

Market Gardening as a Livelihood Strategy

A Case Study of Rural-Urban Migrants in Kapit, Sarawak, Malaysia

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Abstract

This research investigates the role market gardening plays in the livelihood strategies of rural-urban migrants. It contributes to the literature on market gardening, livelihood strategies and migration by positioning market gardening as a highly flexible and adaptable mechanism for managing the rural-urban transition among households with few labour alternatives. Such perspective elevates market gardening from simply being a land use category to being an active instrument in the management of rural-urban migration processes.

The expanding urban centre of Kapit, Sarawak, Malaysia is used as a case study of a rapidly expanding small town in a predominantly rural domain. Market gardening emerges as an important source of income for both individuals and households as rural-urban migrants negotiate the transition between farming and urban settlement. Many rural-urban migrants adopt market gardening or associated market selling as their first employment in urban centres. First generation migrants often have low off-farm skills which limit their ability to take on alternative occupations.

While a rise in market gardening activity is enabled by a growth in demand for fresh vegetables, in the context of Sarawak it is also heavily influenced by the involvement of the state that actively encourages participation, provides advice to farmers and offers subsidies. The expansion of roads from rural to urban areas also plays an important role in improving market gardeners access to urban markets, as well as their access to material inputs. At the same time, increased access has heightened competition by attracting new entrants to urban vegetable markets.

Interviews with 10 sellers and 30 market gardeners from Kapit were conducted in 2004. In contrast to market gardening in larger centres documented in the literature, this small isolated town case identifies market gardeners as typically middle-aged, rural-urban migrant women with limited education and employment skills other than subsistence farming. Market gardening and associated selling is adopted because they are unable to acquire alternative employment to support their household and children's education. As such, market gardening in the urban setting is a logical extension of the woman's role as the primary farmer in rural areas.

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Chapter 1



Cabi (chilli pepper) – a popular vegetable grown in Sarawak

Introduction

1

Introduction

1.1 Introduction to the research

Market gardening is the growing of vegetables for market, although it is also commonly associated with the cultivation of fruits and flowers. Evolving from subsistence farming, the practice of market gardening has been around for centuries and overtime has become an important aspect of agriculture. Among various economic and social benefits, market gardening has a vital and multifaceted role in providing food security, meeting the demands of consumer markets, utilising labour and generating income (Friesen 1998:29).

As urban centres expand, so the market for fresh produce increases and the land devoted to market gardening expands, usually in the periphery (Friesen 1998:29 and 33). This is particularly true of developing countries where rapid urbanisation is prevalent.

For similar reasons however, it is common in developing countries to see a rise in urban market gardening as urban poverty unfolds (Lynch 2002). In addition to the periphery, urban dwellers grow vegetables in backyards, around buildings and on public lands as a strategy for securing food and petty income for the household (Bryld 2003:80). The socio-economic benefits of market gardening are attractive to first generation settlers, subsequent generations and seasonal migrants (Porter *et al.* 2003:378). Despite the frequent reference to such gardens, little is known about how rural-urban migrants use market gardening as a transitional form of enterprise in their adaptation from rural to urban livelihoods. How do new market gardeners get established? How do they survive? With continued rural-urban migration in urban centres, do existing market gardens expand in scale and production, or do the number of growers increase? Where there is a rise in market gardening activity around urban

centres, is it due to emerging demand in urban markets, or is such activity primarily a supply response, a response to a lack of alternative employment, a lack of other marketable skills and hence urban poverty? To what extent does the state recognise the pivotal role of market gardening in sustaining the livelihood of low income migrants?

The purpose of this research is to investigate the role of market gardening in the livelihood strategies of rural-urban migrants. Kapit, in the interior of the State of Sarawak, Malaysia, was selected as a research location for a number of reasons. In a preliminary study on livelihood strategies in Kapit District, Ngidang *et al.* (2004) identified a rise in market gardening as the town developed and markets expanded. To help understand the relationship between market gardening and urban growth, this thesis builds on their work. The relative remoteness of Kapit Town from other urban centres and its small size also offered a relatively controlled case study for isolating the relationships between market gardening, livelihood strategies and rural-urban migration.

1.2 Aim and objectives

The **AIM** of the research is:

To investigate the role of market gardening in the livelihood strategies of rural-urban migrants.

The **OBJECTIVES** of the research are:

To identify the role of market gardening in the overall livelihood strategy of people who have established themselves as market gardeners or market sellers;
and

To identify any relationships between market gardening and rural-urban migration.

1.3 Outline

This thesis is divided into nine chapters including this introductory chapter. Chapter 2 reviews the current literature on market gardening and how well it elucidates links between market gardening livelihood strategies and rural-urban migration. Market gardening terminology used in this thesis is also defined.

Chapter 3 introduces the case study area of Kapit and market gardening in the region, while Chapter 4 outlines the methodology and the methods used in the research.

Chapter 5 describes demographic and social characteristics of the market gardeners and market sellers who participated in this research, while Chapters 6 presents key findings on the role of market gardening in livelihood strategies. Chapter 7 presents findings on the relationships between market gardening and rural-urban migration.

Chapter 8 discusses key findings from Chapters 5, 6 and 7 in relation to existing literature. Market gardening and livelihood concerns are raised and responses to these are suggested. Chapter 9 concludes the thesis and its key findings with suggestions for further research into market gardening and livelihood strategies.

Chapter 2



Sawi production in a Vegetable Net House, Kapit District

Market gardening and migration

2

Market gardening and migration

2.1 Research concepts

Market gardening, market gardeners and market sellers

Market gardening is the growing of vegetables for market and is commonly associated with the cultivation of fruits and flowers. This research focuses on vegetable market gardening, although it is acknowledged some market gardeners participating in this research did undertake commercial fruit production, but often to a smaller extent than vegetable growing.

Market gardeners are people who grow their own vegetables for sale. *Market sellers* are people who do not grow their vegetables, but purchase them from market gardeners or middlemen to on sell to end consumers. Market gardeners may sell their produce directly to end consumers and in this instance assume the role of market sellers. Market selling is synonymous with the term ‘vegetable marketing’.

Research on market gardening is often coupled with rural studies on agriculture and commercial food cropping. For example, Swindell *et al.* (1999) include market gardening with grains and other commercial food crops in their examination of agrarian livelihoods in North-West Nigeria. However, there is a growing trend to examine market gardening as a livelihood strategy in the broader field of commercial food farming and its relationship with urban centres. Research in this area is notable in sub-Saharan African countries, for example Tanzania (Lynch 1994; Flynn 2001), Nigeria (Ezedinma and Chukuzi 1999; Porter *et al.* 2003), Mali (Becker 2000; Wooten 2003) and Burkina Faso (Freidberg 2001). Likewise in Asian economies, there is growing interest in market gardening, for example vegetable marketing in

urban food systems, in China (Zhu 2000), Vietnam (Cadilhon *et al.* 2003) and India (Gupta and Rathore 1998; Chauhan and Singh 1998).

Livelihood strategies

A *livelihood* in a very basic sense is a means of gaining a living. The term livelihood is often associated with employment and financial measurements, however Ellis (1998) defines it as much more than this.

“A livelihood encompasses income, both cash and in kind, as well as the social institutions (kin, family, compound, village and so on), gender relations, and property rights required to support and sustain a given standard of living.”

(Ellis 1998:4)

Chambers and Conway (1991) suggest a broader definition of livelihoods as they explore the concept of sustainable livelihoods.

“A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living: a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels in the short and long term.”

(Chambers and Conway 1991:6)

Livelihoods are influenced by a number of factors including associations by birth, gender, and social, economic and ecological environments. Choices available to a person or household also determine livelihood paths and these choices may be influenced by education and migration (Chambers and Conway 1991:6).

Livelihood strategies are the range and combination of activities and choices that individuals and groups undertake to achieve their livelihood outcomes. A dominating

livelihood strategy for many rural households is to integrate migration of family members into their overall mode of livelihood (de Haan 2002; de Haan *et al.* 2002). This builds into the wide strategy of livelihood diversification, exemplified by Murray (2002:151) in a rural context where a household may derive a part-livelihood from farming, a part-livelihood from migrant labour in an urban area, and a part-livelihood from a variety of informal sector activities such as petty trade or beer brewing.

Chambers (1997:164-167) further adds livelihood strategies are complex and diverse because poor people do not follow fixed procedures, but improvise and adapt continuously to better their situation. The changeable nature of survival among poor makes livelihoods a difficult area of development to study.

2.2 The role of market gardening in livelihood strategies

Market gardening is a form of intensive farming that provides market gardeners with enough food for the household and creating surplus for sale. The immediate benefits are a source of income, livelihood protection and food security for the market gardener and their household, as well as food security for the wider community (Friesen 1998:29).

The income generated from market gardening also provides indirect socio-economic benefits for market gardeners. Examples include greater access to household items (e.g. televisions) and greater mobility from the purchase of motor vehicles, motorbikes or bicycles (Porter *et al.* 2003:374 and 380).

Recent advances in technology have increased the role of market gardening as an income generator. Technological developments (e.g. the Green Revolution) have not only improved the ability of market gardeners to increase crop yields, but have also turned food production into economically sustainable businesses. The rise of agribusinesses, commercial contract farming and export-oriented cash cropping in the

face of neoliberalism, structural adjustment and globalisation are widely known (Simon 2002).

Many rural farmers have benefited considerably under modern operating environments, although it is also recognised the benefits from technology and agrarian restructuring are not uniform. Swindell *et al.* (1999) exemplify this in a study of commercial food farming around Sokoto City in Nigeria. Access to new technology, for example the introduction of motorised pumps via the World Bank's Agricultural Development Projects, has led to greater yield surpluses that are traded on a wider scale to the larger urban markets of South Nigeria. However, the unequal distribution of technology and benefits are also obvious as Swindell *et al.* remark:

“It is plain that those farmers who have benefited most from partial mechanisation and the surge in food prices comprise the better-off small commodity producers in the villages, often linked by descent or clientage with traditional rulers and/or politicians, together with the new urban managerial classes.”

(Swindell *et al.* 1999:399)

The literature links technological advancement to large-scale market gardening geared towards supplying primary cities where ready markets exist. Little has been explored on technological advances in market gardening geared towards small urban centres where market demand may be variable. Questions remain over whether market gardeners in small urban centres can access technology and to what degree they benefit from it.

In some instances market gardening has a role as a primary source of income, while in others it is a secondary means of income generation within a wider livelihood strategy. In peri-urban areas of Mali's capital city, Bamako, Wooten (2003) identifies market gardening as a primary source of income for many households.

“While a variety of income-generating activities occurred in the community, people were uniform in viewing market gardening as the premier avenue for

income generation and potential accumulation. Men and women alike commonly identified market gardening – the commercial production of fruits and vegetables – as the preferred strategy for earning income and urban consumers in Bamako as the main market for these activities.”

(Wooten 2003:169)

Where market gardening is a secondary income, it is often characterised by off-season, interspersed secondary cropping to utilise land and maximise economic activity (Cramb 1985; Ezedinma and Chukuzi 1999). Becker (2000:231) specifically illustrates the benefits of secondary market gardening income among grain producers near Bamako, Mali where 32% of households surveyed used income from produce sales as the main source of cash for purchasing grain.

In terms of production and overall income generation there are definite patterns of gender dominance. In peri-urban areas of Bamako, Mali, male market gardeners have access to larger land parcels, better technology (e.g. motorized irrigation pumps), greater plant stocks and preferential close proximity to village markets. As a spin off from their position as garden leaders, males have greater control over resources such as land, labour and technology. In essence, gender relations in production support men's participation, yet women's marginalization from the market gardening realm (Wooten 2003:170-174). On the other hand, Wooten (2003:170) notes urban market sellers are mostly women.

Dolon (2001) reiterates many of these conflicts over rights, obligations and resources using a case study of women bean growers in the Meru District of Kenya. Likewise, Jahan and Alauddin (1996) show the persistence of wage inequalities against women in Bangladesh despite development transformations of the Green Revolution. Porter *et al.* (2003:375) suggest “gender inequalities may be growing in many vegetable producing households [as] women often appear to bear the brunt of increased workloads in production, transport and marketing of produce”.

Depending on local traditions and the scale of market gardening, income may be pooled within the household and spent collectively, or spent at the gardener's

discretion. In Mali, Becker (2000:231) identifies market gardens as small-scale cash cropping enterprises of household heads and own-account enterprises.

However as with production and income generation, expenditure also has gender biases. Becker (2000:237-239 and 246) and Wooten (2003:174) reveal Mali men reinvest their income into market gardening operations and personal consumer goods, while in contrast women use a portion of their personal income for household cooking expenses and children.

Irrespective of gender biases, the literature suggests market gardening in developing nations has a role as a component of multiple livelihood strategies. Rigg (1998; 2003) explores this in comprehensive reviews of rural-urban interactions and livelihood strategies in Southeast Asia. Men, women and youth are engaging in a diverse portfolio of waged labour, self employment, farming and non-farm work in both rural and urban environments (Rigg 1998:501). Despite preferences for non-farm work amidst industrialisation and urbanisation processes, households still engage in agriculture as a 'sideline' income generating activity. Reasons include households being reluctant to give up agriculture, or at least their land, because of associated livelihood risks during times of instability and economic collapse (Rigg 2003:241). In the case of Nigeria, Porter *et al.* (2003:371 and 380) further add, market gardening and cash cropping remains profitable even during times of economic decline or instability (e.g. in the mining sector) because both land and labour are released to agriculture.

Given the persistence of poverty, income disparities and gender inequalities, Ellis (1998) persuasively argues diversification is a desirable policy objective in developing regions because it gives individuals and households greater capabilities to improve their livelihood security and raise living standards. Correspondingly Jervell (1999) stresses the way the "family farm" is defined must now reflect the rise in pluriactivity, and changing patterns of income generation and utilisation of labour.

The practise and knowledge of domestic vegetable growing for basic food security has existed for centuries and therefore it is a natural progression for those with rural

land to sell surplus or increase production for trade to better ones position (Ngidang 1987:21; Friesen 1998:29).

In general market gardening has not been promoted per se by states, but voluntarily adopted by farmers as a livelihood strategy. Becker (2000:226) observes that since the 1960s, market gardening activities in peri-urban areas of Bamako, Mali have developed independent of state or nongovernmental organisation programmes characterised by other agrarian and typically export-oriented crops such as cotton. Ngidang (1987) recognises similar absences among early Bidayuh adopters of market gardening in Sarawak, Malaysia, although notes the importance of middlemen and sales distribution networks in promoting market gardening.

In contrast, Porter *et al.* (2003:371) note the expansion of market gardening may be encouraged by state policies, for example import bans on foodstuffs under domestic structural adjustment programmes increase demand for local produce. The expansion, and adoption, of market gardening is also characterised by whether farmers have access to factors such as land, farm inputs, labour, credit, technology and secure markets for produce (Porter *et al.* 2003:374-377).

Likewise, sustaining market gardening practices is influenced by a combination of factors including environment conditions, farmer strategies, pest and disease control, water supply, technical innovation, labour, government policy and local power structures (Porter *et al.* 2003:374-377; Swindell *et al.* 1999:399).

Clearly market gardening has a multifaceted role in the livelihoods of people in urban centres. It is an important source of income for households among a diverse portfolio of livelihoods. However, the literature is relatively unspecific towards the role of market gardening in the livelihoods of rural-urban migrants and it is not clear how, as new entrants to market gardening, this group accesses the various factors required for adoption and maintenance of market gardening practices. This research aims to clarify these issues.

2.3 Market gardening and rural-urban migration

Urbanisation refers to the process whereby the proportion of a national population living in urban areas increases. An increase in the number living in towns and cities can result from rural settlements growing to an urban size, or boundaries of existing urban areas extending into areas previously classified as 'rural', as well as rural-urban migration (Beall 2000:428). The urbanisation process refers not only to changes in population size and distribution, but also economic, political and social transformations between rural and urban areas.

Satterthwaite (2002:246) highlights how the distinctions between rural and urban areas become blurred as rural populations derive livelihoods from non-agricultural activities or interactions with urban areas. Likewise, large sections of urban populations work in agriculture or in urban enterprises that serve rural demand (e.g. agricultural extension workers) and the flow of goods, capital and information blur rural and urban distinctions. These points are relevant for understanding rural-urban linkages and are used to explore the relationships between market gardening and migration processes.

Developing countries are experiencing rapid rural-urban migration and the causes and consequences are well documented (Pacione 2001; Beall 2000). With respect to 19th century New Russia, Friesen (1998:29) identifies that for a long time a direct relationship between increased market gardening production and urban centres has existed as urban appetites create a market for fresh fruit and vegetables. Markets are influenced by a number of factors including changes in diet, nutrition campaigns, consumption shifts in emerging middle class and demand by foreign aid workers (Wooten 2003:169; Porter *et al.* 2003:371). In light of this, vegetable gardens are often located in close proximity or with ease of access to urban markets. Swindell *et al.* (1999:388) confirm this with their observation that vegetable farming in urban hinterlands in North-West Nigeria is primarily oriented towards large urban markets.

Wider and improved access to markets is undoubtedly vital to agricultural development, particularly in market gardening where produce is highly perishable.

Friesen (1998:33) for example highlights the direct relationship between increased market gardening production and improved transportation networks (e.g. rail, seaports), and also reiterates the relationship between increased profitability and expanding urban centres. Windle and Cramb (1997) find considerable economic benefits when rural roads provide remote communities with improved access to prevailing markets in major urban centres. The importance of vegetable marketing systems and the role of wholesalers in facilitating market supply are also explored, for example in Tanzania (Lynch 1994), Southeast Asia (Cadilhon *et al.* 2003) and India (Chauhan and Singh 1998; Gupta and Rathore 1998).

In light of rapid urbanisation in developing countries, there is growing interest in how urban dwellers, particularly urban poor, cope as their economic, social and environmental landscape changes with increasing population pressures. Lynch (2002) provides a concise overview of urban agriculture, which is complemented by Bryld (2003:80) who defines it as the growing of vegetables in backyards, around buildings and on public lands as a strategy for securing family well-being and further accumulation through sales. Accounting for the increase in urban agriculture among poor households in the past 20 years, Bryld (2003:79) argues rapid rural-urban migration and worsened economic conditions resulting from Bretton Woods Structural Adjustment Programmes are predominant driving forces. Although it is not stated in the literature, this could imply the adoption of market gardening is more a response to difficult urban conditions, rather than an urban pull factor for rural-urban migrants.

The benefits of urban agriculture are food security, economic advantages from the sale of produce and some environmental spin offs from increased vegetation in the landscape (Bryld 2003:81). With regard to economic advantages, Bryld (2003:82) suggests income from vegetable sales and savings from the consumption of home grown produce increases household mobility as the money can increase the welfare of family members (e.g. education for children). Although it is not stated, this suggests market gardening in urban centres may be used as a lever for socio-economic advancement, or at least a coping or risk minimisation strategy. The literature is

relatively silent on the adoption of market gardening by rural-urban migrants as a means of household advancement.

In characterising urban market gardeners, Flynn (2001) notes the rise of urban agriculture among men, women and children from particularly low-income households. However, Flynn also notes some Tanzanian middle class remain income insecure in light of economic restructuring and therefore continue to engage in urban agriculture more so than their Kenyan and Zambian counterparts who have higher purchasing powers. In contrast, Ezedinma and Chukuezi (1999) characterise market gardeners in Lagos, Nigeria as mainly poorly educated migrant farmers who engage in vegetable production as an off-season income generating activity. Porter *et al.* (2003:378) and Swindell *et al.* (1999:387) also note an emergence of migrant and seasonal wage labourers engaging in commercial food farming.

Clearly market gardening has linkages to urbanisation processes. A rise in market gardening activities may be a response to growing urban markets, a response to falling costs of production associated with improved market access, and a response to urban poverty. Rural households are known to use migration as a livelihood strategy for survival and risk management, however the literature is relatively unspecific on the importance of market gardening as a livelihood strategy among rural-urban migrants. Why and how do rural-urban migrants adopt market gardening and what role does it play in their transition from rural to urban ways of living? This research aims to clarify these issues.

2.4 Market gardening in Sarawak, Malaysia

With respect to Sarawak, literature dedicated to vegetable market gardening in the Borneo State is limited. However, what does exist is often based on primary data collection and direct observations at the household, wholesaler and market level, resulting in the findings being extremely informative and highly reflective of market

gardening in practice. To a large extent market gardening in Sarawak bears the same characteristics and roles in livelihood strategies as experienced in other developing regions. These include the role of market gardening as an income generator, a secondary crop to other commercial food production and a response to improved market access. Some research also alludes to a relationship between market gardening and urban centres, however further work in this area is required.

As an overview, De Koninck (2003) provides a generic, but useful account of agricultural transformation post-1960 in Southeast Asia, with some brief sections dedicated to Malaysia. His commentary includes an account of the Green Revolution and the use of technology to achieve significant yield increases, particularly in the cultivation of food crops. A brief account of Malaysia's expansion and diversification into export-oriented agricultural products (e.g. palm oil) typifies the nature of structural adjustment programmes and liberalised trade adopted by many developing countries since the early 1980s. With Malaysia's increasingly industrial and urban based economy, De Koninck interestingly notes that although in macroeconomic terms the relative importance of Malaysian agriculture is fast decreasing, some forms of agricultural expansion such as fruit and vegetable production are maintained due to increased consumer purchasing power (De Koninck 2003:200-203).

On a more specific level, Cramb (1985) assesses the economic importance of secondary crops in the Saribas District of Sarawak, including vegetables, which are often intercropped with primary crops such as rice. Not only do secondary crops supplement domestic food consumption and boost livestock feed, but also contribute economically to household income levels when surplus produce is sold at local markets. Cramb calculates an average of 42% of household gross income is derived from secondary crops. This appears to outweigh associated input costs of production such as labour (Cramb 1985:43-44). Cramb's work clearly illustrates the importance of secondary crops in livelihood strategies, however it is difficult to assess the specific economic importance of vegetable production given crops such as cereals are included in the study.

Ngidang *et al.* (1986), Ngidang (1987) and Uli (1991) provide studies on market gardening in isolation of other crops. Their research subjects are Bidayuh households in the Siburan sub-district. Ngidang *et al.* (1986) succinctly identifies patterns of information flow that facilitated the adoption and continuation of market gardening activities among the Bidayuh. The acquisition of market gardening knowledge by Bidayuh is traced back to their participation as waged labourers on commercial gardens managed predominantly by Chinese resettled in the area shortly after Sarawak's independence in 1963 (Ngidang 1987:21-22). Ngidang identifies 108 out of 125 Bidayuh households surveyed as adopting predominately experimental market gardening practices between 1960 and 1985, with three-quarters of them growing crops on a part-time basis. Adoption is influenced primarily by the availability of suitable land followed by the need for extra income. Other reasons for market gardening are its prevalence as their main cash crop, a ready market and a fast return. Reasons for discontinuance or non-adoption of market gardening among the Bidayuh are the lack of manpower, a higher important job, the cost of inputs and poor prices (Ngidang *et al.* 1986:14 and Ngidang 1987:24). In investigating the persistence of market gardening among the Bidayuh, Ngidang highlights the importance of the middleman for promoting gardening activities by means of knowledge transfer, credit and ready access to markets (Ngidang 1987:27).

Uli (1991) provides a further comprehensive study on market gardening among the Bidayuh in Siburan sub-district and complements the earlier publications of Ngidang *et al.* (1986) and Ngidang (1987) in the same area. Uli likewise examines the diffusion and adoption of market gardening among the Bidayuh, but also presents an informative overview of technical practices and economic aspects of the market gardening. Uli confirms the importance of market gardening in the wider farming strategies of Bidayuh households.

As with other areas of Southeast Asia, livelihood strategies among rural households in Sarawak are no longer strictly farm dependent as processes of commercial contract farming, urbanisation and industrialisation evolve. The peaking of the rural population in 1991 census is evidence of rural-urban population movements in Sarawak (Morrison 1996), although notably a relatively large proportion of people

still reside in rural areas on subsistence livelihoods. In assessing how rural households survive, Morrison (1993) explores the changing relationship between different components of livelihood strategies associated with migration and economic development, particularly the way off-farm employment and wage labour has grown to supplement subsistence and cash crop production. The adoption of market gardening by households could be considered in this light as a part-livelihood to off-farm employment and wage labour in small urban centres.

Windle and Cramb (1997) assess the economic impact of rural roads and find considerable benefits when roads provide rural communities with improved access to ready markets in major urban centres. With respect to market gardening, improved road access has enabled rural households for the first time to sell secondary crops in Sarawak's major city Kuching (Windle and Cramb 1997:46). Yet Windle and Cramb also note improved road access does not offer the same level of economic benefits to rural farmers on the periphery of smaller urban towns due to the limitations of market size.

This latter observation raises questions over the relationship between market gardening by migrants in small administrative towns in Sarawak, particularly the case study area of Kapit. Despite the limited economic benefits rural roads impart on farmers in small urban towns, a preliminary study on livelihood strategies among the Iban in Kapit District by Ngidang *et al.* (2004:14) identifies an emergence of market gardening activities along recently constructed logging roads connecting the rural 'periphery' to the urban 'core'. Ngidang *et al.* (2004:3) also identify distinct migration trends towards the small urban centre, although the centre remains small with a town population of 7,852 people in the year 2000. This work of Ngidang *et al.* (2004) is only at an infant stage, but serves as a useful precursor to this paper on the role of market gardening in the livelihood strategies of rural-urban migrants.

2.5 Conclusion

The literature has revealed the role of market gardening in developing regions is multifaceted. It has a vital role as an income generator and in some cases is a primary source of income while in others it is a secondary source of income. Access to large urban markets, technology and capital has turned some market gardening ventures into agribusiness and export-oriented cash crops. However, many people in developing regions do not have access to these capabilities and assets, and instead adopt market gardening as a part-livelihood among a diverse portfolio of livelihoods.

With respect to urbanisation processes and market gardening, three key themes emerge from the literature. Firstly, a rise in market gardening activities may be a response to growing urban markets as the demand for fresh produce increases. Secondly, rises in market gardening may also be a response to falling costs of production associated with improved access to markets. Thirdly, market gardening may also be a response to lack of employment opportunities faced by less qualified households, in other words to urban poverty. Market gardening may therefore be as much a response to difficult urban conditions, as to lowering costs of production or market opportunities.

Central to understanding the role of market gardening among rural-urban migrants is identifying how, as new entrants to market gardening, they acquire land, access farm inputs, gain gardening knowledge, utilise labour and establish sales networks. How do they compete with existing market gardeners and what role does market gardening play in wider household livelihood strategies?

If diversified livelihoods are a survival strategy among poor in developing regions, then one expects rural-urban migrants to adopt this strategy as they progress from subsistence farming to urban economies. Market gardening would be a part-livelihood among a diverse portfolio of livelihoods. It's potential as an income generator and the relative ease of progression from subsistence to commercial farming would facilitate the adoption process.

Unless migrant households expand into large-scale market gardening, over time one might expect market gardening revenue to contribute less to the total household income as members of migrant families progress into off-farm employment.

With improved access to education facilities in urban centres one might also expect children of migrant families to progress into off-farm employment, suggesting market gardening has generation biases for migrant families.

The immediate adoption of market gardening by rural-urban migrants and the tapering off of its contribution to total household income could be indicators of the use of market gardening as a transitional phase and lever for socio-economic advancement into urban centres.

The literature is relatively silent on these issues and therefore this study on market gardening and rural-urban migrants aims to clarify their relative importance.

