



Malaysian Agricultural Quality Standards

Mohd Rashid Rabu, Nik Rozana Nik Mohd Masdek, Mohd Dainori Md Shah
Economic and Social Science Research Centre, Malaysian Agricultural Research and
Development Institute (MARDI), Persiaran UPM-MARDI, Serdang Selangor.
Email: mrrabu@mardi.gov.my

INTRODUCTION

Consumers are demanding healthy, nutritious and safe food and agricultural products. The demand has increased both in the domestic and export markets. This is a result of the rampant food scandals, which occur from time to time.. Examples of said scandals include the, pathogenic microorganisms in sprouted seeds in Germany and France, listeria monocytogenes in melons in the USA, and norovirus in berries in Northern Europe (Bernard *et al.*, 2014; EFSA, 2011; Fründt *et al.*, 2013; Laksanalamai *et al.*, 2012).

Currently, consumers are more knowledgeable and aware of the impact of mishandling of food and agricultural commodities, and demand for reliable and consistent quality of products (Trienekens, J.,and Zuurbier P., 2008). According to Haines *et al.* (1996) and Putnam and Allshouse (1999), the last decades show rapid changes of consumer attitudes and awareness toward food safety and quality which have significantly shaped consumer concerns in agricultural and meat produce. The concern emerged due to the potential hazards resulting from the non-systematic use of pesticides, chemical additives, antibiotics and hormones in the production system. Consumers' concern on this issue in Malaysia has been identified by the study conducted by Alias *et al.* (2010) where they found that Malaysian consumers are willing to pay an extra 13% of price for the guaranteed safety of beef products.

In addition, the wide media coverage on the global food scandals also increases consumers' concerns and sensitivities.. Consumers have begun to demand the authority to undertake comprehensive actions in controlling and monitoring the food supply system. Consequently, the authorities began to take their leading role to curb the issues of food scandals, which involved the incidences of food poisoning, food contamination, improper production system, and welfare of animals in the livestock sector as well as how the aquaculture industry was operated and how products were produced. The concerns also extend to the generic sustainable production system which has an impact to the environment and nature. Moreover, public and international human rights organizations also established their concern on the human or labor welfare on child labor, minimum salary and labor working environment.

In the global food market, some of the industrial countries halted the entry of food from countries, which undermine the human, environment and animal welfare in the food supply chain system. According to Rocourt *et al.* (2003), it was estimated that around a million people in OECD countries get ill every year from food contamination. In South-East Asia,

every year Indonesia, Singapore and Malaysia face unhealthy environment due to the open burning on agriculture land clearing activities. Therefore, the public concerns have triggered the food producing countries to pay more attention to its food safety scheme in controlling and monitoring the food supply system including the conservation and preservation of the environment. Consistent with the global legalization and consumer sensitivity, this paper aims to review the food safety scheme implemented in Malaysia for the past few decades, and how the quality, standard and monitoring system are established in the country, and also to look at its benefits toward nurturing the success of Malaysia's agricultural sector.

Food standard, quality and safety scheme

The food standard, quality and safety scheme has become a subject to economic liberalization of the agricultural sector (Watts and Goodman, 1977). There are substantial studies, concept papers and conferences that investigate on this subject from diverse perspectives such as convention's theory and institutional economics. These new regulatory models are based on diverse notions of quality and practices through which agreed qualities, standardization and certification were derived from. These practices are an effective mechanism for market entry and exclusion. However, they still depend on the needs and wants of the interest parties. In general, there are three parties involved as determinants of the needs and requirements of the quality scheme in food and agricultural commodities; authority bodies or government which takes the leading role as mediator to protect public interest, the industry players who consist of producers and retailers doing business, producers and suppliers looking for profits and finally, consumers who are buyers or users concerned on their well being. Table 1 indicates the scheme functions and benefits to the interest parties.

