1998, p. 78) mentioned that clusters 'are geographic concentrations of interconnected companies and institutions in a particular field'. Humphrey and Schmidt (1995, p. 13) defined a cluster as 'a sectoral and geographical concentration of enterprises'. Their case studies were mostly related to manufacturing industries. However, case studies gathered by UNIDO (2004) found that clustering was slowly becoming a rural phenomena as well, as evidenced by the expansion of Indonesian cottage industries. Schmidt and Nadvi (1999) identified incipient (those in early stages) and mature clusters. The early stages of clustering were crucial since the risks were high and human and financial capital was required.

Mytelka and Farinelli (2000) distinguished between informal and formal clusters. Informal clusters are spontaneous groupings of enterprises that largely form as a consequence of public policies. On the other hand, formal clusters were created industry groupings such as export processing zones, incubators and technology parks. Nadvi (1995) discovered during his case studies of five small and medium scale enterprises that support, particularly from local institutions, proved to be an important factor in technical and capacity building. UNIDO presented nine lessons they had learned from working with cluster/network projects: (1) beneficiaries' demands should be considered; (2) it should be business, production and SME focused; (3) networking is not limited to enterprises; (4) people are the key resource; (5) training and exposure to best practices are important; (6) public and private investment is needed; (7) evaluation criteria must be designed carefully; (8) make actions/strategies to encourage independence from support agencies; and (9) cluster/network support is flexible and depends on the environment (Ceglie and Dini 1999).

### **3.6 The need for smallholders to market collectively**

Maintaining a consistent supply of good quality product is a major impediment for the majority of smallholder farmers in the Philippines. In order to compete, there is a need for farmers to collaborate.

#### **3.6.1 Collaboration**

Teamwork, partnerships, group effort, alliances, cooperation and relationships are some of the words synonymous with collaboration. In a supply chain, collaboration among the different players is very important. Fawcett et al. (2008) listed the top 25 practices and requirements for supply chain collaboration that they subsequently grouped into seven variables: (1) management commitment; (2) supply chain mapping and role definition; (3) information sharing and system integration; (4) people management and development; (5) supply chain performance measurement; (6) relationship management and trust building; and (7) rationalization and simplification.

Personal and process based trust is very important in a collaborative relationship (Kotilla and Ronni 2008). Time, resources and management skill must be invested over a long period of time to develop this trust. In a study of meat farmers in Scotland, Leat and Revoredo-Giha (2008) concluded that the development of trust was dependent on improved communication, better business planning and the equitable distribution of rewards and risks along the supply chain. Around 20 to 30% of the meat producers were having regular contact with their buyers, visiting processing plants, visiting slaughterhouses to look at the quality of their animals and attending meat producers meetings.

In a study of irrigators in the Philippines, Fujiie, Hayami and Kikuchi (2005) found that collective action was difficult to organize if supply was abundant, membership of the association was large, the population density was low, the share of non-farm households was high, and the history of irrigated farming was short. They suggested that adequate support from the government was needed to promote community-level cooperation.

Barrat and Oliveira (2001) suggested several approaches to developing trust including: (i) defining a single point of contact for each trading partner; (ii) defining short, medium and long-term goals; (iii) expanding collaborative projects in terms of scope and complexity; (iv) ensuring the continuous sharing of information; and (v) maintaining a lengthy relationship with preferred trading partners.

### **3.7 Experiences with collaboration in the Philippines**

In the Philippines, four different arrangements are frequently observed to facilitate the entry of smallholder farmers into the emerging institutional market: cooperatives, contract farming, individual farms, and large farms and clusters.

#### **3.7.1 Cooperatives**

The International Cooperative Alliance defines a cooperative as ‘an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise’ (International Cooperative Alliance n.d.). Cooperatives are formed to access loans, improve income and conduct marketing activities (Digby and Gretton 1955; Republic of the Philippines 2006; Lele 1981). However, Clammer suggested (in Wong 1979) that cooperatives were more of a belief than a general solution for all development issues. In particular, Clammer noted that it was dangerous to form a cooperative where it is externally driven.

In the Philippines, there are six types of cooperatives, as stipulated in Republic Act 6938 (Cooperative Code of the Philippines), Article 23, Section 1:

- Credit – promotes thrift among members and creates funds in order to grant loans for productive and provident purposes;
- Consumers – primary purpose of which is to procure and distribute commodities to members and non-members;
- Producers – undertake joint production whether agricultural or industrial;
- Marketing – engage in the supply of production inputs to members and market their products;
- Service – engage in medical and dental care, hospitalization, transportation, insurance, housing, labour, electric light and power, communications and other services; and

- Multi-purpose – combine 2 or more of the business activities of these different types of cooperatives.

In 2008, the RA 6938 was amended. Republic Act 9520 (Philippine Cooperative Code of 1998) added 14 kinds of cooperatives. These included advocacy, agrarian reform, cooperative bank, education, electric, financial service, fishermen, health service, housing, insurance, transportation, water system and workers cooperative (RA 9520, Article 23:1).

There are two kinds of cooperative membership: regular and associate. The regular member can exercise full rights and privileges while an associate member cannot vote and has other limitations (RA 9520).

Traditionally, farmers in the Philippines have joined or formed cooperatives. Some of the reasons for forming cooperatives include accessing loans, improving income and conducting marketing activities (Digby and Gretton 1955; Republic of the Philippines 2006). O'Connor (2003) listed three motivations why cooperatives are formed: (1) to increase bargaining power; (2) to take advantage of the grants offered by government; and (3) to collectively pursue a business together. If the cooperative is well established, it can negotiate for better business terms. Cooperatives can also access government assistance, such as loans and tax discounts. Entrepreneurial cooperatives can also develop businesses that will entail lower costs. Farmers, through the cooperative can consolidate their needs for farm inputs and purchase them at a lower price (Batt 2004).

According to Araullo (2006), in the absence of effective management (Digby and Gretton 1955) and in the presence of corruption, many of the cooperatives formed in the Philippines have gone bankrupt, leaving most members distrustful of cooperatives. Parnell (1999) suggested that problems often arose when outsiders initiated the formation of a cooperative to satisfy their own agenda, which were often different from the members.

In the Philippines, crucial factors for cooperative organization such as leadership, management, experience and technical expertise are often overlooked. Many farmers do not commit themselves to the cooperative because of more lucrative opportunities to sell their produce at a higher price elsewhere. Thus, it is rare for cooperatives to market the farmers' products successfully (Nuevo and Lizada 2000). As a result, fragmentation among smallholder farmers is a major problem.

Manwaring (1990) provided six key points for those interested in putting up new marketing groups: (1) a complete feasibility study; (2) communication; (3) commitment; (4) competent management; (5) customer orientation; and (6) appropriate conflict resolution. Manalili (2003) emphasized the need to improve the cooperatives' organizational management, operational efficiencies and functional linkages to enhance performance. She also stated that

cooperatives were measured in terms of longevity, member business growth, profitability and member satisfaction.

### **3.7.2 Contract farming**

Contract farming is an agreement between farmers and a company/firm for the production and supply of products (agriculture), usually at a predetermined price (Eaton and Shepherd 2001). There are four models of contract farming, according to the intensity of contractual arrangement and the organizational structure: multipartite, centralized, nucleus-estate, and an intermediary or informal model.

Some of the motivations for participating in contract farming are performance assurance and risk management (Masakure and Henson 2005). Most contracts are geared towards providing incentives for performance and also facilitating risk sharing for price, quantity and/or quality. Masakure and Henson (2005) identified several factors which encouraged smallholder producers to enter into formal contracts. These include: (i) the desire to earn extra income; (ii) no need to transport crops to market; (iii) a guaranteed market for crops; (iv) a reliable supply of inputs; (v) to acquire knowledge for use on both new and traditional crops; (vi) guaranteed minimum prices; (vii) a stepping stone to other projects; (viii) lack of alternative sources of income; and (ix) satisfaction from participating in high value markets. Participation in contract farming enabled smallholder producers to take advantage of market opportunities while simultaneously lessening the undesirable circumstances they face in traditional markets.

Benfica, Tshirley and Boughton (2006) showed that the decision to participate in contract farming was based on capital, labour and technology endowments, asset ownership and income diversification. When determining the benefits of contract farming to smallholder farmers, Patrick (2003) suggested looking into the participation of the farmers in the contract arrangements. During the transactions, farmers should play an active role since their exclusion in the contract arrangements could constrain opportunities and worsen inequalities. In the Philippines, there are recorded contract farming arrangements for commodities such as banana, asparagus, pineapple, palm oil and mango (Patrick 2003).

### **3.7.3 Large farms**

One person, one family, one company or a corporation, owns a large farm. Individual farms are composed of independent farmers who till the lands on their own. They finance their own farms or have occasional financiers in order to sustain their production. Large corporate farms are also present in the Mindanao. These produce crops for fresh or processed products. They cater not only the local but also foreign markets. Some of them may also own processing plants to value-add vegetable products such as ketchup and tomato sauce.

### **3.7.4 Cluster farming**

Czerniawski (1986) introduced the concept of “cluster marketing” and defined it as a focused, local market approach to market planning and implementation founded on the principles of “economy of force” and “mass”. Customers are segmented geographically so that resources are directed to where there is growth potential for the company and more sales are expected to be generated.

## **3.8 Cluster farming in the Philippines**

Cluster farming is not a new concept in the Philippines. The Department of Agriculture (DA) facilitated the formation of clusters in the corn industry through its Ginintuang Masaganang Ani (GMA) Program. According to the Department of Agriculture (n.d.) ‘a typical farm cluster involves small farm holders and cooperatives within at least 400 hectares of contiguous lands with a cropping intensity of 200%’. This strategy was originally developed by the corn industry to access government funding (Aldirete 2007 pers comm).

Cluster farming is both a marketing and a production strategy. Cluster farming means individual growers committing to work together for collective marketing (Uy 2005; Mendoza 2006). It also functions as a production and financial planning tool for groups of farmers in a particular area (Gualberto 2007, pers comm).

The Department of Trade and Industry also initiated the industry clustering approach. This approach was used to group different industries such as grains, electronics and handicrafts.

The Northern Mindanao Vegetable Producers’ Association formed a lettuce cluster composed of five farms (Digal and Concepcion 2004; Shepherd 2005). The largest farm among the five coordinates the marketing activities for the group. This strategy saves resources. Andersson et al. (2005) concluded that when farms collaborate, they use their resources more effectively.

Smallholders are faced with various internal and external factors that prevent them from competing against large farms and farmers (Murray-Prior and Batt 2008).

The internal factors are related to the characteristics of small farmers such as small-scale production, poverty, high levels of illiteracy, ill health, and low social and political status. The external factors relate to the farmer’s external environment such as poor transport infrastructure leading to high transport and handling costs, expensive and limited access to physical inputs, credit and information, inferior technology, high transaction costs, problems of land tenure, and law and order.

Smallholder farmers lack the ability and capability to commercialise production since they mostly engage in semi or fully subsistence production. These farmers seldom produce the vegetables demanded by the market (Pingali 2006)

### **3.9 Summary**

With increasing population, rising household income and greater urbanisation, institutional markets are emerging for the vegetable industry to supply hotels, hospitals, supermarkets, restaurants and fast food chains. Acting independently, smallholder vegetable producers are unable to meet the demand, the quality specifications or to supply the institutional market at a competitive price. In order to compete, smallholder producers must collaborate to consolidate their products. One of the many alternatives for vegetable marketing is to form clusters.

In the cluster, the farmers will have more access to support services. Although it is different from the cooperative, in terms of the share capital and patronage, its purpose is basically the same. It encourages the farmers to consolidate their products to gain market access, to increase bargaining capacity and to access support.

## **Chapter 4. An exploratory study of cluster farming**

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### **4.1 Introduction**

As very little has been written and published on cluster farming, this research project used the case study methodology using exploratory qualitative research and both a qualitative and quantitative survey. Yin (1994, p. 13) defined a case study as an ‘empirical inquiry that investigates a contemporary phenomenon within its real-life context’. Case studies are often conducted where the number of potential respondents is low. George and Bennet (2005) identified four strong advantages of the case study method: (1) conceptual validity; (2) derivation of new hypotheses; (3) exploration of causal mechanisms; (4) modelling and assessing complex causal relations.

For this research, an exploratory qualitative study was undertaken using key informant interviews. Neuman (2006) suggested that exploratory research be used when a new topic emerges and the main purpose is to explain why certain phenomena happen. Murray-Prior et al. (1997) used this exploratory framework in their study of collaborative marketing groups in Australia.

This chapter discusses the preliminary activities prior to the survey of farmers. Since the idea of cluster farming in Mindanao was relatively new, there was a need to interview key persons to provide an overview. The interviews took place between December 2006 to February 2007. Prior to this, initial correspondence was undertaken with potential key informants. The interviewees were divided into two, the farmers and the support agencies. Most of the responses were taped, with permission of the interviewee, and were encoded in a Microsoft Word document. In this chapter, only the excerpts will be presented. Details regarding the clusters will be discussed in Chapter 5. The results of the interviews provided insights in drafting the questionnaire.

### **4.2 Case study selection**

The three case studies: the Maragusan Vegetable Farmers Association, the Northern Mindanao Vegetable Producers Association (Normin Veggies) and the Vegetable Industry Council of Southern Mindanao (VICSMIN) were selected for this study based on convenience. They were the known groups in Mindanao involved in cluster farming in 2006. The University of the Philippines Mindanao, where the researcher is affiliated, had been involved in facilitating and supporting the clusters. Moreover, the cluster leaders had willingly agreed to participate in the study after an initial approach. Cost was also a consideration in both monetary terms and the limited time available.

## **4.3 Key informant interviews**

### **4.3.1 Interview guide**

There were semi-structured interview guides prepared for the farmers and for the support agencies. Key informant (KI) interviews elicited in-depth information about vegetable cluster groups in Southern and Northern Mindanao. The interview guide aimed to get a picture of the three cluster groups from the perspective of the farmer leaders and from the organisations that supported them.

### **4.3.2 Profile of interviewees**

The interviews with key informants provided information on the marketing strategies and approaches to product contribution and quality control. From the data gathered, variables were identified to be included in a structured questionnaire, which was to be administered in the next phase (George and Bennet 2005).

Primary data were collected from personal, semi-structured interviews with key informants including: the VICSMIN President, Normin Veggies President, Normin Veggies Executive Director, Marketing Coordinator of Normin Veggies, Technical Advisor for Business Support Organizations of Growth with Equity in Mindanao 2 Program, Marketing Project Coordinator – Marketing Project/ NRM Program Small Farmers Marketing Project (SFMP) of the CRS, Government Liaison Officer (MMD Agro Supply Farmer's Multi-purpose Cooperative), Department of Agriculture XI staff, and Davao City Agriculturist's Office staff. Informal interviews with the farmers, visits to farms and focus group discussions (FGD) with farmers were undertaken.

### **4.3.3 Guide questions for the farmers**

The questionnaire for the farmers was a one-page guide intended to prompt the key informants. There were follow-up questions, depending on the responses. The interview with the farmer leaders lasted between one to three hours, with anecdotes and side stories relating to the organisation and the people involved with it. An interview guide was necessary to ensure that the data needed was collected, for key informants often digressed (Appendix 3). The key areas covered are the definitions of cluster farming, the reason and purpose for forming the cluster and the respondents' role.

### **4.3.4 Results of the exploratory farmer interviews**

To protect the identity of the farmers, their identities were masked through the assignment of nicknames to each of them. This section contains the definitions of cluster farming, the reasons for forming the clusters, the farm sizes, the organizational structure and the support received.

### ***Definition of cluster farming***

An initial question sought to define cluster farming from the perspective of the farmer leaders. For one farmer, cluster farming, meant designating an area as a top or main producer of a commodity. The cluster functioned as a production and financial planning tool for groups of farmers in a particular area. *Nong* Bebot mentioned that the clusters should form around specific commodities and planting should be based on market demand. *Nong* Mar described a cluster a group composed of at least five members with a cluster head who also acts as a “big brother”. It is through cluster farming that they can meet the quality standards needed by prospective buyers. They have to focus on one crop and specialize.

### ***Why form cluster farms?***

For VICSMIN, the motivation for forming the clusters was to consolidate produce to attain a sufficient volume to deliver to institutional buyers. The Marketing Officer for agro-enterprise in Maragusan was a former cluster leader. He said that the prospect of new markets motivated the farmers to form the clusters. For Normin Veggies, farmers who owned more land, produced a larger volume of vegetables and were more financially capable had become the cluster heads. The farmers were motivated to form the clusters because they saw the need to consolidate their products to attain the higher volumes required by institutional buyers.

### ***What is the size of clusters and their farms?***

The sizes of the farms mentioned by the interviewees ranged from half a hectare to five hectares. One cluster was usually composed of several farmers, but seldom exceeded 15 members. This was true for Maragusan, Normin Veggies and VICSMIN.

### ***Who organized these clusters?***

The questions on cluster organisers were adapted from Finsterbusch, Ingersoll and Llewellyn (1990) to identify the cluster champions. Normin Veggies was developed from the Department of Trade and Industry (DTI) model. The DTI formed industry clusters to encourage stakeholders to group together to strengthen their products and for the government to channel resources.

The Maragusan vegetable farmers’ cluster was formed based from the CIAT Territorial approach where farmers were grouped together per area for easy coordination, communication and consolidation. The Catholic Relief Services (CRS), however, modified the CIAT approach to fit the Philippine setting.

VICSMIN had emerged following the design of the corn clusters under the DA GMA Program. The corn clusters had been organised by the government to facilitate the transfer of

funds to farmers. The same was true with the vegetable farmers who had to form a group to access government resources and projects.

***What was your role in the formation of these clusters?***

Questions were asked to identify the role and length of time the interviewee had been in the organisation (Murray-Prior et al. 1997). *Nong* Leo, *Nong* Rogelio, *Nong* Mar and *Nong* Nur were farmer leaders who initiated cluster farming in their respective areas. They had been the pioneering members of their group.

***How is the group structured?***

Normin Veggies have a cluster marketing officer who oversaw the supply and delivery, and a cluster head who represented the group in meetings and other activities. The details of their transactions will be discussed in Chapter 5. For the Maragusan vegetable farmers' cluster, there was also a cluster head who helped in consolidating the products to be delivered. Similarly, the VICSMIN cluster also had a cluster head who oversaw the production and marketing of vegetables.

***What support did the clusters receive?***

There were several organisations supporting the farmers. Government agencies included the Department of Agriculture, Department of Science and Technology (DOST), the Agriculturist's Office (City, Municipal and Provincial) and Department of Trade and Industry (DTI). Academic institutions included the University of Southeastern Philippines and the University of the Philippines Mindanao. Non-government and private organisations included the GEM 2 USAid Program, Kasilak Development Foundation and the Catholic Relief Services (CRS).

***How does the cluster coordinate planting and production?***

*Nong* Rogelio from VICSMIN said that they usually coordinated planting and production during regular meetings with members. There were certain areas which were known to produce a particular crop. Smallholder farmers would be asked to grow these crops and to sell the output to the cluster. In the case of Normin Veggies, they would assign a sub-cluster composed of several farmers who were committed to produce the kind and volume of vegetables needed by the buyer. For the Maragusan vegetable farmers, they had pre-planted crops such as chayote. However, when they were able to identify the crops needed by the market, they met among themselves and divided the tasks of planting the vegetables.

***Obstacles, problems and challenges during the cluster conception stage and how overcome***

The distance between farmers proved to be a major challenge for VICSMIN. The logistics of getting the product from the farm and delivering it to the consolidation area in Davao City, while maintaining quality, was a major obstacle. To address this, there were coordinators per

province who took charge of coordinating and consolidating the farmers' produce. This would ensure that good and acceptable qualities of vegetables were marketed.

In the Maragusan vegetable farmers' case, the accessibility of the farms was a hindrance in consolidating the products. Poor road conditions exacerbated the farmers' concerns that they could deliver the products with the quality required by the prospective buyers. The support agencies assisted the farmers by providing a vehicle to pick-up the vegetables from the farms and then transport them to the consolidation area. According to one farmer interviewed, this minimized their transportation costs. However, this practice encouraged dependence on the support agency and the income they got from marketing was not comparable to other farmers who do not have these privileges. Normin Veggies, on the other hand, had difficulty in producing enough produce to supply the market. They were able to solve this problem by establishing other clusters to produce the required volume. Some farmers who also owned more land had expanded their production areas and planted more vegetables to cater to the increased demand.

#### ***Obstacles, problems, and challenges during the initial stages and how overcome***

The initial stages for the three cluster groups were very challenging. The Maragusan vegetable farmers' cluster, for example, was composed of farmers who sold their products in the local market. They had limited exposure to markets outside their area. Eventually, they succeeded in grouping together and the support agencies introduced them to new markets. Meanwhile, VICSMIN farmers had limited market exposure. Most of them dealt with traders who picked up their produce from the farm or trading post and had no direct interaction with the wholesalers or retailers. Normin Veggies, on the other hand, consisted of farmers who transacted with more than one wet and one institutional market. They travelled further and had seen markets outside of Mindanao. Several of them had been exposed to wet markets in the National Capital Region. *Nong* Rogelio of VICSMIN mentioned that grouping farmers was difficult, because they were not market oriented. Farmers would plant vegetables and would think about where to sell only during harvest time. On the other hand, *Nong* Mar of Normin Veggies, said that he oversaw areas and clusters to monitor the production. This was to ensure that farmers would be able to meet the volume required by the buyers.

#### ***Present obstacles and problems and how it was solved***

*Nong* Rogelio said that money was a major problem because most of the farmers did not have the capital to produce a higher volume of vegetables for the cluster. As a result, they were looking into accessing micro-finance institutions and to utilize the "plant now-pay later" program provided by the government, NGOs and private institutions. The "plant now-pay later" program enabled farmers to get seeds and to pay for them after harvest.

In VICSMIN's case, the supply was inconsistent because the member farmers did not sell to GTM if the price of vegetables was high; they only sold to GTM when the price was low. Traders around the Bankerohan Public Market were also threatened by the farmer-led enterprise and they tried many tactics to jeopardise the operations. Some traders intercepted the products supposedly intended for GTM by offering a higher price to the farmers. Despite these trials, VICSMIN became the trailblazer for farmer groups turned traders. Other farmers learned from VICSMIN's mistakes and made modifications and improvements when they created marketing arms. These mistakes included trusting the hired staff in transactions and farmers who promised to deliver the products with good quality.

*Nong* Bebot from Maragusan said that road access and the inefficiency of transport contributed to the delay in the delivery of vegetables. What the farmers did was to ask staff from a non-government organisation to transport their vegetables from the consolidation areas to buyers in nearby cities. Their greatest achievement was to sell to a supermarket, which offered a good price. However, the volume required by the supermarket was very low compared to the traditional wholesalers. *Nong* Leo mentioned that since some clusters could not deliver the volume they were assigned, other clusters were asked to fill the gap. This was to maintain relationships with the buyer and to sustain deliveries.

#### ***How is cluster farming different from other group marketing activities?***

*Nong* Leo said that cluster farming was different from other group marketing activities because each member was responsible for meeting their individual volume commitments. He added that getting a good price and earning income was an essential element for the success of the group. *Nong* Rogelio mentioned that commitment was important to the success of the group. Cluster farming was different because it was not only production and marketing activities, but also the relationships among farmers. Moreover, since there were no contracts among the farmers, most transactions were based on trust. Meanwhile, *Nong* Bebot mentioned that in cluster farming, each member had a responsibility towards their fellow farmers to ensure that they delivered good quality products as demanded by the buyers. Each farmer was responsible for monitoring his fellow farmers to ensure that the volume, quality and reliability of supply were met.

*Nong* Rogelio mentioned that the trading arm (*Gulayan ng Timog Mindanaw* or GTM) was conceptualised by the Vegetable Industry Council of Southern Mindanao (VICSMIN) to address the problem of marketing fresh vegetables. Farmers brought the produce to the GTM consolidation area in the Bankerohan Public Market in Davao City. They were paid cash and vegetables were bought "all-in", or in other words, all the vegetables brought to GTM were purchased irrespective of the classification. The classification or grading was done in the consolidation area. The marketing officer hired by GTM coordinated and maintained contact

with the buyers and continually looked for new buyers. The delivery scheme was dependent on the buyer; it could be pick-up or delivery. Support agencies provided grants for facilities and equipment such as the washing area, tables, crates, weighing scale, computer and air conditioner.

*Nong* Leo from Normin Veggies said one of their leaders introduced clustering to the group. The farmers consolidate their products in Cagayan de Oro City where they have quality control measures to ensure that the vegetables can command a higher price. The product standards were displayed in their consolidation area in the Agora Market in Cagayan de Oro. Normin Veggies had similar equipment and facilities to VICSMIN, which included grants from support agencies. Maragusan, on the other hand, had marketing officers hired by a project to consolidate the products in the designated areas. Generally, sorting was done on the farm, but product would be re-sorted in the consolidation area due to the unfavourable road conditions from the farm resulting in bruised and damaged vegetables.

#### **How would you define successful/unsuccessful groups?**

*Nong* Rogelio defined a successful group as having members who were committed to the vision, mission and goals of the organisation. On the other hand, *Nong* Mar defined a successful group as having members who were able to fulfil their obligations. *Nong* Bebot mentioned that the group would fail if the members did not follow the leaders or the leaders failed to perform their duties. If only a few people were seen to reap the benefits, other farmers would eventually detach themselves from the group.

#### **4.3.5 Guide questions for the support agencies**

Similar to the farmers, a key informant interview guide was also used to provide basic information regarding the clusters (Appendix 3). The key informants were those involved with any of the three case studies. The interviews lasted for two to four hours because updates on the status of projects involving the clusters were also asked. The respondents were asked about their definition of cluster farming and their agency's role in its formation. Questions 1 to 4 were the same as the farmers questions. This was done to get the support agencies' perspectives on the definitions, reasons and persons who were most influential in the formation of the clusters.

#### **4.3.6 Results of the exploratory support agencies interviews**

According to one respondent, cluster farming was an initiative of the Department of Agriculture (DA) in 2003 for the corn industry. If the farmers did not form clusters, they could not benefit from the programs implemented by the DA under the *Ginintuang Masaganang Ani* (GMA) program. Another key informant suggested that cluster farming meant grouping vegetables according to type, classification and market.

A government agency respondent defined cluster farming as a profit-oriented scheme where higher volume equates to higher net income. Cluster farms are farms or areas producing commodities to be collected or collated - not necessarily in contiguous land, but some distance apart- where farmers gather/consolidate and sell in bulk. On the other hand, a non-government organization staff member defined cluster farming as farmers grouping together for marketing.

***What was your agency's role in the formation of these clusters?***

The City Agriculturist's Office of Davao City has a "plant now, pay later" program where farmers can access seeds where the loan is repaid after selling the harvest. Technical support, through the City's Agricultural Technicians (AT), was extended to the farmers. The farmers to be clustered were identified by these AT's. One of the key informants was the high value commercial crops (fruits and vegetables) coordinator from the Davao City Agriculturist's Office. Her task was to identify target farmers (through the assistance of the AT's and Municipal Agriculture Officers), the areas where they reside, and the services/inputs they needed. When these were identified she sourced the funds to provide capital to meet their requests. On the other hand, another respondent was the agribusiness and marketing assistance coordinator. She worked closely with the farmers and looked for buyers for their produce. There were also buyers who asked them to identify suppliers. Likewise, she liaised with the Department of Agriculture's Agribusiness and Marketing Assistance Division.

The DA initiated the formation of commodity councils. One of the councils formed was the Vegetable Industry Council of Southern Mindanao (VICSMIN) Inc. In 2001, one major concern raised during the first Vegetable Seed Congress was the high cost of seeds. To address this, seed companies produced small packets, which were more affordable for smallholder farmers. The DA provides seeds to the farmers through the local government units (LGUs), cooperatives, registered farmer associations and vegetable councils.

CRS was instrumental in carrying out projects funded by the USDA. The objective of their projects was to help the farmers solve marketing problems. CRS piloted a process developed by CIAT called the Territorial Approach to Agro Enterprise Development. GEM 2 (a program funded by USAid) provided financial assistance to VICSMIN and Normin Veggies. The clustering approach of Normin Veggies was developed from the industry clusters formulated by the Department of Trade and Industry. They had been involved in the institutional capacity building of producer organizations. One of the key items that GEM 2 had been doing with the clusters was to expand the market for high value vegetables. It started with strategic planning. Among the three or four factors/key strategic objectives, one was the consolidation of produce so that smallholder producers could collectively supply better markets. GEM 2 also introduced technology to improve product quality through

improved post harvest practices, packaging, and the use of plastic crates and cold storage facilities.

***Other organizations supporting the formation of these clusters***

The Davao City Agriculturist Office and the Department of Agriculture provided in-kind support such as fertilizers and seeds. The local government unit, through the initiatives of city councilors, likewise provided support for the clusters. The Maragusan vegetable farmers' cluster, together with CRS and the Kasilak Development Foundation Inc. carried out the agro-enterprise project. One funding agency member mentioned that in 2001, they thought that producer organizations were ready to tackle bigger markets. Therefore, together with the Department of Trade and Industry (DTI), they were able to come up with a proposal for AusAID to fund a group from Northern Mindanao (Region 10) to go to Australia to observe clustering. Two farmers went to Australia to observe how clustering could be done. When they came back, they shared their experience and tried to replicate what they had seen. The key informant mentioned that this exposure helped in the organisation of Normin Veggies.

***Obstacles, problems, and challenges faced during the cluster conception stage and how overcome***

For the Davao City Agriculturist's Office, some of the problems in setting up the clusters were organisational, technical, commitment and capital. It was difficult to hold a meeting due to the distance between the farmers. Some were also not technically prepared to handle groups and had insufficient knowledge in production and marketing. Since most farmers were used to dealing with traders, commitment to produce and deliver to the cluster was hard to maintain. It was also difficult to gather the farmers together and to ask them to commit to form a group. Money was also a problem, especially for smallholder farmers who were used to getting financing from the traders. Local government units also did not have enough funding to provide assistance to the farmers. The Agricultural Technicians (AT's), for example, did not have the budget to visit and monitor farmers.