Chapter 3



Kapit Town alongside the river, Batang Rajang

Kapit

3

Kapit

3.1 Introduction

Kapit Town and its periphery was the case study area for this research. Background on the area is essential for understanding the research and therefore this chapter introduces Kapit Town, Kapit District and the wider Kapit Division. Resident's Office Kapit Division (2003) and Pejabat Resident Bahagian Kapit (2004) are the main sources of information for the facts and figures presented in this chapter. Direct observations and conversations with Kapit residents also contribute to the descriptions of Kapit Town.

3.2 Kapit Division and Kapit District

Sarawak and Sabah are the two Malaysian States located on the island of Borneo. The State of Sarawak is currently divided into eleven administrative divisions of which Kapit Division is the seventh. Kapit Division is approximately one-third of the total land area of Sarawak, and as the largest division in Sarawak has an area of 38,934 sq km (refer to Figure 3.1). Within Kapit Division there are three administrative districts, namely Kapit, Song and Belaga. Kapit Town, located in Kapit District, is the capital of Kapit Division (Resident's Office Kapit Division 2003, Pejabat Resident Bahagian Kapit 2004).

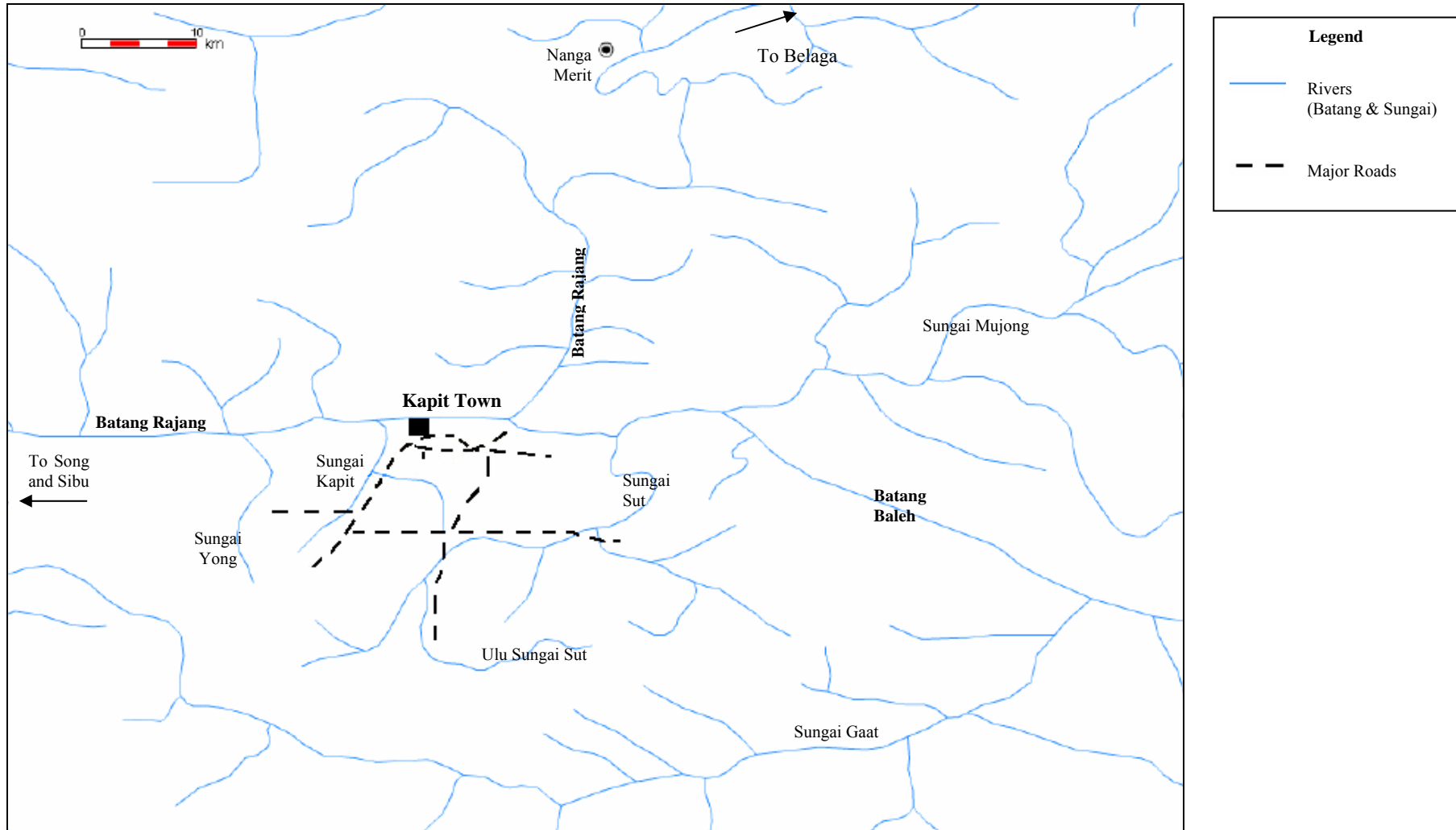
Kapit Division is mountainous and mostly covered by dense primary forests containing valuable timber. Flowing through the Division is Malaysia's longest river, the Batang Rajang (640km) and its main tributaries such as the Batang Baleh in Kapit District. The river system provides the main means of transport for the Division.

Figure 3.1: Map of the case study area – Kapit, Sarawak (Malaysia)



Map outline adapted from e-Map Malaysia 2001

Figure 3.2: Map of the case study area – Kapit Town and its periphery



Map outline adapted from e-Map Malaysia 2001

Based on the 2000 census data, Kapit Division has a population of 99,833 people and Kapit District 57,840 people (Resident's Office Kapit Division 2003). With respect to rural-urban distributions in Kapit Division, 76.6% live in rural areas, particularly in longhouses¹, and 23.4% live in urban areas (Resident's Office Kapit Division 2003). Kapit Town is considered an 'urban small', however there is evidence of increasing rural-urban migration patterns experienced by other parts of Sarawak and Malaysia. The population of Kapit Town more than doubled in 20 years increasing from 3,256 residents in 1980 to 7,852 residents in 2000 (Ngidang *et al.* 2004:3).

Kapit Division comprises indigenous groups (bumiputera) of Iban, Orang Ulu, Malay, Melanau and Bidayuh. Non-bumiputera ethnic groups include Chinese and Indians. The 2000 census data identifies the major ethnic group in Kapit Division as Iban (68%), followed by Orang Ulu (19%) and Chinese (7%). The remaining population consists of Malay, Melanau, Bidayuh and non-bumiputera groups other than Chinese (Resident's Office Kapit Division 2003).

Logging is still the major economic activity in Kapit Division and there is a small coal mine located at Nanga Merit in Kapit District (see Figures 3.2 and 3.3). In addition, farming is important to the District, although to a smaller extent than forestry. Many farmers in Kapit still practice 'slash and burn' agriculture with hill padi (rice) as the main crop (see Figure 3.4). Pepper, fruits, rubber and vegetables are also grown.

Timber exports declined in the 1990s in line with Sarawak's State policies to manage dwindling forest resources. Rubber production fell in the mid 1990s (De Koninck 2003:201), while pepper prices plummeted in early the 1990s (Morrison 1997:307). Despite the decline in other sectors, Kapit has seen a rise in experimental farming in crops such as vegetables and fruit.

¹ A *longhouse* is a multi-family dwelling for indigenous groups to Borneo (e.g. Melanau, Iban, Bidayuh). Different styles of construction exist between indigenous groups, but longhouses are typically long, rectangular structures, housing 10 or more families (Bilek).

Figure 3.3: Logging on the Batang Rajang, Kapit District



Figure 3.4: 'Slash and burn' cultivation of hill padi (rice) along Sungai Sut, Kapit District



Sarawak's 1957 Land Code governs land ownership in Kapit Division. There are 5 classifications of land, namely Mixed Zone Land, Native Area Land, Native Customary Land, Reserved Land and Interior Area Land. Mixed Zone Land is land with a registered title that may be owned by any Malaysian citizen or permanent resident in Sarawak regardless of race. Native Area Land is registered land that may be freely transferred among natives of Sarawak only. Native Customary Land may be possessed by a person indigenous to Sarawak only and is acquired through the creation of Native Customary Rights. Felling primary forests and occupying and cultivating the land may, for example, create Native Customary Rights. Reserved Land is land reserved to the Government and includes national parks and protected forests. Interior Area Land refers to any land not falling within the definitions of the other four land classifications (Foo Nyuk Kian, 1986:18-19).

The sale of Native Customary Land from one indigenous party to another is relevant to this research, as Native Customary Land typifies much of the land on the periphery of Kapit Town where urban expansion and market gardening are likely to occur. As a general note, Native Customary Land is not surveyed and therefore cannot be registered with the government's Land and Survey Department. When sales of Native Customary Land occur, a local Community Leader (Penghulu) or Longhouse Leader (Tuai Rumah) usually witnesses the transaction. If the land is surveyed, the purchaser of the land can retrospectively claim formal ownership and registered title.

3.3 Kapit Town

Kapit Town is located approximately 140km upriver from the main town of Sibu (population of 209,012 in 2000). In turn, Sibu is connected by air, road and sea transport to Sarawak's capital Kuching (population of 495,996 in 2000) and by air and sea transport to the Malaysian Peninsular².

There is no road access to Kapit Town and the local airstrip was closed in 1997 due to insufficient use. Helicopters operate for some government officials, flying doctor services and logging, but for the majority of people the town is accessible only by riverboats, locally called Express Boats (see Figure 3.5). The Express Boats operate between the main town of Sibu at the mouth of the Batang Rajang and Kapit. The boat journey between Sibu and Kapit takes 2½ to 3½ hours depending on the number of stops made and whether boats are travelling upstream or downstream.

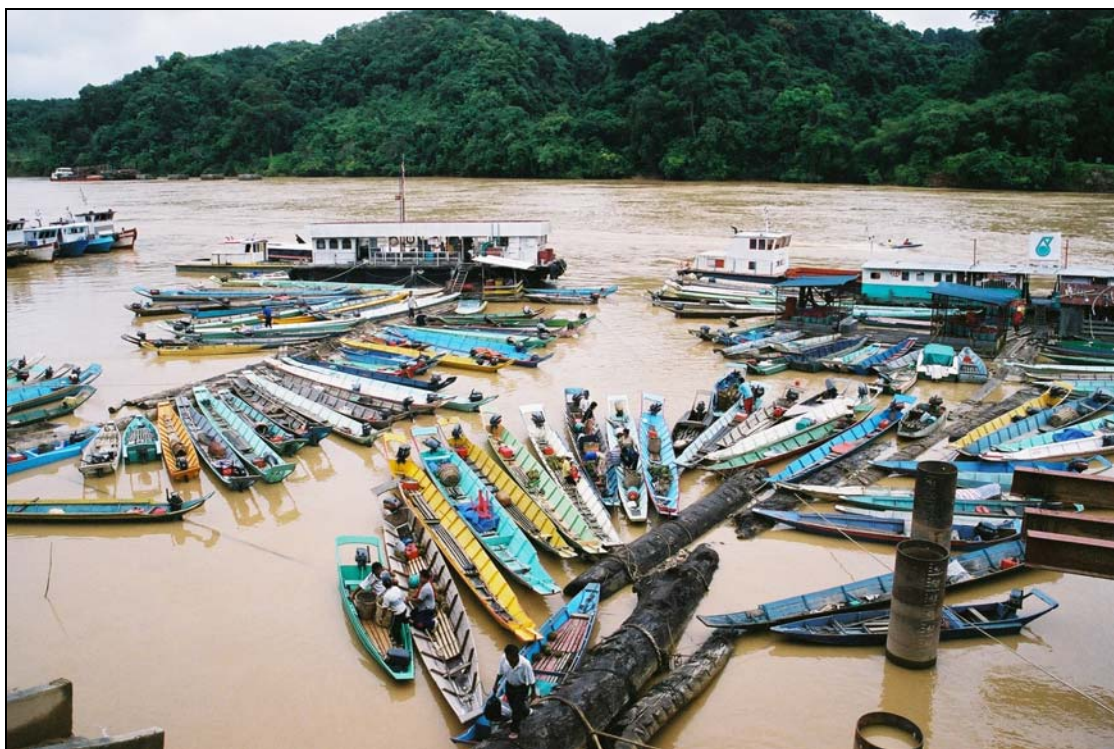
Figure 3.5: Express Boats at Kapit Wharf



² Population figures for Sibu and Kuching are based on the Malaysian Population and Housing Census 2000 (Statoids 2003).

Around Kapit Town there are approximately 100 kilometres of public roads, large portions of which are still under construction by the government department for road works, Jabatan Kerja Raya (JKR). The Forest Department also has a network of forestry roads for logging purposes. Logging camps often establish along the forestry roads and over time the roads may be converted into public roads. The main modes of transport around Kapit Town are by privately owned vehicles or public vans. There is also a noticeable group of private van operators who compete against public van transport and operate in places where public transport is limited. People with no road access to Kapit Town use privately owned motorised longboats to reach the town (see Figure 3.6).

Figure 3.6: Longboats at Kapit Wharf



Associated with the growth of Kapit Town through rural-urban migration, has been a change in ethnic composition. In the 1980s the largest ethnic group was the Chinese with 1,589 residents, followed by Iban with 1,175 residents. However, by the year 2000 these statistics reversed with Kapit Town comprising 3,682 Iban residents compared to 2,473 Chinese residents (Ngidang *et al.* 2004:3).

As with many other areas of Sarawak, rural-urban migration by Iban in Kapit is driven by improved access to education and medical facilities, off-farm employment opportunities, and the search for a better standard of living (Ngidang 2004:22). The relationship between education and employment was only recognised by Iban in the mid-1950s when schools for Iban communities became more accessible, largely in urban centres (Sutlive 1992:161). In this respect many older generations lack formal education, but migrate towards urban-based schools as they regard it as a means for their children to escape subsistence livelihoods.

Although Kapit Town is situated 140kms up the Batang Rajang, it is far from being a quiet river town. Kapit Town is the last major administrative post along the Batang Rajang and is a vibrant commercial and social centre, largely as a result of the timber industry. Although Kapit Town is home to only 7,852 residents, the place is the main service centre for the 57,840 people living in Kapit District. Therefore, despite its small size of only a few streets, Kapit Town is equipped with modern facilities and amenities such as water and sewage treatment facilities, health services (e.g. a hospital, polyclinic and private clinics), banking services, schools, government services and administration offices. There are also recreational facilities (e.g. a mini sports stadium, swimming pool and sports complex) and an abundance of Internet and computer game venues, restaurants, eating houses, karaoke bars and retail outlets. Upriver longhouse communities and timber camp workers consider Kapit Town as the 'big city' where they can buy, sell and exchange goods and to enjoy the diversions of urban life.

3.4 Market gardening in Kapit

Limited research has been undertaken concerning market gardening in Kapit although as highlighted in Chapter 2, the recent preliminary study on livelihoods by Ngidang *et al.* (2004) provides evidence of the importance of market gardening in the region.

Ngidang *et al.* (2004) suggest Iban households from Kapit's periphery are diversifying their agro-economic activities, particularly with cash crops, as a survival strategy in light of urban development.

This thesis builds on the work of Ngidang *et al.* (2004) by producing a comprehensive account of market gardening in Kapit by assessing its linkages to livelihood strategies and rural-urban migration. Market gardening, as for agriculture in general in Sarawak, can only be understood in light of its institutional setting or context. The following therefore backgrounds the Kapit market and the role of three agencies associated with market gardening activities in Kapit, namely Kapit District Council, the Department of Agriculture, and the Ministry of Domestic Trade and Consumer Affairs. Information on the respective roles of these three agencies in market gardening is derived from discussions with relevant organisational representatives and reviews of official publications.

Kapit Market and Kapit District Council

Kapit Market (Market Teresang) is the hub for vegetable trading as well as the sale of fruits, meats and other fresh food items (see Figure 3.7). The market place is a two-storey building comprising a wall-less ground floor where vegetables, fruits, meats and other fresh foods are sold, and an upper floor where clothing retailers and restaurants operate. The current market is relatively new having opened in June 2001. It replaces the neighbouring old open-air market on Kapit's waterfront, which was subject to direct sunlight and overcrowding.

Kapit Market is managed by Kapit District Council (Majlis Daerah Kapit), which collects daily rent from market sellers in exchange for keeping the market place serviced with toilet facilities, piped water, electricity, rubbish collection and cleaners. The official business hours of the market are from 5am to 6pm, 7 days per week although it is common for market sellers to arrive earlier to reserve a good place and set up their displays before the first customers arrive. Vegetables and fruit are usually sold on mats or sheets of plastic placed by vendors on the concrete floor.

Figure 3.7: Market sellers and customers in Kapit Market (Market Teresang)



Vendors selling fresh produce pay rent to Kapit District Council for each day they require floor space to sell their produce. A maximum of 2 floor spaces per person are available and the Kapit District Council's market supervisor (mandor) collects the rent on a daily basis. The space allocated for vegetable selling is 2 x 5ft and costs RM1 per day³. The space allocated for fruit selling is also 2 x 5ft and costs RM2 per day. Most produce is sold in bundles worth RM1 (e.g. one handful of beans sells for RM1). Therefore it is not difficult for market sellers to recover their rental costs.

Although market sellers and their fresh produce are protected from the direct sunlight, the market is often hot and overcrowded. According to Kapit District Council the market is designed to hold approximately 150 fruit and vegetable sellers per day, but a review of their rent collection records shows during peak seasons (e.g. the November and December fruit season), the number of market sellers increases to approximately 200. The overspill of market sellers into the open streets immediately surrounding Kapit Market is also evidence of overcrowding (see Figure 3.8).

³ At the time of data collection (December 2004), one Malaysian Ringgit (RM1) was equivalent to NZ\$0.38 or US\$0.27.

Figure 3.8: Overspill of market sellers and customers onto the street outside Kapit Market



Department of Agriculture

The Department of Agriculture (Jabatan Pertanian) has a high degree of influence on market gardening activities in Kapit. The government department is responsible for agricultural development and its brief includes the development of food production (e.g. padi, fruit, livestock, inland fisheries and vegetable industries), industrial crop development (e.g. pepper, rubber, palm oil and coconut industries) and agricultural support services (e.g. extension services, farm modernisation and research). The vision of the department is directed towards transforming Sarawak into a leading food-producing State in Malaysia, with specific goals of increasing Sarawak's agricultural productivity and transforming it into a net exporter of food in support of national policies (Department of Agriculture Sarawak 2003).

With respect to vegetable production, the Department of Agriculture has a number of assistance programmes for market gardeners that are administered at Divisional and District levels. The programmes are geared towards increasing food-production in Kapit Division and are in alignment with wider departmental goals. In Kapit, assistance for market gardening includes agricultural extension services, subsidised farm inputs and Vegetable Net Schemes.

In Kapit there are 13 area staff providing agricultural extension services for market gardening and other agricultural industries. Area staff are available to market gardeners for crop management training at their District Office and on field visits. A Kapit-based Divisional Extension Training and Development Centre (DETDC) used to operate as a training centre for Kapit farmers, however this closed seven years ago in favour of a larger centre in Sibul.

Farm inputs include seeds, fertilisers, insect pellets and sprays (e.g. pesticides, insecticides and fungicides). To a small extent, farm equipment such as mini power tillers, manual water pumps, piping and spray knapsacks are provided. Vegetable subsidies are administered by the Kapit District Office (Jabatan Pertanian Daerah) and may be fully or partially subsidised by the government. The subsidies are issued on an annual basis upon successful application by market gardeners. The farm subsidies are often issued in conjunction with Vegetable Net Schemes.

The Kapit Office of the Department of Agriculture has heavily promoted Vegetable Net Schemes since 2001, although prior to this it experimented with net schemes and other commercial vegetable projects on a smaller scale. 'Net house systems' are the most common net scheme for vegetables, although 'open net systems' generally designed for fruit production are sometimes used for vegetables.

A net house is a box-like structure enclosed by a fine, high-density polyethylene net with an exit door (see Figure 3.9). The net is like a mosquito net and excludes pests and insects from the vegetables growing inside. This not only protects the plants, but also reduces the use of insecticides and pesticides (Chai Lian Kuet *et al.* 1999:20).

Figure 3.9: Vegetable net house subsidised by the Department of Agriculture under its Agricultural Development Programmes



The land area of net houses is usually between 0.1 and 2.0 hectares. Under a net scheme, farmers usually receive the materials for the net houses, seeds, fertilisers, sprays, farm equipment and extension services. In terms of cost, vegetable net schemes are valued at RM4,875 per vegetable net house and RM1,038 per open net⁴.

To be entitled to a government subsidised net scheme, an application is submitted (usually by the longhouse leader) to the District Development Action Committee, which is part of the Department of Agriculture and responsible for assessing applications. Successful applicants are usually those who have established market gardens, are interested in growing for commercial purposes and have suitable land, labour and marketing experience.

According to District Office records, 133 Vegetable Schemes (most of which are vegetable net schemes) were granted to Kapit market gardeners between 2000 and 2004. The 133 schemes benefited over 1,250 people, as multiple members of the

⁴ Equivalent to US\$1,316 or NZ\$1,853 per vegetable net house and US\$280 or NZ\$394 per open net.

same longhouse were included in each grant. The Department of Agriculture's subsidies are open to all ethnic groups, however the District Office records show only Iban market gardeners applied for the subsidies (Jabatan Pertanian Daerah Kapit 2000, 2001, 2002, 2003 and 2004). This suggests the majority of market gardeners are Iban.

In addition to the subsidies described above, the Department of Agriculture operates a Farmers Entrepreneur Programme that provides farmers with start up loans. District Officers reported no Kapit market gardener had adopted the scheme and attribute this to the isolation of Kapit from major urban markets thereby increasing the risk of default on loan repayments.

With regard to production increases, the Department of Agriculture is investigating the feasibility of growing sub temperate crops such as broccoli, cabbage and cauliflower further inland at Sungai Tunoh, Kapit District. This area could receive economic spin offs from new markets created as a result of the construction of the Bakun Dam in the Belaga District of Kapit Division. New entrants to market gardening are anticipated.

Ministry of Domestic Trade and Consumer Affairs

The Ministry of Domestic Trade and Consumer Affairs (Kementerian Perdagangan Dalam Negeri Dan Hal Ehwal Pengguna) regulates the price of food items widely used during celebrations under the price control Act "Akta Kawalan Harga 1946". Prices are regulated one week prior and one week after celebrations to stabilise market prices and ensure fair-trading to consumers. The food items include vegetables such as longbean, tomatoes and certain cabbage varieties, and the celebrations include Gawai Dayak (the Iban celebration at the end of the padi harvest) and Chinese New Year.

District Offices of the department set maximum prices market sellers can sell their produce for and District Enforcement Officers monitor this. The prices are set in kilograms, which is difficult for District Enforcement Officers to regulate given the

majority to market sellers in Kapit Market cannot afford scales to weigh their produce. At the same time District Enforcement Officers acknowledge many Kapit market gardeners and market sellers are operating on subsistence livelihoods and enforcing such regulations would not be beneficial to either party in the long term. In effect, only vendors selling larger quantities of weighed produce imported from Sibu are subject to the price controls.

3.5 Conclusion

Knowledge of the institutional setting of Kapit is essential for understanding the research this paper pertains to and therefore Kapit, rural-urban migration and associated market gardening in the region were introduced in this chapter.

Kapit Town emerges as a rapidly developing urban centre, undergoing rural-urban migration by predominantly indigenous Iban. Ngidang *et al.* (2004) note the town is also experiencing a rise in market gardening in light of growing urban markets. Expanded market facilities and increased numbers of market vendors provide evidence of heightened market gardening activity and population increases in Kapit.

A review of local agencies, including the Department of Agriculture, highlights the influential role of the state in promoting and sustaining market gardening in Kapit. The state is driven by regional export-oriented agriculture, however in reality the nature of market gardening in Kapit appears small in scale.

The relationship between a rise in market gardening activities and rural-urban migration processes remain largely unexplored in Kapit. The adoption of market gardening by rural-urban migrants as a potential lever for advancement into Kapit's urban economy and in the wider context of Sarawak is not entirely clear. Exploring the underlying causes of a rise in market gardening and the relationship to rural-urban migration processes will clarify these issues. The methodology and methods used to identify such causes and relationships are outlined in the next chapter.

Chapter 4



Sawi production in a Vegetable Net House, Kapit District

Methodology and methods

4

Methodology and methods

4.1 Methodology

With regard to epistemology, a realist approach is adopted for this research. A realist theoretical framework is concerned with the identification of what causes something to happen and how extensive the phenomenon is. Realism enables a mix of qualitative and quantitative methodologies to be adopted (Kitchin and Tate 2000:21, (McKendrick 1999:45).

Applied to this research, realism is concerned with identifying the quantifiable and qualitative characteristics of market gardening as a livelihood strategy and any relationships with rural-urban migration. Quantifiable measures of outputs include income, while inputs include household data, employment skills, land availability and labour. Similarly, quantifiable aspects such as the period of urban settlement and the time taken to adopt vegetable farming explore the relationship between rural-urban migration and market gardening. Qualitative measures include people's reasons for engaging in market gardening activities, their feelings about their occupation and future prospects.

The research is not concerned with how people communicate and interact with others and society. These are characteristics of theoretical frameworks such as behaviourism, phenomenology and pragmatism. The primary focus of this research is in identifying the underlying mechanisms and structures that cause people to adopt market gardening as a livelihood and why this happens in developing urban environments. A realist approach allows these mechanisms and structures to be explored by probing why, when and how market gardening is adopted and what links this has to rural-urban migration.

4.2 Methods

Data collection

The primary method of data collection was semi-structured one-on-one interviews with market gardeners and market sellers from Kapit District. Market gardeners were people who grew their own vegetables for sale. Market sellers were people who did not grow their vegetables, but purchased them from market gardeners to on sell in Kapit Market.

The interviews comprised a series of open and closed questions with probes to cover different aspects of the topic. A base set of questions was asked in each interview to ensure consistency and reliability of data, while ad hoc questions were posed to extract more information and explore areas of interest in greater detail.

The interview questions in this research were aimed at identifying the role of market gardening in the livelihood strategies of rural-urban migrants. Copies of the interview questionnaires for market gardeners and market sellers are provided in Appendix I and II respectively.

Findings from the interviews with market gardeners and market sellers were confirmed using a combination of participant observations, secondary data and less structured interviews with key informants.

Secondary data provided generic knowledge of commercial vegetable growing and conceptualised market gardening in Kapit and Sarawak in light of wider agricultural, economic and social development. Secondary data included academic literature, official statistical information, government publications, departmental records, brochures and newspapers.

Discussions with key informants offered a wider understanding of market gardening in Kapit District and clarified points raised by market gardeners and market sellers.

An understanding of related issues, including regional agricultural development, economic planning, land tenure and road construction, was also achieved.

Key informants included officers and representative people from the following groups:

- Department of Agriculture, Kapit Division (Jabatan Peranian)
- Department of Agriculture, Kapit District (Jabatan Pertanian Daerah)
- Kapit District Council (Majlis Daerah Kapit)
- Ministry of Domestic Trade and Consumer Affairs, Kapit Division (Kementerian Perdagangan Dalam Negeri Dan Hal Ehwal Pengguna)
- Wholesalers in Sibu market and Kapit town
- Restaurants owners in Kapit Town
- Department of Road Works, Kapit Office (Jabatan Kerja Raya)

The Sample

For the primary data collection, a total of 40 people from the case study district of Kapit were interviewed. The 40 people were selected from the set who had established themselves as market gardeners or market sellers in Kapit District. Respondents residing within a 50km radius of Kapit Town were targeted. Those living less than 3km from the town centre were considered residents of Kapit Town, while those living 3km or more from the town centre were considered to be residents of Kapit Town periphery.

