

The Potential Impact of UPOV 1991 on the Malaysian Seed Sector, Farmers and Their Practices

NurFitri Amir Muhammad



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The Association for Plant Breeding for the Benefit of Society (APBREBES) is a network of civil society organizations from developing and industrialized countries. The purpose of APBREBES is to promote plant breeding for the benefit of society, fully implementing Farmers' Rights to plant genetic resources and promoting biodiversity.

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Abbreviations

ASEAN	Association of Southeast Asian Nations
CBD	Convention on Biological Diversity
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CETDEM	Centre for Environment, Technology and Development
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
CPVO	Community Plant Variety Office (European Union)
DOA	Department of Agriculture
EAPVPF	East Asia Plant Variety Protection Forum
EDV	essentially derived variety
EFTA	European Free Trade Association
FAO	Food and Agriculture Organization of the United Nations
FTA	free trade agreement
GDP	gross domestic product
IADA	Integrated Agricultural Development Authority
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
LMO	living modified organism
MARDI	Malaysian Agricultural Research and Development Institute
MPC	Malaysia Productivity Corporation
MyIPO	Intellectual Property Corporation of Malaysia
NAFAS	National Farmers Organization
NDI	new, distinct, identifiable
NDUS	new, distinct, uniform, stable
NFA	Natural Farming Association
NGO	non-governmental organization
OAPI	African Intellectual Property Organization
PNPV (Act)	Protection of New Plant Varieties (Act)
PVP	plant variety protection
RIA	Risk Impact Analysis
RNF	Regulatory Notification Form
SEMAE	French Interprofessional Organisation for Seeds and Plants
SPM	Sijil Pelajaran Malaysia
SSL	self-sufficiency level
TPPA	Trans-Pacific Partnership Agreement
TRIPS (Agreement)	Trade-Related Aspects of Intellectual Property Rights (Agreement)
UKM	Universiti Kebangsaan Malaysia
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
UNDROP	United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas
UPM	Universiti Putra Malaysia
UPOV	Union pour la Protection des Obtentions Vegetales (International Union for the Protection of New Varieties of Plants)
UPOV 1991	1991 Act of the International Convention for the Protection of New Varieties of Plants
USPTO	United States Patent and Trademark Office
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

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Executive Summary

The first, second and third chapters of this report are introductory chapters providing background on Malaysia's agricultural system, the state of its seed market and the current situation in the country pertaining to the protection of new varieties of plants.

The agricultural sector contributed around 8.2% or RM96.00 billion (USD22.36 billion) to Malaysia's gross domestic product (GDP) in 2017. Of this amount, 46.6% came from palm oil commodities. Because this crop uses almost 74.5% of the country's agricultural land, Malaysia still needs to import many agricultural products, especially vegetables and livestock, to meet the needs of consumers. There are 921,931 registered farmers in Malaysia, especially in rice cultivation, where they produce around 70% of the country's domestic needs. In addition, fruit farmers in Malaysia produce around 77.5% of the country's domestic fruit needs while vegetable farmers currently produce around 46.6% of Malaysia's vegetable needs.

Next, this report looks at the situation of the plant seed industry in Malaysia. Except for local rice seeds and fruits, Malaysia imports almost 90% of the country's plant seed needs, especially vegetables. Farmers in Malaysia obtain seed supplies from various sources, namely from government agencies such as the Department of Agriculture (DOA), the private sector through seed wholesalers and retailers, and from friends and family members. Vegetable seeds in Malaysia are mostly imported from countries such as China, Thailand and Japan while local fruit seeds such as durian, mango, pineapple and rambutan are mostly produced by the Malaysian Agricultural Research and Development Institute (MARDI), the DOA and local farms. In Malaysia, the seed certification process is optional to seed sellers, and farmers can choose whether to get certified seeds or not. Certified seeds are usually more expensive. For rice seeds, farmers will not be able to buy seeds at a subsidized price if they do not choose to use seeds certified by the authorities. Seeds processed by paddy farmers themselves are categorized as uncertified seeds. Under the Control of Padi and Rice Act 1994, sale of paddy and rice seed is only allowed by licensed entities.

Chapter 3 elaborates on the features of Malaysia's Protection of New Plant Varieties (PNPV) Act 2004. Plant variety protection (PVP) consists of monopoly rights conferred to the plant breeder for a specific duration (also sometimes known as plant breeders' rights) in relation to the development of new plant varieties. Such protection became globalized with the entry into force of the World Trade Organization (WTO)'s Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement). Using the flexibility allowed under the TRIPS Agreement to develop "*sui generis*" PVP systems, Malaysia adopted the PNPV Act 2004 that aims to balance the different interests operating within the national agricultural system while reflecting Malaysia's rights and commitments under various international instruments. From December 2008, when the PVP system became operational in Malaysia, to December 2020, a total of 447 PVP applications were made; of these, 158 applications were from local breeders and the other 289 were from foreign breeders. The majority of the applicants are foreign companies (283 applicants or 63.31%) and most applications are for ornamental crops (283 applications). From the total of 447 applications, 187 or 41.83% have been granted PVP certificates. In this regard, the claim that the existing law limits innovation and access to quality seeds from abroad for local farmers is not true. Evidently the distinctiveness of the PNPV Act 2004 has not affected its operation and use.

Chapter 4 of this report discusses international treaties and declarations relevant to plant genetic resources and Farmers' Rights. The related international instruments include the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), the Convention on Biological Diversity (CBD) and its

Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization, the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), the United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas (UNDROP), and the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW). In general, these international instruments *inter alia* recognize the contribution of farmers and indigenous communities in the preservation and development of plant genetic resources, and their right to seed including to save, use, exchange and sell farm-saved seeds and to participate in decision-making on these matters; they also provide for mechanisms to deal with biopiracy of plant genetic resources by implementing effective access and benefit-sharing systems. Several of these elements are the result of Malaysia's leadership at the international level. Undoubtedly they reinforce the imperative for a unique PVP system and mutually supportive national laws. Therefore, these factors must be ensured in any PVP system, and the PNPV Act 2004 is a step in that direction.

Chapter 5 discusses the 1991 Act of the International Convention for the Protection of New Varieties of Plants (UPOV 1991), analyzing its myriad contradictions with farmers' and other rights in international treaties and declarations. Proponents of UPOV 1991 claim that the extensive protection and monopoly rights granted to plant breeders are for the purpose of encouraging commercial breeders to invest in research and innovation and produce new plant varieties. However, there are major concerns with the UPOV system. It was primarily designed to advance the commercial agricultural interests of European and other developed countries; the characteristics, needs and interests of agricultural systems in developing countries were never a consideration. Overall, the chapter finds that the UPOV system offers a rigid, one-size-fits-all legal framework that is inappropriate for Malaysia and its realization and fulfilment of the rights and obligations under international treaties and declarations relevant to plant genetic resources and Farmers' Rights. In particular, UPOV extends monopolies over seeds, denies farmers' rights to freely use, share and sell protected seeds harvested from their own fields, and lacks mechanisms to prevent misappropriation of plant genetic resources.

The most controlled seed system in Malaysia is for rice seeds. This control is implemented through subsidy and licensing regulations, strengthened by the PVP system, that encompass the development of seed varieties by public and private research institutions, seed production by seed factories, and seed distribution by wholesalers, retailers and seed sales agents. This is discussed in depth in Chapter 6. For a protected variety, the seed producer needs to pay royalties but most of the time farmers are the ones who have to bear the cost. As of December 2020, 17 rice varieties have been granted protection but every season usually only three to four protected varieties are available in the local market at any one time. A major problem with the Malaysian rice seed system is the exploitation of the governmental distribution and subsidy mechanism by the private sector that gives rise to a monopoly of the market and price exploitation. In addition, farmers experience a shortage of rice seeds every year due to many factors such as logistical and management problems – seed supplies arrive late and planting is dragged off-season, disease, supply and demand mismatch – as well as profiteering and hoarding as reported by the media and farmers' organizations. Given this situation, farmers are more regularly saving, exchanging and selling seeds. Further, to avoid being trapped in an exploitative system, younger farmers are increasingly focused on ecological farming methods, reinforcing the need for rice paddy farmers to have freedom to operate.

Chapters 7 and 8 discuss surveys and interviews conducted by the author of the report to better understand what is happening on the ground and the potential implications of UPOV 1991 and its restrictions on rice paddy farmers as well as farmers planting vegetables, fruits and industrial crops in Peninsular Malaysia and in the East Malaysian states of Sabah and Sarawak.

In Peninsular Malaysia, a survey conducted among 200 paddy farmers found that 50.4% of seeds that the respondents use are of the protected MR220 CL2 variety, followed by the protected SIRAJ MR297 (26.4%), unprotected MR219 (14.4%) and protected UKM RC2 (3.2%) varieties. Other seed varieties like MR10, MR167, MR220, MR284 and MR263 (all unprotected except MR263) constitute 5.6% of all the seeds used by the respondents. A few of the respondents plant more than one variety of rice seed every season. In Peninsular Malaysia, most of the rice farmers use the protected MR220 CL2 variety as it is practically forced upon the market by suppliers and the government's subsidy policy because it is more profitable to the vendors

(as the sale of the seed is packaged with the sale of an associated herbicide) although it is no longer favoured by farmers because it can no longer deal with the problem of weedy rice.

Our survey found that 33.50% of the farmers save seeds from their own farm. 83.58% do it because they believe that the quality of the seeds is guaranteed and they are satisfied with the seeds that they processed themselves. The other 16.41% want to save costs by saving seeds. The amount of the seeds that they save is 10% to 20% of their harvest and they also share and sell the farm-saved seeds. Almost 99% of the survey respondents were opposed to restrictions on exchange and sale of seeds for reasons such as: wanting freedom to choose whatever seed they prefer; wanting to control their own farm-saved seed; no guarantee that the seed in the market will always maintain its quality; worries that the seed price will increase; and worries that they cannot save costs when needed.

Meanwhile in Sabah and Sarawak, a series of interviews conducted among 40 paddy farmers revealed seed saving and exchange to be a common practice among farmers using traditional or government-subsidized paddy seeds. In the latter case, seed saving is considered necessary due to constant delays in seed distribution by the government. A wide variety of paddy is cultivated in Sabah and Sarawak, and the supply of paddy seeds does not depend as much on the commercial market. However, as foreign companies have started working with the State Agriculture Department to produce commercial rice seeds, which will then be PVP-protected, there is a risk of heading towards a situation like what is happening in Peninsular Malaysia; this will be exacerbated if the practices of saving, exchanging and selling among farmers are restricted and/or made illegal if Malaysia were to join UPOV 1991. There is also concern about misappropriation of local genetic resources in light of increased interest in commercializing traditional varieties.

The practice of saving, using, exchanging and selling seeds is also employed by small-scale vegetable and fruit farmers. We conducted interviews with 10 vegetable and fruit farmers in Peninsular and East Malaysia. We found that, apart from planting traditional variety plants or landraces such as *cekur manis*, *sambung nyawa*, *kaduk*, *gajus*, *serai kayu* and *ulam raja*, they also plant modern variety plants such as chilli, eggplant, luffa, ladyfingers, guava, water pumpkin, mung bean, tomato, papaya, basil and marigold.

They get the seeds of these plants from sharing and selling seeds among community members and through the activities of the farming associations of which they are members. In addition, they also buy these seeds from commercial seed shops in their area. They are also active in crossbreeding and selection activities to produce better plant varieties. Lack of knowledge of a variety's denomination makes it quite hard to determine whether or not the variety is PVP-protected. However, all farmers interviewed expressed concern over the impact of the UPOV system and its various restrictions. UPOV's Guidance for implementation of the 1991 Act requires that the seed-saving exception to breeders' rights not be applied to vegetables, fruits and ornamentals. UPOV 1991 also does not allow exchange and sale of farm-saved seeds of protected varieties. Further breeding to adapt seeds to local conditions is subject to restrictions as well.

Chapter 9 explains how Malaysia is being pressured to join UPOV 1991 and looks in detail at the amendments proposed to the PNPV Act 2004 to align it with UPOV 1991. Free trade agreements are often used to force a country to join UPOV 1991. In the case of Malaysia, its surprise ratification of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) in October 2022 is a concern, for the agreement requires Malaysia to join UPOV 1991 within four years. The chapter highlights examples of countries that have not ratified UPOV 1991 even when required by a trade agreement, due to the potential negative effects of UPOV 1991 on national agriculture systems and public opposition. Independent experts reporting to the United Nations have also strongly argued against using trade agreements to impose UPOV 1991 on developing countries such as Malaysia.

The chapter further explains the use of the East Asia Plant Variety Protection Forum (EAPVPF) by UPOV and Japan to gradually influence and groom domestic PVP offices and relevant officials from agriculture ministries in the Asian region, including Malaysia, to become advocates for joining UPOV 1991. In 2018, to incentivize non-members to join UPOV 1991 and to expedite regional harmonization of PVP systems

consistent with UPOV 1991, Japan and Vietnam (both UPOV members) launched an EAPVPPF pilot project to build an online cross-country breeder rights application platform known as e-PVP Asia.

In 2005, the Malaysian Department of Agriculture had requested examination of the PNPV Act 2004 for conformity with UPOV 1991. UPOV responded to this request by suggesting amendments to at least 13 sections of the Act to bring it into conformity with UPOV 1991. Hence joining UPOV would mean a major revision of the PNPV Act 2004 that entails deletion of provisions that reflect the diversity of Malaysia's agricultural system, safeguard farmers' rights to freely save, use, exchange and sell farm-saved seeds/ propagating materials, prevent misappropriation of local genetic resources, and ensure timely availability of adequate seeds at affordable prices.

To justify Malaysia joining the 1991 Convention, UPOV supporters and multinational agricultural companies claim it will provide easier access to improved varieties of crops and plant genetic resources, enable further breeding locally, increase the number and diversity of local breeders, facilitate access to the global market and enhance competitiveness. Such claims are, however, not based on evidence, as many studies around the world, including in Vietnam, have shown that robust seed systems are not dependent on UPOV 1991. Studies also point out that UPOV-type PVP systems create concentrated seed markets and reduce agricultural innovation and biodiversity while risking food security and sustainability. Globally there is huge opposition to UPOV 1991, with many experts pointing out that it is unfit for agricultural systems prevailing in developing countries and for realizing Farmers' Rights and other related human rights such as the right to food.

In conclusion, copying the UPOV system into the proposed new PNPV Act would be a denial of farmers' and indigenous peoples' right to the practice of saving, sharing and selling farm-saved seeds. It will promote monopolies, facilitate monocultures and lead to more loss of local farming knowledge and wisdom. The UPOV system will adversely affect the socio-cultural practices and socioeconomic status of farmers as well as the diversity and security of national food production. The government must not ignore the importance of agricultural biodiversity, food security, farmers' rights and access to good, nutritious and affordable food for all Malaysians.

1

Background of Malaysia's Agriculture System

Malaysia's agricultural production is divided into two categories: commodity production such as palm oil and rubber, and food production such as rice, fruits, vegetables, fish and livestock.

Commodities fall under the Ministry of Plantation and Commodities while food products fall under the Ministry of Agriculture and Food Security. Commodity production is mainly operated by large companies. However, about 40% of oil palm is cultivated by small farmers (Kamalrudin & Ramli, 2014). The oil palm plantation threshold for a smallholder is set at 50 hectares (ha) but the majority of oil palm smallholders tend to have very small plots of below five hectares (Mohd Noor, Gassner, Terheggen, & Dobie, 2017).

On the other hand, approximately 90% of farm producers in the food sector are smallholders with small-sized farms (Tiraieyari & Uli, 2011; Tiraieyari, Hamzah, & Abu Samah, 2014). (See Chapter 3 for concerns over the definition of smallholder farmer in the Protection of New Plant Varieties (Prescribed Size of a Holding) Regulations 2008.)

In 2019, there were 921,931 farmers registered with the National Farmers Organization (NAFAS), a government-linked association established in 1972 to distribute subsidies and implement government policies (NAFAS, 2019a). NAFAS members are the individual producers (not workers and not companies) who are involved in the agro-commodity and agro-food sectors. However, there are also independent farmers who are not registered with NAFAS, especially those involved in organic and natural farming as well as part-time farmers.

According to the Department of Statistics Malaysia (DOSM, 2018a), the agriculture sector contributed 8.2% or RM96.00 billion (USD22.36 billion) to the gross domestic product (GDP) in 2017. Palm oil is a major contributor to the GDP of the agriculture sector at 46.6%, followed by other agricultural products (18.6%), livestock (11.4%), fishing (10.5%), rubber (7.3%) and forestry & logging (5.6%). Agriculture exports and imports amounted to RM126.59 billion (USD29.49 billion) and RM95.22 billion (USD22.18 billion) respectively, with a trade surplus of RM31.37 billion (USD7.31 billion). However, with regard to agro-food, the total imports and exports amounted to RM51.3 billion (USD11.95 billion) and RM31.7 billion (USD7.38 billion) respectively, with a deficit trade balance of RM19.6 billion (USD4.57 billion) (DOSM, 2018b).

Malaysia cannot produce all of its food needs, especially temperate agricultural produce that is gaining popularity as consumption patterns change, particularly among the urban population. The shortage of local production to meet domestic demand is offset by imports. In addition, some of the imports are for the local industry to add value and then re-export. The main food imports are temperate fruits and vegetables, wheat, sugar, beef and mutton.

Malaysia has not achieved a 100% self-sufficiency level (SSL) for most of its food, including its staple food, rice. Table 1 below shows the SSL for each category of food.

Food Category	Self-Sufficiency Level
Rice	70%
Fruits	77.5%
Vegetables	46.6%
Fish	92.8%
Beef	22.2%
Mutton	10.2%
Milk	58.3%
Chicken and Duck Meat	103.7%
Chicken and Duck Eggs	114.7%

Table 1: Self-Sufficiency Level of Foods Based on Food Category (2017)
Source: MOA (2019)

Although Malaysia is located in a green equatorial region, it is dependent on imported food, which remains a major national problem. This is the result of too much attention given to large-scale commodity plantations such as oil palm and rubber plantations. These commodity plantation programmes may help to promote rural development and alleviate poverty but they also have consequences on the environment and local communities, especially the indigenous peoples, mostly because of deforestation (Russell, 2018), as well as on food security.

Out of the total 7,852,604 ha of agricultural land in Malaysia, 5,850,000 ha is planted with oil palm, 1,080,000 ha with rubber trees and 76,103 ha with other commodities like sago, pepper, cocoa and kenaf. Only 846,501 ha or approximately 10.78% is planted for agro-food (MPIC, 2019; DOA, 2016; DOA, 2018a).

From the total of 846,501 ha of land used for agro-food, 408,162 ha is for rice; 208,590 ha is for fruits; 133,951 ha is for industrial crops like coconut, tea, coffee, areca nuts, roselle, nipa palm and mushroom; 62,539 ha is for vegetables; 20,763 ha is for cash crops like sweet potatoes, groundnuts, sweet corn, tapioca and sugar cane; 7,467 ha is for spices; 2,605 ha is for flowers; and 2,424 ha is for herbs (DOA, 2018a; DOA, 2016; MOA, 2011b). The approximate percentage of agricultural land use in Malaysia based on all plant types is presented in Figure 1. All these plants came from both home-produced and imported seeds and plant propagation materials.

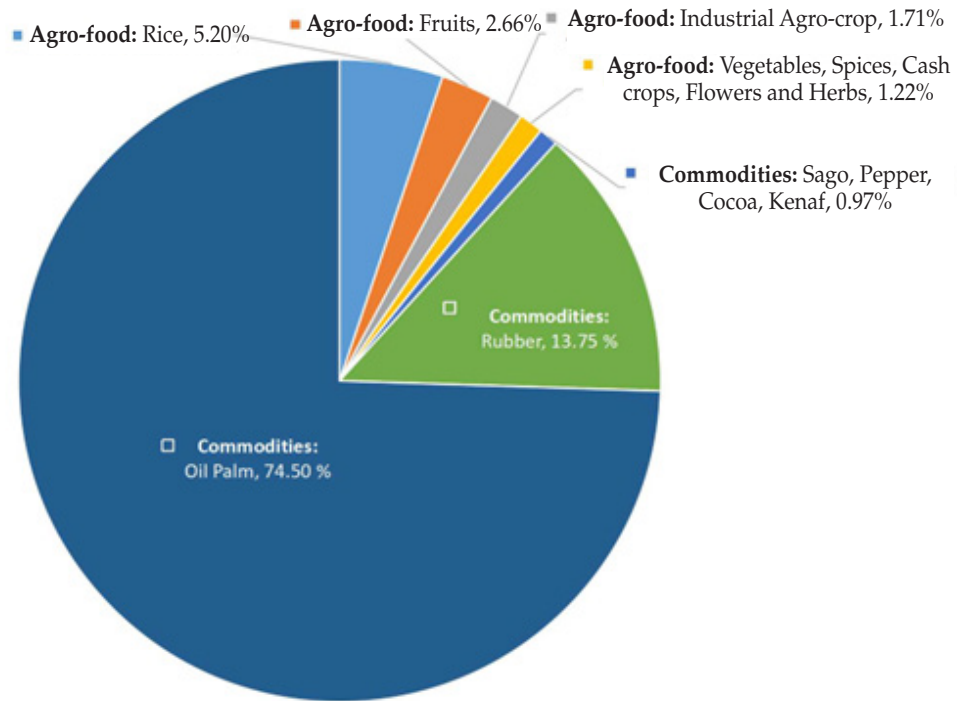


Figure 1: Percentage of Agricultural Land Use in Malaysia
 Source: DOA (2018a); DOA (2016); MOA (2011b)

2 Malaysia's Seed Market

The plant seed industry in Malaysia depends very much on foreign countries. As shown in Figure 2 below, between 2012 and 2016, the import value for vegetable and fruit seed was higher than the export value, with a cumulative deficit trade balance at about RM13 billion (USD2.98 billion) (Najmi Aiman, Siti Zainab, & Suhana, 2017). Rice and local fruit seed like durian, coconut, rambutan, pineapple and mango are quite well developed. Fruit seed as well as oil palm seed exports increased between 2013 and 2015 as a result of Malaysian palm oil companies' expansion to other countries, but this fell dramatically in 2016 because of lower import quota limits by importing countries, particularly Indonesia. Malaysia does not export or import rice seed as the production of rice seed is barely enough for local use. As seed production in Malaysia is very low, about 90% of Malaysia's vegetable seed is imported from other countries such as China, Thailand and Japan (MOA, 2011a). Most of the imported seed/planting materials are those of vegetables, ornamental plants, cover crops and fruit. Malaysia exports some vegetable and fruit seed to countries like Brunei, Papua New Guinea and Indonesia.