GTM, an initiative of VICSMIN, together with DA, was conceptualised to answer the call for cluster farming. GTM was established to operate as the marketing arm of the vegetable farmers in Southern Mindanao (Region 11). During the conception stage, many different vegetable stakeholders in the Region collaborated and supported the farmers in establishing a marketing arm. Technical support such as training, strategic planning and a farmers' forum was also extended.

In the case of the Maragusan vegetable farmers' cluster, the distance between the farms was the main problem. As transportation was not readily available and expensive, the support organisation provided motorcycles to their staff to travel to the different *barangays* (villages)

to conduct cluster meetings. The farmers planted chayote as their main crop. They were reluctant to venture into new crops in which they had little experience. Normin Veggies, on the other hand, had farmers who were financially and logically capable of producing and marketing their own vegetables. However, some of them lacked the technical capability and had limited market access. This motivated the farmers to participate in the cluster.

#### ***Obstacles, problems and challenges during the initial stages and how solved***

The key informants mentioned that setting up the clusters was an on-going process. One of the milestones in the initiative was accessing a PhP 1.2 million fund to procure seeds, fertilizers and inputs. This was the start-up fund for the “plant now, pay later” program of the Davao City Agriculturist’s Office. Funding for the Maragusan vegetable farmers’ cluster and Normin Veggies was not a problem because they were supported by the LGUs and other projects. One of the problems, however, was ensuring the cooperation and participation of the farmers and convincing them that cluster farming would be beneficial to them. During the interviews, some of the key informants vented their frustrations at some farmers who expected increased income immediately. Another problem was the presence of the traders who often financed farm production. In those instances where the trader had extended capital, the harvest had to be sold to them and they dictated the price. This arrangement became one of the biggest challenges during the initial stages of cluster formation. The support agencies overcame the obstacles, problems and challenges by pursuing the formation of clusters and providing technical and material assistance.

#### ***Obstacles and problems at present and how solved***

An on-going source of funding was a perennial problem for all the clusters. At least six respondents mentioned these. All of the clusters were supported financially by external sources. One of the milestones was to link the farmer groups to the market. By strengthening their capacity to negotiate price and to improve the quality of the cultivated vegetables, farmers should be able to sustain their operations even after the project was terminated. The support agencies would also link the clusters to academic institutions who could provide technical capacity building activities. Moreover, there was a continuing lobby with the LGUs to allocate funds to provide support not only to cluster farmers but also to other smallholder farmers. The vegetable congresses and fora could also provide venues for farmers to interact with vegetable industry stakeholders and fellow farmers. Here, they could exchange and share ideas, problems and solutions, to help them address their problems.

#### ***How cluster farming is different from other group marketing activities***

A VICSMIN support agency mentioned that in a cooperative, credibility and integrity were needed. This is true with cluster farming. There must be tangible benefits for the members, otherwise there is no reason or benefit in belonging to the cluster. A Normin Veggies support

agency mentioned that the need to consolidate to compete provided the key motivation for cluster farming. Cooperation and trust contributed to the sustainability of the group. This was essential, especially when products were entrusted to other people, including price determination. Although there were key informants who mentioned that there were some cluster activities similar to cooperatives, they were quick to identify the differences. In a cooperative, the members had to pay a certain amount for share capital. However, in cluster farming, there were no fees involved in joining. The farmer's contribution would be dependent on the net income from sales.

#### ***How successful/unsuccessful groups are defined***

Successful groups are those with a sustainable market. The members were committed, loyal to the group and to their work as a farmer. According to the key informants, it was easy to get support and training if the farmers were united and cooperative. Skills training, organisational building and strengthening defined a successful group.

It was indicated that the factors contributing to the success of cluster groups were workable advocacy that the group could rally on; forgetting differences; giving credit where credit was due; giving value to its members; altruism; and mutual respect for one another. Failure should not dampen the spirit of the members. An NGO defined a successful group as having alternative markets where they could deliver their produce. Maintaining only one market limited the opportunities for the farmers to earn more income.

#### **4.4 Summary**

The key informant interviews found four major elements influencing the operations of cluster farming groups in Mindanao: (1) different approaches to cluster farming; (2) the need for more farmer leaders; (3) encouraging and sustaining farmer participation; and (4) the presence of strong institutional support organizations.

The interviews with the key informants provided information and variables to be used in formulating questions for the farmers' survey. Moreover, the study saw the need to discuss the three cases thoroughly. As a result, the discussion of the Maragusan vegetable farmers' cluster, Normin Veggies and VICSMIN will be elaborated in Chapter 5.

# **Chapter 5. Case Studies**

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## **5.1 Introduction**

This chapter presents the cases of the Maragusan Vegetable Farmers' Cluster, Northern Mindanao Vegetable Producers Association Inc. and the Vegetable Industry Council of Southern Mindanao (VICSMIN), all of which were known to be involved in cluster farming activities in Mindanao in 2006. Data sources were reports and interviews. Further details of the three cases are presented in Appendix 6, 7 and 8.

## **5.2 Maragusan Vegetable Farmers' Cluster**

The Maragusan vegetable farmers' cluster was a group of 174 farmers assisted by the Kasilak Development Foundation Inc. (a social development organization) and the Catholic Relief Services (CRS). The cluster project was one of the components of the Small Farmers Marketing Project (SFMP) of CRS. The SFMP was a three-year project that commenced in 2004 with co-funding from the United States Department of Agriculture (USDA) and the Commodity Credit Corporation (CRS 2006). Aside from Kasilak Development Foundation Inc., CRS worked with four local non-government organisations.

### **5.2.1 Overview**

The cluster was organised as a farmer's group assisted by Kasilak and CRS. The farmers and their cluster leaders were identified and started working together. The Maragusan vegetable cluster encompassed 6 *barangays*. In January 2007, 174 farmers sold their vegetables through the Maragusan vegetable cluster (Table 5.1).

**Table 5.1: Number of farmers (per *Barangay*) who contributed to the vegetable supply**

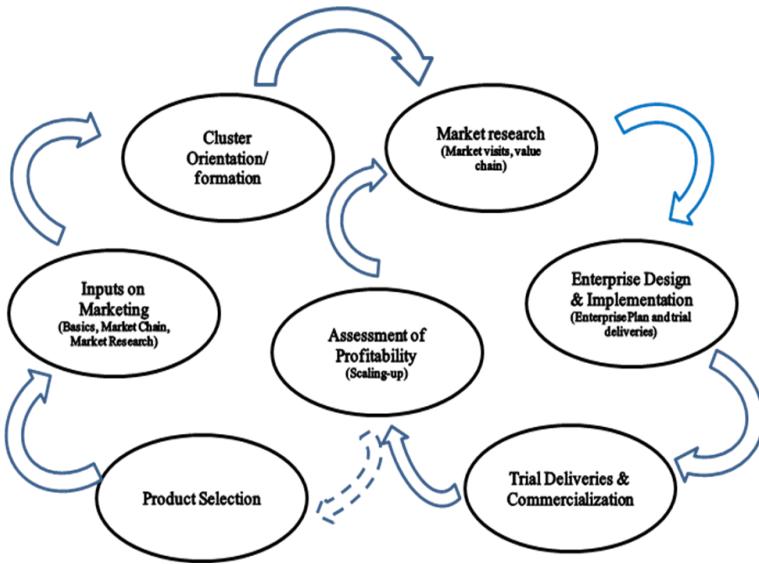
<b>Barangay</b>	<b>No. of farmers</b>
Saranga	46
Mahayahay	36
Magcagong	35
New Albay	20
Parasanon	20
Tupas	17
<b>TOTAL</b>	<b>174</b>

Source: Kasilak Development Foundation Inc. 2006

The Maragusan vegetable farmers' cluster utilized the Territorial Approach to Agro enterprise Development. This approach was conceptualized by the Centro Internacional de Agricultura Tropical (CIAT). It was based on CIAT's learning experiences over more than ten years in South America, Africa and Asia.

The Territorial Approach has five components: territorial selection and partnership development; market opportunities identification; enterprise design and implementation;

strengthening of business support services; and advocacy for pro-poor marketing and trade policy at the micro, meso and macro levels (Lundy et al. n.d.)(Figure 5.1).



**Figure 5.1: Marketing assistance component strategy**

Source: Mendoza 2006

CIAT trained CRS and Kasilak staff in 2005. Included in the territorial selection process was the identification of *barangays* that had some production activity but no established marketing system. The key people in the *barangay* were also identified, which included those recommended and highly respected in the area. Some of these key people eventually became cluster leaders. During the production selection phase, coffee and vegetables were selected. Vegetables were one of the products chosen since Maragusan is one of Region 11's main producers of chayote and has the potential to produce other temperate vegetables because of the high elevation, fertile soil and suitable climate. Key farmers were given basic market training and briefed on the principles of clustering. After cluster orientation, the clusters were formed. CRS and Kasilak then conducted market research to identify suitable markets for the produce. Market research included market visits to Davao City, Cagayan de Oro City, Tagum City and municipalities adjacent to Maragusan. An enterprise design was prepared and the cluster successfully undertook trial deliveries to four cities in Mindanao. As part of the strategy, the cluster, together with Kasilak and CRS, assessed the profitability after each delivery.

### 5.2.2 Support services

Support services are activities, functions, materials or services that are essential to the implementation or completion of a project or program. The Maragusan vegetable farmers' cluster was formed and has continued, due to financial, technical and logistical support from

CRS, Kasilak Development Foundation Inc., Department of Agriculture and the local government unit.

The Catholic Relief Services (CRS) is the official aid and development agency of the United States of America Catholic Community. They were formed in 1943 by the Catholic Bishops of the United States of America. CRS started relief and reconstruction efforts in 1945, after World War II. From 1945 to the present, it has evolved into a development agency that supports programs in peace and reconciliation, health, microfinance, agriculture and resource management (Mendoza 2006). It is present in 99 countries and five territories around the world and is staffed by people of different faiths. They provide assistance on the basis of need, not race, creed, or nationality (CRS 2006).

The objective of the Small Farms Marketing Project, funded by the USDA, was to improve the livelihood of farmers in Mindanao by increasing the productivity of agricultural products such as coffee and vegetables. They worked with five local non-government organizations, one of which was Kasilak, which implemented the CRS project.

CRS funded the Maragusan Valley Area Resource Development Project (MaVARD). Aside from financial support, they also provided technical assistance, training, market visits and monitoring. Moreover, the organisation also presented the results of the Maragusan vegetable farmers' clustering experience to the local and international community.

The Kasilak Development Foundation Inc. is a non-stock, non-profit social development organization, established in 1997 as the result of a learning experience from the Libuganon Watershed Project in Davao del Norte. This project was co-funded by the United States Agency for International Development (USAID) and Dole-Stanfilco. As of 2008, Kasilak operated in five provinces including Bukidnon, North Cotabato, South Cotabato, Compostela Valley, Sarangani Province and Davao City.

Their institutional programs are watershed and natural resource management, livelihood and income augmentation, with support for basic social services such as education and health (Montebon 2006). With funding from CRS, Kasilak designed the Maragusan Valley Area Resource Development Project (MaVARD). MaVARD was a three-year project that had agricultural extension, marketing, natural resource management, and agricultural infrastructure components. From MaVARD, two sub-projects were identified: the Maragusan Integrated Natural Resource Conservation Project (MINARD) and the Maragusan Livelihood and Enterprise Development Centre Project (MLEDC).

Kasilak provided financial, technical, marketing and infrastructure support. They also provided the salary for the full-time marketing officer and five development officers. They also assisted in the marketing of the produce by providing logistical support. A building was

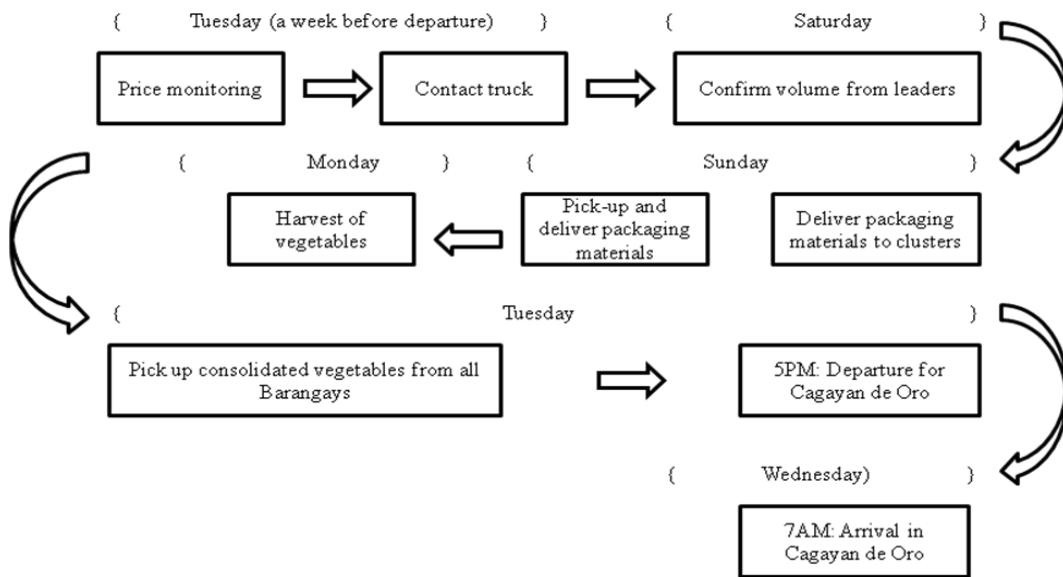
constructed in *Poblacion* Maragusan in November 2005 for livelihood-related training, seminars and meetings. The building may also be used for other community activities such as a place to accept official visitors, eating meals during celebrations and inaugurations.

The Department of Agriculture (DA) is a government agency helping farmers through training, research and financing. Maragusan is under the jurisdiction of the DA Regional Field Unit 11. Regional Executive Director Roger Chio (SunStar Davao 2007) said that the DA was looking towards Maragusan as being one of the key vegetable producing areas in Region 11 since it is close to both Panabo and Tagum city. The DA support vegetable production in the province through the High Value Commercial Crops Program (HVCC). Some of the support provided to industry includes quality seeds, post-harvest facilities such as trucks and stackable crates for farmers to maintain the quality of their produce, as well as to reduce post-harvest losses, and to improve farm-to-market roads for the major vegetable producing barangays in Maragusan. The DA Bureau of Post-harvest Research and Extension (BPRE) is currently validating the need to establish a tramline facility. The cluster leaders, Kasilak and CRS staff identified this tramline facility during focus group discussions in September 2007, facilitated by the researcher.

The Maragusan local government, through its Municipal Agriculturist's Office (MAO), is supporting agricultural activities in the municipality. As of 2008, the local government is working closely with Dole-Stanfilco (a subsidiary of Dole Philippines Inc.) to provide trucks (grader, hydraulic excavator and compactor) to temporarily repair the roads, particularly after heavy rain. A new set of government officials were elected in 2007 and one of their priority projects was to establish new and reinforce the existing farm to market roads. Other support for the farmers included the plant now, pay later scheme where farmers could avail of interest free loan seeds. The MAO also provided technical assistance to the farmers through its technicians.

### **5.2.3 Vegetable clustering scheme**

CRS defines clustering as a group of small growers who commit to work together for collective marketing (CRS 2006). The Maragusan farmers' cluster is an informal group of farmers who live in Maragusan. Potential farmers were selected by the project team and endorsed by the local residents during a six month interaction period with the farmers in Maragusan.



**Figure 5.2: Enterprise design**

Source: Mendoza 2006

One week before selling (which usually falls on a Tuesday), the marketing officer sends a text message (or SMS) to market contacts in Cagayan de Oro and Davao City to agree on a price and products to be delivered (Figure 5.2). He then contacted a truck owner to arrange for the delivery of the produce to the target customer. Four days later, the marketing officer confirmed the volume needed from the different cluster leaders and Kasilak staff (Development Officers) using a short-wave radio. The home base for the short wave radio was the Kasilak office in Maragusan, but all cluster leaders could listen to the conversations since it was broadcasted through the radio, so the communication line was always open. There was one full time employee in each *barangay* (Tupas, New Albay, Magcagong and Saranga) and one staff member for *barangays* Mahayahay and Parasanon to support the clusters. The cluster leaders, or the development officers assigned in the *barangay*, informed the members about the volume and value of the vegetables. The marketing officer, or the Development Officer, picked-up the packaging materials from the Kasilak office and delivered them to the clusters. The farmers harvested the vegetables the next day. Some farms were far from the road, so the cluster members needed to bring the produce to a consolidation area where a truck picked them up. The consolidation area was the place where they classified or graded the products. The truck traveled to the market such as Cagayan de Oro City. If the volume was not large, the Kasilak vehicle (a Suzuki four wheel drive) picked up the crates or sacks from the consolidation area and brought the produce to the bus terminal in the *Poblacion*. The marketing officer, together with one cluster leader, transported the vegetables to the buyer using public transport (i.e. bus, jeepney).

In September 2007, for example, a supermarket in Tagum City bought their vegetables and paid in cash. From the gross income, there were deductions for the fare and food for the cluster leader who delivered the vegetables. From the net income, 5% was given to the cluster leader and another 5% went into a cluster fund. This arrangement was acceptable to the farmers.

#### **5.2.4 Issues and challenges**

Numerous issues and challenges face the Maragusan vegetable farmers' cluster. These included: (1) sustainability, in the absence of financial support from funding agencies; (2) the legal status of the cluster group; (3) the need for additional volume and product assortment; (4) the lack of market options; and, (5) inaccessible farm-to-market roads.

Institutional support organisations play a crucial role in the cluster. CRS funding ended after the first quarter of 2008. They provided the majority of the funding, particularly the salaries of the personnel (the Marketing Officer and the Development Officer), travel, supplies and a communication allowance. The main reason why the Maragusan vegetable farmers' cluster worked, despite the low volume and sales, was because staff and funding were present. This was a reality accepted by both the farmers and the support organisations.

Maragusan farmers, through CRS and the Kasilak Development Foundation Inc., have funding from USDA, so it is imperative to serve the beneficiaries. Their challenge was how to sustain the cluster. One positive aspect of the relationship was that the cluster members had some degree of trust in their cluster leader. CRS and Kasilak prepared the cluster through capacity building and strengthening activities to ensure that production and marketing would continue.

However, the group was not registered with any legal body such as the Securities and Exchange Commission (SEC), Department of Trade and Industry (DTI), Cooperative Development Authority (CDA), or the Department of Labor and Employment (DOLE). This means that even if the Maragusan vegetable farmers' cluster continues, they will not have difficulty accessing funds or support from other agencies or funding institutions. Technically, they cannot trade as one group or issue any receipts when the MaVard project ceases. In September 2007, Kasilak was researching which alternative mechanisms would entail less time and less expense for the farmers.

Maragusan vegetable farmers predominantly planted chayote. This has caused some problems. For example, during the trial deliveries to public markets (Cagayan de Oro City and Davao City) and a supermarket in Davao City, these markets could not absorb all the chayote produced in Maragusan. As a result, prices were lower and it was no longer

profitable. Some of the cluster members still maintain their trading relationships with dicensand sell their produce.

The main roads leading from Maragusan to nearby cities and municipalities was often impassable during rainy days. Almost 90% of the roads were made of gravel and the farm-to-market roads were muddy and slippery. Because of this, tomatoes, though suitable at high elevation, were difficult and cumbersome to transport. Since the farm-to-market roads were bad, transportation was also very expensive. Although the newly elected municipal officials promised to construct new roads and to repair existing farm-to-market roads, with the current situation of the roads, the work will require a greater budget and more work.

In 2011, some farmers continued to deliver to a supermarket in Tagum City. The supermarket in Davao City wanted to buy fresh vegetables cheaper than the public market because they wanted to sell affordable vegetables to consumers. They also wanted a greater assortment, including leafy vegetables, so the cluster no longer supplied this supermarket. The cluster also stopped deliveries to Cagayan de Oro City because they could not compete with the cheaper product from nearby vegetable producing areas like Bukidnon. Therefore, the cluster looked for more markets to sell their products. Unfortunately, only a few farmers continued to sell to local buyers, since several of them stopped farming and transferred to mining.

### **5.3 Northern Mindanao Vegetable Producers' Association Inc**

The Northern Mindanao Vegetable Producers' Association Inc., also known as Normin Veggies, is composed of individual producers, development foundations, corporate farms, farmers' associations, farmers' cooperatives, input and service providers and institutional partners. The organization aims to become a competitive vegetable industry producing high value commodities for the domestic and international markets. It was organized on March 10, 1999, with eight founding members from Bukidnon and seven from Misamis Oriental (Department of Agriculture Regional Field Unit 10). Normin Veggies' membership as of February 2007 was 87 members (Table 5.2). Most of the members come from Northern Mindanao, with most farms located around Kitanglad (Bukidnon), the Balatucan (Misamis Oriental) mountain range, Misamis Occidental and Lanao del Norte.

**Table 5.2: Normin Veggies members as of February 2007**

Type of Members	Number
Regular	
Individual	54
Corporate	7
Development Foundation	2
Association	4
Cooperative	7
Associate Member	9
Honorary Member	4
<b>TOTAL</b>	<b>87</b>

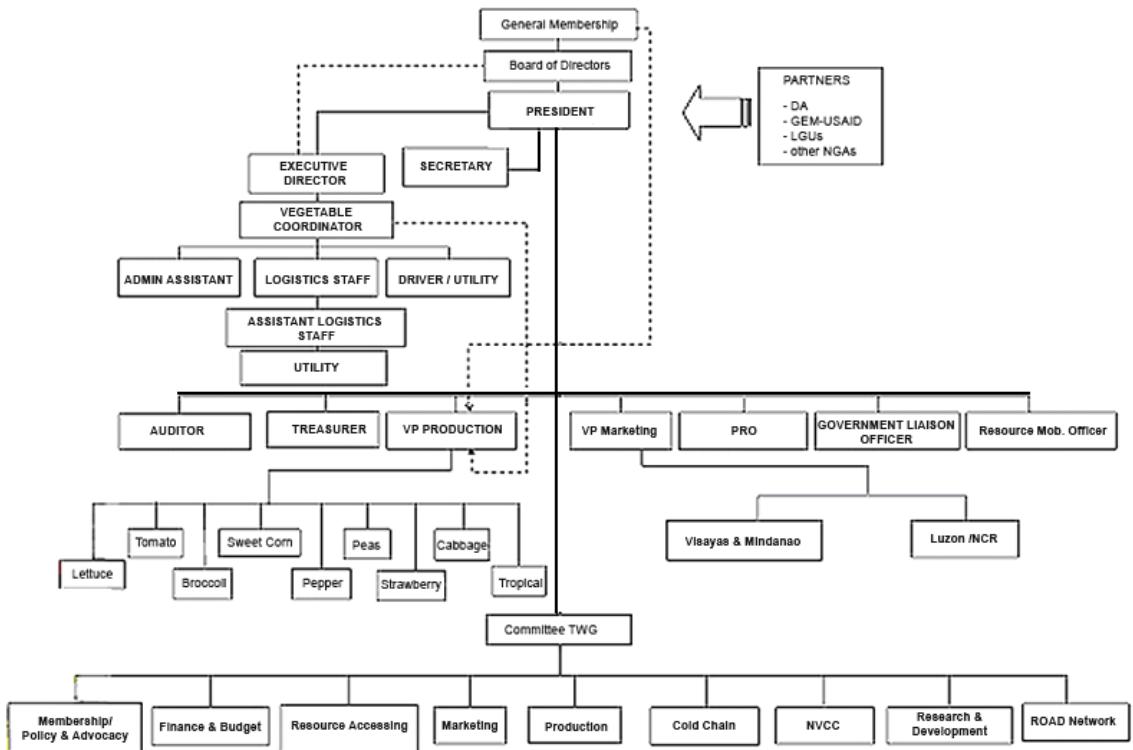
Source: NMVPAI Records

### **5.3.1 Overview**

As of June 2007, Normin Veggies employed three full time staff (an Executive Director, Vegetable Coordinator, and an Administrative Assistant/Bookkeeper) and four casual staff (a logistics officer, driver/utility, assistant logistics officer and utility)(Figure 5.3).

### **5.3.2 Support agencies**

The support agencies for Normin Veggies consisted of government and non-government organizations. The Department of Agriculture, through its Regional Field Unit in Region 10 provided research, marketing, production and training support to NorminVeggies. The DA has a Regional Agriculture and Fishery Council (RAFC), which handles the problems of the different agricultural commodities. As the RAFC is composed of several commodities, specific problems for each commodity are not addressed. According to a Senior Agriculturist from the DA RFU 11, then-DA Secretary Edgardo Angara in 2000 (during President Joseph Estrada's term) wanted to assign one person per agricultural commodity. As a result, the Agribusiness and Marketing Assistance Division (AMAD) was encouraged to assist in establishing numerous producer councils.



**Figure 5.3: Existing organizational structure of Northern Mindanao Vegetable Producers' Association Inc. (Normin Veggies), as of December 2006**

Source: Normin Veggies documents

In DA RFU 10, they organised the Northern Mindanao Vegetable Producers Association Inc. Assistance included technical, financial and market linkages. The warehouse of Normin Veggies in Cagayan de Oro was built with a grant from the DA RFU 10. Aside from the warehouse, it also holds the office of Normin Veggies and NorminCorp. The DA National Office also provided (through a loan) a refrigerated van used by both Normin Veggies and NorminCorp to transport some of its members' products to different areas in Mindanao, the Visayas and Luzon. As of 2011, the van maintained a red or government plate and had to abide by government protocols (such as a travel order, trip tickets) before it could travel. Members use it for a fee. Other fresh industries such as cutflowers can also hire it, if there are no vegetable deliveries. In 2007, the fee for the refrigerated truck was PhP 1,000 per trip plus actual fuel consumption from the Cagayan de Oro base station (warehouse in Agora Public Market) to the farm then to the delivery area.

GEM 2 is a USAID-funded project, which has operations in different areas in Mindanao, but has a special focus on conflict-affected areas of Mindanao (Growth with Equity in Mindanao 2 Program 2007). It maintains its program management office in Davao City. One of its programs is the Business Support Organization where they provide financial and technical support.

GEM 2's predecessor, GEM 1, had been involved with Normin Veggies. Demonstration farms and trainings were conducted and facilitated by the previous staff of GEM 1. GEM 2 started in 2002. The support to Normin Veggies included funds for several vegetable congresses, farmer's fora and workshops, identification of key production areas, market visitations, and other projects that required travel and manpower. GEM2 always has a technical advisor and staff who oversee the implementation of the proposed projects. They liaise regularly with Normin Veggies Board and staff.

In 2007, GEM supported the production of two books, which Normin Veggies co-authored with VICSMIN, one of which was published in 2008. GEM 2 subsidized the salaries of two full-time staff of Normin Veggies, the Executive Director and the Technical Assistant. GEM 2 likewise subsidized the gasoline, travel and communication expenses of Normin Veggies.

Kaanib Foundation is a non-government organization working with farmers and agrarian reform communities in Bukidnon. It is also an active member of Normin Veggies. The foundation has supported many smallholder farmers and included them in vegetable clusters. The support to smallholder farmers included technical, financial and marketing assistance. It was also a collaborator in the United States Department of Agriculture-funded Catholic Relief Services project called Small Farms Marketing Project. As such, farmer members of the foundation have access to funds, training, workshops, travel and technical assistance. The support of Kaanib Foundation was limited to its members in Bukidnon. However, their assistance to farmers has helped them to make a substantial contribution to the total volume of vegetables traded by the clusters.

The local government units, through their municipal (MAO) and city agriculturist's offices (CAO), were very helpful in identifying key and potential areas for vegetable production. They also lobby the local government units (LGUs) as to which areas need to be given priority in terms of infrastructure, financial assistance for agricultural purposes (such as the plant now pay later program), and other services for the small farmers. Despite budgetary and geographic constraints (as some farms are very far and inaccessible especially during the rainy season), the LGUs are still able to provide seed, loans and technical assistance to small farmers in their municipality or city. Data from the CAO and MAO were given to research institutions, academe, non-government organisations and the national government to assist in developing plans to improve the vegetable industry.

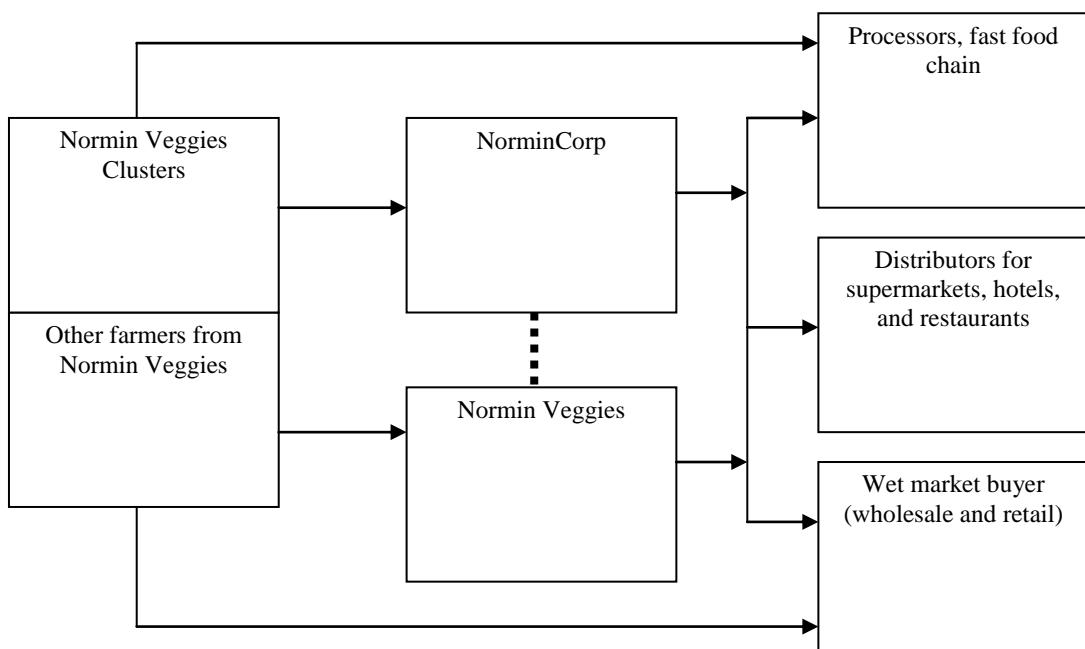
Xavier University, formerly known as Ateneo de Cagayan, is a Catholic university established and managed by the Jesuits since 1933. One of their auxiliary units is the Sustainable Agriculture Centre under the College of Agriculture. The Centre has extension programs that encourage the planting of vegetables by poor communities and help them sell

to the market. As such, Xavier University Sustainable Agriculture Centre was an active member of Normin Veggies. Aside from production, Xavier University has collaborated with Normin Veggies in future projects, research and training programs. Faculty members and university staff are often tapped as speakers and facilitators in training, workshops and congresses.

