

Universiti Utara Malaysia

From the Selected Works of Md. Mahmudul Alam

Spring 2010

Socioeconomic Profile of Farmer in Malaysia: Study on Integrated Agricultural Development Area in North-West Selangor

Md. Mahmudul Alam
Chamhuri Siwar
Md. Wahid Murad
Rafiqul Islam Molla
Mohd Ekhwan bin Toriman



Available at: <https://works.bepress.com/md-mahmudul-alam/18/>

Socioeconomic Profile of Farmer in Malaysia: Study on Integrated Agricultural Development Area in North-West Selangor

Md. Mahmudul Alam

Postgraduate Student

Institute for Environment and Development (LESTARI)

Universiti Kebangsaan Malaysia, Malaysia

E-mail: rony000@gmail.com

Chamhuri Siwar

Emiretus Professor

Institute for Environment and Development (LESTARI)

Universiti Kebangsaan Malaysia, Malaysia

E-mail: csiwar@ukm.my

Md. Wahid Murad

Senior Lecturer

Department of Economics

Faculty of Management and Economics

University of Malaysia Terengganu, Malaysia

E-mail: mwmurad@gmail.com

Rafiqul Islam Molla

Specialist in Economics

Faculty of Business and Law

Multimedia University, Malaysia

Email: rimolla@gmail.com

Mohd Ekhwan bin Toriman

Associate Professor

School of Social, Development & Environmental Studies (FSSK)

Universiti Kebangsaan Malaysia, Malaysia

E-mail: ikhwan@ukm.my

Citation Reference:

Alam, M.M., Siwar, C., Murad, M.W., Molla, R.I., and Mohd Ekhwan. T. 2010. Socioeconomic Profile of Farmer in Malaysia: Study on Integrated Agricultural Development Area in North-West Selangor, *Agricultural Economics and Rural Development*, Vol. 7(2), pp. 249-265. Available at http://www.ipe.ro/RePEc/iag/iag_pdf/AERD1013_249-265.pdf. (ISSN 1841-0375; Publisher- Institute for Agricultural Economics, National Institute of Economic Research, Romania)

**This is a pre-publication copy.
The published article is copyrighted by the publisher of the journal.**

Socioeconomic Profile of Farmer in Malaysia: Study on Integrated Agricultural Development Area in North-West Selangor

Md. Mahmudul Alam¹, Chamhuri Siwar², Md. Wahid Murad³, Rafiqul Islam Molla⁴, Mohd Ekhwan bin Toriman⁵

Abstract

Agricultural contribution to GDP in Malaysia has been declining since 1970. The usages of agricultural land are also gradually decreasing. Even within the total agricultural area, most of the land has been used for industrial crops, and the ratio between industrial crops and food crops is increasing. Paddy is the main food crop in Malaysia, but as a low rate of productivity, farmers are engaged on part time basis. Therefore, it seems necessary to know the socioeconomic characteristics of the paddy farmers, their livelihood, and agricultural sustainability for policy implementation and its evaluation. This study analyzes the current profile of the paddy farmers in the Integrated Agricultural Development Area (IADA), North-West Selangor, Malaysia based on primary data. The data was collected through a questionnaire survey. Findings of the study suggest policy recommendations and action plans for the improvement of the farmers' livelihood. The findings of the study are important for the policy makers and relevant agencies.

Key words: Land ownership; Crop choice; Yield; Machineries; Dependency ratio; Paddy; Malaysia

JEL-codes: Q15, Q16

Introduction

Malaysia is one of the newly growing industrializing countries. In the path of economic development from agriculture to industrial movement, the agricultural sector of Malaysia has been declining its share of GDP since 1975. In 1970, the contribution of agriculture to GDP was 30.8 percent which is the highest among all sectoral contribution. The contribution of the agriculture to the GDP accounted 22.7 percent in 1975, 22.9 percent in 1980 and 20.8 percent in 1985, but it was still the major contributor in GDP. In 1990, agriculture became the second

¹ Md. Mahmudul Alam, Postgraduate Student, Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor Darul Ehsan, Malaysia, E-mail: rony000@gmail.com; Tel: +601-6279 9091.

² Chamhuri Siwar, Professor, Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor Darul Ehsan, Malaysia, E-mail: csiwar@ukm.my; Tel: +603-8921 4154.

³ Md. Wahid Murad, Senior Lecturer, Department of Economics, Faculty of Management and Economics, University of Malaysia Terengganu, 21030 Kuala Terengganu, Terengganu, Malaysia, E-mail: mwmurad@gmail.com, Tel: +609 668 4152.

⁴ Rafiqul Islam Molla, Specialist in Economics, Faculty of Business and Law, Multimedia University, Melaka, Malaysia, Email: rimolla@gmail.com; Tel: +601 6610 0612.

