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FOOD SECURITY AND SUSTAINABILITY: MALAYSIA AGENDA

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ABSTRACT

Issues pertaining to sustainability and food security in agricultural development are still the main agenda of Malaysia in its vision of being a developed nation. It is basically the government's responsibility of installing public confidence that food is available and affordable as well as ensuring the sustainability of the agri-food sector, for the welfare of today's and future generation. Apart from defining food security and sustainability, the paper reviews Malaysia's position on food security considering the global food security index as well as identification of its strengths and weaknesses. Some of the descriptions are also presented as part of a policy review on food security and sustainability as well as government regulations that have been established to ensure the effective implementation of relevant initiatives. This paper also focuses on agri-food research direction particularly in MARDI in addressing food security and sustainability. It encompasses the areas of research that need to be strengthened to address food security issues and sustainable agriculture through technology and innovation. Discussions within this framework also include the relationship of climate change with food security and sustainability with special emphasis on rice production. This is due to the fact that rice is a major commodity in the context of food security in our country.

Key words: Food security, food policy, food security index, environmental impact

INTRODUCTION

Food security exists when all people, at all time, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (FAO, 2008). The Malaysian Government was very much aware of the potential social discontent implications of higher food prices and acted fast in introducing the "National Food Security Policy". Overall the policy seemed to work considering that during the "2008 Food Crisis", food availability was never an issue and that prices of basic food were still very much affordable by the lower income group in the country. Lower income group are those in B40 category who household monthly income of less than RM2, 500 in 2016 (Department of Statistic Malaysia, 2017) There are still many challenges that to overcome to ensure food security, especially to the lower income segment. A long-term solution is, of course, to enhance local production of our food needs competitively. Better and more effective developmental R&D including funding and human capital accessibility for food-based research institutions would be needed. Similarly, infrastructure for the farming community needs to be optimised for higher productivity. Long term policy improvements such as the ones related to direct subsidies are also needed to revise for the competitive food industry to evolve (Suhaimee *et al.*, 2015). Thus, the main challenge is still to enhance productivity and efficiency in the sector. Competitiveness is the bottom-line in ensuring food security for the nation. What the Malaysian government actually needs to do is to install public confidence that food is available and affordable. In the case of rice, this was done through short term measures such as capping the price of certain grades of rice that were meant for the lower income and lower middle-income groups. For example, in 2015 the maximum retail price of broken 15%, 10% and 5% rice was controlled at RM1.80, RM2.40 and RM2.60 per kilogram, respectively (DOA, 2016). The next measure was to ensure that there was

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sufficient domestic stockpile just in case that international source became scarcer. This was done through a Government to Government arrangement with Thailand and Vietnam to enhance our stockpile.

Meanwhile, the goal of sustainable agriculture is to meet society's food security needs without compromising the well-being and ability of future generations to meet their needs. Agricultural Sustainability Institute, UC Davis (2018) noted that practitioners of sustainable agriculture attempt to integrate a healthy environment, economic profitability as well as social and economic equity into their work. Certain roles should be carried out by all involved in the food system including growers, food processors, distributors, retailers, consumers and waste managers in ensuring a sustainable agricultural system. Sustainable agriculture and sustainable food systems comprise many practices. Farm owners may use methods to promote soil fertility, optimize water use, and lower pollution levels on the farm. Best quality with reasonable price foods that are grown using methods that taking care labour wellbeing and environmentally friendly which resulted in strengthening the local economy, could be the need of consumers and retailers who concerned agricultural sustainability. Researchers often use the cross-disciplinary approach in their work, combining biology, economics, engineering, chemistry, community development and many others in addressing agricultural production sustainability. However, sustainable agriculture is more than a combination of practices, but also a balance between the competing interests of an individual farmer or of people in a community as they work to solve complex problems about how to ensure food security.