### **5.3.3 Vegetable clustering scheme**

Initially, NorminVeggies formed a lettuce cluster composed of five farms (Digal and Concepcion 2004; Shepherd 2005). The largest farm among the five coordinated the marketing activities. Most often, NorminVeggies clusters have consisted of five to ten farmers (Concepcion, Digal and Uy 2006).

NorminVeggies has two cluster types: the one (single) product cluster and the diversified product cluster (Uy 2005). The one product cluster expanded from lettuce to four other high value crops: broccoli, cabbage, tomato and carrot. These were usually sold to processors. On the other hand, the diversified product clusters produce assorted vegetables such as bell pepper, cabbages, eggplant, bitter gourd and tomato, and sell these products to supermarket distributors (Figure 5.4).



**Figure 5.4: Normin Veggies clustering approach**

In 2003, Normin Veggies formed the Northern Mindanao Vegetable Corporation (NorminCorp) to serve as its market facilitator. NorminCorp charges a facilitation fee as payment for its market linkage, communication and logistics services (Table 5.3).

**Table 5.3: NorminCorp fees (2007)**

<b>Value/kg (PhP)</b>	<b>Normin Veggies (Bodega/Warehouse fee)</b>	<b>NorminCorp (Market facilitation fee, optional)</b>
Up to 10.00	5% of gross sales	5% of gross sales
>10.00 up to 20.00	4% of gross sales	4% of gross sales
>20.00 up to 50.00	3% of gross sales	3% of gross sales
>50.00	2% of gross sales	2% of gross sales
<b><i>Table Tomato</i></b>		
Up to 300/crate	2.50/crate	2.50/crate
> 3000/crate	5.00/crate	5.00/crate

Source: NorminCorp Warehouse

NorminCorp also linked the farmers to appropriate service providers. NorminCorp informs the farmer of the buyer's price and the farmer is accountable from harvest to delivery to the buyer. This means that quality management starts from the farm and the farmer needs to be efficient in delivering the products to the buyer.

NorminCorp services are optional to Normin Veggies members. They may opt not to deal with NorminCorp but avail themselves of the services provided by the association such as truck services, business centre services (i.e. photocopy, printing, telephone and facsimile, computer services, email account management, text broadcast (SMS), and warehouse services.

#### **5.3.4 Issue and challenges**

Normin Veggies faced several issues and challenges. These included: (1) the sustainability of financial support from funding agencies; (2) cluster groups are very independent; and (3) inaccessible farm to market roads.

##### ***Sustainability of financial support***

Institutional support organizations played a crucial role in the cluster. The GEM 2 program had a project term of five years (2002-2007) and was extended until December 2008. The majority of the funding for Normin Veggies came from the GEM 2 program, including the salaries of its Executive Director, technical staff and allowances for Board Members. This funding has enabled Normin Veggies to function well and to mobilise its members. Normin Veggies maintained a bank account where monies collected and raised from different projects and businesses were deposited. However, the amount was not enough to maintain the salaries of the people employed. There was also funding from other projects but this was not as much as that contributed by the GEM 2 program. As such, the officers and members indicated that they continually look for sources of funds to maintain their operations.

### ***Cluster groups are very independent***

Cluster groups were very independent and have the capacity to make decisions on their own. This has positive and negative repercussions. Normin Veggies can be assured of the capacity of the clusters and their leaders in dealing with buyers and in mobilising their members to produce the required volume. They can also handle transactions and can negotiate with the buyers. However, because of this independence, the Executive Director and the Board members do not have any control and thus there is some difficulty in tracking all transactions, unless they are dutifully reported and recorded.

Since NorminCorp has the right to handle non-members' products, the challenge is to keep its members loyal to the organisation. Some members saw some officers taking advantage of their position and connection by prioritising their products during marketing.

### ***Distances of farms***

The vegetable farms, which comprise Normin Veggies are scattered throughout the province. The cluster farms were seldom situated close to each other. As such, the farms are under constant pressure to produce a sufficient volume if they are to benefit from any post-harvest exercise. For travel to the consolidation areas to be viable and sustainable, the farmers have to ensure full truckloads every time and thus organise a synchronised harvest and transport system so that the products do not incur a large warehouse fee.

Communication among the farms was also a problem. Even mobile phones became ineffective as phone signals were weak or non-existent in some remote farms, and two-way radios were not popular with Normin Veggies farmers. Moreover, although the farmers acknowledge the need for maintaining a mobile phone (to keep in touch with the clusters, production and harvest schedule), it is only the richer farmers who can afford to buy mobile phone prepaid load. While they likewise see the importance of regularly visiting the Cagayan de Oro office, only the richer farmers can afford the transportation cost (most of them own vehicles).

### ***Inaccessible farm to market roads***

Farm to market roads are often a problem in the Philippines and the Northern Mindanao region (Region 10) is no exception. Most of the farms are situated in the mountain ranges and are difficult to access particularly during and after heavy rain. High value vegetables have to be carefully packed from the farm site to keep them fresh and free from bruising. Sometimes, farms have to wait for the rain to subside before taking the products to the market. Some vegetables have to be trimmed in the warehouse, thus reducing its weight.

## **5.4 Vegetable Industry Council of Southern Mindanao Inc. (VICSMIN)**

The Vegetable Industry Council of Southern Mindanao Inc. (VICSMIN) is an organization composed of vegetable industry stakeholders such as individual farmers, farmer cooperatives or associations, academic institutions, government and non-government organizations, supermarkets and input suppliers in Southern Mindanao (Region 11). The Council aims to strengthen linkages among stakeholders to become highly competitive and competent entrepreneurs. It was formally incorporated on July 28, 2000, and registered with the Securities and Exchange Commission (SEC Reg. No. D-2001-00368). As of September 2006, there were 95 members.

The majority of farmer members come from Region 11, from the provinces of Davao del Sur, Davao del Norte, the Compostela Valley, Davao Oriental and the cities of Davao, Digos, Panabo and Tagum. Farmers from North and South Cotabato provinces were VICSMIN members until 2006 whereupon they broke away and formed the Vegetable Industry Council of South Cotabato (VICSCo). This was also due to the reclassification of these provinces from Region 11 to Region 12.

VICSMIN's vision is to become a highly recognized and proactive advocacy group (Strategic Plan 2007). VICSMIN aims to unify stakeholders and catalyse the development of a globally competitive and sustainable vegetable industry in Southern Mindanao. The services offered by the organization included:

- market matching
- event organizing (conferences and vegetable trade fairs)
- an information centre
- facilitation of techno-transfer training
- policy advocacy
- business and trade opportunities.

VICSMIN as an organization was not involved with the production and marketing of vegetables. Hence, the *Gulayan ng Timog Mindanaw* (GTM) was established in 2005 as the marketing arm to assist farmers in selling their vegetables. GTM was mostly involved in buying vegetables from farmers and farmer organizations that were members of VICSMIN.

### **5.4.1 Overview**

In 2000, the then Department of Agriculture Secretary (Edgardo M. Angara) wanted to have one person to approach for a commodity inquiry. As a result, the Agribusiness and Marketing Assistance Division (AMAD) of the Department of Agriculture was encouraged to assist in putting together several councils. Some of these councils included the

Floriculture Council of Southern Mindanao or FICSMIN, the Banana Industry Council of Southern Mindanao (BICSMIN), the Southern Mindanao Mango Industry Development Council (SMMIDC) and the Vegetable Industry Council of Southern Mindanao Inc. (VICSMIN).

VICSMIN is an organization composed of vegetable growers, farmers' groups, individuals and private organizations that are involved with the vegetable industry in the region. The council is supported by the Department of Agriculture Regional Field Unit XI and is based at DA AMAD. The aim of the organization is to develop the vegetable industry. The members of the council come from different municipalities within the region. There are regular and associate members. The regular members, usually farmers and farmer group representatives, are allowed to run for any officer positions. Associate members, on the other hand, are composed of support organisations and are not allowed to hold office, but can participate in the voting process as an observer. In January 2008, VICSMIN had two fulltime staff, the Executive Director and Technical Assistant.

#### **5.4.2 Support organisations**

Similar to the Normin Veggies and Maragusan, support organizations for VICSMIN are composed of government and non-government organizations. The associate members of VICSMIN came from the government, private and non-government organizations, and universities. Government departments such as the Department of Agriculture Regional Field Unit XI (DA RFU XI), Department of Science and Technology (DOST) and the Department of Trade and Industry (DTI), provided financial and technical support to the Council. Two state universities based in Davao City, University of the Philippines Mindanao and University of Southeastern Philippines, were extending assistance in training, extension and capacity building. The United States Agency for International Development (USAID), which funded the Growth with Equity in Mindanao (GEM 2) Program, has conducted farm demonstration trials and various training programs. Until 2008, GEM 2 subsidized the cost of two full-time employees. The Catholic Relief Services (CRS) have provided financial and technical assistance to the Council as well. The Local Government Units (LGUs) such as the City Governments of Davao City, Panabo, Tagum and Digos, represented by their City Agriculturist's Office, the Provincial Government of Davao del Norte, Davao Oriental, Davao del Sur and the Compostela Valley, through their respective Provincial and City Agriculturist's Office, were also providing technical support in terms of agricultural technicians and field workers. Each also provided financial support for the activities that were implemented in their areas.

In the Philippines, the Department of Agriculture (DA) has Field Offices (called Regional Field Units or RFU) in 15 regions of the country. It is headed by a Regional Executive Director (RED) who reports directly to the Secretary of the DA. The DA, through its Regional Field Unit in Region 11, provided research, marketing, production and training support to VICSMIN. The DA also has a Regional Agriculture and Fishery Council (RAFC), which handles the problems for each agricultural commodity. However, since an RAFC is composed of several commodities, specific problems for each commodity are seldom addressed. In DA RFU XI, then RED Dennis Araullo ordered the Department of Agriculture Agribusiness and Marketing Assistance Division (DA-AMAD) to have Commodity Desk Officers to address inquiries and provide support to the industry councils.

Aside from DA-AMAD, the Regional Crop Protection Centre (RCPC), whose representative is Plant Pathologist Ms. Marilou Infante, had been supporting VICSMIN. One of these projects is the *Diadegma semiclausum* laboratory operated by Maharlika Farmer's Cooperative. DA AMAD and DA RCPC also provided funds for vegetable training and congresses.

Another active support organisation is the GEM 2 Program. It maintains its program management office in Davao City. One of its programs was the Business Support Organization, where they provide financial and technical support. GEM 2's predecessor, GEM 1 had been involved with VICSMIN. The support to VICSMIN included the funds for several vegetable congresses that VICSMIN sponsored or co-sponsored (1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> Southern Mindanao Vegetable Congresses, 2<sup>nd</sup> Mindanao Vegetable Congress, 4<sup>th</sup> National Vegetable Congress), farmer's forum and workshops, key production areas identification, and other projects that required travel and manpower. GEM 2 always has a Technical Advisor and staff who oversee the implementation of the projects. They liaise regularly with VICSMIN Board and staff. GEM 2 recently funded the publication of the Vegetable Production Areas of Mindanao (2007), in cooperation with VICSMIN and the Northern Mindanao Vegetable Producers' Association Inc. The book is useful to buyers, investors and input suppliers who want to do business with the vegetable farmers in Mindanao.

Aside from the book, GEM 2 also subsidised the salaries of the two VICSMIN full-time staff. They shouldered 80% of the total salary, while VICSMIN paid for the remaining 20%. The GEM 2 Program likewise subsidized the gasoline, travel and communication expenses of VICSMIN.

Two universities are actively supporting VICSMIN: the University of Southeastern Philippines (USEP) and the University of the Philippines in Mindanao (UP Min). USEP have co-sponsored vegetable congresses with VICSMIN and been involved with some projects

such as the *Gulayan sa Barangay (GSB)* contest or Vegetable Gardening in Villages Contest, where they helped forge the contest mechanics or rules. Currently, the USEP extension office is an active associate member of VICSMIN and assists them when the need arises.

UP Min is a constituent university of the University of the Philippines. In 2001, it became involved in a vegetable supply chain project funded by the Australian Centre for International Agricultural Research (ACIAR). The project team was invited to attend vegetable congresses. In 2003, UP Min was asked to participate in the VICSMIN strategic plan which eventually lead to the university's associate member in the Council. Since one of the components of the ACIAR funded project was to liaise with vegetable industry stakeholders, UP Min became an active member of the VICSMIN. Since then, the university has helped organize several congresses and workshops and became one of the resource speakers for VICSMIN activities. Other projects assisted by the university include the *GSB* project, vegetable awareness campaign and farmer's forum. Although the ACIAR project has ended, UP Min has maintained its membership of VICSMIN and regularly provides technical assistance such as proposal writing, workshop facilitation and resource personnel.

The local government units (LGUs) from the different provinces, municipalities and cities have an agriculture office. As such, VICSMIN often liaise with them, especially during farmer's fora, workshops and vegetable congresses. Their staff regularly attend meetings and brainstorming sessions to provide their experiences in the field. In turn, they will relay what they discussed during the VICSMIN meeting to their respective constituents. Their presence in the Council is very important because the membership of the Council relies on the efforts of these LGU's to convey the projects and programs of VICSMIN and to encourage people to join and become actively involved. Aside from manpower support, LGU's also provided financial and logistical support to the Council, especially during farmer's fora held in the LGU's area.

According to Davao City Agriculturist's Office staff, their involvement with VICSMIN has been through DA-AMAD. During late 1999 and early 2000, LGU counterparts for agriculture were invited to come up with mechanisms to organize and support commodity councils. Davao City, for example, was very supportive of the vegetable industry efforts. When VICSMIN initiated the first *GSB*, the City Government of Davao was approached and VICSMIN was granted an audience with the Mayor. The Mayor directed the City Agriculturist's Office to ensure that funds for the *GSB* activity were allocated on an annual basis. For their part, the City Agriculturist's Office directed their Agricultural technicians to support the *GSB* project by making it their key target area for 2007. Other LGUs in Region 11 were also undertaking similar efforts to assist their vegetable farmers. The Mayor of

Tagum endorsed the launching of the trading activities of VICSMIN Davao del Norte in 2006.

Another government agency, the Department of Science and Technology (DOST), provides direction, leadership and coordination for all science and technology activities in the country and formulates science and technology policies, programs and projects that support national development priorities (Department of Science and Technology 2007). DOST was part of the initial group which conceptualised the formation of the councils. They regularly attend the vegetable congresses organised by VICSMIN. They are currently associate members and provide assistance when requested by VICSMIN.

Like DOST, the Department of Trade and Industry (DTI) has been among the government organizations that assisted VICSMIN in its early stages. The DTI's mandate is to assist entrepreneurs and businesses in the conduct of their activities. In 2007, it funded the Trade and Industry mission to the Kingdom of Saudi Arabia in which VICSMIN was chosen to participate.

Major seed companies and other input suppliers also provided technical assistance to farmers through the conduct of seed caravans and demonstrations. East-West Seed Company, Harbest Agribusiness Corporation, and AZ 41 Organic Fertilizer were actively involved in the council. These input suppliers also participate in production and marketing training activities for VICSMIN.

#### **5.4.3 Vegetable clustering scheme**

Early discussions on clustering were conducted during the term of Mrs. Estrella Juson as VICSMIN President. The topic was considered again during the first term of Mr. Rogelio Gualberto. Cluster farming, according to Mr. Gualberto, means designating an area as a top or main producer of a commodity. It is a production and financial plan for a group of farmers in a particular area. For example, the Compostela Valley should produce chayote while Kapatagan, Digos City, should produce cabbages. This would be decided during the VICSMIN strategic planning process.

The idea for clustering is to produce a desired volume and to get a good price. Since VICSMIN is a not for profit organisation<sup>6</sup>, it organised the *Gulayan ng Timog Mindanaw* (GTM) in 2005 to serve as its trading arm.

GTM is a corporation conceptualised, organised and incorporated by the stakeholders of VICSMIN. It was registered at the Securities and Exchange Commission on April 19, 2005, to sell and buy agricultural produce and inputs. The members individually contributed

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<sup>6</sup> In the Philippines, if you are not for profit organization, you are not allowed to do trading or earn from trading.

money to set up the trading company. There were seven farmer organizations and nineteen individual stockholders who have a combined capital share of PhP 544,000.

GTM was the result of the 2003 Strategic Plan, which encouraged VICSMIN to establish a marketing arm to address the problem of poor access to markets. Other problems identified were the lack and high cost of transport from farm to market, the poor quality of vegetables due to pests and diseases, poor post-harvest handling and traders who dictated the price.

GTM's primary goal is to sell to the institutional markets such as supermarkets, hotels, hospitals, restaurants and to the wet markets. Ultimately, the main objective is to export fresh produce.

As the trading arm of VICSMIN, GTM is involved in the identification of the products. VICSMIN also has area representatives who commit to deliver to GTM. In September 2006, VICSMIN identified eleven main vegetables to be planted and traded. These included eggplant, okra, string beans, ampalaya (bitter gourd), cucumber, carrots, cabbage, bell pepper, lettuce and chayote. They also identified seasonal crops such as potato, tomato, squash, cauliflower, Kentucky beans, broccoli and spring onions (Table 5.4). The farmer representatives at the supply source have to commit to this volume. A farmer who wishes to trade with GTM has to be a registered VICSMIN member or belong to a cooperative or association that is a member of the Council. The five areas have members who will produce the designated crop. The area representatives will then assist in consolidating the produce and delivering it to GTM in Davao City. GTM will sell the produce to institutional buyers and to the nearby public market. Payment is made to the farmers (an advance of not more than 50%) upon delivery. The remaining balance is paid after all the produce has been sold.

**Table 5.4: Source and volumes of vegetables considered to be required for GTM sustainability as a result of a Supply Clustering Planning Workshop**

Cluster crops	Supply source	Committed volume (kg./ day)
Eggplant	Davao del Norte	200
Okra	Davao del Norte	50
String Beans	Davao del Norte	50
Ampalaya	Magsaysay, Davao del Sur	150
Cucumber	Magsaysay, Davao del Sur	150
Pechay	Magsaysay, Davao del Sur	80
Carrots	Balutakay, Davao del Sur	150
Cabbage	Kapatagan, Digos City	200
Bell Pepper	Marilog, Davao City	20
Lettuce	Marilog, Davao City	20
Chayote	Compostela Valley	100
Total		1,170

Note: Seasonal target for GTM is 1,000 kg/day

Classification and sorting was done at the supply source, based on the standards used by local buyers. However, the products will undergo re-sorting and re-classification when the supply arrives in the Bangkerohan Public Market in Davao City, where GTM operates, for the quality of the vegetables will have deteriorated after packing and transport.

#### 5.4.4 Issues

The issues faced by VICSMIN include: (1) sustainability of financial support; (2) sustaining active farmer members; (3) the dearth of farmer leaders in the Council; and (4) encouraging and motivating the farmers to sell their produce to GTM.

VICSMIN is a council composed of vegetable industry stakeholders. The farmer and farmer group members rely heavily on the support agencies such as the DA and GEM 2 program, particularly for financial support. GEM 2 in particular, supports 80% of the salary of VICSMIN's current staff. The GEM 2 Program ended in mid 2007, so sustaining the services of the two staff has become an issue. This situation was discussed during the Strategic Planning session in January 2007. The Treasurer said that VICSMIN had set aside funds to employ the current staff for three to four months, until the GEM 3 Program commenced. In September 2007, Mindanao Peace and Development (or GEM 3) was approved to conduct a five year peace and development project in Mindanao with a budget of around US\$190 million (eMindanao Portal 2007). The new project will have the same components as GEM 2 Program. The GEM 3 Program will continue to support VICSMIN until 2012.

The Department of Agriculture (DA) is also very active in supporting VICSMIN, since it was among the agencies that conceptualised and assisted the establishment of the Council in 2000. The financial and technical support from the Department, through its subsidiary agencies such as AMAD, the High Value Commercial Crops Division, Bureau of Agricultural Research, National Nutrition Council, RAFC and RCPC, has benefited the Council through many programs and projects, such as the vegetable congresses and farmer's fora. As of 2011, VICSMIN had enough savings in the bank to sustain their activities.

Although the membership of VICSMIN totals 96, according to the Executive Director, there are only 45 active members. One of the reasons for the inactive membership was the poor access to the VICSMIN office, which is located in Davao City. Another reason was that some of the members do not see any direct benefits arising from the VICSMIN's projects for them. Others are too busy with their farming, trading and business activities, which prevent them from attending regular meetings and activities. Some members, due to their busy schedule, often reactivate their membership only during vegetable congresses, which are generally conducted on an annual basis.

There are many farmer leaders in Region 11. Many of them belong to other commodity groups such as rice, corn, banana, mango and durian. However, in vegetables, there only few farmer leaders participated. One of the reasons was the lack of trust in the VICSMIN because there was an alleged mismanagement during its early stages. Some smallholder vegetable farmers totally lost their confidence in VICSMIN. However, some of them were slowly coming back and attending meetings since new leaders became more transparent with its financial transactions and the Treasurer delivers a regular report during meetings.

Another reason was that poor vegetable farmers cannot afford to pay to transport their produce to Davao City. With the rising cost of fares and unstable road conditions during the rainy season, willing VICSMIN members cannot attend the regular monthly meetings. Attendance did however increase in 2006 when the VICSMIN Board passed a resolution to reimburse the farmer group representatives' fares. The Provincial and City Agriculturist's Offices also signified their agreement to hold at least one meeting in their province to encourage the farmers to attend and participate. A very minimal per diem (PhP 50) was paid to VICSMIN officers to encourage them to attend regular monthly and Board meetings.

In 2005, GTM employed two full-time staff and rented a building in the Bangkerohan. The initial operation went well, especially when a small grocery store became a regular customer. Initial talks were also forged with a local supermarket chain. However, the GTM Board and Officers' trust was soon destroyed in the two staff when several unaccounted transactions were detected. Aside from this, the farmers who promised to deliver their produce did not

fulfil their obligations. Instead, they sold their produce to traders who offered a higher price, since the traders knew how much GTM was offering the farmers. Eventually, GTM's operation was put on hold and the building, which used up most of the stockholders money, was closed to save on rental. The contracts of the two staff were not renewed. In September 2006, the farmers once again committed to deliver produce to GTM. However, the key informants interviewed in December 2006 and January 2007 revealed that one area cluster did not sell the produce to GTM as promised. Instead, it sold its produce to the trader in the area. Clustering for VICSMIN has yet to commence since it is still at the planning stage. At present, VICSMIN's technical assistant also functions as GTM liaison officer.

## 5.5 Summary

In summary, although Normin Veggies and VICSMIN were organized in 1999 and 2000, respectively, farmers started clustering in 2004 and 2005 (Table 5.5). The triggers for clustering were access to project funds, markets and support. Maragusan vegetable farmers were composed of individual farmers while Normin Veggies and VICSMIN were composed not only of individual farmers but also farmer organizations. Assorted tropical and semi-temperate vegetables were produced by the farmers.

**Table 5.5: Summary of the cases**

Characteristic	Maragusan vegetable farmers' cluster	Normin Veggies	VICSMIN
Year organized	2004	1999	2000
Started cluster farming	2004	2004	2005
Trigger for organizing	Project	Government initiative	Government initiative
Trigger for clustering	Access to project funds	Access to market	Access to support
Number of members	174	87	95
Composition of members	Individual farmers	Individual farmers and organizations	Individual farmers and organizations
Products sold	chayote	Assorted tropical and semi-temperate vegetables such as eggplant, bitter gourd, cabbage, squash, tomatoes, string beans	Chayote, broccoli, lettuce, cabbage
Nature of market	Supply-led	Demand-led	Supply-led
Marketing arrangements	Cash on delivery	Cash on delivery and terms	Cash on delivery
Number of employees	6	3	2
Assistance received	Support staff, travel funds, input support, training	Support staff, travel funds, training, vehicle	Support staff, travel funds, input support, training

The Maragusan farmers decided what and when to produce. They could either sell to the cluster, through the dicers or directly to buyers in nearby cities and municipalities. This is because they do not have written contracts within the group. Their transactions were mostly based on trust. Communication was also open because of the two-way radios issued to the

farmers and development officers. The farmers were also taught how to market their produce and how to transact with institutional buyers. Market visits were also done to expose the farmers to the wholesale and retail markets. However, most of these initiatives come from the support organizations. The farmers were able to take risks because there was ample funding to maintain the operation. Nevertheless, there is an urgent need to equip the farmers to handle the marketing process themselves. One great challenge would be how to sustain the interest of the people, their participation in the cluster, and their enthusiasm to produce more products to sell.

NorminVeggies was more advanced in its clustering, having already established both single product and diversified product clusters, and having more experience in trading with institutional buyers such as fast food chains and supermarkets. A large percentage of the financially able farmers were also willing to assist and share their knowledge with smallholder farmer members. Institutional support was likewise present. Although the project has ended, Normin Veggies continues to gather support from government and non-government organizations.

NorminVeggies needs strong farmer leaders to ensure an attainable and sustainable project and work plan. The commitment of the member farmers is fundamental to the success of the clusters. The organization must train new leaders who can continue implementing the projects and programs. The problem is to maintain the dedication and perseverance of these leaders to devote their time to assist the industry. Volunteering is encouraged since serving the industry is mostly *pro-bono*.

There is a strong presence of institutional support organizations. However, some of them have a definite project term. The support organizations' main challenges are sustaining the clusters and fully devolving the marketing activities to the farmers, after the project term ends.

VICSMIN have technical and financial support from government and non-government agencies. However, while the support is strong, only a few leaders maintain their commitment to the Council. The reasons vary from distance to the meeting place, to disgruntled members, to very poor farmers who cannot afford the cost of transportation to attend the meeting.

VICSMIN needs to have more farmer leaders, but in order to sustain them, the Council should have a mechanism to give some remuneration or benefits to the officers and members. Farmers need strong leaders. If VICSMIN is to have more farmer leaders, they are more likely to sustain their organization since they include support agencies as their associate members.

Their clustering approach is welcomed by the farmers. The concept has been introduced during conferences, farmer meetings, stakeholders' meetings and other formal and informal avenues. However, the guarantee from the members to give the product and volume to VICSMIN's trading arm GTM has yet to be seen.

The three cases have distinct characteristics and approaches to cluster farming. The Maragusan vegetable farmers' cluster uses the territorial approach, while VICSMIN follows the model of the corn clusters. NorminVeggies uses their industry knowledge and the experience of its members to pursue its clustering activities. NorminVeggies is more advanced in its clustering since it has already established single product and diversified product clusters and has experience trading with institutional buyers. It also has larger farmers who are willing to assist and share their knowledge with smallholder farmer members. On the other hand, Maragusan vegetable farmers formed a cluster with assistance from support organizations, which facilitated the production and the marketing of the products. Meanwhile, VICSMIN has yet to prove that clustering works because they have yet to implement their clustering plans. VICSMIN has experienced problems with farmers failing to honour their obligations to deliver assigned vegetables to *Gulayan ng Timog Mindanaw* (GTM).

# **Chapter 6. Methodology**

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## **6.1 Introduction**

The case studies contributed to the formulation of a structured questionnaire. This chapter describes the research design, questions, survey administration and clearances. A structured questionnaire was used to gather information on the socio-economic impact of cluster farming on smallholder farmers. Finsterbusch, Ingersoll and Llewellyn (1990) reported that while questionnaires are practical to use, researchers should always look at the local context and situation before administering. To this end, a focus group discussion (FGD) with stakeholders in the vegetable industry including the farmers, appropriate government and non-government agencies was conducted. This sought to identify the key success factors and challenges of vegetable cluster farming and to validate the previous information gathered through key informant interviews. In the FGD, the researcher documented what institutional supports were given to the farmers and how important these were to the success of the cluster farming groups.

## **6.2 Research design**

This section describes how the area and the methodological approaches of the questionnaire were selected. This included the selection of the research area, data gathering techniques and limitations of the study.

### **6.2.1 Selection of research area**

The research area was selected on the basis of the location of the three cases being studied. This research chose three cases whose members were using the cluster farming approach for vegetables: (1) the Maragusan Vegetable Farmers' Cluster, (2) the Northern Mindanao Vegetable Producers Association Inc. (Normin Veggies), and (3) the Vegetable Industry Council of Southern Mindanao (VICSMIN). All three clusters were in Mindanao, an island in the Southern Philippines.

The fieldwork in the Philippines was undertaken in two phases. Exploratory research was undertaken from November 2006 to February 2007 through key informant interviews with farmer leaders and key people from support agencies. The results of this preliminary study were discussed in Chapter 5. The second phase was performed in August to September 2007 using a quantitative survey and focus group discussions.

### **6.2.2 Data gathering techniques**

Chambers (in Cernea, 1985, pp. 523-526) describes the qualitative and quantitative methods for data gathering. These were used in facilitating the collection of information from the

cluster members. Qualitative and quantitative data were drawn from primary and secondary sources. Project reports and data from ACIAR project ASEM 2001/101, local organisations' records, government sources and consecutive vegetable congresses were gathered. Additional information was obtained from other research and development organizations, NGOs and private institutions. To ensure that the information and primary analysis were valid, research results were presented to the farmers and industry experts through a focus group discussion.

