SOCIO-ECONOMIC BACKGROUNDS AND INCOME GENERATION OF HERBAL CULTIVATORS IN PENINSULAR MALAYSIA

AR Rohana, HF Lim & A Ismariah

Forest Research Institute Malaysia
Tel: 03-62797559. E-mail: rohanasr@frim.gov.my

INTRODUCTION

The herbal industry has been expected to contribute to the Economic Transformation Programme (ETP). Emphasis has been given by the government to further strengthen the industry. It indirectly encourages farmers to be involved with herbal cultivation. Herbal cultivation is very much related to the socio-economic background of the cultivators. It is therefore necessary to examine the socio-economic characteristics of cultivators which could be used in policy formulation and programme implementation to further develop the herbal industry in Malaysia.

MATERIALS AND METHODS

In the 2011 study, in addition to the general survey of 673 cultivators, an in-depth survey was carried out of 161 herbal cultivators (24%), to understand their socio-economic background and problems. Selection of the sample was based on their distribution by state, herbal species, hectareage of herbal cultivation and availability of cultivators at the time of the survey. Structured questionnaire was used during the survey.

RESULTS AND DISCUSSION

Socio-economic background of herbal cultivators

The findings show that herbal cultivation in Peninsular Malaysia is generally a male-dominated economic activity with 135 (84%) out of a total of 161 cultivators. A total of 131 cultivators (81%) were above 40 years old. Most of the herbal cultivators had some form of formal education. Out of the 161 cultivators, only 11 (7%) cultivators had no formal schooling. Table 1 shows the demographic profiles of the 161 herbal cultivators in Peninsular Malaysia.

Herbal cultivation is a part-time or full-time activity. Of the 161 cultivators, 138 (86%) were full-time farmers. This category of farmers comprised 98 (61% of the total) cultivators engaging in farming only while the remaining full-timers of 40 cultivators (25% of the total) were farmers-cum-processors who processed their own products and sold to others. The latter had their own business by processing their herbal products instead of depending on income from herbal cultivation alone.

Most of the cultivators (63%) in Selangor operated their own land. Conversely, most of the cultivators (77%) in Kelantan rented the land for cultivation. Chi-square test indicates that status of land and states are correlated with each other. The test result shows Pearson chi-square = 66.624 with p-value = 0.000, statistically significant at 1%. It indicates that there is tendency in several states for the

cultivators to use their own land (Kedah, Perak, Perlis, Pulau Pinang, Selangor and Terengganu), rented land (Kelantan and Pahang) or surrogate land (Perlis) for herbal cultivation.

Table 1 Demographic profiles of the respondents

Age groups			**Educational attainments**	
	Frequency			Frequency
Less than 31 years old	6 (3.7)		No schooling	11 (6.8)
31–40 years old	24 (14.9)		Primary	30 (18.6)
41–50 years old	43 (26.7)		Lower secondary	38 (23.6)
51–60 years old	52 (32.3)		Upper secondary	58 (36.0)
61–70 years old	31 (19.3)		Pre U/ diploma	15 (9.3)
More than 70 years old	5 (3.1)		Degree	9 (5.6)
Total	161 (100.0)		Total	161 (100.0)
Type of work			**Numbers of labour force**	
	Frequency			Frequency
Full time			Farmer only	96 (59.6)
a) Farmer	98 (60.9)		Farmer+1 worker	23 (14.3)
b) Farmer-cum-processor	40 (24.8)		Farmer+2 workers	13 (8.1)
Part time			Farmer+3 workers	5 (3.1)
a) Own business other than herbs	9 (5.6)		Farmer+4 workers	6 (3.7)
b) Retiree	6 (3.7)		Farmer+5 workers	5 (3.1)
c) Government employee	2 (1.2)		Farmer+6 workers	1 (0.6)
d) Housewife	2 (1.2)		Farmer+7 workers	1 (0.6)
e) Private employee	2 (1.2)		Farmer+8 workers	5 (3.1)
f) Others	2 (1.2)		Farmer+10 workers	1 (0.6)
Total	161 (100.0)		Farmer + more than 10 workers	5 (3.0)
			Total	161 (100.0)
Status of land			**Starting years of herbal cultivation**	
	Frequency			Frequency
Own land	78 (48.4)		20 years (before 1991)	10 (6.2)
Rented land	68 (42.2)		16–20 years (1991–1995)	4 (2.5)
Surrogate land	15 (9.3)		11–15 years (1996–2000)	7 (4.4)
Total	161 (100.0)		6–10 years (2001–2005)	17 (10.6)
			1–5 years (2006–2010)	63 (39.1)
			< 1 year (2011)	60 (37.3)
				161 (100.0)