⁵ Mohd Ekhwan bin Toriman, Associate Professor, School of Social, Development & Environmental Studies (FSSK), Universiti Kebangsaan Malaysia (UKM), 43600 UKM Bangi, Selangor, Malaysia, E-mail: ikhwan@ukm.my, Tel: +603- 8921 3648.

largest sector contributing 18.7 percent to the national GDP. In 1995, the contribution of agriculture to the national GDP further declined to 13.6 percent, but it remained as the second largest sector in the economy. The contribution of the sector continued to decline to 8.9 percent in 2000 and 8.2 percent in 2005. While the agriculture sector was losing its importance to the national economy, services and manufacturing sectors have taken the first and second highest contributing roles respectively, placing the agriculture as the third engine of economic growth in the country

Use of land by Malaysia's agriculture also continues to decrease due to the country's rapid economic development, which occupies more agricultural land mainly for housing, business, and industrial purposes. Since 1960 until 2005, the land use for industrial crops is increasing while it is decreasing for food crops. It just means that the major part of agricultural land is being used for growing industrial crops and that importance of growing food crops continues to decrease. In 1960, for example, land use for food crops accounted for 31.5 percent of the total agricultural land in Malaysia, while it has decreased to 16.3 percent in 2005. Among the industrial crops, palm oil sector accounted for the largest share of the total land utilization in the country. Agricultural land use by the palm oil sector has significantly increased over the last five decades with only 2.1 percent in 1960 to 63.4 percent in 2005. This just reveals the facts that palm oil production has been getting more importance and contributing significantly to the national economy. Yamada (2003: 171) mentioned that the agriculture sector in Malaysia is characterized by a dualistic structure, where large plantation companies are professionally managed who mainly involved in the cultivation of perennial crops such as oil palm, rubber and cocoa, and small farmers are not so well-managed who mainly engaged in the cultivation of food crops.

Rice is the main staple food in Malaysia. There are 0.3 million paddy farmers in Malaysia, of which only 40 percent are full time farmers. The farm sizes of 65 percent of total paddy farmers are below one hectare. The current record shows a negative trend of land usage for paddy production. There are total 426,260 ha paddy planted area, and average yield is 3.5 ton per hectare (Agriculture Statistical Handbook, 2008). Singh et al. (1996) mentioned that the actual farm yields of rice in Malaysia vary from 3-5 tons per hectare, where potential yield is 7.2 tons. Pio Lopez (2007) mentioned that rice production in Malaysia is going to end due to the continued decline in cultivated area, negligible gains in productivity, continued increases in the cost of production and decreasing profitability. Jayawardane (1996) mentioned that labor, farm power, fertilizer and agro-chemicals demand about 90 percent of the total paddy yield, where the share of the labor component alone is about 45 percent.

The Third Malaysia Plan (1976) reported that the incidence of poverty was 88 percent among the rice farmers. NRS (2001) also reported that due to the climate change most vulnerable group of people are the poor and hardcore poor having relatively larger household members and involving in agricultural activities. While working on the Muda Agricultural Development Authority (MADA) area, Corner (1981) observed that there is a need for the expansion of off-farm employment as an anti-poverty strategy. Shand and Chew (1983) conducted their research in Kelantan, Malaysia and illustrated that a large majority of farmers had relied heavily on off-farm employment to achieve even a modest standard of living. To assess the socioeconomic profile of farmers in Selangor, Malaysia, another study has been revealed that 81 percent of farmers were between 20 and 60 years old, and 84 percent have attained at least primary education (TaniNet 2nd Report, 2000).

All of these factors affect, directly or indirectly, the social and economic sustainability of the farmers. Upon realizing the problems Second National Agricultural Policy (1992-1997) has been revised in 1998 and Third National Agricultural Policy (1998-2010) has been introduced in Malaysia, which was based on a vision of sustainable development of a dynamic agricultural sector focusing on the market-led, commercialized, efficient and competitive growth of agriculture. The principal aim of Third National Agricultural Policy (1998-2010) is to maximize income of the stakeholders through optimal utilization of resources. So, this paper is an attempt to check the socioeconomic characteristics of farmers and farms to become adapt to the current policy.

To determine the characteristics of the paddy farms in Malaysia, this study mostly relies on primary data that were collected through an in depth survey on farmers in the area of Integrated Agricultural Development Area (IADA), North-West Selangor, Malaysia. The target group of the survey is paddy producing farmers. A structured questionnaire was used and data were collected through interview guided by the regular remunerators of IADA authority under the direct supervision of IADA officials. IADA in North-West Selangor consists of eight areas where total recorded paddy farmers are 10,300. Among the total population size of 10,300, a sample of 198 respondents is considered for this study. These 198 households cover total 577.53 ha of paddy area. The number of sample is proportionately distributed among the eight areas based on the size of the irrigated land area. The sample within the area is selected randomly.

Background of the Area

The agricultural history of the study area started before 1930. In 1932, an irrigation controlled area was built at Pancang Bedena and 15000 acre land was converted to rice field. In this area the planting started in 1936. The yield was very low at that time due to water shortage. To solve the water problem, Tenggi river was built in the same year of 1936. Since 1948, concrete water ways have continually been built. In 1962, yearly double planting of paddy has been introduced. In 1962, pump house has been built in Began Terap to provide sufficient water in remote land areas in the south. In 1966, all paddy area has been carried out for double planting per year. In 1978, Pulau Burung Landfill Site (PBLs) was established that helped to increase productivity, setup price, upgraded and improved the agricultural plots infrastructures, and looked after the welfare of the farmers. In 1982, planting by seeds sowing has been introduced in this area. Before it was changed to North West Selangor IADP, it was called Tanjung Karang Drainage Scheme. The project has been completed in 1985 costing USD\$87 million, financed by World Bank loan. The 6th IADP at North West Selangor was launched on 6 Jun, 1978 including the area of Kuala Selangor and Sungai Berrnam. Now the IADA in North West Selangor consists of eight areas - Sawah Sempadan, Sg. Burong, Sekinchan, Sg. Leman, Pasir Panjang, Sg. Nipah, Panchang Bedena, Bagan Terap.