## **6.3 Farmer survey**

### **6.3.1 Questionnaire design**

The questionnaire was divided into four parts. Part I sought to gain information on cluster membership; Part II sought information on the farmers' perception about cluster farming; Part III contained various questions about measures of cluster group performance; and Part IV contained personal information about the respondents themselves.

The questions were mostly derived from Murray-Prior et al. (1995), World Bank (2002) and Concepcion and Murray-Prior (2004). Other questions were derived from the results of the key informant interviews. Only four point scales were employed because the researcher observed that farmers found it easier to respond to the shorter rating. There was also some empirical support for the use of an even number to discourage neutral responses (Concepcion 2003). An additional column was provided for the "don't know" and "no" answers.

The questionnaire was initially prepared in English but a local Visayan (Cebuano) language translation was done. There were many other local dialects and languages, however, most of the prospective respondents spoke Cebuano.

#### ***Part I: Cluster membership***

The first question sought to identify the respondents' affiliation. This was asked so that it would be possible to differentiate between the three clusters. There was also an entry for non-members because some respondents were not members of the cluster.

The respondents were then asked what their ideas on cooperative and cluster farms were. This was to find out whether respondents perceive cooperative farming and cluster farming to be different or similar and to distinguish between the two.

Questions about what encouraged the respondent to become a member and what benefits they expected to get and had achieved were also asked. This was to find out the reasons why respondents joined the cluster. This question was adapted from the World Bank (2002), but instead of giving multiple choices, the responses were qualitative.

There were questions adapted from Murray-Prior et al. (1995). The respondents were to rate their responses from 1 to 4, where 1 was ‘not at all important’ and 4 was ‘very important’. The questions sought to explore how important certain management, membership and group focus were to them when they decided to join the cluster.

Question 11, adapted from the World Bank (2002), explored the social and geographic location of the respondents. The variables included were neighbourhood/village, family or kin group, religion, gender, age and ethnic or linguistic group/race/caste/tribe. This was used in profiling the cases. Moreover, the variables for the inquiry about how the leaders were selected were also derived from the World Bank (2002).

Since there is little literature available on cluster farming, this study adapted from Murray-Prior et al. (1995), five features of collaborative marketing groups: initial activities, communications, membership characteristics, management characteristics and group focus.

Initial activities include research and discussion to identify opportunities and problems; resources and options; funding sources; most appropriate business structure and level of grower support.

Communication included open communication, which addressed a number of issues including; establishes clear objectives and rules; provides information, opportunities for discussions and identifiable benefits to all members.

Membership characteristics included a high level of member commitment and participation; common aims; a good understanding of group objectives; and adherence to a quality assurance program.

Management characteristics included very committed managers with the expertise to deal with most group management issues; the ability to work together and a willingness to accept responsibility and to assist others.

Group focus included a strong customer focus; access to marketing expertise; focus on product recognition; improved post-harvest information to grower members and long range planning.

However, instead of allocating a total of 100 points among the five features, Respondents' were asked to rank from 1 to 5 which item was of most importance for them. The five features were presented in a table with brief descriptions. The reason for the modification was that most small farmers with limited numerical skills would find it difficult to allocate 100 points.

## ***Part II: Perceptions about cluster farming***

From the literature reported by Concepcion and Murray-Prior (2005), and the key informant interviews, 24 benefits of cluster farming were derived. Respondents were then asked to rate how important each of these items were on a four-point scale, where 1 was not at all important and 4 was very important. The 24 expectations were placed into one of seven groups: financial, knowledge, production, social, marketing, communication and access benefits.

### ***Expected benefits***

In the financial group, the benefits were earning more income from clustering, getting a higher product for their products, having continuous and clearly identified benefits for the members and improving their household's current livelihood. In the knowledge group, expectations included learning new farming ideas, learning from other farmers, sharing their knowledge to other farmers and gaining more farming knowledge. Maximising their farm area and more yield from the farm were included in the production group.

For the social skills, the responses included: being able to use their leadership skills, gaining more friends, becoming famous, for enjoyment/recreation, for social status and a high level of personal commitment.

Communication variables included open communication between all parties (cluster head, members, buyers) and open discussion and freely available information on all important group issues identified, through group discussion of clear, achievable objectives for the group.

In marketing, expected benefits were selling to other markets aside from the wet markets, joining an established marketing network of farmers and selling to supermarkets.

Improving their access to services and inputs were the access constructs.

Respondents were then given the same 24 variables, but on this occasion they were asked to rate the extent to which their expectations had been fulfilled after joining the cluster on a four point scale where 1 was 'strongly disagree' and 4 was 'strongly agree'.

A qualitative open-ended question was also asked to learn why the farmers' expectations had not been met. This was followed by inquiries about the major problems or difficulties they experienced and how they overcame them. These questions sought to identify how they handled the difficulties experienced in the cluster.

Questions 18 and 19 were open-ended questions to supplement the key success factors and benefits of clustering not mentioned by the key informants, including the major highlights.

The variables asked in Question 20 were adapted from Batt (2005); World Bank (2002); Murray-Prior et al. (1997); Concepcion and Murray-Prior (2004). The respondents were asked to rate the extent to which they agreed with 15 statements that dealt with trust and satisfaction with the way in which the cluster was managed on a four point scale where 1 was ‘strongly disagree’ and four was ‘strongly agree’:

Questions 21 to 27 explored the modes and frequency of communication within the three selected cluster farming groups. Communication is very important in any organisation. According to Stoner, Freeman and Gilbert (1994, p.524), ‘communication is the lifeblood of an organization’. The more the farmers discuss their issues openly, the more trusting they become. The questions were open ended so as not to influence the respondents.

Using a list derived from the World Bank (2002), respondents were asked to indicate how important each of the sources of information were to them, on a four point scale where 1 was ‘not at all important’ and 4 was ‘very important’. The sources were relatives, friends and neighbours, community bulletin boards, community or local newspapers, national newspapers, radio, television, community leaders, an agent of the government, NGOs and the Internet. Two other sources of information were added: vegetable congresses and cluster head. The vegetable congresses provide a venue for vegetable stakeholders to listen to lectures on production and marketing, share experiences with fellow farmers, and seek information from input suppliers (i.e. seed companies, fertilizer, etc.).

### ***Part III: Measures of cluster group performance***

Derived from Murray-Prior et al. (1995), these questions sought to identify what things were most important in holding the cluster group together, factors contributing to the successful establishment of the cluster and what things were most likely to cause the group to fall apart. The respondents were also given statements which they can rate on a scale of 1 to 4 where 1 was ‘I disagree a lot’ and 4 was ‘I agree a lot’.

### ***Part IV: Pre and post cluster farm activities***

Questions 33 to 46 asked the respondents about their pre- and post-cluster activities. These questions sought to identify any changes in the type of vegetables planted, the area of the farm planted to vegetables, the inputs (seeds, fertilizers, pesticides) purchased, the source of these inputs, to whom the vegetables were sold, the frequency of the transactions and the means by which the vegetables were transported to the market.

Given that the price of vegetables is highly variable, depending on the seasonal influences, the average weekly income prior to joining the cluster was asked but later multiplied by 4.35 weeks to compare it with the respondents’ current income. Respondents were also asked if they perceived they were financially better off after joining the cluster.

## **Part V: Personal details**

The personal details for each respondent were recorded to allow a comparison to be made between the cluster members of the three groups. Questions 49 to 58 were about the gender, age, highest educational attainment, average monthly household income, number of household members, number of working household members, religious affiliation, number of years living in the area, place of birth and the major dialect spoken at home

### **6.3.2 Research clearances**

In all instances, respondents were informed of the objectives of the study and their permission sought prior to the interview to take pictures. Respondents were made aware that they could withdraw from the study at any time, assured that their confidentiality would be protected, and acknowledged for their cooperation and contribution in a way that protected their anonymity unless otherwise requested. The study was granted ethical approval from the university since it involved interviewing people.

One letter per case was prepared and was addressed to key personnel for their permission to undertake the survey. For Normin Veggies and VICSMIN, the letter was addressed to their respective president, while the letter to Maragusan farmers was addressed to the Executive Director of Kasilak Development Foundation Inc.

### **6.3.3 Survey administration**

Face-to-face interviews with each respondent were undertaken, which on average, took between 30 minutes to one hour to complete. The farmers' responses were recorded on the questionnaire.

For the Maragusan farmers, staff from Kasilak served as guides for the researcher. They took the researcher to the farming area using their office issued motorcycles. In the *Barangays* (villages), the cluster leaders assisted in identifying and locating respondents.

Half of the VICSMIN respondents were interviewed by the researcher on their farms, while half were interviewed by an area representative of VICSMIN, who was also a farmer.

For the Normin Veggies survey, as the members' farms were located throughout the region and there were no guides available to accompany the researcher, the Executive Director was trained to administer the survey. Although the questionnaires were translated, the Normin Veggies respondents were able to read and understand the questions in English.

## **6.4 Data analysis**

In Phase 2, a quantitative survey of the cluster members was conducted. The analysis was primarily descriptive. Combining both qualitative and quantitative research is useful in

triangulation or cross validation. Creswell (1994 p.174) said that the ‘concept of triangulation was based on the assumption that any bias inherent in particular data sources, investigator, and method would be neutralized when used in conjunction with other data sources, investigators and methods. The survey data were encoded and statistically analysed using the SPSS statistical analysis program to obtain descriptive statistics and to undertake more specific statistical tests including analysis of variance, paired sample tests and factor analysis.

## **6.5 Summary**

Chapter 6 discussed the survey instrument in detail. This included the sources of the questions in relation to the objective of the study. These questions aimed to answer the objectives of the study and to have a grasp on the responses of the farmers on certain issues relating to cluster farming. The questionnaire will also address the farmers’ perception on the benefits they got from clustering. The next chapter will discuss the survey results.

# **Chapter 7. Results and discussions<sup>7</sup>**

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## **7.1 Introduction**

This chapter presents the results of the survey conducted with members of the Maragusan vegetable farmers, VICSMIN and Normin Veggies. It contains a profile of the respondents and a number of definitions of cluster farming based on the respondent's perceptions of cluster farming.

## **7.2 Profile of respondents**

A total of 124 respondents completed the survey instrument. However, during data processing it became obvious that 19 questionnaires were completed by farmers who were not affiliated with any cluster group. These 19 respondents were subsequently dropped from the analysis to leave 105 valid responses (Table 7.1). This made the sample size for VICSMIN just 12.4 %. As it was not practical to gather additional samples due to time, financial and logistical constraints, this limited the number of respondents.

**Table 7.1: Breakdown of respondents**

<b>Group</b>	<b>Frequency</b>	<b>%</b>
Maragusan Farmer's Cluster	34	32.4
Normin Veggies	58	55.2
VICSMIN	13	12.4
Total	105	100.0

Most of the respondents came from Normin Veggies (55%), while 32% were members of the Maragusan cluster and 12% were from VICSMIN. Most of the respondents had joined their respective cluster between 2002 and 2006.

### **7.2.1 Maragusan**

A total of 34 farmers were interviewed from the Maragusan vegetable farmers' cluster. An equal number of female and male respondents were interviewed. The mean age was 43.4 years. The highest level of education attained was a vocational course (3%), but a third of the respondents had only reached high school level (35%). The average monthly income was PhP 5,592. Most respondents were Roman Catholics (82%). Most respondents had been born

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<sup>7</sup> This chapter was based on Montiflor, M.O. 2007. Cluster farming as a vegetable marketing strategy: The case of smallholder farmers in Southern and Northern Mindanao. *Acta Hort.* 794:229-238; Montiflor, M.O., Batt, P.J. and Murray-Prior, R. (2008). *Cluster farms in Mindanao, Philippines: Do vegetable farmers get what they expect?* Banwa. Vol. 8. No. 2: 10-21; Montiflor, M.O., Batt, P.J. and Murray Prior, R. 2009. Socio-economic impact of cluster farming for smallholder farmers in Southern Philippines. *Acta Horticulturae* (International Society for Horticultural Science) 809:193-200.

in Mindanao (62%) and had lived in the same area for 22 years. However, among the 34 respondents, only four were indigenous people. On average, there were two males and one female aged above 18 years old in the immediate household. The average number of children was three and there were at least two working members within the household (Table 7.2).

The mean farm size of the Maragusan farmers was 0.6 hectares. The minimum land area was 0.02 hectares and the maximum was 2 hectares.

**Table 7.2: Summary of the respondents' profiles**

<b>Variables</b>	<b>Maragusan</b>	<b>Normin Veggies</b>	<b>VICSMIN</b>
Majority of Respondents	Equal number of male and female	83% Male	61.5% Male
Mean Age	43.4 years	44.8 years	43.2 years
Highest Educational Attainment	Vocational (3%)	Postgraduate Level (22.4%)	College Level (7.7%)
Majority's Highest Educational Attainment	High School Level (35%)	College graduate (65.5%)	High School Level (38.5%)
Average monthly income	PhP 5,593	PhP 49,571	PhP 5,590
Major Religion	Roman Catholic (82.4%)	Roman Catholic (86.2%)	Roman Catholic (69.2%)
Average number of male household members above 18 years	2	1	2
Average number of female household members above 18 years)	1	1	1
Average number of children 17 years and below	2	2	3
Average number of working household members	2	2	2
Majority's place of birth	Mindanao (61.8%)	Mindanao (75.9%)	Mindanao (84.6%)
Average number of years living in the area	22. Years	26. Years	21. Years
Number of Indigenous respondent	4	2	1

Most farmers (67%) interviewed had become a member of the cluster in 2006. The earliest members joined in 2005. The top three vegetables planted were chayote (62%), tomatoes (32%) and eggplant (24%).

### **7.2.2 Normin Veggies**

There were 58 Normin Veggies farmers interviewed, the majority (83%) of whom were male. The mean age of respondents was 45 years. The highest level of education attained was a postgraduate degree (22%), but most respondents had finished college (66%). The average monthly household income was PhP 49,571. Most respondents were Roman Catholics (86%). Most respondents had been born in Mindanao (76%) and resided in the same area for around 27 years. Among the 58 respondents, only two were indigenous people. On average, there was one male and one female aged above 18 years old in the immediate household. The average number of children was two and there were at least two working members of the household.

The mean farm size of the Normin Veggies farmers was 3.9 hectares. The minimum land area was 0.05 hectares and the maximum was 24 hectares. Some 29% of the respondents became a member of the cluster in 2006, but the earliest members joined in 1999. The main vegetables planted were squash (71%), eggplant (60%), tomatoes (59%), cabbage (55%) and bitter gourd (53%).

### **7.2.3 VICSMIN**

From VICSMIN, among the 13 farmers interviewed, 62% were male. The mean age was 43 years. The highest level of education attained was college level (8%), but around a third of the respondents had reached high school level (39%). The average monthly income was PhP 5,590. The majority of respondents were Roman Catholics (69%). Most respondents had been born in Mindanao (85%) and had lived in the same area for 22 years. Among the 13 respondents, only one was an indigenous person. Like the Maragusan cluster, there were two males and one female above 18 years old residing in the immediate household. Likewise, they had the same average number of children (2) and working members in the household (2).

The mean farm size was 0.9 hectares. The minimum land area was 0.01 hectares and the maximum area was 3.0 hectares. The majority (75%) of the respondents interviewed had become a member of the cluster in 2006, with the earliest members joining in 2002. The main vegetables cultivated by the respondents were broccoli (54%), lettuce (39%), chayote (39%) and cabbage (31%).

## **7.3 Definitions of cluster farming**

The farmers were asked to define cluster farming. This was to get an idea what the members understood by the concept of cluster farming and indeed, to get a definition of the concept from the farmers themselves. Some of the responses were in Visayan (Cebuano) and

Filipino, which were subsequently translated into English. The responses were grouped as marketing, production, cooperation and knowledge (Table 7.3).

**Table 7.3: Definitions of cluster farming**

<i>Marketing</i>	<i>Production</i>	<i>Organisation/grouping</i>	<i>Personal Assessment/Hopes</i>
Common effort among growers to sustain market	Farmers cooperating for a market with homogenous production protocol	Alliance or group of farmers for better opportunities	I hope clustering continues
Cooperation among growers for common interests and objectives and to attain substantial volume to meet specific market demands	Planting of vegetables	Commitment of growers	Cluster is good and help the poor, particularly the farmers
Consolidate products to sell directly to the buyers	Plant one crop	Grouped to monitor each other	Increase income
Business	Production efficiency to meet market demand	With a cluster leader	Give other support for livelihood, such as backyard piggery and poultry
A quota for each area	Teach farmers how to plant	One group, one product	

The responses of the members of Normin Veggies, the Maragusan Vegetable Cluster and VICSMIN were similar. Cooperation and consolidation of products to meet market demands provided a definition of the marketing function. Another definition for cluster farming was to have a quota for each area.

From a production perspective, the farmers' definition focused on efficiency, followed by a homogenous production protocol. This was also related to the cultivation of one crop and to teaching farmers how to plant.

Cluster farming was defined as an alliance or group of farmers to create better opportunities. These farmers grouped together to monitor each other with a cluster leader and one product.

In terms of personal assessment and hopes, most respondents wanted cluster farming to continue. They also believed that forming a cluster was good and would help the poor farmers. Being in a cluster facilitated other in-kind support for the household livelihood including pig and chicken production. Cluster farming was also described as providing financial benefits to the farmers. Some cluster members identified leadership as a very important ingredient in the organisation.

The respondents identified some similarities and differences between cluster farming and agricultural cooperatives. Cluster farming was market-driven and there was regular monitoring of members. Some of the features that were similar to a cooperative included being people focused and voluntary. On the other hand, in a cooperative, there were multiple products. Cooperatives were member-based, meaning that with more members, more capital was available as a loan. The main difference was the share capital, which was present only in a cooperative.

The respondents were asked in their own words to describe what encouraged them to become a cluster member. These responses were grouped according to their commonalities. The main encouragement for all respondents was to gain better market opportunities such as higher prices, better trading, to sell direct and to achieve a greater volume. Some respondents (19%) saw cluster farming as addressing common marketing and production concerns. Another 15% of the respondents believed that they would get support such as attending seminars and getting inputs when they joined the cluster. Others were encouraged to join because they wanted to improve their production knowledge (11%) and their livelihood (7%). Then there were those who wanted to encourage other farmers (5%), to decide on their own (5%) and to get access to loans (3%).

When asked what were the main benefits they had derived from cluster farming, 74% said that they had clearer and better market opportunities, while 13% and 10% had received production inputs and marketing assistance, respectively. Other benefits mentioned were getting livelihood projects (6%), getting additional knowledge from seminars, experts and fellow farmers (5%), loan assistance (5%), and achieving more sustainable production (2%). However, 6% said that they had not received any benefits after joining the cluster.

## **7.4 Perceptions about cluster farming**

### **7.4.1 Characteristics of a cluster**

In describing the membership characteristics of a successful cluster, respondents from the Maragusan vegetable cluster placed significantly more importance on all of the variables than the respondents from Normin Veggies (Table 7.4). Except for having a personal objective that promoted common aims, the Maragusan farmers rated all variables as very important. A high level of personal commitment, active participation in group activities, a willingness to provide adequate financial support to the group and a good understanding of the aims of the group, were all considered very important.

With regard to the VICSMIN cluster members, in the majority of cases, their responses were not significantly different from those given by the Normin Veggies cluster members, but they were significantly less important than the responses given by the Maragusan cluster.

However, in rating the importance of personal objectives that promote common aims, the responses of the VICSMIN farmers were not significantly different from those given by both the Maragusan and Normin Veggies farmers. In rating the importance of a personal commitment to the success of the cluster, the VICSMIN farmers' response was significantly lower than the Maragusan farmers' response, but significantly higher than the Normin Veggies growers' response.

**Table 7.4: Membership characteristics**

<i>Membership characteristics</i>	<i>Cluster</i>			<i>p</i>
	Maragusan	Normin Veggies	VICSMIN	
A high level of personal commitment	4.0 <sup>a</sup>	3.4 <sup>b</sup>	3.7 <sup>c</sup>	.000
Actively participate in group activities	4.0 <sup>a</sup>	3.4 <sup>b</sup>	3.6 <sup>b</sup>	.000
A willingness to provide adequate financial support to the group	4.0 <sup>a</sup>	3.2 <sup>b</sup>	3.4 <sup>b</sup>	.000
Support for group quality assurance	4.0 <sup>a</sup>	3.4 <sup>b</sup>	3.6 <sup>b</sup>	.000
A willingness to provide consistent supply of produce	4.0 <sup>a</sup>	3.4 <sup>b</sup>	3.5 <sup>b</sup>	.000
Personal objective which promote common aims	3.9 <sup>a</sup>	3.4 <sup>b</sup>	3.6 <sup>a,b</sup>	.000
A good understanding of the aims of the group	4.0 <sup>a</sup>	3.4 <sup>b</sup>	3.6 <sup>b</sup>	.000

Those items with the same superscript are not significantly different at p = 0.05

With regard to the management characteristics of a successful cluster group, the members commitment to the group, willingness to accept responsibility, to encourage prospective group leaders, to work together to overcome different opinions, to develop unity and cohesion within the group, and to maintain the commitment and involvement of members, was seen as being instrumental to the success of the group by the Maragusan and VICSMIN cluster members (Table 7.5). Conversely, the Normin Veggies' cluster members rated each of these variables as being significantly less important.

**Table 7.5: Management characteristics**

<i>Management characteristics</i>	<i>Cluster</i>			<i>p</i>
	Maragusan	Normin Veggies	VICSMIN	
A strong commitment to the success of the group	3.9 <sup>a</sup>	3.4 <sup>b</sup>	4.0 <sup>a</sup>	.00
A willingness to accept responsibility	4.0 <sup>a</sup>	3.4 <sup>b</sup>	3.9 <sup>a</sup>	.00
A willingness to assist other members	4.0 <sup>a</sup>	3.4 <sup>b</sup>	3.5 <sup>b</sup>	.00
A willingness to encourage prospective group leaders	3.8 <sup>a</sup>	3.4 <sup>b</sup>	3.9 <sup>a</sup>	.00
The ability to work together to overcome different opinions	3.9 <sup>a</sup>	3.4 <sup>b</sup>	3.8 <sup>a</sup>	.00
The ability to develop unity and cohesion within the group	4.0 <sup>a</sup>	3.4 <sup>b</sup>	3.9 <sup>a</sup>	.00
The ability to maintain the commitment and involvement of members	4.0 <sup>a</sup>	3.4 <sup>b</sup>	3.9 <sup>a</sup>	.00

Those items with the same superscript are not significantly different at p = 0.05

In considering how a strong group focus contributed to the success of the cluster, the Maragusan and VICSMIN cluster members placed significantly more importance on recognising the needs of all customers, developing and maintaining a reputation in the marketplace, and having access to professional expertise in the area than the Normin Veggies' cluster members (Table 7.6). Conversely, the VICSMIN cluster members rated the importance of establishing a corporate brand significantly lower than the cluster members from both Normin Veggies' and Maragusan.

Around 82% of the respondents from the Maragusan farmers cluster, 97% from Normin Veggies and 85% from VICSMIN replied that their leaders were selected based on a popular vote by all the members. The other method for the selection of leaders for the Maragusan farmers was done by other persons or entities (15%). However, 3% of the Maragusan respondents did not know how their leaders were selected. On the other hand, 3% of Normin Veggies and 15% of VICSMIN respondents suggested that their leaders had been appointed.

Five features of collaborative marketing groups were presented to the respondents based on Murray-Prior et al. (2004). Cluster members were asked to rank how important each of these features were in their decision to join the group, where 1 was the most important and 5 was the least important (Table 7.7).

**Table 7.6: Group focus**

<i>Focus</i>	<i>Cluster</i>			<i>p</i>
	Maragusan	Normin Veggies <sup>2</sup>	VICSMIN	
A strong focus on the needs of all customers	3.9 <sup>a</sup>	3.4 <sup>b</sup>	3.8 <sup>a</sup>	.00
Long range planning focusing on maintaining product reputation in the marketplace	4.0 <sup>a</sup>	3.3 <sup>b</sup>	3.8 <sup>a</sup>	.00
Access to professional expertise in the area	3.9 <sup>a</sup>	3.3 <sup>b</sup>	3.8 <sup>a</sup>	.00
Use of corporate brand name, uniform packaging, etc.	3.9 <sup>a</sup>	3.3 <sup>a</sup>	2.4 <sup>b</sup>	.00
Obtaining greater post harvest control of produce	4.0 <sup>a</sup>	3.3 <sup>b</sup>	3.5 <sup>b</sup>	.00
Obtaining more post harvest information from the marketplace	4.0 <sup>a</sup>	3.3 <sup>b</sup>	3.5 <sup>b</sup>	.00
Obtaining reduced costs from suppliers	3.9 <sup>a</sup>	3.3 <sup>b</sup>	3.2 <sup>b</sup>	.00

Those items with the same superscript are not significantly different at p = 0.05

**Table 7.7: Features of collaborative group**

Features	Maragusan	Normin Veggies	VICSMIN
Initial activities	4.5	5.0	2.0
Communications	1.0	4.0	1.0
Membership characteristics	2.0	1.0	3.0
Management characteristics	3.0	2.0	5.0
Group focus	4.5	3.0	4.0

Communication for both the Maragusan and VICSMIN clusters were ranked the highest, while the cluster members from Normin Veggies rated it fourth. Member characteristics were ranked one by Normin Veggies, but two and three for Maragusan and VICSMIN, respectively. VICSMIN, on the other hand, placed much importance on the initial activities, rating this as the second most important feature of a collaborative marketing group. Initial activities included research and discussion to identify opportunities and problems, resources and options, funding sources, the most appropriate business structure and encouraging more grower support.

The Maragusan and Normin Veggies farmers placed management characteristics as three and two respectively, while VICSMIN farmers ranked it as five. Management characteristics included committed managers with the expertise to deal with most group management issues, the ability to work together and a willingness to accept responsibility and to assist others.

Some 24 expectations, subdivided into seven categories: financial, knowledge, crop production, social, marketing, communication and access were presented to the respondents.

Respondents were asked to rate, on a scale of 1 to 4 (where 1 was “not at all important” and 4 was “very important”), how important each of the expected benefits was to them in their decision to participate in their respective clusters (Table 7.8).

Financial expectations included earning a higher income, getting a higher price for their produce, improving family income and the household’s current livelihood, and achieving ongoing and clearly defined benefits from the cluster. Knowledge expectations included learning new ideas and knowledge and sharing them with fellow farmers. Marketing expectations included being able to sell to other markets especially supermarkets, and joining an established marketing network of farmers. Production expectations included maximizing their farm area and getting higher yields. Social expectations included gaining more friends and spending more time with them, to be famous and to attain a higher social status.

Communication expectations included open discussions and a smooth flow of information within the cluster. Resources included improved access to services and inputs.

Generally, the three cluster groups’ responses ranged from important to very important. For the social expectations such as being famous, using their leadership skills and enjoyment, and recreation, the responses of the three cluster groups were not significantly different.

Conversely, the cluster members from both Maragusan and VICS MIN placed significantly more importance on getting a higher price for their produce and improving their household income than the respondents from Normin Veggies. With regard to their expectations for continuing and clearly defined benefits, the responses of the three cluster groups were significantly but not meaningfully different, with the Maragusan farmers placing significantly more importance on this variable.

The importance Maragusan farmers placed on learning from other farmers was significantly higher than that of the cluster farmers from both VICS MIN and Normin Veggies. On the other hand, the importance attached to learning new farm ideas, sharing knowledge with other farmers and gaining more farming knowledge, was significantly higher for the Maragusan and VICS MIN farmers than the Normin Veggies’ farmers’.

While the Maragusan and VICS MIN farmers’ expectations of increasing the yield were significantly higher than the Normin Veggies’ cluster farmers, respondents from Maragusan placed more importance on maximising the area of the farm (4%) than the respondents from both Normin Veggies (3%) and VICS MIN (3%).

**Table 7.8: Expectations from Cluster Farm (All clusters)**

Variables	Maragusan (n=34)	Normin Veggies (n=58)	VICSMIN (n=13)
<b>FINANCIAL</b>			
Earn more income from cluster farming	3.94 <sup>a</sup>	3.37 <sup>b</sup>	3.53 <sup>ab</sup>
Get a higher price for my products	4.00 <sup>a</sup>	3.37 <sup>b</sup>	3.77 <sup>a</sup>
Continuing and clearly defined benefits	4.00 <sup>a</sup>	3.32 <sup>c</sup>	3.69 <sup>b</sup>
Improve my household's current livelihood	4.00 <sup>a</sup>	3.34 <sup>b</sup>	3.84 <sup>a</sup>
<b>KNOWLEDGE</b>			
Learn new farming ideas	4.00 <sup>a</sup>	3.32 <sup>b</sup>	3.92 <sup>a</sup>
Learn from other farmers	3.91 <sup>a</sup>	3.32 <sup>b</sup>	3.30 <sup>b</sup>
Share my knowledge to other farmers	3.94 <sup>a</sup>	3.32 <sup>b</sup>	3.77 <sup>a</sup>
Gain more farming knowledge	4.00 <sup>a</sup>	3.31 <sup>b</sup>	3.92 <sup>a</sup>
<b>PRODUCTION</b>			
Maximize my farm area	3.94 <sup>a</sup>	3.36 <sup>b</sup>	3.30 <sup>b</sup>
More yield from the farm	4.00 <sup>a</sup>	3.32 <sup>b</sup>	3.92 <sup>a</sup>
<b>MARKETING</b>			
Sell to other markets aside from the wet markets	3.91 <sup>a</sup>	3.34 <sup>b</sup>	3.85 <sup>a</sup>
Join a established marketing network of farmers	4.00 <sup>a</sup>	3.31 <sup>b</sup>	3.92 <sup>a</sup>
Sell to supermarkets	4.00 <sup>a</sup>	3.32 <sup>b</sup>	3.61 <sup>b</sup>
<b>SOCIAL</b>			
I will gain more friends	4.00 <sup>a</sup>	3.29 <sup>b</sup>	3.77 <sup>a</sup>
Be famous	3.71 <sup>a</sup>	3.24 <sup>a</sup>	3.23 <sup>a</sup>
Use my leadership skills	3.71 <sup>a</sup>	3.29 <sup>a</sup>	3.77 <sup>a</sup>
A high level of personal commitment	4.00 <sup>a</sup>	3.34 <sup>b</sup>	3.92 <sup>a</sup>
Enjoyment/recreation	3.35 <sup>a</sup>	3.03 <sup>a</sup>	3.23 <sup>a</sup>
Social status	3.88 <sup>a</sup>	3.03 <sup>b</sup>	3.53 <sup>ab</sup>
<b>COMMUNICATION</b>			
Open communication between all parties (cluster head members, buyers)	4.00 <sup>a</sup>	3.34 <sup>b</sup>	3.92 <sup>a</sup>
Open discussion and freely available information on all important group issues	4.00 <sup>a</sup>	3.34 <sup>b</sup>	3.84 <sup>a</sup>
Identification, through group discussion of clear, achievable objectives for the group	4.00 <sup>a</sup>	3.34 <sup>b</sup>	3.92 <sup>a</sup>
<b>RESOURCES</b>			
Improve my access to services	3.94 <sup>a</sup>	3.31 <sup>b</sup>	3.69 <sup>a</sup>
Access inputs	4.00 <sup>a</sup>	3.24 <sup>b</sup>	3.84 <sup>a</sup>

Those items with the same superscript are not significantly different at p = 0.05

For the smallholder farmers in both VICSMIN and Maragusan, the importance of selling to other markets and joining an established marketing network of farmers were rated significantly more important than the farmers from Normin Veggies. Similarly, the Maragusan farmers rated the importance of selling to supermarkets significantly higher than the farmers from both Normin Veggies and VICSMIN.