Of the 40 people interviewed, 30 were market gardeners and 10 were market sellers. The ratio of 3:1 market gardeners to market sellers is representative of people selling vegetables in Kapit Market, where the majority of fresh produce was sold.

In some households, market gardening was a family activity. In this instance, the person in the family that conducted the majority of the market gardening activities was interviewed. If a husband and wife shared the market gardening activities equally, only one of them was interviewed, however the other was often interested in listening to the discussion and contributed from time to time. In one case, a

longhouse leader's family carried out the majority of market gardening work while he oversaw the activities. In this particular instance, because of status and formalities, it was appropriate to interview the longhouse leader on behalf of his family.

Participants were recruited from a number of sources. These included recruitment from Kapit Market where the majority of fresh produce was sold, recruitment from longhouses known to be in market gardening areas and recruitment via the Department of Agriculture in Kapit (Jabatan Pertanian Daerah). Given Kapit Town is a small community, word of mouth was also used to engage potential participants. As the days and hours of market gardeners and market sellers varied from person to person, recruitment at Kapit Market occurred Monday to Sunday, morning and afternoon.

Procedure

The research project was formulated in New Zealand during 2004 with a preliminary visit to Kuching, Sarawak during September 2004. The visit to Kuching enabled attendance at a conference on poverty where the preliminary work of Ngidang *et al.* (2004) was presented⁵. It also enabled other local literature to be researched and the content of this project to be further developed. The interviews with market gardeners, market sellers and key informants were carried out in Kapit, Sarawak during a second visit in November and December 2004. Funding for both visits was provided through the Chair of Malay Studies, Victoria University of Wellington, New Zealand.

The interviews with market gardeners, market sellers and key informants were conducted in Iban, Malay and English with the assistance of an interpreter. Information sheets outlining the research were translated into Iban and Malay to assist with interview procedures. Some key informants understood and spoke English fluently and in these instances the services of the interpreter were not required.

⁵ The conference was the Sarawak Dayak Graduates Association seminar on "Challenges and responses to poverty eradication among Bumiputera minorities in Sarawak", Kuching, Sarawak, September 2004.

The interviews were conducted in various places depending on the preference of the participant. These included Kapit Market, quiet seating areas near Kapit Market or at their residence. Twenty-three people were interviewed in or around Kapit Market, while 17 people were interviewed at their place of residence (house or longhouse). Discussions with key informants occurred at their place of work (e.g. at their office or restaurant), while discussions with Sibu wholesalers occurred at Sibu market.

It was important to conduct the interviews in environments where the participant felt comfortable speaking about their livelihood and expressing their opinions. Interviews were recorded in writing and responses confirmed using direct observations at the market place as well as on tours of longhouses and market gardens.

People were generally open and willing to contribute to the research project. Many participants appeared comfortable answering the interview questions to the point of volunteering additional information.

Ethics

Sharing information about livelihoods and personal situations can provoke sensitive issues within a participant. Ensuring each interview was a positive experience for participants was important to the research design and care was taken to provide a supportive, familiar environment where participants could speak freely about their experiences.

Ethics approval to conduct the research was obtained from Victoria University Ethics Committee. The ethical precautions adopted in this research included informed consent from participants to take part in the research, assurance of confidentiality and privacy of participants, consent from the participants to present the data collected, and the option for participants to withdraw from the research project without reason.

Data analysis

The data collected in this research is analysed and presented using three main headings. The three headings and their relevance to the research are:

- Social characteristics of respondents.

This base data is presented in chapter 5 and provides background data on respondents.

- Role of market gardening in household livelihood strategies.

This data is presented in chapter 6 and addresses the functions of market gardening in the livelihood strategies of the 40 respondents.

- Market gardening and rural-urban migration.

This data is presented in chapter 7 and addresses the linkages between market gardening and rural-urban migration processes.

The research design has both qualitative and quantitative aspects to it and therefore data analysis couples empirical findings with patterns of social behaviour to interpret results and draw general conclusions.

Limitations

Cross-cultural research poses many challenges aside from the obvious ones of language barriers and intimate knowledge of customs, beliefs and traditions. In addition to the obvious ones, it is recognised my presence as a foreigner to Sarawak and Malaysia may have influenced the level of detail and the type of responses given by interviewees, for example respondents underplaying household economic situations or officials exaggerating farmer assistance programmes to impress a foreigner. Likewise, my own cultural conditioning influenced my understanding and interpretation of their responses.

It is important for researchers to recognise their conditioning towards other cultures and the influence this has on research design, analysis and presentation of findings.

Undoubtedly my Chinese ethnicity, upbringing in a market gardening family in New Zealand, knowledge of development issues and previous work experience in developing countries have created biases and generalisations about different groups within Sarawak. This cultural conditioning has influenced how I understand and interpret information on market gardening and livelihood strategies of people in Kapit.

Primary data collection for this research occurred during November and December 2004. These months are the start of the harvesting season for fruit and it is acknowledged this may have influenced some respondents' estimates of income, labour and production. Invariably many vegetable market gardeners and market sellers engage in fruit growing and selling, however given most of the respondents were primarily vegetable growers, respondents were encouraged to provide responses that were indicative of year round activities. Likewise, many market gardeners were less engaged in vegetable growing and selling during the padi cropping (June to September) and padi harvesting (January to March) periods.

Failing memories, particularly among the older respondents, and the absence of written records meant information on income, production and sales had to be approximated. For example, a respondent would give an approximate income figure of RM800 per month rather than an exact amount. Therefore figures on income, production and sales should be read as a general guide rather than exact figures.

This research provides information on the market gardening sector in Kapit, Sarawak. Factors such as locality, population demographics and socio-economic conditions influence the results and therefore some aspects of market gardening are unique to Kapit. In light of this, no attempt should be made to strictly apply the findings in Kapit to the wider market gardening sector in Sarawak or Asia, however the results can be used as a general indicator of the role of market gardening in the livelihood strategies of people in developing urban centres. The results can provide base information for exploring the relationships between market gardening and rural-urban migration in other developing regions.

4.3 Summary

The methodology and methods employed in this research explored the role of market gardening in the livelihood strategies of rural-urban migrants. A realist methodology was adopted, which enabled both quantitative and qualitative characteristics of market gardening as a livelihood strategy and its relationship with rural-urban migration to be examined. The primary method of data collection was semi-structured interviews with 40 market gardeners and market sellers from Kapit, Sarawak during 2004. Findings were confirmed using participant observations, secondary data and discussions with key informants.

Cross-cultural research, seasonality and approximated data create certain limitations on the interpretation of research findings. However the limitations do not disguise the benefits of the methods employed, which generate a general indication of the role of market gardening in the livelihood strategies of rural-urban migrants, and provide a useful base for further research.

Chapter 5



Kapit Market (Market Teresang)

Social characteristics of respondents

5

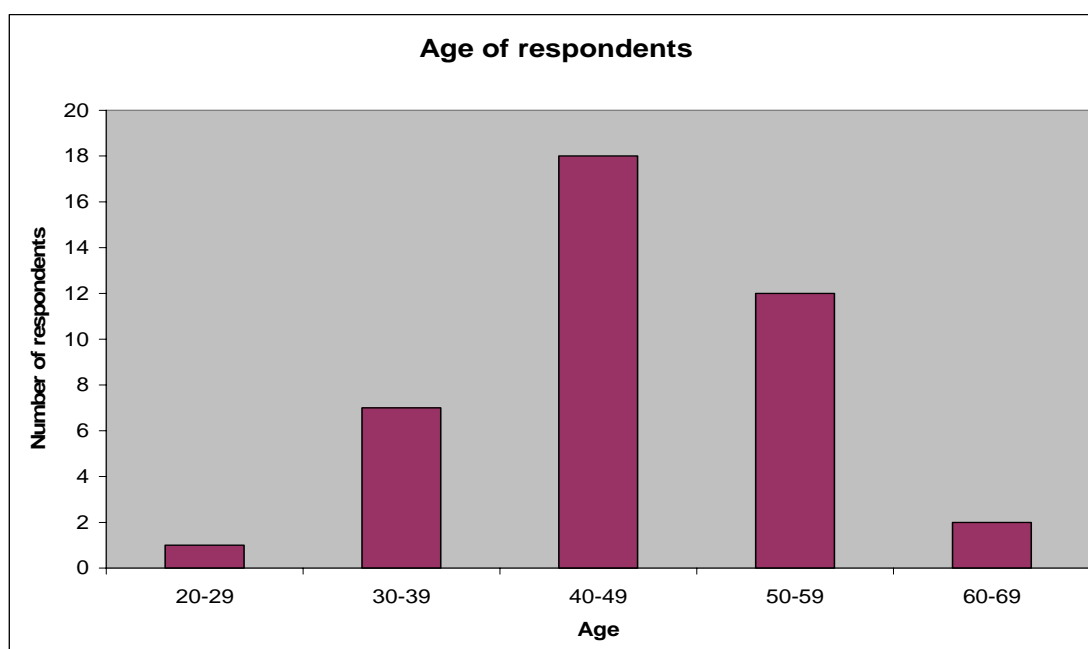
Social characteristics of respondents

Of the 40 respondents interviewed for this research, 30 were market gardeners who grew and sold their produce in Kapit District. The remaining 10 respondents were market sellers who did not grow their own vegetables, but purchased them from market gardeners to on sell in Kapit Market. Characteristics of the 40 respondents are presented under the headings of age, sex and ethnicity, household data, education and previous employment.

5.1 Age

The average age of the 40 respondents was 46 years, with a mode of 46.5 years. The youngest respondent was 20 years and the oldest 64 years. In general, most market gardeners and market sellers in Kapit were *middle aged*⁶. See Figure 5.1.

Figure 5.1: Age of respondents



⁶ The life expectancy at birth in Malaysia in 2002 was 73 years (UNDP 2004).

5.2 Sex and ethnicity

Of the 40 respondents, 33 were females and 7 were males. All respondents were Iban except for 1 Chinese man and 2 Kenyah women. All 30 market gardeners were Iban. See Figure 5.2.

Figure 5.2: Ethnicity and sex of respondents

ETHNICITY	SEX		TOTAL
	Male	Female	
Iban	6	31	37
Chinese	1	0	1
Kenyah	0	2	2
TOTAL	7	33	40

The presence of Malay, Melanau, Bidayuh and other indigenous groups were limited in the Kapit market gardening sector and their absence from the research sample reflects this. Throughout the period of primary data collection in Kapit, observations of activity in Kapit Market were made every day of the week. One observation was to count the number of market sellers present on any given day. As the market was often crowded and with people moving constantly about, only rough headcounts were possible. However, based on this observation, Figure 5.3 shows the typical breakdown of market sellers in Kapit Market by sex and ethnicity.

Figure 5.3: Typical breakdown of market sellers in Kapit Market by sex and ethnicity

Ethnicity of market seller	Male	Female	Total
Iban	5	~162	~167
Chinese	10	12	22
Kenyah	1	5	6
Malay	2	3	5
Total	18	182	~200

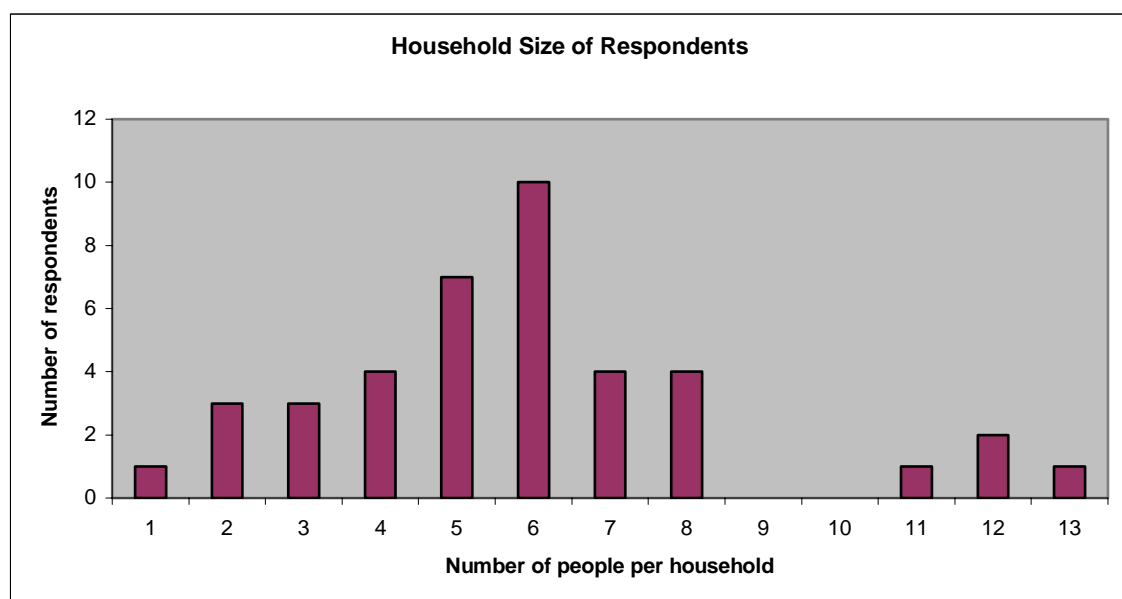
5.3 Household data

Of the 40 respondents, 23 lived in longhouses on the periphery of Kapit Town, 12 lived in stand alone housing that they owned around the ‘suburban’ areas or on the periphery of Kapit Town, and 5 lived in rented accommodation above shops or in rent-free government housing in Kapit Town.

The respondents living in longhouses had access to land and were generally market gardeners. Those living in stand alone housing were a mix of market gardeners and market sellers depending if they had land around their property. The respondents in rented accommodation and government housing were typically market sellers as they had no or limited access to land.

Respondents lived in households (or bilek for longhouse dwellers) with an average size of 5.9 people. One person lived alone and represented the smallest household. The largest household had 13 occupants comprising the respondent and her husband, mother, aunt, 4 sons, mother in law, 2 daughter-in-laws and 2 grandchildren. While this household was on the larger end of the scale, it was common for bilek to include extended family members.

Figure 5.4: Distribution of household size of respondents



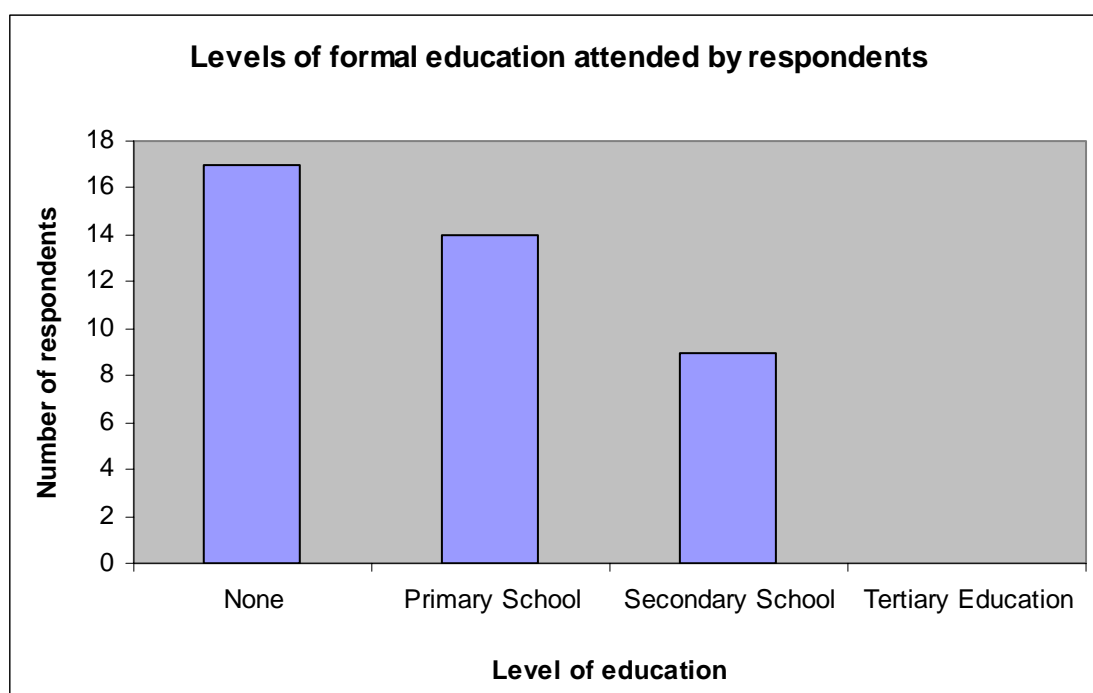
In terms of the gender, households had between 0 and 4 adult males, with an average of 1.5; between 0 and 3 adult females, with an average of 2.0; and between 0 and 7 children (under 21 years), with an average of 2.4.

It was common for respondents to have children who were not living at home because they were undertaking studies in other urban centres. It was also common for respondents to no longer have children to support because they had grown up and established their own families and employment in other urban areas. Often these children sent remittances to their parents.

5.4 Education

Many market gardeners and market sellers had no or little formal education. Of the 40 respondents, 17 received no formal education, 14 attended primary school and 9 attended secondary school.

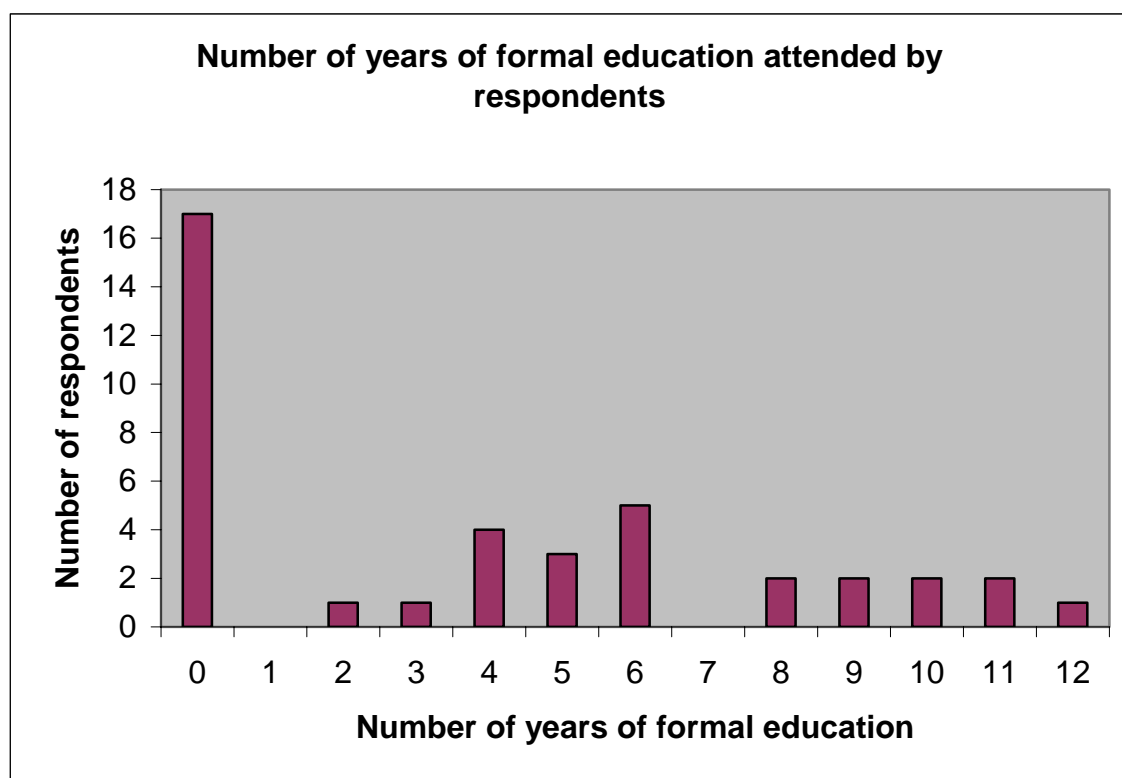
Figure 5.5: Levels of formal education attended by respondents



In Sarawak there are 6 years of primary schooling (Primary 1 to Primary 6) and 6 years of secondary schooling (Secondary 1 to Secondary 6). Although many respondents commenced formal education, often primary and secondary schooling were not completed. Only 5 out of 14 respondents who attended Primary School completed Primary 6 or the equivalent. Only 1 out of 9 respondents who attended Secondary School completed Secondary 6 or the equivalent. No respondents attended tertiary institutions, however some respondents with previous employment received occupational training.

Figure 5.6 provides an additional representation of education among respondents by showing the number of years of formal education attended by them.

Figure 5.6: Number of years of formal education attended by market gardeners

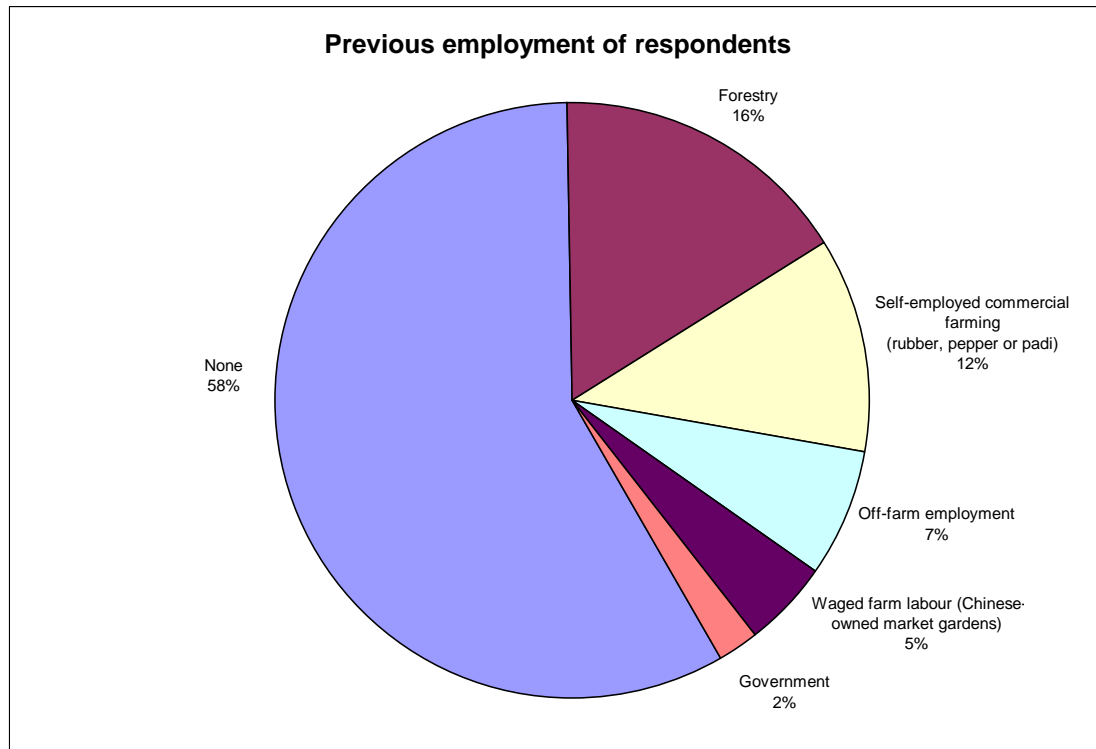


The low levels of educational attainment are attributed to the limited availability of schools when respondents were of school age and align with other rural areas of Sarawak. The lack of formal education is important because it excludes this demographic from alternative work, especially off-farm employment.

5.5 Previous employment

The 40 respondents were asked to describe their previous occupations.

Figure 5.7: Previous employment of respondents



The most striking finding was over half of the 40 respondents (58%) had never undertaken paid employment or carried out income generating activities prior to becoming market gardeners or market sellers. Subsistence livelihoods in longhouses and remoteness from cash economies were the main reasons for this. Despite the absence of previous paid employment, the self-sufficiency of longhouse communities meant most respondents were skilled in hill padi farming and animal rearing.

Before becoming market gardeners or market sellers, 7 respondents (16%) previously worked in the forestry sector as labours, office clerks and camp managers. Their reasons for leaving the forestry sector were the dangerous nature of the logging work, injury, and the decline in salaries and employment opportunities after the sector slowed in the 1990s.

Five respondents (12%) previously undertook commercial rubber, pepper and padi farming before engaging in market gardening activities. Access to ready markets and available land were their reasons for engaging in these commercial crops, but the fall of pepper and rubber prices led to a switch in market gardening.

Two of the 40 respondents (5%) undertook waged labour on Chinese-owned market gardens in Kapit in the 1970s. Both respondents worked for less than 1 year under this arrangement before deciding their working conditions and income could be improved if they established their own gardens. The remaining 4 respondents held jobs as a security guard, clothes retailer, home economics teacher and a government worker in the agricultural sector.

5.6 Conclusion

This research involved interviewing 30 market gardeners and 10 market sellers about their involvement in the market gardening sector. Market gardeners and market sellers were typically middle-aged Iban females belonging to large households and with strong attachments to longhouse living arrangements. Respondents were formally uneducated or with limited education beyond primary school, and low skilled beyond subsistence farming in traditional longhouse settings.

The findings suggest market gardening is adopted as a natural progression from subsistence livelihoods to urban economies. Market gardening provides a livelihood for a demographic lacking suitable employment skills and education to attain alternative employment in an urban environment.

Chapter 6



Iban longhouse, Kapit District

Role of market gardening in household livelihood strategies

6 *Role of market gardening in household livelihood strategies*

6.1 Introduction

Questioning respondents on their livelihood history revealed many had migrated from rural areas of Kapit District towards Kapit Town. They had made the transition from subsistence farming to market gardening once they resettled in or around the town. To understand how the transition to market gardening was made, it was important to establish the role of market gardening in livelihood strategies, followed by an examination of the relationship between market gardening and rural-urban migration.

To establish the role of market gardening in livelihood strategies, Chapter 6 outlines characteristics of market gardening common to the 30 market gardeners and 10 market sellers. These characteristics are:

- 6.2 Reasons for market gardening and market selling
- 6.3 How respondents learned to market garden
- 6.4 Land ownership, area and usage
- 6.5 Crops grown and sold in Kapit Market
- 6.6 Vegetable growing
- 6.7 Vegetable net schemes and government subsidies
- 6.8 Vegetable marketing
- 6.9 Division of labour
- 6.10 Income and expenditure
- 6.11 Future outlook

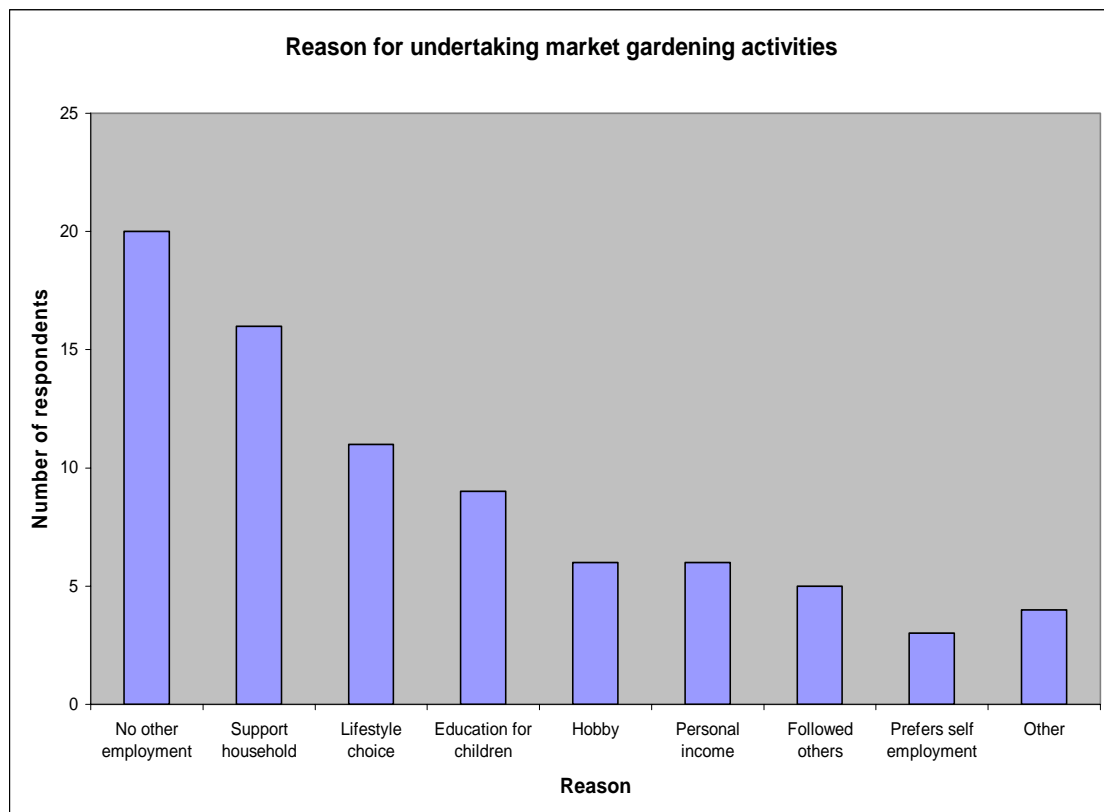
Exploration into the relationship between rural-urban migration and market gardening follows in Chapter 7.