Now the IADA in North West Selangor consists of eight areas - Sawah Sempadan, Sg. Burong, Sekinchan, Sg. Leman, Pasir Panjang, Sg. Nipah, Panchang Bedena, Bagan Terap. Here total agricultural land area is 100,000 hectare (ha), where 55,000 ha are used for palm oil, 20,000 ha for coconut, 5,000 ha for fruits and vegetable, and 20,000 ha for paddy. This 20,000 ha for paddy area consists of river, drain, and road. Here total paddy producible area is 18,638 ha, where paddy planted area is 18,355 ha and unused land is 283 ha. Total paddy irrigated area is considered as 18,980 ha, where extra 625 ha is used for drainage. There are total of 10,300 paddy and 30,000 for other crops producers. Total size of the agricultural community is considered as 50,000.

Socioeconomic Status of Farmers and Farms

The socioeconomic approach is mainly concerned with the social, economic, and political aspects of individuals or social groups in society (Adger, 1999). Generally the socioeconomic approach focuses on identifying the adaptive capacity of individuals or communities based on their internal characteristics such as, education, gender, wealth, health status, access to credit, access to information and technology, formal and informal (social) capital, political power, and so on. Variations of these factors are responsible for the variations in socioeconomic characteristics of farmers. The findings about the socioeconomic status of the study area are given below.

Ethnicity

According to the records of IADA the distribution of ethnic groups among the farming community is 65 percent Malay, 22 percent Chinese and 13 percent Indian, whereas the survey covered distribution for this study is 89.9 percent Malay and 10.1 percent Chinese. There are few strong reasons behind this asymmetrical distribution of sample with respect to race. The survey is clustered based on place rather than ethnicity. Within a geographical location, the survey is conducted in random basis, but geographically in most cases the same race group stay together and their localized distributions are not same at all.

Gender

In terms of gender, the distribution of sample is 9.6 percent females and 90.4 percent males. Among the Chinese group only male farmers are available in the survey and among the Malay group the proportion of female farmers is almost the same for all locations.

Table 1: Ethnicity and Gender Distribution of Farmers

Name of the Area	Female			Male			Total
	Chinese	Malay	Total	Chinese	Malay	Total	
Bagan Terap		4	4		21	21	25
Panchang Bedena		6	6		29	29	35
Pasir Panjang		3	3		15	15	18
Sawah Simpadan		1	1		24	24	25
Sekinchan				19		19	19
Sg Lemam	1	2	3		21	21	24
Sg Nipah		1	1		19	19	20
Sg. Burong		1	1		31	31	32
Total	1	18	19	19	160	179	198
% of Total	0.5%	9.1%	9.6%	9.6%	80.8%	90.4%	100%

Age

The average age of all farmers is 52.9 years where that of males is 52.9 years and that of females is 53.5 years old. Among the female farmers, minimum age is 25 years and maximum is 75 years old. Among the male farmers, minimum age is 27 years and maximum is 84 years old. In total, only 8.5 percent farmers are below 40 years old, 18.2 percent are above 60 years old and rest 62.1 percent is between 40 to 60 years old.

Table 2: Age and Gender Distribution of Farmers

Name of the Area	Average Age		
	Female	Male	All
Bagan Terap	60	55	55.8
Panchang Bedena	43.8	51.3	50
Pasir Panjang	62.7	56.5	57.6
Sawah Simpadan	63	56.2	56.5
Sekinchan		53.6	53.6
Sg Leman	53.3	53.7	53.7
Sg Nipah	45	48.6	48.5
Sg. Burong	58	50.1	50.4
All Area	53.5	52.9	52.9

Table 3: Age Range and Area wise Distribution of Farmers

Name of the Area	Age Range												Sample Total
	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80+	
Bagan Terap	1		1	3	2	3	5	3	4	3			25
Panchang Bedena	1	2	3	7	4	4	5	5	2	1	1		35
Pasir Panjang		1		4	2	2	2	1	1	2	1	2	18
Sawah Simpadan		1		5	2	4	2	4	2	4	1		25
Sekinchan		1		1	5	3	2	6			1		19
Sg Leman	1		2	3	2	6	2	1	4	2	1		24
Sg Nipah				5	8	3	2	2					20
Sg. Burong		1	2	8	4	6	7		2	2			32
Total	3	6	8	36	29	31	27	22	15	14	5	2	198
% of Total	1.5%	3.0%	4.0%	18.2%	14.6%	15.7%	13.6%	11.1%	7.6%	7.1%	2.5%	1.0%	100%

Education

Most of the farmers have basic primary education (47.5 percent) followed by secondary education (42.9 percent). Only 4 percent farmers have tertiary education and 3.5 percent have no education.

Table 4: Education Level and Area wise Distribution of Farmers

Name of the Area	Level of Education						Sample Total
	Illiterate	Primary	Secondary	Diploma	Graduate	Other	
Bagan Terap		1	15	8	1		25
Panchang Bedena		1	14	17	2	1	35
Pasir Panjang		1	11	5		1	18
Sawah Simpadan		3	10	10	1	1	25
Sekinchan			15	4			19
Sg Leman		1	10	12		1	24
Sg Nipah			8	12			20
Sg. Burong			11	17	2	1	32
All Area Total		7	94	85	6	4	198
% of Total		3.5%	47.5%	42.9%	3.0%	2.0%	100%

Marital Status

93 percent of the total respondents are married where 3 percent are unmarried. Among the women farmers, 42.1 percent are widows.