MALAYSIA'S POSITION IN GLOBAL FOOD SECURITY

Malaysia performance is in the top-tier of the 2015 Global Food Security Index (GFSI), placing 34th out of 109 countries, but was far behind Singapore and five other neighbours in the Asia-Pacific region. In the Economist Intelligence Unit (EIU)'s latest annual findings, Malaysia was categorised as showing "good performance" in ensuring that its citizens have access to sufficient amounts of affordable, safe and quality food. With annual gains that amounted to a cumulative 4.9 points in both indicators (affordability and, safe and quality) for over a four-year-period, Malaysia improved its overall score towards 69 out of 100. Singapore, an island state with fewer natural resources, took second place in the ladder with an overall score of 88.2.

Currently, Malaysia's in 2017 Global Food Security Index (GFSI) was placing 41st out of 113 countries with a score of 66.2, far behind Singapore (4th). Malaysia still remains a relatively strong performer, however, outranking 23rd other countries from the Asia-Pacific region including economic superpower China (45th) and ASEAN neighbours Thailand (55th), Vietnam (64th), the Philippines (79th), Indonesia (69th), Myanmar (80th) and Cambodia (83th).

The country's best performance was in the quality and safety category with a 71.1 score and a 37th rank, achieving the full indicator rating of 100 on the government's commitment to improving nutritional standards and a near-perfect score of 98.5 for enabling an environment for food safety (Table 1).

Malaysia performed relatively well in the affordability category, scoring of 68.1 and ranking 41st due to food consumption accounting for 74.7% of the household expenditure. The country's score in this category was also bolstered by the fact that 97.1 percent of its 31.62 million-strong population live under the global poverty line. Malaysia performed also slightly better in the availability category, with a 62.7 score at the 43rd spot out of 113 countries (Table 2).

MALAYSIA'S POLICIES IN FOOD SECURITY AND SUSTAINABILITY

Food security is not a new agenda in the national policy origins in Malaysia. For decades, a long-standing national agricultural policy goal is to address food security concerns which have been dominated by its primary staple, rice. This largely dictates why the Malaysian government constantly mandates rice self-sufficiency as a crucial national policy measure. The perception of food security in Malaysia is narrowly interpreted as the ability of the country to feed sufficient food entirely through domestic production, which implies the government's stance on food security is largely referred to as complete dependence on domestic production without supplement from external sources. Hence, the policymakers have often misinterpreted food security to self-sufficiency. Food security not only relies on self-sufficiency, but also requires the integration of capital, energy, technology, and experienced management into sustained efforts to heighten the efficiency of food production. In fact, self-sufficiency has been revealed as an inefficient, a costly, and a counterproductive path to food security (Alavi *et al*., 2012). A food self-sufficiency approach to food security has been widely criticized as a misguided policy decision and furthermore, it seeks to achieve food security that reflects political

Table 1. Malaysia strengths that had a value of 75% and above

Rank	Strengths	Score
1	Nutritional standards	100
2	Food safety	98.5
3	Proportion of population under the global poverty line	97.1
4	Volatility of agricultural production	94.7
5	Food loss	94.7
6	Agricultural import tariffs	86
7	Presence of food safety net programmes	75
8	Access to financing for farmers	75