6.2 Reasons for market gardening and market selling

For market gardeners, activities associated with market gardening include the growing, harvesting and selling of vegetables. For market sellers, activities include the purchasing of vegetables from suppliers (market gardeners and middlemen) and on selling the produce usually in a market place.

Market gardeners and market sellers from Kapit had a number of reasons for undertaking market gardening activities and their most common motivations are presented in Figure 6.1.

Figure 6.1: Reasons for undertaking market gardening activities



The most common reason respondents undertook market gardening activities was because based on their skill set, there were no other suitable employment options available to them. This confirms the role of market gardening as a first point of entry into urban employment.

The lack of alternative employment options resulted from respondents having limited previous work experience, few transferable skills and no occupational training. Respondents lacked appropriate levels of schooling to undertake essential tasks for certain jobs (e.g. work requiring literacy). Kapit was also experiencing a decline in demand for low skilled employment in the forestry sector and other farming divisions (e.g. pepper and rubber farming) where respondents were formally employed.

A high number of respondents undertook market gardening activities because money was required to support their large household and daily living expenses (e.g. food, electricity and rent). Often there were other members of the family who were unable to work (e.g. the elderly, children and sick members of the family) and support for their basic needs was required. Many market gardeners and market sellers stressed the importance of saving money for their children's education. In these instances, the money generated from market gardening activities was not intended for personal use.

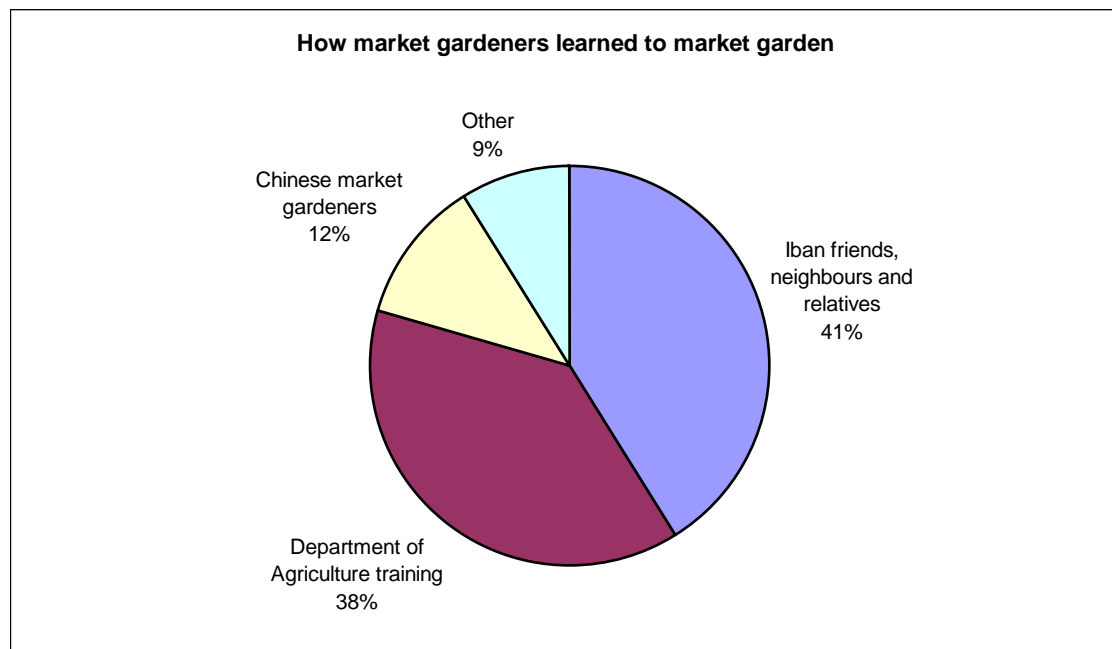
For some growers, market gardening was not perceived as an arduous form of employment. Eleven respondents described vegetable growing and selling as a comfortable lifestyle that suited the present situation. Many were aging and the flexible hours suited them, particularly when they became ill. Several respondents said they were too old to look for other work and market gardening was therefore 'good use of free time'. Six respondents went so far to describe vegetable growing as a hobby. In these cases, money generated from market gardening was often for personal expenditure.

Interestingly, 6 respondents saw others engaging in market gardening activities and wanted to join the bandwagon. If there were profits to be made, they wanted a piece of it. Other reasons for respondents undertaking market gardening was their preference for self-employment, good utilisation of otherwise unused land, better road access to markets and perceived profits. For those with no land, vegetable selling in Kapit market was perceived as an easy source of income.

6.3 How respondents learned to market garden

Thirty of the 40 respondents were market gardeners. Figure 6.2 illustrates the principle mechanism through which the market gardeners learned to grow vegetables.

Figure 6.2: How market gardeners learned to market garden



All of the market gardeners interviewed were Iban and the principle mechanisms for learning to market garden were from information flows from other Iban (41%) or training from the Department of Agriculture (38%). The learning gained from “other Iban” tended to be from Iban friends, neighbours and relatives who were already engaged in vegetable growing activities.

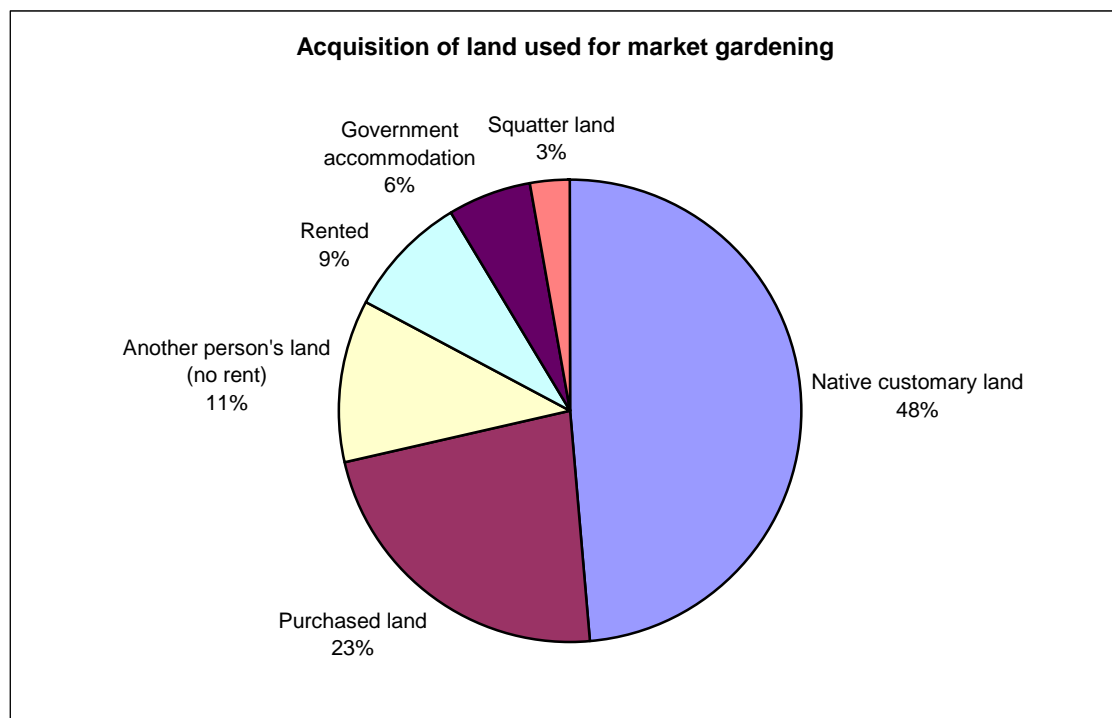
Of the other learning channels, 12% of respondents worked as labourers on Chinese market gardens or were taught by Chinese friends who were growers. The remaining 9% of respondents were former employees of the Department of Agriculture, or spouses to current employees and informally learned to market garden through this channel.

6.4 Land ownership, area and usage

Land ownership

Of the 40 respondents, 30 had access to land where they could grow vegetables and these people became market gardeners. Land was acquired by various means and these are outlined in Figure 6.3. Note that some growers had two plots of land acquired by different means (e.g. Native Customary Land and purchased land) and are therefore counted twice.

Figure 6.3: Acquisition of land used for market gardening



In the majority of cases land was acquired through Native Customary Rights or private purchase, granting market gardeners the property rights and freedom to use the land at their discretion. In the case of Native Customary Land, market gardeners often inherited the land at birth or shortly after from grandparents and parents who had acquired it under Native Customary Rights.

Eight of the 30 market gardeners owned their land by purchasing it from local Iban, although in many cases the land ownership titles were not formally registered with the Department of Land and Survey because the land was non-surveyed Native Customary Land.

The remaining market gardeners did not own their land, but obtained access to another person's land by agreement, renting or squatting. Land used for government subsidised Vegetable Net Schemes often belonged to a member of a longhouse, but because the required land area was small and beneficial to the longhouse as a whole, it was generally made available to others for free. Two market gardeners lived in government accommodation and planted vegetables on the surrounding land, while 3 growers shared rental on a piece of land to erect their own net scheme. One market gardener grew vegetables on unused land that did not belong to her, but the land was part of a riverbed and extremely susceptible to flooding.

Land area and usage

It was difficult to assess the total area of land owned by market gardeners as many did not know the size of the land themselves, partially because it had not been surveyed. This was particularly the case for Native Customary Land that was still in natural forests and had not been cleared for any particular purpose. Some respondents claimed they had “hundreds of acres of forestry land” but couldn't specify the exact amount.

Respondents were therefore asked how much land they used for market gardening as well as other crops such as fruit and padi. Tours of gardens also gave an indication of how land was used.

Of the 30 market gardeners who grew vegetables for sale, 21 (70%) used 1 acre or less. This highlights the relative smallness of market gardening activities and the constraint of Kapit District's hilly terrain. The average land area used for market

gardening was 1¼ acres, while the smallest gardens were 0.1 acres and the largest 8 acres. The smallest gardens were typically those grown around adjoining sections of town houses. Vegetables were usually grown in one confined area.

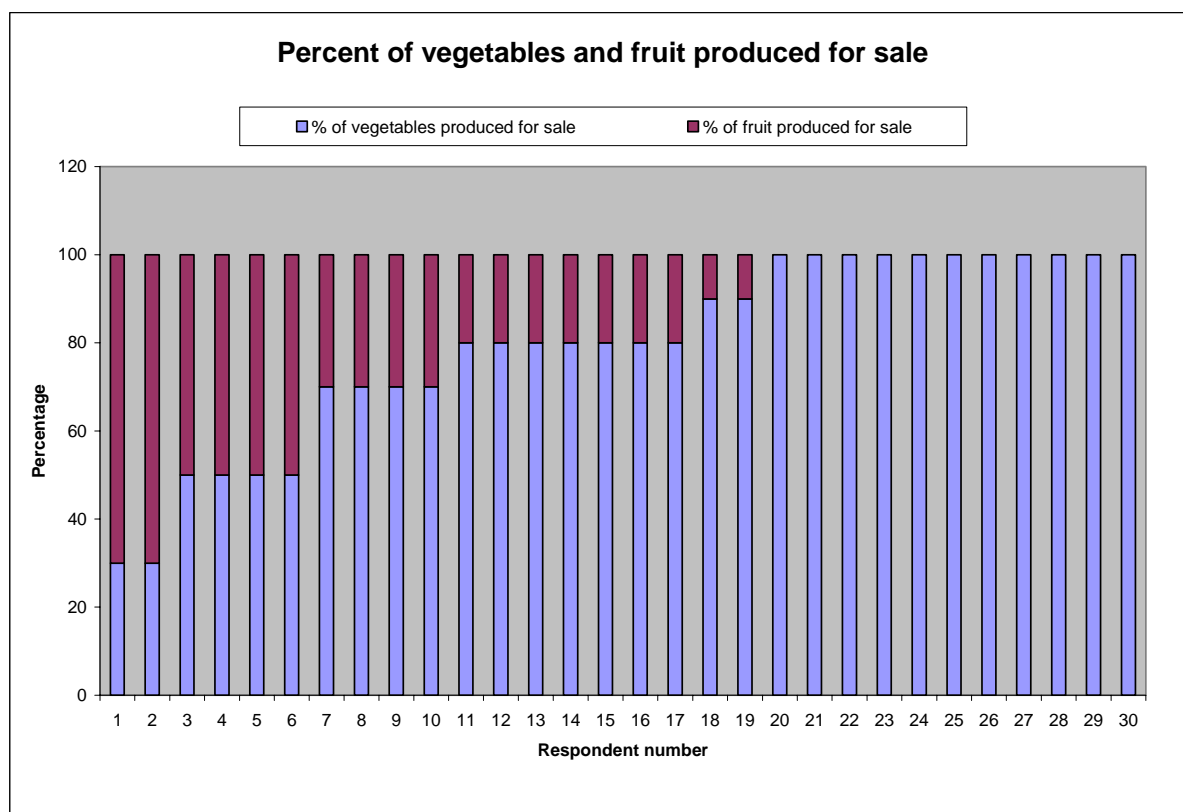
Twelve market gardeners grew vegetables in net houses received under the Department of Agriculture's Vegetable Net Schemes and associated subsidies. The land area of the net houses was between 0.1 and 2.0 hectares, but in the case of longhouses was usually shared by a number of bilek. Growers often grew small plots of other vegetables on the land immediately surrounding the net houses.

Vegetables were the primary commercial crop for most market gardeners, although it was common for growers to produce small amounts of fruit to add variety to their sales and improve marketing. It was common for market gardeners to have fruit trees secondary cropped amongst vegetables or surrounding vegetable plots, although 10 growers also had between 1 and 10 acres designated specifically for fruit. Typically commercial fruit production required greater areas of land than vegetables. In many cases, excess fruit from trees planted primarily for household consumption was on sold in Kapit Market with the commercially grown vegetables.

Two respondents were primarily fruit growers who supplemented their fruit sales with vegetables. One of the growers was involved in a 50-hectare government subsidised commercial fruit scheme, but grew vegetables as an income source while he waited for the recently planted fruit trees to mature. A small number of less commercial vegetable growers had also planted fruit such as banana, pineapple and papaya, with the intention of moving into more fruit production as the plants matured.

Figure 6.4 illustrates the percentage of vegetables grown in comparison to the percentage of fruit grown by the 30 market gardeners involved in this research.

Figure 6.4: Percent of vegetables and fruit produced for sale by market gardeners



The main reasons growers engaged in vegetable growing over fruit production were vegetables were faster growing than fruit trees and therefore a quick return could be made. Most fruit were seasonal in nature (peaking between November and January) and could not generate a year-round source of income for the household. Finally growers did not have enough land or cleared land to grow fruit.

Hill padi was grown by 17 out of 30 market gardeners (57%). In all cases the padi was not grown for commercial sale, but for household consumption. Padi was grown on areas of land ranging from 0.5 to 5 acres. Some growers acknowledged if they turned the land into commercial crops such as fruit and vegetables they would generate enough money to purchase padi for household consumption and still make a profit. However, padi farming was a valued part of Iban culture and the mainstay of the Iban diet. Many persisted with the practice, reasoning that in the event the household could not generate enough money to buy food, at least the family had padi to survive on.

A few market gardeners also planted pepper and rubber, but on small areas of land. These crops were always secondary to vegetables and fruit production. Remaining land was typically native forests and scrub.

State of the land

The state of the land used for market gardening varied from grower to grower. Some planted on the small flat areas immediately surrounding longhouses, while others utilised the surrounding hills. Even if it were available, the land was often too steep and the area too small to warrant heavy machinery (e.g. tractors) effective. Some of the net schemes and other low-lying areas of vegetable land had poor drainage and remained boggy a long time after the rains passed. Some market gardeners who had been farming for over 10 years commented their soil was overused and no longer rich in nutrients from the lack of fertiliser replacement.

6.5 Crops grown and sold in Kapit Market

The common crops grown for sale by the respondents are listed in Figure 6.5. The Iban name, English equivalent (if applicable) and the botanical name are provided.

Figure 6.5: Crops grown and sold by Kapit market gardeners

IBAN NAME	ENGLISH NAME	BOTANICAL NAME
Cabi	Chilli pepper	<i>Capsicum frutescens</i>
Cangkuk manis		<i>Sauropus androgynus</i>
Daun entekai	Pumpkin leaf	<i>Cucurbita maxima</i>
Daun rumpu	Cucumber leaf	<i>Cucumis sativus</i>
Ensabi	Mustard Green	<i>Brassica juncea cv ensabi</i>
Entekai	Pumpkin	<i>Cucurbita maxima</i>
Jebong (or Bayam)	Amaranth (or Bayam or Spinich)	<i>Celosia sp. and Amaranthus gangeticus</i>
Kacang buncis	French bean	<i>Phaseolus vulgaris</i>
Kai Lan		<i>Brassica alboglabra</i>
Kang Kong		<i>Ipomoea reptans</i>
Ketola (or Kecula or Empusut)	Loofah	<i>Luffa cylindrica, Luffa acutangula</i>
Kuca	Chives	<i>Allium sp.</i>
Labu	Bottle gourd	<i>Lagenaria siceraria</i>
Lia	Ginger	<i>Zingiber officinale</i>
Peria	Bitter gourd	<i>Momordica charantia</i>
Rampu (or Entimun)	Iban Cucumber	<i>Dayak timum</i>
Rampu Penjai	Cucumber	<i>Cucumis sativus</i>
Retak	Long bean	<i>Vigna sinensis var. sesquipedalis</i>
Retak lender	Lady's finger	<i>Hibiscus esculentus</i>
Retak serugan (or Kacang serugan)	Winged bean	<i>Psophocarpus tetragonolobus</i>
Sawi kerinting		<i>Brassica pekinensis</i>
Sawi salad		<i>Lactuca sativa</i>
Sawi Chai Sim		<i>Brassica parachinensis</i>
Sayuk	Baby corn	<i>Zea mays</i>
Subung (or Keladi in Malay)	Yam	<i>Colocasia spp</i>
Terong Cina	Eggplant (Chinese)	<i>Solanum melongena</i>
Terong kangan (or Bulu)	Eggplant (Iban)	<i>Solanum aculeatissimum</i>
Ubi kayu	Tapioca or Cassava	<i>Manihot esculenta</i>

The most popular vegetables grown and sold by Kapit market gardeners were longbean, cucumber, sawi, loofah, cangkuk manis, chilli pepper, eggplant and

pumpkin. It was also common for people to sell leaves of cucumber and pumpkin plants, as well as jungle produce (e.g. paku pakis and kemiding) collected from surrounding forests.

The main reasons for growing the above vegetables were they were easy to grow and maintain. Vegetables in high demand generated good prices and profits. The Department of Agriculture advised market gardeners to plant experimental sawi varieties in the Vegetable Net Houses, while other crops were a good use of otherwise idle land. The tropical climate also provided good growing conditions and vegetables could be grown year round with quick returns.

As already mentioned, fruit supplemented vegetable sales during their ripening season. The common fruits grown and sold in Kapit were pisang (banana), nanas (pineapple), rambutan, durian, rungan (papaya), isau, dabai and langsung.

Many of the vegetables and fruit grown in Kapit were also grown 140km downstream from Kapit in the neighbouring Sibu Division. Sub-temperate vegetables such as cabbage, mushrooms, carrots and tomatoes were also grown in Sibu and imported from China and Malaysia's other Borneo state, Sabah. Some Kapit sellers purchased these vegetables from Sibu middlemen to on sell in Kapit Market.

6.6 Vegetable growing

For market gardeners, vegetable growing involved the preparation of the land by ploughing and fertilising the soil. Vegetable beds and frames for climbing plants were prepared, followed by planting, ongoing weeding, cultivating, and spraying with chemicals (pesticides, insecticides and fungicides). Crops were then harvested and taken, usually to Kapit Market, to sell.

Due to the tropical climate in Kapit, market gardeners staggered planting to ensure vegetable production was a year round activity. Depending on the vegetable type, crops usually took between 1 month (e.g. sawi) and 3 months (e.g. longbean and cucumber) to mature. This is a relatively short term compared to fruit, which could take from 6 months (e.g. bananas) to 20+ years (e.g. durian).

Most market gardening activities were done by hand, or using hand-held tools such as hoes, trowels and spraying knapsacks. Tours of market gardens revealed some growers could not afford a full suite of gardening tools and had no choice but to do many gardening activities by hand. Vegetables were collected in hand woven baskets and no heavy machinery was used.

Market gardeners usually tended their crops early in the morning (e.g. 6am – 10am) and again in the late afternoon (e.g. 3pm – 6pm) when the temperatures were cooler. Crops were tended 6-7 days per week. The hours in the middle of the day were used for selling vegetables in Kapit Market, tending to other income generating activities, doing indoor chores, going to town and relaxing.

The cost of farm inputs varied from one market gardener to the next. Farm inputs included fertilisers, seeds, gardening equipment and sprays. Some market gardeners struggled to afford many essential farm inputs such as fertilisers and pesticides, while others received these in the form of subsidies from the Department of Agriculture. Expenditure on farm inputs ranged from RM20 to RM200 per month⁷.

⁷ Equivalent to US\$5.40 to US\$54.00 per month or NZ\$7.60 to NZ\$76.00 per month.

6.7 Vegetable Net Schemes and government subsidies

Of the 30 market growers, 13 received government subsidies at the time of interviewing and 9 received subsidies in the past, but these had now ceased. Subsidies came in the form of Vegetable Net Schemes and farm inputs such as subsidised seeds, fertilisers and sprays. Many growers had also received farm visits and one-off training seminars on vegetable growing from the Department of Agriculture. While not everyone received subsidies, a notable portion of market gardeners benefited from them and this influenced their decision to continue market gardening as an occupation. This illustrates the pivotal role of the state in sustaining market gardening.

Twelve market growers grew their vegetables in net houses under the government subsidised Vegetable Net Schemes. Market gardeners with access to a net house divided it into 60 to 100 raised vegetable beds separated by drainage channels. Often the net scheme was shared by a number of bilek from the same longhouse and the vegetable beds allocated to members accordingly. Under the tutelage of the Department of Agriculture, only sawi and leafy salad vegetables were grown in the net houses.

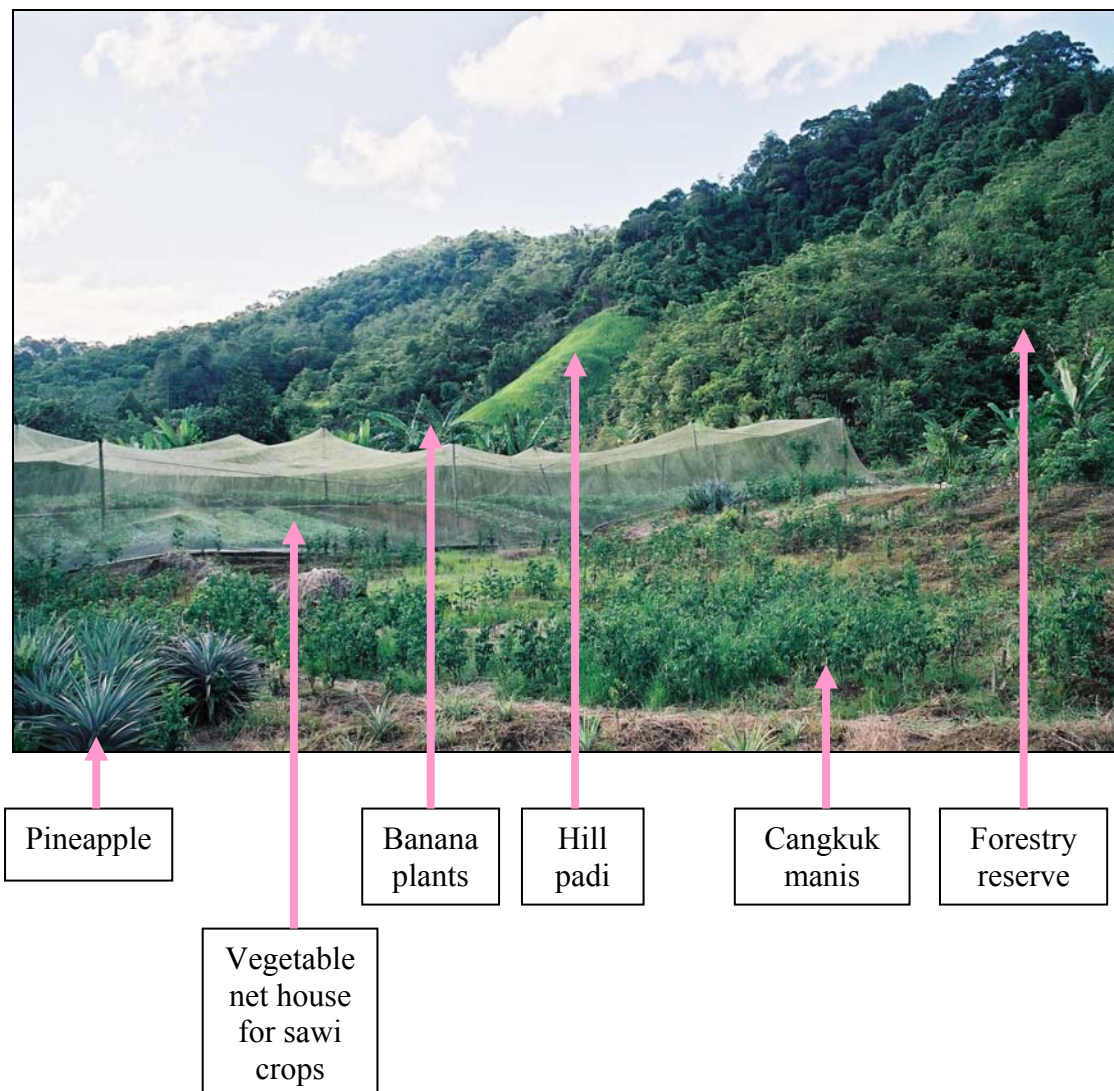
Although net houses were shared by several bilek belonging to the same longhouse, each bilek was generally only concerned with their allocated vegetable beds. Each bilek weeded, sprayed and harvested its own vegetable beds and very rarely assisted others. This suggests a level of independence and competition existed within longhouses, and the costs of cooperation necessary to achieve economies of scale in production deemed too high.