Table 5: Marital Status and Area wise Distribution of Farmers

Name of the Area	Marital Status			Sample Total
	Married	Single	Widow	
Bagan Terap	21	1	3	25
Panchang Bedena	32	1	2	35
Pasir Panjang	16	1	1	18
Sawah Simpadan	24		1	25
Sekinchan	19			19
Sg Leman	24			24
Sg Nipah	20			20
Sg. Burong	28	3	1	32
All Area Total	184	6	8	198

Family Size

As the study reveals, 29.3 percent of the families have three members, 52 percent have four to six members and 18.7 percent have more than six members in each family.

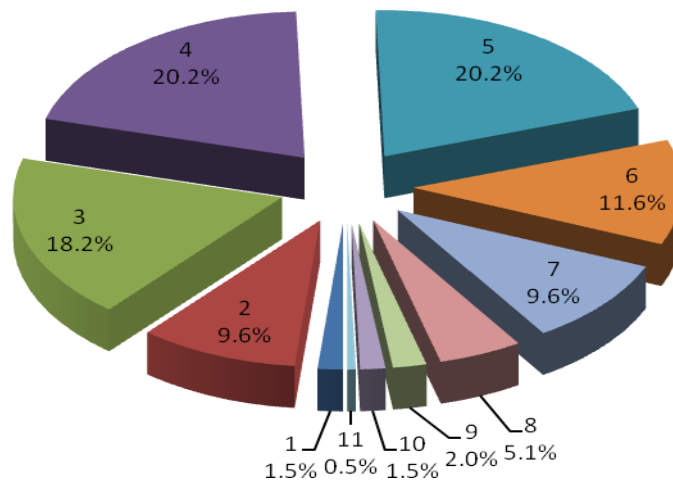


Figure 1: Household Size of Farmers in North-West Selangor, Malaysia

Occupation

Agriculture is the main occupation of 88.4 percent and supplementary occupation of 8.6 percent heads of household in farmers’ community. In addition, agriculture is the main occupation of 3.5 percent and supplementary occupation of 1 percent spouse of household head in farmers’ community. At the household level, 80.3 percent households have no other occupation except farming, which means 80.3 percent farming households are fully dependent on agriculture.

Table 6: Main Occupation and Supplementary Occupation of Head of Household or Respondents

Main Occupation	Supplementary Occupations					Total
	Business	Farmer	Housewife	Job Holder	No Job	

Business		3				3
Farmer	2		1	9	163	175
Housewife		1			5	6
Job Holder		13			1	14
Total	2	17	1	9	169	198

Table 7: Main Occupation and Supplementary Occupation of Spouse of Head of Household or Respondents

Main Occupation of Spouse	Supplementary Occupation		Total
	Farmer	No Job	
Business		2	2
Farmer		7	7
Housewife	1	130	131
Job Holder	1	11	12
No Job		14	14
Not Respond		32	32
All Total	2	196	198

Earning Family Members

Among the household of farming community, 89.9 percent have only one earning member, 8.6 percent have two earning members, and 1.5 percent have three and above earning family members. Among 89.9 percent households, who have only one earning family member, 91.2 percent have no other activities except agricultural activities.

Table 8: Total Household Members and Earning Household Members

Household Size	No. of Working Family Members in Each Household				No. of Households	% of Total Household
	1	2	3	4		
1	3				3	1.50%
2	13	6			19	9.60%
3	32	3	1		36	18.20%
4	38	1	1		40	20.20%
5	37	3			40	20.20%
6	21	1		1	23	11.60%
7	16	3			19	9.60%
8	10				10	5.10%
9	4				4	2.00%
10	3				3	1.50%
12	1				1	0.50%
No. of Households	178	17	2	1	198	100%
% of Total Household	89.9%	8.6%	1.0%	0.5%	100%	

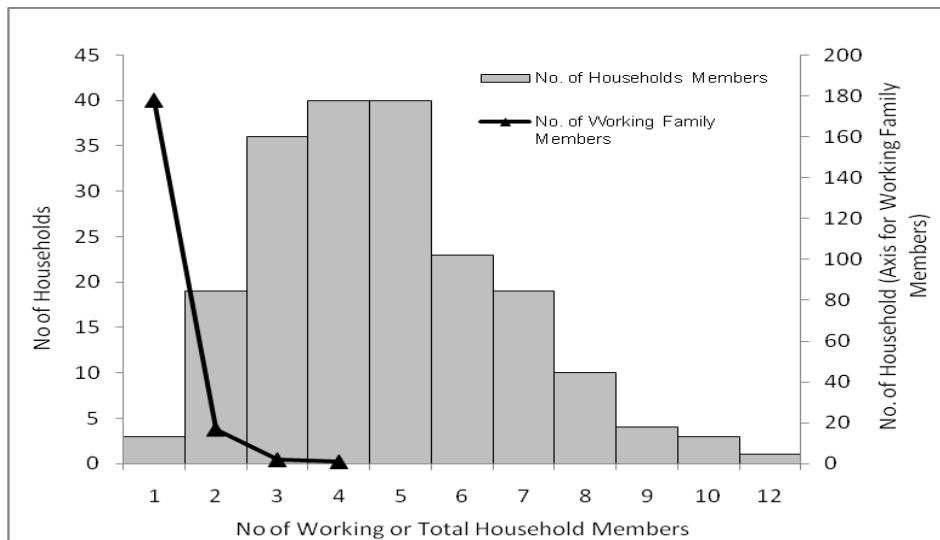


Figure 2: Distribution of Total Household Members and Earning Members

Earning Ratio and Dependency Ratio

At the household level, the earning family members to total family members ratio is 0.294, indicating only 29.4 percent of family members are engaged in economic activities. However, at household level, dependent family members to earning family members ratio is 3.52, meaning one earning person needs to bear expenses of other 3.52 persons, and total 4.52 persons including himself. It also means that the burden rate for each earning member is 352 percent. The dependency ratio highly varies among households; the standard deviation is 2.09. The range of this dependency ratio is minimum 0 to maximum 11 times.