Table 2. Weighted total of all category scores, Malaysia, 2017

CATEGORY	Score 2017	Δ	Rank 2017	Average score (all countries)
OVERALL	66.2	-3.2	=41	57.3
1) AFFORDABILITY	68.1	-0.4	41	54.8
2) AVAILABILITY	62.7	-7.0	=43	59.0
3) QUALITY AND SAFETY	71.1	0.0	37	58.7
1.1) Food consumption as a share of household expenditure	74.7	-2.2	38	58.6
1.2) Proportion of population under the global poverty line	97.1	0.0	46	73.0
1.3) Gross domestic product per capita (US$ PPP)	19.1	+0.6	32	14.5
1.4) Agricultural import tariffs	86.0	-0.2	18	76.4
1.5) Presence of food safety net programmes	75.0	0.0	44	65.5
1.6) Access to financing for farmers	75.0	0.0	40	61.3
2.1) Sufficiency of supply	43.4	-24.0	66	56.5
2.2) Public expenditure on agricultural R&D	12.5	0.0	32	15.0
2.3) Agricultural infrastructure	70.4	0.0	=36	57.6
2.4) Volatility of agricultural production	94.7	+0.2	24	86.2
2.5) Political stability risk	58.8	-2.3	29	46.8
2.6) Corruption	50.0	0.0	25	37.4
2.7) Urban absorption capacity	72.3	-11.3	27	66.6
2.8) Food loss	94.7	-0.1	19	84.9
3.1) Diet diversification	62.5	0.0	49	56.4
3.2) Nutritional standards	100.0	0.0	=1	79.1
3.3) Micronutrient availability	61.2	0.0	17	43.9
3.4) Protein quality	52.9	0.0	49	49.4
3.5) Food safety	98.5	0.0	39	80.5

Source: Global Food Security Index 2017.

priorities over economic efficiency (Clapp, 2017). Despite having been emphasized under a series of national agricultural policies and plans, food security and sustainability has been dominated in the most recent policies. Table 3 describes policy emphasis and strategies which primarily included increasing domestic production, improving productivity, strengthening research and development activities, innovation, and technologies, monitoring food prices, market access, and stability. The severe aftermath of the 2007/08 food crisis has strained many rice-deficit regions, primarily in Asia where rice is the basic food staple triggered the government to establish and revise the National Food Security Policy (2008–2010). The policy had manifested to move the country towards a food self-sufficiency nation, especially for rice and to tighten security on the national food reserve by tremendously increasing the national rice buffer stocks. This decision essentially worsened the situation of the world market price for rice (Dawe, 2010). In the most recent national development plan, the government made an extreme policy decision to pursue an autarky economy in its rice sector, thus closing borders from the international markets in the future. Subsequently, in the national policy goal reformulation, the government decided to pursue and aim to achieve total rice self-sufficiency by the year 2020. However, this target has been recently extended to 2050 under the new

Table 3. Malaysia: Policy Reviews on Food Security and Sustainability

Period	National Policy / Development Plans	Policy Emphasis	Strategies
1991–2008	NAP-1	• Increase in the production of major food products to enhance food security and better food quality at affordable prices. • Enhancement of food security for the populace and the nation.	• Meeting national food requirements or food security through large food production by the private sector. • Enhancing the integrated development of the food and industrial crop subsectors.
1992–2010	NAP-2	• Greater emphasis on food sufficiency. • Focusing on food security and food safety (food scarcity).	
1998–2010	NAP-3	• Providing food security and safety. • Making agro-food a competitive and sustainable industry. • Ensuring national food security.	• Increasing food production and food access, as well as stabilising food prices, and ensuring food safety and nutrition.
2011–2020	NAFP	• The increasing contribution of the agro-food industry. • Strengthening R & D activities, innovation and use of technology.	• Increasing productivity through the use of intensification of agriculture factors, and expansion of the agro-based industry. • Strengthening R&D activities, innovation and use of technology. • Increasing and improving access to food through the availability of marketing infrastructure and promotion. • Ensuring reasonable food prices with the development of monitoring systems on food prices and early warning system on food availability.

Source: Ministry of Agriculture and Agro-based Industry (First National Agricultural Policy – NAP 1; Second National Agricultural Policy – NAP 2; Third National Agricultural Policy – NAP 3; National Agro-Food Policy – NAFP).

masterplan, the National Transformation 2050 (2020–2050).