Table 1. Functions and benefits of the component parties on food standard and quality scheme

Interest party	Scheme functions	Benefits of compliance
Government (Authorized bodies)	Safety of nation and consumers Providing national quality and standard	<ul style="list-style-type: none"> • Eliminating and minimizing food scandals issues • Conserving environment • Potential for export markets
Firms (Producers, Retailers)	Creating product's social value added and consumers' confidence	<ul style="list-style-type: none"> • Premium price • Potential market compliance • Positive quality image
Consumers	Buying behavior purchasing determinants	<ul style="list-style-type: none"> • Reliability on quality and safety assurance

		<ul style="list-style-type: none"> • Value for money • Self satisfaction on human, animal and environmental friendly products
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Authorized bodies in a country establish, monitor and implement food-safety schemes to ensure that products are safe to be consumed by human beings. However, to ensure the end product is safe, the whole value chain must follow certain steps, or instance, good agronomy practices focus on the potential hazard of the end product. The controlling agencies in a specific country have their own set of certification and accreditation scheme. In general, Zingger and Trienekens (1999) and Vorst van der (2000) have identified a number of specific characteristics that influence product quality and quality assurance in the production process;

1. Quality variation between different producers and between different lots of produce, due to, e.g., weather conditions, biological variation and seasonality, but also as a possible result of variation in production techniques.
2. Perishability of produce and fresh products (materials used and shelf life control system)
3. Production yields are often uncertain due to weather conditions and quality variation within and between lots.
4. There are special demands for storage and transportation, such as cooling facilities and hygienic measurements.

The potential sources of hazard on production and distribution are:

1. Mixed batches of production.
2. Diverse sources of raw materials (domestic or international suppliers).
3. Recycling of semi finished products.
4. Too many actors in the food chain.

The general features of the broad evaluation system commonly used for food and agriculture production system from farm to consumers are presented in Fig. 1.

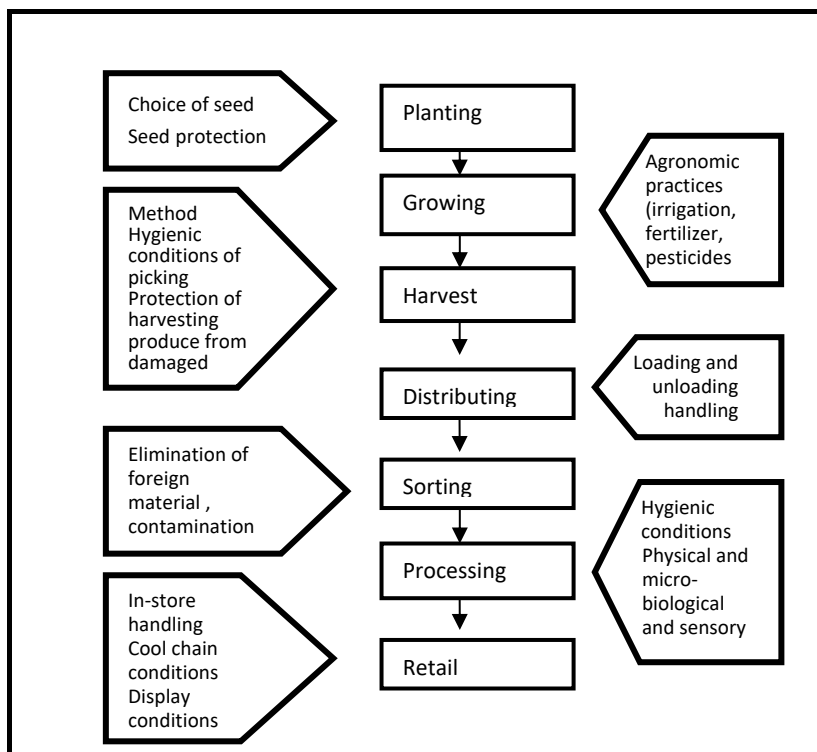


Fig. 1. Factors influencing quality in agricultural produce chain (adapted from Trienekens J. and Zuurbier P., 2008)

The bottom line of food quality and standard compliance is market acceptance. For developing countries, saturation and stagnation of the domestic market is a shortcoming of the industry's development. Exploring the global market is one of the options for developing countries to progress further. Malaysia, for example, has relied on the global economy since its independence. In the '90s, Malaysia was listed in the top 20 global trading economy. In the agriculture sector, Malaysia is the major exporter of oil palm valued at RM6-8 billion annually. However, the Malaysian exports are frequently disrupted by the smearing campaigns by producers of vegetable oil from developed countries that claimed Malaysian palm oil plantation contribute to deforestation and destroying the rainforests' bio diversity. In addition, in so far as export of agricultural produce such as vegetables, fruits and livestock products to major destination is concerned, Singapore is also subjected to stringent clearing protocol. Despite the global pressure, domestic consumers are signaling similar messages to the government demanding for safe and high quality food products. In response to various marketing issues on global good agricultural practices, various Ministries through its relevant agencies have taken their own initiatives. The Ministry of Agriculture and Agro Based Industry has started programs and schemes on food standards and quality since 2002.