Table 9: Average Dependency Ratio and Earning Ratio by Area

Area	Average Family Size	Average Earning Family Size	Average Dependency/ Burden Ratio ¹	Average Earning Ratio ²
Bagan Terap	4.5	1.04	3.42	0.28
Panchang Bedena	4.9	1.1	3.73	0.25
Pasir Panjang	4.5	1.1	3.39	0.43
Sawah Simpadan	4.4	1.6	2.49	0.41
Sekinchan	5.7	1	4.68	0.2
Sg Leman	5.3	1.1	4.08	0.25
Sg Nipah	4.5	1.1	3.4	0.28
Sg. Burong	4.3	1	3.22	0.29
Individual Household Average	4.7	1.1	3.52	0.29
Maximum			11	1
Minimum			0	0.08
Standard Deviation			2.09	0.2

¹ Dependency Ratio = (Dependent Family Members/ Earning Members);

² Earnings Ratio= (Earning Family Members/ Total Member)

Home Ownership

Among the farming community, 99 percent of the farmers have their own residences. This means farmers are stable in terms of having permanent address and staying place.

Table 10: Types of Home Ownership of Farmers by Area

Name of the Area	Home Ownership		Sample Total
	Own	Rent	
Bagan Terap	25		25
Panchang Bedena	34	1	35
Pasir Panjang	18		18
Sawah Simpadan	25		25
Sekinchan	19		19
Sg Leman	24		24
Sg Nipah	20		20
Sg. Burong	31	1	32
All Area Total	196	2	198
% of Total	99%	1%	100%

Types and Status of Residence

In total, 29.8 percent of farmers' houses are made of brick, 48 percent are made of both brick and wood, and 22.2 percent are made of wood. Among the Chinese farmers, 45 percent have brick made houses, 30 percent have brick and wood mixed houses, and 25 percent have wood made houses. Among the Malay farmers, 28 percent have brick made houses, 53.3 percent have mixed houses, and 22.2 percent have wood made houses. Most of the Chinese houses are made of brick, and most of the Malay houses are made of both brick and wood. So, Chinese farmers are comparatively richer than Malay farmers.

Table 11: Types of House of Farmers by Area

Name of the Area	Types of House			Sample Total
	Brick	Mixed	Wood	
Bagan Terap	5	11	9	25
Panchang Bedena	10	19	6	35
Pasir Panjang	9	5	4	18
Sawah Simpadan	5	14	6	25
Sekinchan	8	6	5	19
Sg Leman	8	12	4	24
Sg Nipah	5	11	4	20
Sg. Burong	9	17	6	32
All Area Total	59	95	44	198
% of Total	29.8%	48.0%	22.2%	100%

Table 12: Types of House of Farmers by Ethnic Group

Race	Types of House			Sample Total
	Brick	Mixed	Wood	
Chinese	9	6	5	20
Malay	50	89	39	178
Total	59	95	44	198

If actual or an imputed monthly rents of houses are calculated, the rent of 35 percent houses is up to Ringgit Malaysia (RM) 200 and all of them are Malay households, i.e., 39.3 percent of total Malay households. The actual or imputed monthly rents for 51.5 percent of total, 30 percent of Chinese and 53.9 percent of Malay households are in the range of RM 200-400, indicating mostly Malay farmers are in the middle class group. The rest, 13.1 percent of total, 70 percent of Chinese and 6.7 percent of Malay are in the range of RM 400 and above group, indicating most of the Chinese are in the high income group.

Table 13: Monthly Imputed Value of Farmers' House by Area

Name of the Area	Range of Monthly Imputed Value of Home						Sample Total
	0-100	101-200	201-300	301-400	401-500	500+	
Bagan Terap	1	4	12	7	1		25
Panchang Bedena		5	15	14		1	35
Pasir Panjang	1	9	4	2	2		18
Sawah Simpadan		19	4	1	1		25
Sekinchan			2	4	11	2	19
Sg Leman	1	13	3	4	1	2	24
Sg Nipah		11	9				20
Sg. Burong	1	5	14	7	5		32
All Area Total	4	66	63	39	21	5	198
% of Total	2.0%	33.3%	31.8%	19.7%	10.6%	2.5%	100%

Table 14: Monthly Imputed Value of Farmers' House by Ethnic Group

Ethnicity	Range of Imputed Value of Home						Sample Total
	0-100	101-200	201-300	301-400	401-500	500+	
Chinese			2	4	12	2	20
Malay	4	66	61	35	9	3	178
All Total	4	66	63	39	21	5	198
% of Total	2.0%	33.3%	31.8%	19.7%	10.6%	2.5%	100%

Availability of Vehicle

At household level, farmers have several types of vehicles available. Among the household vehicles, 99 percent have motorcycle, 67.2 percent have car, 49.5 percent have bicycle and 12.1 percent have lorry or van. Among all farmers, 56 percent of total households have one car and 11 percent have two or more cars. A total of 38.9 percent households have one motorcycle and 60.1 percent have two or more. A total of 27.3 percent of the households have one bicycle and 22.2 percent have two or more. Only 9.6 percent households have one lorry/ van and 2.5 percent have two or more. Overall, all households of the farmer have minimum one vehicle.

