FFTC Agricultural Policy Platform (FFTC-AP)
Available online at: http://ap.fftc.agnet.org/index.php

Overview of Melon Industry in Malaysia

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INTRODUCTION

In general, there are three types of melons in Malaysia, namely watermelon, rockmelon, and honeydew. These melons are widely cultivated and easily obtained in Malaysia. Even though there are more than 500 varieties of melons and 150 varieties of watermelons all over the world, only *Super Dragon*, *Jade Dew* and *Glamour* are the most popular ones in Malaysia. Melons are best planted on soil temperatures between 25°C and 32°C and the season can be stretched from March to May, and July to September (two seasons). The crop belongs to the family of *Cucurbitaceae* which is predominantly tropical, and is considered botanical cousins of cucumber, squash, and pumpkins. Watermelons are also known as *Citrullus Lanatus*, originally from West Africa and vary in sizes and shapes from round to oblong. One of the more unusual aspects of watermelon is its rich supply of vitamin A, B6, C and as a lycopene leader. By contrast, the characteristics of honeydews and rockmelons are slightly different, where the former is typically smooth, has white skin with green flesh, while the latter has pale orange flesh and usually have rough and wrinkled skin with netting. In general, rockmelon is sweeter than other fruits and has a more compact pulp than watermelon. Melons not only boost our health esteem, but can also become an important part of our healthy diet with its refreshing characteristics. Melon is cultivated all over the world, with China as the largest producer with the highest production of melons, followed by Iran and Turkey. Malaysia also produces melons of its own, with considerably large areas of production comparable to its high global demand.

Melons in Malaysia

Based on a recent study by Rasmuna Mazwan *et al.* (2015), melon cultivation in Malaysia is dominantly carried out by men. The study was carried out among 80 melon farmers in Peninsular Malaysia. Approximately 85.2% of rockmelon farmers and 96.2% of watermelon and honeydew farmers are men (Table 1.0). From this table, only a small number of women are involved in

melon cultivation with a percentage of 14.8% for rockmelon and 3.8% for watermelon and honeydew. Generally, in Malaysia, the average age of farmers cultivating watermelon and honeydew are between 35 years and 48 years. The number of younger farmers continues to increase. It is expected that a new trend of urban farmers reflect how the Malaysian government has continuously encouraged the involvement of youths in agriculture. Young agropreneurs who are interested to venture in rockmelon cultivation are required to prepare a proposal to be eligible to participate in the Permanent Food Production Program under the supervision of the Department of Agriculture (DOA). The participant must at least be a Diploma or degree holder. They will get financial assistance from the Ministry of Agriculture and Agro based industry.

Table 1.0. Profile of melon farmers (Peninsular Malaysia)

Item	**Element**	**Rockmelon**	**Watermelon/Honeydew**
Gender	Male	*85.2%*	96.2%
	Female	*14.8%*	3.8%
Age	*20-30*	*25.93%*	*11.54%*
	31-40	*55.56%*	*19.23*
	41-50	*11.1%*	*25.00*
	51-60	*3.7%*	*25.00*
	61-70	*0.0%*	*19.23*
		3.7%	
Education	Primary school	3.7%	20.8%
	Secondary school	25.9%	73.6%
	Diploma/Bachelor	48.1%	1.9%
	Others	22.2%	3.8%
Main occupation	Watermelon farmers	92.6%	94.3%
	Bussinessman	7.4%	5.7%
	Government sector	0%	1.9%
	Private sector	0%	0%
Cultivation experience		≥ 3years (73.1%)	≥10years (76.92%)

Sources: (Rasmuna *et al*., 2015)

Melons are mostly planted in Johor, Kedah, Kelantan Pahang and Terengganu. Almost 7.1% of agro-food land in Malaysia is planted with melons which is equivalent to 13,814 hectares. The demand for tropical fruits is increasing not only for watermelons but also other tropical fruits like banana, mango, pineapple, lemon, lime and papaya. The key factors that contribute to the higher demands is consumers' awareness towards healthier lifestyle, a stronger concern on what we consume, and the globalization of the supply chain (Fig. 1.0).

The production of melons (including watermelons) in Malaysia was 220,226 metric tons (2014). Melon production has recorded the highest volume growth in 2009 and 2010 which were 238,671 metric tons and 235,893 metric tonnes respectively. However, the production decreased in 2011 until 2013 and had a slight increase in 2014. The demand for melon in Malaysia is relatively high and this is supported by

farmers' responses in the survey by Rasmuna *et al*. (2015) that rockmelon production is insufficient and there is a high demand from consumers especially in Perak and Selangor.