Durand-Morat and Wailes (2011) postulated that Malaysia has the potential to be a food secured nation resulting from liberalizing rice trade through a significant decrease in consumer prices. In addition, regional trade agreements are hypothesized to receive positive responses from participating member countries. Nevertheless, "since the issuance of the ASEAN Integrated Food Security framework in 2008 and the further successful adoption of the ASEAN Trade in Goods and Agreement (ATIGA) in 2009, food deficit countries within the region would prefer to hang tenaciously on their long-held goal of self-sufficiency" (Alavi *et al*., 2012). The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) agreement also seeks to open trade initiatives among the members, particularly major rice exporters – Vietnam and Australia – thus contributing to food security (Ministry of International Trade Industry, 2015). According to Organization for Economic Co-operation and Development (OECD), trade openness could improve each dimension of food security, increasing food availability through enabling products to flow from surplus to deficit regions (OECD, 2014). In theory, trade expands markets, and thus opens access to additional sources that could be a remedial approach to domestic production scarcity, so that supply and demand would be met. In fact, trade could balance the deficits of net food importers with the surpluses of exporting countries. In the absence of trade, food prices would be higher in net importing countries in order to bring national supply and demand into equilibrium, potentially worsening the food security status quo in this country.

In response to various externalities, there have been rigorous efforts to promote sustainable agricultural development in Malaysia. The government has established the New Economic Model (2011–2020) and the National Agrofood Policy (2011–2020) to guide a long-term transformation; the 10th (2011–2015) and 11th (2016–2020) Malaysian Plans which are also expected to boost sustainability progress in the short term. The basis of the relevant policy measures is made up of versatile sustainable agricultural practices, including conservation tillage, intercropping, cover crops/mulches, crop rotation, organic fertilizers/composts, and integrated pest management. These are also being promoted along with other requirements of Malaysia's Good Agricultural Practices and Organic Schemes (Chan, 2016).

Sustainable agricultural practices are promoted with an aim to compensate for external inputs (e.g., synthetic fertilizers, synthetic pesticides, machinery, and so forth) by using locally available natural resources more efficiently. Their benefits include soil enhancement particularly through the management of organic matter and soil biotic activity, as well as crop and environment protection through diversification of species and genetic resources. Based on these features, sustainable agricultural practices do not compromise either productivity or environmental health. However, they do require the improved use of farm management practices since their application is complex. For instance, conservation tillage, intercropping, cover crops/mulches, crop rotation, organic fertilizers/composts, and integrated pest management are important factors in sustainable agricultural practices where adoption of technologies depend on a range of socio-economic, agro-ecological, institutional, informational, and psychological factors (Tey *et al.*, 2013).

Additionally, the Malaysian government has imposed some legal restrictions to control hazards that impact the environment, food safety, and worker health and safety. Environmental Quality (Control of Suspended Solids) Regulations 2011, for example, aims to protect and maintain the quality of soil and water. Under such regulation, farmers are required to take measures to minimize erosion and manage stormwater at all time. In the worst case, a directive will be issued to farmers for taking the necessary measures to mitigate, minimize or control erosion from their premises. However, the progress of Malaysia's Good Agricultural Practices Scheme and its Organic Scheme has been far below satisfactory. It could be indicated that, although the policies seem strong, the use of unsustainable production practices has remained indisputably significant just like other sectors.

AGRO-FOOD RESEARCH DIRECTION IN ADDRESSING FOOD SECURITY AND SUSTAINABILITY

MARDI was established to undertake research and development (R & D) on various commodity sectors including rice, livestock, vegetables and fruits. Current scenario indicates that Malaysia needs to increase food supplies to support the growing population of 35 million people by 2020. In this regard, R & D should generate a technology that can support the development of adequate local food production. Along with economic growth, prosperity and luxury lifestyle caused by the increase of income, the pattern of food intake is also changing, from grain to animal proteins as well as vegetables. Climate change and awareness of the increasingly limited resource in food production have led to sustainable farming practices in food agriculture. The National Agro-Food Policy (2011–2020) has set targets based on the nation's strengths in food production. Although the contribution of the agro-food sector to GDP is low (3-4%), its quantity and value are expected to increase. The projections show that the country does not have problems with the supply of chicken and pork, eggs and fish. However, the local production of rice, vegetables, fruits, beef, mutton and liquid milk are 30%, 51%, 20%, 77%, 87% and 35% below the self-sufficiency level, respectively (MOA, 2017). The country should also have an effective import policy to cope with short of supply. The long-term strategy will certainly enhance the production and competitiveness of the agro-food sector. Long-term policy reforms that lead to direct subsidy rationalization are required to make the agro-food industry more competitive. Hence, the main challenge is to increase productivity and production efficiency in the sector.