Institutional quality control Scheme for agricultural production

In general, the contribution of the agriculture sector in the GDP has declined from more than 50% in the 1970s to less than 10% in the year 2000. However, the sector is still important to the national economy, socio-political landscape and food security. In 2012, the sector contributed 9% or RM6 billion to Malaysia's GDP. The agriculture sector employed almost 1.5 million people nationwide.

There is an obvious dissimilarity on the agricultural sector development in Malaysia. The achievement of Malaysian industrial crops, for instance, palm oil in the global market is remarkable. Nevertheless, Malaysia is less competitive on food crops such as paddy, fruits and vegetables. The achievement and stability of Malaysian industrial crops depend on its ability in strengthening its institutionalization system to overcome the smearing campaign on palm oil. The issue requires institutional intervention.

The government had strived to promote an export-oriented agriculture and established food production parks to encourage large-scale vegetable farms during the 9th Malaysia Plan that covers the period 2005 to 2010. The government has responded to the market needs with Malaysia's certification scheme on Good Agriculture Practices, which acclaim to enable Malaysia's commodities to be exported despite serving the increasing demand from domestic consumers.

The strategic framework was underlined in the Third National Agriculture Policy in 1999. The scheme has been applied across product value chains. The quality scheme started individually based on commodities: crops, livestock and aquaculture and organic products. Each of the schemes, is led by specific agencies. The agriculture crops fall under the responsibility of the Department of Agriculture. The Department of Veterinary Services is responsible for the livestock commodities, and the aquaculture industry is administered by the Department of Fishery. The commodity-based quality scheme started in 2002, and eventually by 2013 the schemes were re-branded as MyGAP (Malaysian Good Agriculture Practices). Although, it was re-branded, nevertheless, the scheme is clustered according to commodities and its relevant agencies.

MyGAP (Malaysia Good Agricultural Practices)

Initially, there are three sets of standards established in Malaysia. The standards were developed with the cooperation of the Malaysian Standard Department. The Department of Agriculture is responsible for crop commodities. The crops' good agriculture practice is coded with MS 1784:2005 Crop Commodities – Malaysian Farm Good Agricultural Practice Scheme. For the livestock industry, the Department of Veterinary Services is taking a lead role in overseeing all the supply-chain system of livestock commodities. The livestock commodities' good animal husbandry practice is coded with MS2027:2006 Good Animal Husbandry Practices. The aquaculture standard is under the control of the Fishery Department. This standard is coded as MS1998:2007 Good Aquaculture Practices (GaqP) for aquaculture farm. In addition, the Fishery Department developed general guidelines, specifically for seaweed cultivation practices. The seaweed cultivation practice is coded as MS 2467:2002 Code of Practice for Seaweed Cultivation. Initially, all the schemes have a different logo of certification.

Recently, the Ministry of Agriculture and Agro Based Industry introduced one new standard logo to be used as a national logo for Good Agricultural Practices, named as MyGAP. MyGAP was launched by the Ministry of Agriculture and Agro-based Industry in 2013. This scheme provides a comprehensive certification system for agriculture commodities; crops, livestock and aquaculture.

MyGAP certification for non-industrial crops

Malaysia Farm Good Agricultural Practices previously known as SALM or literally translated as the Malaysian Accredited Farm Scheme, evaluate the hazard factor to the agricultural production inputs and outputs along the value chain. In MyGAP, all factors of production must be managed in a sustainable way. The scheme will certify the farms of farmers who followed the good practices in four aspects:

1. Understanding of the farm situation that can determine its potential performance and guidelines, which can be achieved.
2. Plan the ways to improve current practices.
3. Implement the plan according to standard procedures.
4. Monitor the effectiveness of plan implementation.