Market gardeners were involved with vegetable net schemes from 1 to 7 years and in many instances crop growing was still at an experimental stage. The Department of Agriculture promoted the growth of sawi varieties in the net houses, which took approximately 1 month to mature. Agricultural extension staff monitored progress through farm visits and market gardeners reported on quantities produced and prices received at the end of each growing cycle. The Vegetable Net Schemes aligned with

the Department of Agriculture's broad strategy of initiating and implementing commercially viable projects that promoted regional self-sufficiency in food production as well as income generation.

Often growers involved with the net schemes grew small plots of vegetables, fruit and non-commercial padi on the land immediately surrounding the net houses to supplement sawi production inside the nets (see Figure 6.6). Diversification in land use was attributed to the importance held by households for maintaining income and food sources should one crop fail. This aligns with the general observation that poor households adopt a portfolio of livelihoods as a basic survival strategy.

Figure 6.6: Diversification in land use around a net house



6.8 Vegetable marketing

Vegetable marketing by market gardeners

Market gardeners estimated between 70% and 100% of all vegetables produced were sold for income generation while the remaining produce was consumed by the household. Families had a tendency to eat what could not be sold, for example second grade vegetables and produce not sold at the end of day.

Figure 6.7: Places where market gardeners sold their vegetables



Figure 6.7 indicates the different places Kapit market gardeners sold their produce. All 30 market gardeners sold their vegetables in Kapit Market. Vegetables were taken to the market between 1 and 7 days per week, with an average of 3 days per week. Vegetables were usually harvested in the evening, bundled and then taken to Kapit

Market early the following morning. In addition to Kapit Market, 9 of the 30 market gardeners sold some produce to neighbouring forestry camps, schools, households or road construction teams. Middlemen were used in three of these cases and vegetables were sold at wholesale rates. Sales outside of Kapit Market were generally infrequent, informal arrangements, and with the exception of one case the quantities sold were 1/3 or less of the total vegetables produced.

Produce was separated into bundles worth RM1 and RM2 and sold that way (see Figure 6.8). It was difficult to accurately determine the quantities of produce sold by Kapit market gardeners as few of them weighed or counted their bundles of produce and the sizes of bundles varied from grower to grower. Some growers estimated they took 20-60kg of produce to market per trip, which could be easily carried by 1 or 2 people. This illustrates on a commercial scale the amount of produce sold was small and indicative of a petty trade.

Figure 6.8: Vegetable bundles on display in Kapit Market



Transport to the point of sale

In all cases the market gardeners were responsible for delivering their produce to the point of sale. The method of transporting produce to the point of sale is illustrated in Figure 6.9.

Figure 6.9: Method of transporting produce to the point of sale

	Road transport			River transport	Total
	Household vehicle	Private van operator	Mix of household vehicle and private van operator	Household longboat	
Number of market gardeners	10	11	2	7	30
Percent of market gardeners (%)	33.3	36.7	6.7	23.3	100

Road transportation was used by 23 out of 30 market gardeners (76.7%) to deliver produce to the point of sale. The remaining 7 market gardeners (23.3%) used the river system in the absence of roads. Road transport was by means of the household vehicle and private van operators. River transport was by means of motorised longboats belonging to the bilek. Nearly all female market gardeners could not operate road vehicles or longboats and relied on their spouse or another family member to take them to Kapit Market if private van operators were not an option.

Figures 6.10 and 6.11 illustrate the daily traffic congestion around Kapit Market. Longboats converge along the Batang Rajang adjacent to Kapit Market (Figure 6.10), while road vehicles of sellers and buyers congregate on neighbouring streets (Figure 6.11).

Figure 6.10: Hauling produce from longboats to Kapit Market

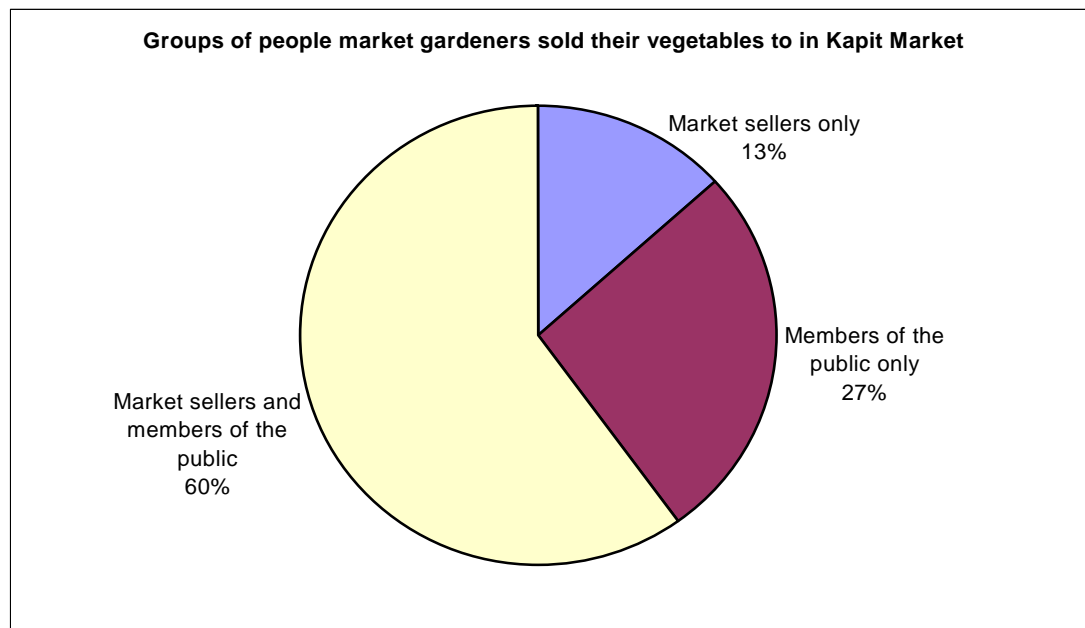


Figure 6.11: Congestion as market gardeners and buyers flock to Kapit Market for produce sales.



The majority of vegetables produced by Kapit market gardeners were sold in Kapit Market. Within Kapit Market the produce was sold to different groups of people and these groups are illustrated in Figure 6.12.

Figure 6.12: The groups of people market gardeners sold their vegetables to in Kapit Market.



Market sellers and members of the public were the two groups market gardeners sold their produce to in Kapit Market. Of the 30 market gardeners, 22 (73%) sold all or some of their produce to market sellers who on sold it to members of the public. Eighteen market gardeners sold 30-80% of their produce to market sellers, while four market gardeners sold 100% of their produce to market sellers. The latter therefore used as little as 5 minutes of their time selling produce in Kapit Market.

Market gardeners sold their produce to as few as 1 and up to 6 market sellers. The top quality vegetables were generally sold to market sellers. There was a tendency for business relationships and loyalty to exist, with some market sellers pre-ordering produce. It was also common for market gardeners to sell their produce to market

sellers who were friends or relatives. Transactions between market gardeners and market sellers usually occurred in the morning from 5am onwards. For market gardeners in the more remote longhouses, this meant rising before dawn to transport their produce to Kapit Market on time.

Of the produce not sold to market sellers, market gardeners took a space in Kapit Market and sold it themselves. Some market gardeners enjoyed this because not only was the market a place of trading, but it was also a place for social interaction. Others preferred to sell as much as possible to market sellers so they could return to their longhouses to relax. Although it was rare, 3 market gardeners purchased produce they did not grow from other vendors in order increase variety in their displays and attract more customers.

Market sellers

Ten market sellers in Kapit Market were interviewed in addition to the 30 market gardeners. Market selling was a fulltime occupation and on average they were in the market 13 hours per day, 6-7 days per week. Three of the market sellers used to be market gardeners, but preferred the less physical demands of market selling despite the often longer working hours per week. Many market sellers sold fruit and occasionally other items such as tuak, home made food, rice and handcrafts. However of the market sellers interviewed, the majority of their stocks were vegetables and fruit. Market sellers sold between 50-100% vegetables and 0-50% fruit.

Six market sellers purchased produce from Kapit market gardeners, while 1 market seller purchased 100% of produce from a Chinese middleman in Sibu (140 kilometres downstream from Kapit Town). Three market sellers purchased vegetables from a combination of both. Some market sellers purchased vegetables from Kapit market gardeners at a discounted rate, but others found they competed against Kapit market gardeners who undercut their prices.

It was difficult to assess the quantities purchased and sold by market sellers as no records of transactions were kept. Depending on their supply arrangements, they purchased produce from 5-10 different Kapit market gardeners everyday or every second day depending on how low their stocks got, and purchased from 1 Sibu middleman usually 1-3 times per week. Kapit District Council limited the sales space of market sellers to 2 blocks per day measuring 2 x 5ft each. This suggests the quantities sold were small. The mark-up on produce was usually between 100% and 150%.

The reasons market sellers purchased vegetables from Sibu middlemen were Sibu middlemen offered better wholesale prices (often Kapit market gardeners undercut the price of market sellers). Bigger quantities could be purchased at one time and demand for Sibu vegetables was high because some of the produce was not grown in Kapit (e.g. Chinese and regular cabbage imported from Sabah and China). Sibu vegetables therefore added more variety to displays and were attractive to customers shopping in Kapit Market. The quality of Sibu vegetables was also just as good and fresh as vegetables grown in Kapit.

Members of the public were the end purchasers of the produce and it was usually purchased for household consumption. Enquiries made at 10 restaurants and cafes around Kapit Town revealed small to medium sized restaurants also purchased their produce from Kapit market. This differs from some of the larger, up-market restaurants that purchased vegetables from Sibu middlemen. Notably, small to medium sized restaurant owners received no special treatment from market sellers and were not distinguishable from other customers in the market.

Sibu middlemen (tokay)

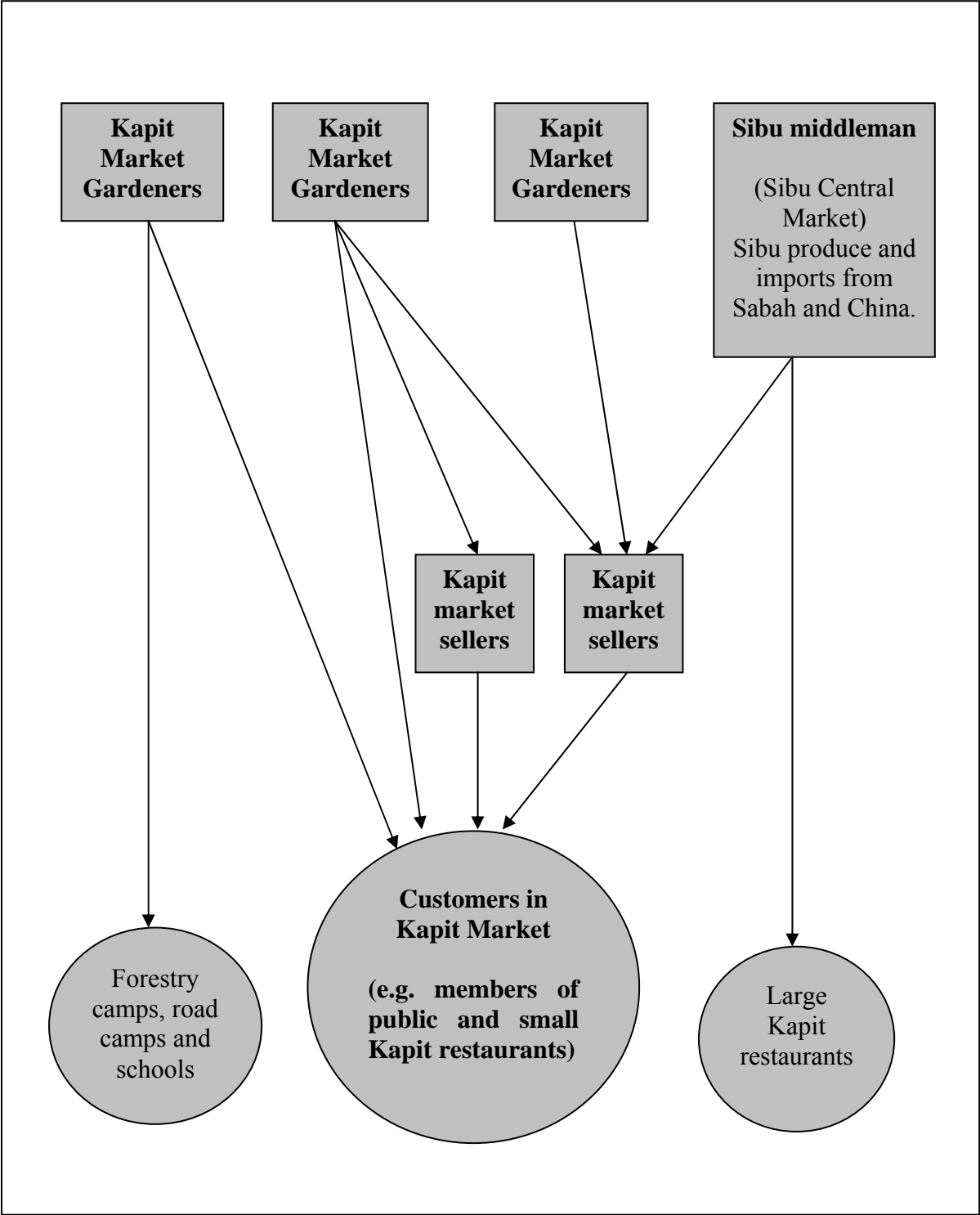
All of the Sibu middlemen were Chinese and the Kapit market sellers knew them as a friend, an acquaintance through family members or by meeting them in the Sibu market. A visit to Sibu revealed many of the Sibu middlemen were market sellers in

Sibu Central Market (Pusat Market, Sibu) as well as suppliers for Kapit sellers and restaurants. One woman at the Sibu Central Market supplied six different Kapit restaurants and estimated there were at least 10 Sibu middlemen supplying Kapit buyers. The Sibu middlemen purchased their produce from local Sibu growers and wholesalers who imported sub-temperate vegetables such as cabbage, broccoli and tomatoes from Sabah and China.

Kapit market sellers and Sibu-based middlemen seldom met. To purchase vegetables from Sibu, a Kapit market seller made a telephone order with their Sibu middleman. The Sibu middleman would send the vegetables in a box by Express Boat Post and it would arrive in Kapit the following morning. An invoice would be included in the delivery box and depending on the arrangement, market sellers had a credit period of 1-30 days before payment was due. Payments were made by direct crediting bank accounts or by cash payments via a friend or family member who was visiting Sibu. Larger restaurants in Kapit Town used a similar system to purchase vegetables from Sibu middlemen. One restaurant owner said payments to their Sibu middleman were via Internet banking.

Figure 6.13 summarises the supplier-buyer sales chain for vegetables sold in Kapit.

Figure 6.13: Sales chain for produce sold in Kapit



6.9 Division of labour

The division of labour for market gardeners and market sellers varied depending on the household. Of the 30 market gardeners, 11 undertook market gardening as a joint occupation with their spouse. Work such as sowing, weeding and harvesting were done together, although there was a tendency for males to be responsible for ploughing, fertilising, spraying and frame making, while the women took a more active role in preparing and selling vegetables (see Figure 6.14). Very rarely did men assist with the vegetable selling. Males viewed market selling as “women’s work” and preferred to tend to the gardens while the women sold their produce in Kapit market.

Figure 6.14: Women in the longhouse ‘ruai’ preparing vegetables for market the following day



The remaining 19 out of 30 vegetable growers undertook the majority of market gardening activities, but with varying levels of assistance from their spouse, children, elderly parents, siblings and daughter-in-laws. Family members worked less days and hours per week on market gardening activities than respondents because they had other employment, attended school, had failing health or were minding infants. In

addition, family members usually assisted with less physical activities such as weeding, harvesting and selling. Some respondents remarked younger generations within the household were reluctant to assist with market gardening activities. Educated children aspired to off-farm work and status rather than the physical demands and peasant status associated with market gardening.

With regard to the 10 respondents who were market sellers, all of them undertook selling activities with little or no assistance from family members. Occasionally a family member would sit in the market to give the seller some company and mind their produce while they took short breaks. It was more common for neighbouring sellers to mind produce while breaks were taken.

The total hours spent on market gardening activities varied from person to person depending on their household situation. Figure 6.15 presents the average hours per week market gardeners and market sellers spent growing and selling vegetables. The average hours of assistance provided by family members of the market gardeners and market sellers is also presented.

Figure 6.15: Average hours per week spent on market gardening activities

AVERAGE HOURS SPENT ON MARKET GARDENING ACTIVITIES BY RESPONDENTS AND THEIR FAMILY				
	Average hours per week			
	Market Gardening (e.g. planting, weeding, harvesting)	Market Selling (e.g. selling vegetables in Kapit Market)	Getting assistance from family members (on a mix of market gardening and market selling activities)	Total
Market gardeners	17.5	18.2	19.2	54.9
Market sellers	0	87.8	1.7	89.5

The most striking finding was market sellers worked more hours per week than market gardeners. The main reasons for this were market gardeners received assistance from up to 5 family members and many reduced their hours in Kapit Market by selling portions of their produce to market sellers. Market sellers on the other hand received little assistance from family members and spent 11 to 16 hour days vending in Kapit Market. Some market sellers said they arrived at Kapit Market around 4am to set up their displays, purchase produce from market gardeners and make their first sales around 5am. They spent the entire day on the market floor selling their goods and did not retire from the market until after 6pm when sales waned. As the market was often hot and overcrowded, many sellers arrived early at Kapit Market to get a good place. Although market gardeners worked fewer hours per week than market sellers, this should not detract from the fact that market gardening activities were physically demanding in comparison to market selling.

6.10 Income and expenditure

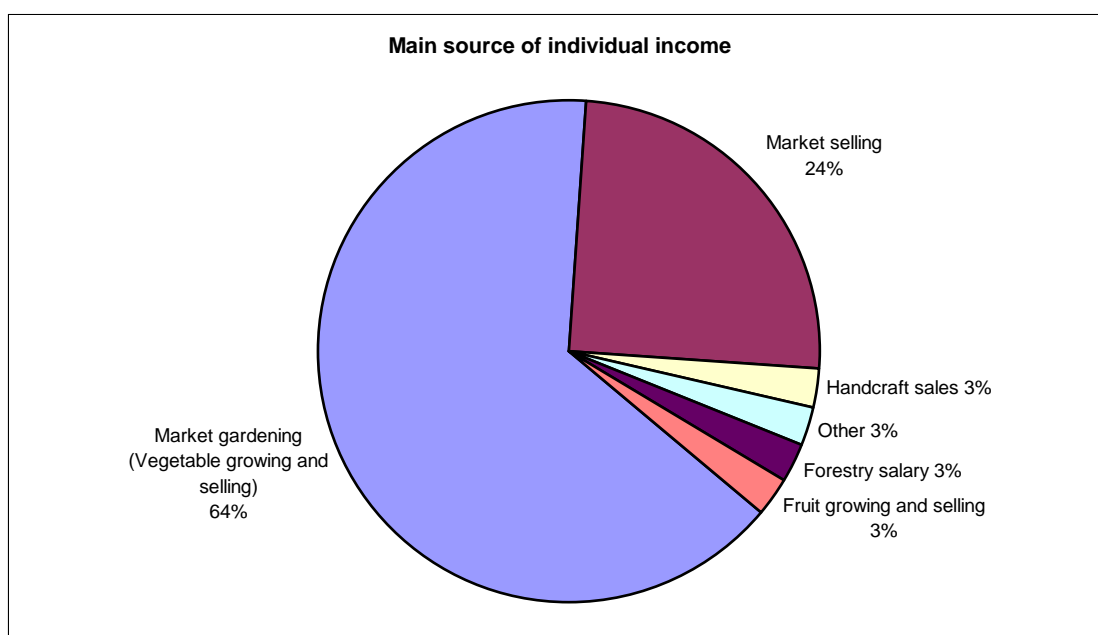
Assessing the income and expenditure of market gardening was extremely difficult as no record of production or sales was kept. The only exception was records of net house sawi production that market gardeners were obliged to report on to the Department of Agriculture. Market gardeners and market sellers were therefore asked to estimate their monthly income and discuss the importance of market gardening in the wider livelihood strategy of their household.

The questioning sought to determine their primary and any secondary sources of individual income, sources of household income, expenditure, and the significance of market gardening revenue in comparison to other sources of income. This information would determine the monetary role of market gardening in overall livelihood strategies of households.

Main source of individual income

Figure 6.16 illustrates the primary source of individual income for the majority of respondents came from market gardening or market selling. Only 4 respondents had other primary sources of individual income and these were generated from handcrafts, forestry camp management, commercial fruit growing and various benefits derived from longhouse leadership.

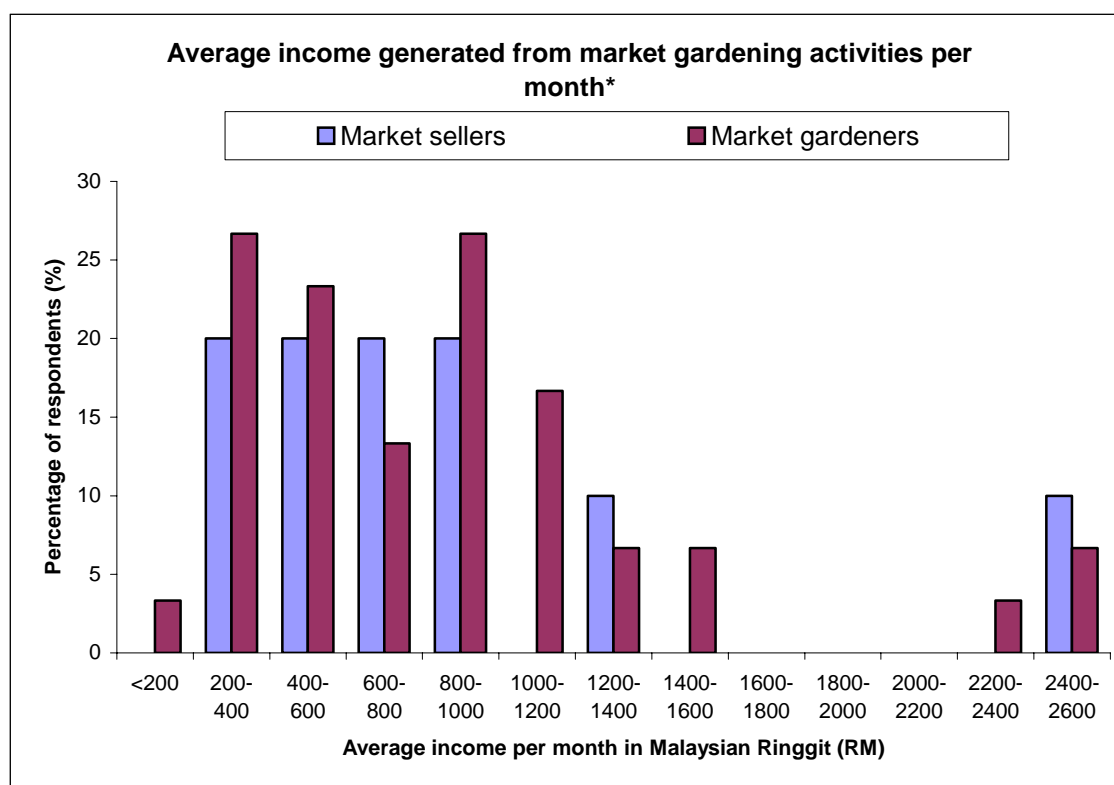
Figure 6.16: Primary source of income for respondents



Average income generated from market gardening activities

Calculating the income generated from market gardening activities was extremely difficult because market gardening and market selling was informal sector employment. In addition to no sales records, respondents often spent money as they earned it in a 'hand to mouth' fashion. However, in order to obtain an overall indication of income generated, respondents estimated the amount of money they earned per month from market gardening activities, and also the variance from month to month. The spread of average income generated by market gardeners and market sellers per month is presented in Figure 6.17.

Figure 6.17: Average income generated from market gardening activities per month



* Only includes income generated from market gardening activities (e.g. selling vegetables). Figures do not include other sources of income generated by market gardeners and market sellers (e.g. handcrafts and animal rearing).

Of the total 40 respondents, the average income generated from market gardening activities was RM808 per month⁸. There appeared little discrepancy in earning potential of market gardeners and market sellers despite the significant difference in hours worked. Market gardeners earned an average of RM814 per month and market sellers earned an average of RM790 per month.

The range in monthly income varied considerably from RM160 to RM2,400 for market gardeners⁹ and RM250 to RM2,500 for market sellers¹⁰. The huge range in monthly income was largely attributed to differences in household labour available for market gardening and the extent market gardening sales contributed to total household income. For example, family-run market gardens had more labour, generated high

⁸ Equivalent to US\$218 per month or NZ\$307 per month. At the time of data collection (December 2004), one Malaysian Ringgit (RM1) was equivalent to US\$0.27 or NZ\$0.38.

⁹ Equivalent to US\$43 to US\$648 per month or NZ\$61 to NZ\$912 per month.

¹⁰ Equivalent to US\$68 to US\$675 per month or NZ\$95 to NZ\$950 per month.

levels of vegetable production and sales, and were usually the primary source of household income. In contrast, individuals who engaged in market gardening had less labour hours available, produced less vegetables and generated less sales. Market gardening was not a primary source of household income, but a secondary source and in some instances a hobby for the individual. Working longer hours in Kapit market, building customer relationships and being business savvy enabled 3-4 market gardeners and market sellers to earn over RM2,000 per month year round.

Small shifts in demand and supply meant income generated by market gardeners and market sellers usually fluctuated between RM100 and RM200 per month, however there were exceptions of occasionally high and low income generating months. High income generating months were attributed to celebratory periods such as Gawai Dayak and seasonal fruit, enabling some market gardeners to generate up to RM3,000 and market sellers up to RM4,000. Low income generating months were attributed to the diversion of market gardeners to padi farming and competition in the market, resulting in market gardeners earning as little as RM100 per month and market sellers RM200 per month.

All income generated from market gardening activities was cash based and a form of informal sector employment. The income generated by respondents was below Malaysia's taxable threshold.

Secondary sources of individual income

Although market gardening activities were the primary source of income for the majority of respondents, 20 out of 40 people (50%) had on average two secondary sources of individual income. One respondent had four additional sources of income secondary to market gardening, while another had five. The secondary income generating activities and the number of respondents who undertook them are presented in Figure 6.18.

Figure 6.18: Secondary income generating activities of market gardeners and market sellers

Secondary income generating activities of market gardeners and market sellers	Number of respondents undertaking these activities*
Handcrafts (e.g. batik and basket weaving)	7
Poultry farming	7
Fruit growing	6
Fish farming	4
Pepper farming	4
Pig farming	2
Retirement pension / social welfare benefits	2
Hill padi farming	1
Private van driving	1
Traditional cake making	1

* Figures are non-cumulative due to multiple responses given by respondents.

In general, the secondary sources of income were small in scale, consumed less time, generated less revenue than market gardening and were often seasonal in nature. For example, excess fruit from trees intended for personal consumption was often collected and sold at the local market during the fruit season. Similarly, poultry rearing, traditional cake making and other secondary income generating activities were often geared towards the festive seasons (e.g. Gawai Dayak, Christmas and Chinese New Year) when demand for goods increased substantially.