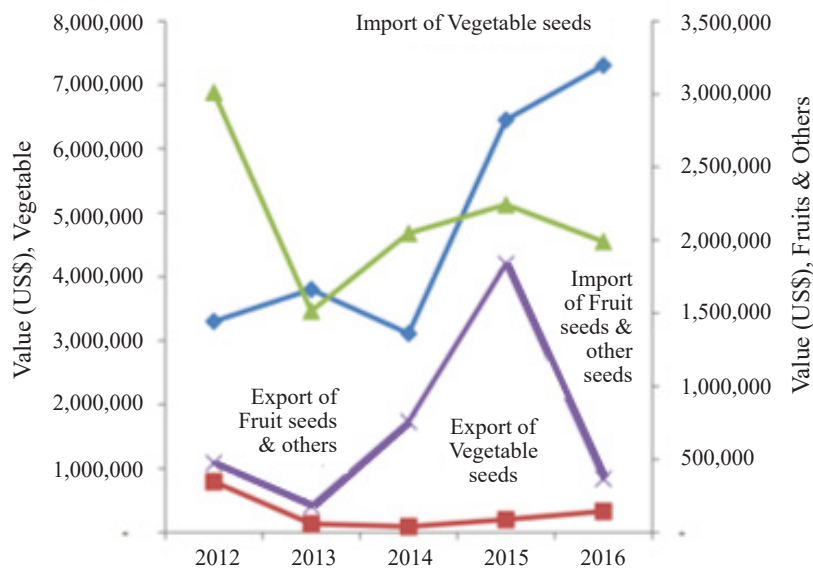


Figure 2: Import and Export Value of Malaysian Seed Industry (2012-2016)
Source: Najmi Aiman, Siti Zainab, & Suhana (2017)

Chart 1 shows Malaysia’s plant seed distribution structure. Based on our observations and interviews, Malaysian farmers get their seed and propagation material supply from retailers, seed factories, the Department of Agriculture (DOA), farmers’ associations and cooperatives, from their own harvest (farm-saved seed and propagation material) as well as from other local farmers.

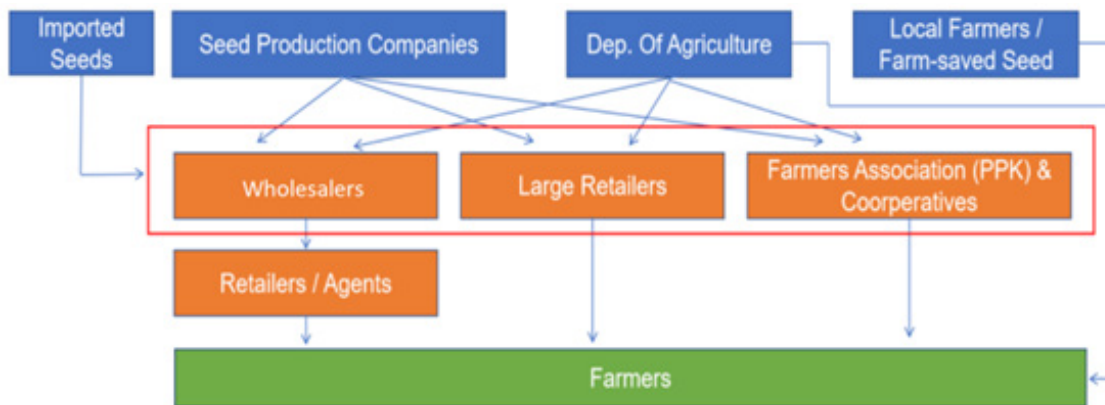


Chart 1: Malaysia Seed Distribution Structure

All subsidized paddy seeds in Malaysia are certified. Paddy farmers who want to buy seeds at subsidized retail prices must buy the certified seeds from certified companies. This is because the subsidy is given to the companies, not to farmers.

Farmers also get an additional price incentive of RM360 (USD85.71) per tonne of paddy for the harvest that they sell to licensed factories approved by the government, on top of the RM1,200 per tonne (USD275.36 per tonne) guaranteed minimum market price of the harvested paddy. Farmers who save seeds for further propagation on their holdings or for exchange can still carry on their practices but they will not get the RM360 (USD85.71) per tonne paddy price incentive for harvest that is not sold to the certified factories that distribute the incentive. Under the Control of Padi and Rice Act 1994, sale of paddy and rice seed is only allowed by licensed entities.

The paddy seed industry in Malaysia is coordinated by the Malaysian Agricultural Research and Development Institute (MARDI), which controls the production of breeder (F1) and foundation (F2) seed as shown in Chart 2.

All companies and research institutions that want to market their own rice variety must collaborate with MARDI to produce the breeder seed (F1). The seed production companies will receive the foundation seed (F2) from MARDI and start producing registered seed (F3). The registered seed will be mass propagated by contract farmers to produce the fourth filial generation seed (F4). This F4 seed will be checked for germination, purity and weed contamination as part of the certification process. That means all paddy seed bought by farmers from the market are from generation 4 (F4).

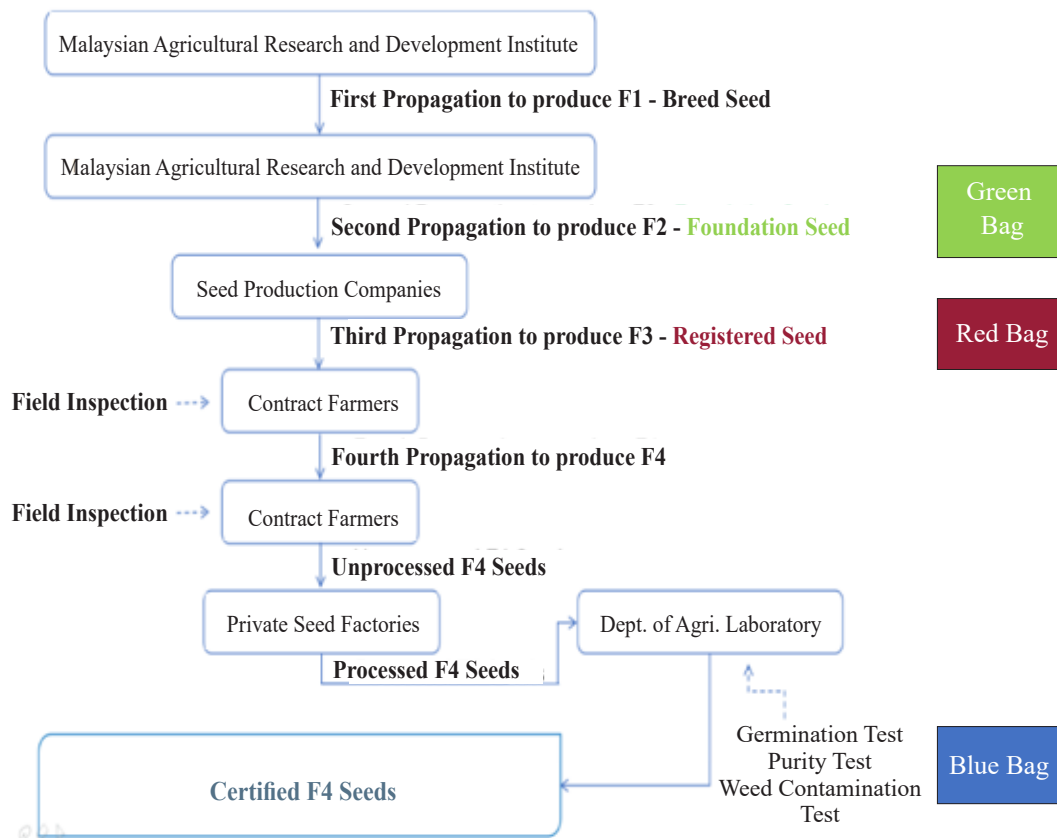


Chart 2: Certified Paddy Seed Production Flow in Malaysia

Faced with the problems of higher food prices and an increasing agro-food import bill, the Malaysian government has developed a new policy for its agro-food industry. In the Ministry of Agriculture’s 2019-2020 Direction Document and in the National Agrofood Policy 2021-2030 (NAP 2.0), the same strategy that has been implemented for rubber and oil palm will be used for the agro-food industry. Under the slogans of “Economies of Scale”, “Market-Driven” and “Modern and Precision Farming”, the Ministry will push the private sector to play a bigger role. This time, instead of opening new forests for agriculture, small farms will be consolidated to become bigger estates. Incentives will be given to plant breeders to produce “better quality” seeds. The Ministry will provide the ecosystem which it believes is conducive to boosting private investment.

In this context, the PVP Office has been lobbying the government to fundamentally change Malaysia’s Protection of New Plant Varieties (PNPV) Act 2004 to be in line with the 1991 Act of the International Convention for the Protection of New Varieties of Plants (UPOV 1991), while the Department of Agriculture has been considering the introduction of a Seed Act to make seed certification mandatory and compel any person who wants to save, process and sell seeds to obtain a licence.

These developments worry many parties, especially farmers. In November 2021, Kedah state’s Farmers Association representative to the NAFAS annual general meeting, Abdul Rashid Yob, brought a motion objecting to the proposed establishment of the Seed Act and to Malaysia's participation in the UPOV 1991 Convention. This motion was unanimously accepted by all other state representatives. Currently, Malaysia's PNPV Act 2004 gives some freedom to save, use, exchange and sell farm-saved seeds of protected varieties. It is feared that UPOV 1991 and the proposed seed bill will have a negative impact on the farmers’ seed system and food security in Malaysia.

3

Malaysia's Protection of New Plant Varieties System

The protection of a new plant variety as a type of intellectual property is afforded by the granting of plant breeders' rights by the state, creating monopoly rights for a certain duration in relation to the development of certain new plant varieties.

Plant variety protection (PVP) in Malaysia is managed by the Plant Variety Protection Registration Section under the Department of Agriculture in the Ministry of Agriculture and Food Security with its own law, the Protection of New Plant Varieties Act 2004. The DOA was officially designated as the National Registrar of Varieties in 1994. All other types of intellectual property protection are granted and administered by the Intellectual Property Corporation of Malaysia (MyIPO).

Plant variety protection is different from conventional intellectual property rights because a more diverse approach to plant varieties is required to cater for the complex social, cultural and economic factors involved when dealing with the agriculture sector, including the need to protect the interest of local farmers, indigenous peoples and local communities, protect traditional knowledge and prevent misappropriation of local genetic resources, promote biodiversity and ensure food security (Smith et al., 2016).

Malaysia also has to ensure that its laws, policies and practices implement, protect and promote its rights, obligations and commitments under relevant international instruments such as the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), Convention on Biological Diversity (CBD), United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas (UNDROP) and UN Declaration on the Rights of Indigenous Peoples (UNDRIP), and, accordingly, that national laws are mutually supportive (see Chapter 4).

Plant variety protection was globalized with the entry into force of the World Trade Organization (WTO)'s Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). Prior to the TRIPS Agreement, such protection mainly existed in developed countries as a direct result of lobbying by commercial breeders (see Chapter 5). Article 27.3(b) of the TRIPS Agreement states that:

“Members may also exclude from patentability: plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. However, Members shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof. The provisions of this subparagraph shall be reviewed four years after the date of entry into force of the WTO Agreement.”

The Malaysian government thus has full freedom to design a plant variety protection system that suits its own needs, conditions and agricultural priorities by opting to develop a *sui generis* PVP system, i.e., a tailor-made, unique system. Article 27.3(b) does not mention or require any WTO member to join UPOV.

In 2004, the government enacted the PNPV Act. This Act was implemented on 20 October 2008 with the gazetting of the Protection of New Plant Varieties Regulations 2008 (including templates for forms, fees, etc.) and the Protection of New Plant Varieties (Prescribed Size of a Holding) Regulations 2008 (on the size of a small farmer's holding).

Some of the important characteristics of the PNPV Act 2004 are highlighted below.

- I. Recognition and protection of contributions made by local farmers and indigenous peoples to the development of new varieties of plants. This means recognizing farmers' seed systems and the need for local communities' innovation to be protected using registration criteria (NDI – new, distinct, identifiable) different from the commercial breeders' registration criteria (NDUS – new, distinct, uniform, stable) for new plant varieties that are used within the UPOV system.

A plant variety is **uniform** and **stable** if all the relevant characteristics of the plant are sufficiently uniform and remain unchanged after repeated propagation. These criteria are not applicable to farmers' varieties, which are more diverse and heterogeneous.

On the other hand, a plant variety is **identifiable**:

- i. When it can be distinguished from any other plant grouping by the expression of one characteristic and that characteristic is identifiable within individual plants or within and across a group of plants; and
- ii. Such characteristics can be identified by any person skilled in the relevant art.

The "identifiable" criterion would allow farmers' varieties to be protected, and is a relatively novel concept that makes the Malaysian PNPV Act 2004 *sui generis*. Section 14(2) of the PNPV Act 2004 therefore provides for the registration of a plant variety which has been bred, or discovered and developed by farmers, local communities or indigenous peoples. These varieties enjoy protection for 15 years, as opposed to the period of 20 years for commercial varieties.

- II. Obligation of the PVP authority to refuse the registration and grant of a new variety of plant to any party if the variety may undermine the public interest, including where a plant variety may produce a negative impact on the environment (Section 15 of the PNPV Act 2004).
- III. The requirement for applicants of plant breeders' rights to:
 - i. Declare the source of the genetic material or the immediate parental lines of the plant variety;
 - ii. Provide prior written consent of the authority representing the local community or the indigenous people in cases where the plant variety is developed from traditional varieties;
 - iii. Be supported by documents relating to compliance with any law regulating access to genetic or biological resources and activities involving genetically modified organisms in cases where the development of the plant variety involves genetic modification.

These measures in Section 12 of the PNPV Act are aimed at operationalizing the rights of Malaysia under the CBD to prevent biopiracy, facilitate fair and equitable sharing of benefits, and support implementation of biosafety legislation to protect Malaysians from varieties which may harm health or the environment.

- IV. Restrictions on plant breeders' rights so as to not affect non-commercial uses and small farmers' practices of cultivating their own land with farm-saved seeds/propagating materials, allowing also exchange of reasonable amounts of seeds/propagating materials among small farmers as well as sale in situations where excess seed exists for reasons beyond the control of farmers if the amount sold is not more than what is required in his own holding (Section 31 of the PNPV Act 2004).

However, the implementation of the PNPV Act 2004 still needs improvements, one of which is to the narrow definition of "small farmers". The Protection of New Plant Varieties (Prescribed Size of a Holding) Regulations 2008 state that:

"For the purposes of the definition of 'small farmer' under section 2 of the Act, the Minister prescribes that the size of his or its holding for farming operations shall not exceed 0.2 hectare."

This definition is absolutely inadequate because the average smallholder's farm size in Malaysia is 1.0 to 2.0 ha (Bakar, 2009). This is also in line with data from the UN Food and Agriculture Organization (FAO) on smallholder farmers (Maass Wolfenson, 2013; Rapsomanikis, 2015). In addition, farmers who grow different crops require different optimal distances between plants. Vegetables need a 2-100 cm space between rows, depending on the type of vegetable. Meanwhile the optimum distance required between durian trees is 10-12 metres. Different crops also need different minimum land sizes to achieve break-even point.

- V. The government may grant a compulsory licence (i.e., to use the protected variety for propagating purposes without the consent of the PVP holder) to any person, agency or company if the obligation to ensure the availability of seeds or propagating materials is not complied with and the farming community's needs are not met or an excessive proportion of the seeds/propagating materials for sale is being imported (Section 36 of the PNPV Act 2004).

The PNPV Act 2004 also has some similarities with UPOV 1991. They are as follows:

- I. Criteria for plant breeders' rights, i.e., novelty, distinctiveness, uniformity and stability, as applied to commercially bred varieties.
- II. The duration of PVP protection is 20 years for plants and 25 years for trees or vines, although the starting point for the duration differs from that under UPOV 1991.
- III. The grant of plant breeders' rights confers rights over the following acts: producing or reproducing; conditioning for the purpose of propagation; offering for sale; marketing, inclusive of selling; exporting; importing; and stocking the material for the previous purposes.
- IV. The scope of breeders' rights also extends to harvested material and "essentially derived varieties".

The key characteristics of the PNPV Act 2004 make the Act especially unique to the circumstances of Malaysia. As Lim Eng Siang (2016), a retired officer of the Malaysian Ministry of Agriculture and Agro-based Industry, explained, the Act represents an attempt – in the context of a plant variety protection law – to provide support for farmers, local communities and indigenous peoples as the conservers and innovators of plant genetic resources. This policy rationale is clearly set out in the Act:

“An Act to provide for the protection of breeding rights for new varieties of plants, and the recognition and protection of contributions made by farmers, local and indigenous peoples to the creation of new varieties of plants; to encourage investment and development in the propagation of new varieties of plants in the public and private sectors; and to provide for matters connected therewith.”

Since the 1930s, the government has registered local fruit clones, most of which have been discovered and selected by farmers. No one can deny the contribution of farmers in enhancing crop biodiversity in Malaysia. Therefore, the Act takes into account the interests of 600,000 small farmers who are also entitled to the opportunity to apply for plant breeder rights and continue to use, share and sell farm-saved seeds in situations where excess exists for reasons beyond the control of the farmer (Lim, 2016).

This preservation of the farmers' seed system based on farm-saved seeds and the exchange and sale of seeds is crucial to providing smallholder farmers access to seeds (including improved and protected varieties) and it ensures that they are not penalized by the granting of rights over seeds/propagating materials. Interaction between the formal and farmers' seed systems guarantees access to affordable seed for small-scale, resource-poor farmer-producers and protects them from the uncertainties of the formal seed supply (such as uncertainties in price, availability and quantity) and from the risks associated with high-input agriculture. The farmers' seed system further serves to protect biodiversity and the livelihood of small farmers as well as to reduce dependence on imports. Malaysia has thus adopted a *sui generis* approach to allow farmers the freedom to operate *vis-à-vis* a protected variety, taking into account the complex social, cultural and economic factors of the Malaysian reality while complying with requirements under the TRIPS Agreement.

Performance of Malaysia's Plant Variety Protection System

Data from the PVP Office of the Department of Agriculture shows that the Malaysian system is functioning. From December 2008, when PVP applications started, to December 2020, a total of 447 applications for plant variety protection were made, as shown in Table 2. Of these, 158 (35.34%) applications were from local breeders and the other 289 (64.65%) were from foreign breeders.

Year/ Nationality	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Local	1	36	8	14	9	16	9	9	2	9	12	8	25	158
Foreign	0	6	3	13	11	35	24	21	21	20	57	32	46	289
Total	1	42	11	27	20	51	33	30	23	29	69	40	71	447

Table 2: Number of Applications for Plant Variety Protection in Malaysia (2008-2020)
Source: PVP DOA (2022)

By category (see Table 3), 63.31% of the applicants were foreign companies, 8.94% local companies, 17.89% local government research institutions, 4.25% local universities, 4.02% individuals (all local), 0.67% foreign universities, 0.67% foreign government research institutions and agencies (e.g., Taiwan Banana Research Institute, Rural Development Administration of South Korea and Secretary of Agriculture of USA), and 0.22% cooperatives.

Applicant Category	Number of Applicants
Foreign Companies	283
Local Government Research Institutions	80
Local Companies	40
Local Universities	19
Individuals (all locals)	18
Foreign Universities	3
Foreign Government Research Institutions/Agencies	3
Local Cooperatives	1
Total	447

Table 3: PVP Applicants by Category (2008-2020)
Source: PVP DOA (2022)

Between 2008 and 2020, the highest number of applications was for ornamental crops (283), followed by fruits (43) and cereals (40). From the total of 447 applications, 187 or 41.83% have been granted plant variety protection certificates, of which 65% were for ornamental crops (Table 4).

Crop Type	Total Applications	Granted
Ornamental	283	122
Fruits	43	10
Cereals	40	17
Industrial Crops	18	5
Forest Plants	23	19
Vegetables	28	10
Herbs	4	2
Mushrooms	8	2
Total	447	187

Table 4: Number of Applications by Crop Type and Granted Varieties in Each Type (2008-2020)
Source: PVP DOA (2022)

The complete list of the plant variety protection applications with applicant’s name, plant name and the application status (whether filed, under preliminary examination, under substantive examination, open for public comment, under publication procedure, granted, withdrawn, rejected or revoked) is not readily and easily available publicly. Only certificates that are granted are posted publicly (see the official database website of Plant Variety Protection Malaysia, Department of Agriculture (<http://pvpbkkt.doa.gov.my/>)). Information about applications and grants is also published in the Government Gazette but this requires a burdensome search.

Conclusion

This chapter has highlighted that Malaysia has a unique and functional PVP system in place. The PNPV Act 2004 is a shift away from the one-size-fits-all approach of UPOV 1991. On the whole, the Act delicately balances the different interests (public interest, commercial plant breeders, public breeders and smallholder farmers) that operate within the national agricultural system while reflecting Malaysia’s rights and commitments under various international instruments (elaborated in the next chapter). Its distinctiveness has not affected its operation and use. On the contrary, the existing PVP system is utilized by a variety of actors, including local and foreign companies and research institutions.