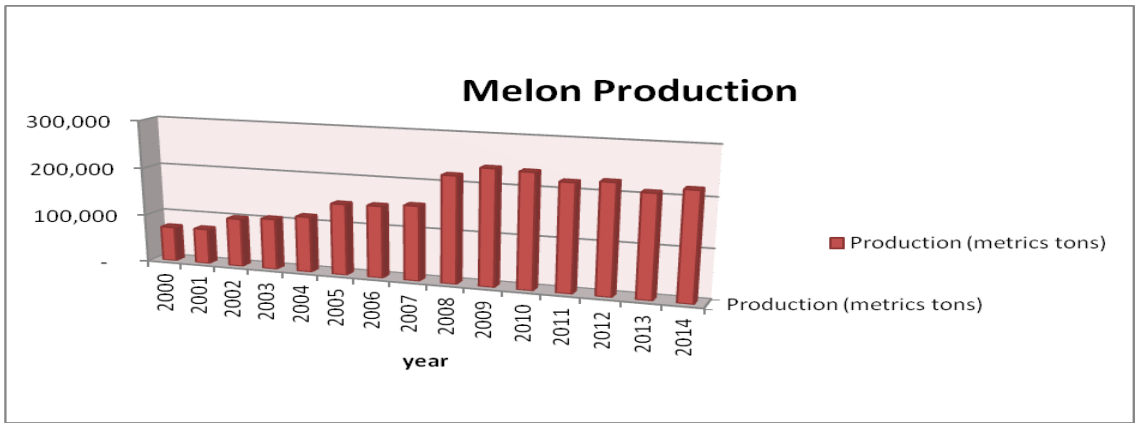

Fig. 1.0. Melon Production in Malaysia, 2000-2014
Source: AgroFood Statistics, 2014

Melon trade

Malaysia focuses on exporting fresh melons. Value added products from melons are still very minimal in the local market. Table 2.0 shows that most melons are exported to Singapore, China, Hong Kong, and the Middle East. At least 62% of melons are exported to Singapore, 33% to China and the remaining 2% to the United Arab Emirates (UAE). Minimal quantity of melons is also exported to the Netherlands. Malaysia has a high competitive position in the global watermelon market. A recent study by Nik Rozana *et al*. (2015) proved that Malaysia has a significant advantage in exporting watermelons as compared to the Philippines, Thailand, and Indonesia. Besides that, Malaysia also has a moderate advantage over India and a relatively least comparative advantage over China. Comparative advantage that Malaysia has over Thailand, India, Indonesia, and Philippines are similar with a study conducted earlier by Suntharalingam *et al*. (2011). This indicates that over the last 15 years Malaysia has a relatively stable comparative advantage over Thailand, India, Indonesia, and The Philippines.

Table 2.0. Malaysia's fresh watermelon/melon Exports, 2014

Partner	Trade Value (US$)
Singapore	12,748,543.00
China, Hong Kong SAR	6,830,704.00
United Arab Emirates	454,049.00
Thailand	76,709.00
Qatar	29,765.00
Brunei Darussalam	29,302.00
China	27,538.00
Indonesia	25,334.00
Maldives	4,828.00

Rep. of Korea	2,636.00
Other Asia, nes	215,503.00
Total	**20, 445, 485.00**

Source: COMTRADE, 2014

Policy

Melon has been identified as one of the fruits that can be commercialized and can contribute to economic development in the National Agriculture Policy (1984-2010) and National Agro-Food Policy (2011-2020). It has been stated that the role of the Third National Agriculture Policy is to ensure a sufficient supply of fresh fruits in order to meet the needs and demand. Another role is for industrial processing. Apart from that, it is to ensure that the selected fruit industry has a strategic advantage for exports. The policy implementation has provided a strong foundation for improving the contribution for agriculture. The National Agro-Food Policy which was developed after the 3rd National Agriculture Policy has its main focus to increase production and productivity of selected fruits. Besides that, the National Agro-food Policy has also emphasized the exploitation of potential fruits and the strengthening of market networks. In terms of priority, melon is positioned as one of the fruits that can be commercially produced for export. It also has the potential to be expanded to new markets.