The farm practices will be evaluated and verified based on series of standards and requirements below;

1. Use no genetically modified planting materials.
2. Use no industrial or animal waste as fertilizers.
3. Use only registered pesticides meant for the crops planted.
4. Use recommended rates of pesticides as stated on the labels.
5. Follow the pesticide application intervals recommended strictly, especially the pre-harvest interval (PHI).
6. Practice integrated pest management (IPM) either wholly or partially.
7. Dispose of farm wastes, including pesticide containers, in an environmentally friendly manner.
8. Pesticides, fertilizers and farm equipment are kept in proper, well-ventilated stores.
9. Employ farm laborers aged 16 years and older.
10. Employ legal foreign farm laborers.
11. Ensure health and well-being of farm laborers.
12. Follow the proper dress code for laborers when spraying pesticides.

MyGAP certification for livestock industry : good animal husbandry practices

The scheme for animal farm practices is for animal production with the aim to produce quality livestock products that are fit to be consumed by humans. The food safety and quality program conducted by the Department of Veterinary Services focuses on a farm-to-table approach, mainly to eliminate or reduce food-borne hazards. It is a holistic approach focusing on the control of food-related risks, which involves control of every step in the chain, from raw material to food consumption. With regards to this approach, the Department of Veterinary Services (DVS) conducted certification programs, inspections and accreditation system as well as implementation of legislation to support Malaysia's food safety and quality management system. The Livestock Farm Accreditation Scheme (SALT) was introduced by the DVS in 2003 based on Good Animal Husbandry Practices (GAHP). The criteria for the certification of SALT are based on animal health management, bio-security, good infrastructure and prudent use of antibiotics, vaccines and drugs to animals. This scheme covers all types of livestock such as beef cattle, dairy cattle, broiler chicken, layer chicken, breeder chicken, deer, goat, sheep and pig. The objective of SALT is to ensure the production of safe and wholesome food from farms practicing GAHP, operated in a sustainable and environmental friendly condition and yield produce that are of good quality and safe for consumption. The SALT recognition is in the form of certificate and logo.

There are six evaluation aspects:

1. Farm infrastructure.
2. Farm labour management.
3. Farm Waste Management system.
4. Diseases management and control.
5. Pest management control.
6. Bio-security control.

MyGAP for aquaculture production: Malaysian Aquaculture Farm Accreditation Scheme (SPLAM)

The introduction of SPLAM for Malaysian aquaculture industry is a very important step in steering the success of Malaysian aquaculture venture into the global market. Malaysia exports almost RM2.0 billion fishery products annually. Most of the products are exported to developed markets such as the USA and Europe. These market requirements are complex and stringent. Therefore, the Malaysian Ministry of Agriculture and Agro-based Industry is setting various programs and strategies to promote the application of this scheme to farmers. The SPLAM scheme was internationally recognized, and it is in accordance to most of the international standards and quality compliances on sanitary and phytosanitary agreement as set by the World Trade Organization (WTO). Before the scheme was established, there is no quality system overseeing the aquaculture industry in Malaysia. The department has established this scheme to provide good practices for the aquaculture industry that will inculcate consumers confidence to aquaculture products. This scheme is also important for the export market.

The farm categories in the scheme are:

1. Marine shrimp in brackish water ponds.
2. Freshwater fish in cages/pens.
3. Marine finfish in cages/pens.
4. Freshwater fish in ponds/tanks.
5. Marine finfish in ponds/tanks.
6. Marine finfish/shrimp hatcheries.
7. Freshwater fish/prawn hatcheries.
8. Molluscs culture (on-bottom, rafts/racks).
9. Ornamental fishes.

The objectives of the scheme are:

1. To improve product safety and quality.
2. To make the industry more responsible, more eco-friendly to ensure sustainable development for the future.
3. To prevent the occurrence of fish diseases and pollution.
4. To encourage the Good Aquaculture Practices based on Aquaculture's Code of Practice (COP).
5. To enhance the marketing system.
6. To prepare for the implementation of HACCP (Hazard Analysis and Critical Control Point) for aquaculture products "voluntarily" by the fish farmers.
7. To control the use of pesticides and dangerous chemicals.