4

International Treaties and Declarations Relevant to Plant Genetic Resources and Farmers' Rights

Malaysia is a Party to several international treaties and has supported human rights declarations relevant to plant genetic resources and Farmers' Rights. Hence when drafting policies and laws, the government should address the objectives of these instruments in a coherent manner and avoid contradiction and non-compliance with international obligations and commitments. The related international instruments include the International Treaty on Plant Genetic Resources for Food and Agriculture, the Convention on Biological Diversity and its Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization, the United Nations Declaration on the Rights of Indigenous Peoples, and the United Nations Declaration on the Rights of Peasants and Other People Working in Rural Areas.

International Treaty on Plant Genetic Resources for Food and Agriculture

The ITPGRFA was adopted by the 31st Session of the Conference of the Food and Agriculture Organization of the United Nations on 3 November 2001 and came into force on 29 June 2004 with the objectives of conservation and sustainable use of plant genetic resources for food and agriculture, and the fair and equitable sharing of the benefits arising out of their use, for sustainable agriculture and food security.

The Treaty aims at recognizing the enormous contribution of farmers to the diversity of crops that feed the world; establishing a global system to provide farmers, plant breeders and scientists with access to plant genetic materials; and ensuring that recipients share benefits derived from the use of these genetic materials with the countries where they have been originated (FAO, 2020). The main provisions of the Treaty are concerned with Farmers' Rights, conservation, sustainable use, and a multilateral system for access and benefit sharing for plant genetic resources for food and agriculture.

The preamble of the ITPGRFA affirms "that the past, present and future contributions of farmers in all regions of the world, particularly those in centres of origin and diversity, in conserving, improving and making available these resources, [are] the basis of Farmers' Rights".

Specifically, Farmers' Rights are set out in Article 9 of the Treaty whereby the government that is Party to the ITPGRFA is responsible for taking steps at the national level to "protect and promote" the rights of farmers.

Article 9.1 further provides that the Contracting Parties recognize the enormous contribution that the local and indigenous communities and farmers of all regions of the world have made and will continue to make for the conservation and development of plant genetic resources.

In Article 9.2, each member of the Treaty also agrees to take measures to "protect and promote Farmers' Rights" including:

- I. The right to the protection of traditional knowledge relevant to PGRFA;
- II. The right to equitably participate in sharing benefits arising from the utilization of PGRFA;
- III. The right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of PGRFA.

Article 9.3 of the ITPGRFA clarifies that nothing in Article 9 “shall be interpreted to limit any rights that farmers have to save, use, exchange and sell farm-saved seed/propagating material”. Importantly, the preamble of the ITPGRFA reaffirms “that the rights recognized in this Treaty to save, use, exchange and sell farm-saved seed and other propagating material, and to participate in decision-making regarding, and in the fair and equitable sharing of the benefits arising from, the use of plant genetic resources for food and agriculture, are fundamental to the realization of Farmers’ Rights, as well as the promotion of Farmers’ Rights at national and international levels ...”

Article 6 is also relevant as it requires the Contracting Parties to develop and maintain appropriate policy and legal measures that promote the sustainable use of PGRFA, as mentioned in Article 6.1. Furthermore, Article 6.2 of the Treaty describes the measures as:

- a) Pursuing fair agricultural policies that promote, as appropriate, the development and maintenance of diverse farming systems that enhance the sustainable use of agricultural biological diversity and other natural resources;
- b) Strengthening research which enhances and conserves biological diversity by maximizing intra- and inter-specific variation for the benefit of farmers, especially those who generate and use their own varieties and apply ecological principles in maintaining soil fertility and in combating diseases, weeds and pests;
- c) Promoting, as appropriate, plant breeding efforts which, with the participation of farmers, particularly in developing countries, strengthen the capacity to develop varieties particularly adapted to social, economic and ecological conditions, including in marginal areas;
- d) Broadening the genetic base of crops and increasing the range of genetic diversity available to farmers;
- e) Promoting, as appropriate, the expanded use of local and locally adapted crops, varieties and underutilized species;
- f) Supporting, as appropriate, the wider use of diversity of varieties and species in on-farm management, conservation and sustainable use of crops and creating strong links to plant breeding and agricultural development in order to reduce crop vulnerability and genetic erosion, and promote increased world food production compatible with sustainable development; and
- g) Reviewing, and, as appropriate, adjusting breeding strategies and regulations concerning variety release and seed distribution.

Convention on Biological Diversity

The CBD is a legally binding international agreement concluded in 1992, and entered into force in December 1993, with three main objectives: biodiversity conservation, sustainable use of components of biological diversity, and fair and equitable sharing of the benefits arising from the use of genetic resources. Malaysia ratified the CBD on 22 September 1994.

The CBD looks at biodiversity in the framework of ecosystems, species and genetic resources. It also regulates modern biotechnology through its 2000 Cartagena Protocol on Biosafety and implements the benefit-sharing objective through its 2010 Nagoya Protocol on Access and Benefit Sharing. The CBD plays a direct and indirect role in matters related to biodiversity in politics, education, business, science, culture and agriculture (United Nations, n.d.).

Article 8(j) of the CBD recognizes the role played by indigenous peoples and local communities in maintaining biodiversity and their reliance on nature. Through this provision, Parties to the Convention must respect, preserve and maintain the knowledge, innovation and practices of indigenous peoples and local communities. Parties are also responsible for promoting the sharing of benefits arising from the knowledge, innovations and practices of indigenous peoples and local communities.

Article 8(j) of the CBD provides that each Party shall, as far as possible and as appropriate:

“Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices”.

The CBD provisions on access and benefit sharing acknowledge the sovereign rights of States over their natural resources. It is the responsibility of Parties to put in place conditions that facilitate access to their resources on mutually agreed terms and subject to prior informed consent. A Party is entitled to fair and equitable benefit sharing arising from commercialization and other utilization of the genetic resources on mutually agreed terms. The implementation of these provisions is set out in the Nagoya Protocol on Access and Benefit Sharing, to which Malaysia became a Party on 3 February 2019 (CBD, n.d.).

Malaysia is one of the world’s megadiverse countries. It is ranked 12th in the world in the National Biodiversity Index. As a country rich in biodiversity, it has played a leading role in the CBD negotiations including as a leader of like-minded megadiverse countries.

Malaysia has gazetted the Access to Biological Resources and Benefit Sharing Act 2017 to implement the CBD and its Nagoya Protocol. However, in the case of protection of new plant varieties, the access and benefit-sharing principles are operationalized through Section 12 of the PNPV Act, which requires that an applicant disclose the source of the genetic material or the immediate parental lines of the plant variety; that the application be accompanied by the prior written consent of the authority representing the local community or the indigenous people in cases where the plant variety is developed from traditional varieties; and that the application be supported by documents relating to compliance with any law regulating access to genetic or biological resources. The idea here is to ensure compliance with access and benefit-sharing requirements to prevent misappropriation of genetic resources and traditional knowledge and to facilitate the implementation of prior informed consent and fair and equitable benefit sharing arising from the utilization of the genetic resources or traditional knowledge.

Article 12 of the Nagoya Protocol addresses traditional knowledge associated with genetic resources. Parties to the Protocol shall, in accordance with domestic law, take into consideration indigenous peoples and local communities’ customary laws, community protocols and procedures, as applicable, with respect to traditional knowledge associated with genetic resources.

Article 12.4 states that:

“Parties in their implementation of this Protocol, shall, as far as possible, not restrict the customary use and exchange of genetic resources and associated traditional knowledge within and among indigenous and local communities in accordance with the objectives of the Convention.”

As Malaysia is also a Party to the CBD’s Cartagena Protocol on Biosafety, it enacted the Biosafety Act earlier in 2007. To ensure consistency and coherence in national practices, the PNPV Act 2004 requires that in the case of a genetically modified plant variety, a biosafety certificate must first be obtained before a PVP application can be considered.

International Human Rights Instruments

Consideration of human rights principles and norms is imperative when formulating or adopting national law and policy. International human rights instruments have primacy of norms over other international instruments, including those protecting intellectual property (Golay et al., 2022). The promotion and protection of human rights is one of the main purposes of the UN (Article 1.3 of the UN Charter), and UN Member States have pledged to take joint and separate action to promote universal respect for human rights (Articles 55 and 56). The UN Charter also provides that “In the event of a conflict between the obligations of the Members of the United Nations under the present Charter and their obligations under any other international agreement, their obligations under the present Charter shall prevail” (Article 103). In the Vienna Declaration and Programme of Action, all UN Member States reaffirmed that the promotion and protection of human rights is the first responsibility of governments (United Nations General Assembly, 1993).

The range of human rights that could be impacted by intellectual property in agriculture, and plant variety protection more specifically, is broad, as all human rights are interdependent and interrelated. Olivier De Schutter (2009), in his capacity as the then UN Special Rapporteur on the right to food, stressed in his report “Seed policies and the right to food: enhancing agrobiodiversity and encouraging innovation” that access to seed is a critical element of the universal right to food. His report states: “The right to food requires that we place the needs of the most marginalized groups, including in particular smallholders in developing countries, at the centre of our efforts.” It adds that “[t]he oligopolistic structure of the input providers’ market may result in poor farmers being deprived of access to seeds productive resources essential for their livelihoods, and it could raise the price of food, thus making food less affordable for the poorest”.

From a human rights perspective, restrictions on the use, exchange and sale of protected seeds could also adversely affect the right to food, as seeds might become either more costly or harder to access, as well as affect other human rights, by reducing the amount of household income available for food, healthcare and education (Braunschweig et al., 2014).

The current Special Rapporteur on the right to food, Michael Fakhri, has stressed, in a report to the UN Human Rights Council (Fakhri, 2021), that Member States should base their national seed systems on the ITPGRFA and human rights law as articulated in instruments such as the International Covenant on Economic, Social and Cultural Rights, the Convention on the Elimination of All Forms of Discrimination against Women, the UN Declaration on the Rights of Indigenous Peoples, and the UN Declaration on the Rights of Peasants and Other People Working in Rural Areas.

In this section, we discuss three specific human rights instruments that are relevant to Malaysia.

UN Declaration on the Rights of Peasants and Other People Working in Rural Areas

The UN Declaration on the Rights of Peasants and Other People Working in Rural Areas was adopted by the UN General Assembly on 19 November 2018. This established, for the first time, the rights of peasants and other people working in rural areas in international human rights law, including the right to seeds as per Article 19 of the Declaration (see box). Malaysia voted in favour of the Declaration.

ARTICLE 19 OF THE UN DECLARATION ON THE RIGHTS OF PEASANTS AND OTHER PEOPLE WORKING IN RURAL AREAS

1. Peasants and other people working in rural areas have the right to seeds, in accordance with article 28 of the present Declaration, including:
 - a. The right to the protection of traditional knowledge relevant to plant genetic resources for food and agriculture;
 - b. The right to equitably participate in sharing the benefits arising from the utilization of plant genetic resources for food and agriculture;
 - c. The right to participate in the making of decisions on matters relating to the conservation and sustainable use of plant genetic resources for food and agriculture;
 - d. The right to save, use, exchange and sell their farm-saved seed or propagating material.
2. Peasants and other people working in rural areas have the right to maintain, control, protect and develop their own seeds and traditional knowledge.
3. States shall take measures to respect, protect and fulfil the right to seeds of peasants and other people working in rural areas.
4. States shall ensure that seeds of sufficient quality and quantity are available to peasants at the most suitable time for planting and at an affordable price.
5. States shall recognize the rights of peasants to rely either on their own seeds or on other locally available seeds of their choice and to decide on the crops and species that they wish to grow.
6. States shall take appropriate measures to support peasant seed systems and promote the use of peasant seeds and agrobiodiversity.
7. States shall take appropriate measures to ensure that agricultural research and development integrates the needs of peasants and other people working in rural areas and to ensure their active participation in the definition of priorities and the undertaking of research and development, taking into account their experience, and increase investment in research and the development of orphan crops and seeds that respond to the needs of peasants and other people working in rural areas.
8. States shall ensure that seed policies, plant variety protection and other intellectual property laws, certification schemes and seed marketing laws respect and take into account the rights, needs and realities of peasants and other people working in rural areas.

States have the responsibility to realize the rights of peasants and rural workers as set out in the Declaration. Notably the Declaration explicitly recognizes that the right to protection of traditional knowledge relevant to PGRFA; the right to equitably participate in sharing the benefits arising from the utilization of PGRFA; the right to participate in the making of decisions on matters relating to the conservation and sustainable use of PGRFA, and the right to save, use, exchange and sell farm-saved seed or propagating material are fundamental prerequisites of the right to seeds and that States are required to take “measures to respect, protect and fulfil” these rights.

UNDROP strongly reaffirms the primacy of the human rights of peasants over other international norms. Article 2.4 provides that “States shall elaborate, interpret and apply relevant international agreements and standards to which they are party in a manner consistent with their human rights obligations as applicable to peasants.” In Article 19.8, UNDROP calls on States *inter alia* to ensure that plant variety protection laws respect and take into account the rights, needs and realities of peasants and other people working in rural areas. Experts argue that these provisions reflect the fact that “as higher-order norms, human rights cannot be traded off or undermined” (Golay et al., 2022).

It is also important to note that in accordance with Article 15.5, States shall establish mechanisms to ensure the coherence of their agricultural, economic, social, cultural and development policies with the realization of the rights contained in UNDROP.

UN Declaration on the Rights of Indigenous Peoples

UNDRIP was adopted by the UN General Assembly on 13 September 2007 and Malaysia supported its adoption. This historic Declaration sets out the responsibility of the State to fulfil the collective and individual rights of indigenous peoples for their survival, dignity and well-being.

Article 31 explicitly states that indigenous peoples have the right to “maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, as well as the manifestations of their sciences, technologies and cultures, including human and genetic resources, seeds, ... knowledge of the properties of fauna and flora, oral traditions...”, with States having the obligation to “take effective measures to recognize and protect the exercise of these rights”.

ARTICLE 29 OF THE UN DECLARATION ON THE RIGHTS OF INDIGENOUS PEOPLES

1. Indigenous peoples have the right to the conservation and protection of the environment and the productive capacity of their lands or territories and resources. States shall establish and implement assistance programmes for indigenous peoples for such conservation and protection, without discrimination.

Articles 18, 28 and 29 of UNDRIP stress on the responsibility of States to support indigenous peoples to realize their rights to the conservation and protection of the environment and the productive capacity of their lands or territories and resources, their right to free, prior and informed consent to use their natural resources, and their right to be involved in the decision-making process. Furthermore, the Declaration guarantees indigenous peoples the right to practise their culture and beliefs, including their traditional agricultural practices, without restriction as long as they do not violate international human rights. In addition, Article 20 recognizes the right of indigenous peoples to maintain and develop their political, economic and social systems, to be secure in the enjoyment of their own means of subsistence and development, and to engage freely in all their traditional and other economic activities.

S. James Anaya (2008), in his capacity as the UN Special Rapporteur on the rights of indigenous peoples, recognized UNDRIP to be “an authoritative common understanding, at the global level, of the minimum content of the rights of indigenous peoples”.

Convention on the Elimination of All Forms of Discrimination against Women (CEDAW)

CEDAW was adopted on 18 December 1979 by the United Nations General Assembly and entered into force as an international treaty on 3 September 1981. Malaysia became a Party in 1995.

Article 14 of CEDAW recognizes the rights of rural women and provides that States Parties shall take all appropriate measures to eliminate discrimination against women in rural areas. In its General Recommendation No. 34 adopted in 2016, in which it interpreted Article 14, the UN Committee on the Elimination of Discrimination against Women (CEDAW Committee) underlined that “rural women are critical to achieving food security, reducing poverty, malnutrition and hunger, and in promoting rural development, yet their contribution is often unpaid, unacknowledged, and poorly supported” (CEDAW Committee, 2016). It then described the measures that States Parties to the CEDAW Convention should take to better protect rural women’s right to food. These include measures to ensure that they have the authority to manage and control their natural resources, within the framework of food sovereignty, and the adoption of effective policies to ensure that they have access to adequate food and nutrition.

The CEDAW Committee has also recognized that rural women's right to seeds is a fundamental human right (CEDAW Committee, 2016), recommending that Parties to the CEDAW Convention should, among others:

- implement agricultural policies which support rural women farmers, recognize and protect the natural commons, promote organic farming and protect rural women from harmful pesticides and fertilizers;
- ensure that rural women have effective access to agricultural resources, including high-quality seeds, tools, knowledge and information, as well as equipment and resources for organic farming;
- respect and protect rural women's traditional and eco-friendly agricultural knowledge and particularly the right of women to preserve, use, and exchange traditional and native seeds;
- protect and conserve native and endemic plant species and varieties that are a source of food and medicine, and prevent patenting by national and transnational companies to the extent that it threatens the rights of rural women;
- ensure the realization of the right to food and nutrition of rural women within the framework of food sovereignty and ensure that they have the authority to manage and control their natural resources; and
- adopt laws, policies and measures to promote and protect rural women's diverse local agricultural methods and products, and their access to markets. They should ensure diversity of crops and medicinal resources to improve rural women's food security and health, as well as access to livestock.

Conclusion

Access to plant genetic resources and sharing of benefits arising from their utilization, mechanisms to prevent biopiracy of such resources, and the rights of local and indigenous communities and farmers that have been involved in the conservation and development of plant genetic resources, are among the aspects that are germane to any legal framework pertaining to plant genetic resources.

Consequently, these factors have to be considered and addressed within a PVP system. As discussed above, each of these areas is governed by international law, notably in some instances as a direct result of Malaysia's leadership at the international level.

Operationalizing rights and fulfilling commitments in international treaties and human rights instruments underscores the imperative for a distinctive PVP framework as well as mutually supportive national laws. The PNPV Act 2004 is a step in that direction. In contrast, as discussed in the next chapter, the UPOV 1991 legal framework does not recognize the rights and obligations that countries have in the abovementioned international instruments, nor does it allow its Parties the flexibility and policy space to implement the same in the context of a PVP system.

5

UPOV 1991 and Its Contradictions with Farmers' Rights in International Treaties and Declarations

Seeking to protect their monopoly rights over plant varieties, European commercial plant breeders succeeded in galvanizing their governments to establish the International Convention for the Protection of New Varieties of Plants in 1961 in Paris. At the convening conference, the governments agreed to establish the *Union pour la Protection des Obtentions Vegetales* (UPOV) or International Union for the Protection of New Varieties of Plants. The UPOV Convention (as it is commonly called) came into force on 10 August 1968, having been ratified by the United Kingdom, the Netherlands and Germany. The UPOV Convention was revised on 10 November 1972, on 23 October 1978, and most recently on 19 March 1991 (UPOV, 1991). Though “international” in name, UPOV was essentially set up as a small club of countries dedicated to creating commercial plant breeders’ rights.

The UPOV Convention Acts of 1972 and 1978 were slightly more flexible towards farmers, but the 1991 Act expanded and strengthened the rights conferred to commercial breeders while severely limiting the rights of farmers to freely save, use, exchange and sell farm-saved seeds/propagating material. However, countries can now accede only to UPOV 1991 since the option to join previous versions of UPOV is no longer possible. Further, unlike with other international treaties, a country’s accession to UPOV 1991 is conditional on its PVP legislation being reviewed and approved by the UPOV Council for its consistency with the 1991 Act and with the Guidance on implementation of the Act.

Only 20 countries (all developed countries except South Africa, a developing country under apartheid rule at the time) negotiated the UPOV 1991 Act. It was designed to suit the farming system of developed countries, especially European countries that are heavily dependent on commercial breeders for seed supply (Correa et al., 2015). UPOV 1991 provides extensive protection of plant varieties to breeders, with a minimum of 20 years (25 years for trees and vines) of monopoly rights. This monopoly disregards the innovations made by farmers over the centuries through the practice of plant breeding and the practice of saving, using, exchanging and selling seeds/propagating material among farmers.

Farmers apply their traditional knowledge in the selection, preservation and storing of seeds as the basis of local innovation and *in situ* seed conservation. To guarantee the sustainability and security of food production and crop agrobiodiversity, it is crucial to facilitate the ability of farmers to continue their traditional farming practices of seed saving, use, exchange and sale, and to have autonomy over their own seeds/propagating materials (Shashikant & Meienberg, 2015; Murshamshul Kamariah, Zuhairah Arif, & Mohd Shahril Nizam, 2015).

UPOV’s instruments fail to give due acknowledgment to the commitment of farmers, indigenous peoples and local communities, or recognize their continuous significant role in the improvement of plant genetic resources. While protecting the interests of commercial breeders, its instruments (particularly UPOV 1991) impede the interests of farmers, indigenous peoples and local communities (Correa et al., 2015).

Under UPOV, the key criteria for a new plant variety to be protected are: novelty (the variety cannot have previously been available within a specific time frame), distinctness (distinguishable from any other variety), uniformity (sufficiently uniform in its relevant characteristics) and stability (relevant characteristics must remain unchanged after repeated propagation). With these strict criteria, UPOV already excludes farmers’ varieties or land races from being given similar protection.

Local breeders from farming communities that practise plant breeding usually will produce more heterogeneous and variable varieties which respond to the requirements of traditional farming systems that depend on diverse genetic resources. This is crucial for food security in risk-prone areas. Uniformity of plant varieties will narrow down agricultural genetic diversity, risk resilience and sustainability of crop biodiversity, which are important to adapt to climate change. Clearly, UPOV 1991 does not recognize the characteristics of farmers' contributions to conservation and development of varieties. In any case, most farmers cannot bear the cost of filing, maintaining and enforcing plant variety protection rights.