Table 15: Types and Number of Vehicles Available of Farmers' Household

No. of Vehicle	Types of Vehicle			
	Car	Lorry/ Van	Motorcycle	Bicycle
1	111	19	77	54
2	21	2	87	26
3	1	3	20	15
4	0	0	9	2
5	0	0	3	0
6	0	0	0	0
7	0	0	0	1
No. of Household	133	24	196	98
% of Total	67.2%	12.1%	99.0%	49.5%

Distance between Field and Home

In most cases farmers' residence is close to their land. 63.6 percent of the farmers' field is within 1km from home, 32.3 percent mentioned their field is between 2-5 km distance from home, and only 4 percent mentioned it is over 5 km.

Table 16: Distance (KM) between Home and Field of Farmers

Name of the Area	Distance (KM)						Sample Total
	0-1	1-2	2-3	3-4	4-5	5+	
Bagan Terap	13	4	2	1		5	25
Panchang Bedena	21	7	3	3		1	35
Pasir Panjang	17	1					18
Sawah Simpadan	23	1				1	25
Sekinchan		11	2	5		1	19
Sg Leman	22		1	1			24
Sg Nipah	14	4	1		1		20
Sg. Burong	16	9	3	4			32
All Area Total	126	37	12	14	1	8	198
% of Total	63.60%	18.70%	6.10%	7.10%	0.50%	4.00%	100%

Size of Paddy Farm

The size of 17.2 percent of the farms is below 1 hectare, 59.1 percent is between 1-3 hectares, 12.1 percent is between 3-5 hectares and 11.6 percent is 5 hectares or above. So, commercial farms are increasing more in terms of small farmers.

Table 17: Size and Ownership of Paddy Farm

Paddy Cultivated Land Size (Ha)	No. of Farmers Cultivating Own Land	No. of Farmers Cultivating Rent Land	No. of Farmers Cultivating Both Own and Rent Land	Total Farmer
Below 1	12	0	22	34
1- 2	61	11	16	88
2- 3	18	7	4	29
3- 4	10	6	2	18
4- 5	1	2	3	6
5- 6		2	1	3
6- 7		2	1	3
7- 8	2	2	4	8
8+	1	1	7	9
Total	105	33	60	198
% of Total	53.0%	16.7%	30.3%	100%

Yield of Paddy Production

With very little fluctuation, the yields of paddy in main season and off-season are close. The yield (per hectare) of 13.6 percent of the farmers is below 5 tons, 58.5 percent of the farmers is 5-8 tons, and 27.8 percent of the farmers is 8 tons or above. Average yield of Chinese is far better than Malays. The average yield per hectare of Chinese is 10.09 tons where Malays is 6.47 tons, and total is 6.85 tons. The yields of Sekinchan area, where most farmers are Chinese, are very high in respect to yield of other locality because of high productivity and farm management of Chinese ethnic group.

Table 18: Paddy Yield in Main Season and Off Season

Yield in Main Season	Yield in Off-Season (Ton/ Ha)											Sample Total	% of Total
	Below 3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12+		
Below 3	4	1										5	2.5
3-4	2	4										6	3.0
4-5		1	10		1							12	6.1
5-6		1	5	40		1						47	23.7
6-7				10	34							44	22.2
7-8					6	17	1					24	12.1
8-9						5	10	1				16	8.1
9-10							5	7	2			14	7.1
10-11								7	13			20	10.1
11-12							1		5	3		9	4.5
12+											1	1	0.5
Total	6	7	15	50	41	23	17	15	20	3	1	198	100
% of Total	3.0	3.5	7.6	25.3	20.7	11.6	8.6	7.6	10.1	1.5	0.5	100	

Table 19: Paddy Yield per Hectare by Ethnic Group

Ethnicity	Yield per Ha. (Yearly Average)											Sample Total	Average Yield
	Below 3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12+		
Chinese								8	11	1		20	10.09
Malay	7	5	15	47	44	25	16	8	6	4	1	178	6.47
Total	7	5	15	47	44	25	16	16	17	5	1	198	6.85
% of Total	3.50	2.5	7.6	23.7	22.2	12.6	8.1	8.1	8.6	2.5	0.5		

Table 20: Paddy Yield per Hectare by Area

Area	Yield per Ha. (Yearly Average)											Sample Total	Average Yield
	Below 3	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12+		
Bagan Terap	3	1	4	6	6	1	1	1	1	1		25	5.79
Panchang Bedena	1		1	15	9	5	1	1	1		1	35	6.47
Pasir Panjang		2	1	5	4	2	1	1	1	1		18	6.53
Sawah Simpadan	2	1	4	9	7						2	25	5.7
Sekinchan								7	11	1		19	10.11
Sg Leman	1		3	4	9	3	2	2				24	6.42
Sg Nipah				4	3	9	4					20	7.13
Sg. Burong		1	2	4	6	5	7	4	3			32	7.35
Total	7	5	15	47	44	25	16	16	17	5	1	198	6.85
% of Total	3.50	2.5	7.6	23.7	22.2	12.6	8.1	8.1	8.6	2.5	0.5		

The target of IADA is 7.5 ton paddy per hectare. But the actual average yield is 6.85 ton per hectare has been found by the survey. Moreover, 64.6 percent of farmers and 50 percent of paddy cultivated areas are below the target level. According to the statistics, paddy yield in the IADA, West Selangor area is 5.042 ton in 2007 that decreases to 4.819 ton in 2008 (Agriculture Statistical Handbook 2008).