Source: Actual survey (2011)
Note: Figures in parentheses refer to percentage value

Of the total 161 cultivators, 96 (60%) were single operators who did not engage any workers (family or employed) in herbal cultivation and processing. Another 23

herbal cultivators (14%) each engaged one worker. The rest of the 42 cultivators each engaged two workers or more. This clearly shows that herbal cultivation and processing in Malaysia are still at an infancy stage, where the size of labour force involvement was still small in 2011.

In this study, the earliest commercial herbal cultivation started in 1940. Despite this, most of the commercial herbal cultivators in 2011 were relatively young in terms of the number of years in cultivation. Out of the total of 161, 63 (39%) had operated for one to five years and 60 (37%) had operated for less than one year.

There appears to be some specialization in the type of herbal species cultivated by different ethnic groups (Table 2). The Malays were involved in the cultivation of herbal species such as tongkat Ali, mas cotek, misai kucing, roselle, kacip Fatimah and dukung anak. The cultivation of these herbal crops was mainly intended to enhance physical health and general healthcare. Planting of sirih was 100% by Indian farmers. Sirih is traditionally used for treating ulcers, sore throat and hair health maintenance. The Chinese entrepreneurs focused on limau nipis cultivation, i.e. 53% of the total 17 Chinese entrepreneurs. Limau nipis cultivation is planted to meet the high demand especially during the Chinese New Year (January–February of each year). Chi-square test indicates that the type of herbal species cultivated is significantly related with ethnicity. ANOVA test shows that statistically there is significant difference in cultivation area in terms of ethnicity. In terms of hectareage, Chinese cultivators operated an average area of 9 ha, compared with Malays with 2 ha and Indians 1 ha (Table 3).

Table 2 Ethnic involvements by herbal species

Herbal species	**Malays**	**Chinese**	**Indians**	**Others**	**Total**
Dukung anak *(Phyllanthus niruri)*	1	0	0	0	1
Gaharu (*Aquilaria malaccensis)*	4	1	0	0	5
Halia *(Zingiber officinale)*	2	2	0	0	4
Kacip Fatimah *(Labisia pumila)*	1	0	0	0	1
Lidah buaya (*Aloe barbadensis)*	0	1	0	0	1
Limau nipis *(Citrus aurantifolia)*	16	9	0	0	25
Mas cotek (*Ficus deltoidea*)	16	0	0	0	16
Misai kucing *(Orthosiphon stamineus)*	12	0	0	0	12
Pegaga (*Centella asiatica*)	3	2	0	0	5
Roselle *(Hibiscus sabdariffa)*	53	0	0	0	53
Serai wangi (*Cymbopogon nardus)*	2	0	0	0	2
Sirih (*Piper betle)*	0	0	14	0	14
Tongkat Ali *(Eurycoma longifolia)*	9	0	0	0	9
Others	8	2	0	3	13
Total	**127**	**17**	**14**	**3**	**161**

Source: Actual survey, 2011

Note: Pearson Chi-Square = 2.452 with p-value = 0.000, statistically significant at 1%.

Table 3 Hectareages of the herbal cultivation by ethnic group

Ethnic group	N	Minimum (ha)	Maximum (ha)	Mean (ha)	Std. deviation (ha)
Malays	127	.04	17.22	1.5674	2.84965
Chinese	17	.40	40.46	8.7459	10.55540
Indians	14	.10	2.02	.6307	.64841
Others – Thai	3	.14	2.00	.8467	1.00724
Total	**161**	**.04**	**40.46**	**2.2305**	**4.76472**

Source: Actual survey, 2011
Note: F-value = 15.236, p-value = 0.000, statistically significant at 1%

The herbal cultivators obtained their seeds/seedlings from various sources. Chi-square test indicates that sources of seeds/seedlings and herbal species correlate with each other. The test result shows that Pearson chi-square = 361.795 with p-value = 0.000, statistically significant at 1% (Table 4). A total of 13 limau nipis cultivators (52%) used seeds/seedling from suppliers/nurseries. Nine cultivators (56%) planted mas cotek using seeds/seedlings via contract farming. Most of roselle cultivators (91%) obtained the seeds from government agencies. A total of 71 cultivators (44%) sold their yields through the middlemen and 39 cultivators (24%) sold their yields directly to the buyers (herb processors and/or product manufacturers) either in wet or dry condition.