As UPOV 1991 confers extensive plant variety protection to breeders, it has also further undermined Farmers' Rights as enshrined in the ITPGRFA and expanded and reinforced in UNDRIP by *inter alia* restricting the right of farmers to freely save, use, exchange and sell farm-saved seed/propagating materials. Under Article 14(1) of UPOV 1991, the acts of production, reproduction (multiplication), conditioning for the purpose of propagation, offering for sale, selling or other marketing, exporting, importing or stocking for any of the mentioned acts are not allowed with respect to the propagating material of the protected variety without the breeder's authorization.

These abovementioned acts with respect to the harvested material of the protected variety including entire plants and parts of plants, obtained through the unauthorized use of propagating material of the protected variety, also require the authorization of the breeder, unless the breeder has had reasonable opportunity to exercise his right in relation to the said propagating material (Article 14(2), UPOV 1991). Optionally the same can be applied to products made directly from harvested material of the protected variety.

The extension of the scope of breeders' rights to harvested material and the option of further extending it to products made directly from the harvested material in UPOV 1991 are aimed at providing the holders of breeders' rights additional avenues to enforce and assert their rights.

These rights also extend to "essentially derived varieties" (EDVs), a concept introduced in UPOV 1991. Article 14(5)(c) defines EDVs as varieties that "may be obtained for example by the selection of a natural or induced mutant, or of a somaclonal variant, the selection of a variant individual from plants of the initial variety, backcrossing, or transformation by genetic engineering". Effectively, a variety that is an EDV cannot be commercialized without the authorization of the right holder of the initial variety (from which the EDV was derived).

Generally, there are practical difficulties and divergent approaches in applying the concept of EDVs, more so in the developing-country context. Farmers will no longer be able to freely use protected varieties for further breeding using common techniques such as selection breeding, as the authorization of the right holder to exploit the newly bred variety will be needed, affecting the ability of farmers to adapt protected varieties to local conditions and thus enhancing farmers' vulnerability. Introduction of the concept of EDVs also infuses a double standard as it only applies to protected varieties used for further breeding. In cases where a farmer's variety is used for further breeding, even if the newly bred variety meets the EDV criteria, the farmer will have no rights over the new variety. In fact, a breeder can obtain plant variety protection over the new variety which is an EDV of the farmer's variety, while the breeder of the unprotected original variety is left empty-handed.

Application of the EDV rules could also reduce competition between breeders, as it gives existing breeders a market monopoly, making it difficult for new varieties to enter the market.¹

Exceptions to Breeders' Rights in UPOV 1991

The expansive rights above are subject to a few exceptions, albeit extremely limited, in Article 15 of UPOV 1991.

¹ Such arguments were also presented in the discussion concerning the revision of the UPOV Explanatory Note on EDVs (APBREBES, 2021).

Article 15(1) provides compulsory exceptions whereby the breeder's right shall not extend to:

- (i) acts done privately and for non-commercial purposes,
- (ii) acts done for experimental purposes, and
- (iii) acts done for the purpose of breeding other varieties, and, except where the provisions of Article 14(5) apply, acts referred to in Article 14(1) to (4) in respect of such other varieties.

Article 15(2) provides an optional exception:

“Each Contracting Party may, within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder, restrict the breeder's right in relation to any variety in order to permit farmers to use for propagating purposes, on their own holdings, the product of the harvest which they have obtained by planting, on their own holdings, the protected variety or a variety covered by Article 14(5)(a)(i) or (ii).”

Private and Non-Commercial Use

UPOV's Guidance on preparation of laws (UPOV, 2017a) provides a narrow interpretation of the exception for acts done “privately and for non-commercial purposes”. To be within the scope of the exception, acts have to be both private and for non-commercial purpose, and both terms are defined narrowly. Selling or exchanging seeds/propagating materials with nearby farmers or in local markets, or even the sharing of seeds or consuming the product of the harvest with family members not living on the same holding, would be outside the scope of the exception. (See UPOV's Guidance in Appendix 2.)

UPOV's Guidance suggests that “subsistence farming” may qualify for the exception but puts forward an impractical description of subsistence farming, i.e., “propagation of a variety by a farmer exclusively for the production of a food crop to be consumed entirely by that farmer and the dependents of the farmer living on that holding”. In reality, subsistence farmers worldwide sell some part of the harvest on the local market, exchange seeds with neighbouring farmers, as well as invite family members not living on the same holding and neighbours to dinner prepared from the harvest of varieties propagated by the farmer.

Breeder's Exemption

The breeder's exemption is considered by UPOV as being an essential aspect of UPOV 1991 that differentiates the 1991 Act from the patent system as it allows for the continuous improvement of plant varieties by third parties without the authorization of the right holder of the original variety. However, compared with UPOV 1978, the breeder's exemption in UPOV 1991 is restricted. UPOV 1978 allows the use of the protected variety as an initial source of variation for the purpose of creating other varieties and marketing of such varieties. Authorization of the right holder is only required in cases where repeated use of the protected variety is “necessary for the commercial production of the newly bred variety”. In contrast, the breeder's exemption under UPOV 1991 requires the authorization of the right holder of the protected variety for purposes of commercialization in the following cases: the newly bred variety is an EDV (discussed above), or its production requires the repeated use of the protected variety, or the newly bred variety is not clearly distinguishable from the protected variety.

Optional Limited Exception: Seed Saving

Article 15(2) of UPOV 1991 as reproduced above restricts breeders' rights by allowing seed saving when using protected varieties but only for further propagation on the farmer's own holding. Thus, under this exception, the exchange or sale of seeds by farmers is excluded. UPOV's Guidance on Article 15(2) further limits the scope of the exception, explaining that it is aimed at crops where “there was a common practice of farmers saving harvested material for further propagation”. It adds that the optional exception relates to “selected crops where the product of the harvest is used for propagating purposes, for example small-grained cereals where the harvested grain can equally be used as seed i.e. propagating material” and that “it may be

considered inappropriate to introduce the optional exception for agricultural or horticultural sectors, such as fruit, ornamentals and vegetables, where it has not been a common practice for the harvested material to be used as propagating material.” UPOV members which have signed the 1991 Act have a catalogue which lists varieties for which there can be saving of seeds/propagating materials.

Furthermore, UPOV’s Guidance explains that the condition of “within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder” in Article 15(2) means that for crops where the optional exception is applicable, further limitations may be introduced – such as on the type of varieties, the size of holding/crop area/crop value and the harvested amount to which the exception is applicable – and the saving of seeds/propagating materials may be subject to payment of royalties to the breeder.

In effect, farmers’ right to save seed is optional under UPOV 1991, narrow in scope and conditional.

Inflexible Legal Framework Impacting National Sovereignty

Overall, UPOV 1991 offers an extremely rigid legal framework, with governments having extremely limited policy space to implement measures that safeguard national interests including those of local farmers and the public generally.

Article 34(3) of UPOV 1991 requires that the national law of a country intending to be a party to UPOV be scrutinized to ensure conformity with the latter’s provisions and guidance. In the event of the slightest bit of inconsistency with the provisions of UPOV 1991 or its guidance, the country will be called on to amend its law and to again provide proof of conformity.

In 2005, UPOV rejected the distinctive provisions in Malaysia’s PNPV Act 2004 that had been crafted to delicately balance the various interests involved in the agricultural sector, to protect and promote its biodiversity and to ensure adequate policy space for Malaysia to fulfil its commitments under other international treaties. UPOV called for amendment of the Act to bring it in line with the requirements of UPOV 1991. Such interference in national sovereign lawmaking is unprecedented and very unlike other international instruments. The rigid and unaccommodating nature of UPOV 1991 is apparent in the changes required by UPOV to the PNPV Act 2004, further discussed in Chapter 9.

UPOV’s inflexibility is best reflected in the way it deals with globally recognized access and benefit-sharing principles of the CBD and Nagoya Protocol. Developing country members of the WTO, CBD and the World Intellectual Property Organization (WIPO) have long advocated for disclosure requirements to be incorporated into intellectual property legislation. They consider disclosure mechanisms to be imperative tools to prevent misappropriation of genetic resources and traditional knowledge (see box), to facilitate implementation of prior informed consent and to deliver fair and equitable sharing of benefits arising from the utilization of the genetic resources or traditional knowledge.

However, Article 18 of UPOV 1991 states that the breeder’s right has to be independent of any measure concerning the production, certification, marketing, importing or exporting of the material, thus rejecting any kind of disclosure of country of origin or legal provenance of genetic resources as a condition for grant of plant variety protection.

In 2003, in a communication to the Executive Secretary of the CBD, the UPOV Council stated: “[I]f a country decides, in the frame of its overall policy, to introduce a mechanism for the disclosure of countries of origin or geographical origin of genetic resources, such a mechanism should not be introduced in a narrow sense, as a condition for plant variety protection ... With regard to any requirement for a declaration that the genetic material has been lawfully acquired or proof that prior informed consent concerning the access of the genetic material has been obtained, ... the UPOV Convention requires that the breeder’s right should not be subject to any further or different conditions than [novelty, distinctness, uniformity and stability] in order to obtain protection” (UPOV, 2003).

The threat of biopiracy

Turkey's purple carrot

Seminis (a subsidiary of Monsanto) planted farmers' carrot seeds from Turkey, and through a simple process of selection – mainly selecting plants that were slow to bolt and that had a desirable root shape and shade of purple (associated with health benefits) – introduced a new carrot variety over which it has obtained PVP protection in the United States and Europe (Hammond, 2014a).

Sri Lankan purple rice

A purple rice variety named Blanca Isabel is protected by plant breeders' rights and promoted by Rush Rice Products. Research publications state the variety owes its colour and other characteristics to Hitan Kitan, a Sri Lankan farmer's variety. "In the case of Blanca Isabel, the willingness of the US Plant Variety Protection Office ... to grant intellectual property (plant breeder's rights in this case) over a seed whose salable traits are of an essentially unknown origin has led to biopiracy" (Hammond, 2014b).

Whenever genetic resources from a country are used in a way that is subject to the rules of the Nagoya Protocol, the access and benefit-sharing rules of that country must be followed. This also applies to breeding work, which constitutes "utilization" as defined by the CBD and the Nagoya Protocol. According to the Nagoya Protocol, it is the responsibility of the user State to verify if the access and benefit-sharing laws of the country of origin have been respected. To do so, the requirement to disclose in IP applications that the utilized genetic resources have been accessed in accordance with the law of the provider country is essential.

The effect of this communication is that national laws that incorporate disclosure requirements as a condition for plant variety protection would be considered to be inconsistent with UPOV 1991. This was borne out when Peru had to remove a relevant article from its law in order to become a member of UPOV (Braunschweig et al., 2014).

Conclusion

The UPOV 1991 system was designed over 30 years ago to bolster the commercial interests of breeders in developed countries, especially from Europe. The needs and interests of developing countries like Malaysia were not taken into account in the development of the UPOV system. It offers a one-size-fits-all legal framework with very little flexibility to adapt to the local agricultural system and which is incompatible with the various commitments of the Malaysian government under the relevant international treaties and human rights instruments. The review of Malaysia's law by UPOV in 2005 clearly established this.

6

The Rice Industry and Protected Rice Seed in Malaysia

Like in many other Southeast Asian countries, rice paddy has been planted in Malaysia for centuries. There are 320,000 paddy farmers in Malaysia working on a total area of rice parcel lands of 408,162 ha. Paddy is grown twice a year in Muda Agricultural Development Authority (MADA), Kemubu Agricultural Development Authority (KADA) and 10 Integrated Agricultural Development Authority (IADA) areas. Ten of these granary areas are in the Peninsula and one each in Sabah and Sarawak. Outside the granary areas which are equipped with irrigation systems, paddy is grown only once a year depending on rainwater. Each year, around 2.8 million tonnes of paddy are harvested and processed into 1.82 million tonnes of rice, and the rice consumption of the Malaysian people is 2.78 million tonnes per year. With a population of 32 million people, the country still needs to import around 1 million tonnes of rice to meet the country's needs (USDA, 2017).

Most of the Malaysian paddy farmers are small farmers with paddy fields of less than 3 ha, with an average yield of 4.80 tonnes per ha; the average age of Malaysian paddy farmers is 60 years (KRI, 2019). Rice is a major crop in Malaysia with an annual government budget of up to RM2.2 billion (USD500 million) for seed, fertilizer, herbicide and price subsidies as well as for building and maintaining infrastructure like roads and irrigation systems. The bulk of this money does not go into farmers' pockets. Farmers only directly receive the paddy price incentive of RM360 (USD85.71) per tonne of paddy sold to licensed factories, while other subsidies are received by the vendors who supply the inputs and build and maintain the infrastructure. For seed, farmers do not receive free seed but can buy it at a subsidized retail price from the vendors. Every season, around 75,000 metric tonnes of rice seed is sold to farmers in Malaysia (Haika, 2019).

The Policy Committee on Government Assistance to the Paddy and Rice Industry, which decides on which paddy seed varieties are allowed to be produced and distributed to farmers, released 53 rice varieties from 1964 to 2021 (see Appendix 3). These seeds were developed by MARDI or by collaboration between MARDI and institutions such as Universiti Kebangsaan Malaysia (UKM), Universiti Putra Malaysia (UPM), and with the multinational chemical company BASF based in Germany. For subsidized paddy seed, the released variety must first get approval from the committee to be produced and sold on the market. To buy the seed at a subsidized price, farmers must buy such certified seed. Uncertified seed of the same variety is also available but it is not encouraged by the government and not subsidized.

In 2010, rice varieties MR220 CL1 and MR220 CL2 were released. These two varieties were developed jointly by MARDI and BASF. MR220 CL2 has become the most widely planted rice variety in Malaysia, covering 44.60% or approximately 119,670 ha of the total planted rice area during the main planting season of 2017/2018 (DOA, 2018a; Anim, 2019). This protected variety owned by MARDI is based on BASF's Clearfield Rice Technology to prevent weedy rice. (The terms of the agreement between MARDI and BASF are not known.) MR220 CL2 is a product of chemical mutagenesis where the gene has been modified to be resistant to a herbicide called imidazolinone. It has a short maturity period of 105-115 days. MR220 CL2 is not considered a living modified organism (LMO) under the Biosafety Act 2007. Because it is resistant to imidazolinone, only MR220 CL2 is expected to survive when the paddy field is sprayed using the specific herbicide. All other invasive plants and weeds including other rice variety plants are expected to die out.

Weedy rice, locally known as "*padi angin*", had almost been successfully eliminated until the emergence in 2018 of a new strain that is resistant to the herbicide used in the Clearfield system. This is because of the

excessive monoculture use of MR220 CL2 for almost eight years when good agricultural practice suggests that farmers should change the seed type every three seasons. In this case, farmers are the ones blamed but the reality is that there are not many other varieties to choose from since most of the suppliers only sell MR220 CL2 as a priority, because of its higher profit margin due to the seed being packaged with the specific herbicide, a product of BASF, promoted by the Seri Merbok company.

Two other popular rice varieties are SIRAJ MR297 and MR219. MR219 was released to the market earlier in 2001 and SIRAJ MR297 was released later than MR220 CL, in 2016. Both were developed by MARDI without any involvement from private companies; SIRAJ MR297 is protected by breeders' rights but MR219 is not. In 2019, two new protected varieties were released, i.e., UKM RC2 and UKM RC8 produced jointly by UKM and MARDI. They are crossbreeds between local rice *Oryza sativa* and wild rice *Oryza rufipogon*. Also in 2019, a hybrid rice variety called MR 12H or KADARIA 1 was released. This is the only hybrid rice variety that has been produced by MARDI to date and it does not have plant variety protection.

Table 5 shows the size of planted areas and the percentage of rice seed planted by farmers based on variety during the main planting season of 2017/2018 in Malaysia. MR220 CL2 was the most widely planted paddy seed from 2014 to 2018 (MOA, 2017; DOA, 2018a).

Variety Denomination	Hectares Planted	Percentage	Plant Variety Protection Status
MR220 CL2	119,670	44.6%	Protected
SIRAJ MR297	84,788	31.6%	Protected
MR219	22,002	8.2%	Not Protected
MR263	12,880	4.8%	Protected
MR284	12,880	4.8%	Not Protected
MR220	9,391	3.5%	Not Protected
MR269	5,366	2.0%	Protected
MRQ76	536	0.2%	Not Protected
MR211	268	0.1%	Not Protected
MR220 CL1	268	0.1%	Protected

Table 5: The Size of Planted Area and the Percentage of Rice Seed Used by Farmers Based on Variety During the Main Planting Season of 2017/2018 in Malaysia
Source: Anim (2019), MOA (2017), DOA (2018a)

There are only nine licensed paddy seed producer companies in Malaysia, and each is given a quota on how much seed subsidy can be claimed (the subsidy is given to the producer, not farmers). Most producers will produce the MR220 CL2 variety because of the bigger profit margin, from the selling of the herbicide required for planting of the variety.

As of December 2021, the government has released 53 varieties to the public since 1964. Most are not registered, especially the earlier varieties. Of the 53 varieties, 48 have been developed by MARDI; two by MARDI and BASF; two by UKM and MARDI; and one by the Malaysian Nuclear Agency (ANM), UPM and MARDI. These rice seed varieties consist of common or inbred rice, hybrid rice, fragrant rice, coloured rice, herbicide-resistant rice and aerobic rice.

For a protected variety, the seed producer needs to pay royalties but most of the time farmers are the ones who have to bear the cost. Currently farmers need to pay an additional RM3 (USD0.71) per pack of 20 kg for UKM RC2 and UKM RC8, and RM5 (USD1.19) for MR220 CL1 and MR220 CL2, which are included in

No.	Variety Denomination	Application Status	Duration of Protection	First Applicant's Name	Additional Information
1.	UKM RC1	Rejected	Filed 16.9.2009	UKM	Collab. with MARDI
2.	UKM RC2	Granted	16.9.2009 - 15.9.2029	UKM	Collab. with MARDI
3.	UKM RC3	Granted	16.9.2009 - 15.9.2029	UKM	Collab. with MARDI
4.	UKM RC4	Granted	16.9.2009 - 15.9.2029	UKM	Collab. with MARDI
5.	UKM RC5	Rejected	Filed 16.9.2009	UKM	Collab. with MARDI
6.	UKM RC6	Rejected	Filed 16.9.2009	UKM	Collab. with MARDI
7.	UKM RC7	Rejected	Filed 16.9.2009	UKM	Collab. with MARDI
8.	UKM RC8	Granted	16.9.2009 - 15.9.2029	UKM	Collab. with MARDI
9.	UKM RC9	Granted	16.9.2009 - 15.9.2029	UKM	Collab. with MARDI
10.	UKM RC10	Granted	16.9.2009 - 15.9.2029	UKM	Collab. with MARDI
11.	UKM RC11	Rejected	Filed 16.9.2009	UKM	Collab. with MARDI
12.	MR220 CL1	Granted	23.6.2011 - 22.6.2031	MARDI	Collab. with BASF
13.	MR220 CL2	Granted	23.6.2011 - 22.6.2031	MARDI	Collab. with BASF
14.	MR253	Granted	21.11.2011 - 20.11.2031	MARDI	
15.	MR263	Granted	21.11.2011 - 20.11.2031	MARDI	
16.	MR272	Granted	21.11.2011 - 20.11.2031	MARDI	
17.	MR276	Granted	27.6.2012 -26.6.2032	MARDI	
18.	MRQ76	Rejected	Filed 10.9.2012	MARDI	
19.	MR269	Granted	9.10.2012 - 8.10.2032	MARDI	
20.	MR1A 1	Granted	17.4.2013 - 16.4.2033	MARDI	Collab. with IRRI
21.	NMR 151	Granted	19.8.2015 - 18.8.2035	ANM	Collab. with MARDI and UPM
22.	NMR 152	Granted	19.8.2015 - 18.8.2035	ANM	Collab. with MARDI and UPM
23.	Tej Gold	Application Open for Public Comment	Filed 28.3.2018	Bayer CropScience LP	Collab. with Sarawak's DOA
24.	MARDI SIRAJ MR297	Granted	1.6.2017 - 31.5.2037	MARDI	
25.	MARDI WARNA 98	Application Filed	Filed 5.7.2019	MARDI	
26.	004R	Application Under Substantive Examination	Filed 5.12.2019	MARDI	
27.	MR315	Application Under Preliminary Examination	Filed 12.10.2020	MARDI	
28.	Puteri Saadong 104	Application Under Preliminary Examination	Filed 12.10.2020	MARDI	

Table 6: Rice Varieties for Which Protection Has Been Applied and Their Related Information (2009-2020)

Source: PVP DOA (2022)

the selling price. There is a feeling of dissatisfaction among the farmers about this. As of December 2020, 17 rice varieties have been granted protection but every season usually only three to four protected varieties are available in the local market at one time. As we can see in Table 5, the second most widely planted variety is SIRAJ MR297 and it was granted protection only recently in 2020. Table 6 shows the denomination of rice varieties for which protection has been applied and their related information as retrieved from the official website of the Plant Variety Protection Unit.

A major problem with the Malaysian rice seed system is the exploitation of the governmental distribution and subsidy mechanism by the private sector that gives rise to a monopoly of the market and price exploitation. Shortage of rice seeds happens every year due to many factors such as logistical and management problems – seed supplies arrive late and planting is dragged off-season, disease, supply and demand mismatch – producers and retailers forcefully promoting certain seed varieties that are more profitable like MR220 CL2, as well as profiteering and hoarding as reported by the media and farmers' organizations (Shaiful Shahrin, 2019; NAFAS, 2019b; Astro Awani, 2017a; BERNAMA, 2015). Given this situation, farmers have begun to return to seed saving, exchanging and selling, and the younger farmers are starting to practise more ecological farming methods as agroecology and natural farming gain recognition in Malaysia. For this to become a viable alternative to being trapped in an exploitative and unsustainable system, rice paddy farmers need to have the freedom to operate.