Production of Other Crops

According to IADA, in spite of government regulation, a total of 384 hectares of rice plots are used for other purposes - business (6 percent), commercial (25 percent), fruits plant (44 percent), vegetables (7 percent), livestock (13 percent), other (5 percent). This survey shows 41.9 percent paddy producing farmers are engaged in livestock or other crops production. Among them, 26.8 percent are engaged in Palm Oil production and 5 percent in coconut production.

Table 21: Production of Other Crops and Planted Area (Ha) except Paddy

Crops	Area						Total	% of Total Other Crops Producer	% of Total Paddy Producing Farmers
	Below 1	1-2	2-3	3-4	4+	NR			
Apple						1	1	1.20%	0.50%
Aquaculture	1						1	1.20%	0.50%
Banana		1				2	3	3.60%	1.50%
Coco						1	1	1.20%	0.50%
Coconut	1	1				8	10	12.00%	5.10%
Fishery	1					1	2	2.40%	1.00%
Mango		2				1	3	3.60%	1.50%
Tuber	1					2	3	3.60%	1.50%
Palm Oil	12	6	3		2	30	53	63.90%	26.80%
Vegetable			1			2	3	3.60%	1.50%
Corn			1				1	1.20%	0.50%
Lime						1	1	1.20%	0.50%
Sugarcane						1	1	1.20%	0.50%
Total	16	10	5	0	2	50	83	100%	41.90%
% of Total Other Crops Producer	19.30%	12%	6.0%	0.0%	2.4%	60.2%	100%		
% of Total Paddy Producing Farmers	8.10%	5.1%	2.5%	0.0%	1.0%	25.3%	41.90%		

Ownership of Agricultural Land

Among the farmers, 53 percent are cultivating own land only (traditional owners), 16.7 percent are cultivating on rented land only (enterprises), and 30.3 percent are cultivating both own and rented land (mixture of both). Among the own land cultivating farmers, the size of farm below 1 hectare is 11.4 percent, that between 1 to 3 hectares is 75.2 percent, and 3 or above is 13.3 percent. Among the farmers who are cultivating on rented lands, the size of farm of 1 to 3 hectares is 54.5 percent and 3 or above is 45.5 percent. Those who cultivate on rented land only are not cultivating below 1 hectare land area. Among the farmers who cultivate paddy on both rented and own land, 36.7 percent of farms' size is below 1 hectares, 33.3 percent is 1 to 3 hectares and 30 percent is 3 hectares or above.

Availability of Machineries

Among the farmers, 7.1 percent have heavy tractors, 6.1 percent have light, 57.6 percent have power sprayers, 48 percent have motorized blower water pumps, 57.6 percent have lawn-mowers and 54.4 percent have poison sprayers. A total 6.6 percent of the farmers have none of these machineries, 23.7 percent have only one type of machinery, 26.3 percent have any two types of machineries, 24.2 percent have any three types of machineries, and 19.2 percent

have more than three types of machineries. It indicates that farmers are transforming to machine oriented from labour oriented.

Table 22: Types and Number of Machineries Available of Farmers

No. of Vehicle	Types of Machinery						
	Combine harvester	Heavy Tractor	Light	Power Sprayer	Motorized Blower Water Pump	Lawn-mower	Poison Sprayer
1		9	9	84	73	104	79
2		2	2	22	16	10	25
3		1		6	3		4
4		2	1	1	2		
5				1			
6					1		
Total	0	14	12	114	95	114	108
% of Total	0.00%	7.10%	6.10%	57.60%	48.00%	57.60%	54.50%

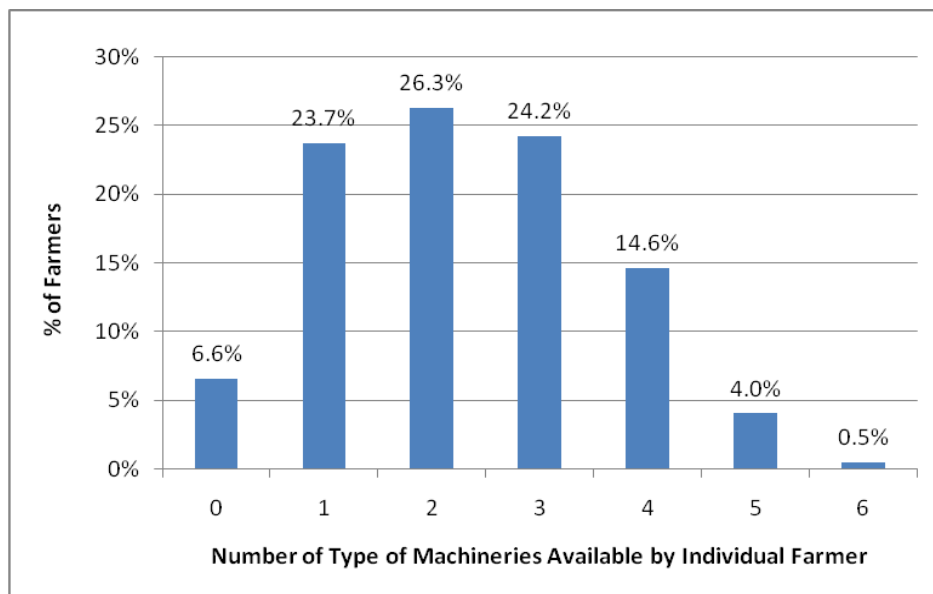


Figure 3: Different Types of Machineries Available by Individual Farmer
Source: Primary Data from Survey