The cluster members from both Maragusan and VICSMIN placed significantly more importance on the expectation of gaining more friends and a higher level of personal commitment than the farmers from the Normin Veggies cluster. The Maragusan and VICSMIN farmers' expectations were significantly more important than the Normin Veggies cluster farmers on all three variables: having open communication between all parties, open discussion and freely available information, and the identification of clear and achievable objectives. The farmers were then asked to rate, on a scale of 1 to 4 where 1 was 'I strongly disagree' and 4 was 'I strongly agree', to what extent their expectations had been fulfilled as a result of joining the cluster.

Regrettably, for the Maragusan farmers, the financial expectations had the lower rating (Table 7.9). Smallholder farmers had not necessarily improved their income nor were they always able to achieve a higher price. Their expectation for continuing and clearly defined benefits, and improving their household's livelihood were unfulfilled. Furthermore, smallholder farmers had not necessarily gained any additional farming knowledge, which might otherwise enable them to improve productivity per unit area.

Given that most farmers had only joined the group in 2006, the cluster had yet to establish any formal marketing network and thus the farmers had experienced some difficulty in meeting the supermarkets needs. Membership of the cluster, it seemed, had not improved the smallholders' access to inputs.

On the other hand, the farmers were able to share their knowledge to other farmers and maximize the utilization of their farm area. They also gained friends, became famous or became well known to the community and improved their access to services. Their high expectations on communication such as having an open line between all parties (cluster leader, members and buyers), an open discussion on important issues, and having clear and achievable objectives had been largely fulfilled. The two-way radio provided by CRS-Kasilak had served its purpose in Maragusan.

**Table 7.9: Expectations and fulfilment of expectations for Maragusan cluster members**

Variables		Expectation Mean (SD)	Fulfilment Mean (SD)	p
Financial	Earn more income from cluster farming	3.94 (0.34)	3.38 (1.01)	0.004
	Get a higher price for my products	4.00 (0.00)	3.50 (0.96)	0.005
	Continuing and clearly identified benefits for the members	4.00 (0.00)	3.74 (0.67)	0.027
	Improve household's livelihood	4.00 (0.00)	3.58 (0.78)	0.004
Knowledge	Learn new farming ideas	4.00 (0.00)	3.79 (0.59)	0.051
	Learn from other farmers	3.91 (0.51)	3.67 (0.87)	0.199
	Share my knowledge to other farmers	3.91 (0.34)	3.82 (0.72)	0.211
	Gain more farming knowledge	4.00 (0.00)	3.64 (0.88)	0.026
Production	Maximize my farm area	3.91 (0.34)	3.88 (0.54)	0.600
	More yield from the farm	4.00 (0.00)	3.56 (0.78)	0.002
Social	I will gain more friends	4.00 (0.00)	4.00 (0.00)	1.000
	Be famous	3.72 (0.91)	3.85 (0.55)	0.257
	Use my leadership skills	3.71 (0.97)	3.38 (1.30)	0.062
	A high level of personal commitment	4.00 (0.00)	3.85 (0.44)	0.058
	Enjoyment/recreation	3.35 (1.25)	3.17 (1.33)	0.083
Marketing	Social status	3.88 (0.69)	3.50 (0.93)	0.003
	Join a established marketing network of farmers	4.00 (0.00)	3.02 (1.42)	0.000
	Sell to other markets aside from the wet markets	3.94 (0.38)	3.79 (0.73)	0.402
	Sell to supermarkets	4.00 (0.00)	3.23 (1.30)	0.002
Communication	Open communication between all parties (cluster head, members, buyers)	4.00 (0.00)	3.82 (0.58)	0.083
	Open discussion and freely available information on all important group issues	4.00 (0.00)	3.88 (0.48)	0.160
	Clear, achievable objectives	4.00 (0.00)	3.88 (0.48)	0.160
Access	Improve access to services	3.94 (0.34)	3.58 (0.99)	0.063
	Access inputs	4.00 (0.00)	3.41 (1.10)	0.004

Notes: Expectation (Scale of 1 to 4 where 1 was “Not at all important” and 4 was “Very important”)

Fulfilment (Scale of 1 to 4 where 1 was “I strongly disagree” and 4 was “I agree a lot”)

For the members of the Normin Veggies cluster, the results showed that although they did have very high expectations, the average cluster member’s expectations had been fulfilled (Table 7.10). After joining the cluster, farmers agreed on average that their household income had improved. With more knowledge, farmers had been able to achieve a greater yield from the farm and to improve their access to farm inputs and services. With an established network, farmers were better able to fulfil the demands of their downstream customers. Between the farmers, there was good communication and a high level of personal commitment.

**Table 7.10: Expectations and fulfilment of expectations for Normin Veggies cluster members**

Variables		Expectation Mean (SD)	Fulfilment Mean (SD)	p
Financial	Earn more income from cluster farming	3.77 (0.49)	3.34 (0.48)	0.159
	Get a higher price for my products	3.37 (0.49)	3.34 (0.48)	0.159
	Continuing and clearly identified benefits for the members	3.32 (0.47)	3.34 (0.48)	0.322
Knowledge	Improve household's livelihood	3.34 (0.48)	3.34 (0.48)	1.00
	Learn new farming ideas	3.32 (0.47)	3.31 (0.47)	0.322
	Learn from other farmers	3.32 (0.47)	3.31 (0.47)	0.322
	Share my knowledge to other farmers	3.32 (0.47)	3.31 (0.47)	0.322
	Gain more farming knowledge	3.31 (0.47)	3.31 (0.47)	1.000
Production	Maximize my farm area	3.36 (0.49)	3.31 (0.47)	0.322
	More yield from the farm	3.32 (0.47)	3.32 (0.47)	1.000
Social	I will gain more friends	3.29 (0.49)	3.31 (0.47)	0.322
	Be famous	3.24 (0.60)	3.10 (0.89)	0.088
	Use my leadership skills	3.29 (0.49)	3.19 (0.76)	0.243
	A high level of personal commitment	3.29 (0.48)	3.34 (0.48)	1.000
	Enjoyment/recreation	3.03 (1.00)	3.00 (1.05)	0.532
Marketing	Social status	3.03 (1.00)	2.91 (1.11)	0.109
	Join a established marketing network of farmers	3.34 (0.48)	3.34 (0.48)	1.000
	Sell to other markets aside from the wet markets	3.31 (0.47)	3.32 (0.47)	0.322
	Sell to supermarkets	3.32 (0.47)	3.32 (0.47)	1.000
Communication	Open communication between all parties (cluster head, members, buyers)	3.34 (0.48)	3.32 (0.47)	0.322
	Open discussion and freely available information on all important group issues	3.34 (0.47)	3.34 (0.47)	1.000
	Clear, achievable objectives	3.34 (0.47)	3.34 (0.47)	1.000
	Similar to Normin Veggies, all of the VICSMIN farmers' expectations had been met (Table 7.11). VICSMIN farmers had received higher prices for their fresh produce, and continued to see clearly defined benefits and improved household income. The farmers were also able to learn new farming ideas, to gain new knowledge and to learn from other farmers. They were also able to share their learning with other farmers. They had also gained more friends, become more well-known, achieved a higher social status and participated in more	3.31 (0.47)	3.31 (0.47)	1.000
Access	Access inputs	3.24 (0.63)	3.31 (0.47)	0.322

Notes: Expectation (Scale of 1 to 4 where 1 was “Not at all important” and 4 was “Very important”)

Fulfillment (Scale of 1 to 4 where 1 was “I strongly disagree” and 4 was “I agree a lot”)

Similar to Normin Veggies, all of the VICSMIN farmers' expectations had been met (Table 7.11). VICSMIN farmers had received higher prices for their fresh produce, and continued to see clearly defined benefits and improved household income. The farmers were also able to learn new farming ideas, to gain new knowledge and to learn from other farmers. They were also able to share their learning with other farmers. They had also gained more friends, become more well-known, achieved a higher social status and participated in more

recreational activities. Their expectations of joining an established group and selling to alternative markets i.e. supermarkets had been fulfilled. Information was freely available and the farmers had been able to access services and inputs after joining the cluster.

**Table 7.11: Expectations and fulfilment of expectations for VICSMIN cluster members**

Variables		Expectation Mean (SD)	Fulfilment Mean (SD)	p
Financial	Earn more income from cluster farming	3.53 (1.12)	3.23 (1.30)	0.212
	Get a higher price for my products	3.76 (0.44)	3.46 (0.88)	0.219
	Continuing and clearly identified benefits for the members	3.69 (0.63)	3.38 (1.32)	0.303
Knowledge	Improve household's livelihood	3.84 (0.38)	3.77 (0.59)	0.673
	Learn new farming ideas	3.92 (0.28)	3.84 (0.37)	0.337
	Learn from other farmers	3.31 (1.49)	3.84 (0.38)	0.170
	Share my knowledge to other farmers	3.77 (0.59)	3.38 (1.19)	0.240
Production	Gain more farming knowledge	3.92 (0.28)	3.84 (0.37)	0.337
	Maximize my farm area	3.31 (0.75)	3.00 (0.82)	0.165
	More yield from the farm	3.92 (0.28)	3.54 (0.77)	0.096
Social	I will gain more friends	3.76 (0.44)	3.08 (1.32)	0.056
	Be famous	3.23 (1.23)	2.92 (0.95)	0.392
	Use my leadership skills	3.77 (0.44)	3.61 (0.77)	0.165
	A high level of personal commitment	3.92 (0.28)	3.53 (1.12)	0.240
	Enjoyment/recreation	3.23 (0.93)	3.31 (1.25)	0.776
Marketing	Social status	3.53 (1.12)	3.46 (1.19)	0.673
	Join a established marketing network of farmers	3.84 (0.37)	3.46 (0.97)	0.175
	Sell to other markets aside from the wet markets	3.92 (0.28)	3.61 (0.77)	0.165
Communication	Sell to supermarkets	3.61 (1.12)	2.92 (1.44)	0.201
	Open communication between all parties (cluster head, members, buyers)	3.92 (0.28)	3.84 (0.37)	0.337
	Open discussion and freely available information on all important group issues	3.84 (0.28)	3.84 (0.38)	1.000
Access	Clear, achievable objectives	3.92 (0.23)	3.84 (0.37)	0.337
	Improve access to services	3.69 (0.85)	3.38 (1.12)	0.219
	Access inputs	3.84 (0.38)	4.00 (0.00)	0.165

Notes: Expectation (Scale of 1 to 4 where 1 was “Not at all important” and 4 was “Very important”)

Fulfillment (Scale of 1 to 4 where 1 was “I strongly disagree” and 4 was “I agree a lot”)

In response to an open-ended question that sought to identify the major impediments or difficulties experienced in those areas where the farmers’ expectations had not been met, bad weather and problems beyond the farmer’s control were the some of the reasons indicated.

Other impediments included the lack of commitment by cluster members, production and marketing problems, erratic delivery schedules, poor logistics, low or fluctuating market prices, household obligations, and the lack of capital and distrust.

When asked what efforts had been made by the cluster to overcome the difficulties experienced, 33% of the respondents said nothing. Around 19% said they would encourage new members to join, while 13% replied that the cluster should have a better production protocol. Attending meetings, improved support, constant monitoring and coordination, new technologies, attempting to meet market demands, diversification, getting good prices, and not selling were some of the efforts the cluster had made to redress the impediments.

On a more positive note, the areas where the clusters had succeeded in meeting the farmers expectations included finding stable and profitable markets (22%), giving them a better income (18%) and encouraging cooperation and commitment from the members (13%). Other responses included getting better production and post-harvest information (10%), receiving technical assistance (10%), meeting the desired volume (9%), a greater sense of belongingness (9%), participating in livelihood improvement projects (9%) and learning new knowledge (4%).

Unity and a mutual understanding were the key success factors for 30% of the respondents. Some 27% of the respondents said that sustainable and stable markets would ensure the success of the cluster, while 21% said commitment also contributed to the sustainability of the cluster. Other factors mentioned in the open-ended question were good management (11%); financial, food and technical support (8%); good and open communication (6%); continuity of supply (4%); a preference for the cluster to use its own funds (3%); cooperation among the cluster members (2%); an honest and transparent reporting of price (2%), and increased income (2%).

On a scale of 1 to 4 where 1 was “I strongly disagree” and 4 was “I strongly agree”, the respondents were asked to rate the extent to which they trusted their cluster head and fellow cluster members. The responses from the Maragusan and VICSMIN clusters suggested that their cluster head was a respectable person who treated the members of the clusters fairly (Table 7.12). However, the farmers from Normin Veggies rated each of these variables lower.

**Table 7.12:Trust in the cluster head**

Trust about the cluster head	Maragusan	Normin Veggies	VICSMIN	p
I can rely on my cluster head	3.7 <sup>a</sup>	3.2 <sup>b</sup>	3.8 <sup>a</sup>	0.00
My cluster head is a respectable person	3.9 <sup>a</sup>	3.2 <sup>b</sup>	3.8 <sup>a</sup>	0.00
My cluster head is a popular person in the community	4.0 <sup>a</sup>	3.1 <sup>b</sup>	2.8 <sup>b</sup>	0.00
My cluster head has a good reputation in the community	4.0 <sup>a</sup>	3.1 <sup>b</sup>	3.8 <sup>a</sup>	0.00
I would not hesitate to make important selling decisions based on my cluster head's suggestion	4.0 <sup>a</sup>	3.2 <sup>b</sup>	3.5 <sup>b</sup>	0.00
My cluster head can deliver what she/he promised	3.7 <sup>a</sup>	3.2 <sup>a,b</sup>	2.8 <sup>b</sup>	0.00
My cluster head can act on my behalf	3.9 <sup>a</sup>	3.2 <sup>b</sup>	3.1 <sup>b</sup>	0.00
The cluster head treats all members fairly	3.8 <sup>a</sup>	3.2 <sup>b</sup>	3.8 <sup>a</sup>	0.00
The cluster head is trustworthy	3.8 <sup>a</sup>	3.2 <sup>b</sup>	3.8 <sup>a</sup>	0.00
My previous relationships with my cluster head are satisfactory	4.0 <sup>a</sup>	3.2 <sup>b</sup>	3.8 <sup>a</sup>	0.00

Note: The numbers with the same superscript have no significant difference.

Compared to the trust respondents from the Maragusan cluster placed in their cluster head, the degree to which they could rely upon their fellow cluster members was lower (Table 7.13). Normin Veggies, on the other hand, gave similar responses to the amount of trust they placed in their cluster heads and cluster members. Within the VICSMIN cluster, respondents had difficulty relying on their fellow farmers to deliver what they had promised.

**Table 7.13: Trust about the cluster members**

Trust about the cluster members	Maragusan	Normin Veggies	VICSMIN	p
My fellow cluster members can deliver what they promised	3.5 <sup>a</sup>	3.2 <sup>a</sup>	2.6 <sup>b</sup>	0.003
I can rely on other cluster members	3.3 <sup>a,b</sup>	3.2 <sup>a</sup>	3.8 <sup>b</sup>	0.054
All of the cluster members are respected in the community	3.9 <sup>a</sup>	3.1 <sup>b</sup>	2.9 <sup>b</sup>	0.00
My previous relationships with other cluster members are satisfactory	3.7 <sup>a</sup>	3.2 <sup>b</sup>	3.8 <sup>a</sup>	0.00
The cluster members are trustworthy	3.5 <sup>a</sup>	3.2 <sup>a</sup>	3.5 <sup>a</sup>	0.249

Note: The numbers with the same superscript have no significant difference.

All the respondents from Normin Veggies indicated that they met as a cluster as needed. Some 47% of the Maragusan respondents and 46% of the VICSMIN respondents suggested that they met on a monthly basis. Other Maragusan farmers said they met weekly (3%) or quarterly (6%), whereas 23% of VICSMIN members suggested that they met weekly.

Face-to-face communication was the most common mode of communication within the clusters. About 74% of the Maragusan farmers, 98% of Normin Veggies and 85% of the VICSMIN respondents used this mode of communication. Mobile phones were also used, although the farmers from Normin Veggies relied on it more (78%) compared to others

(15%). Only Normin Veggies used electronic mail (16%) and the telephone (2%). The Maragusan farmers used more modes of communication, including a messenger (3%), facsimile (3%), letter (6%) and the two-way radio or handset (26%), which was issued to cluster heads by the Kasilak Foundation.

Almost half (47%) of the respondents said that they openly discussed issues and concerns during their meetings. Some respondents even suggested that marketing issues (28%), production issues (20%) and prices (13%) were openly discussed. Other issues being discussed were about the organization (9%) and finance (5%).

The majority of respondents (89%) believed that no issues were being discussed behind closed doors. There were some who said that gossip (5%), management issues (1%) and canvassing of prices (1%) were not shared with everybody, while 3% were not aware of any closed door meetings.

When asked if these issues caused a problem in the group, 83% did not answer, 9% replied no, while 8% said yes. To overcome these problems, some of the respondents resolved among themselves that there should be more face-to-face communication, a greater acceptance of faults and no secrets.

The Normin Veggies respondents had more access to different sources of information such as relatives, friends and neighbours, newspapers, radio and television, other organizations, the internet and leaders.

Respondents were asked to rate from 1 to 4, where 1 was the ‘least important’ while 4 was the ‘very important’, how important each source of communication was to them. The cluster members from Normin Veggies provided a rating of 3.2 for most sources (Table 7.14). Farmers from Maragusan, on the other hand, placed more importance on the cluster head, non-government organisations (NGO), community bulletin boards, fellow farmers, government agents and associations. However, respondents from the Maragusan cluster placed little importance on community and national newspapers, and the internet. In a similar manner to Maragusan, the farmers from VICSMIN also rated the same sources of information quite low.

**Table 7.14: Importance of different sources of information**

Source of information	n=34 Maragusan		n=58 Normin Veggies		n=13 VICSMIN		N=105 Ave.	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Relatives, friends, and neighbours	3.6	0.9	3.1	0.7	3.3	0.6	3.3	0.8
Community bulletin board	3.9	0.5	3.1	0.8	2.8	1.3	3.3	0.9
Community of local Newspaper	1.7	1.5	3.2	0.4	2.5	1.8	2.6	1.3
National newspaper	1.7	1.4	3.2	0.4	2.5	1.8	2.6	1.3
Radio	3.4	1.2	3.2	0.4	3.5	0.9	3.3	0.8
Television	2.9	1.4	3.2	0.4	3.2	1.4	3.1	1.0
Groups or associations (i.e. Normin Veggies, VICSMIN)	3.7	0.8	3.3	0.4	3.3	1.5	3.4	0.8
Fellow farmers	3.9	0.3	3.2	0.4	3.4	0.5	3.5	0.5
Community leaders	3.9	0.3	3.2	0.4	3.5	0.5	3.5	0.5
An agent of the government	3.9	0.5	3.2	0.4	3.8	0.6	3.5	0.6
NGOs	4.0	0.0	3.2	0.4	3.4	1.1	3.5	0.6
Internet	0.9	0.4	3.2	0.6	1.5	1.9	2.2	1.3
Vegetable congresses	2.7	1.8	3.2	0.6	2.7	1.8	3.0	1.3
Cluster head	4.0	0.0	3.2	0.4	3.5	1.1	3.5	0.6

## 7.5 Measures of cluster group performance

The commitment of members (30%); clear, consistent and stable markets (27%); and cooperation and unity among the members (23%) were the three variables considered most important in the successful establishment of a cluster. Other factors mentioned by the respondents to an open-ended question were continued and sustainable production (11%), a group focus (10%), helping other farmers (10%), infrastructure support (9%), good leadership and management (6%), learning new technologies (5%), and having open and good communication (3%).

Some 47% of the respondents thought that having a market would hold their group together. Other important factors included the commitment of members (18%), cooperation/unity (16%), support (9%), good communication (7%), good relationships (5%), having one vision (5%), good leadership (3%) and sustainable production (2%).

On the other hand, having no market was the most likely reason for the cluster to fall apart (38%). Misunderstandings (22%), poor communication (8%), a lack of commitment from the members (22%), and no unity and cooperation were foreseen to contribute to the demise of the cluster. Other factors mentioned by the respondents were lack of good management (10%), anomalies and discrimination (5%), the lack of any plan (3%) and no motivation (2%).

The cluster members were asked to respond to a number of statements about collaborative marketing groups on a scale from 1 to 4, where 1 was ‘I strongly disagree’ and 4 was ‘I strongly agree’. Cluster members from Maragusan, Normin Veggies and VICSMIN had similar responses in encouraging other farmers to join the cluster, perceiving that cluster farming was better than a cooperative and that their incomes had improved after joining the cluster (Table 7.15). However, the three cluster groups had different perceptions about the extent to which cluster farming was similar to cooperative farming.

**Table 7.15: Perceptions on cluster farming**

Perception	Maragusan	Normin Veggies	VICSMIN	p
Cluster farming is different from cooperative farming.	3.6 <sup>a</sup>	3.1 <sup>a, b</sup>	2.8 <sup>b</sup>	0.03
Cluster farming is beneficial to me as a farmer.	3.9 <sup>a</sup>	3.3 <sup>b</sup>	3.7 <sup>a</sup>	0.00
I will encourage other farmers to join clusters.	3.8 <sup>a</sup>	3.3 <sup>a</sup>	3.4 <sup>a</sup>	0.03
Cluster farming is better than cooperative farming.	3.1 <sup>a</sup>	3.1 <sup>a</sup>	2.9 <sup>a</sup>	0.90
My income improved after joining the cluster farm.	3.6 <sup>a</sup>	3.3 <sup>a</sup>	3.2 <sup>a</sup>	0.04
Cluster farming encourages cooperation.	3.9 <sup>a</sup>	3.3 <sup>b</sup>	3.5 <sup>b</sup>	0.00
Cluster farming is similar to a cooperative.	1.1 <sup>a</sup>	3.3 <sup>b</sup>	2.0 <sup>c</sup>	0.00
I gain more knowledge in farming after joining the clusters.	4.0 <sup>a</sup>	3.3 <sup>b</sup>	3.6 <sup>a</sup>	0.00
The prospect of gaining more income motivated me to join clusters.	4.0 <sup>a</sup>	3.3 <sup>b</sup>	3.9 <sup>a</sup>	0.00
Trust is the main reason why I joined cluster farm.	3.9 <sup>a</sup>	3.3 <sup>b</sup>	3.6 <sup>a, b</sup>	0.00

Note: The numbers with the same superscript have no significant difference.

Most respondents trusted their cluster leaders and, as a consequence, there was no significant difference among the three clusters when it came to trusting their cluster leader (Table 7.16). They also agreed that their cluster head was willing to encourage prospective group leaders. While most of the responses from Normin Veggies and VICSMIN were not significantly different, it was found that the willingness of the cluster head to accept responsibility was significantly different.

**Table 7.16: Measure of trust for cluster leaders**

Variables	Maragusan	Normin Veggies	VICSMIN	p
I trust my cluster leader.	3.8 <sup>a</sup>	3.3 <sup>a</sup>	3.8 <sup>a</sup>	0.00
The cluster head has a strong commitment to the success of the group.	3.9 <sup>a</sup>	3.3 <sup>b</sup>	3.3 <sup>b</sup>	0.00
The cluster head is willing to accept responsibility.	3.9 <sup>a</sup>	3.3 <sup>b</sup>	3.8 <sup>a</sup>	0.00
The cluster head is willing to assist other members	3.9 <sup>a</sup>	3.3 <sup>b</sup>	3.4 <sup>b</sup>	0.00
The cluster head is willing to encourage prospective group leaders	3.5 <sup>a</sup>	3.2 <sup>a</sup>	3.3 <sup>a</sup>	0.29
The cluster head has the ability to maintain the commitment and involvement of members.	3.9 <sup>a</sup>	3.3 <sup>b</sup>	3.6 <sup>a,b</sup>	0.00

Note: The numbers with the same superscript have no significant difference.

Compared to the trust afforded to the cluster heads, most respondents had a lower degree of trust in their fellow cluster members or in their cluster group's financial plan (Table 7.17). Their responses to statements about fees and levy agreements, rules, their willingness to provide a consistent supply of produce and their understanding of the aims of the group was not significantly different between the three clusters.

**Table 7.17: Measure of trust for cluster members**

Variables	Maragusan	Normin Veggies	VICSMIN	p
I trust other farmers in my cluster.	3.5 <sup>a,b</sup>	3.3 <sup>b</sup>	3.8 <sup>a</sup>	0.04
I am satisfied working with other farmers in my cluster.	3.9 <sup>a</sup>	3.3 <sup>b</sup>	3.4 <sup>b</sup>	0.00
The cluster group has clearly defined the marketing problem.	3.9 <sup>a</sup>	3.3 <sup>b</sup>	3.9 <sup>a</sup>	0.00
The cluster group has developed a group financial plan.	2.4 <sup>a</sup>	3.2 <sup>b</sup>	2.8 <sup>a,b</sup>	0.00
The cluster group has agreement on membership fees and levy arrangements.	3.4 <sup>a</sup>	3.2 <sup>a</sup>	3.5 <sup>a</sup>	0.57
The cluster group has agreement on a definite set of rules for the group.	3.6 <sup>a</sup>	3.3 <sup>a</sup>	3.7 <sup>a</sup>	0.11
The cluster group has open discussion and freely available information on all important group issues.	4.0 <sup>a</sup>	3.3 <sup>b</sup>	3.9 <sup>a</sup>	0.00
Members of the cluster group are willing to provide a consistent supply of produce.	3.5 <sup>a</sup>	3.3 <sup>a</sup>	3.6 <sup>a</sup>	0.22
Members of the cluster group have a good understanding of the aims of the group.	3.4 <sup>a</sup>	3.3 <sup>a</sup>	3.7 <sup>a</sup>	0.28
The cluster group has a strong focus on the needs of all customers.	3.9 <sup>a</sup>	3.3 <sup>b</sup>	3.9 <sup>a</sup>	0.00
The cluster group has a long range plan focusing on maintaining reputation in the marketplace.	3.8 <sup>a</sup>	3.3 <sup>b</sup>	3.8 <sup>a</sup>	0.00
The cluster group has access to professional expertise in the marketing area.	3.6 <sup>a,b</sup>	3.3 <sup>a</sup>	3.9 <sup>b</sup>	0.03

Note: The numbers with the same superscript have no significant difference.

## 7.6 Pre- and post-cluster farming

The questions on pre- and post-cluster farming sought to explore any differences in the farmers' activities before and after cluster farming.

### 7.6.1 Area

The majority of respondents (62%) had less than 1 hectare of land planted to vegetables (Table 7.18). Per cluster, Normin Veggies had more farmers with more than 2 hectares of land both before and after cluster formation. Maragusan farmers had the most farmers with less than 0.5 hectare. The members of Normin Veggies showed the most dramatic increase in the area of the farm planted in vegetables after clustering.

**Table 7.18: Area utilized for vegetable production**

Hectares	Maragusan Farmer's Cluster		Normin Veggies		VICSMIN	
	Before	After	Before	After	Before	After
2.1 above	0	1	16	40	0	1
1.6-2	5	5	10	1	1	2
1.1-1.5	1	0	1	10	0	0
0.6-1	7	7	17		1	3
0.01-0.5	21	21	8	7	11	6
No answer			6			1
	34		58		13	

It was observed in the Maragusan cluster that the number of farmers who planted chayote after clustering increased from three to 21 farmers (Table 7.19). So also did the number of farmers planting squash, bell pepper, tomatoes and eggplant. However, after clustering, there was a reduction in the number of farmers planting bitter gourd and potatoes.

Among the three clusters, the Normin Veggies farmers planted the greatest variety of vegetables (Table 7.20). Before joining the cluster, they planted at least 15 kinds of tropical and semi-temperate vegetables, but after clustering, over 22 different kinds of vegetables were planted. The most widely grown vegetables included squash (41), eggplant (39), tomatoes (34) and cabbage (32).