Table 4 Sources of seeds/seedlings by herbal species

Herbal species	Forest	Suppliers/ nurseries	Government agencies	Contract farming	Own seed	Imported	Family/ Friends	Total
Dukung anak	0	0	0	0	1	0	0	1
Gaharu	0	2	0	0	0	3	0	5
Halia	0	2	0	0	0	0	2	4
Kacip Fatimah	1	0	0	0	0	0	0	1
Lidah buaya	0	1	0	0	0	0	0	1
Limau nipis	0	13	3	0	7	0	2	25
Mas cotek	4	2	1	9	0	0	0	16
Misai kucing	1	5	2	0	3	0	1	12
Pegaga	1	0	0	1	3	0	0	5
Roselle	0	3	48	2	0	0	0	53
Serai wangi	0	1	0	0	1	0	0	2
Sirih	0	1	0	0	3	0	10	14
Tongkat Ali	0	5	1	3	0	0	0	9
Others	2	6	0	0	1	2	2	13
Total	**9**	**41**	**55**	**15**	**19**	**5**	**17**	**161**

Source: Actual survey, 2011
Note: Pearson chi-square = 361.795, p-value = 0.000, statistically significant at 1%

Income generation

The findings focus on three case studies on the cost and income from the cultivations of roselle and misai kucing in the State of Kelantan, and mas cotek in the State of Selangor. It is due to difficulty in gathering information on cost, production, price and income from herbal cultivation (Table 5).

Table 5 Actual costs and incomes for selected herbal cultivators and manufacturer

Mas cotek cultivator		**Roselle cultivator**		**Misai kucing tea manufacturer**	
	Value		Value		Value
Total cost	RM22,800/ha	Total cost	RM1,422/ha*	Total cost	RM146,000/y
Total production of dry leaves	600 kg/ha/y	Total production	7,920 kg/ha/y	Cost of production, incurred by company**	RM127,500/y
Total production of wet leaves	3,000 kg/ha/y	Farmgate price	RM2.50/kg	Cost of promotion***	RM18,500/y
Farm gate price of wet leaves	RM7/kg			Total no. of boxes of tea bags produced	24,000
Farm gate price of dry leaves	RM40/kg			Price per box	RM10
Annual gross income	RM45,000/ha	Annual gross income	RM19,800/ha	Annual gross income	RM240,000
Annual net income	RM22,200/ha	Annual net income	RM18,378/ha	Annual net income	RM94,000
Net income (per month)	RM1,850/ha	Net income (per month)	RM1,532/ha	Net income (per month)	RM7,833

Source: Actual survey, 2011

Note: *Excluding RM 610/ha incentives provided by LKTN

**Including land cost, cottage, workshop, machines, water pump, water tank, tables, fancing wire, pores and net, washroom and irrigation.

***Box brochure and pamphlet, banner, name cards.

In 2010, a total of 15 farmers in Selangor were approached by a mas cotek processing company to engage in contract farming using organic fertilizer. The farmers approached MOA as they faced the problem in marketing their produce. FAMA purchased the mas cotek at a price of RM7 per kg (wet leaves) and RM40 per kg (dry leaves). Mas cotek cultivators received RM1,850/ha of monthly net income.

Roselle cultivation started in 2009 by 30 cultivators as part of an integration programme implemented by LTKN in Bachok, Kelantan. LTKN provided seeds and fertilizers to the farmers and marketed the products to four big companies processing roselle products. All farmers were part-time cultivators. LTKN also provided 30% financial incentives of the total production cost. The roselle was harvested three months after planting and was economically viable only for a year. Roselle cultivators generated monthly net income of RM1,532/ha.

Since 2007, the company has specialized in misai kucing cultivation and used the leaves for processing into products such as misai kucing tea. The company employed two permanent and two temporary workers in 2011 to carry out various cultivation activities. The misai kucing was ready for harvesting after four months of planting. The monthly net income received by the company was RM7,833.