In the recent policy, the 11th Malaysia Plan, adoption of technology in fruit production has been identified as one of the strategies to enhance farm productivity and efficiency which will improve farmers' income. Among others, fertigation system and farm automation are highly emphasized especially in the production of high value fruits. To realize this aspiration, the government provides a number of incentives such as grants and low interest loans to farmers who are participating in the production of fruits under the Permanent Food Park Programs.

Melon research and development in MARDI

In the context of research and development (R&D) on melons, MARDI has gone forward especially in seed breeding and agronomy management. MARDI has succeeded in overcoming the seeds issue, by introducing a new hybrid variety which is called 'superhort'. The development of new varieties of watermelon hybrids was initially known as "Superhort-Red". Research has focused on the development of parent inbred lines and has successfully produced six parents. MARDI has conducted a cross hybrid between the parents and produced 'Superhort' varieties. This variety is among the best compared to the existing hybrids in terms of sweetness, shape, yield, maturity, and disease resistance. Multi-location testing for 'superhort' has been conducted in few areas such as in Pasir Puteh, Kelantan, Serdang, Selangor, and Kluang, Johor. Besides, MARDI also published a manual on rockmelon planting using a more systematic and coordinated approach to be adopted by fertigation agropreneurs or farmers. This book is used by all agencies under the Ministry of Agriculture (MOA).

Rasmuna *et al*. (2015) indicated that 22% of melon fertigation farmers in Malaysia are at the best level in their technology adoption practices, while 78% are at the moderate level. On the other hand, only 5.7% of melon conventional farmers are at their best level while 94.3% are at the moderate level in technology adoption especially from seeds to postharvest handling. Majority of melon farmers in Malaysia are still at the moderate level. According to the study, postharvest handling, fertilizer, cultivation, water management, and agronomy management practice are part of the technology indicators. One of the challenges faced by melon farmers is

pest and disease management. This is a critical technology that should be upgraded for the improvement of melon quality and higher production yield.

Issues and challenges

In general, the level of technology adoption among farmers for watermelon cultivation is relatively moderate. This is due to lack of capital, lack of confidence and know-how regarding the technology (technology adoption). Weather condition and pest and diseases pose a major challenge to all melon farmers, sometimes forcing them to bear high losses. The fruit quality then becomes an issue, making it harder to market. Those are among the risks faced by melon farmers. Unfortunately, there are no specific insurance schemes to manage the risks (Mansor, 2014). Enhancing postharvest losses is a high priority for the entire supply chain. Lack of proper postharvest handling and exposure to high temperature during distribution are the most critical environmental factors limiting long shelf life and freshness of fruits. Poor logistics such as the lack of cold storage facilities can actually add to shorten the shelf life of melons. In terms of quality management, human capital is part of the reasons why melon farmers do not properly grade or pack their harvest. Thus, resulting in quality control issues which harms the value of the end product, since the appearance and external conditions are among priority characteristics in determining the quality of the final product.

The Federal Agricultural Marketing Authority (FAMA) has introduced the Grading, Packaging, Labeling (GPL) regulation which was gazetted in 2008 to regulate the activities of grading, packaging and labeling of agricultural products (FAMA, 2016). However, there are still many melon exporters and agropreneurs who do not comply with the regulations before marketing their produce. Farmers are generally comfortable practicing their traditional methods of ensuring freshness or quality of their produce. FAMA members are actively creating awareness among exporters, importers, wholesalers and retailers on the importance of complying with the GPL regulations to ensure quality through grading, packaging and labeling prior to selling. Exporters are strongly urged to comply with this standard practices since the GPL rules are accepted globally, which would ease the trading process.

Conclusion

Melon is a strong fruit industry in Malaysia as its production appears to be stable and shows an increasing trend, in line with its high demand. It has great potential to be further developed, and contribute to the country's GDP. Malaysia’s watermelon exports in the world market are promising, with exports to Singapore, China, Hong Kong, and the Middle East increasing every year. In the national agriculture policies, melon is ranked third among the high-value fruits that show potential to be commercialized further. Research and Development (R&D) activities on melons are also continuously carried out by various entities and agencies, besides relevant grants and loans being provided by the government. All in all, the melon industry in Malaysia gets the support it needs to overcome any issues or challenges that the industry is currently facing. The enforcement part may need to be strengthened and given top priority for better implementation of existing legislations, technologies, and programs.

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Date submitted: Sept. 9, 2016

Reviewed, edited and uploaded: Sept. 9, 2016