**Table 7.19: Vegetables planted: Maragusan Vegetable Farmers'**

Vegetables	Before	After
Baguio beans	5	5
Bell pepper	2	4
Bitter gourd	3	1
Brown beans	1	1
Carrots	1	0
Chayote	3	21
Chinese cabbage	1	0
Eggplant	0	8
Onion	1	0
Pechay	1	0
Potato	2	0
Radish	1	0
Squash	1	6
String beans	2	2
Tomatoes	1	11

Note: multiple answers

**Table 7.20: Vegetables planted: Normin Veggies**

Vegetables	Before	After
Bell pepper	7	16
Bitter gourd	12	24
Bottle gourd	1	9
Broccoli	12	18
Cabbage	18	32
Carrots	14	19
Cauliflower		1
Chayote	9	14
Chinese cabbage	9	18
Cucumber		3
Eggplant	15	39
Ginger	1	
Kangkong (Swamp cabbage)		1
Lettuce	9	17
Okra		1
Onion	1	1
Salad tomato		2
Squash	26	41
String beans	8	20
Sweet corn		4
Sweet pea		2
Tomatoes	22	34
Zucchini		1

Note: multiple answers

The respondents from VICSMIN planted very similar vegetables both before and after clustering (Table 7.21). Of interest was the reduction in the number of farmers cultivating broccoli, cabbage, chayote and Chinese cabbage, whereas the number of farmers cultivating lettuce increased marginally.

**Table 7.21: Vegetables planted: VICSMIN**

Vegetables	Before	After
Bell pepper	1	1
Broccoli	10	7
Cabbage	9	4
Carrots	2	1
Cauliflower	1	
Chayote	9	5
Chinese cabbage	7	3
Eggplant		1
Lettuce	1	4
Potato	2	1
Squash	1	1
String beans	1	
Tomatoes	1	2

Note: multiple answers

### 7.6.2 Sources of seeds

Prior to clustering, Maragusan farmers bought from the local input store and from Tagum City (Table 7.22). However, after clustering, the “plant now pay later” program provided by the support agency provided the seed for almost a third of the respondents.

**Table 7.22: Sources of seeds: Maragusan Vegetable Farmers'**

Vegetables	Before	After
Local input store	16	8
Fellow farmer	4	
Town (Tagum)	15	4
Grow my own	3	6
I get it for free	4	2
Others	1	1
Cagayan	1	1
<i>Silingan</i> (Neighbor)	2	1
Local cooperative		3
Plant now, pay later of Kasilak/CRS		14
Cluster		1
Maragusan		1

Note: multiple answers

Almost all of the Normin Veggies farmers sourced their seeds from the local input store before and after clustering (Table 7.23). There was little change in their seed sources.

**Table 7.23: Sources of seeds: Normin Veggies**

Vegetables	Before	After
Local input store	57	56
Fellow farmer	3	1
Neighbor	1	
Salesman from a company	9	10
Local cooperative		3
I get it for free	1	1

Note: multiple answers

In VICSMIN's case, most of the respondents bought from the local input store prior to clustering (Table 7.24). However, after joining the cluster, some of them got loan assistance from NGOs and other sources.

**Table 7.24: Sources of seeds: VICSMIN**

Vegetables	Before	After
Local input store	12	4
Local cooperative		3
Others	1	5
Loan assistance (from non-government organizations)	1	5

Note: multiple answers

Among the three cases, most of the respondents from VICSMIN indicated that the quality of the seeds purchased had improved after joining the cluster (Table 7.25).

**Table 7.25: Has the quality of seeds you used improved as a result of joining the cluster?**

Quality of seeds	Maragusan Farmer's Cluster	Normin Veggies	VICSMIN	Total
No answer	4	29		
Yes	12	4	12	
No	4	20	1	
Same	14	5		
<b>TOTAL</b>	<b>34</b>	<b>58</b>	<b>13</b>	<b>105</b>

Respondents were also asked about the quality of the seeds from different sources. This was to determine if there were changes in the quality of the seed before and after joining the cluster.

It was apparent that there was very little difference in the quality of the seed before and after clustering (Table 7.26).

**Table 7.26: Quality of seeds from the local inputs store**

Quality of seeds	Maragusan Farmer's Cluster		Normin Veggies		VICSMIN	
	Before	After	Before	After	Before	After
Don't know	15	26		2		3
Very low quality	1					1
Low Quality	2					
Good Quality	1	2	58	56	10	6
Very good quality	15	6			3	3
TOTAL	34		58		13	

### 7.6.3 Sources of inputs

Maragusan farmers did not change the sources from which they purchased fertiliser after clustering (Table 7.27). Farmers sourced their fertiliser from the local cooperative, town, local input store and from Tagum City.

**Table 7.27: Sources of fertilizer: Maragusan Vegetable Farmers'**

Sources	Before	After
Local cooperative	3	2
Local cooperative and town		1
Local input store	18	20
Local input store and town	1	1
Maragusan	2	1
Town (Tagum)	24	24

Note: multiple answers

Similarly, the farmers in Normin Veggies continued to source their fertilisers from local input stores, company salesmen and from fellow farmers (Table 7.28). After joining the cluster, they still bought from these sources.

**Table 7.28: Sources of fertilizer: Normin Veggies**

Sources	Before	After
No answer	2	
Local input store	53	56
Salesman from a company	9	10
Fellow farmers	4	3

Note: Multiple answers

Conversely, after joining the cluster, there was a marked difference in the number of sources from which VICSMIN farmers purchased their fertilisers. Considerably more farmers purchased seed from a local cooperative (Table 7.29).

**Table 7.29: Sources of fertilizer: VICSMIN**

Sources	Before	After
Local input store	13	5
Local cooperative		9
Others (Gintong Ani, MFTS)		2

Note: Multiple answers

The Maragusan farmers sourced most of the chemicals that they required from a local input store (Table 7.30). After joining the cluster there was little difference in the source.

**Table 7.30: Sources of pesticides, herbicides and other farm chemicals: Maragusan Vegetable Farmers'**

Sources	Before	After
Local cooperative	1	1
Local cooperative and town	1	1
Local input store	17	19
Local input store and town	4	2
Maragusan	1	1
Maragusan and Tagum	4	
Salesman from a company		1
Town (Tagum)	25	22

Note: Multiple answers

The members of Normin Veggies also sourced most of the farm chemicals that they required from local input stores, company salesmen and fellow farmers (Table 7.31).

**Table 7.31: Sources of pesticides, herbicides and other farm chemicals: Normin Veggies**

Sources	Before	After
No answer	3	
Local input store	54	57
Salesman from a company	8	9
Fellow farmer	2	2

Note: Multiple answers

Before joining the cluster, VICSMIN farmers were only sourcing chemicals from the local input store but after joining, the local cooperative emerged as the major place of purchase (7.32).

**Table 7.32: Sources of pesticides, herbicides and other farm chemicals: VICSMIN**

Sources	Before	After
Local input store	13	3
Local cooperative		10
MFTS		8

Note: Multiple answers

#### **7.6.4 Marketing**

Before clustering, the Maragusan farmers mostly sold their produce in the local wet market and in Tagum City (Table 7.33). After joining the cluster, they were able to sell to supermarkets, to other wet markets and as far away as Tacloban City in the Visayas.

After joining the cluster, although most members of Normin Veggies continued to sell to the trading post, there was a notable increase in the number of alternative markets (Table 7.34).

**Table 7.33: Where do you sell your vegetables: Maragusan Vegetable Farmers'**

Sources *	Before	After
Bankerohan, Davao City	3	2
Cagayan	1	5
Cluster (their group)		5
Davao and Tagum	1	
Local warehouse	2	2
Local wet market	2	2
Other areas	10	17
Panabo	1	
San Francisco (Agusan del Sur)	2	3
Supermarket		16
Tacloban	1	5
Tacloban, Cagayan	1	
Tagum	19	16
Tagum, Nabunturan	1	1
Town warehouse	1	
Town wet market	22	19
Trading post	1	
Warikwarik	1	1

Note: Multiple answers

**Table 7.34: Where do you sell your vegetables: Normin Veggies**

Sources	Before	After
No answer	4	
Trading post	52	58
Restaurant	5	8
Local retail store	8	8
Hotel	5	8
Supermarket	6	8
Local wet market	1	3
Town wet market	1	4

Note: Multiple answers

In the case of VICSMIN, most farmers indicated a dramatic increase in the range of alternative markets after joining the cluster (Table 7.35). Through their involvement in the cluster, farmers were able to sell to supermarkets, hotels, other areas and to their local cooperative.

**Table 7.35: Where do you sell your vegetables: VICSMIN**

Sources	Before	After
No answer	1	1
Local warehouse	1	
Local wet market	10	1
Other areas	1	
Davao	1	1
Supermarket		3
Hotels		4
Other areas		7
Local cooperative		6
JR Gulay		1

Note: Multiple answers

While all of the Normin Veggies respondents sold to the cluster, some farmers from Maragusan and VICSMIN chose not to sell to the cluster (Table 7.36).

**Table 7.36: Do you sell to the cluster?**

Response	Maragusan Farmer's Cluster	Normin Veggies	VICSMIN
Yes	31	58	10
No	3		3
TOTAL	34	58	13

After clustering, there was little change in the frequency of selling the fresh vegetables they had produced for the Maragusan farmers (Table 7.37). The majority of farmers continued to sell only one time per week.

**Table 7.37: How often do you sell: Maragusan Vegetable Farmers'**

Frequency	Before	After
Daily	1	1
Every 2-3 days	1	1
Weekly	29	28
Every two weeks	3	3
Monthly		1

However, in the case of Normin Veggies', whereas the farmers used to sell one time per week, after clustering, the frequency of selling vegetables increased to every 2-3 days for 32 farmers (Table 7.38).

**Table 7.38: How often do you sell: Normin Veggies**

Frequency	Before	After
No answer	4	
Daily		3
Every 2-3 days	19	32
Weekly	34	23
Every two weeks	1	

In the case of VICSMIN, there was little difference in the frequency of selling before and after clustering, with most growers selling one time per week (Table 7.39).

**Table 7.39: How often do you sell: VICSMIN**

Frequency	Before	After
No answer		1
Every 2-3 days	2	4
Weekly	10	6
Every two weeks		1
Every three months	1	1

In transporting the fresh vegetables that they had grown to market, for the Maragusan farmers there was little difference in the mode of transport before and after clustering. Most of their fresh vegetables were transported by truck (Table 7.40).

**Table 7.40: Transportation of the product: Maragusan Vegetable Farmers'**

Transportation	Before	After
Carry it myself	2	2
Motorcycle	5	6
Truck	27	25
Bus	3	3
No answer		1

Note: multiple answers

Similarly, there was no notable difference in the mode of transport after clustering for either the Normin Veggies respondents or the VICSMIN respondents (Table 7.41 and 7.42).

**Table 7.41: Transportation of the product: Normin Veggies**

Transportation	Before	After
Truck	53	58
No answer	5	

**Table 7.42: Transportation of the product: VICSMIN**

Transportation	Before	After
Carry it myself	3	1
Hire someone to carry it	6	8
Horse	4	2
Truck		1
No answer		1

## 7.7 Financial benefits of cluster farming

The farmers were asked how much income they had earned before and after joining the cluster from the sale of fresh vegetables. Results showed that the average monthly income of all respondents before joining their respective cluster was PhP 16,283, which increased to PhP 23,041 after joining the cluster. However, upon analysing the clusters individually, only the income of the Normin Veggies cluster members had increased (Table 7.43).

**Table 7.43:Differences in average monthly income of cluster members after joining cluster (in Philippine Peso)**

Average monthly income	Before cluster	After cluster
All respondents (N=84)	16,282	23,041
Maragusan Vegetable Farmer's Cluster (n=24)	5,977	5,593
Normin Veggies (n=37)	29,297	45,205
VICSMIN (n=13)	6,195	5,590

Even though the income of the other two cluster groups had not increased, the majority of the farmers believed that they were financially better off after joining the cluster. All of the Normin Veggies members were adamant that their financial status had improved while 84% of the VICSMIN farmers and 82% of the Maragusan farmers answered in the affirmative. Some 15% the Maragusan farmers and 8% of the VICSMIN respondents said they were not financially better off after joining the cluster.

## 7.8 Other benefits of cluster farming

Respondents suggested that they had received other substantial benefits from cluster farming such as high or better market prices, clearer and better market opportunities, marketing assistance, financial support and access to production inputs. All three clusters had received strong financial and technical support from government and non-government organizations. The support organizations likewise continued to link the clusters to other markets by funding

market research and visits to prospective buyers. Other assistance included logistics, market linkages and organizational strengthening. By being involved in a cluster, access to these opportunities was possible for the farmers.

The farmer leaders of each cluster were very proactive, determined, well informed and open-minded to changes and innovations. They were also production and marketing oriented and they constantly reinforced the results of any training and workshops they had attended on behalf of the cluster members.

Financial assistance from support organizations was present, with each of the clusters accessing funds for items such as supplies, transportation and personnel. All three clusters had full-time staff funded by support organizations.

Production inputs such as seeds and fertilizers were also donated, most often in soft loans or what they locally termed as “plant now, pay later”. Farmers were given inputs as an interest-free loan, repayable when the farmer harvested the crop. Similarly, where farmers received a sack of seed or bag of fertilizer, they were expected to repay or replenish the loan after harvest.

## **7.9 Summary**

Data has shown that the farmers from the three groups have differences in their respective experiences in relation to cluster farming. The Maragusan vegetable farmers were the more support agency dependent among the three. Normin Veggies, on the other hand, has the most exposure to alternative markets, while VICSMIN has the least access to these markets.

The farmers expectations of the benefits of clustering were fulfilled based on their responses. They were able to find new markets, access support, diversify products and increase the area planted to vegetables. Farmers trusted their leaders more than their fellow farmers.

The three most important variables considered by the respondents as being very crucial in the success of a cluster were member commitment; clear, consistent and stable market; and the members’ cooperation and unity.

## **Chapter 8. Conclusions**

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### **8.1 Key success factors and challenges of cluster farming**

Many issues and challenges faced the smallholder vegetable clusters in Southern and Northern Mindanao. These included the sustainability of financial support, sustaining the farmers' interest, maintaining a stable and profitable market, and poor infrastructure.

The first challenge is the sustainability of financial support. Institutional support organizations play a crucial role in VICSMIN, NorminVeggies and the Maragusan farmers' clusters. There was a strong presence of institutional support organizations. However, the support agencies such as the non-government organizations (NGOs) have a definite project term. These NGOs provide the majority of the funding, particularly the salaries of the personnel, travel expenses, supplies and communication allowances. Support organizations have to ensure that even after their project term, the clusters will be sustainable. One strategy is to fully devolve the marketing activities to the farmers so that they can continue to transact with buyers even after the project ends. This presents a challenge for all three organizations and for the support agencies to find ways and means to sustain and continue their activities. It is important to link these farmers not only to the buyers but also to other support agencies since the farmers will still need some assistance.

The second challenge is the difficulty in sustaining farmer interest. Having active and engaged members is crucial to the success of the cluster. The more members joining the cluster, the greater the volume and the greater the assortment of fresh vegetables sold. Potentially this means more income for the farmers.

In the Maragusan cluster, the leaders are in constant contact with the members and members give feedback for any improvements or problems to be addressed. Communication is also open because of the two-way radios used by the farmer leaders and development officers. Active participation of the farmers from conceptualization to implementation made the cluster thrive. Leaders were chosen by the farmers themselves and were not chosen by outsiders. There was trust among the members since they handed over the responsibility of collating, selling and negotiating the sale of the vegetables to one person. However, some trust issues emerged when farmers were unable deliver their produce.

For VICSMIN, the clustering approach was still quite new to the majority of the farmers. Although not all farmers are marketing through the cluster, most are interested because of the perceived benefits they can achieve from clustering.

Prior to the inception of GTM, there were no farmer-led vegetable trading groups in Southern Mindanao. The start-up, including capital, organisational development,

infrastructure and operations started from scratch. Many inputs from the farmers and support agencies were necessary to establish the trading post in the Bankerohan and to prepare and present the legal papers (registrations and permits). For NorminVeggies, the motivation to stay in the cluster had been economic. Farmers remain with the cluster for as long as they can gain more income.

The third challenge is maintaining a profitable and stable market. Better and clearer market opportunities are the main reasons why farmers joined their respective cluster.

The fourth challenge is the poor infrastructure. The main roads leading from Maragusan to nearby cities and municipalities are often impassable during rainy days. Almost 90% of the roads are made of gravel, not concrete, and the farm-to-market roads are worse. Although tomatoes are suitable, especially at high elevation, the roads are muddy and slippery, so it is hard to transport the fruit. This is also the same with NorminVeggies and VICSMIN. The access roads from the farms are in a poor condition.

Since the farm-to-market roads are bad, transportation is also very expensive. The newly elected municipal officials promised to construct new roads and to repair existing farm-to-market roads, but with the current situation of the roads, more work is needed.

## **8.2 Socioeconomic impact of cluster farming to smallholder farmers**

Vegetable prices are volatile so income alone is not a good indicator of the socio-economic impact of cluster farming for smallholder farmers in Southern and Northern Mindanao. Results have shown that only the NorminVeggies farmers increased their average monthly income. However, 91% of all respondents believed that they were financially better off after joining the cluster. This means that after joining the cluster, they received other substantial, mostly non-monetary benefits such as greater access to wet and institutional markets, market information, market and production linkages, technical and financial support, and production inputs. Cluster members also had a better understanding of the market because they had been exposed to other markets and key people (such as experts, institutional buyers and government personnel) in the vegetable industry.

The Normin Veggies respondents were higher educated, their farms were bigger and they had continued membership since 1999. They were also the ones whose members incomes had increased.

The three cases have some commonalities and differences. The majority of the respondents from the three cases were males and were in their early 40's. Most of them were also Roman Catholics, born in Mindanao who had been living in the same area for more than 20 years.

Working household members were also the same across the three cases. However, the main difference was in the level of education. Normin Veggies members were the most educated among the three, while Maragusan were the least educated. Income differences were also evident. Normin Veggies farmers were richer than the VICSMIN and Maragusan farmers.

### **8.3 Strategies and approaches within cluster marketing groups**

The semi-subsistence clusters such as VICSMIN and the Maragusan Vegetable Farmers' Cluster tend to be area based. They had more social connections such as being neighbours, relatives, or practicing the same religion. They also spoke the same language or local dialect. They also planted multiple crops. Due to the proximity of the farms and residences, consolidation of products was easier and face-to-face communication was possible. Other farmer groups who are similar to VICSMIN and Maragusan Vegetable Farmers' Cluster may adopt the area-based approach. Transportation and communication costs of coordinating with each other will be minimal since farmers tend to live in adjacent areas. Farmers will also plant a number of vegetables, which spreads the risk of price fluctuation and crop failure.

On the other hand, clusters with larger farmers such as Normin Veggies tend to use a commodity-based approach, for they come from different areas and bring their products to one consolidation area before selling to the buyers. They needed a large volume of product to deliver to a buyer. Farmer clusters who aspire to deliver to institutional buyers may learn from the Normin Veggies experience and produce a substantial volume for one crop. Aside from this, to sustain the buyer, clusters must maintain consistency of supply and quality and reliability of delivery.

### **8.4 Institutional Support**

Material, human resources (staff), training and market linkages are the support required to facilitate the success of the clusters. Material support will be in the form of seeds and other inputs needed to jump-start the farm. Human resources are likewise important. The three cases each had staff from the government and non-government organisations guiding the farmers in their respective activities. Continuous training is also important in providing additional knowledge to the farmers, particularly in production and marketing concepts. While production is important, the market linkages, where farmers get access to new and alternative markets, are needed.

### **8.5 Implications of the research**

This research project was able to identify two different approaches to cluster farming: an area-based and commodity-based approach. The research results indicate that cluster farm is an alternative marketing strategy to link smallholder farmers in Mindanao to the emerging

institutional market. However, the clusters are also young. The method is quite new to the farmers, the leaders and the support agencies. Since the groups have different needs and a different degree of readiness, external institutional support is needed. Support organizations must nurture the clusters, then build their capacity to be independent and empowered.

## **8.6 Study limitations and areas for further research**

In 2006, there were only three known vegetable clusters in Mindanao, the Maragusan vegetable farmers' cluster, Northern Mindanao Vegetable Producers' Association Inc. (Normin Veggies) and the Vegetable Industry Council of Southern Mindanao Inc. (VICSMIN). As a result, these were the cases selected for the study. These groups were all supported by funding agencies. Moreover, further investigation proved that not all members participated in the cluster farming, which resulted in a smaller sample size in the analysis. However, this study utilizes the case study study method, which means that there is no minimum and maximum number of respondents.

Vegetable cluster farming activities in the Philippines are less than 10 years old so there is a need for further studies regarding the farmers' participation and the benefits derived from cluster farming. Some of the farmers have just commenced planting. The farmers from the three groups could be asked in five years time to determine if they are still with the cluster and their reasons for staying or leaving.

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## **Appendices**

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## **Appendix 1: Abstracts (Conference papers and publications)**

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**Montiflor, M.O., Batt, P.J. and Murray-Prior, R. 2009. Socio-economic Impact of Cluster Farming for Smallholder Farmers in Southern Philippines. In Batt, P.J (ed). Acta Horticulturae 809:193-200**

### *Abstract*

Cluster farming is an alternative farming strategy for smallholder vegetable farmers in Mindanao, an island in the Southern Philippines. Two cluster farming approaches were identified: an area based and a commodity based approach. In the area based approach, farmers came together based on the proximity of farms and trading posts, while in the commodity based approach, farmers planted the same type of vegetable and combined their produce to achieve a higher volume. The main objectives of cluster farming are to consolidate smallholder farmers' produce, to deliver in bulk to save on transport and transaction costs, and to increase income. This paper examines the socio-economic impact of cluster farming on smallholder vegetable farmers. A total of 84 smallholder farmers from three cluster groups were interviewed using a structured survey questionnaire. Results show that only one cluster group improved their average monthly income. However, 91% of the respondents believed that they were financially better off after joining the cluster. Participating farmers received other mostly non-monetary benefits such as improved access to wet and institutional markets, market information, market and production linkages, technical and financial support, and production inputs.

**Montiflor, M.O., Batt, P.J. and Murray-Prior, R. 2008. Cluster Farms in Mindanao: Are Smallholder Farmers' Expectations Being Fulfilled? BANWA (Academic Journal of the University of the Philippines Mindanao) 2(2): 39-54.**

### *Abstract*

Cluster farming means grouping farmers together to consolidate their produce to deliver in bulk, thus saving transportation and transaction cost. As this marketing strategy is an alternative to traditional vegetable marketing practices in the Philippines, there is a need to evaluate the extent to which cluster farmer has fulfilled the farmer's expectations. The result demonstrate that even though farmers may not be financially better off, most of the cluster members' expectations had been met after joining the cluster.

**Montiflor, M.O. 2008. Cluster Farming as a Vegetable Marketing Strategy: The Case of Smallholder Farmers in Southern and Northern Mindanao. In Batt, P.J. (ed). Acta Horticulturae 794: 229-238.**

### *Abstract*

With increasing population, rising household income and greater urbanization in the Philippines, opportunities are emerging for the vegetable industry to supply hotels, hospitals, supermarkets, restaurants and fast food chains. These institutional buyers need more vegetables for their menus and are looking for more reliable suppliers who can give them a constant supply at a good price while maintaining good quality. With increasing competition from imported products, domestic vegetable producers are unable to meet the demand, the quality specifications or to supply the institutional market at a competitive price. As the

majority of the vegetable farmers in the Philippines cultivate less than 3 hectares, producers and producer organizations must collaborate to consolidate their produce. One of the many alternatives for vegetable marketing is to form clusters. This paper will present the key success factors and the challenges faced by cluster farming groups in the Philippines; identify the marketing strategies and the approaches employed for quality control within the cluster marketing groups; and identify what institutional support is important for the success of the clusters. Case studies from Northern and Southern Mindanao will be presented.

## Appendix 2: Normin Veggies Quality Standard

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<b>PRODUCT</b>	<b>STANDARD</b>	<b>PACKAGING</b>
Squash	Flat round, regularly ridged Ave. Weight: 3-4 kgs.	Packed in sacks or wooden boxes
String beans	Est. length: 45-50 cm	Packed in cartons
Bush sitaw	Est. length: 15-20 cm	Packed in cartons
Habituellas (Baguio beans)	Est. weight: 5 g	Packed in cartons
French beans	Est. length: 10 cm	Packed in cartons
Eggplant	Regular shaped Ave. wt: 200-300 g	Packed in cartons
	Long and slender Ave. wt: 200-300 g	Packed in cartons
	Large deep purple Ave. wt: 200-300 g.	Packed in cartons
Chinese Kale	Estimated shelf life after harvest: 1 week (refrigerated) Ave. wt: 5-10 g	Packed in brown or plastic bags
Potatoes	Estimated shelf life after harvest: 2 weeks (refrigerated) Ave. wt: 200-300 g	Packed in sacks or cartons
Cauliflower	Estimated shelf life after harvest: 2 weeks (refrigerated) Ave. wt: 500 g – 1 kg	Packed in plastic crates or cartons
Bitter gourd (ampalaya)	Est. length: 30 cm	Packed in cartons
Okra	Ave. weight: 30-50 g	Packed in cartons
Ginger	Ave. weight: 300-800 g	Packed in cartons (export grade)
Carrots	Ave. weight: 100-250 g	Packed in cartons
Young corn	Ave. weight: 10-20 g	Packed in ice chests or cartons
Sweet peas	Est. weight: 2-5 g	Packed in sacks
Zucchini	Estimated shelf life after harvest: 2 weeks (refrigerated) Regular shaped Ave. weight: 20-300 g	Packed in cartons
Chinese Cabbage (Wongbok)	Estimated shelf life after harvest: 2 weeks (refrigerated) Ave. weight 800 g to 1 kg.	Packed in cartons, plastic crates, sacks or lined baskets
Bok Choi (Petchay, Pai chai, Pey chay)	Ave. weight: 100-150 g	Packed in cartons
Bell Pepper	Ave. weight: 100-350 g	Packed in cartons
Celery	Ave. weight: 500 kg – 1.5 kg	Packed in cartons with paper lining
Sweet pepper (atsal)	Ave. weight: 50 g	Packed in cartons
Salad tomato	Ave. weight: 200-500 g	Packed in plastic containers or cartons
Cherry tomato	Ave. weight: 5-7 g	Packed in plastic containers
Table tomato	Ave. weight: 100-300 g	Packed in wooden boxes
Cabbage (round, plat, and red)	Ave. weight: 500g to 1 kg	Packed in cartons, plastic crates, sacks or line baskets
Iceberg lettuce	Ave. weight: 300-500 g	Packed in crates or cartons with paper lining
Romaine (Cos) lettuce (green and red)	Ave. weight: 200-300 g	Packed in crates or cartons with paper lining
Broccoli	Ave. weight: 500 g- 1 kg (3-6" stalk)	Packed in ice chests

Source: Normin Veggies Records

## **Appendix 3: Key informant interview guide (support agencies)**

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Name of respondent : \_\_\_\_\_  
Agency : \_\_\_\_\_  
Date of Interview : \_\_\_\_\_

### Questions:

1. What is cluster farming?
2. Why form cluster farms?
  - 2.1. When was the cluster formed?
  - 2.2. How was the cluster formed and organized?
  - 2.3. What was (were) the motivation/s to form the cluster?
3. How many farms are in a cluster?
  - 3.1. What is the average size of these farms?
4. Who organized these clusters?
  - 4.1. How many people organized the clusters? Who were the initiators?
  - 4.2. What are the characteristics of the initiators? participants?
  - 4.3. How do they allocate their time (in the organization)?
5. What was your agency's role in the formation of these clusters?
  - 5.1. What was the support given (i.e. monetary, training, etc.)?
  - 5.2. As a representative of your agency, what was your role?
6. Aside from your agency, what other organizations supported the formation of these clusters? And what was the support given (i.e. monetary, training, etc.)?
7. What were the obstacles, problems, and challenges during the cluster conception stage and how did the clusters overcome it?
  - 7.1. What do you think were the milestones (successes) during the conception stage?
8. What were the obstacles, problems, and challenges during the initial stage and how did the clusters overcome it?
  - 8.1. What do you think were the milestones (successes) during the initial stage?
  - 8.2. What support did your agency provided?
9. What are the obstacles, problems at present and how the clusters solving it?
  - 9.1. What do you think are the milestones (successes) at present?
  - 9.2. What is your agency's contribution?
10. How is cluster farming different from other group marketing activities?
  - 10.1. What would you consider to be the most essential elements for the success of the group?
11. How would you define successful/unsuccessful groups?

## **Appendix 4: Key informant interview guide (Farmers)**

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### **Key informant interview guide (Farmers)**

Name of Interviewee : \_\_\_\_\_  
Organization : \_\_\_\_\_  
Date of Interview : \_\_\_\_\_

1. What is cluster farming?
2. Why form cluster farms?
  - 2.1. When was the cluster formed?
  - 2.2. How was the cluster formed and organized?
  - 2.3. What was (were) the motivation/s to form the cluster?
3. How many farms are in a cluster?
  - 3.1. What is the average size of these farms?
4. Who organized these clusters?
  - 4.1. How many people organized the clusters? Who were the initiators?
  - 4.2. What are the characteristics of the initiators? participants?
  - 4.3. How do they allocate their time (in the organization)?
5. What was your role in the formation of these clusters?
  - 5.1. How long have you been a member of the group?
    - a. How is the group structured?
    - b. How involved with the group have you been?
    - c. Are all group members growers or do you have representatives of other groups.
    - d. If the group focus is marketing, how does the group market the produce.
6. What agencies supported the formation of these clusters? And what was the support given (i.e. monetary, training, etc.)?
7. How does the cluster coordinate planting and production?
  - 7.1. How does the cluster consolidate your products? Who consolidates it?
  - 7.2. How does the cluster control quality?
  - 7.3. What do farmers do with product that is rejected?
  - 7.4. Do farmers receive a price premium for quality?
  - 7.5. What is the payment scheme from the buyers to the farmers?
  - 7.6. How does the cluster contact the buyer/s? How do you look for the buyer/s?
  - 7.7. Who coordinates (and maintains) the contact with the buyers?
  - 7.8. What is the delivery scheme?
  - 7.9. What facilities or equipment does the cluster have? Who owns it?
8. What were the obstacles, problems, and challenges during the cluster conception stage and how did you overcome it?
  - 8.1. What were your milestones (successes) during the conception stage?
9. What were the obstacles, problems, and challenges during the initial stage and how did you overcome it?
  - 9.1. What were your milestones (successes) during the initial stage?
10. What were your obstacles, problems at present and how are you solving it?
  - 10.1. What were your milestones (successes) at present?
11. How is cluster farming different from other group marketing activities?
  - 11.1. What would you consider to be the most essential elements for the success of the group?
12. How would you define successful/unsuccessful groups?