Realising the challenges and issues in food security and sustainability, government policy encourages the transformation in agri-food sector through R & D. In this regard, seven strategic objectives have been outlined in the National Agro-Food Policy (2011–2020), where enhancement of R & D activities, innovation and use of technology is one that has been identified. FAO predicts that 70% increase in future food production will be contributed via technology, 20% through production intensification and the rest (10%) through area expansion. MARDI, as a national agro-food R & D agency, focuses on its mandate in contributing to the agricultural development through technology generation. Nevertheless, the effectiveness of MARDI's R & D is very much depending on the availability of funds and sufficient expertise. At the same time, agricultural infrastructure needs to be optimised. Priority to MARDI's R & D activities is based on challenges such as improving competitiveness, sustainability and food security, preserving the environment and attracting private investment. It should also be in line with market and customer requirements that will adapt to relevant technologies and innovations. In the 11th Malaysia Plan (11MP), several R & D themes in the agro-food sector have been in focus (MARDI, 2016). Those are:

- Post-harvest technology to increase production and minimize losses
- Competitiveness and food security, safety and quality
- Green technology development
- Efficient use of resources for sustainable agriculture

- Exploring and generating new wealth creation through biotechnology and agrobiodiversity
- Improving efficiency through proper mechanization and precision agriculture
- Early warning system development in pest and disease management
- Adaptation and mitigation of climate change
- Development of high-value agricultural products
- Promotion and transfer of technology

The way forward of R & D is categorised into some important food commodities that are rice, fruit and vegetables and livestock. Rice R & D basically revolves around the major R & D themes: breeding, agronomics or crop production, pest and disease management, cultivation and harvesting mechanization, water management, rice product development with the support of other disciplines that produce inputs or components in the main themes. Research theme designed as long-term programs (7-12 years), each of which can consist of several medium-term programs (2-6 years). Each sub-program is targeted at producing commercially-available technologies or at least producing semi-mature technologies. Each sub-program is built from several projects that can run simultaneously or sequentially of which took about 2 years. Typically, every project is targeted to produce short-term outputs, which is often a (i) knowledge, or (ii) an initial process or steps in the development of a technological component. According to the developed way forward framework, activities in these areas will generate technological innovations for medium-to-long or long-term use. Among long-term innovations are:

- Hybrid rice cultivation technology
- New inbred rice varieties
- Aerobic cultivation technology
- Technology towards increasing 250% cultivation intensity

R & D in fruits and vegetables have been carried out to produce complete technology throughout the production chain up to harvesting and processing. The technology package generated has produced safe and high-quality fruits. MARDI has developed a commercially viable short-term fruit production technology such as pineapple, melon, papaya, star fruit and banana. Varieties of pineapple (Josapine), papaya (Eksotika), rambutan (Mutiara Merah and Mutiara Wangi) and lime (Melomas) were some example that has been introduced. Post-harvest and transportation technology generated in collaboration with fruit exporters have successfully penetrated the international market. Pineapple, melon and papaya have been marketed to China and the Middle East. The Malaysian starfruit has been recognised in the European market. At the same time, high-value vegetables such as chili, cabbage and tomato have also been given priority in R & D. The production of chili under the protective structure has improved yields and guarantees quality as well as reduces the use of pesticides. The direction of fruits and vegetable R & D in MARDI is guided by the need for food security and sustainability in line with the National Agro-Food Policy. The major emphasis on horticultural R & D would be to increase productivity, quality, safety with minimal post-harvest losses. Focused areas include the development of varieties from selected species, production systems, pest and disease management and post-harvest handling.