Development and market acceptance

Since its inception in 2003, the number of applicants being certified with SALT and SALM are very encouraging. Currently, there are 382 premises certified under the Livestock Farm Accreditation Scheme (SALT). Meanwhile for SALM, 156 certificate recipients were recorded in 2012. Since the schemes have been re-branded into MyGAP, the number of applicants has increased, showing a tremendous improvement and willingness of farmers. To date, farmers who succeeded in receiving the certification of MyGAP reached 509 premises. The breakdown by states shows that the majority of MyGAP holders are from Selangor (40.5%) followed by Pahang (16.0%). The rest are recipients in the states of Perak, Johor, Sarawak, Kelantan, Penang, Terengganu, Melaka, Sabah, Negeri Sembilan and the Federal Territory of Labuan.

A study by Islam *et al.* (2012) on tomato farmers in Cameron Highlands reported that there is the distinction of market opportunity between GAP certified farmers and conventional farmers. The GAP farmers export their produce directly to oversea buyers, and their marketing chain is shorter as compared to conventional farmers. The farmers export almost 60% of their produce, and the balance is marketed to local hypermarkets such as Tesco, The Store, and MAKRO. The produce is well accepted by Singaporean importers due to its quality and safety assurance.

In the monetary term, the study found that the net profit received by GAP certified farmer is better than the conventional farmers whereby the net profit for GAP farmers is RM2.62 per plant while RM1.40 per plant for conventional farmers. The profit margin is almost double.

In the Edible Bird Nest Industry (EBN), MyGAP has become compulsory certification for products to be exported to China. The agreement in the Export Protocol of EBN only approved the source of EBN which comes from certified premises. Therefore, there is an obligation for the EBN producers to apply for GAP in order the products to be exported to China. The quality and safety assurance established by GAP certification has made EBN products from Malaysia highly trusted among consumers in the China.

In addition, ornamental fish industry in Malaysia is also one of the important commodities in the aquaculture industry. The sub-sector contributes an estimated 7% of the global export quantity. The development of this industry was driven by global demand especially of countries such as Singapore, USA, Japan and other European countries. The export of life organisms is strictly based on the good quality and standard enforcement by exporting countries. Malaysia has achieved these standards that enable Malaysia's life organisms to enter advanced counties such as Singapore, Japan, the USA and European countries. The industry saw a pragmatic growth at the average of 10.9% annually from 2000 and it was expected to increase by 12% annually by 2020.

Quality scheme certification is indeed beneficial for all including producers, consumers and the environment since the GAP management system are able to improve productivity, ensure the safety and welfare of workers, have a clear appreciation of food safety and environmentally friendly agriculture. GAP adoption would benefit both the farmers and consumers because for the former, they could increase their yield and income, while the latter would be able to consume safe and quality agricultural produce. However, the number of overall farms and entities having the accreditation is comparatively still small because their participation is based on a voluntary basis. It is not an easy task to convince all farmers and entities to use MyGAP standard. Relevant party needs to continually create awareness among farmers as well as consumers..

CONCLUSION

The global food marketing system is going to be more stringent and tied with quality and safety measures. Although it began as voluntarily in nature, and firms or industry players have an option to be certified or not, it is important to note that nowadays the consumers and retailers are taking a lead role to discriminate buyers of non-compliant products. In a number of cases, the non-compliant products were rejected to be displayed in the retailers' shelves. Retailers are responsive to consumers' sensitivity and concerns about the safety of the products sold.

Therefore, both the government and industrial players in the food and agricultural sector have to prepare themselves with financial, human and technology capital in order to dominate the domestic and global markets. People now are not only concerned about their own well being, or the health and safe foods alone, but the concerns also included labor and animal welfare, and environmental issues along the food production chain. Therefore, industry players have to spend more financial and technical resources in order to comply with the quality and safety schemes introduced by authorized bodies. Nevertheless, the return of investment is worth it because consumers are willing to pay premium price for the certified products. Furthermore, market opportunities for certified products are higher in developed countries.

Farmers can choose to build a food-safety system which conforms to a single scheme or more effectively it can build a robust system based on the most stringent requirements of several major schemes. This allows greater flexibility in meeting customer requirements or defending a system against challenges. The most important thing farmers need to consider when choosing a government initiative approved food-safety scheme is to make sure that there is a perfect match between the scheme and the farms. Regardless of which scheme is chosen, the farmers will benefit from the improved understanding of its processes and will be better positioned to consistently meet the need for sustainable food-safety management.

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