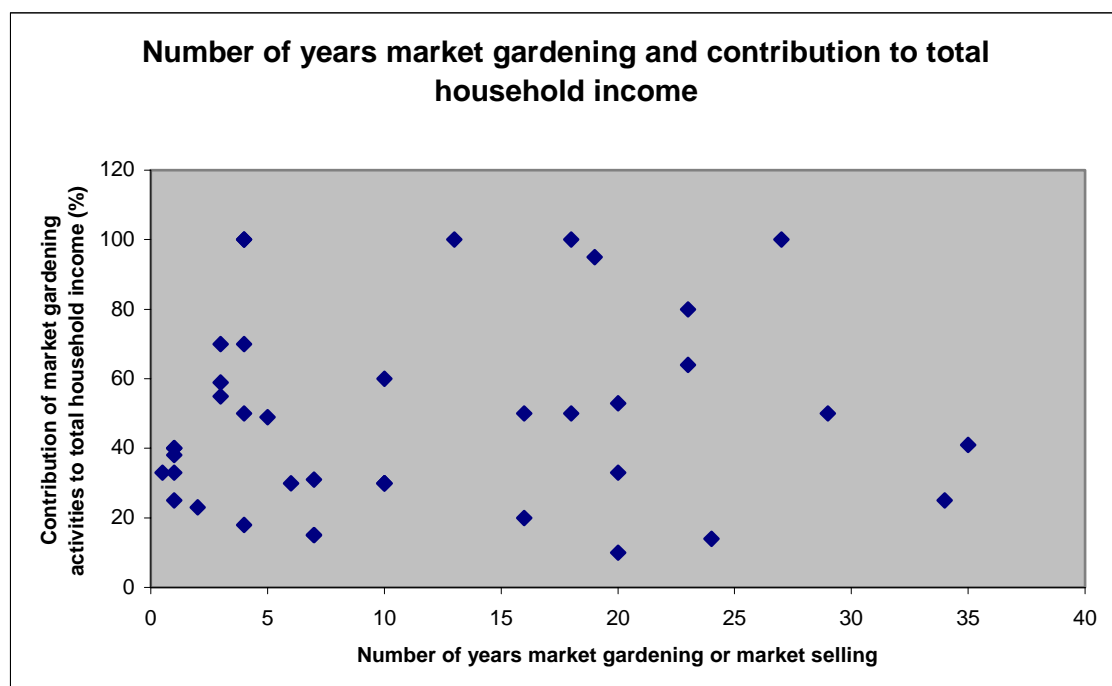
Main source of income for the household

For both market gardeners and market sellers, the role of market gardening activities as the main source of household income was evenly split. Fifty percent of respondents relied on market gardening as the main source of income for the family,

while the remaining 50% had other higher sources of income, usually generated by another family member.

Market gardening sales contributed towards 10% to 100% of household incomes with an average of 48%. Despite the expectation that market gardening in urban environments might expand over time with increased urban markets, or diminish as alternative urban employment is adopted, there appeared to be no correlation between the contribution market gardening made to total household income and the number of years market gardening activities were undertaken.

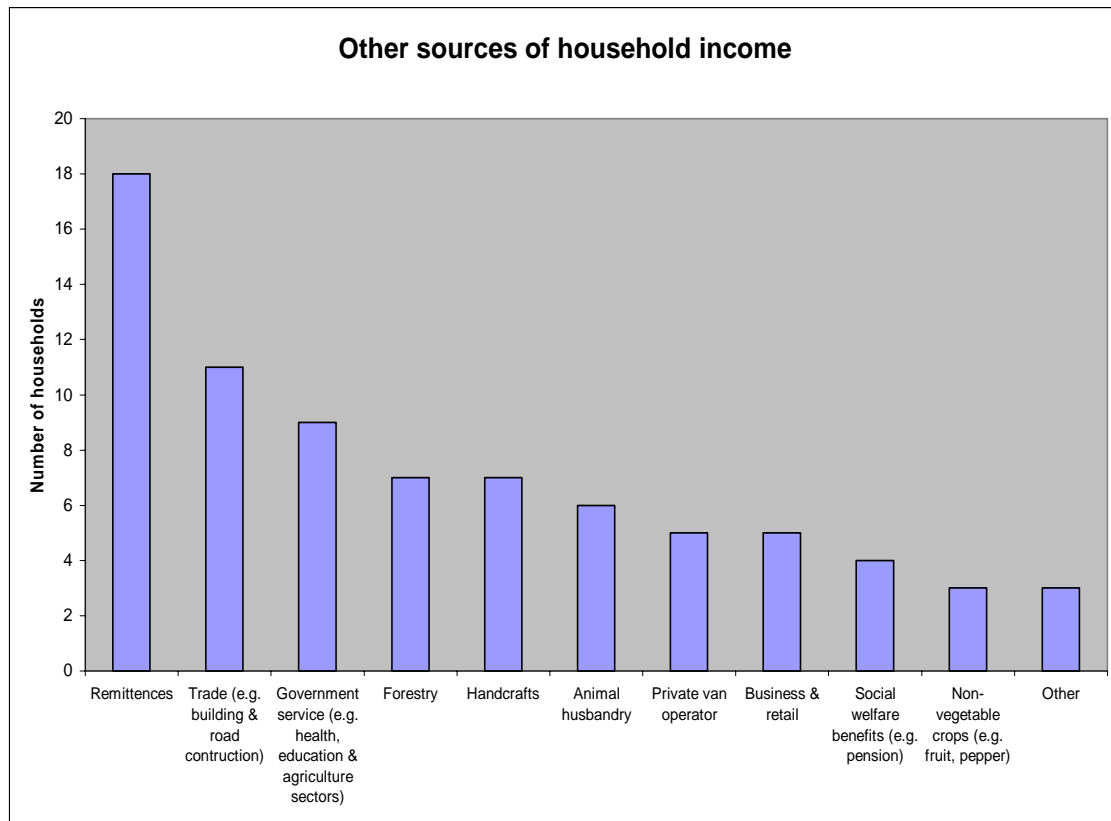
Figure 6.19: Number of years market gardening and contribution to total household income.



Including market gardening activities, households had between 1 to 7 different sources of income, with an average of 3 different sources. In light of the literature, the multiple number of income-generating activities suggests a level of vulnerability to urban poverty as diversified livelihood strategies are adopted as a means of household survival and risk management.

Other sources of household income generated by the household members are presented in Figure 6.20.

Figure 6.20: Other sources of household income



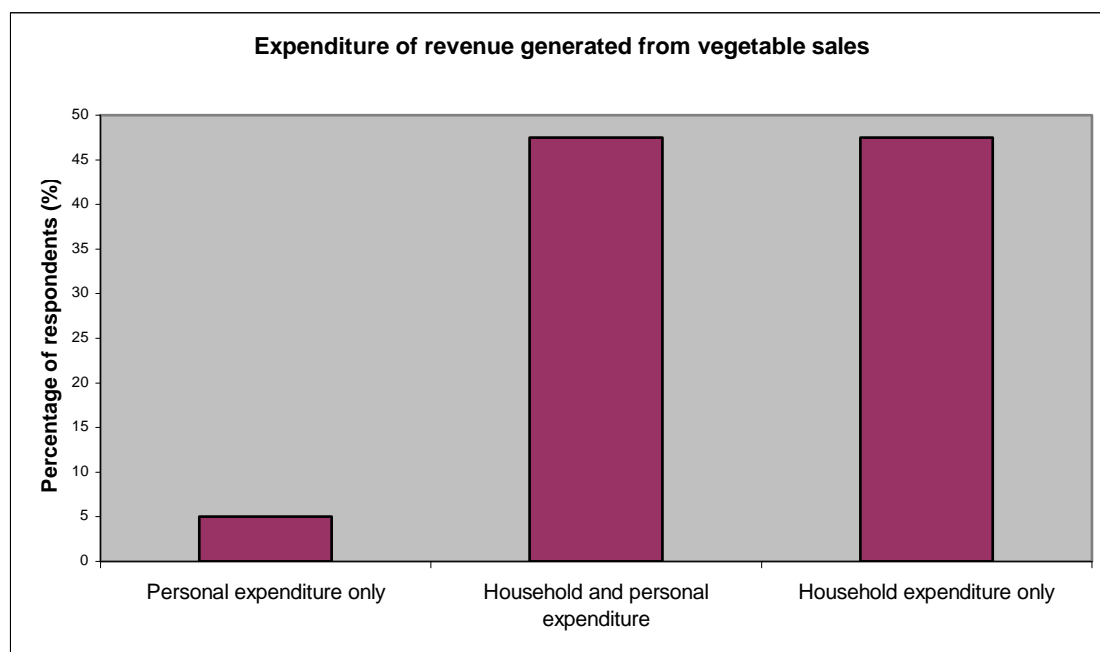
The most striking finding was the importance of remittances in contributing to household incomes, suggesting market gardening has to be firmly situated in the context of the wider family economy. Given many respondents were middle-aged parents, remittances were commonly received from children who had grown up and acquired jobs in other parts of Sarawak or overseas. Remittances were monetary and often came on a monthly basis.

Spouses and children of working age usually generated the other sources of household income. Family members employed in the government sector, construction and forestry tended to be the main breadwinners for the household. Handcrafts, animal husbandry (e.g. poultry and pig rearing) and private van operating tended to be secondary sources of income for the household and also secondary occupations for market gardeners and market sellers.

Expenditure

Revenue generated from vegetable sales was either used for personal spending by the respondent, pooled together with the other sources of household revenue, or combinations of the two. Figure 6.21 illustrates how the 40 respondents spent the revenue generated from vegetable sales.

Figure 6.21: Expenditure of revenue earned from vegetable sales



Only 2 out of 40 respondents (5%) spent all the revenue they earned from vegetable sales on personal expenses. In these cases, the household had sufficient income generated by other family members in high-paid employment and the role of market gardening was for hobby sake.

The majority of market gardeners and market sellers pooled their revenue from vegetable marketing into the household basket. Nineteen out of 40 respondents (47.5%) pooled all of their earnings into the household, while another 19 respondents (47.5%) kept from 5% to 50% for themselves and gave the rest to the household.

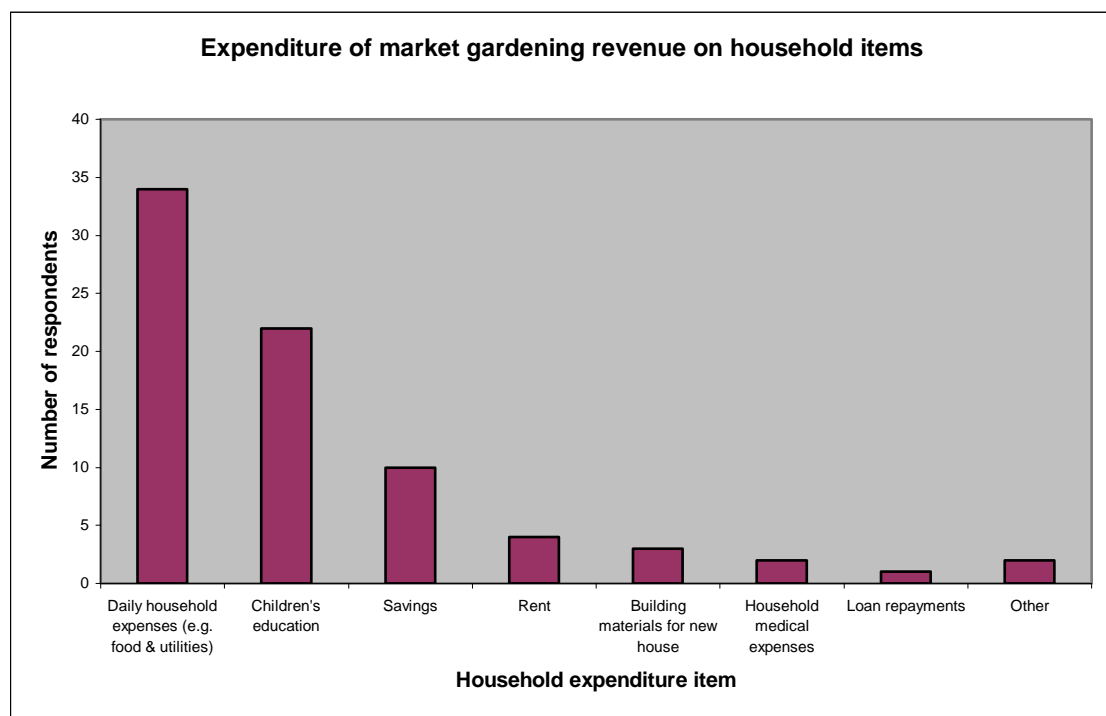
The 5-50% of personal expenditure equated to RM50-RM200 per month¹¹ and was spent on the respondent's daily living expenses, medical bills, entertainment, clothing

¹¹ Equivalent to US\$13.50 – US\$54.00 per month or NZ\$19.00 – NZ\$76.00 per month.

and other miscellaneous expenses. If the respondent pooled all of their vegetable marketing revenue in the household basket, they would receive some personal spending money back if a surplus remained after household expenses were covered. Often personal expenditure for female respondents came from their husband's source of income, although it was noted this arrangement was not reversed for the husband. For revenue generated by some husbands and working children it was noted their personal expenses came first followed by household contributions. This highlights levels of gender biases within market gardening households.

The main household items market gardening revenue was spent on is shown in Figure 6.22.

Figure 6.22: Expenditure of market gardening revenue on household items



For most households, revenue from vegetable marketing was spent on daily living expenses followed by education expenses for children. One quarter of the respondents put money aside for saving, however when probed on what they were saving for, many said it was for their children's education in the future.

6.11 Future outlook

Respondents were asked to consider their future as market gardeners and market sellers. Although respondents had mixed feelings about their future, most planned to continue as market gardeners or market sellers. A number of respondents intended to expand or diversify their market gardening activities, while others were open to changing occupations if something better came along. The main reasons respondents intended to continue as market gardeners and market sellers are presented in Figure 6.23.

Figure 6.23: Reasons for continuing as market gardeners and market sellers

Reasons for continuing as market gardeners and market sellers	Number of respondents
Respondents had nothing else to do (and in some cases no other choice).	19
Market gardening and market selling were easy, stable sources of income.	13
Market gardening and market selling provided an easy, enjoyable lifestyle.	8
Market gardening and market selling provided employment until more profitable opportunities came along.	7
They wanted to stop working, but needed money for the household.	7
They wanted to stop working, but needed money for their children's education.	4
Market gardening provided employment until fruit crops matured and became more profitable.	4
Market gardening was a safer alternative to forestry and more productive than padi farming.	3
Interested in expanding market gardening into commercially bigger projects.	3
Market selling was socially fulfilling.	2
Respondents were too old or ill to do anything else.	2

Note: Figures are non-cumulative due to multiple responses given by respondents.

In general, respondents worked as market gardeners and market sellers because they had no other employment and these occupations provided a relatively easy, stable source of income. Market gardening and market selling were the most appropriate occupations given their personal circumstances. Several respondents wanted to stop market gardening and market selling, but felt they didn't have any option except to continue in order to provide for their household. Many respondents were not passionate about market gardening and market selling and were always on the look out for easier and more profitable sources of income.

6.12 Conclusion

The research reveals market gardening plays an important role in the livelihood strategies of people in urban centres. Evidence of the role of market gardening for household survival was the adoption of market gardening activities primarily for employment, and to financially support the household and children's education. Further evidence was the growing of vegetables in preference to other crops (e.g. fruit and rubber) because of their ease of growing and quick, year round returns. Non-commercial padi was also grown by many market gardeners as a safety net.

Many market gardeners and market sellers had mixed feelings about their livelihood choice, but continued due to the lack of suitable alternatives and the need to financially support their household and children's education.

Market gardening was the primary livelihood for respondents although individuals also engaged in secondary income generating activities. The adoption of diverse income generating activities corresponds with the general observation among poor households in developing regions where multiple livelihoods are adopted as a survival mechanism.

Although it was a petty trade, market gardening activities contributed from 10% to 100% of total household income and in 50% of cases were the main source of household income. Despite expectations, there was no correlation between the number of years market gardening activities were undertaken and the contribution to total household income. The absence of a correlation is not necessarily a rejection of the hypothesis that market gardening is adopted as a first entry point into urban employment before progression is made to off-farm employment. It is more indicative of a lack of alternative employment opportunities and the inability of the demographic of this research, namely low skilled and poorly educated, to progress into off-farm employment.

Market gardening was typically small-scale with land parcels averaging 1¼ acres. Land was intensively farmed year round, with limited nutrient replacement resulting in poor soil quality. Market gardening was labour intensive, with activities predominantly done by hand. This suggests market gardeners in small urbanising centres have limited access to technology and capital, restricting their ability to expand beyond small-scale production. In Kapit, this highlights the difficulties for the state in advancing the region to the status of a regional food exporter.

However, the state did have an influential role as nearly 75% of market gardeners had or were currently receiving government subsidies in the form of farm inputs and this facilitated their continuance of market gardening. Market gardeners also learned to grow vegetables directly from the Department of Agriculture and indirectly from Department of Agriculture's Iban 'pupils' who were passing on their knowledge.

Overall, the research reveals the role of market gardening in developing urban areas is to act as the primary livelihood for individuals and households with limited employment alternatives. Market gardening has a role in utilising small parcels of land to generate year round, quick cash returns, and complements diversification of overarching household livelihood strategies as a means for survival and risk management. In this context, market gardening had an important role in supporting daily living expenses for the household and children's education.

Chapter 7



Urban agriculture in Kapit Town

Market gardening and rural-urban migration

7

Market gardening and rural-urban migration

7.1 Introduction

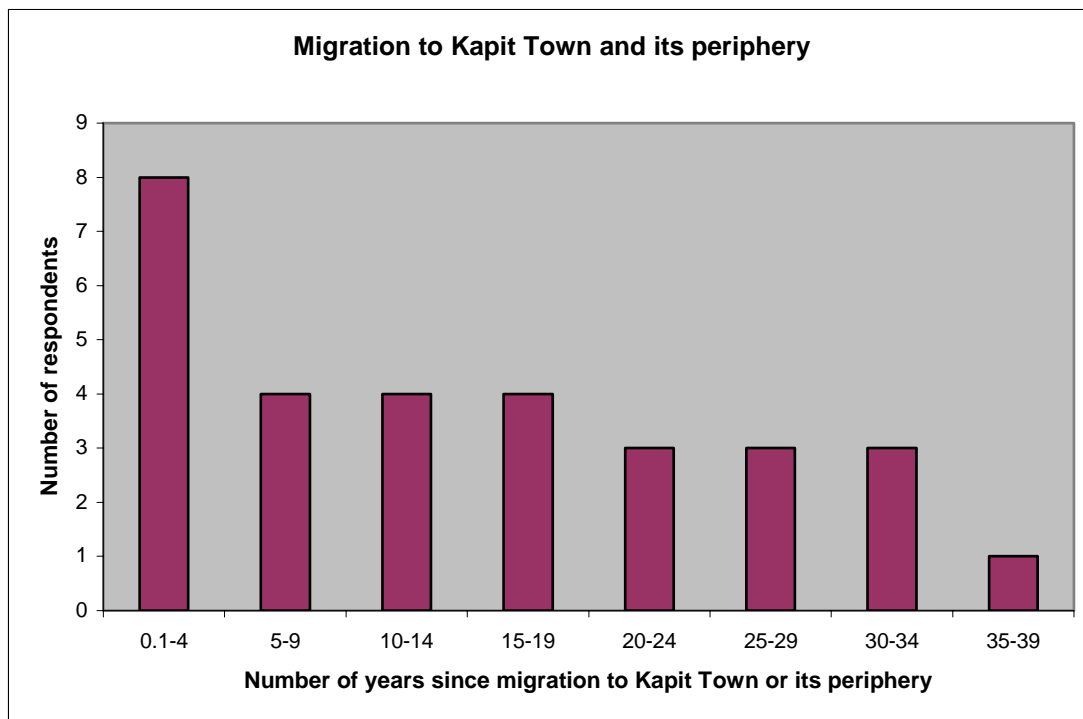
To investigate the relationships between market gardening and rural-urban migration, the 40 respondents were interviewed on their migration to or near Kapit Town and their adoption of market gardening activities. The influence of rural roads was also discussed along with how competition in urban markets had changed over time. The findings on the relationship between market gardening and rural-urban migration are presented under the following headings:

- 7.2 Rural–urban migration
- 7.3 Rural-urban migration and market gardening
- 7.4 Rural-urban roads and market gardening
- 7.5 Competition in urban markets

7.2 Rural-urban migration

Rural-urban migration was a common feature among respondents with 30 out of 40 (75%) having migrated to Kapit Town or its periphery. The most recent migrant lived in Kapit Town for only 9 months, while the earliest arrived 35 years ago. Of the 30 migrants, 20 were market gardeners and 10 were market sellers.

Figure 7.1: Migration of respondents to Kapit Town and its periphery



Twenty-four respondents (60%) migrated to Kapit Town or its periphery from rural longhouses located in Kapit District, but further up the Batang Rajang, Batang Baleh, Sungai Mujong and their many tributaries. Migration to Kapit Town was typically achieved in one shift as bilek (families) uprooted and re-established themselves around Kapit Town. Twelve respondents said their original longhouses were now ‘empty’ of people, but the structures still in place as bilek and eventually whole longhouse populations moved away.

Six respondents (15%) migrated to Kapit from other districts. These people typically migrated because they or a member of the family were government employees (usually in the agriculture and forestry sectors) and were posted to Kapit Division. Ten respondents (25%) had not migrated from other areas, but in several cases their present longhouses, once remote from Kapit Town, were now in close proximity due to the recent construction of forestry and public roads.

A number of rural push and urban pull factors contributed to the migration of respondents to Kapit Town. In order of priority, the common factors drawing people to Kapit Town were:

Urban pull factors

- Education for children.
- Closer to medical facilities.
- Followed husband or other family member with employment in Kapit Town.
- Better livelihood and quality of life.
- Marriage to partner who happened to reside closer to Kapit Town.
- Better conditions for growing and selling vegetables.
- Employment for self in Kapit town.

Rural push factors

- Longhouses too far in distance and travelling time to facilities in Kapit Town.
- Expensive upriver transport.
- Everyone else was leaving rural longhouses – wanted to join the bandwagon.

As many respondents were females and not the main breadwinners of the household, they often followed other family members who needed to migrate for employment or to give the children access to better education and medical facilities. Notably, market gardening was not a key factor in the migration decision as it only influenced 3 respondents in their decision to migrate to Kapit Town. This suggests the adoption of market gardening follows the decision to migrate and is a strategy for integrating individuals and households into urban environments.

Although a large portion of respondents had migrated from longhouses to Kapit Town, 19 out of 40 (48%) had parents, siblings and extended family that still resided in their original longhouses. Generally older generations remained in the original longhouses.

Nearly all respondents considered their present residence in or around Kapit Town as their permanent home, although many sent remittances (usually money) back to their original longhouses. Sometimes family members from the original longhouse would travel to Kapit Town, collect money from respondents, and use this to purchase supplies and access services in town.

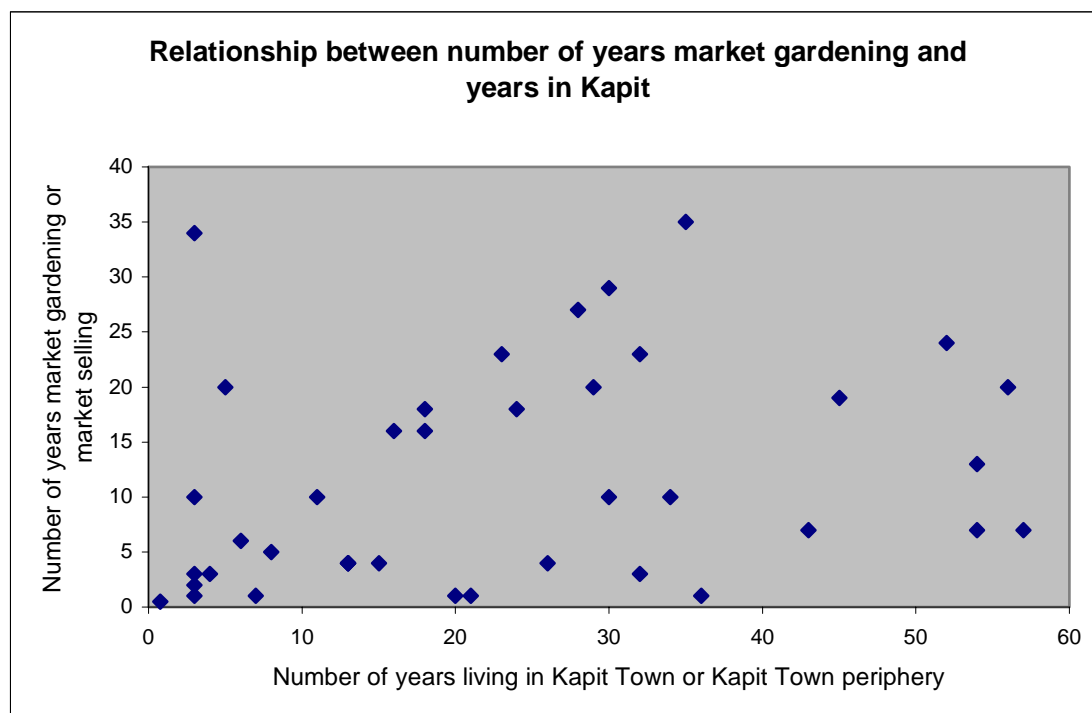
Respondents recognised life in their original longhouses was ‘dying out’, and that their children and grandchildren, many of whom grew up in Kapit Town, ‘do not know the longhouse life and nor do they want it’. Generally, respondents and their family returned to their original longhouse only 1-2 times per year - usually during the festival periods (e.g. Gawai Dayak and Christmas).

7.3 Rural-urban migration and market gardening

Most respondents in this research commenced market gardening and market selling for the first time in their life in or around Kapit Town. Of the 30 market gardeners interviewed, the number of years they had engaged in market gardening activities in Kapit ranged from 1 to 35 years with an average of 14 years. Of the 10 market sellers interviewed, the number of years they had engaged in market selling in Kapit Market ranged from 6 months to 5 years, with an average of 2.7 years.

Figure 7.2 illustrates the relationship between the number of years market gardening and the number of years living in Kapit.

Figure 7.2: Relationship between number of years market gardening and years in Kapit.

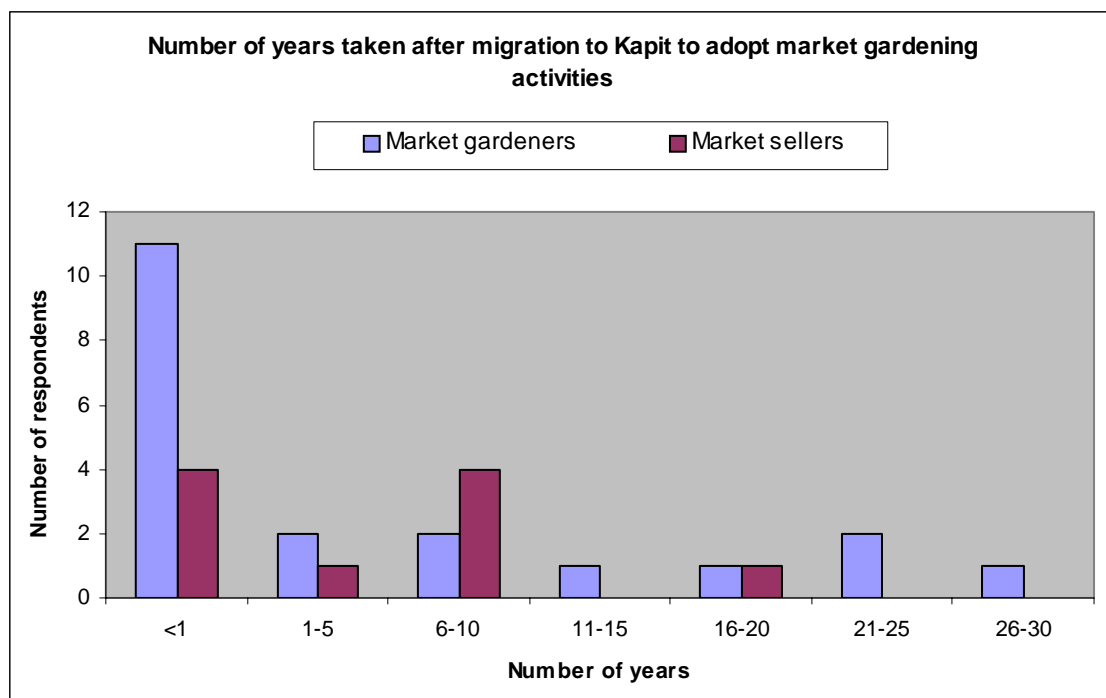


Three respondents practiced market gardening in other urban centres before migrating to Kapit with their spouse who was engaged in off-farm employment. Aside from these three people, Figure 7.2 shows the remaining respondents commenced market gardening and market selling for the first time in Kapit.