To explore the situation further, we conducted a survey and interviews on the livelihood of rice paddy farmers and the possible impact of UPOV 1991 on the practice of saving, using, exchanging and selling seeds/ propagating material among farmers.

Survey on the Practice of Saving, Using, Exchanging and Selling Seed Among Rice Paddy Farmers in the Northern States of Peninsular Malaysia

A survey and a series of interviews among paddy farmers were carried out between July and September 2019 in the states of Perak, Penang, Kedah and Perlis situated in the north of Peninsular Malaysia. We surveyed 200 farmers, using a questionnaire, on the issues of seed saving, use, exchange and sale. The objective of this survey was to understand the situation on the ground in relation to this practice among paddy farmers in Malaysia. We sought to identify the possible effects of UPOV 1991 on the paddy seed system and the livelihoods of Malaysian paddy farmers in the northern states.

Demography

We randomly surveyed 200 farmers, of whom 171 (85.5%) are men and 29 (14.5%) are women. The mean age of the surveyed farmers is 53 years, with the youngest farmer being 24 and the oldest 82 years old. 77.5% of the farmers are married with a mean number of four children, and the highest number of children in a family is 13. 13% of them are widows or widowers. 93.5% of them have an education level of Sijil Pelajaran Malaysia (SPM) – year 11 and final year of secondary school – and below, with only 3% of them holding a diploma and 1% with a university degree (see Figure 3).

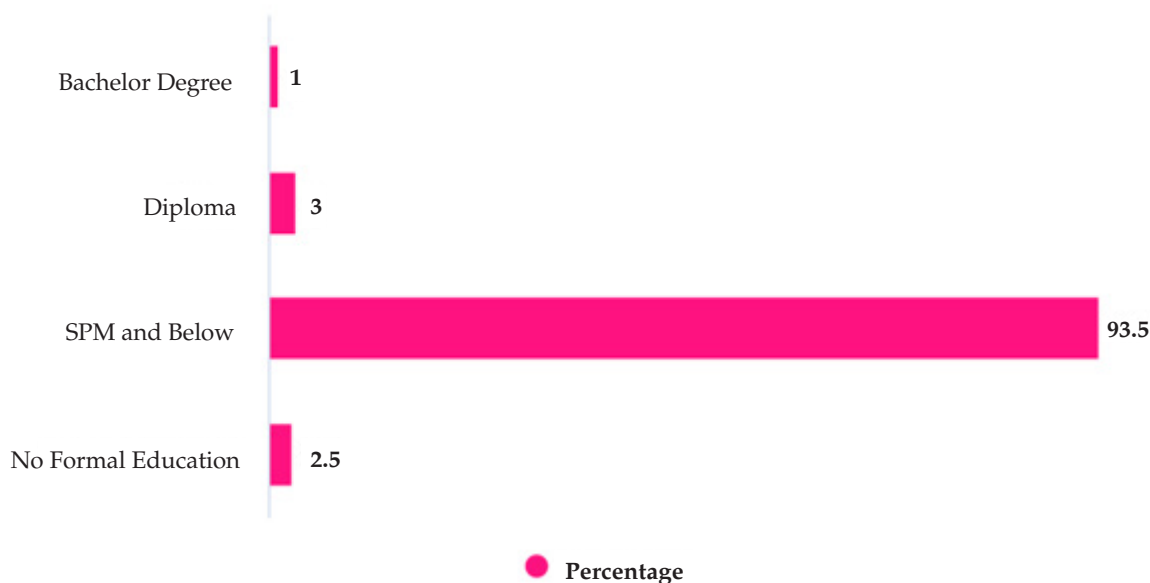


Figure 3: Percentage of Respondents Based on Education Level

Land Ownership, Yield and Income

On average, the farmers surveyed work on 2.0 ha of land. 36% of the farmers own the land, 38% rent the land and another 26% own a part of the land and at the same time rent some other land to work on (see Figure 4). The average yield of their field is 3.3 tonnes per hectare, with income of around RM600-RM700 (USD137.55-USD160.48) a month from paddy farming. Many of them take on a second job to increase their income and some of them receive money transfers from welfare institutions or working children usually in the urban areas. The average number of dependents (all other people who live together in a house) in each household is five.

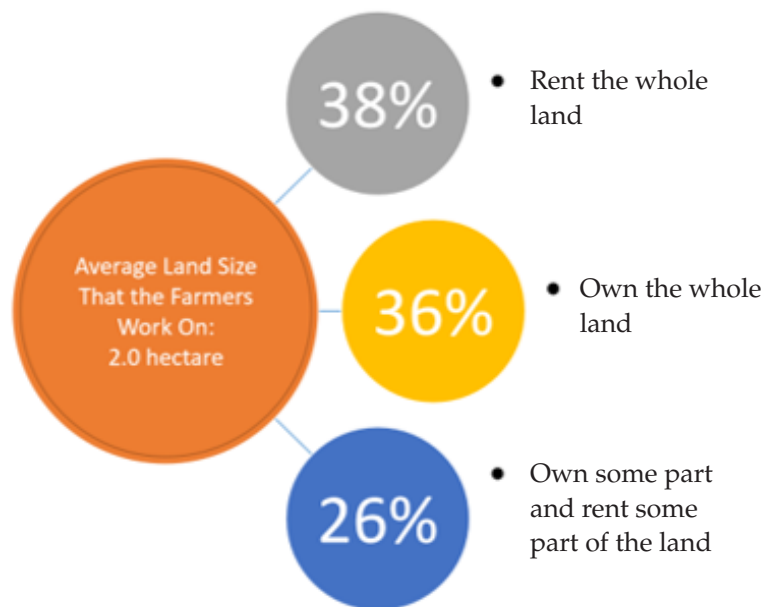


Figure 4: Average Land Size and Type of Land Ownership by Percentage

The national average of land size worked by a paddy farmer in Malaysia is less than 3 ha. As such, in the case of the paddy industry, the current Protection of New Plant Varieties (Prescribed Size of a Holding) Regulations 2008 that define small farmers as those working on land not exceeding 0.2 ha are not based on reality. The determination of the threshold for small farmers at 0.2 ha was done based on reference to the average size of a farm owned by ornamental flower producers and growers (Suzi Fadhilah, 2012). Therefore, it should be revised to give paddy farmers the right to exchange and also sell seeds.

Knowledge and Farming Practices

Ninety-eight respondents (49%) have experience of 20 years and above in paddy farming while eight younger respondents (4%) have 1 to 5 years' experience. One hundred and ninety-three respondents (96.5%) are aware that agri-chemicals are dangerous but still 171 of them (88.6%) use agri-chemicals on their farms. When they are asked why they keep depending on chemicals, the top answer is the high cost of natural farming because of its labour-intensive nature (48.5%). The second highest answer is "don't know how to practise natural farming" (38%) (see Figure 5). Lack of knowledge may be creating negative perceptions towards natural farming as the main paddy growing areas have undergone decades of a system where everything from seed varieties to irrigation to the processing and sale of harvests is externally controlled as discussed in Chapter 6.

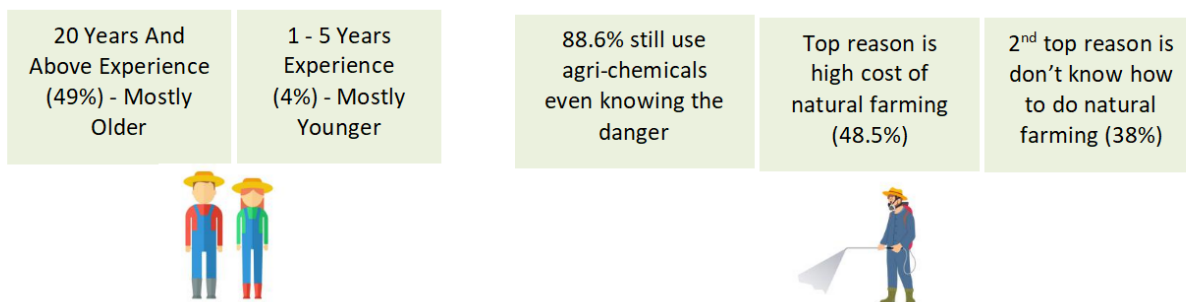


Figure 5: Respondents' Experience in Paddy Farming and Agri-chemical Awareness

Our survey shows that 50.4% of seeds that the respondents use are of the MR220 CL2 variety, followed by SIRAJ MR297 (26.4%), MR219 (14.4%) and UKM RC2 (3.2%). Other seed varieties like MR10 (Sekembang), MR167, MR220, MR284 and MR263 constitute 5.6% of all the seeds used by the respondents (see Figure 6). A few of the respondents plant more than one variety of rice seed every season.

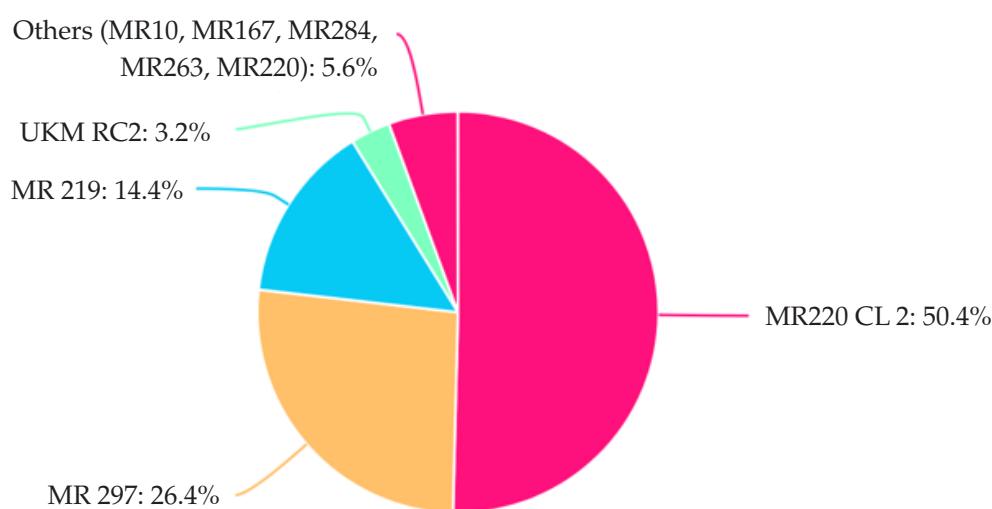


Figure 6: Percentage of Seed Variety Planted by Respondents

During the survey, when we randomly met a farmer and asked him/her to name as many paddy seed varieties as he/she knew, most could name seven varieties at most and said they only ever used up to three paddy varieties since becoming a farmer. Next, when we met a farmer and showed him/her seven types of rice, he/she could only confidently identify four varieties as either being protected or not. Younger paddy farmers could only name three to four paddy varieties and only ever used two to three varieties while the older farmers could name up to 22 varieties and have used up to 20 varieties in their lifetime, confirming the gap in knowledge among the younger farmers and also the erosion of seed diversity.

Seed Saving, Exchange and Sale

Our survey shows 33.50% of the farmers save seeds from their own farm (see Figure 7). Out of those who save seeds, 91.04% only save seeds in certain situations, e.g., when they find that the quality of their harvest in that season is very good and/or when the quality of the seeds sold in the market is not good. 4.47% will save seeds occasionally every few seasons and another 4.47% keep farm-saved seeds every season.

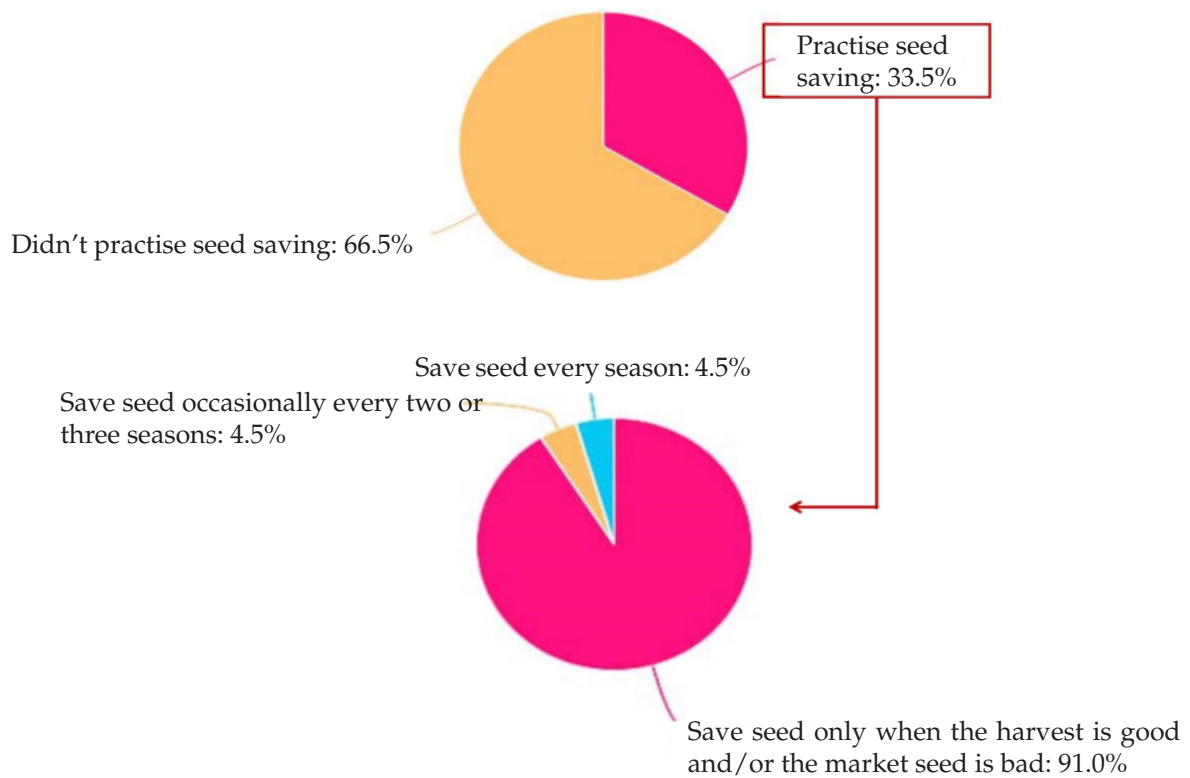


Figure 7: Percentage of Respondents Who Save Seed and When They Save Seed

On why the respondents save seeds for the next season, 83.58% do it because they believe that the quality of the seeds is guaranteed and they are satisfied with the seeds that they processed themselves (see Figure 8). The other 16.41% want to save costs by saving seeds. The amount of the seeds that they save is 10% to 20% of their harvest. Some of the harvest will be shared and sold among friends and family for propagating purposes.

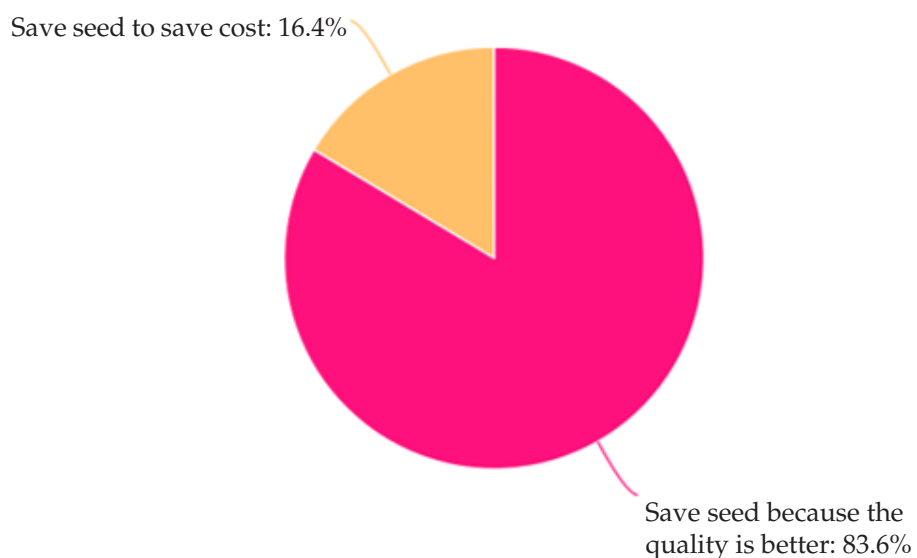


Figure 8: Why Farmers Save Seed

66.50% of all respondents do not save seeds (see Figure 9). 55.63% of them do not save seeds because it is easier to buy new seeds at the store. 23.55% of them do not save seeds because they want to claim the full RM360 (USD85.71) per tonne paddy price incentive when they sell their harvest to the rice factory. The price incentive is to encourage farmers to produce more yield but can only be claimed if the farmers sell to licensed rice factories; farm-saved seeds are not eligible for the incentive. Only 15.03% of them do not save seeds because they are satisfied with the current seeds from the market; 3.75% do not save seeds because they do not have time to process the seeds; 1.50% do not know how to process the seed; and another 1.50% do not have a place to store the farm-saved seed.

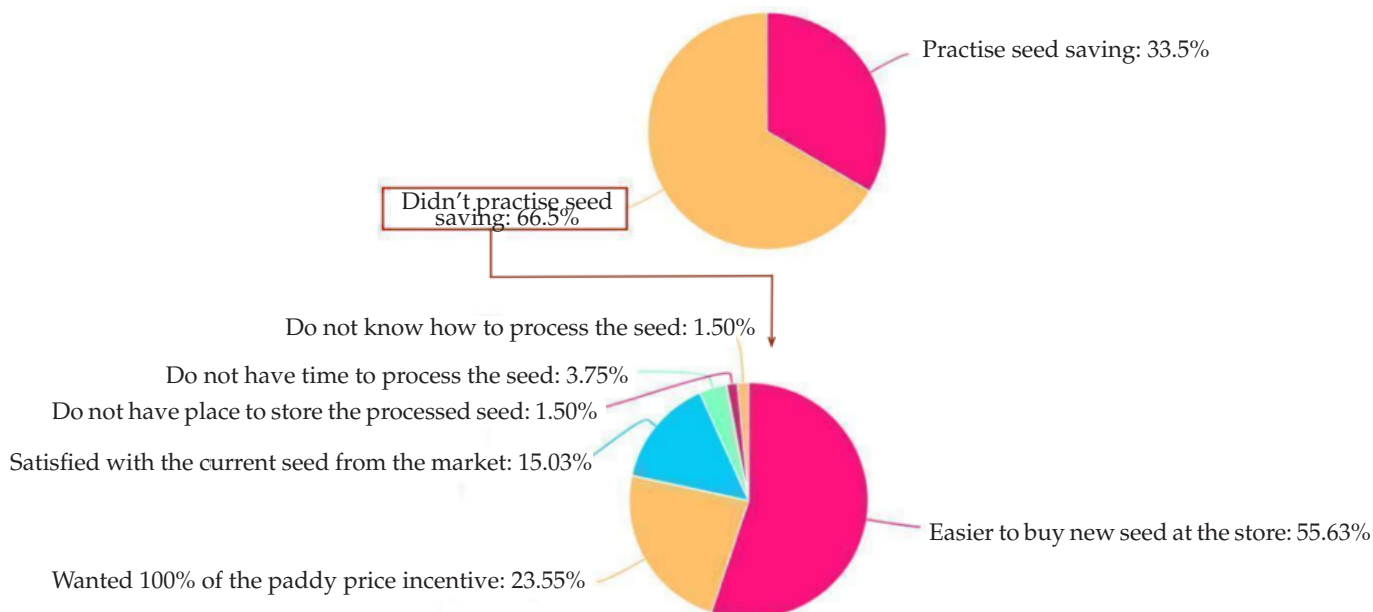


Figure 9: Percentage of Respondents Who Do Not Save Seed and Their Reasons

Our survey also revealed that farmers also share and sell farm-saved seeds, with about 3% sharing and 1.5% selling the seeds to family and friends (see Figure 10).

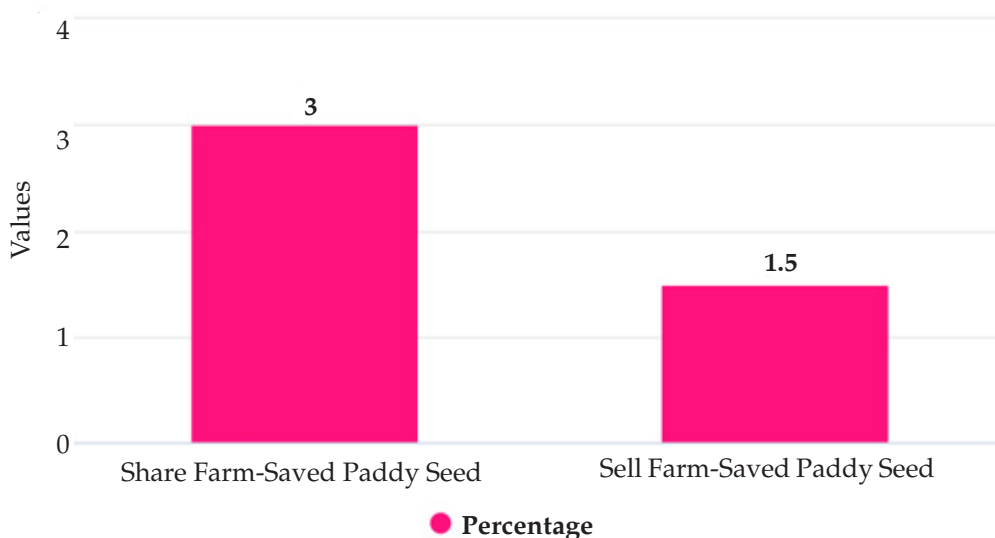


Figure 10: Percentage of Respondents Who Share and Sell Farm-Saved Paddy Seed

When asked about restriction on exchange and sale of seeds, almost all respondents (99%) do not agree with it. 53.53% of them want the freedom to choose seeds; 16.66% say it is the farmers' right to control their own farm-saved seed; while 12.12% believe it will burden the low-income farmers. 9.59% say there is no guarantee the seeds in the market will always maintain their quality; 3.03% are worried about price uncertainty; 2.02% are worried they cannot save costs when they want to; another 1.51% are not sure about the impact and want more research to be done before the government makes any decision; while 1.51% believe it will create new, unforeseen problems (see Figure 11).