One of the goals of MARDI is to address issues on the production of meat and milk supply of the country. MARDI has developed several technologies to help the ruminant and non-ruminant industry. Among the significant technologies that have been generated and commercialized or used by producers were chicken eggs which high in Omega-3, Brakmas cattle which were suitable for integration with palm oil plantation, OPF (oil palm froth) based ruminant feed, Mineral block, for ruminant additional mineral source, Otosil and Silosil for silage production, Intensive goat / sheep farming systems, etc.

MARDI is still consistent with its R & D goals aimed at increasing meat production at competitive costs with the adoption of eco-friendly production systems (MARDI, 2016). The field of R & D is based on three strategies identified in the National Agro-Food Policy as follows:

a. Improving the efficiency of ruminant production industry specifically through;
   - intensive farming for meat/milk production and intensify zero waste practices
   - increasing the productive population of ruminant livestock through breeding services, including the use of modern breeding biotechnology methods
   - developing a structured quality breed (structured) production system through the development of nucleus herd
   - producing high-quality breeds of local cattle and goat

b. Maintaining competitiveness of non-ruminant livestock industry through:
   - Strengthening the use of closed-house technology and automation
   - Developing effective microorganism (EM) as a natural biological control agent.

- Enhancing the use of ICT in production systems including RFID technology

c. Increasing the production of feedstuffs through
   - Strengthening the domestic raw materials use in ruminants on-ruminants feed
   - Providing quality food formulas with competitive prices

CLIMATE CHANGE RELATIONSHIP WITH FOOD SECURITY AND SUSTAINABILITY WITH SPECIAL FOCUS ON RICE PRODUCTION

The Intergovernmental Panel on Climate Change (IPCC) has stated that over the past 150 years, the global average surface temperature has increased by 0.76°C (IPCC, 2007). It is expected that global warming will cause greater climatic volatility, including changes in precipitation patterns and increased frequency and intensity of extreme weather events including typhoons, heavy rainfall, floods, and drought. There has also been a rise in mean global sea levels. It is widely believed that climate change is largely a result of anthropogenic greenhouse gas (GHG) emissions, which are likely to intensify if no action is taken (IPCC, 2000). Climate change is a global issue and Malaysia was part of it. Malaysian Meteorological Department (MMD) projected that our temperature will increase that ranges from 1.5°C to 2.0°C by 2050. Rainfall and river flows are projected to experience greater fluctuations as well.

Climate change is a complex environmental problem affecting different sectors of the economy; both in developed and developing world. It could threaten lives, the sustainability of agricultural production, fresh water supplies and the survival of native species and ecosystems. Threats also include food as well as political instability in a political environment which might be exacerbated.

The agricultural sector is exposed to a variety of risks which include climate variability, weather-related hazards of cyclone and flood, pest and diseases, commodity price fluctuation, change in consumer demand among others. Therefore, the output or yield will be mandatory unpredictable in such condition for single crop production. The Malaysian Meteorology Department has predicted that temperature in Malaysia will increase on average by 1.3°C for the period 2020–2029 and climate change will affect rice production and agriculture more generally. The externality of environmental uncertainties would be the major constraints in Malaysian agricultural production (MMD, 2009).

The Malaysian agricultural sector in terms of production will have a socio-economic impact on the people in the sector and nation as a whole as the result of the climate change phenomenon. The absence of complete information among the farmers in weather prediction, calamities or environmental unexpected events consequently affects their productivity. As the average temperature increases, the yield of rice production will gradually decrease as soon as it hit a certain degree. There are needs for new resistant varieties development and other production technological advances that able to manage the extreme heat in the future as predicted (Ariff, 2016).