Many of the rural-urban migrants adopted market gardening on arrival to the urban centre, while some who had grown up around Kapit Town adopted market gardening in their later years when other occupations ended.

Figure 7.3 illustrates the relationship between migration to Kapit Town and the adoption of market gardening and market selling by respondents.

Figure 7.3: Migration and adoption of market gardening activities in Kapit



Of the 20 market gardeners who migrated to Kapit Town and its periphery, 11 (55%) commenced market gardening within 1 year of arrival and 13 (65%) within 5 years of migration. This suggests market gardening is adopted as a transitional livelihood strategy for rural-urban migrants integrating into urban economies. Similarly, 4 of the 10 market sellers adopted market gardening activities within 1 year of arrival in Kapit. Overall, 18 out of 30 migrants (60%) adopted market gardening or market selling within 5 years after resettlement.

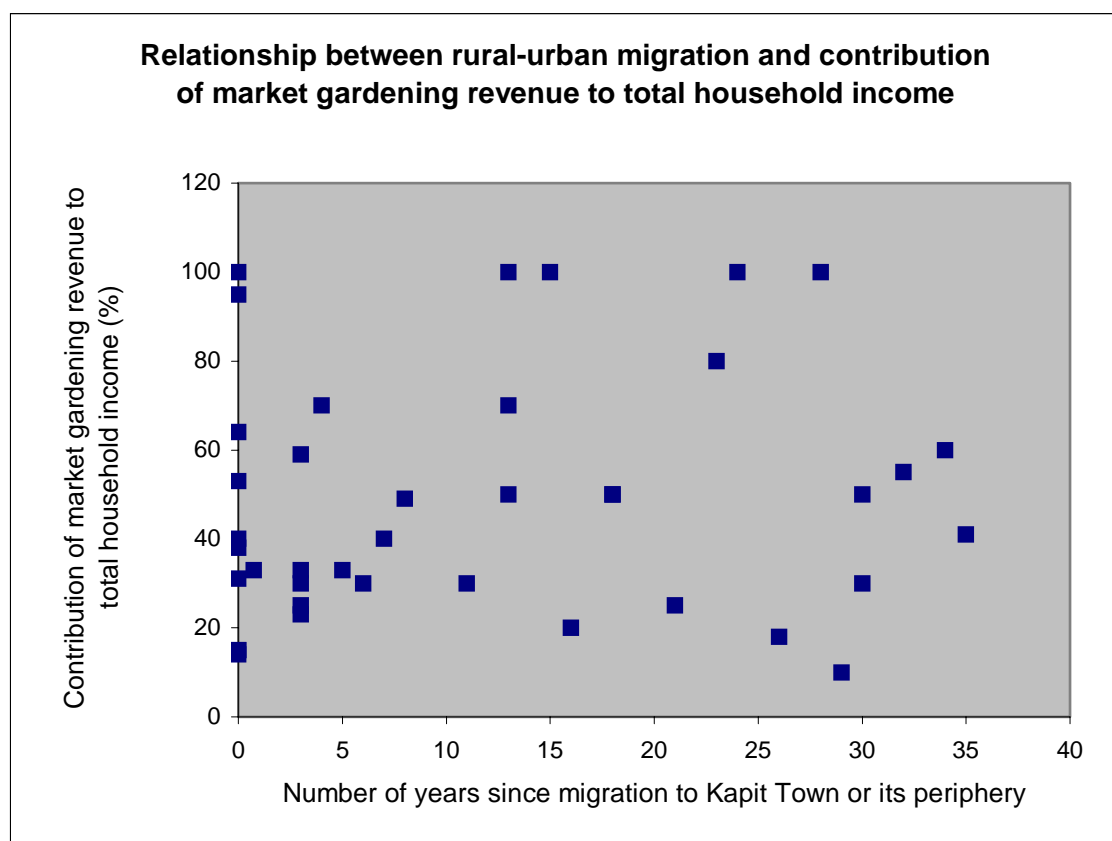
Migrants who adopted market gardening or market selling 10 to 30 years after resettlement in Kapit did so as a result of declines in employment and profits in other sectors (e.g. forestry, pepper and rubber). This emphasises the use of market gardening as an income-generating activity when households experience the effects of economic down turns. Late adopters were also encouraged by the spread of market gardening training and subsidies offered by the Department of Agriculture.

If market gardening were a coping strategy for households upon rural-urban migration, one would expect market gardening revenue to contribute a significant amount to total household income. Over time, as households became integrated into urban environments, one might expect the contribution of market gardening income to

drop off as migrant households followed the trend in Sarawak and engaged in off-farm employment. On the other hand, if market gardening were profitable, one might expect the contribution of market gardening revenue to total household income to increase over time as market gardening activities expanded in scale.

There appeared to be no correlation between the number of years respondents had migrated towards Kapit Town and the contribution market gardening income made to the total household income. This is illustrated in Figure 7.4.

Figure 7.4: Relationship between rural-urban migration and the contribution of market gardening revenue to total household income.



The absence of a relationship between a decrease in the contribution of market gardening revenue to total household income over time suggests first generation migrants are unable to make the transition from urban market gardening to other urban employment. It suggests such shift takes generations to occur as the transition is often only achieved by up-skilled younger generations whose improved access to education facilitates the process. The transition to off-farm employment by

subsequent generations is evident from the high number of market gardeners and market sellers receiving remittances from children living and working in other urban centres.

An absence in a relationship between increased contribution of market gardening revenue to total household income over time is similarly indicative of rural-urban migrants, particularly in small developing centres, being unable to access the necessary inputs such as capital and technology to expand production and potential profits.

7.4 Rural-urban roads and market gardening

Ten of the 40 respondents were not migrants to Kapit, but lived in longhouses on the periphery of Kapit Town where they worked as market gardeners. Rural roads connecting their longhouses to Kapit Town were a major influence on their market gardening activities. Before the roads were built, some respondents travelled up to 3 hours by motorised longboat along the Batang Rajang and its tributaries to get to Kapit Town. The creation of logging roads and their subsequent conversion into public roads offered alternative, faster and cheaper access routes to Kapit Town. As an example, a one-way trip from the outlying Sungai Sut area to Kapit Town took market gardeners up to 3 hours along the river systems, particularly if the rivers were low and boats got stuck. The cost of a one way trip was approximately RM64 for 8 gallons of fuel (or 8% of the average monthly income of market gardeners). This was a significant cost to market gardeners bearing in mind several return trips to Kapit Market were required each month. The creation of a public road meant previously outlying Sungai Sut longhouses were less than 20km away from Kapit Town, and a one-way road journey using a private van operator cost RM5 (or 0.6% of the average monthly income of market gardeners) and took 45 minutes. Improved access to longhouses also meant the Department of Agriculture could install Vegetable Net Schemes and conduct monitoring field visits with greater ease.

Many respondents highlighted the relationship between the rise in the number of market gardeners and market sellers in Kapit, and the expansion and improvement of roads around Kapit's periphery. Rural-urban roads around Kapit granted original longhouses and migrant longhouses that resettled by these roads improved access to Kapit Market. This encouraged new entrants into market gardening as well as a rise of private van operators who transported market gardeners and their produce to Kapit Market.

In terms of distance and travelling times, the average distance from residences to Kapit Town was 5.4km, with the nearest respondents (market sellers) living within 1 km of the town centre and the furthest respondents (market growers) living up to 19kms away from Kapit Town. Distance was not necessarily indicative of time required to drive to Kapit Town as gravel surfaces and poor upgrading made some roads impassable at times. In addition, public transport and private operators often stopped on route to pick up other passengers. Therefore, the average time to travel one-way to Kapit Town by road was 17 minutes.

Seven respondents lived in longhouses with no road access to Kapit Town and therefore relied on private motorised longboats to make this journey. In comparison to road access, the time to reach Kapit Town by longboat ranged from 10 minutes to 2½ hours, with an average time of 40 minutes. Clearly, those with road access were at a distinct advantage with savings in time and money getting from their gardens to Kapit Market.

7.5 Competition in urban markets

To obtain a broader understanding of the relationship between market gardening and urban centres, respondents were asked to comment on any concerns or problems associated with market gardening activities as well as changes in competition over time. Their thoughts on how to manage problems and competition were also discussed.

Market gardening issues

Respondents were asked to comment on the main difficulties associated with market gardening and market selling and these are summarised in Figure 7.5.

Figure 7.5: Common problems experienced by market gardeners and market sellers

Problems experienced by market gardeners and market sellers	Number of times the issue was raised		
	Market gardeners	Market sellers	Total
Controlling pests and weeds (e.g. chemicals become ineffective with continued use as pest and weed resistance occurs).	20	0	20
Controlling disease (e.g. fungi, mildew).	11	0	11
Controlling effects of the climate (e.g. soil and fertiliser erosion from flooding; irrigation during dry seasons, preventing produce from perishing in the heat).	9	1	10
Affording farm inputs (e.g. fertiliser) or market selling inputs (e.g. crates).	7	1	8
Competing against new entrants or established market gardeners and market sellers.	2	4	6
Maintaining physical labour due to age and illness.	6	0	6
Government farm subsidies too small and inconsistent (e.g. only given once per year).	5	0	5
Uncomfortable, overcrowded and dirty market.	2	1	3
Insufficient land and labour for market gardening.	3	0	3

This line of questioning did not provoke many responses on competition in urban markets and the likely reason was most respondents were market gardeners concerned with their main activity of vegetable growing. Controlling pests, weeds and disease were their biggest concerns along with maintaining fertile soil over land that was intensively farmed for a number of years.

In contrast, this line of questioning provoked responses on competition in urban markets among market sellers. Their main problems were competing against new entrants and establishing buyer-seller relationships.

Competition

Respondents were probed specifically on competition in urban markets. Of the forty respondents, nineteen felt competition in urban markets had changed and their ability to compete had worsened over time. Eight felt no change in competition in urban markets, while thirteen felt competition in urban markets had change and their ability to compete had improved over time. The common reasons market gardeners and market sellers could not compete as well over time and the number of respondents who felt this are presented in Figure 7.6.

Figure 7.6: Common reasons for worsened competition in urban markets over time

Reasons for worsened competition		Number of respondents
Compared to the 1980s and 1990s there were few market gardeners and market sellers so relative prices were better then than now.		10
New entrants in market gardening had increased.	Due to unemployment in other sectors (e.g. forestry).	8
	Due to better roads connecting rural longhouses to Kapit Market.	7
	Due to government subsidies, training on farming methods and flow on effects of this.	6
New entrants in market selling had increased.		6
Supply exceeded demand and a ready market was lacking.		6
Customers had become market gardeners or learned to grow vegetables in their 'home garden'.		5
Land had become less fertile over time decreasing production and ability to compete.		2

The main observation is competition in urban markets had increased due a large number of new entrants to market gardening and market selling. Supply of fresh produce had increased while demand had diminished as customers became growers. New entrants were encouraged by the perceived quick profits from market gardening as slumps in other sectors (e.g. forestry, pepper and rubber) created a lack of alternative employment. Adoption of market gardening was also facilitated by better roads, while government subsidies helped to sustain market gardening activities.

Many respondents commented that competition in urban markets appeared to increase significantly after 2001 and attributed this to the coverage of government subsidies and the introduction of Vegetable Net Schemes. The recent rise in competition was also attributed to the opening of the new market in Kapit in June 2001. The larger covered market and its facilities provided a more comfortable venue for market gardeners and market sellers to display their produce. As a result, many also commented Kapit Market was now overcrowded.

The common reasons other market gardeners and market sellers could compete better in urban markets and the number of respondents who felt this are presented in Figure 7.7.

Figure 7.7: Reasons for improved ability to compete in urban markets

Reasons for improved ability to compete in urban markets	Number of respondents
Produced better quality and quantities of vegetables with increased knowledge, experience, government subsidies and training.	5
Sound reputation and established relationships with buyers who pre-order produce.	4
Operating costs had reduced with cheaper, faster road access to Kapit Market.	4
Diversified produce with the introduction of fruit and Sibu produce.	2
Improved display of produce in Kapit Market.	1

The Department of Agriculture had a significant influence over the competitiveness of market gardeners as training and farm subsidies increased the quality and quantity of produce. This had flow on effects in terms of establishing and maintaining supplier-buyer relationships as market sellers pre-ordered produce from market gardeners that produced consistent quantities and quality. In addition, the leafy vegetable *sawi* was best grown protected from insects in the Vegetable Net Houses provided by the Department of Agriculture. Market gardeners with access to net houses therefore had a production and sales advantage over those without net houses.

Rural roads also had a significant influence on the competitiveness of market gardeners as operating costs such as fuel were reduced significantly.

Suggestions

In light of the difficulties faced by market gardeners and market sellers, respondents were asked to suggest ways of overcoming specific problems and improving their overall livelihoods. A quarter of respondents could not suggest anything, however the comments of the remaining respondents are presented in Figure 7.8.

Many suggestions provided by respondents entailed increases in responsibility, management and financial expenditure by government agencies and local councils. A culture of dependency on the State was apparent. Respondents did not think the private sector and non-government organisations could play a significant role in improving market gardening livelihoods. No respondents considered the idea of market gardeners and market sellers doing something collectively to improve their livelihoods.

Figure 7.8: Respondents' suggestions for improving market gardening and overall livelihoods

Suggestions	Number of respondents
Department of Agriculture increase current farm subsidies (e.g. net houses, fertilisers) and expand the number of beneficiaries.	12
Kapit District Council improve the facilities in Kapit Market (e.g. manage overcrowding and improve hygiene by permitting the use of tables).	7
Department of Agriculture provide further training on market gardening (e.g. vegetable growing, soil maintenance and diversification of crops).	5
Department of Agriculture identify fertilisers and pesticides more suited to the land and crops than present ones.	5
Establish micro credit and start up loan schemes to enable market gardeners to purchase farm inputs up front and to allow market sellers purchase more produce up front.	3
Department of Agriculture reduce the number of subsidies and concentrate on developing existing commercial growers.	2
Create wider markets to increase demand for Kapit grown vegetables.	2
Government investigate broader strategies to improve livelihoods (e.g. increase support and access to education and health).	2

7.6 Conclusion

Interviews with the 40 market gardeners and market sellers clearly defined the nature of relationships between market gardening and rural-urban migration. Firstly, market gardening did not influence the decision to migrate from rural areas towards Kapit Town, but rather education for children, medical facilities and off-farm employment opportunities for other family members did.

However, there was a strong relationship between rural-urban migration towards Kapit Town and the time taken to adopt market gardening activities. Of those that were practising market gardening or market selling, a majority had migrated to Kapit Town or its immediate periphery within 1 year or less. This suggests the adoption of market gardening follows the decision to migrate and is strategy for integrating individuals and households into urban environments.

Despite expectations that market gardening revenue would change over time, there was no correlation between the number of years respondents had migrated towards Kapit Town and the contribution market gardening revenue made to total household income. The absence of a correlation is not necessarily a rejection of the hypothesis that market gardening is a major source of income upon urban settlement that tapers off as migrants progress to off-farm employment. It is more indicative of a lack of alternative employment opportunities and the inability of the demographic of this research, namely low skilled and poorly educated, to progress into off-farm employment. It suggests the transition and complete integration of rural households into urban economies is generational in nature as the transition from urban agriculture to off-farm employment is often only achieved by up-skilled younger generations whose access to improved education facilitates the process. The absence of a correlation between the contribution of market gardening revenue and total household income is also indicative of rural-urban migrants in small urban centres being unable to expand market gardening beyond small-scale production and petty trade due to variable markets and limited access to inputs such as capital and technology.

The research further shows urbanisation processes such as the expansion of rural-urban roads facilitate market gardening activities. Rural-urban roads improved market access for previously remote market gardeners by reducing travelling times and the costs associated with transporting produce to the point of sale. Rural-urban roads widened consumer markets, yet the benefits were limited as improved market access also encouraged new competitors.

In addition to improved market access, competition in urban markets increased as new entrants to market gardening were encouraged by government subsidies at a time when employment and profitability in other agricultural sectors were declining. This illustrates that in the context of Sarawak, the state has a pivotal role in promoting and sustaining market gardening livelihoods for rural-urban migrants.

Chapter 8



Market sellers in Kapit Market, with public passenger vans in the background

Discussion

8

Discussion

The results presented in Chapters 5, 6 and 7 provide a clear indication of the role of market gardening in livelihood strategies of rural-urban migrants. The findings and their relevance to existing literature are discussed in this chapter.

8.1 The role of market gardening in livelihood strategies

The research in the urbanising centre of Kapit concurs with some of the existing literature, particularly that the role of market gardening in livelihood strategies is multifaceted and a vital component for household survival. However there are some distinctions about the nature of market gardening in the context of Sarawak where the scale of market gardening is on one hand limited by the small urban markets that typify the region, yet on the other hand is promoted under the influence of the state. The role of market gardening as a livelihood strategy is discussed in this section and provides useful comparisons for other studies.

The role of market gardening as an income generator

Market gardeners in Kapit were typically women, middle aged, rural-urban migrants, and with limited education and employment skills other than subsistence farming. These people adopted marketing gardening or market selling because they had no other employment opportunities and needed to generate income to support their household and children's education. Between 70% and 100% of produce grown in Kapit was sold to local consumer markets confirming market gardening has a role as an income generator.

For the majority of respondents, market gardening and associated selling was the primary source of individual income. In 50% of cases market gardening was the

primary source of household income and in the other 50% of cases it was a secondary source of household income. This confirms the flexible role of market gardening as an income generator for individuals and households as observed by Wooten (2003), Becker (2000) and Swindell *et al.* (1999).

In contrast to three studies in Nigeria by Ezedinma and Chukuezi (1999), Porter *et al.* (2003) and Swindell *et al.* (1999), market gardening in Kapit was not adopted by migrant men and other farmers as an off-season or wage labour occupation that supplemented income generated by other primary urban employment. In Kapit, market gardening was generally adopted by migrant women as a primary year-round livelihood when no other suitable urban employment opportunities were available. This raises the importance of market gardening as an income generator and potential lever for urban advancement by low-skilled women in the absence of other urban employment opportunities.

Although proposed in this thesis, it was not obvious from the research in Kapit that the contribution of market gardening revenue to total household income would decrease over time as some respondents progressed from market gardening to off-farm employment in urban centres. For respondents farming for over 30 years, sales from market gardening generated 100% of household income in some cases, yet only 5% in others. Likewise, for respondents farming for less than 5 years, sales from market gardening generated 100% of household income in some cases, yet less than 10% in others.

The absence of a correlation between a decrease in the contribution of market gardening revenue toward the total household income over time is indicative of the limited ability of low skilled, poorly educated and middle-aged women in Sarawak to progress from market gardening to better paying off-farm employment. In addition the small size of Kapit potentially means the range of alternative urban employment is limited for people already disadvantaged by low employment skills. Furthermore, unlike the big urban centres that attract larger market gardening enterprises typically run by men (see Nigerian case studies by Ezedinma and Chukuezi (1999), Porter *et al.* (2003) and Swindell *et al.* (1999)), the Kapit market is small and unable to support a

whole household. The women engaging in market gardening in Kapit appear to be generating only supplementary earnings in much the same way that female partners of full-time earners might work part-time to supplement a family budget.

Despite a further proposal, it was not obvious in Kapit that the contribution of market gardening revenue to total household income would increase over time as some market gardeners expanded production and increased profits with growing urban markets. The absence of a relationship is indicative of low skilled, poorly educated and middle aged women in Kapit lacking the interest and ability to access the necessary inputs such as capital and technology to upscale their commercial farming practices. As such, the mainly female market gardeners in this research resigned themselves to small scale vegetable production and petty trading.

The notion proposed in this thesis that market gardening revenue would taper off over time as rural-urban migrants progress from the transitional market gardening phase to off-farm employment was also not obvious in Kapit. There did not appear to be a correlation between the number of years since migration towards Kapit Town and the contribution market gardening made towards household income – at least as judged by the cross-sectional evidence. Some women who had migrated towards Kapit Town over 30 years ago continued to use market gardening as primary or secondary sources of household income. This could suggest the informal sector and fast cropping nature, particularly in year-round temperate climates, encourages the use of market gardening as a safety net for quick cash returns in light of no other suitable income generating activities. Again, the low skilled, poorly educated, middle-aged and female nature of migrant market gardeners in Sarawak is likely to have influenced the limited progression into alternative urban employment.

The role of market gardening as a survival strategy

In alignment with Ngidang *et al.* (1986) and Ngidang (1987) market gardening was an appealing livelihood to respondents, particularly because fast growing crops and informal sector trading generated immediate cash returns. The desire to generate quick cash returns suggests a level of urgency in income generation for basic survival.

However in addition to the findings of Ngidang *et al.* (1986) and Ngidang (1987), many market gardeners and market sellers admitted being open to changing livelihoods should something easier and more profitable come along, suggesting market gardening is a makeshift income generator for the poor. The latter point confers with the remarks of Chambers (1997:164-167) where poor people are continuously changing and adapting their livelihoods to better their position.

Despite acknowledging land could be more profitably utilised in fruit or vegetable production, the fact that 57% of market gardeners continued to grow padi highlights the use of stable and storable food crops as a safety net for households in economic downturns. It indicates basic household survival is a major concern for many market gardeners and in light of Rigg's (2003:241) observations on the persistence of sideline farm activities, their reluctance to give up agriculture is associated with a fear for their livelihoods during times of instability and economic collapse.

Basic survival was still a priority for market gardeners that had converted their padi land into vegetable plots. This was evident by their preference for vegetable growing over fruit production, which takes longer to mature and as a seasonal product is not a year round income generating activity. The use of vegetable enterprises as a household safety net suggests market gardening is a logical extension of the woman's role as the primary 'farmer' in rural areas into the urban setting.

The quest for quick cash is an unfortunate situation for market gardeners because fruit trees may be more suited to land and certain exotic fruits to Kapit (e.g. dabai) have the potential to create profitable niche markets on a national and regional scale. Start up support programmes for crop diversification could assist market gardeners in this instance.

Further evidence of the role of market gardening for basic survival was obvious from the way women exercised their control over how market gardening revenue was spent. In most cases, market gardening income was spent on essential items such as household living expenses in a 'hand to mouth' fashion. Market gardening revenue

was also spent on education for children, indicating market gardening contributed to long term household survival by “providing sustainable livelihood opportunities for the next generation” (Chambers and Conway 1991:6).

The role of market gardening for basic survival in an urban setting was also evident by the scale of operations. In the case study area of Kapit, market gardens were characterised by the use of only family labour, small land parcels averaging 1¼ acres, hand held farm equipment, small-scale production and petty trade. This illustrates market gardening is geared towards basic household survival and community food security, although the role of women in ensuring market gardening revenue is actually spent in this way is important. In the context of small urban centres, market gardening is not intended as an agribusiness or export-oriented cash cropping that characterises some market gardens in other regions (see for example the supply of vegetables from the Jos Plateau in Nigeria to southern Nigerian cities, Niger and Chad in Wooten (2003: 371 and 374)).

Furthermore, many middle-aged market gardeners in Kapit did not wish to engage in large-scale production simply because their age and health were working against them. In addition, given market gardeners were mainly women, their time and capacity to run large enterprises were limited by overarching family responsibilities. While the farm subsidies allocated by the Department of Agriculture clearly enhanced the productivity of market gardeners and led to food security for the local community, there is little question that large-scale production will have to come from outside the middle-aged demographic if the state goal of becoming a regional net exporter in food production is to be addressed.

It is also important to understand many middle-aged people receiving subsidies such as vegetable net schemes did not wish to engage in large scale or long-term production because family labour was unavailable and wage labour unaffordable. In addition, they did not need to expand in production because their children’s labour was being applied more productively in education or off-farm employment and there were benefits in remittances as a result. In Kapit, over half the respondents engaged in market gardening activities to support their children’s education and intended to

stop when the children were gainfully employed and sending back remittances. Many educated children were not excited about market gardening work and were more interested in seeking higher income earning, off-farm employment more suited to their education. This indicates market gardening as a livelihood is only adopted for a set number of generations until younger, upskilled family members progress the household's livelihood from market gardening to higher earning off-farm employment. In the context of Sarawak, this also suggests the market gardening sector may experience labour shortages as younger generations up-skill and progress into other forms of urban employment.

The role of market gardening as a part-livelihood in a diverse portfolio of livelihoods

The market gardening literature has a tendency to focus on diversification of household livelihoods, rather than diversification by individuals within a household. The multiple number of occupations other than market gardening undertaken by individuals within Kapit households illustrates market gardening has a role as a part-livelihood in a diverse portfolio of livelihoods for both individuals as well as households.

While market gardening was the primary source of individual income for nearly all respondents, market gardeners demonstrated the diversity of their livelihoods by their adoption of multiple secondary income generating activities such as handcrafts and animal rearing. The diversification of land use into padi, fruit, animals and forestry reiterates this point. The adoption of multiple livelihoods by individuals may be indicative of the lack of well-paying livelihood opportunities in urban centres, particularly in the context of small urban centres of Sarawak.

At a household level, Kapit households had between 1 to 7 different sources of income (including market gardening), with an average of three different sources. Other family members typically undertook off-farm employment and generated the remaining household income not produced by the market gardener. The adoption of these multiple livelihood strategies reiterates Ellis' (1998) observation of

diversification among poor, while the diversification by rural households into off-farm work concurs with Morrison (1993) and Rigg (1998; 2003).

The role of market gardening as a primary livelihood for certain demographic groups

The typical demography profile of respondents is middle-aged women with low education and limited employment skills from having migrated from subsistence rural environment. Young people who adopt market gardening as a livelihood also tend to be poorly educated and with little or no employment skills. Ezedinma and Chukuezi (1999), Flynn (2001) and Wooten (2003) also characterised market gardeners in other developing countries as poorly educated and with low off-farm skills. However in contrast to the male market gardeners described by Ezedinma and Chukuezi (1999), market gardeners in Kapit were predominantly women. In contrast to the migrants and other farmers characterised by Porter *et al.* (2003) and Swindell *et al.* (1999), the market gardeners in Kapit were typically migrant women engaging in market gardening as a primary livelihood rather than an off-season and wage labour occupation.

The differences in the demographic profile and the way in which market gardening is utilised as a livelihood may be attributed to the different employment opportunities available in different regions. For example, in Kapit many men were employed in the forestry sector rather than in market gardening, while few wage labour opportunities were available for market gardeners because no large scale market gardening ventures were established in the region. These employment characteristics are specific to Sarawak, and may not apply to other developing countries.

Market gardening in the urbanising centre of Kapit also had a gendered nature as the income generated by predominantly female market gardeners was often pooled with household expenditure before personal expenses were taken out. In some households this practice was reversed by males and working children who only contributed to household expenses once their personal expenses were catered for. The observation

in Kapit confirms the gender biases observed by Becker (2000:239) and Wooten (2003:174) in the capital city of Bamako, Mali.