CONCLUSION

The analysis of data provided by the 161 cultivators shows that herbal cultivation in Peninsular Malaysia is still in its infancy, where 76% of the cultivators were engaged in this commercial activity after 2006. Most of these cultivators (79%) were Malays. Herbal cultivation was basically a male-dominated economic activity for 84% of the total cultivators. The cultivators were generally lowly educated where 49% had lower secondary education and below. Herbal cultivation is regarded as a potential enterprise as 86% of the cultivators were full-time farmers. About half of the cultivators operated on their own land while the rest were mainly renting.

The three case studies provided show that herbal cultivation provided a reasonable level of net income to the farmers, i.e. ranging monthly from RM1,532/ha (part-time roselle cultivator) to RM7,833 (full-time misai kucing cultivator-cum-processor).). As a new business venture, herbal cultivation has faced a number of problems to be overcome for further development.

ACKNOWLEDGEMENTS

We thank the Forest Research Institute Malaysia (FRIM) for sponsoring the project. This project was inspired by Dato' Dr Abd Latif Mohmod, Director General of FRIM, in response to the poor existing information on the current status of the supply and availability of selected herbal species in Peninsular Malaysia in terms of their distribution, extent and production. Our gratitude also goes to FRIM's officers and supporting staffs for giving their full support, encouragement and assistance. We are indebted to all the collaborating agencies, including the Department of Agriculture (DoA), the Federal Agricultural Marketing Authority (FAMA), the Federal Land Consolidation and Rehabilitation Authority (FELCRA), the Federal Land Development Authority (FELDA), the National Kenaf & Tobacco Board (LTKN), the Southern Kelantan Development Authority (KESEDAR), the Terengganu Tengah Development (KETENGAH) and the Rubber Industry Smallholders Development Authority (RISDA), for the support and assistance provided during our field visits. Without their input, the collection of data at the district and cultivator levels would have been much more difficult and challenging. Last but not least, due credit should also be given to all the

herbal cultivators, manufacturers and persons involved directly or indirectly in this study.

BIBLIOGRAPHY

.

Adenan MI. 2003. Malaysian herbs and herbal products. A two and half day course of herbal and phytochemical processing, CEPP short course notes. Chemical Engineering Pilot Plant, UTM Skudai. 7–9 January 2003.

Anon. 1999. *Malaysian Herbal Monograph*. Volume 1. Malaysian Monograph Committee, Kuala Lumpur. 93 pp.

Anon. 2012a. Global information hub on integrated medicine [online]. (Updated 2011). Available at: http://www.globinmed.com/ [Accessed on 28 May 2012]

Arnold R. 2004. *Khaya senegalensis*—current use from its natural range and its potential in Sri Lanka and elsewhere in Asia. Paper presented at the Workshop on Prospects for High-value Hardwood Timber Plantations in the Dry Tropics of Northern Australia, Mareeba, Queensland, 19–21 October 2004

Department of Agriculture Peninsular Malaysia. 2010. *Industrial Crops and Herbs Statistics*. Department of Agriculture Peninsular Malaysia, Putrajaya.

East Coast Economic Region (ECER). 2011. Bakal jadi hab industri herba Malaysia [online]. Available at: http://www.ecerdc.com.my/ecerdc/mediareleases_14042111i.html
(Accessed 13 September 2011)

Economic Transformation Programme. 2012. Overview of ETP: propelling Malaysia towards becoming a high-income developed nation. [online]. Available at: http://etp.pemandu.gov.my/Overview-@-Overview_of_ETP.aspx (Accessed 26 September 2011)

Musa Y, Azimah AKK & Zaharah H. 2009. *Tumbuhan Ubatan Popular Malaysia*. Institut Penyelidikan dan Kemajuan Pertanian Malaysia (MARDI), Serdang. 212 pp.

Ramlan AA, Sivakumar K, Zarani MT & Dominic FCY. 2003. Phytochemical processing: the next emerging field in chemical engineering: aspects and opportunities [online]. Available at: http://kolmetz.com/pdf/Foo/ICCBPE2003_Phytochemical.pdf
(Accessed 22 September 2011)

Sekaran U. 2000. *Research Methods for Business: A Skill-Building Approach*. John Wiley & Sons, USA. 463 pp.

Zainal Azman AK. 2007. Herbal biotechnology development—the way forward & market access opportunities. Paper presented at EUM–BIO Business Partnering Seminar, MATRADE Exhibition and Conference Centre, Malaysia, 25 October 2007.