As far as food security is a concern, uncertainties in global food supply indeed was a threat and therefore innovative measures must be undertaken. The major issues and challenges facing Malaysian agriculture are structural and supply-side in nature. Land, labour, capital and other inputs are increasingly scarce for agriculture and food production as other sectors increasingly attract these basic factors of production. Thus, even without climate change, the agricultural sector faces many challenges (Ariff, 2016).

In consequence, rice production and productivity are seen as being very important in Malaysia and the country and one of the many developing nations that became more concerned about food security and sustainability in the late 2000s. Food security and sustainability as well been a longer-term concern in Malaysia. Although a declining part of the economy, agriculture has been seen as particularly important to the economy and historically there has been an extensive intervention in agriculture, particularly rice production, by the government in Malaysia (MARDI, 2008). With climate change, another threat to food security has become apparent. As we now know, the climate has changed already – becoming warmer with evidence of more extreme events of the type which can contribute to great losses, especially in agriculture. Due to these factors, issues relating to food security have become more important, not just in developing countries, but also worldwide (Ariff, 2016). The study said that increasing the temperature by 2ºCelsius would decrease the rice yield by 0.359 tonnes per hectare. By multiplying the yield loss by the planted area for each year, the estimated average production loss from 1999 to 2007 would be 147 metric tonnes. With the average price of rice of RM1.10, the average economic loss for the second scenario is estimated to be RM162 million per year (Vaghefi, 2011).

Considering the importance of food security, the rice sector is also identified as one of the NKEAs. The rice industry in Malaysia could benefit from

this plan; with a higher R & D budget on fragrant and Basmati rice as well as new infrastructure development for non-granary areas. The generation of potential new technologies and the development of better infrastructure could certainly improve the productivity of rice production, as well as helping farmers to face future challenges in rice cultivation including that of climate change.

Part of climate change is the occurrence of extreme events such as drought or flood. In order to overcome this - or at least offset the effect – varieties should be developed that are tolerant to water stress. New hybrid rice though might lower the yield in the range of 20–30% it is still comparable, particularly when we consider the predicted losses of more than 50%.

For now, part of the sustainability of the rice industry affects by climate change depends on the above adaptation. However, as a whole of the agriculture sector, we might consider the option of crop insurance to minimize farmers losses and ensure the sustainability of the agriculture sector. It has been drafted and structured by Agro Bank with cooperation from all of the agricultural agencies under the Ministry of Agriculture and Agro-based Industry. Among the considerations is the indemnity payment mechanism which significantly related to losses assessment procedures. Efficient and transparent procedures are very important in the continuation of initiatives. If not, this crop insurance initiative, for instance, may become the new burden to the government as it fails to leverage private firms to embark on this initiative. This could be the opportunity for agriculture as a whole to sustain though climatic events might be a huge threat to the sector (Rahim *et al.,* 2016).

CONCLUSION

Food security exists when all people, at all time, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. Sustainable agriculture is an approach to meet society's food security needs without compromising the well-being and ability of future generations. Examining the underlying meaning of those statements, therefore concluding that both were significantly related. Malaysia was successful in ensuring its citizens have access to sufficient amounts of affordable, safe and quality food. This might be due to the fact that food security and sustainability were not a new agenda in the national policy origins in Malaysia. Despite having been emphasis under series of national agricultural policies and plans, food security and sustainability has been dominated in the most recent policies through not only increasing domestic production, but also improving productivity, strengthening research and development activities, innovation, and technologies, monitoring food prices, market access, and stability. Knowing the outstanding scenario indicates that Malaysia needs to increase food supplies to support the growing population of 35 million people by 2020. Therefore, R & D should generate appropriate technology that can support, strengthen and enhance the development of sustainable local food production. This could be the way forward in agri-food development despite the global complex environmental problem that could threaten lives, the sustainability of agricultural production, fresh water supplies and the survival of native species and ecosystems. In conclusion, food insecurity is a major social and environmental disruptor with serious repercussions for the health and future world sustainability. Improved food security governance based on sound, equitable and sustainable food systems that benefit from modern information technologies is essential to meet the sustainable development goal.

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