## **Appendix 5: Questionnaire for farmers**

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Questionnaire no : \_\_\_\_\_ [1]

Name of Interviewer : \_\_\_\_\_

Date of Interview : \_\_\_\_\_

Personal Details:

Name of respondent : \_\_\_\_\_

Address : \_\_\_\_\_

1. Membership affiliation [2]

- a. Maragusan Farmers' Cluster
- b. Normin Veggies
- c. VICSMIN
- d. Non- member

### **PART I. Membership Information**

2. When did you first become a member of the ..... cluster?

[ 3 ]

(Kanus-a ka naging miyembro sa cluster?)

Month \_\_\_\_\_

Year \_\_\_\_\_

3. What is your current position in the cluster?

[ 4 ]

(Unsa imong posisyon sa cluster?)

Member \_\_\_\_\_

Officer (please specify) \_\_\_\_\_

4. How do you define cluster farming? (Para sa imo, unsa ang cluster farming?)

.....[5]

.....[6]

.....[7]

.....[8]

5. In what ways is cluster farming different from cooperative marketing?

(Unsay kalahian sa cluster farming sa cooperative farming?)

.....[9]

.....[10]

.....[11]

.....[12]

6. What encouraged you to become a member of this cluster? What benefits did you foresee emerging as a result of joining this cluster? (*Unsa ang nakapadani sa imo na muapil sa cluster? Unsa ang mga posibleng benepisyo para sa imo kung muapil ka sa cluster?*)

- .....[13]  
 .....[14]  
 .....[15]  
 .....[16]

7. What are the main benefits you have received after becoming a member of this group? (*Unsa ang mga benepisyo nga imong nadawat pagkahuman ka nagpa miyembro?*)

- .....[17]  
 .....[18]  
 .....[19]  
 .....[20]

8. When considering membership of a cluster farm, how important is it that members have the following characteristics: (*Unsa kaimportante para sa usa ka muapilay ug cluster farm ang mga sumusunod nga mga batasan*)

Characteristics	Not at all important	Not important	Important	Very important	Don't know	
A high level of personal commitment. ( <i>Taas na lebel sa commitment</i> )	1	2	3	4	0	[21]
Actively participate in group activities. ( <i>Muapil sa mga aktibidades sa grupo</i> )	1	2	3	4	0	[22]
A willingness to provide adequate financial support to the group ( <i>Maghatag ug pinansyal na suporta sa grupo</i> )	1	2	3	4	0	[23]
Support for group quality assurance plan ( <i>Musuporta sa quality assurance plan</i> )	1	2	3	4	0	[24]
A willingness to provide a consistent supply of produce. ( <i>Muhatag ug permanente ug igong supply</i> )	1	2	3	4	0	[25]
Personal objectives which promote common aims. ( <i>Ang kaugalingong tumong makaayo pud sa uban</i> )	1	2	3	4	0	[26]
A good understanding of the aims of the group. ( <i>Maayo ang pagsabot sa tumong sa grupo</i> )	1	2	3	4	0	[27]

When considering the management of a cluster, how important is it that members of the management team have the following characteristics:

*(Kung ginatan-aw ninyo ang management sa cluster, unsa ka importante na naa sila nianing mga batasan)*

Characteristics	Not at all important	Not important	Important	Very important	Don't know	
A strong commitment to the success of the group <i>(Ginasiguro ang kalambuan sa grupo)</i>	1	2	3	4	0	[28]
A willingness to accept responsibility. <i>(Mudawat ug responsibilidad)</i>	1	2	3	4	0	[29]
A willingness to assist other members. <i>(Mutabang sa laing mga miyembro)</i>	1	2	3	4	0	[30]
A willingness to encourage prospective group leaders. <i>(Maayo ang buot nga mangdani ug ba-onng mga lider)</i>	1	2	3	4	0	[31]
The ability to work together to overcome different opinions <i>(Naayabilidad na makatrabajo sa uban aron maayos ang mga dili pagsinabtanay)</i>	1	2	3	4	0	[32]
The ability to develop unity and cohesion within the group <i>(Naayabilidad na mapahugpong ang grupo)</i>	1	2	3	4	0	[33]
The ability to maintain the commitment and involvement of members. <i>(Abilidad nga mangdani sa mga miyembro nga padayon ang pagiging aktibo sa grupo)</i>	1	2	3	4	0	[34]

9. When considering the focus of a cluster, how important are the following issues:

*(Kung huna-hunaon ang tutok sa usa ka cluster, unsa ka importante ang mga sumusunod na isyu)*

Issues	Not at all important	Not important	Important	Very important	Don't know	
A strong focus on the needs of all customers. <i>(Ginatagaan ang importansya sa mga kinahanglanon sa mga customers.)</i>	1	2	3	4	0	[35]

Long range planning focusing on maintaining product reputation in the marketplace. ( <i>Plano nga nakatutok sa pagmaintain ug maayong reputasyon sa produkto didto sa merkado</i> )	1	2	3	4	0	[36]
Access to professional expertise in the area. ( <i>Makakuha ug propesyunal na tabang sa duol</i> )	1	2	3	4	0	[37]
Use of a corporate brand name, uniform packaging, etc. ( <i>Paggamit ug brand name</i> )	1	2	3	4	0	[38]
Obtaining greater post harvest control of produce. ( <i>Pagkuha ug maayong post harvest control sa produkto</i> )	1	2	3	4	0	[39]
Obtaining more post harvest information from the marketplace ( <i>Pagkuha ug daghang impormasyon sa post harvest gikan sa merkado</i> )	1	2	3	4	0	[40]
Obtaining reduced costs from suppliers and market agents/brokers. ( <i>Pagkuha ug mga discount sa mga suppliers ug ahente</i> )	1	2	3	4	0	[41]

10. Thinking about the members of this group, are most of them from the same...  
*(Huna-huna ang mga mitembro niang grupo, kadaghanan ba sa ila...)*

	Yes	No	
Neighborhood/Village <i>(Silingan)</i>	1	2	[42]
Family or Kin group <i>(Kapamilya/Paryente)</i>	1	2	[43]
Religion <i>(Usa ka relihiyon)</i>	1	2	[44]
Gender <i>(Parehas nga babaye o lalaki)</i>	1	2	[45]
Age <i>(Parehas ug edad)</i>	1	2	[46]
Ethnic or linguistic group/race/ caste/tribe <i>(Parehas ug tribu o probinsya)</i>	1	2	[47]

11. How are leaders in this group selected? [48]

*(Gi unsa pagpili sa mga leaders sa mga grupo)*

- 1 By an outside person or entity (*Gikan sa gawas*)
- 2 Each leader chooses his/her successor (*Ang lider nagapili ug kapuli*)
- 3 By a small group of members (*Ang ubang miyembro nagapili*)
- 4 By decision/vote of all members (*Ginaboto sa tanan*)
- 5 Other (specify \_\_\_\_\_)
- 8 Don't know/not sure (*wala ko kabalo*)
- 9 Not applicable

12. Directions: Listed below are five features of collaborative groups. We would like to know how important each of these features are to you when you considered joining the group. Please rank 1 to 5, with 1 being the most important and 5 is the least important  
*(Naay lima ka basehan sa mga grupo. Gusto namo mahibal-an unsa ka importante kada usa ka basehan para imo para muapil sa grupo. Paki rank 1 hangtud 5, 1 ang pinaka importante ug 5 ang pinaka dili importante)*

Rank
<b>Initial activities:</b> This includes research and discussion to identify opportunities and problems; resources and options; funding sources; most appropriate business structure and level of grower support. <i>(Sa sinugdanan, sama sa pag duki duki, diskusyon sa mga oportunidad ug problema, mga pagpangita ug kwarta, unsa ang hulma sa bisnis)</i>
<b>Communications:</b> This includes open communication which addresses all issues; establishes clear objectives and rules; and provides information, opportunities for discussions and identifiable benefits to all members. <i>(Komunikasyon, sama sa pag istorya sa tanang isyu, klaro ug ha- ay ang mga tumong ug balaod, ug nagahatag ug impormasyon, oportunidad or benepisyo sa tanang miyembro)</i>
<b>Membership characteristics:</b> This includes a high level of member commitment and participation; common aims; a good understanding of group objectives and adherence to a quality assurance program. <i>(Mga miyembro. Sama sa pag apil nga nakasabot sa tumong sa grupo, naga maintain ug maayong quality)</i>
<b>Management characteristics:</b> This includes very committed managers with the expertise to deal with most group management issues; the ability to work together and a willingness to accept responsibility and assist others. <i>(Management, sama sa committed na managers nga eksperتو sa pagtubag sa mga isyu, makatrabaho sa tanan, responsible ug matinabangon.)</i>
<b>Group focus:</b> This includes a strong customer focus; access to marketing expertise; focus on product recognition; improved post harvest information to grower members and long range planning. <i>(Pokus sa grupo, sama sa ginahuna huna ang customer, makakuha ug kahibalo sa merkado, pokus sa pagpaila sa produkto, madugangan ang impormasyon sa post-harvest sa mga miyembro ug paghimo ug tig dugay nga plano)</i>

Part II. Perceptions about cluster farming

13. On a scale of 1 to 4 where 1 is not at all important and 4 is very important, please indicate how important EACH of these expected benefits was to you in decision to participate in cluster farming.

(*Ang 1 dili kaayo importante ug 4 ang pinakaimportante, pakisulti kung unsa ang kaimportante ang mga benepisyo na mahimong makuhha sa pag apil nimo sa cluster farming*)

Expected benefits	Not at all important	Not important	Important	Very important	Don't know	
Earn more income from cluster farming. <i>(Makadawat ug dakong income sa cluster farming)</i>	1	2	3	4	0	[54]
Get a higher price for my products. <i>(Makakuha ug taas na presyo sa akoang produkto)</i>	1	2	3	4	0	[55]
Learn new farming ideas. <i>(Makatuon ug bao-ong ideya sa pang-uma)</i>	1	2	3	4	0	[56]
Maximize my farm area. <i>(Napuslan ug taman ang uma)</i>	1	2	3	4	0	[57]
Learn from other farmers. <i>(Makatuon sa laing mga mag-uuma)</i>	1	2	3	4	0	[58]
Sell to other markets aside from the wet markets. <i>(Makabaligya sa ubang merkado)</i>	1	2	3	4	0	[59]
Share my knowledge to other farmers. <i>(Ma-share pud sa ubang mga mag-uuma ang kahibalo)</i>	1	2	3	4	0	[60]
I will gain more friends. <i>(Mudaghan ang mga amigo)</i>	1	2	3	4	0	[61]
Join an established marketing network of farmers. <i>(Makaapil ug maayong marketing network sa mga mag-uuma)</i>	1	2	3	4	0	[62]
More yield from the farm. <i>(Makakuha ug taas nga abot sa uma)</i>	1	2	3	4	0	[63]
Be famous. <i>(Maging sikat)</i>	1	2	3	4	0	[64]
Use my leadership skills. <i>(Magamit akoang leadership skills)</i>	1	2	3	4	0	[65]
Sell to supermarkets. <i>(Ibenta sa mga supermarkets)</i>	1	2	3	4	0	[66]

Gain more farming knowledge. <i>(Madugang ug kahibalo sa uma)</i>	1	2	3	4	0	[67]
Open communication between all parties (cluster head, members, buyers) <i>(Bukas na komunikasyo sa tanan –cluster head, miyembro, buyer)</i>	1	2	3	4	0	[68]
Open discussion and freely available information on all important group issues <i>(Maka-istorya sa tanan ug bukas ang impormasyon sa tanang importanteng isyo, walay sikreto)</i>	1	2	3	4	0	[69]
Identification, through group discussion of clear, achievable objectives for the group. <i>(Ma identify, pinaagi sa pagpulong pulong, ang klaro ug makab-ot nga mga tumong)</i>	1	2	3	4	0	[70]
Continuing and clearly identified benefits for the members. <i>(Padayon ug klarong benepisyo sa grupo)</i>	1	2	3	4	0	[71]
A high level of personal commitment. <i>(Mataas na lebel ng commitment)</i>	1	2	3	4	0	[72]
Improve my household's current livelihood. <i>(Muuswag among panginabuhi)</i>	1	2	3	4	0	[73]
Improve my access to services. <i>(Mapadali ang pagkuha sa mga serbisyo)</i>	1	2	3	4	0	[74]
Access inputs. <i>(Maka access sa inputs)</i>	1	2	3	4	0	[75]
Enjoyment/ recreation <i>(Kalingawan)</i>	1	2	3	4	0	[76]
Social status <i>(Estado sa buhay)</i>	1	2	3	4	0	[77]

14. On a scale of 1 to 4 where 1 is Strongly disagree and 4 is Strongly agree, please indicate the extent to which your expectations have been fulfilled as a result of joining this cluster group.

*(1 ang dili musugot ug ang 4 ang musugot kaayo, palihug sulti kung nakab-ot ang imong ekspektasyon sa pag-apil sa cluster)*

Expectations	Strongly disagree	Disagree	Agree	Strongly agree	Don't know	
Earned more income from cluster farming. <i>(Makakuha ug taas na income gikan sa cluster)</i>	1	2	3	4	0	[78]
Got a higher price for my products. <i>(Makakuha ug taas na presyo sa akong produkto)</i>	1	2	3	4	0	[79]
Learned new farming ideas. <i>(Nakabalo ug mga bagong ideya sa pag uma)</i>	1	2	3	4	0	[80]
Maximized my farm area. <i>(Napuslan ang uma)</i>	1	2	3	4	0	[81]
Learned from other farmers. <i>(Nakatuon sa laing mga mag uma)</i>	1	2	3	4	0	[82]
Sold to other markets aside from the wet markets. <i>(Nakabaligya sa laing merkado)</i>	1	2	3	4	0	[83]
Shared my knowledge to other farmers. <i>(Nakashare ko sa akong kahibalo sa ubang mag uma)</i>	1	2	3	4	0	[84]
Gained more friends. <i>(Mudaghan ang mga amigo)</i>	1	2	3	4	0	[85]
Joined an established marketing network of farmers. <i>(Nakaapil ug maayong marketing network sa mga mag uma)</i>	1	2	3	4	0	[86]
Got more yield from my farm. <i>(Makakuha ug taas nga abot sa uma)</i>	1	2	3	4	0	[87]
I'm famous. <i>(Sikat na ko)</i>	1	2	3	4	0	[88]
Used my leadership skills. <i>(Nagamit akong leadership skills)</i>	1	2	3	4	0	[89]
Sold to supermarkets. <i>(Baligya sa supermarkets)</i>	1	2	3	4	0	[90]

Gained more farming knowledge. <i>(Nakakuha ug bag-on kahibalo)</i>	1	2	3	4	0	[91]
Open communication between all parties (cluster head, members, buyers) (( <i>Bukas na komunikasyo sa tanan – cluster head, miyembro, buyer</i> ))	1	2	3	4	0	[92]
Open discussion and freely available information on all important group issues ( <i>Maka-istorya sa tanan ug bukas ang impormasyon sa tanang importanteng isyo, wala sikreto</i> )	1	2	3	4	0	[93]
Identification, through group discussion of clear, achievable objectives for the group. ( <i>Ma identify, pinaagi sa pagpulong pulong, ang klaro ug makab-ot nga mga tumong</i> )	1	2	3	4	0	[94]
Continuing and clearly identified benefits for the members. ( <i>Padayon ug klarong benepisyo sa grupo</i> )	1	2	3	4	0	[95]
A high level of personal commitment. ( <i>Mataas na lebel ng commitment</i> )	1	2	3	4	0	[96]
Improved my household's current livelihood. ( <i>Miuswag among panginabuhi</i> )	1	2	3	4	0	[97]
Improved my access to services. (( <i>Mapadali ang pagkuha sa mga serbisyo</i> )	1	2	3	4	0	[98]
Access inputs. ( <i>Makukha ug inputs</i> )	1	2	3	4	0	[99]
Enjoyment/ recreation. ( <i>Kalingawan</i> )	1	2	3	4	0	[100]
Social status ( <i>Estado sa buhay</i> )	1	2	3	4	0	[101]

15. In those areas where your expectations have not been met, what were the major problems or difficulties experienced? (*Sa mga bagay na wala nakab-ot imong ekspektasyon, unsa ang mga problema o kalisud na imong nasinati?*)
- ..... [102]  
..... [103]  
..... [104]  
..... [105]
16. What, if any, efforts has the cluster group made to overcome these difficulties? (*Unsay mga pamaagi, kung naa man, ang gihimo sa cluster group aron maayos ang mga kalisud?*)
- ..... [106]  
..... [107]  
..... [108]  
..... [109]
17. In those areas where your expectations have been met, what were the major highlights experienced? (*Sa uban na nahitabo imong ekspektasyon, unsa ang mga highlights?*)
- ..... [110]  
..... [111]  
..... [112]  
..... [113]
18. What do you believe are the key factors that will ensure the on-going success/sustainability of this cluster group? (*Sa imong pagsinati, unsa ang mga butang nga makapa dugay ug makalig-on sa cluster?*)
- ..... [114]  
..... [115]  
..... [116]  
..... [117]

19. On a scale of 1 to 4 where 1 is I disagree a lot and 4 is I agree a lot, please respond to EACH of the following statements (*1 ang dili gyud musugot 4 ang musugot kaayo*)

	Disagree a Lot	Disagree	Agree	Agree a lot	Don't Know	
I can rely on my cluster head. <i>(Maasahan nako ang cluster head)</i>	1	2	3	4	0	[118]
My cluster head is a respectable person. <i>(Ginatahad ang akoang cluster head)</i>	1	2	3	4	0	[119]
My cluster head is a popular person in the community. <i>(Ilado sa komunidad ang akoang cluster head)</i>	1	2	3	4	0	[120]
I can rely on other cluster members. <i>(Maasahan nako ang ubang cluster members)</i>	1	2	3	4	0	[121]
My cluster head can deliver what he/she promised. <i>(Makahatag sa akoang cluster head ang iyang gi-promiso)</i>	1	2	3	4	0	[122]
My fellow cluster members can deliver what they promised. <i>(Mahatag sa ubang mga miyembro ang ilang gi-promiso)</i>	1	2	3	4	0	[123]
All of the cluster members are respected in the community. <i>(Ilado ug respetado ang mga miyembro sa cluster sa komunidad)</i>	1	2	3	4	0	[124]
My cluster head can act on my behalf. <i>(Pwede mu-transact ang cluster head paras a akaa)</i>	1	2	3	4	0	[125]
My cluster head has a good reputation in the community. <i>(Naay maayong reputasyon akoang cluster head sa komunidad)</i>	1	2	3	4	0	[126]
I would not hesitate to make important selling decisions based on my cluster head's suggestion. <i>(Dili ko mag duha-duha maghimo ug importanteng desisyon sa pagbaligya kung gikan ang suhestyon sa akoang cluster head)</i>	1	2	3	4	0	[127]
My previous relationships with my cluster head are satisfactory. <i>(Ang relasyon nako kaniadto sa akoang cluster head, maayo man)</i>	1	2	3	4	0	[128]
My previous relationships with other cluster members is satisfactory. <i>(Ang relasyon nako sa akoang mga kaubang mag-uuma sa cluster, maayo man bisan kaniadto pa)</i>	1	2	3	4	0	[129]
The cluster head is trustworthy. <i>(Maasahan ang cluster head)</i>	1	2	3	4	0	[130]

The cluster members are trustworthy. ( <i>Maasahan ang mga miyembro sa cluster</i> )	1	2	3	4	0	[131]
The cluster head treats all members fairly. ( <i>Patas ang cluster head sa tanan, dili mag pabor pabor</i> )	1	2	3	4	0	[132]

20. How often do you meet as a cluster? [133]  
*(Unsa ka pirmi ang meeting ninyo sa cluster?)*

- a. Daily
- b. Every two days
- c. Twice a week
- d. Weekly
- e. Every two weeks
- f. Monthly
- g. As needed

21. What are your modes of communication as a cluster? (Pls. circle any applicable answer/s) [134]  
*(Unsa inyong komunikasyon?)*

- a. Telephone
- b. Mobile phone
- c. Messenger
- d. Face to face
- e. Facsimile
- f. Email
- g. Letter
- h. Others, pls. specify \_\_\_\_\_

22. What issues are discussed openly and democratically?  
*(Unsang mga isyu ang pwede isulti na makadungog ang tanan ug pwede pud ma-istoyahan sa tanan?)*

- ..... [135]
- ..... [136]
- ..... [137]
- ..... [138]

23. What issues are discussed behind closed doors?  
*(Unsa ang mga isyu nga gina istoryahan na dili pwede madungog sa tanan?)*

- ..... [139]
- ..... [140]
- ..... [141]
- ..... [142]

24. Does this cause a problem for the group? (*Makahatag ba ni ug problema ni sa grupo*)

Yes/No

25. If Yes: What problems?

- ..... [143]
- ..... [144]
- ..... [145]
- ..... [146]

26. How is it resolved/not resolved? (*Paano sya naayo/wala naayo?*)

- ..... [147]
- ..... [148]
- ..... [149]
- ..... [150]

27. How important are EACH of the following sources of information about what the government is doing (such as agricultural extension, new farming techniques, market information)?

(*Unsa ka importante ang mga ginagikanan sa impormasyon para sa imo? 1 ang dili kaayo importante ug 4 ang pinaka importante*)

	Not at all important	Not important	Important	Very important	Don't Know	
Relatives, friends and neighbors ( <i>Paryente, amigo, ug silingan</i> )	1	2	3	4	0	[151]
Community bulletin board	1	2	3	4	0	[152]
Community or local newspaper	1	2	3	4	0	[153]
National newspaper	1	2	3	4	0	[154]
Radio	1	2	3	4	0	[155]
Television	1	2	3	4	0	[156]
Groups or associations (i.e. VICSMIN, Normin Veggies)	1	2	3	4	0	[157]
Fellow farmers	1	2	3	4	0	[158]
Community leaders	1	2	3	4	0	[159]
An agent of the government ( <i>Ahensya sa gobyerno</i> )	1	2	3	4	0	[160]
NGOs	1	2	3	4	0	[161]
Internet	1	2	3	4	0	[162]
Vegetable Congresses	1	2	3	4	0	[163]
Cluster head	1	2	3	4	0	[164]

### PART III. Measures of Cluster Group Performance

28. What things were most important in the successful establishment of your cluster group?  
*(Unsa ang mga butang ang importante sa paghimo ug cluster?)*

..... [166]

..... [167]

..... [168]

..... [169]

29. What are the most important factors that hold this group together?

*(Unsa ang mga importanteng butang nga naga-hugpong sa grupo)*

..... [170]

..... [171]

..... [172]

..... [173]

30. What are the most important factors that are most likely to cause this group to fall apart?  
*(Unsa pud ang mga butang nga makapabungkag aning grupo?)*

..... [174]

..... [175]

..... [176]

..... [177]

31. On a scale of 1 to 4 where 1 is disagree a lot and 4 is agree a lot, please rate the following statements:

*(1 ang dili gyud musugot 4 ang musugot kaayo)*

Statements	Disagree a lot	Disagree	Agree	Agree a lot	Don't know	
Cluster farming is different from cooperative farming. <i>(Lahi ang cluster farm sa cooperative farm)</i>	1	2	3	4	0	[178]
Cluster farming is beneficial to me as a farmer. <i>(Makaayo gyud sa mag uuma ang cluster)</i>	1	2	3	4	0	[179]
I will encourage other farmers to join clusters. <i>(Idani nako ang ubang mag-uuma nga muapil ug cluster)</i>	1	2	3	4	0	[180]
Cluster farming is better than cooperative farming. <i>(Mas maayo ang cluster farming sa cooperative farming)</i>	1	2	3	4	0	[181]
My income improved after joining the cluster farm. <i>(Nitaas akong income paghuman ug apil sa cluster)</i>	1	2	3	4	0	[182]

Cluster farming encourages cooperation. ( <i>Nagatudlo ug kooperasyon ang cluster farming</i> )	1	2	3	4	0	[183]
Cluster farming is similar to a cooperative. ( <i>Pareho ang cluster farm ug cooperative</i> )	1	2	3	4	0	[184]
I gain more knowledge in farming after joining the clusters. ( <i>Nakakuha ko ug dugang kaalam sa pag-uma paghuman ug apil sa cluster</i> )	1	2	3	4	0	[185]
I trust my cluster leader. ( <i>Naa koy kumpansya sa akoang cluster head</i> )	1	2	3	4	0	[186]
I trust other farmers in my cluster. ( <i>Naay koy kumpansya sa ubang mag-uuma sa akoang cluster</i> )	1	2	3	4	0	[187]
Trust is the main reason why I joined cluster farm. ( <i>Kumpyansa ang dahilan ngano ko niapil ug cluster farm</i> )	1	2	3	4	0	[188]
The prospect of gaining more income motivated me to join the clusters. ( <i>Ang prospect sa daku nga income ang nakapadani sa ako na muapil ug cluster</i> )	1	2	3	4	0	[189]
I am satisfied working with other farmers in my cluster. ( <i>Nalipay man ko makatrabaho ang ubang mga mag-uuma sa akoang cluster.</i> )	1	2	3	4	0	[190]
The cluster group has clearly defined the marketing problem. ( <i>Nakita sa cluster group ang problema sa pagbaligya</i> )	1	2	3	4	0	[191]
The cluster group has developed a group financial plan. ( <i>Nakahimo na ug plano sa financial ang cluster</i> )	1	2	3	4	0	[192]
The cluster group has agreement on membership fees and levy arrangements. ( <i>Naa mi sinabutan sa bayad sa miyembro ug levy</i> )	1	2	3	4	0	[193]
The cluster group has agreement on a definite set of rules for the group. ( <i>Nagkasinabot ang cluster sa mga balaod</i> )	1	2	3	4	0	[194]
The cluster group has open discussion and freely available information on all important group issues (expectations, costs benefits, etc). ( <i>Abli ang diskusyon ug impormasyon sa tanang isyu sa tanang miyembro, sama sa ekspektasyon, benepisyo</i> )	1	2	3	4	0	[195]

Members of the cluster group are willing to provide a consistent supply of produce. ( <i>Ang tanan miyembro gusto muhatag ug permanenteng supply sa produkto</i> )	1	2	3	4	0	[196]
Members of the cluster group have a good understanding of the aims of the group. ( <i>Nakasabot ang mga miyembro sa tumong sa cluster</i> )	1	2	3	4	0	[197]
The cluster head has a strong commitment to the success of the group. ( <i>Naay pagpursige ang cluster head sa kalambuwan sa cluster</i> )	1	2	3	4	0	[198]
The cluster head is willing to accept responsibility. ( <i>Mudawat ug responsibilidad ang cluster head</i> )	1	2	3	4	0	[199]
The cluster head is willing to assist other members. ( <i>Mutabang ang cluster head sa ubang miyembro</i> )	1	2	3	4	0	[200]
The cluster head is willing to encourage prospective group leaders. ( <i>Naka encourage pud ang cluster head sa uban nga maging lider</i> )	1	2	3	4	0	[201]
The cluster head has the ability to maintain the commitment and involvement of members. ( <i>Naayabilidad ang cluster head nga makapadani sa mga miyembro ng mu-commit ug mutabang</i> )	1	2	3	4	0	[202]
The cluster group has a strong focus on the needs of all customers. ( <i>Naay pokus ang cluster sa pakinahanglan sa mga customer</i> )	1	2	3	4	0	[203]
The cluster group has a long range plan focusing on maintaining product reputation in the marketplace. ( <i>Naay pagplano ang cluster nga pokus ang pag maintain sa maayong reputasyo sa merkado</i> )	1	2	3	4	0	[204]
The cluster group has access to professional expertise in the marketing area. ( <i>Makakuha ug mga experts ang cluster group sa duol</i> )	1	2	3	4	0	[205]

**Pre and Post Cluster Farm Activities**

Questions	Before joining the cluster	After joining the cluster	
33. Vegetables planted <i>(Mga tanim na gulay)</i>	Carrots Cabbage Broccoli Tomatoes Chinese cabbage Bitter gourd Squash Chayote Eggplant String beans Others, pls. Specify	Carrots Cabbage Broccoli Tomatoes Chinese cabbage Bitter gourd Squash Chayote Eggplant String beans Others, pls. Specify	[207] [208]
34. Average area of farm planted with vegetables			[209] [210]

35. Where do you buy the seeds **BEFORE** joining the cluster? (Pls. circle any applicable answer/s) [211]

*(As ka nagapalit ug semilya bag-o ka niapil sa cluster)*

- a. Local inputs store
- b. Salesman from a company
- c. Fellow farmer
- d. Local cooperative
- e. Town
- f. Financier
- g. Trader
- h. Grow my own
- i. I get it for free (Pls. specify from where or from whom \_\_\_\_\_)

36. Please evaluate the quality of seeds from the following sources (**BEFORE** joining the cluster):

Source	Very low quality	Low quality	Good quality	Very good quality	Don't know	
Local inputs store	1	2	3	4	0	[212]
Salesman from a company	1	2	3	4	0	[213]
Fellow farmer	1	2	3	4	0	[214]
Local cooperative	1	2	3	4	0	[215]
Town	1	2	3	4	0	[216]
Financier	1	2	3	4	0	[217]
Trader	1	2	3	4	0	[218]
Grow my own	1	2	3	4	0	[219]
Other sources (pls. specify)	1	2	3	4	0	[220]

37. Where do you buy the seeds **AFTER** joining the cluster? (Pls. circle any applicable answer/s) [221]

(Asa mo nagapalit human ninyo apil ug cluster?)

- a. Local inputs store
- b. Salesman from a company
- c. Fellow farmer
- d. Local cooperative
- e. Town
- f. Financier
- g. Trader
- h. Grow my own
- i. I get it for free (Pls. specify from where or from whom \_\_\_\_\_)

38. Has the quality of the seeds you used improved as a result of joining the cluster? [222]

(Nag improve ba ang quality sa imohang seeds pangkahuman nimo apil ug cluster?)