The role of market gardening as a natural livelihood choice

Many respondents had subsistence farming skills from earlier rural livelihoods and this supports the notions of Becker (2000) and Ngidang (1987) that the role of market gardening is a natural and voluntary progression among poor with access to land. In addition, many respondents did not have suitable employment skills to undertake other forms of work and therefore market gardening was the only option presently available to them. Those without access to land adopted roles as market sellers because the start-up costs and skills required were relatively low.

Iban respondents showed their ability to adopt market gardening livelihoods by learning from other Iban or, in the case of early Iban adopters, learning from the Chinese (refer to Figure 6.2). Ngidang (1987) reported similar adoption patterns of market gardening amongst Bidayuh in the Siburan sub-district of Sarawak. The learning and adoption patterns also reiterate Chambers' (1997:164-167) observation on the ability of poor people to improvise and adapt in an effort to better their situation.

However, contrary to observations by Becker (2000), in the Sarawak case the state did have a significant influence on the adoption and persistence of market gardening in the urban centre of Kapit. The hilly terrain of Kapit is not suitable for market gardening, yet the popularity of market gardening as a livelihood is evident from the 1,250 people benefiting from vegetable net schemes and training by the Department of Agriculture in the past five years. Arising from this is the reliance and dependency on farm subsidies for the survival of many market gardening livelihoods. Many growers said they could not continue without farm subsidies indicating that while market gardening in urban centres may be voluntarily adopted, productivity remains small and struggling without external assistance. The influence of the state is an important feature of the Sarawak context and the reliance on farm subsidies is a characteristic of most cash cropping by the Iban in Sarawak.

8.2 Relationships between market gardening and rural-urban migration

The research identified strong relationships between market gardening and rural-urban migration and these are discussed in this section. Of particular note, the research identified an association between the adoption of market gardening activities and rural-urban migration. The use of market gardening as a transitional phase and a lever for socio-economic advancement of migrant households into urban centres was noted. Some linkages between the rise in market gardening in urban centres and growing urban markets were observed. Likewise, relationships between market gardening and improved market access were noted, but the benefits were limited compared to primary cities given the unsustainable nature of markets in small urban centres.

The relationships between market gardening, urban poverty and rural-urban migration

The majority of people interviewed originated from rural communities and at the very least had engaged in subsistence farm activities that were traditional to longhouse communities (e.g. hill padi farming). This rural upbringing undoubtedly influenced their adoption of market gardening activities.

However, there is no substantial evidence to suggest market gardening is an urban pull factor for rural-urban migrants as major pull factors were education for children, medical facilities, off-farm employment and a better quality of life.

In contrast, there is evidence of a relationship between rural-urban migration and the adoption of market gardening activities as a means of integrating individuals and households into an urban environment. Overall, 50% of all market gardeners and market sellers interviewed adopted market gardening activities within 1 year of urban resettlement and 60% within 5 years of urban resettlement. Reasons for the immediate uptake of market gardening activities upon urban resettlement were attributed to the need for households to generate quick cash returns for basic living

and the desire for low skilled migrants to engage in a livelihood when no other alternatives were available.

There is limited evidence to suggest rural-urban migrants progressed from non-commercial urban agriculture to market gardening, but rather the adoption of market gardening or market selling within 1 year of resettlement suggests the uptake of market gardening activities may be a conscious and immediate decision. This aligns with the earlier notion that market gardening has a role in generating quick cash for basic household survival.

There is also a strong correlation between the adoption of market gardening and demographic characteristics of rural-urban migrants. In alignment with Ezedinma and Chukuezi (1999), Flynn (2001) and Wooten (2003), the results show low skilled, poorly educated, and in this case middle-aged women, adopt market gardening activities. This demographic group engage in market gardening activities because they have often followed other skilled family members to urban centres, yet as individuals they do not have suitable employment skills or opportunities to do anything else.

It is difficult to discuss the relationship between the discontinuance of market gardening and the length of time rural-urban migration occurred given only people involved in market gardening activities were interviewed in this research. However, given nearly half the respondents migrated to Kapit between 10 and 30 years ago and continue to market garden, suggests in the context of Sarawak the continuance of market gardening has little relationship to the length of time migrants have settled in urban centres. This area warrants further investigation and factors including the influence of the Department of Agriculture, and the age, ambitions and transferability of limited employment skills among respondents would need to be considered.

In contrast, the adoption of market gardening in the absence of other urban employment opportunities provides evidence to suggest market gardening activities are intended as a lever for socio-economic advancement of people in urban environments, particularly among the younger generations who have ambitions to

move into more profitable livelihoods such as commercial fruit growing. In addition, many respondents had no qualms changing livelihoods if a suitable and more profitable alternative presented itself, suggesting market gardening is used as makeshift livelihood. Whether a change in livelihood actually occurs given the limited education, employment skills and capital of market gardeners and market sellers is yet to be seen. Off-farm employment undertaken by children and the remittances sent back to middle-aged market gardening parents as a result suggests the transition of rural-urban migrants from market gardening to other urban employment is often only achieved by younger up-skilled generations.

The relationship between market gardening and socio-economic advancement in urban centres is also evident by the way market gardening income is spent. Expenditure on household living expenses aligns with the economic advantages described by Bryld (2003:82) of giving the household more mobility by freeing other sources of household income for the welfare of family members. This could be in the form of education for children. Expenditure of market gardening income directly on children's education, household savings and building materials for a new house are also evidence of a relationship between market gardening and socio-economic advancement.

Although there may be a relationship between market gardening and its use as a lever for socio-economic advancement, there does not appear to be a relationship, at least from the cross sectional evidence, between the number of years since migration towards urban centres and the contribution market gardening makes to total household income. The extent migrant households in urban centres diversify and continuously adapt livelihoods to stay afloat, and the constantly changing environment, may explain the absence of a relationship. For example, the contribution of market gardening revenue to total household income may increase if market gardening production is heightened in times of economic insecurity, or it may decrease with increased competition in the market.

The relationship between market gardening and growing urban markets

To some extent there is a relationship between the rise in market gardening and growing urban markets. Many early adopters in Kapit considered market gardening less profitable today than in the 1980s and 1990s despite urban population growth because there were now more market gardeners and market sellers to compete with. The overcrowded Kapit Market was also indicative of a rise in market gardening activity.

Some of the reasons new competitors entered the market gardening sector were due to perceived profits from easy sales in the market place. In contrast to Becker (2000), respondents also highlighted many new entrants to market gardening were a direct result of training and farm subsidies from the Department of Agriculture, creating an oversupply in urban markets. This in turn decreased urban markets (despite urban population growth), because many customers had now learned to grow their own vegetables and had become competitors in the market. In the context of Sarawak, the state therefore has a pivotal role in influencing the growth on the number of market gardeners on one hand, but deterioration of market gardening livelihoods on the other. The Department of Agriculture's goal of expanding into other markets beyond Kapit Town indicates the Department has some awareness of this apparent contradiction.

The relationship between the rise in market gardening and growing markets in urban centres may be more visible in primary cities than in the small urban centres that typify Sarawak. The reason for this is market gardening in small urban centres is not as robust as in primary cities because small urban centres have volatile markets. Rises in market gardeners can be significantly jolted under the influence of government subsidies, rural roads and unemployment in other sectors, and can misconstrue the relationship between the rise in market gardening and growing urban markets.

The relationships between market gardening and improved market access

In alignment with Friesen (1998:33) and Windle and Cramb (1997), the research provides evidence of relationships between market gardening and improved market access. The relationships are in the benefits to market gardeners and market sellers

with improved transportation methods, and the adoption of market gardening by new entrants with improved market access.

With regard to the benefits of improved transportation methods, market sellers were able to access a wider variety of fresh wholesale produce from the primary city of Sibu using Express Boat postal services. The connection of the small urban centre of Kapit to the primary centre of Sibu (140km downstream from Kapit Town) increased the ability of market sellers to compete in Kapit Market with their highly sought imported produce.

Similarly, market gardeners in peripheral areas of Kapit (e.g. the Sungai Sut area 20km from Kapit Town) substantially saved on travelling time and transport costs to Kapit Market using recently constructed public roads above former river transport. This confirms the preliminary findings of Ngidang *et al.* (2004) that some people living on the periphery of Kapit Town are original residents, and it is roads that have brought them closer to the town centre rather than any form of rural-urban migration.

Notably, the decreasing profits experienced by respondents as competition increased in Kapit Market strongly suggests improved market access does not necessarily benefit all market gardeners and market sellers in small urban centres. Rural roads and subsequent improved market access were cited on numerous occasions as a reason for the rise in new entrants to the market gardening sector. While a relationship between market gardening and improved market access is obvious, the rise in new entrants led to increasing competition and decreasing profits in Kapit, as consumer markets in the small urban centre could not sustain the oversupply of produce. The limited benefits to market gardeners in small urban centres concurs with Windle and Cramb's (1997) study of the economic benefits of rural roads to farmers in Sarawak.

8.3 The future of market gardening in urban centres

The results and subsequent discussion have highlighted the concerns of market gardeners and market sellers, including their difficulties with cropping and pest control, unaffordable farm inputs such as fertilisers and sprays, and their ability to compete with so many new entrants in the market place. In addition, the research raises concerns about the rise in market gardening activities as a result of state funded farm subsidies, the dependency this instils in market gardeners, and the impact it has on the demand and supply chains.

The research highlights the role of market gardening as a vital component for household survival by people in urban centres. Many market gardeners, particularly first generation rural-urban migrants, are poorly educated, low skilled, aging and unable to engage in other employment. The expenditure of market gardening income in a hand to mouth fashion and on non-luxury items emphasises the importance of market gardening as a livelihood. Therefore it is critical for these livelihoods to be protected or suitable alternatives presented.

Suggestions for the future of market gardening in Kapit and in the wider context of urban centres include:

The creation of new markets for market gardeners and market sellers.

- New markets include local schools, large local restaurants and industry, which are often supplied in wholesale quantities and prices from middlemen in other districts such as Sibul. Kapit market gardeners do not supply schools and large industries because their production quantities are small and they do not offer wholesale prices.

Coordinated vegetable marketing systems

- In order for small-scale market gardeners to supply larger customers they require marketing systems that are able to consign their produce to the

wholesale quantities and competitive prices demanded by these customers. A market gardeners collective may be one avenue for undertaking this.

Diversification of vegetable crops

- Diversification, for example into sub-temperature vegetables, will open up markets and relieve the competition from a glut of local market gardeners growing and selling the same varieties of produce. Experimental work into what alternative vegetable crops grow well in Kapit needs to be explored.

Diversification into other agricultural products

- A significant portion of land in Kapit Division is unexplored and research into what grows well on its hilly terrain is lacking. This has left the division with untapped resource potential and under utilisation.
- Diversification into other agricultural products, for example debai, isau, durian and other exotic fruits that are known to grow well in Kapit Division, has the potential for niche market creation. Produce could be supplied to local and national markets (e.g. Sibul, Kuching) where growing conditions for these products are less favourable.
- The diversion of farmers into diversified national export markets will also relieve competition in the local Kapit market, allowing small-scale market gardeners who have no intention or capabilities of expanding to prosper at a local level.

The role of the Department of Agriculture

- The assistance of the Department of Agriculture is commendable and the current farm subsidies, training and extension services are clearly benefiting numerous market gardeners. However, it is recommended the Department of Agriculture review the impact of its farm subsidies in light of the rise in

market gardening activities and the subsequent oversupply of common produce in Kapit Market.

- Market gardeners' attitudes towards the Department of Agriculture reflect a high dependency on the agency for farm subsidies. Persistence in subsidies from the department will continue to flood Kapit Market with common produce, as current market gardeners do not have the connections or sufficient outputs to seek fresh markets. A review of the nature and allocation of market gardening subsidies is recommended.
- The middle-aged nature of many Kapit market gardeners and their limited ambitions to expand into large scale commercial farming should be considered by the Department of Agriculture when allocating farm subsidies for projects geared towards regional export orientation.
- Market gardeners are requesting further training on soil management, crop protection and growing techniques, suggesting the one day training seminars of the past are insufficient. In some instances market gardening land is being used intensively year round, without sufficient nutrient replacement or knowledge to do so. Extension workers provide an ideal avenue for knowledge sharing and training in this instance.

8.4 Conclusion

The aim of this research was to investigate the role of market gardening in the livelihood strategies of rural-urban migrants. The urbanising centre of Kapit, Sarawak was used as a case study.

Market gardening emerges as an important source of income for both individuals and households within a diverse livelihood portfolio. Market gardening and associated

selling is the primary source of livelihood for middle-aged, low skilled women and for many migrating from subsistence farming environments. For these people, the adoption of market gardening is a voluntary and natural progression, and is used as a transitional phase and lever for socio-economic advancement where alternative urban employment is unavailable.

The research identified strong relationships between market gardening and rural-urban migration, particularly the adoption of market gardening activities within one year of urban resettlement. Yet given the demography of respondents, namely low skilled, poorly educated women, the transition into off-farm employment was limited. This detracted from the hypothesis that the contribution of market gardening revenue to total household income would taper off over time as migrant households progressed into other forms of urban employment. Likewise, expansion of market gardening beyond a petty trade was limited by the ability and interest of this demographic to access capital, technology and labour in light of the benefits of remittances from gainfully employed children. In this respect, market gardening is biased towards aging, low skilled generations of migrant households and the complete integration of such families into urban employment is often only recognised through younger up-skilled generations. The literature is relatively silent on the transition of migrant households from market gardening to complete off-farm employment and therefore the research in Kapit sheds new light on how market gardening is used over the course of generations to integrate rural households into urban environments.

A rise in market gardening is attributed to growing urban markets, but in the context of Sarawak market gardening also influenced by government subsidies and improved market access. In the case of Kapit, improved market access came in the form of new rural-urban roads and Express Boat postal services, enabling market gardeners to reduce costs of production and market sellers to access a wider variety of produce. However compared to primary cities, the benefits of improved market access are less in small urban centres where consumer markets are variable. Improved market access attracts new entrants to market gardening and the slightest increase in competition can offset the delicate balance between supply and demand in smaller markets.

In light of the importance of market gardening for the survival of many migrant households, a number of suggestions were made in a local context of Kapit, but could be applied to other centres in Sarawak and beyond. These include considerations on agricultural diversification, niche market creation, vegetable marketing systems, training and subsidy allocation. Economic and urban planners should also consider research into land utilisation and alternative livelihoods for low skilled labour.

Overall, the main contribution to the market gardening literature is the elevation of market gardening from being simply a commercial form of land use to an important mechanism for integrating and advancing rural migrant households into an urban setting. In the context of Sarawak, it is particularly important as an income generator for a demographic group of typically poorly educated, low skilled women – many of whom have migrated from subsistence rural environments and have no other urban employment opportunities. These women have followed highly skilled family members in search of better urban employment opportunities and improved standards of living for their children. Market gardening as such does not influence the decision to migrate to urban centres, but turns out to be a highly adaptable and flexible instrument in managing the rural-urban migration process.

The Sarawak case has highlighted the heavy influence of the state, employment declines in other agricultural and forestry sectors, and the expansion of rural-urban roads on the ability for market gardeners to compete in the market place. It has shown how market gardening livelihoods, particularly those of a petty trade nature, are vulnerable to increased competition arising from the influence of state subsidies, employment declines in other sectors and improved market access. The Sarawak case therefore contributes to the literature by heightening awareness of the susceptibility of market gardening livelihoods to wider urbanisation processes. The case study elevates the importance of including market gardening in the management of urban centres and rural-urban migration processes.

Chapter 9



Tanju (the open porch of an Iban longhouse)

Conclusion

9

Conclusion

The aim of this research has been to investigate the role which market gardening plays in the livelihood strategies of rural-urban migrants. Uniquely positioned to both expand with urban growth and draw on the skills of migrating farmers, market gardening would appear in theory to offer a valuable transition phase for families near to towns and without other marketable skills. In response, this research investigates the livelihood strategies of people who established themselves as market gardeners or market sellers in one of the rapidly growing urban areas of Sarawak, Malaysia - the expanding urban centre of Kapit in the interior of the largest and rapidly developing state in Malaysia.

Three key themes emerge from the literature with respect to the relationship between market gardening and urbanisation processes. From an industry perspective market gardening activities are a response to growing urban markets, as the demand for fresh produce increases for example. From a land use perspective market gardening may be viewed as a response to falling costs of production associated with improved access to markets. From a labour market perspective market gardening may be viewed as a response to lack of alternative urban employment opportunities faced by less qualified households. As such market gardening becomes part of the discourse of urban poverty.

The literature characterises the people in developing countries who engage in market gardening as poorly educated, low skilled workers, with market sellers being typically women. However, the literature is relatively silent on the adoption of market gardening by rural-urban migrants who are caught up in the rapid urbanisation processes in developing regions. The literature is also lacking an appreciation of the role of market gardening as a transitional phase as rural households adapt to an urban

setting and the way in which the livelihood portfolio of families changes as this adaptation progresses.

This research contributes to the body of knowledge on market gardening, livelihood strategies and migration by positioning market gardening as a highly flexible and adaptable mechanism for managing the rural-urban transition among households with few labour alternatives. Such perspective elevates the market garden from simply being a land use category to being an active instrument in the management of rural-urban migration processes.

This research shows the role of market gardening in the livelihoods of rural-urban migrants is multifaceted. Market gardening emerges as an important source of income for both individuals and households within a diverse livelihood portfolio. Market gardening and associated selling is the primary source of livelihood for middle-aged, low skilled women, whom migrated from subsistence farming environments and are unable to engage in alternative urban employment. Market gardening is for the most part a voluntary and natural progression in the absence of suitable employment alternatives. As such a rise in the number involved in market gardening is a reflection of the actual and potential urban poverty faced by less qualified individuals.

Many low skilled rural-urban migrants adopt market gardening or associated market selling as their first employment in urban centres. However while providing a source of livelihood, poor off-farm employment skills among first generation migrants also limit their ability to progress to other urban employment. The transition is often only achieved by younger generations including the children of market gardeners whose access to education in urban centres facilitates the transition.

While fuelled by the need for urban employment the rise in market gardening activity is simultaneously a reflection of growing urban markets. In the context of Sarawak however, it is also heavily influenced by the involvement of the state and declines in employment in other agricultural and forestry sectors.

The state has a pivotal role in sustaining market gardening livelihoods through market gardeners dependency on farm subsidies, yet in turn deteriorates market gardening livelihoods for those unable to access such subsidies and remain competitive.

In addition, the expansion of rural-urban roads plays an important role in improving market access and reducing costs of production, yet at the same time heightens competition by attracting new entrants. Thus while improved market access creates opportunities for the expansion of market gardening and market selling, small urban markets struggle to absorb the increases in supply as new growers enter the market.

The findings from Kapit provide useful insights into the characteristics of market gardening and its adoption as a transitional livelihood by rural-urban migrants. Clearly, market gardening is an important livelihood for the basic survival of many migrant households in developing urban centres, however more critical is its significance to middle-aged, low skilled, rural-urban migrant women who use market gardening as a transitional phase into urban settings when no other suitable employment is available. This offers insight into how rural-urban migrants bridge the gap between rural and urban ways of life and introduces a new paradigm into the way market gardening is perceived from an economic form of land use to a fundamental actor in the integration of many rural households into an urban setting.

The research reveals the use of market gardening as a transitional phase into an urban setting is generational as the complete integration of migrant households into urban employment is often only achieved by younger up-skilled generations. This raises questions over how rural-urban migrants with limited urban employment options respond over time to increased competition in the market gardening sector, and is an avenue for further investigation. In addition, research into the livelihoods of rural-urban migrants who cease market gardening activities will shed light on later stages of urban migration processes. Of the migrant market gardeners that make the transition to alternative urban employment, what is the nature of this employment and how do they make the transition? What distinguishes them from the market gardeners that simply retire to a livelihood supported by remittances from educated and up-skilled children?

In summary, market gardening turns out to be a vital component of a diverse livelihood strategy of rural-urban migrants, and in particular for low skilled migrant women. Over a period of generations, market gardening is used as a transitional phase and socio-economic lever for certain migrant households and certain members of migrant households into urban economies when no other urban employment opportunities are available. This heightens the importance of market gardening from being a commercial form of land use to a fundamental component in the management of rural-urban migration processes.

Appendix I

Interview questionnaire for market gardeners

<p align="center">Livelihood strategies of market gardeners, Kapit District, Sarawak Interview questionnaire</p>

Interviewer: _____
 Translator: _____
 Date: _____

DEMOGRAPHIC QUESTIONS	
Participant number:	Ethnicity:
<input type="checkbox"/> Male <input type="checkbox"/> Female	Age:
1. Where is your Rumah panjang (Longhouse)? <i>(Refer to map)</i>	
2. Where is your usual place of residence?	
3. How long have you lived there?	
4. Where did you live before that? Why did you migrate to Kapit?	

5. Who lives with you?

Bilek (family)	Number of children		Who/ Age?	
	Number of male adults		Who?	
	Number of female adults		Who?	
Rumah panjang (Longhouse)	Number of children		Who/ Age?	
	Number of male adults		Who?	
	Number of female adults		Who?	

6. What are your main occupations / sources of income?

Activity	Reason for doing this activity?	1° source of income (✓)	2° source of income (✓)
Market gardening <input type="checkbox"/> Grower / supplier <input type="checkbox"/> Middleman <input type="checkbox"/> Wholesaler <input type="checkbox"/> Seller <input type="checkbox"/> Other _____			

7. What prior occupations have you had?

8. How many years of schooling have you had? What is your highest level of schooling / occupational training?

MARKET GARDENING ACTIVITIES

9. Where do you grow your vegetables? (*Location / Secondary cropping?*)

10. Land use:

Activity	Approx. area of land used (hectares)
Market gardening	

11. Land ownership

- ☐ Leased
☐ Rented
☐ Customary land
☐ Own title How acquired? Purchased / inherited / other _____

When acquired? _____

12. What crops do you grow?

Crop	Why grow this crop? (e.g. price, low set up, good growing conditions)	1° crop (√)	2° crop (√)	Grown primarily for commercial sale (√)	Grown primarily for household consumption (√)

13. What portion of produce goes towards commercial markets / household consumption?

14. Labour

Who helps to grow the crops? (e.g. Participant, Partner, Children, Other relatives)	What activities do they do?	Average number of hours per day spent on growing crops for sale?

15. The sales process

Type of produce sold	Quantity	Average price per unit	Who is it sold to?	Where?	When / how often?

16. How is produce transported from the garden to the point of sale? How long does it take? How often?

17. Is there a middleman/wholesaler in the sales chain? Y / N
What is the nature of the contract with the middleman?
Do they extend credit? What is the credit used for?

INCOME GENERATION AND EXPENDITURE

18. Is market gardening the main source of cash income for your household? Y / N
19. Do you receive a government subsidy to grow your vegetables? Y / N
If yes, provide details:
20. What of the other sources of income for your household? Describe these and who generates them.
21. What portion / percent of your total household income comes from market gardening?
22. Approximately, how much money is generated from market gardening sales?
In last month _____
In last year _____
22. Is payment for produce sales by:
- ☐ Cash
 - ☐ Credit
 - ☐ Goods & service exchange
 - ☐ Other _____
23. Do you get to retain your earnings from market sales or do you pool it with others in the household?
24. How is the income you generate from market gardening spent? Is it your personal spending or is it shared within the household?

MARKET GARDENING AS A LIVELIHOOD STRATEGY

26. How did you learn to market garden?
27. Where, when and why did you begin market gardening?
28. How has competition in the market changed over time?
29. Are there any agencies involved in market gardening activities? (e.g. What role does the Department of Agriculture or the Local Council have in the supply/sales chain?)
30. What are the major obstacles in establishing and maintaining a market garden? (e.g. policies, regulations, physical barriers)
31. How could State or private sector agencies facilitate market gardening activities or improve livelihoods of market gardeners?
32. What is the future for you and market gardening?

Appendix II

Interview questionnaire for market sellers

<p align="center">Livelihood strategies of market sellers, Kapit District, Sarawak</p> <p align="center">Interview questionnaire</p>
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Interviewer: _____

Translator: _____

Date: _____

DEMOGRAPHIC INFORMATION	
Participant number:	Ethnicity:
<input type="checkbox"/> Male <input type="checkbox"/> Female	Age:
1. Where is your Rumah panjang (Longhouse)? (<i>Refer to map</i>)	
2. Where is your usual place of residence?	
3. How long have you lived there?	
4. Where did you live before that? Why did you migrate to Kapit?	

Participant number:	Ethnicity:
<input type="checkbox"/> Male <input type="checkbox"/> Female	Age:
1. Where is your Rumah panjang (Longhouse)? (<i>Refer to map</i>)	
2. Where is your usual place of residence?	
3. How long have you lived there?	
4. Where did you live before that? Why did you migrate to Kapit?	

5. Who lives with you?

Bilek (family)	Number of children		Who/ Age?	
	Number of male adults		Who?	
	Number of female adults		Who?	
Rumah panjang (Longhouse)	Number of children		Who/ Age?	
	Number of male adults		Who?	
	Number of female adults		Who?	

6. What are your main occupations / sources of income?

Activity	Reason for doing this activity?	1° source of income (✓)	2° source of income (✓)
Market gardening <input type="checkbox"/> Grower / supplier <input type="checkbox"/> Middleman <input type="checkbox"/> Wholesaler <input type="checkbox"/> Seller <input type="checkbox"/> Other _____			

7. What prior occupations have you had?

8. How many years of schooling have you had? What is your highest level of schooling / occupational training?

VEGETABLE MARKETING ACTIVITIES

9. Vegetable purchasing (Where, whom & how often do you purchase your vegetables?)

Type of produce purchased	Quantity	Average price per unit	Who is it purchased from?	Where?	When / how often?

10. How do you pay for the produce you purchase?

- ☐ Cash
☐ Credit
☐ Goods & service exchange
☐ Other _____

11. The sales process

Type of produce sold	Quantity	Average price per unit	Who is it sold to?	Where?	When / how often?

12. Labour

Who helps in the marketing of vegetables? (e.g. Participant, Partner, Children, Other relatives)	What activities do they do?	Average number of hours per day spent on marketing activities?

13. Marketing locations & cost

- ☐ Leased From whom? _____
☐ Rented How much? _____
☐ Other _____

14. How is produce transported from the garden to the point of sale? How long does it take? How often?

15. Is there a middleman/wholesaler in the sales chain? Y / N
 What is the nature of the contract with the middleman?
 Do they extend credit? What is the credit used for?

INCOME GENERATION AND EXPENDITURE

16. Is vegetable marketing the main source of cash income for your household? Y / N

17. Do you receive a government subsidy to sell your vegetables? Y / N
 If yes, provide details:

18. What of the other sources of income for your household? Describe these and who generates them.

19. What portion / percent of your total household income comes from vegetable marketing?

20. Approximately, how much money is generated from market gardening sales?
 In last month _____
 In last year _____

21. Is payment for produce sales by:

- ☐ Cash
☐ Credit
☐ Goods & service exchange
☐ Other _____

22. Do you get to retain your earnings from market sales or do you pool it with others in the household?
23. How is the income you generate from vegetable marketing spent? Is it your personal spending or is it shared within the household?

MARKET GARDENING AS A LIVELIHOOD STRATEGY
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24. Where, when and why did you begin vegetable marketing?
25. How has competition in the market changed over time?
26. Are there any agencies involved in vegetable marketing activities? (e.g. What role does the Department of Agriculture or the Local Council have in the supply/sales chain?)
27. What are the major obstacles in establishing and maintaining vegetable marketing activities? (e.g. policies, regulations, physical barriers)
28. How could State or private sector agencies facilitate vegetable marketing activities or improve livelihoods of vegetable sellers?
29. What is the future for you and vegetable marketing?

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