Conclusion and Recommendations

The socioeconomic characteristics of farmer and farm are important for better policy options. Though the research location is under Integrated Agricultural Development Area (IADA), the characteristics of farming community are different than other social groups. Due to low agricultural profitability, young people are not interested in agriculture and shift towards SME and industrial sectors. So, the farmers are old age group and also less productive group. Most of the farmers have large family size and no alternative sources of income except agriculture. Moreover, most of the cases there is only one earning family members as a result the dependency ratios are very high. Majority of the farmers are educated, but highly educated people are also not interested in agriculture because low profitability in respect to off-farm wage. Most of the farmers have own house and minimum one vehicle per household. The agricultural fields of the farmers are also close to their house. Based on the ethnicity there are several differences among farmers groups. Chinese farmers are richer and their productivity is better than Malay farmers.

In the study area, the component of paddy productivity including irrigation, timing of crop cycle, fertilizers etc are highly controlled by IADA authority. Here, government make rules to produce particular crop in particular area, but farmers' tendency increases to violate the rule due to changing profitability rate among different crops. As a result, expected areas of cultivation for a particular crop differ highly than actual cultivated areas. In some cases, farmers are not interested to cultivate land so that total cultivated land also differs from cultivatable land. Still now, most of the farmers are the small farmers, but day by day commercial farms are increasing. Due to low profitability, small land owners are interested to lease land to large farms, and the number of large farm increases due to the opportunity of economies of scale. Currently, paddy productivity of half of the farmers under IADA North-West Selangor is below the target level, but overall productivity is close to target level. Moreover, the overall rate of paddy productivity under this IADA is far better than national rate. The reason of the high productivity rate in this area is the commercial large farms, not the individual farmers. The commercial farms also have good technology rather than labor oriented approaches, and they also take the opportunity of high productivity incentive from government. So, there is a dilemma for high productivity vs. socioeconomic sustainability of small farmers.

Government bodies need to carefully define its subsidy supports and incentive programmes to influence farm-level production practices and financial management. Furthermore, it needs to define and ensure the compensation, minimum income protection, and insurance facility for the affected groups. Other relevant factors, such as agricultural wage, land leasing system and rate, maximum farm size etc need much attention. Here government tries to increase overall productivity to gain self sufficiency, or close to self sufficiency, and to ensure food security. That causes to increase farm size and commercial farm, which will further increase income inequality and vulnerability of small farmers. Moreover, if government allots more land to Chinese farmers due to their high productivity, it will also create social imbalance. Therefore, government needs to take policy to improve the productivity of Malay farmers through specific training or education programmes, awareness creation program, extra incentive programme etc. These factors are very important for sustainability of small farmers, poverty reduction and reduce income inequality.

Here agricultural policies and investments need to be more strategic. Production practices are important relative to current government policy. Government assigned the area only for paddy production. It has several implications. Farmers are not allowed to select crops by their own choice regardless of their tendency to produce own chosen crops. Moreover, land degradation is high in this area due to mono crop production. So, based on soil suitability, crop rotation and crop variety are also needed to maintain land fertility and reduce the potential risk of climate change in coming days.

Reference

- Adger, W.N. (1999). "Social vulnerability to climate change and extremes in coastal Vietnam". *World Development* 27(2): 249–269.
- Agriculture Statistical Handbook*. (2008). "Paddy". Ministry of Agriculture. Malaysia.
- Corner, L. (1981). "The impact of rural outmigration: labor supply and cultivation techniques in a double cropped padi area, West Malaysia", PhD thesis, Macquarie University, Sydney.

- Jayawardane, S.N. (1996). "Socio-economic constraints and future prospects for crop diversification in minor irrigation schemes", workshop on crop diversification, Colombo.
- NRS (2001). *National Response Strategies to Climate Change*. Ministry of Science, Technology and the Environment, Malaysia.
- Pio Lopez, G. (2007). "Economic reforms for paddy sub-sector", *The Star Online*, 25 June, available at <http://biz.thestar.com.my/news/story.asp?file=/2007/6/25/business/18087959&sec=business>.
- Second National Agricultural Policy (1992-1997)*. Kuala Lumpur: Ministry of Agriculture, Malaysia.
- Shand, R.T. and T.A. Chew (1983). "Off farm employment in the Kemubu Project in Kelantan, Malaysia". *Presented at a conference in Chiang-Mai, Thailand, 23-26 August*. Available at <http://www.cababstractsplus.org/abstracts/Abstract.aspx?AcNo=19876704459>.
- Singh, S., Amartalingam, R., Wan Harun, W.S. & Islam, M.T. (1996). "Simulated impact of climate change on rice production in Peninsular Malaysia". *Proceeding of National Conference on Climate Change*. pp. 41-49, UPM, Malaysia.
- TaniNet 2nd Report (2000). *Second Quarter, DAGS Report, TaniNet Project*, UKM-MTDC Bangi, Selangor, Malaysia.
- Third Malaysia Plan (1976-1980)*. Kuala Lumpur: National Printing Malaysia Berhad.
- Third National Agricultural Policy (1998-2010)*. Kuala Lumpur: Ministry of Agriculture.
- Yamada, Saburo (2003). "Regional Survey Report On Agricultural Productivity Index". Asian Productivity Organization, Japan. Available at http://www.apo-tokyo.org/projreps_acd/15_03-AG-GE-SYP-01-B.pdf.