- a. Yes
- b. No
- c. Same

39. Please evaluate the quality of seeds from the following sources (**AFTER** joining the cluster):

Source	Very low quality	Low quality	Good quality	Very good quality	Don't know	
Local inputs store	1	2	3	4	0	[223]
Salesman from a company	1	2	3	4	0	[224]
Fellow farmer	1	2	3	4	0	[225]
Local cooperative	1	2	3	4	0	[226]
Town	1	2	3	4	0	[227]
Financier	1	2	3	4	0	[228]
Trader	1	2	3	4	0	[229]
Grow my own	1	2	3	4	0	[230]
Other sources (pls. specify_____)	1	2	3	4	0	[231]

Questions	Before joining the cluster	After joining the cluster	
40. Where do you buy the fertilizers? <i>(Asa mo nakapalit ug fertilizers)</i>	Local inputs store Salesman from a company Fellow farmer Local cooperative Town Financier Trader Grow my own I get it for free (Pls. specify from where or from whom _____)	[232] Local inputs store Salesman from a company Fellow farmer Local cooperative Town Financier Trader Grow my own I get it for free (Pls. specify from where or from whom _____)	[233]
41. Where do you buy the pesticides, herbicides and other farm medicines? <i>(Asa mo nagapalit ug pestisido, herbicides ug uban pang medisina sa uma)</i>	Local inputs store Salesman from a company Fellow farmer Local cooperative Town Financier Trader Grow my own I get it for free (Pls. specify from where or from whom _____)	[234] Local inputs store Salesman from a company Fellow farmer Local cooperative Town Financier Trader Grow my own I get it for free (Pls. specify from where or from whom _____)	[235]
42. Where do you sell the vegetables? <i>(As animo ginabaligya ang mga gulay?)</i>	Trading Post Local retail store Local warehouse Town warehouse Local wet market Town wet market Supermarket Restaurant Hotels	[236] Trading Post Local retail store Local warehouse Town warehouse Local wet market Town wet market Supermarket Restaurant Hotels	[237]
43. To whom do you sell the vegetables? <i>(Kang kinsa mo nagabaligya ug gulay?)</i>	Local residents (retail) Fellow farmer Local cooperative Buyer from town Financier Trader	[238] Local residents (retail) Fellow farmer Local cooperative Buyer from town Financier Trader	[239]
44. How often do you sell the vegetables?	Daily Every 2-3 days Weekly Every two weeks Monthly	[240] Daily Every 2-3 days Weekly Every two weeks Monthly	[241]

<p>45. How do you transport the vegetables from the farm? <i>(Ginaunsa ang pagdala sa gulay gikan sa uma)</i></p>	<p>Carry it myself Hire someone to carry it Horse Motorcycle Truck Van</p>	<p>[242]</p>	<p>Carry it carry it myself Hire someone to carry it Horse Motorcycle Truck Van</p>	<p>[243]</p>
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46. Average weekly income from vegetables before joining the cluster  
P \_\_\_\_\_ [244]

*(Kita sa unsa ka semana bag-o niapil ug cluster farm)*

47. Are you better off financially after joining the cluster? a. Yes b. No

[245]

## **PART IV. Personal details**

49. Age \_\_\_\_\_ [247]

## 50. Highest Educational Attainment [248]

## Postgraduate Level

## College Graduate

## College Level

## Vocational

## High School Graduate

## High School Level

Elementary Graduate

## Elementary Level

51. Average Monthly Household Income : \_\_\_\_\_ [249]

52. No. of household members :      Male (18 and above) \_\_\_\_\_  
[249]

Female (18 and above) \_\_\_\_\_ [250]

Children (17 and below) \_\_\_\_\_ [251]

53. Number of working household members : \_\_\_\_\_ [252]

54. Religious affiliation [253]

55. Number of years living in the area : \_\_\_\_\_ [254]  
*(Pila ka tuig na mo nagapuyo sa lugar?)*

56. Place of birth [255]

57. Major dialect spoken at home : \_\_\_\_\_ [256]  
*(Mga ginagamit nga pang istorya sa balay)*

## **Appendix 6: Case Study 1: Maragusan Vegetable Farmers' Cluster**

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### **A6.1 Maragusan cluster location and characteristics**

Maragusan is one of the municipalities of Compostela Valley Province in the Southern Mindanao Region (Region 11) of the Republic of the Philippines. Compostela Valley is part of the Davao Gulf Area Development Zone, which seeks to integrate the development of highly urbanized and industrialized centres with the surrounding rural areas.

The population of the Compostela Valley in 2000 was 580,244, which was composed of 120,766 households. According to the Census of Population and Housing (National Statistics Office, 2000), of the total households, 45.3% own at least some land. Among those who have land, 82.9% was allocated to agricultural purposes, 28.9% was devoted to residential purposes, and 6.02% were for non-agricultural or residential use. Maragusan farmers plant crops such as banana, coffee, rice, corn, coconuts and vegetables. With the majority of land devoted to agriculture, farming is the major source of livelihood.

Maragusan supplies vegetables to the City of Tagum and other nearby municipalities. Traders and agents, locally known as *dicers*, usually buy the products from the *barangays*, *Viajedors* or travelling merchants who usually own or rent a truck. Some farmer groups in Maragusan have organised themselves to sell to buyers other than the traders. One of these groups is the Maragusan Vegetable Farmers' cluster.

#### **A6.1.1 Agro-climactic and economic background**

The municipality of Maragusan has a total land area of approximately 39,426 hectares (Table 10), which constitutes about 8.4% of the total land area in the Compostela Valley Province.

In 2000, Maragusan supported a population of 45,937 or 7.92% of the total population of the Compostela Valley. The population increased to 51,547 in 2007. The largest and most densely inhabited area is the Maragusan Poblacion or town centre.

Maragusan is bounded on the East by the municipalities of Manay, Caraga, Bagangga and Cateel, all in the Province of Davao Oriental; in the North by the municipalities of New Bataan and Nabunturan, Compostela Valley Province; in the West by the municipalities of Maco and Pantukan, Compostela Valley Province, and in the South by the Municipality of Lupon, in Davao Oriental (Commission on Information and Communications Technology-National Computer Center, n.d., Maragusan Discovery, n.d.).

Maragusan lies at an elevation of around 630 meters above sea level, but rises to a peak elevation of 2,295 meters above sea level. The range in elevation is described as low

elevation highland, which has an area of 11,676 hectares; medium elevation highland (19,817 hectares); and high elevation highland (1,857 hectares). About 6,071 hectares or 15.4% have undetermined elevation (Municipality of Maragusan, n.d.).

The municipality was originally called "San Mariano" when it was created on November 25, 1977 by virtue of Presidential Decree Number 1247, thereby separating it from Mabini, its mother municipality. However, it was renamed Maragusan on October 12, 1988 under Republic Act Number 6678.

Of the 24 *barangays* in Maragusan, 11 are vegetable producing areas. These include New Albay, Magcagong, Mahayahay, Paloc, New Man-ay, Tandik, Tupas, Mauswagon and New Katipunan. Paloc is the main producer, delivering between 8,000 kg and 20,000 kg of fresh vegetables daily (Normin and VICSMIN, 2006).

#### **A6.1.2 Rainfall and climate type**

The Province has a Type IV climate. This means that rainfall is more or less evenly distributed throughout the year with no pronounced dry season. There are occurrences of heavy rain during the months of February, June, August, September and December. Low rainfall is usually observed in the months of January, July, October and November (Normin Veggies and VICSMIN, 2007).

#### **A6.1.3 Soil type**

The soil in Maragusan is generally clay loam to silty loam with acidity ranging from slightly acidic. The topography ranges from level to very gently sloping; gently sloping to undulation; moderately sloping to rolling; rolling to hills; steep hills and mountains; very steep hills and mountains.

#### **A6.1.4 Household income and employment**

Maragusan is an agricultural municipality, where vegetable production is the main source of household income. The main crops planted are banana, rice, coffee, and vegetables. Aside from planting agricultural crops, households in Maragusan get their income from working as farm labourers in banana and coffee plantations, and rice and vegetable farms. Farm labour is usually paid at Php100 per day without meals (Llubit, pers comm.). Some also work as *dicers* and traders, collecting the products from different farms and selling them to nearby towns and cities. Since many *barangays* are far from urban centres and transportation is very costly, some households operate very small *sari-sari* (variety) stores to cater for the everyday needs of neighbours, including canned goods, detergent, soap, noodles and other household items. Based on informal interviews with the locals, some Maragusan family

members work in other places as warehouse labourers, household helpers and the like. These members send money home to their families in Maragusan.

## A6.2 Vegetable production

The major vegetables grown in the municipality are chayote, eggplant, spring onions, carrots, tomatoes and squash (Table 6.1). Banana blossom, used in many local vegetable dishes, is also abundant.

**Table 6.1. Major vegetable crops grown in Maragusan and the estimated areas of production**

Type of Crop	Area of production (in Hectares)
Chayote	700
Banana blossom	350
Eggplant	350
Spring Onion	350
Carrots	45
Tomato	43
Squash	38
Sweet Bell Pepper	26
Bell Pepper	25
Bitter Gourd	24
Ginger	22
Cabbage	20
Native Pechay	19
Chinses Cabbage	18
String Beans	15
Water Spinach/Swamp Cabbage (Kangkong)	12
Potato	7
Lettuce	5
Radish	5
Malabar Spinach (Alugbati)	3
Cauliflower	0.5

Source: Maragusan Municipal Agriculturists' Office, 2006

### A6.2.1 Seasonality of production

Vegetables are planted in Maragusan all year round. Tropical vegetables are planted near the town centre, while temperate vegetables are planted at higher elevation because of the cooler conditions. Rain is also abundant. However, the disadvantage of frequent rainfall is the inaccessibility of many interior roads leading to most farm areas. Since the majority of roads are rough dirt tracks, transporting the produce proves to be cumbersome and expensive. Only four-wheel drive trucks, motorcycles (locally known as *habal-habal*), horses and people can pass through. There are some areas only accessible by the last three. In such instances, the truck will wait in a designated collection area. Hauling often becomes a slow process, since a maximum of only two-three sacks (enough for one man) can be transported at one time.

#### A6.2.2 Production practices

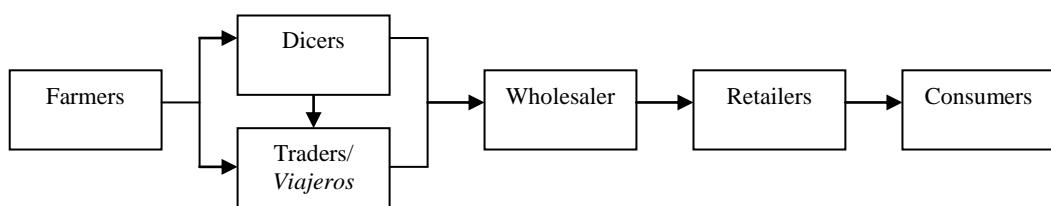
Most of the farmers buy their agricultural inputs, including seeds, fertilizers and pesticides from Maragusan *Poblacion*, local cooperatives and nearby areas (such as Tagum City).

Many Maragusan vegetable farmers have adopted an integrated approach to farming learnt from the farmer field schools organized by the local government, Kasilak, CRS and the Department of Agriculture (Llubit, pers comm., Mendoza, pers comm. Gualberto, pers. comm.).

In spite of these learnings, vegetable farmers are still very conservative in their choice of crops, area of production and use of farming methods. The majority continue to plant chayote, a crop that requires minimal maintenance (Atay, 2005), even when there are other vegetables (e.g. tomatoes) that can generate more income for them. Among the reasons for the farmers' attitudes are: the high risk of crop failure, high transport cost and poor road conditions, particularly when it rains.

#### A6.3 Vegetable marketing<sup>8</sup>

Maragusan vegetable farmers sell their produce to dicers, traders, or *viajedors* (Figure 5). Dicers work in a similar way to agents who canvass products from the farmers and then contact the buyers who may be traders, *viajedors* or wholesalers. The farmers are paid only when the dicers have already sold the vegetables. As the price of vegetables is often dictated by the traders and dicers themselves, the farmers have no choice but to accept whatever price is determined for them. There are also regular *viajeros* (travelling merchants or traders) and traders who hire or own trucks and buy the products on the spot market but at much lower prices. Farmers cannot complain because they have already harvested the produce. The traders and *viajedors* sell the vegetables to wholesalers and retailers in nearby towns such as Cagayan de Oro City, Davao City, Butuan City, and sometimes as far away as Tacloban City in the Visayas.



**Figure 6A. Maragusan Supply Chain (Montiflor 2009)**

<sup>8</sup> Manalili 2003, CRS 2006, Normin Veggies and VICSMIN 2007, Mendoza pers comm, Llubit pers comm, Gualberto pers comm, Montebon pers.comm, Sabuero pers comm.

## **Appendix 7: Case study 2: Northern Mindanao Vegetable Producers' Association Inc.**

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### **A7.1 Northern Mindanao Vegetable Producers' Association location and characteristics**

#### **A7.1.1 Agro-climatic background**

Northern Mindanao or Region 10 covers a total land area of 14,033 square kilometers (Department of Agriculture Regional Field Unit 10, n.d.) and is comprised of the provinces of Bukidnon, Camiguin, Misamis Occidental, Misamis Oriental and Lanao del Norte and the cities of Cagayan de Oro, Malaybalay, Valencia, Gingoog, Oroquieta, Ozamis, Tangub and Iligan.

Geologically, Region 10 is a combination of plains, mountains, rolling hills and coastal areas with rich soil and abundant minerals. Likewise, the area is rich in agriculture, forest and aquaculture resources. The region is strategically located, serving as the gateway to and from the rest of Mindanao, linking this resource-rich island to the rest of the country and the world via its relatively modern seaport, airports and an extensive arterial road network. Located outside the typhoon belt, Northern Mindanao enjoys a climate that is favourable for agriculture and industrial activities. The region is also blessed with abundant hydro-electric power, particularly from the Maria Cristina Falls in Iligan City, which generates the bulk of power available in the Mindanao Grid (Department of Agriculture Regional Field Unit X, n.d.).

In 2003, in Northern Mindanao, wholesale and retail trade businesses comprised the largest number of establishments (Table 7.1). On the other hand, Agriculture & forestry ranked fifth in the number of establishments. However, these figures include only those establishments that employ more than 20 workers. Smallholder farmers are not included in these statistics.

In the May 2000 census, the region recorded a total population of 3,505,558, which has been growing at an average rate of 1.99% per year from 1995. Among the provinces (excluding their cities), Bukidnon had the highest population growth rate of 2.6% between 1995 and 2000 followed by Misamis Oriental with 2.53%. Among the cities, Gingoog City registered the highest growth rate of 3.42% followed by Valencia with 3.04% (National Economic Development Authority, 2004).

**Table 7.1. Business Industry in Northern Mindanao, 1999-2003**

BUSINESS AND INDUSTRY	2003	2001	1999
Number of establishments (CPBI and ASPBI with 20 or more workers)			
Wholesale and retail trade	183	205	-
Manufacturing	103	125	105
Education/Private education	77	78	69
Hotels and restaurants	58	57	56
Agriculture and forestry/Agriculture, hunting and forestry	48	56	-
Transportation/Transport, storage and communications	36	41	29
Real estate/Real estate, renting and business activities	31	34	30
Health/Health and social work	27	28	23
Electricity, gas, and water	24	23	18
Construction	21	24	20
Financial intermediation	15	50	44
Other community, social and personal services	10	16	14
Fishery/Fishing	6	5	6
Mining and quarrying	6	-	7

Sources: CPBI-1999/ASPBI-2001/2003

#### **A7.1.2 Rainfall and climate type**

The annual average rainfall for Northern Mindanao is 2,160 to 3,650 mm (Department of Agriculture, n.d.). Rainfall is evenly distributed so it is suitable to plant vegetables all year round.

According to the Department of Agriculture Regional Field Unit X (n.d.), three climate types prevail in the different areas of Northern Mindanao: Type II, III and IV. Type II has no dry season with very maximum rainfall from November to January. This climate is found in the provinces of Camiguin and Misamis Occidental. Conversely, a Type III climate is relatively dry from November to April and wet during the rest of the year. This climate type prevails in Misamis Oriental and Central Bukidnon. A Type IV climate has rainfall evenly distributed throughout the year. This is found in North eastern Misamis Oriental and Bukidnon (DA RFU X, n.d.).

#### **A7.1.3 Soil type**

The soil type in most areas is predominantly clay and clay loam. Other soil types identified are sandy loam, silt loam, undifferentiated mountain soils, and hydrosol. In vegetable areas such as Clarin, Misamis Occidental, the soil type is lateric soil, basalt soil, and soils derived from igneous and metamorphic rocks. In Opol, another vegetable producing area in Misamis Oriental, the soil is alluvium. Shale, sandstones, coralline and limestone are also abundant (Normin and VICSMIN, 2007).

#### **A7.1.4 Household income/employment**

According to the Family Income and Expenditure Survey (FIES) of the National Statistics Office, the annual average family income has decreased from PhP 110,333 in 1997 to PhP 108,475 in 2003. However, expenditure has increased and thus, not unexpectedly household family savings have decreased by 31% from 1997 to 2003 (Table 7.2).

**Table 7.2. Annual Family Income and Expenditure, Northern Mindanao 1997-2003**

FAMILY INCOME AND EXPENDITURE (in peso, at current prices)	2003 p	2000	1997
Annual average family income	108,475	108,480	110,333
Annual average family expenditure	90,621	83,263	84,477
Annual average family saving	17,853	25,217	25,856

Source: FIES, NSO

People work in different industries such as wholesale and retail trade, manufacturing, education, hotels and restaurants, agriculture, and transportation and communications. Others work in real estate, health, construction, business and the service industries.

#### **A7.2 Vegetable production**

In 2006, the Growth with Equity in Mindanao (GEM) assisted Normin Veggies and the Vegetable Industry Council of Southern Mindanao to document the vegetable producing areas of the island. Tomato is the major vegetable crop cultivated in Northern Mindanao, with an estimated area of 764 hectares, in the municipalities of Claveria, Misamis Oriental and Talakag Bukidnon. (Table 7.3)

Talakag is also the main producer of carrots and the sole producer of asparagus. Other vegetable crops planted on more than 100 hectares in Northern Mindanao include sweet bell pepper, squash, cabbage, eggplant, potato, sweet peas, Baguio beans and chayote. Spring onions, Chinese cabbage, string beans, plastic pepper, mungbean, okra, lettuce, ginger, broccoli, cauliflower, and radish were also grown.

**Table 7.3. Major vegetable crops grown in Northern Mindanao and the estimated areas of production, 2006**

Crop	Area of Production (In hectares)
Tomato	764.0
Carrots	509.5
Asparagus	400.0
Sweet Bell Pepper	222.8
Squash	204.5
Cabbage	169.0
Eggplant	160.0
Potato	145.0
Sweet peas	139.0
Baguio beans	129.0
Chayote	116.8
Spring Onion	77.0
Chinese Cabbage	67.0
String Beans	63.5
Plastic pepper	51.0
Mungbean	49.0
Okra	44.5
Lettuce	39.0
Ginger	23.3
Broccoli	19.0
Cauliflower	15.0
Radish	11.0

Sources: Municipal Agriculturist Offices, 2006

#### A7.2.1 Seasonality of production

There are four provinces predominantly planting vegetables: Bukidnon, Lanao del Norte, Misamis Occidental and Misamis Oriental. Both tropical and temperate vegetables are planted but the main products are temperate vegetables due to the high elevation, cooler climate, and abundance of ground water in the production areas. The majority of these vegetables are picked up by trucks for delivery to the main vegetable wholesale and retail area in Cagayan de Oro City, where they will be distributed within the island or transported to the nearby islands of Cebu, Leyte, Bohol and Camiguin. Moreover, vegetable products from Northern Mindanao can readily reach the capital city of Metro Manila because of the roll-on, roll-off system implemented by the Philippine government. Northern Mindanao has become an alternative source of vegetables in Metro Manila because the NCR relies heavily

on Northern Luzon (particularly Benguet) for their fresh vegetable products. During typhoons and heavy rains, products from these areas are difficult to transport. This provides an opportunity for Northern Mindanao to bring their produce to Manila because the region has a more favourable climate.

#### **A7.2.2 Production practices**

Northern Mindanao has many individual large scale and small scale farms, corporate farms and cooperatives. Each has different production practices, depending on the size of the farms, the number of people working, and the amount of capital. For small-scale farms and cooperatives (also composed of small farmers), traditional farming is used. They utilize the water buffalo to till the land and vegetables are planted in rain-fed open fields or near sources of water such as underground springs, rivers and creeks. Large scale individual and corporate farms have greenhouses and rain shelters which enable them to successfully control their vegetable production.

Vegetables are mostly planted based on the anticipated price and market demand.

### **A7.3 Vegetable Marketing**

Most of the vegetables produced in Northern Mindanao are delivered to the Agora Public Market in Cagayan de Oro City. The farmers have different market arrangements. The most common is to bring the products to the market and selling them to the highest bidder. However, there are also buyers who go to the farms and pick up the products to bring them to Cagayan de Oro and to deliver them to customers at a higher price. Others, such as Normin Veggies members, contact institutional buyers themselves. They form vegetable clusters where each cluster member has a designated volume to produce. When harvest comes, some of the product is delivered to the Normin Veggies warehouse in Cagayan de Oro for consolidation. The farmers pay a fee for this service. Other clusters deliver directly to the buyers without passing through the Normin Veggies warehouse or the Agora Public Market.

One advantage of the region is that the production areas have easy access to the ports in Northern Mindanao (Cagayan de Oro and Iligan City) from where products can be shipped to markets in Luzon, the Visayas and other areas in Mindanao.

## **Appendix 8: Case study 3: Vegetable Industry Council of Southern Mindanao (VICSMIN) Inc.**

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### **A8.1 Location and characteristics**

#### **A8.1.1 Agro-climactic background**

The Southern Mindanao Region (Region 11) is composed of the provinces of Compostela Valley, Davao Oriental, Davao del Norte and Davao del Sur. It also has five cities which include Davao City, Panabo City, Tagum City, Island Garden City of Samal and Digos City. It is located on the south eastern portion of the island of Mindanao and is bounded on the south by the Davao Gulf and the Celebes Sea, in the north by Agusan del Sur and in the west by North Cotabato and Bukidnon. The region has a total land area of 19,662 square kilometres and supports a total population exceeding 3,676,200.

#### **A8.1.2 Rainfall and climate type**

Davao del Norte experiences an average monthly rainfall of 176.34 mm and an annual rainfall that ranges from 1,354 mm to 2,862 mm per year (Davao del Norte Provincial Web Site). Davao del Sur experienced a record annual rainfall of 2,282 mm in 2000 (Official Site of Davao del Sur).

Southern Mindanao (Department of Agriculture XI) has two weather types. Davao Oriental and the western part of Davao Province are classified as having a Type II climate, which is characterized by the absence of a dry season and a very pronounced rainy period from November to January. Davao City, Davao del Sur and the rest of Davao Province are classified as a Type IV climate which is characterized by an even distribution of rain throughout the year. The average temperature in the region is 27 to 28 ° C.

#### **A8.1.3 Soil type**

The soil types in Davao del Sur are primarily Miral clay loams, Kidapawan clay loams, undifferentiated mountain soils, San Manuel silty clay loams, and Camansa sandy clay loams (VICSMIN and Normin Veggies 2007). In Davao Oriental, the soil type is clay and sandy loam. The Compostela Valley is generally clay to silty loam. The soil types that are found in Davao del Norte are hydrosol, Camansa sandy clay loam, Cabangan clay loam, San Manuel silty clay loam, undifferentiated mountain soils, Bolinao clay and Cabantian clay.

#### **A8.1.4 Household income and employment**

The National Statistical Coordination Board Region 11(n.d.) reported that the average income increased from Php 76, 000 in 1997 to PhP 101,000 in 2003. However, at 1994 constant prices, expenditure has increased and savings have decreased (Table 8.1).

**Table 8.1. Family Income and Expenditures, Region 11.**

Indicator	Current Prices				Constant 1994 Prices			
	1994	1997	2000	2003 f/	1994	1997	2000	2003 f/
Total Number of Families	789,350	890,383	1,032,587	808,000	789,350	890,383	1,032,587	808,000
Average Income	71,177	94,408	112,254	114,065	71,177	76,135	...	101,121
Average Expenditures	59,544	76,136	90,868	97,505	59,544	61,400	...	86,441
Average Savings	11,633	18,272	21,386	16,560	11,633	14,735	...	14,681

f/ Under newly reorganized Region 11, which excluded two provinces and one city.

The agricultural sector plays an important role in the provision of employment for the people of Southern Mindanao. The minimum daily wage in 2002 was PhP 176-178. In Davao del Norte, employed male persons had participation rate of 30.3% in the agricultural sector.

#### Vegetable production

In Southern Mindanao, the high altitude areas produce temperate vegetable crops while the low elevation areas produce tropical vegetables. The known areas for temperate vegetable production are Barangay Kapatagan in Digos City, Marilog District in Davao City and Maragusan in the Compostela Valley. There are also a number of other vegetable production areas scattered over the region that produce tropical varieties of vegetables.

In 2005, the total area planted in vegetables in Southern Mindanao was 9,099 hectares. Of that total, 905 hectares were planted with green and leafy vegetables, 6,342 hectares with fruit vegetables, 1,631 hectares with root crops and 221 hectares with herbs and spices. The area yielded 6,720 tonnes of green and leafy vegetables, 40,413 tonnes of vegetable fruit, 10,927 tonnes of root crops and 1,308 tonnes of herbs and spices.

The volume produced by the region is sufficient to meet 64% of the overall demand for vegetables.

#### A8.1.5 Seasonality of production

The agro-climatic conditions in Southern Mindanao are favourable for year round vegetable production because the rainfall is more or less evenly distributed throughout the year. In Kapatagan, the seasonality of vegetable production is not tied with weather conditions, but

rather to socio-economic considerations. Planting is scheduled in such a way that harvest time coincides with the time where household expenses are high. An example of this is the opening of school during the month of June and the associated cost of enrolment (for books, tuition, etc.).

For farmers who are financed by traders, the choice of crop to be planted is a matter that is handled by the trader. Traders prefer that the planted crops are those that are most profitable for them.

#### A8.1.6 Production practices

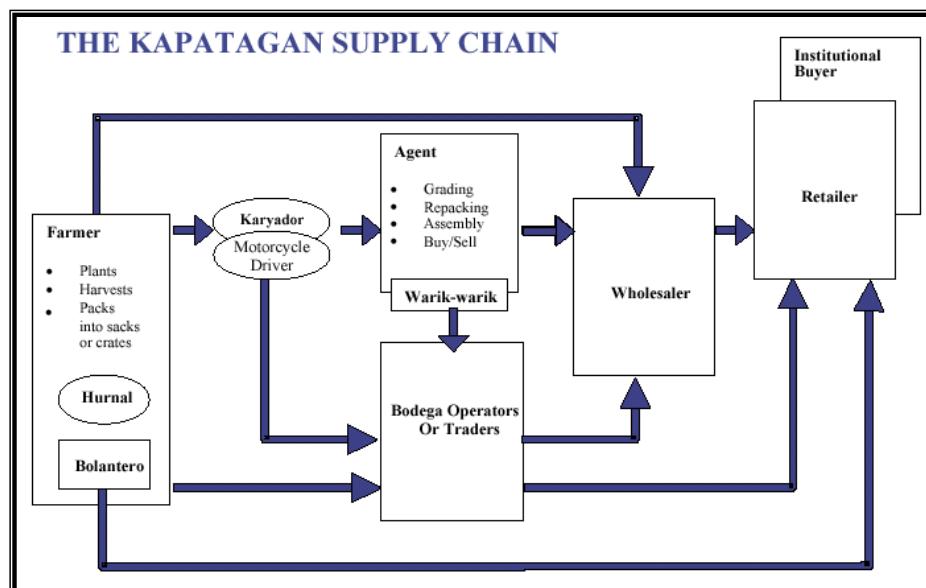
Farming vegetables in Southern Mindanao is undertaken using very traditional methods of production. The details of the steps however, differ for each type of crop planted. Land preparation is undertaken by ploughing and harrowing the fields and is usually done with the aid of a carabao or water buffalo.

Maintenance tasks on the farm include watering, weeding, fertilizer application and pesticide application. Household members can do these tasks but sometimes hired labour is utilized. Carrots, for example, require intensive labour especially for weeding. Labour costs between PhP 60 -70 for one day's work, which is lower than the average daily wage of PhP 176.00.

### A8.2 Vegetable Marketing in Southern Mindanao

The Kapatagan supply chain is a typical configuration of the supply chains that are prevalent in Southern Mindanao. Although the terms used to denote the characters may change the role or functions that these actors fulfil are the same (Figure 8).

**Figure 8. The Kapatagan Supply Chain**



Source: ASEM 2000/101

Agents, traders, wholesalers and bodega (warehouse) operators are present between the farmers and the institutional buyers and retailers. The usual functions of these intermediaries are to consolidate the vegetables and perform ‘value adding’ activities by sorting, cleaning and grading the vegetables.

Vegetables from the major producing areas are brought to the wholesale markets in cities such as Davao and Tagum. Transportation of vegetables from Kapatagan to Davao City will take approximately 2 hours. The estimated travel time is similar for Marilog District to Davao City.

Vegetables are usually transported in sacks, rattan baskets or crates and are loaded into jeeps or trucks for delivery to the wholesale trading centres. Traders and private entities often own the vehicles.

When it comes to the transportation of vegetables, the unfavourable condition of many farm to market roads increases the difficulty and the cost of transporting the vegetables. An improvement in road infrastructure is seen as an opportunity to improve the efficiency of transport for vegetables. In the case of Kapatagan, bringing vegetables from the farm to the trading post has undergone a major evolution. Before, vegetables were transported using horses, but after the road was improved, horses were replaced by motorcycles, which are faster and cheaper. However, there are still some areas that can only be reached by horses.