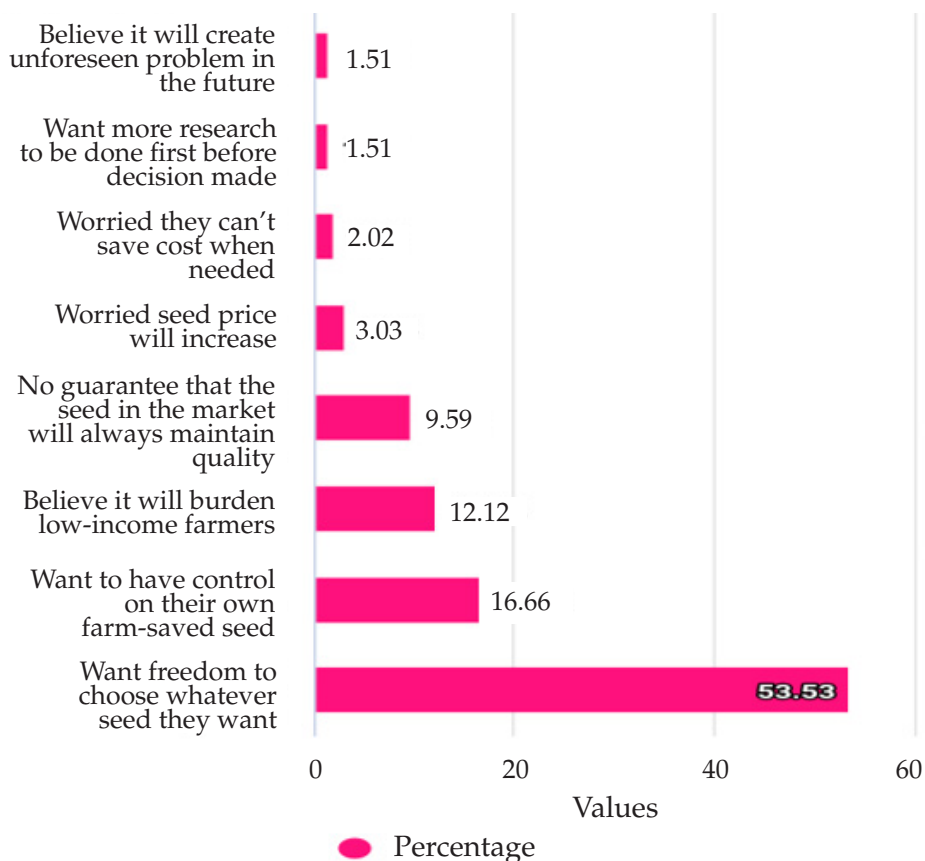


Figure 11: Percentage of Respondents Who Do Not Agree with Restrictions on Selling Farm-saved Seed and Their Reasons

On the practice of plant breeding, only 2.4% have seed collections and none of them ever experimented with crossbreeding. Farmers practise selective breeding by looking at the overall harvest. If it is bad, they will not keep the seeds, and so sell all of it. If it is a good harvest, they will keep a portion of the seeds for the next planting season. We can see that many old seeds that have not been sold in the market for a long time can still be maintained, preserved and even improved in quality – based on information from the farmers interviewed. The examples are MR10 launched in 1979, MR167 launched in 1995 and MR220 launched in 2003 which are still being used by the respondents.

Case studies from the state of Perak in Peninsular Malaysia

Rice farmers Azhar Hashim (30 years' experience) and Abdul Aziz Norpiah (18 years' experience) from Alor Pongsu district in Perak practise seed saving every season because they are more satisfied with their own work and can save money. The seed they use is MR220 CL2, which is a protected seed. They save 10% of their crop for the next season. However, they only use the seed for their own planting and for their immediate family members.

Mohd Fauzi Mokhtar (25 years' experience) is a farmer from Parit Buntar district. Fauzi retains 1 tonne out of 35 tonnes of harvest from 12.5 hectares of land for seed. Of this 1 tonne, he takes 50% for his own use and another 50% he sells to the villagers. The seed currently used by Mohd Fauzi is the unprotected MR220 variety. He sells it for RM29 (USD6.65) for a 20 kg bag. Since 2010 the government or the seed companies have ceased production of MR220. He does occasionally plant the now widely used MR220 CL2 to diversify the varieties used in his paddy field.

These farmers practise saving seeds because of their experience of having poor harvests when using the seeds purchased from the store and due to the increasing prices of seeds. All these farmers save, exchange and sell seeds from their farms.

Only 5.6% of the respondents know that farmers who produce their own new plant variety can register their farmer variety based on the criteria that it is new, distinct and identifiable pursuant to Section 14(2) of the PNPV Act 2004. And only 7.2% have ever even heard about this law (see Figure 12). Information programmes and dialogues need to be implemented by the authorities to educate the farmers about the PNPV Act 2004 as well as the Protection of New Plant Varieties (Prescribed Size of a Holding) Regulations 2008 which contradict the reality of land ownership and traditional agricultural practices in Malaysia.

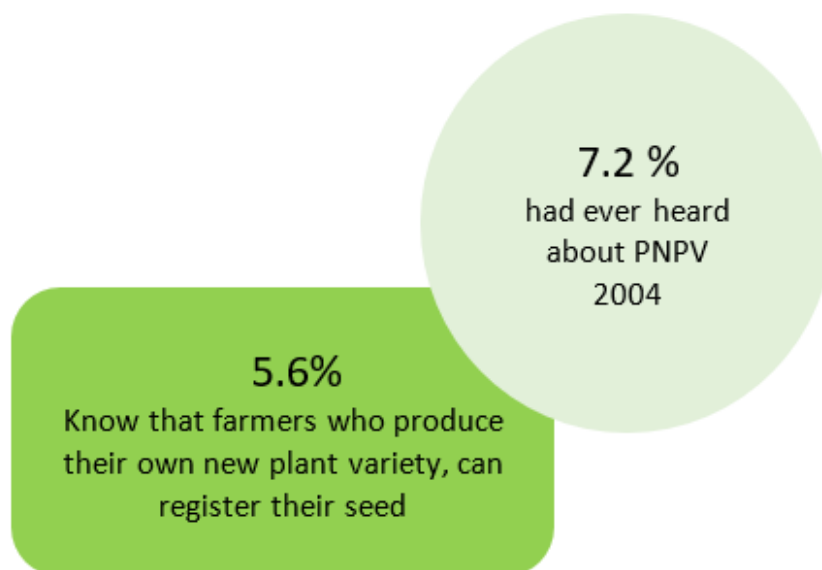


Figure 12: Farmers' Knowledge on Protection of New Plant Varieties Act 2004

The Case of East Malaysia's Paddy Farmers

Sabah and Sarawak in East Malaysia have their respective state agricultural authorities which differ from the system in Peninsular Malaysia as these two states have more autonomy under the constitution. With different geographical and cultural features, paddy farming in East Malaysia is diverse, with the existence of hill paddy cultivation as well as lowland paddy. The native communities (indigenous peoples) in these two states still have traditional farmers' varieties, more than in Peninsular Malaysia. Total paddy production in East Malaysia is 394,797 tonnes per year and this is processed into 240,609 tonnes of rice for local consumption (DOA, 2019).

A series of interviews was conducted among 40 paddy farmers in the states of Sabah and Sarawak between February and March 2020. Below are the highlights of the information gathered from the paddy farmers.

The interviews found that the paddy farmers from Sungai Melikat, Sungai Peking and Sungai Stapang in Sarawak save and exchange seeds freely among themselves as it is an ancestral practice among the Iban communities that live there. The Iban communities are dedicated agriculturists with a correspondingly significant portion of traditions that relate directly to farming. For them, it is a norm for a farmer to grow crops, save seeds of every single variety that they plant in their paddy field and exchange seeds with other farmers. However, the practice of selling seeds for cash is prohibited among Iban farmers because for them, seeds are not meant to be sold but to be shared.

In Sarawak the traditional farmer saves seeds from their harvest every season; one of the popular traditional varieties is known as Beras Balik. Traditional farmers will plant more than three types of paddy in their field. According to them, farmers will plant their ordinary seed first, followed by other varieties, like white glutinous rice, red glutinous rice and black glutinous rice. Nowadays, one of the new varieties planted by them is Beras Bario which has good market value, driving farmers to diversify their planting.

Similarly, a traditional farming group in Kota Belud, Sabah, shared that saving seeds is one of the ways to protect their traditional variety known as Beras Keladi Wangi. They exchange seeds among the villagers only in order to prevent the loss of this traditional variety. The farmers from this village have no intention to grow many varieties but merely want to protect the purity of this traditional variety and save its seeds for the next season. They would not sell their seeds but they will consider exchanging seeds with other farmers from different villages who plant their own traditional varieties too.

Conventional paddy farmers who rely on government-subsidized seeds save and exchange seeds for a different reason. The interviewees claimed that seed saving is necessary for them due to the constant delays in seed distribution by the government. The paddy varieties distributed by the government are MRQ74, MR81 and MR10. All these varieties are not protected; neither are the traditional varieties that are widely planted by farmers across Sabah and Sarawak. Table 7 shows the paddy varieties in Sabah and Sarawak mentioned by the interviewees. While this may be the case now, the situation is likely to change as more varieties are protected. Thus any restrictions on saving, exchanging and sharing seeds/propagating materials will have severe impact on paddy farmers in East Malaysia.

Traditional	Modern
<p>Wet Paddy:</p> <ul style="list-style-type: none"> I. Padi Balik II. Padi Nyelong III. Padi Keladi Wangi IV. Padi Tamu/Kampung V. Padi Kalias VI. Bario Pendek VII. Bario Sederhana VIII. Bario Panjang <p>Hill Paddy:</p> <ul style="list-style-type: none"> I. Padi Bukit Lembut II. Padi Bukit Merah III. Padi Bukit Hitam <p>Glutinous Paddy:</p> <ul style="list-style-type: none"> I. Pulut Putih II. Pulut Merah III. Pulut Hitam 	<p>Wet Paddy:</p> <ul style="list-style-type: none"> I. MR81 II. MR10 <p>Glutinous Paddy:</p> <ul style="list-style-type: none"> I. MRQ74

Table 7: Paddy Varieties Mentioned by the Interviewees in Sabah and Sarawak

Discussion on the Survey and Interviews

The national average age of farmers in Malaysia is 60 years, which is slightly older than the average age of the respondents in our survey. The advanced age of farmers is a trend in agriculture everywhere in the world today. The average farmer is 58.3 years old in the United States, 67 in Japan and 60 in Africa (GRO Intelligence, 2016). This should be of concern to us as we can anticipate a global food shortage in the future when the world lacks farmers to produce food. This is not a new issue and many governments, private and non-governmental organizations have launched various campaigns to encourage young people to participate in agriculture. Although the effect is still unclear, in Malaysia, there are a growing number of youth-oriented agricultural communities and non-governmental organizations (NGOs) that promote crop biodiversity, organic farming and sustainability. It would be useful to conduct a survey among young people with diplomas and degrees who choose to become paddy farmers. This is the group that will change our way of doing farming in the future. Meanwhile the COVID-19 pandemic has raised awareness of the crucial need for food security at the community level even as governments wake up to the vulnerability of being dependent on food imports.

With a monthly income of RM600-RM700 (USD137.55-USD160.48) from paddy farming as stated in the survey, the majority of rice farmers belong to the B40 (bottom 40%) low-income group, and the incidence of poverty is also prevalent among farmers. Because they take on two or three jobs, they end up focusing less on the fields, which can lead to lower yield. However, those who hold many jobs do so because they have no choice. To rely on the produce of the paddy alone is also risky because if the harvest is not good due to external factors, they have no savings to cover the loss. The main factors that determine good crop yields are good agricultural practices, good-quality seeds and varieties that will help farmers to improve yields and income. Hence, access to quality affordable seeds is important. If the seeds are sold at high prices and are difficult to obtain, let alone if usage is controlled by others, the risk of adverse effects on the farmers will increase.

The makeup of varieties planted by the respondents in the survey is in line with what was discussed in the previous chapter, i.e., that, in Peninsular Malaysia, most of the farmers use the protected MR220 CL2 seed as it has been forced onto the market by suppliers and the government's subsidy policy. Another protected seed used by the respondents is UKM RC2, which was introduced into the market in 2019 but is yet to be widely available.

Other seed varieties (MR10, MR167, MR220, MR284 and MR263) mentioned by the respondents (most are not protected, except MR263) are hard to find in shops nowadays. Most of the seeds are kept by farmers through seed saving, exchange and sale. Seed varieties like MR219 (not protected) and SIRAJ MR297 (protected) still have high demand from farmers due to their quality but the producers and sellers often deliberately limit the sale of these varieties as reported by the media (Astro Awani, 2017b; Roshila Murni, 2019) to secure high prices from farmers wanting access.

Protected paddy seed varieties were first introduced to paddy farmers in Malaysia in 2010 with the development of MR220 CL2. This variety came from the parental line of seed variety MR220 introduced in 2003 which is not protected. Gradually MR220 CL2 took over 50% of the seed market, with many stores selling only this variety to farmers. The latest protected paddy seeds introduced into the market were UKM RC2 and UKM RC8 in 2019, and IS21 (NMR152) in 2021.

So far, the PVP Office has already granted protection to 17 paddy varieties for 20 years of monopoly, with five new varieties in the process of approval (see Table 6 above). If the market trend exemplified by the dominance of MR220 CL2 continues, practically all paddy seeds in the market in Peninsular Malaysia will be from a protected variety in the near future. The linking of government subsidies to the use of protected varieties is a driving force that takes away the freedom of farmers to choose their seeds. If UPOV 1991-type PVP protection is imposed, these farmers will be even more trapped as they will effectively be unable to freely save, use, exchange and sell these seeds.

Between September 2019 and January 2020, during the second planting season for the year 2019/2020, a seed shortage in the market triggered a series of protests from paddy farmers (Roshila Murni, 2019; Hashim, 2019). Late supply of seed will result in late planting, dragging into off-season planting and hence reducing the yield. To minimize the impact of this scenario in the future, several NGOs, farmer organizations and individual farmers have recommended that more farmers should start saving, exchanging and selling seeds among themselves in their localities.

As we can see in the survey, high dependency on conventional farming methods causes farmers to lose seed knowledge, making them more comfortable with buying new seeds rather than saving and processing their own seeds for future use. Too much dependency on the current conventional seed system will result in total monoculture crop varieties, exploitation of farmers who are trapped in that dependency, less biodiversity and threats to our food security and sovereignty in the future.

We can see that the paddy farmers may lose the knowledge of our ancestors who produced new plant varieties by crossbreeding and/or selection. There are many factors that could lead to this scenario. Although the farmers are free to choose the type of seed that they want to use because no law currently prohibits them from doing so, the conventional seed distribution system controlled by subsidies manages to make the majority of farmers dependent on the formal seed system and its increasingly protected seeds. There are no incentives to promote agrobiodiversity and diverse seed systems through programmes like plant breeding and seed saving.

Price increases that oppress farmers, lack of plant diversity that will give rise to new diseases and resistance to herbicides, and seed shortages that will lead to low production and endanger food security are already happening in this highly controlled seed production and distribution system. Introducing the UPOV regime into the current system will exacerbate the situation and condemn farmers to continued poverty and marginalization.

Our farmers also do not really understand the concept of plant variety protection. This is something that should be a concern in light of UPOV 1991. The government needs to provide more information and explanation to the farmers before making any decisions on UPOV because it is a farmer's right to participate in the national decision-making process related to PGRFA, especially for vitally important issues like this.

Meanwhile in Sabah and Sarawak, although there is still a wide variety of paddy cultivated and the supply of paddy seeds does not depend as much on the commercial market, the risk of heading towards a situation like what is happening in Peninsular Malaysia exists, with foreign companies having started working with the State Agriculture Department to produce commercial rice seeds.

An application for protection for a rice variety with the denomination name of Tej Gold was submitted on 28 March 2018 by the international company Bayer CropScience (see Table 6). The new variety was developed in collaboration with the Sarawak State Department of Agriculture. Once approved, this variety will most likely be distributed through the government subsidy system to farmers in Sarawak. We anticipate that issues arising from the use of the MR220 CL2 variety in Peninsular Malaysia may similarly occur in Sarawak if the new variety eventually dominates 50% of the market and the traditional practices of many farmers are restricted or made illegal.

Recently, more and more companies have shown interest in commercializing traditional rice products from Sarawak such as Bario rice (KRI, 2018). The diversity of traditional crops in Sabah and Sarawak needs to be guarded with effective enforcement of anti-biopiracy laws to prevent misappropriation of local genetic resources. In this regard, as discussed in Chapter 3, the PNPV Act 2004 requires applicants for PVP to disclose the origin of the plant genetic source they use, submit written proof of permission to use the plant genetic source from the local community and show compliance with national law regulating access and benefit sharing. This provision must be maintained in the existing Act and enforced in tandem with the national access and benefit-sharing law which elaborates *inter alia* on the process of obtaining permits for commercial and non-commercial activities etc. Once a variety is protected under the PNPV Act 2004, such varieties are outside the scope of the national access and benefit-sharing legislation (see section 5(2)(h)(ii) of the Access to Biological Resources and Benefit Sharing Act 2017).

8

Interviews with Malaysian Farmers on Vegetables, Fruits and Industrial Crop Plants

We conducted interviews with 10 vegetable and fruit farmers from July to September 2019 and from February to March 2020. They were from Peninsular Malaysia and Sabah. These case studies aim to provide an idea of the practice of saving, using, exchanging and selling seeds/propagating materials by the farming community – including the alternative agricultural communities like the organic, traditional and natural farming movements – in relation to vegetables, fruits and industrial crop plants.

In Peninsular Malaysia, we interviewed seven farmers from different backgrounds in Balik Pulau and Sungai Rusa in Penang, Kajang and Petaling Jaya in Selangor, Kubang Kerian and Bachok in Kelantan, and Kangar in Perlis. There were five vegetable farmers, one organic/alternative paddy farmer and one fruit farmer. Below are the highlights of the interviews.

Farid Izzeady is a young organic farmer who saves, exchanges and sells seeds using online platforms to gain additional income. He is a graduate and has only half a hectare of land. In addition to the unprotected MRQ74 paddy, he also plants ladyfingers and roselle. The variety and denomination of the ladyfingers and the roselle are unknown to him as he only recognizes these plants as Arab ladyfingers and Mexican roselle. Our review of the PVP Unit database showed that a roselle variety with the name UKMR 3 has been granted protection since 3 May 2010 for 20 years. Based on the database, no ladyfingers varieties are protected. Farid obtained the seeds from the store and also bought some online.

Tan Siew Luang (Ms) and Tan Hong Boon (Mr) live in the urban areas of Petaling Jaya and Kajang respectively. They are urban farmers who have been practising natural farming for over 20 years. Both of them are actively involved in farming associations. Ms Tan is the chair of the Centre for Environment, Technology and Development (CETDEM) while Mr Tan is the chair of the Natural Farming Association (NFA). They are fruit and vegetable farmers.

The plants grown by Mr Tan on his 0.6 ha of land are papaya, long beans, mustard, basil, *tongkat Ali*, *gaharu*, hyacinth, mung beans and ladyfingers. Ms Tan plants spinach, luffa, cucumber, papaya, basil and marigold on 0.2 ha of land. The seeds are obtained from companies like Green World, Leckat Corporation and Soon Huat Seed. Some were given by friends. They practise the exchange and sale of seeds among members of their associations as well as with the public from the farm-saved seed every few months. Both are very active in crossbreeding and selection activities to produce better plant characteristics. Mr Tan has been successful in the selection process of mung beans, tomatoes and chilli seeds for several generations and now produces larger and greater harvests. He also shares and sells seed potatoes and mung bean and chilli seeds with his friends.

Meanwhile, Wan Noriah Wan Ramli, Salwati Mohd Ariffin and Hashim Kadir are rural vegetable farmers. Noriah and Salwati are from Kelantan and grow many local traditional plants such as *cekur manis*, *sambung nyawa*, *kaduk*, *gajus* and *serai kayu*. However, they also grow chilli and eggplant purchased from commercial suppliers like Green World, New Trio Product and Gardenic Reliable Malaysia. They actively save and share seed among their communities.

Hashim comes from Penang and grows commercial vegetables to be sold in the city. He has been growing luffa, ladyfingers, guava and water pumpkin for the past 10 years. He gets the seeds from the store. Hashim complains that seed prices increase every year by up to 20%. The water pumpkin seeds he buys now cost

RM165 (USD37.84) for 400 grams. To save money, he has been experimenting with various techniques to produce his own seeds.

Borhan Omar comes from Sungai Rusa village located in Penang. This village is an agricultural area that produces coconuts, rice, vegetables, durians, mangoes, sugar cane and bananas. The villagers here depend on agricultural activities for their income. Borhan is afraid that if they are restricted from producing their own seeds, the price will be fully controlled by the commercial seed producers. Borhan told us that the people there know how to produce their own seeds and they obtained seeds/propagating materials of coconut, banana and mango, among others, from outside as well as by saving their own seeds/propagating material.

All the farmers interviewed expressed concern over the impact of the UPOV system that will restrict local breeding talent and the ability to save, use, exchange and sell farm-saved seeds/propagating material.

Similar to Peninsular Malaysia, most small farmers in East Malaysia who plant fruits and vegetables will try to produce better plant generations that will lead to more yield. They tend to experiment with all kinds of techniques that they know. One popular and simple technique is mixing the seeds of the same plants with different varieties after a series of selection processes. Mr Dee and his friends from Kampung Sinar, Ranau, in Sabah have successfully bred apple on their own farm. The apple seed is originally from New Zealand. They do the selection and crossing processes in their own way to make sure this apple plant can grow healthily and produce fruits that are suitable to their farm's condition. With this success they have sold some of their apple plants to others who are also interested in planting apple trees.

Saving, using, exchanging and selling seeds are practised by these farmers, especially small-scale vegetable and fruit farmers. With this practice, they can maintain the agrobiodiversity ecosystem in their farms as well as save some costs and earn a little extra income. Lack of knowledge of the variety's denomination name makes it quite hard to determine whether or not it is PVP-protected. Table 8 below shows the list of vegetable and fruit varieties that have been given protection as on 31 December 2020.

Variety Denomination	Common Name	Duration of Protection	Plant Breeders' Rights Holder
VEGETABLES			
Semerah	Chilli Pepper / Hot Pepper	28.10.2009 - 27.10.2029	MARDI
CB Delight 3	Chilli Pepper / Hot Pepper	18.12.2013 - 17.12.2033	Universiti Kebangsaan Malaysia (UKM)
Expertise	Lettuce / Salad	04.06.2014 - 03.06.2034	Rijk Zwaan Zaadteelt en Zaadhandel B.V.
Excite	Lettuce / Salad	04.06.2014 - 03.06.2034	Rijk Zwaan Zaadteelt en Zaadhandel B.V.
Duplex	Lettuce / Salad	04.06.2014 - 03.06.2034	Rijk Zwaan Zaadteelt en Zaadhandel B.V.
Triplex	Lettuce / Salad	04.06.2014 - 03.06.2034	Rijk Zwaan Zaadteelt en Zaadhandel B.V.
Royal Purple (YC12-N28)	Sweet Potato	04.08.2015 - 03.08.2035	Vegefruit Resources Sdn Bhd
VG-10	Sweet Potato	04.08.2015 - 03.08.2035	Vegefruit Resources Sdn Bhd

VG-1	Sweet Potato	04.08.2015 - 03.08.2035	Vegefruit Resources Sdn Bhd
L5	Chilli Pepper / Hot Pepper	20.11.2015 - 19.11.2035	MARDI
FRUITS			
ZESY002	Kiwi	09.07.2010 - 08.07.2030	Zespri Group Limited
ZESY003	Kiwi	09.07.2010 - 08.07.2030	Zespri Group Limited
ZESY004	Kiwi	09.07.2010 - 08.07.2030	Zespri Group Limited
Merdeka	Lime	30.08.2010 - 29.08.2030	T. Devandran a/l K. Tharumalingam
Pink Dragon Sunlike	Dragon Fruit / Pitaya	05.10.2011 - 04.10.2031	Ng Siong Lam
Kim Luang	Durian	05.10.2011 - 04.10.2031	Top Fruits Sdn Bhd
Iguana	Dragon Fruit / Pitaya	21.12.2011 - 20.12.2031	Ng Siong Lam
View of Sunset	Pineapple	27.07.2012 - 26.07.2032	Ng Chor Hong
Viorice	Papaya	03.10.2013 - 02.10.2033	MARDI
Diamond Jubilee	Raspberry	17.05.2017 - 16.05.2042	Berryworld Plus Limited
INDUSTRIAL CROPS			
UKMR-3	Roselle	03.05.2010 - 02.05.2030	UKM
MCB C6	Cocoa	04.05.2010 - 03.05.2025	Malaysian Cocoa Board
MCB C7	Cocoa	04.05.2010 - 03.05.2025	Malaysian Cocoa Board
MCB C8	Cocoa	04.05.2010 - 03.05.2025	Malaysian Cocoa Board
MCB C9	Cocoa	04.05.2010 - 02.05.2035	Malaysian Cocoa Board

Table 8: Vegetable and Fruit Varieties That Have Been Granted Protection in Malaysia (2009-2020)
Source: PVP DOA (2022)

The interviews reveal that the practice of saving, using, exchanging and selling farm-saved seeds/propagating material exists in the farming community with respect to vegetables, fruits and other crops beyond paddy. Adopting the UPOV system would prohibit such practices. As discussed above in Chapter 5, UPOV's Guidance for implementation of the 1991 Act requires that the seed-saving exception to breeders' rights not be applied to vegetables, fruits and ornamentals. UPOV 1991 also disallows exchange and sale of farm-saved seeds of protected varieties. Further breeding to adapt seeds to local conditions is also subject to restrictions as discussed in Chapter 5. These restrictions will create dependency on seed imports, and cut off the possibility of local knowledge being passed on from one generation to the next. The loss of knowledge to produce the seed of these grains, fruits and vegetables will affect not only farmers' income but also national food security.

9

Pressure to Join UPOV 1991 and the Proposed Amendments to the PNPV Act 2004

Since the enactment of the PNPV Act 2004, there has been significant pressure especially from the UPOV Secretariat and developed countries for Malaysia to become a Party to UPOV 1991. As shown below in Table 9, ratification of UPOV 1991 will require Malaysia to strike out the features in the existing PNPV Act 2004 that make the law exceptional and that finely balance the different interests in the agricultural sector. In recent years, the pressure on Malaysia to ratify UPOV 1991 has intensified.

UPOV and Free Trade Agreements

North-South free trade agreements (FTAs) are the most widely used method to promote the adoption of UPOV 1991. Its adoption was a condition of the Trans-Pacific Partnership Agreement (TPPA) negotiations that Malaysia was engaged in. In 2017, under the Trump Administration, the US withdrew from the TPPA. Following the exit of the US, Japan played a central role in reviving the Agreement under the name of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).² While many of the original TPPA's provisions have been suspended, the CPTPP retains the requirement of ratifying/acceding to UPOV 1991.

In a recent surprise move, just prior to the November 2022 national elections, the Malaysian government ratified the CPTPP. This Agreement provides for a four-year transition period before ratifying or acceding to UPOV 1991, a period of reflection for Malaysia as to the implications of the UPOV system for the country's agricultural sector. Interestingly, New Zealand, a developed country, managed to negotiate for itself significant policy space (Ministry of Foreign Affairs and Trade, New Zealand, 2018) when implementing the CPTPP, i.e., that it has the right to adopt any measures that it deems necessary to protect indigenous plant species in fulfilment of its obligations under the Treaty of Waitangi, even if these measures are in contradiction to UPOV 1991 (Peschard, 2021). Similarly, Malaysia should also have an interest in protecting the rights of its indigenous communities and farmers.

Michael Fakhri, the UN Special Rapporteur on the right to food, in a report to the UN Human Rights Council (Fakhri, 2021), recommended that “[b]eing a party to that [UPOV 1991] Convention should no longer be required as part of bilateral or regional agreements. Member States are strongly encouraged to remove such requirements from current agreements”. This call follows similar recommendations from previous Special Rapporteurs of the UN.

In 2009, the then Special Rapporteur Olivier De Schutter, in his report to the UN General Assembly (De Schutter, 2009), said that “[n]o state should be forced to establish a regime for the protection of intellectual property rights which goes beyond the minimum requirements of the TRIPS Agreement: free trade agreements obliging countries to join the 1991 UPOV Convention or to adopt UPOV-compliant legislation, therefore, are questionable”. The report concluded by stating that “[s]tates should promote innovation in both the commercial seed system and in farmers' seed systems, ensuring that innovation in both systems works for the benefit of the poorest and most marginalized farmers, particularly in the developing countries. Only by managing the coexistence of these systems can we hope to arrive at a system which adequately balances the needs for innovation, for the preservation and enhancement of crop diversity, and for improving the livelihoods of small-scale farmers in developing countries, who overwhelmingly still rely on seeds which

² The CPTPP was negotiated by Australia, Brunei Darussalam, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam.

they save from their own crops and which they donate, exchange or sell, often informally.” It recommended that developing countries be supported in efforts to establish intellectual property regimes that suit their development needs and are based on human rights, calling on developing countries to adopt alternative *sui generis* PVP systems that are not based on the UPOV 1991 system.

Notably, there are several instances where countries have ratified FTAs that commit them to joining UPOV 1991 but have not done so in view of the national implications of joining, including rejection of their national PVP laws by UPOV for lack of conformity with UPOV 1991. For instance, Chile has yet to ratify UPOV 1991 although it is a requirement in its FTAs with the US (2003), Japan (2007) and Australia (2009). Liechtenstein is a member of the European Free Trade Association (EFTA) which has signed numerous FTAs (e.g., with Morocco in 2000) that require UPOV membership, and yet has not acceded to UPOV.

East Asia Plant Variety Protection Forum (EAPVPF)

Advocates of UPOV 1991 have also invested substantial time and effort in the EAPVPF, a brainchild of Japan. Participants in this Forum are member countries of the Association of Southeast Asian Nations (ASEAN) plus China, Japan and South Korea (ASEAN+3). The main goal of this Forum is to establish and harmonize PVP systems consistent with UPOV 1991.

Interestingly, apart from Vietnam that joined UPOV 1991 following its FTA with the US, no other ASEAN country is a member of UPOV, due to significant domestic opposition for reasons detailed in Chapter 5. Instead, several of these non-UPOV members (e.g., Malaysia, Thailand, Philippines, etc) have unique PVP systems that capture the heterogeneity of national agricultural systems. From the various activities of the EAPVPF, it is obvious that the principal objective of this Forum is to gradually influence and groom domestic PVP offices and relevant officials from the Ministries of Agriculture so that they become advocates for the ratification of UPOV 1991.

Japan in collaboration with the UPOV Secretariat are the primary drivers of this Forum. Japan views a harmonized UPOV 1991 PVP system with a special focus on the Asian region as being important to protect its breeding industry, its varieties in export markets and generally to improve its competitiveness.

A national goal of Japan’s EAPVPF implementing strategy (2018-2027) is to “improve the protection of PBR [plant breeders’ rights] in the foreign countries in order to provide breeders effective and efficient PVP system as well as to enhance Japan’s innovation” (EAPVPF, 2019). With respect to international relations, Japan’s objective is to “encourage and support establishment of PVP laws in line with the 1991 Act of the UPOV Convention in Asian countries under the EAPVP’s 10-Year Strategic Plan in collaboration with the UPOV and other authorities for economic development in the region and proper investment by the Japanese seed industry” and to build a “regional harmonized mechanism for application and examination procedures ... in collaboration with the UPOV”.

Apart from Japan and the UPOV Secretariat, “guest” participants involved in the Forum proceedings are foreign representatives that stand to gain commercially from ASEAN countries joining UPOV 1991. These include representatives of the multinational seed industry (e.g., representatives from the French Interprofessional Organisation for Seeds and Plants (SEMAE, formerly GNIS)), the United States Patent and Trademark Office (USPTO), the Ministry of Economic Affairs of the Netherlands, the EU Community Plant Variety Office (CPVO) and the Federal Plant Variety Office of Germany. Meanwhile local stakeholders in ASEAN countries such as smallholder farmers, local and indigenous communities as well as civil society organizations involved in plant breeding have been excluded from the Forum.

While the EAPVPF began as an ad hoc initiative motivated by Japan, it has evolved with regular annual and other meetings. PVP offices of ASEAN countries participate in (and even host) the Forum meetings, to present annual country reports to UPOV and the participating foreign entities on their PVP situation, elaborating strategies to join UPOV 1991, even though ASEAN members (except for Vietnam) are not UPOV

members and in most ASEAN countries there is public opposition and hence no national agreement to join UPOV 1991.

EAPVPPF Pilot Project (e-PVP Asia)

In 2018, to incentivize non-members to join UPOV 1991 and to expedite regional harmonization consistent with UPOV 1991, Japan and Vietnam (both UPOV members) launched an EAPVPPF pilot project to build an online cross-country breeder rights application platform known as e-PVP Asia (EAPVPPF, 2021a). The costs of implementation are borne by Japan. The objectives of this pilot project are as follows:

- I. To harmonize a regional PVP mechanism
- II. To develop a model procedure from filing to the grant of plant breeders' right as a foundation of a regional harmonized mechanism in line with the UPOV Convention, i.e.:
 - A unified application form
 - Harmonized DUS test proceedings with test guidelines
 - Mutual acceptance of the DUS test results and administrative proceedings.

The first phase of this pilot project (from 2018 to 2020) was to develop and test a model of the online PVP registration application platform known as e-PVP, while the second phase (from 2022 to 2023) involves the formal receipt of PVP registration applications. To participate in this project, participating countries would have to be UPOV members.

During the first phase, seven pilot meetings of the e-PVP project were held physically in Vietnam as well as online. These meetings involved negotiations to set the principles, definitions and rules of plant variety protection in line with UPOV 1991 through the e-PVP platform. The online PVP registration application platform (e-PVP) is envisioned to integrate with UPOV's databases, namely PRISMA, PLUTO and GENIE.³

The pilot project is an attempt to "incentivize" country ratification of UPOV 1991, eventually leading to a regional harmonization mechanism aligned with UPOV 1991. This is an extremely concerning development, not only for Malaysia but also for other developing countries in the region, as it risks entrenching a wholly unsuitable PVP system in the region.

Malaysia's Involvement in the EAPVPPF

The Plant Variety Protection Office, Department of Agriculture Malaysia has been a regular participant of the EAPVPPF since its inception even though Malaysia's PVP legislation was declared to be inconsistent with UPOV 1991 in 2005. Officials from the Malaysian Department of Agriculture have even gone as far as to negotiate participation in the e-PVP pilot project, all in the absence of any meaningful consultation with local stakeholders.

Consistent with the ultimate goal of the EAPVPPF as set out above, at the Forum's annual meeting in 2018, Malaysia's Department of Agriculture presented a national "implementing strategy" for the three years from 2018 to 2020 (EAPVPPF, 2018) with the following programme:

- I. To re-draft a new PVP Bill in accordance with UPOV 1991;
- II. To consult legal counsel of UPOV on compliance with UPOV 1991;
- III. Consultations with stakeholders such as government agencies, universities, farmer cooperatives, crop associations, seed importers and NGOs;
- IV. Final consultation with UPOV legal counsel;
- V. Submission of the new PVP Bill to the Attorney General's Chambers and tabling of the Bill in Parliament (in 2021).

³ UPOV PRISMA is an online tool for making PVP applications to PVP offices of participating UPOV members. The PLUTO database contains information on plant varieties from UPOV members and the Organization for Economic Co-operation and Development (OECD). The GENIE database provides online information on genera and species protected by UPOV members, cooperation in examination, experience in DUS testing and the existence of UPOV Test Guidelines.

In the attached roadmap, 30 actions were planned, including the submission of a Regulatory Notification Form (RNF) to the Malaysia Productivity Corporation (MPC) in 2018, workshops and meetings to discuss changes to the PNPV Act 2004 from 2019 to 2020, and tabling of a new PNPV Bill in the Parliament in March 2021. The UPOV Secretariat was involved in four actions, as a legal advisor as well as approver of the Bill.

At the 14th annual meeting of the EAPVPF in August 2021, Malaysia's Department of Agriculture presented an updated 10-year strategic plan for 2018 to 2027 (EAPVPF, 2021b). For the next three years, the targeted objectives include:

- I. To finalize the Risk Impact Analysis (RIA) of the newly drafted PVP Bill in order to fulfil the policy requirements of Good Regulatory Practices before tabling it to the Parliament.
- II. To complete any legal requirements for the Parliament's approval of the new PVP Bill and to deposit the instrument for UPOV 1991 membership.
- III. To establish the accession to UPOV 1991.
- IV. To conduct continuous and regular public awareness programmes on the new PVP law which focus on specific target groups as well as the public in general.
- V. To constantly update laws and regulations to keep abreast with international, new challenges and new issues.

A new Bill has not yet been tabled in the Parliament. However, on 30 August 2022, Ahmad Yusuf bin Mohd Kamil, Assistant Director, Registration of Plant Variety Protection Section, Crop Quality Control Division, Department of Agriculture of Malaysia, provided the UPOV Secretariat an updated version of the Draft Act with a request for comments in relation to UPOV 1991. The UPOV Secretariat has indicated that the comments are under preparation and will be communicated to the Department of Agriculture (UPOV, 2022a).

In September 2019, the PVP Office of the Department of Agriculture conducted a consultation meeting with selected farmer and NGO representatives. In that session, the Department claimed that the purpose of repealing the PNPV Act 2004 was not to participate in UPOV 1991 but to streamline the PVP law with other overlapping acts, especially the Access to Biological Resources and Benefit Sharing Act 2017. However, this assertion is obviously false, as it contradicts the national roadmap submitted to the EAPVPF that explicitly targets membership of UPOV 1991. Such a dishonest attitude continues to increase doubts about the overall transparency of the process.

Since then, NGOs and farmers' groups have not been invited to any further consultations on the changes to the law to date, despite assurances that a consultation session will be held. Deliberate sidelining of farmer representatives that are extremely concerned with any changes to the PNPV Act 2004, marks a shocking disregard by national authorities of due processes and farmers' right to participate in making decisions at the national level for matters related to the conservation and sustainable use of plant genetic resources for food and agriculture as established in the ITPGRFA (Chee et al., 2016).

In short, rather than have a PVP law that works for the people of Malaysia and its food security, the demands of the UPOV Secretariat seem to be prioritized. In fact, the role of the UPOV Secretariat in monitoring and approving changes to the PNPV Act 2004 encroaches on Malaysian lawmaking processes, downplaying the role of Malaysian legal officers and parliamentarians.

Changes Required to the PNPV Act 2004 to Align with UPOV 1991

In 2004, the Department of Agriculture of Malaysia had requested examination of the PNPV Act 2004 for conformity with UPOV 1991. UPOV responded to this request in 2005 with comments and suggestions for amendments to the Act in order to bring it into conformity with UPOV 1991 (UPOV, 2005). Table 9 provides a summary of the key changes required by UPOV and the implications of these changes for Malaysia.

UPOV Comment/Changes to PNPV Act 2004	Implications for Malaysia
Clarify genera and species to be protected.	Joining UPOV will require protection to be extended to all genera and species, meaning that Malaysia will no longer have the option of excluding certain genera and species from the scope of protection, such as those that are important for food security.
Deletion of Section 14(2) which sets the criteria of “new, distinct and identifiable” for a variety developed by a farmer, local community or indigenous people. UPOV also adds that the title given to farmers should be under a different name and dealt with through a separate system.	Repeal of Section 14(2) will discriminate against farmers and traditional communities as they will not be able to meet the “uniform” and “stable” criteria as their varieties are constantly evolving but are nevertheless still identifiable. It also contradicts community plant-breeding principles in which the best seeds are derived from the process of selecting the best traits from the gene pool of biological diversity, which by definition is diverse and not uniform. Moreover, there is no logic to treating farmer breeders distinctly from other breeders, risking fragmentation of the agricultural system. UPOV clearly fails to acknowledge the rich diversity of Malaysia’s agricultural system, revealing its inherent inflexibility as discussed in detail in Chapter 5.
Deletion of Section 15 which prohibits the grant of PVP to varieties that may affect public order or morality or negatively impact the environment. UPOV adds that such prohibition may be addressed through a legal mechanism separate from the PVP legislation.	<p>Deletion of the section will affect the ability of the government to exclude varieties that have detrimental effects from benefitting from the PVP system, e.g., varieties that contain “genetic use restriction technology” or a “terminator gene” that prevents germination of seeds. There is also no sense in providing monopoly rights over varieties that adversely impact public interest, and thus it is a critical issue that has to be addressed in the PNPV Act itself with the competent authority empowered to refuse the grant as provided for by Section 15.</p> <p>Importantly, the exclusion in Section 15 is commonly found in all types of intellectual property legislation including PVP laws. Even Article 27.2 of the TRIPS Agreement recognizes the right of WTO Members to exclude from patentability inventions where it is necessary to protect public order or morality including to protect, human, animal, plant life or health or to avoid serious prejudice to the environment.</p>
Delete sub-sections 12(e), (f), (g) and (h) that require every applicant to disclose the source of genetic material or immediate parental lines, prior informed consent of local communities, and proof of compliance with access and benefit-sharing and biosafety legislation.	Sub-sections 12(e), (f), (g) and (h) are key tools to prevent biopiracy of Malaysia’s plant genetic resources and ensure that national laws are mutually supportive. They are also central to implementing rights and obligations in international instruments such as the CBD, the Nagoya Protocol, UNDROP, UNDRIP etc. Thus, all applicants are required to comply with these provisions, failing which the application is not processed. Deletion of these sub-sections or processing applications that do not comply with these elements will open up opportunities for biopiracy of local plant genetic resources, denying local communities the right to fair and equitable benefits, undermining the objectives of the access and benefit-sharing and biosafety legislation as well as adversely impacting Malaysia’s ability to effectively operationalize international instruments as discussed in Chapter 4.

UPOV Comment/Changes to PNPV Act 2004	Implications for Malaysia
Clarify that the requirement in Section 27 to deposit specified quantities of samples of the seed or other propagating material of the plant variety is not a condition for granting PVP.	As a PVP applicant is given exclusive rights, it is only reasonable that the applicant deposit samples of seeds or any other propagating material for use by the local community and hence it should be a condition for granting PVP. Otherwise, the Malaysian authority or the local community may not have access to the material such as when the duration of PVP expires, or in the event the government authorizes a third party to exploit the protected variety, i.e., issues a compulsory licence.
Provisional protection to be provided in line with Article 13 of UPOV 1991.	Addition of provisional protection will allow a plant breeder to claim compensation for use of the variety before PVP is granted (from the filing/publication date). Thus, the effective monopoly enjoyed by a plant breeder begins from the filing/publication date of the PVP application.
Amend Section 31(1)(d) which allows saving of seeds on a farmer's own holding so that the exception is qualified by the phrase "within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder".	The qualification "within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder" is often relied on to attach various restrictions to the exception (e.g., limiting its application to specific varieties, for specific farms, requiring payment of royalties etc), thereby hindering the right of farmers to freely save seeds/propagating materials for propagation purposes.
Delete Section 31(1)(e) which allows exchange of reasonable amounts of propagating materials among small farmers.	In its comments, UPOV is explicit that exchange of protected material for propagating purposes would not be allowed. Deleting the right to exchange would remove a fundamental Farmers' Right.
Delete Section 31(1)(f) which allows sale of farm-saved seeds in circumstances beyond the small farmer's control, and subject such sale only to when compulsory licences are issued under Sections 36 and 37.	The effect of deletion is that selling of protected propagating materials even among small farmers will no longer be an automatic exception. In short, no sale of protected propagating materials will be allowed. Relying on the issuance of compulsory licences is impractical, for it would require government action which takes many months or even years and is subject to political pressure. Use of compulsory licensing is also subject to royalty payment to the breeder.
Delete Section 34 which requires the PVP holder to ensure that propagating material of reasonable quality is available in reasonable quantities and at reasonable prices within three years from date of grant of PVP.	Sections 34 and 36 are required to protect national interest. They safeguard the right of the government to authorize the use of the protected variety by issuing compulsory licences to ensure sufficient propagating material of quality is available in Malaysia at a reasonable price. They also ensure that Malaysia does not become import-dependent and that much of the material is produced locally, which is central to safeguarding food security.
Delete Sections 36(1)(a) and (b) which allow the government to issue a compulsory licence when Section 34 is not complied with and the needs of the farming community are not met and when an excessive proportion of plant varieties offered for sale is imported.	

UPOV Comment/Changes to PNPV Act 2004	Implications for Malaysia
Amend Section 32 so that the duration begins from the date of PVP grant rather than the filing date, and mandate 25-year protection for trees or vines.	This amendment will in effect extend the monopoly of the PVP holder in Malaysia. The majority of PVP holders are usually foreign entities, and so they will be the main beneficiaries of this extension to the detriment of local communities.
Amend Sections 39 and 41 so that the reasons for nullifying and revoking the grant of PVP are consistent with Articles 21 and 22 of UPOV. No other grounds are accepted by UPOV.	Essentially UPOV’s comment undermines Malaysia’s sovereign right to specify grounds for nullifying or revoking PVP grant except as allowed by UPOV. For instance, Malaysia may not be able to nullify or revoke the grant even if the PVP holder fails to comply with access and benefit-sharing requirements.

Table 9: Key Changes Required by UPOV to the PNPV Act 2004 and Their Implications for Malaysia

UPOV’s comments on the PNPV Act 2004 reinforce the conclusion in Chapter 5 that UPOV offers an extremely rigid legal framework of protection. It was developed for the commercial benefit of breeders in developed countries, but could now be imposed on Malaysia without regard to its national needs. A resilient agricultural system is one that invests in promoting diversity of plant genetic resources, and is agile and adaptable, wherein the government has policy space to support local farmers and communities. This is not the case with UPOV 1991, which offers a “one size fits all” approach in favour of creating dependency among farmers on seed monopolies, the majority of which will be held by foreign entities. Even with the existing PNPV Act 2004, the effect of the PVP system and its exploitation is already acutely felt by farmers, as revealed in Chapter 7.

No Case for UPOV 1991 in Malaysia

The Department of Agriculture and UPOV lobbyists have argued that UPOV will bring many benefits to Malaysia especially to breeders, farmers and the seed industry. In the International Seminar on the Benefits of Plant Variety Protection Under the UPOV System, held in the Philippines in 2018, a representative of the Department of Agriculture Malaysia presented Malaysia's expectations of harmonization of its PVP system in line with the UPOV system (Sri Ikarostika Rahayu, 2018). The presentation listed several benefits that Malaysia is expected to receive:

- I. Easier access to improved varieties of crops and plant genetic resources
- II. Enable further breeding locally
- III. Increase in number and diversity of local breeders
- IV. Better access to global market
- V. Enable competitiveness
- VI. Save cost and time in DUS test and reports
- VII. Increase investors’ confidence
- VIII. Creating more business opportunities
- IX. Technology transfer to growers
- X. Capacity building through knowledge sharing.

These are also the same expectations that are often invoked by multinational agricultural companies to justify entering and dominating the local market. Such claims are, however, not based on evidence.

In the aforementioned 10-year strategy presented to the EAPVPPF, the Department of Agriculture outlines several challenges which it claims are the basis for joining UPOV 1991. These are:

- The number of applications for protection of local plant varieties is still low.
- Local breeders of protected varieties have not been able to profit from the protection.
- Farmer breeders have not fully exercised the scope given under breeders' rights.
- Protected varieties fail to meet market demand.
- Insufficient administrative and technical database for managing applications and facilitating substantive examination (DUS test) purposes.

However, as discussed below, these reasons put forward for adopting the UPOV 1991 system are ill-founded.

Robust Seed Systems Not Dependent on UPOV 1991

Comparative data between UPOV and non-UPOV countries published in the 2019 Access to Seed Index have shown that there is no causal relationship between the UPOV system and the dynamics of the seed sector in a country (APBREBES, 2019).

The number of seed companies with sales, breeding and production activities in developing countries from Southeast Asia and South Asia as well as Central and West Africa is shown in Tables 10 and 11.

South and Southeast Asia – Top 10 (out of 13 countries)

	Number of seed companies* with sales activities	Number of seed companies* with breeding activities	Number of seed companies* with production activities	Total presence**	PVP system in place
India	21	18	18	57	<i>Sui generis</i>
Thailand	17	11	13	41	<i>Sui generis</i>
Indonesia	18	8	10	36	<i>Sui generis</i>
Vietnam	18	4	8	30	UPOV91
Philippines	15	6	7	28	<i>Sui generis</i>
Bangladesh	20	3	4	27	None
Pakistan	17	2	3	22	<i>Sui generis</i>
Nepal	15	1	2	18	None
Sri Lanka	16	0	1	17	None
Myanmar	12	0	3	15	<i>Sui generis</i>

* The analysis includes 24 leading seed companies in South and Southeast Asia

** Adding up activities by seed companies (sales, breeding and production)

Table 10: Number of Seed Companies with Activities of Sales, Breeding and Production in South and Southeast Asia

Source: APBREBES (2019)

Western and Central Africa – Top 10 (out of 22 countries)

	Number of seed companies* with sales activities	Number of seed companies* with breeding activities	Number of seed companies* with production activities	Total presence**	PVP system in place
Nigeria	14	4	6	24	None
Senegal	12	3	4	19	UPOV 91***
Burkina Faso	11	2	5	18	UPOV 91***
Mali	10	2	3	15	UPOV 91***
Cote d'Ivoire	10	0	1	11	UPOV 91***
Ghana	8	1	2	11	None
Cameroon	6	2	2	9	UPOV 91***
Niger	6	0	1	7	UPOV 91***
DR Congo	6	0	0	6	None
Benin	3	1	1	5	UPOV 91***

* The analysis includes 24 leading seed companies in Western and Central Africa

** Adding up activities by seed companies (sales, breeding and production)

*** UPOV member through the African Intellectual Property Organization (OAPI)

Table 11: Number of Seed Companies with Activities of Sales, Breeding and Production in Western and Central Africa

Source: APBREBES (2019)

India, which enacted its own *sui generis* PVP law, is the most active in selling, breeding and production of crop seeds in the South Asian and Southeast Asian regions. It is followed by Thailand and Indonesia, which also have *sui generis* PVP laws. Vietnam, the only country in the region that has adopted the UPOV system, is only in fourth place.

The data illustrate that joining the UPOV system is not a factor that determines the level of activity and progress of the plant seed industry in any country. Associating UPOV with the development of the seed industry in developing countries is superficial and baseless. Claiming that the solution to improving the seed industry is to join UPOV is a naive position that can have a devastating effect on the local seed industry and the lives of farmers. There is a need to delve deeper into other factors that hinder the growth of the Malaysian seed industry and address the issues more holistically and with a more focused strategy. One central pillar would be to support farmer seed systems, which are important sources of agrobiodiversity and can secure the livelihood of many farmers.

For years UPOV proponents have held out Vietnam as an example of the success of the UPOV system. In 2021, the NGOs SEARICE, APBREBES and Fastenopfer released a report (Manalo & Ignacio, 2021) analyzing the factors that led to the increase in Vietnam's agricultural yields in the past few decades. The report, titled "Plant Variety Protection in Practice in Vietnam: The Pains in the Gains Achieved", exposes many of the false and empty promises of UPOV-style law. Notably, it debunks UPOV claims that annual yield increases in sweet potato are attributable to developments in plant-breeding activities in the 10 years after Vietnam became a UPOV member. Outrageously this claim is absolutely baseless as the 2021 report reveals that not a single PVP application has been filed for sweet potatoes in Vietnam. For cassava, record yields have been achieved in Vietnam also in the absence of a single PVP application. Malaysia's Department of Agriculture should not pay any heed to UPOV's claims of benefits for they are so blatantly unjustified and misleading.

The main finding of the report is that: “While plant breeding is necessary, agricultural development must be detached from the notion that a draconian plant variety protection law is a fundamental prerequisite.” Vietnam’s agricultural development is the result of a complex interaction of various interventions by the government, and cannot be attributed to the country being a Party to UPOV 1991.

Unjustified Narratives About Additional Benefits of Joining UPOV 1991

Chapter 3 discusses the performance of Malaysia’s existing PVP system. The system is functional and used by a diverse range of breeders and for a variety of crops. Between 2008 and 2020, 447 PVP applications were filed and 187 varieties were granted PVP. The main users of the PVP system are foreign entities as well as domestic companies and research institutions, which shows their confidence in Malaysia’s PVP system and how it does provide access to foreign varieties. In comparison, some UPOV members have significantly lower numbers of PVP applications and grants. For example, Jordan joined UPOV 1991 in 2004 following the signing of the Jordan-US FTA in 2001 wherein ratifying UPOV 1991 was a demand of the US. It had 21 PVP applications in 2020 and 10 applications in 2019, much fewer than Malaysia (UPOV, 2022b).

Moreover, under UPOV, granting PVP does not guarantee access to the protected propagating material for it does not mandate the PVP applicant/holder to make the propagating material available in the country as a condition for PVP registration. Neither does UPOV require a PVP holder to meet the farming needs of the community in terms of quantity, quality and price or to conduct its breeding/growing activity domestically. In contrast, the PNPV Act 2004 (Sections 27, 34 and 36) includes these considerations, which are pivotal to boosting Malaysia’s competitiveness in the seed sector. There is also nothing that prevents local breeders from protecting their varieties in foreign markets and hence gaining access to global markets. For example, applicants from non-UPOV countries India, Thailand and others have been granted PVP by the EU Community Plant Variety Office (CPVO) and other UPOV members (UPOV, 2021, 2022b).

As stated above, another reason put forward by the Malaysian PVP Office for joining UPOV 1991 is that “protected varieties fail to meet market demand”. But this challenge only reinforces the need for provisions in the PNPV Act 2004 that prioritize the needs of the local farming community, such as exceptions that provide other farmers/breeders greater freedom to operate in order to meet market demand that cannot be realized by the PVP holder.

Another common argument of Malaysia’s PVP Office is the need for international cooperation to save time, costs and effort in conducting DUS tests and sharing of expertise. But such cooperation is possible without the country having to be a member of UPOV. For example, DUS reports can be bought from PVP offices such as the EU’s CPVO.⁴ Further, it is imperative to note that varieties protected by the PVP system should be able to meet the DUS criteria, especially the “uniformity” and “stability” criteria, in the context of national climatic conditions. This necessitates the conduct of DUS tests at the national level. Granting PVP monopoly rights to varieties based on DUS tests conducted in foreign countries makes little sense if they cannot be bred stably in Malaysia. When it comes to costs, applying for any form of intellectual property protection will invariably involve some expenses. As such, applicants seeking PVP protection in Malaysia should be willing to pay for such protection. With respect to cooperation and sharing of expertise, Malaysia should indeed engage in cooperation, especially South-South cooperation, but it should do so by sharing its own unique legislation and experience rather than being co-opted to join UPOV 1991.

Malaysia’s PVP Office has also pointed to administrative challenges – such as high turnover of secretariat staff, low technical competencies, administrative delay in grant of breeders’ rights and budgetary constraints – as a reason for joining UPOV 1991. But these challenges call into question the effectiveness of internal management and competency of the PVP Office itself, rather than make the case for joining UPOV 1991, given the serious implications for the country.

⁴ By the end of 2021, the CPVO had provided 8,289 technical reports to 61 countries. See the 2021 Annual Report of the CPVO: https://cpvo.europa.eu/sites/default/files/documents/20220571_pdf_tgac22001enn_002_vc.pdf

Seed Monopolies and High Prices Expected

The Malaysian Department of Agriculture itself, in presenting Malaysia's expectation of harmonization of its PVP system in line with the UPOV system (Sri Ikarostika Rahayu, 2018), expressed concern about local breeders having to compete with multinational companies and the consequences of the latter's monopoly over the domestic seed industry such as higher cost of seeds/planting materials over the years. A study has estimated that joining or complying with UPOV 1991 could increase the cost of seeds by more than four times (Braunschweig et al., 2014). The DOA is also concerned that Malaysia's participation in the UPOV Convention will bind the country to compliance with UPOV requirements in the future.

Recently the Department has argued that without an internationally harmonized PVP system (referring to the UPOV system), the breeding industry is not rewarded and limited varieties are developed for farmers (DOA, 2023). Such an assertion is not rooted in facts nor is it evidence-based. Given UPOV's origins and history as discussed in Chapter 5, and its limited membership, it is hardly deserving of the label of an internationally harmonized PVP system. Only about 28 developing countries and one regional organization (African Intellectual Property Organization – OAPI) are members of UPOV; of these, only some 14 developing countries and OAPI are members of UPOV 1991. As UPOV 1991 is unsuitable for the socioeconomic and agricultural conditions in the OAPI region, its implementation there has been dysfunctional and a major failure (Coulibaly & Brac de la Perrière, 2019).

Globally there is huge opposition against UPOV 1991.⁵ For instance, in 2021, the Supreme Court of Honduras declared the country's PVP law, which was based on UPOV 1991, unconstitutional for violating several international human rights treaties to which Honduras is a party. The ruling explicitly refers to Honduras's obligations to ensure the right to food of its population, and the right to seeds for peasants and indigenous peoples, which is enshrined in the ITPGRFA and UNDROP (APBREBES, 2022).

Many experts have pointed out that UPOV 1991 is unfit for agricultural systems prevailing in developing countries and for realizing Farmers' Rights (APBREBES, 2020).

For example, a study commissioned by GIZ on behalf of the German Federal Ministry for Economic Cooperation and Development recommended that developing countries that have not yet joined UPOV “consider opting for an alternative *sui generis* system of PVP that allows for more flexibility”. The study concluded that “[t]he ‘one size fits all’ approach of UPOV appears ... problematic if the highly diverse conditions and needs of developing countries are to be addressed”, and that “UPOV 91-based PVP laws were found to not advance the realization of Farmers' Rights; rather they are effective in the opposite direction” (GIZ, 2015).

Expert studies also point out that UPOV-type PVP systems create concentrated seed markets and reduce agricultural innovation and biodiversity while risking food security and sustainability. Campi and Nuvolari (2020) argue that “IPRs [intellectual property rights] have a trade-off: they are adopted with the aim of fostering innovation but as they provide a monopoly power on the use of innovations, they can lead to a decrease in the number of new products and to an increase in their price. This monopoly power might in turn reduce innovation because it restricts access to knowledge and innovations, which in the agricultural sector is particularly relevant as innovation depends on access to genetic material”.

Eaton et al. (2006) conclude that “[d]eveloping countries, with their diversity of farmers and seed systems, present special challenges, where the goal should be to provide incentives for seed sector development without limiting the practices and livelihoods of small farmers. Meeting this goal requires a careful balancing of rights and obligations, which may imply adapting, as opposed to simply adopting, the standard models available”.

⁵ See, for example, Peschard (2021).

Further, there is no evidence that only limited varieties are available to farmers unless Malaysia joins UPOV 1991. Eaton (2013) analyzed the effects of the introduction of plant breeders' rights in almost 80 importing countries on the value of exports of agricultural seeds and planting material from 10 exporting EU countries, including all principal traditional exporters of seeds, as well as the US. The paper found no significant effect from UPOV membership on the plant breeding sector, on seed imports, i.e., there is no evidence that the adoption of a UPOV system of PBR positively influences seed imports. One of the most obvious explanations for the lack of significant effect of UPOV membership on seed imports is that, in general, the initiation of PBR has little effect on the decisions of seed companies to export to specific markets.

As noted above and elaborated in Chapter 3, Malaysia already has a functional PVP system that is regularly used by various types of applicants including foreign and local companies, government agencies and research institutions. It should also be noted that five out of 10 paddy varieties available in the Malaysian market are protected varieties. This suggests that UPOV 1991 is not a determining factor in operating an effective and efficient PVP system. Instead, it is apparent from Chapters 7 and 8 that the challenges facing the country's seed industry will worsen if Malaysia were to join UPOV 1991.

Finally, even if UPOV would bring development to the country's agricultural industry (for which there is no evidence), there is little point if this comes at the price of sacrificing farmers' rights to seeds, eliminating sustainable agricultural practices and suppressing the standard of living of small farmers. If this happens, the government's "Malaysia Madani" vision, which aims at the achievement of a prosperous life for every layer of Malaysian society, will never be realized.

10

Conclusion

Malaysia needs to maintain its *sui generis* PNPV Act 2004 and further improve the related regulations in order to make them more appropriate to the agricultural profile of the country, in particular by increasing the threshold size of holdings for a farmer to be defined as a small farmer. The Act aims to balance plant breeders' rights, farmers' rights and protection of public interest. It clearly recognizes and safeguards the traditional farming practices of saving, using, exchanging and selling seeds/propagating material for ensuring the livelihood of farming communities, and the continuous adaptation of seeds and propagating material to the evolution of agricultural ecosystems and food security. It can also encourage the growing number of young farmers who are committed to agroecological farming and the conservation and use of more seed varieties for food.

The Malaysian government must support the practice of saving, exchanging and selling of farm-saved seed as well as participatory plant breeding among paddy farmers and public plant breeders to encourage crop biodiversity that has proven vital for resilient seed systems. By helping and encouraging farmers to use their own farm-saved seeds, the government could reduce the cost of subsidizing seed factories and channel the money to developing other programmes such as training farmers on the conservation of agricultural biodiversity and sustainable farming as well as participatory plant breeding. Successful community-level natural farming of vegetables and fruits has spread since the COVID-19 lockdown in Malaysia and this needs to be scaled up and be part of the national agriculture policy centred on seed diversity, farmers' rights and resilient systems.

Accordingly, UPOV 1991 is not suitable for Malaysia. It will take away the flexibility every country needs to adapt the PVP system to its national needs and circumstances. The UPOV system that will be incorporated into the proposed new PNPV Act is a denial of farmers' and indigenous peoples' right to the practice of saving, sharing and selling farm-saved seeds, and instead will promote monopolies, facilitate monocultures and lead to more loss of local knowledge and wisdom. The UPOV system will cement and further support agricultural industrialization processes that will adversely affect the socio-cultural practices and socioeconomic status of farmers as well as the diversity and security of national food production.

Any decision the government makes must not ignore the importance of agricultural biodiversity, food security, farmers' rights and access to good, nutritious and affordable food for all Malaysians. Essential as well is to ensure that farmers and local communities are meaningfully involved in national decision-making processes related to PGRFA.

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Appendix 1

Plant Substance Validation Scheme List of the Malaysian Department of Agriculture

Plant Species	Variety	Registration Code
Durian (<i>Durio zibethinus</i> L.)	D24	D24
	Kop Kecil	D99
	Chanee	D123
	Beserah, Tuan Mek Hijau	D145
	Kan Yau, Tangkai Panjang	D158
	Mon Thong, Bantal Mas	D159
	Buluh Bawah, Tekka (Musang Queen)	D160
	Mas Hjh Hasmah (101), Durian Mas	D168
	Tok Litok	D169
	Udang Merah	D175
	MDUR 78	D188
	MDUR 79	D189
	MDUR 88	D190
	Raja Kunyit (Musang King)	D197
	Duri Hitam (Ochi)	D200
Jackfruit (<i>Artocarpus heterophyllus</i> L.)	J29	J29
	NS1	J31
	Mantin	J32
	Tekam Yellow	J33
	Mastura	J37
	CJ3	J40
Starfruit (<i>Averrhoa carambola</i> L.)	MAHA 66	B2
	B10	B10
	Madu	B17
Banana (<i>Musa</i> spp.)	Berangan	-
	Cavendish (William)	-
Pineapple (<i>Ananas cosmosus</i>)	Moris	AC 1
	Sarawak	AC 2
	Gandul	AC 3
	Maspine	AC 4
	Josapine	AC 5
	Yankee	AC 6

	Moris Gajah	AC 7
	N36	AC 8
	MD2	AC 9
Guava (<i>Psidium guajaya</i> L.)	Kampuchea	GU 8
	Seedless	GU 15
	Lo han	GU 16
Chilli (<i>Capsicum annum</i> L.)	SD33	SD33
Corn (<i>Zea mays</i> L.)	SDP01	SDP01
Rambutan (<i>Naphelium lappaceum</i> L.)	Muar Gading	R156
	Anak Sekolah	R191
	Deli Baling	R193
Cempedak (<i>Artocarpus champeden</i>)	CH28	CH28
	Kuang 5	CH30
	Chin	CH33
Papaya (<i>Carica papaya</i> L.)	Exotica	CP1
	Exotica 2	CP2
	Sekaki	CP3
Ciku (<i>Manilkara zapota</i>)	Subang	C62
	Jantung	C63
	Mega	C64
Mango (<i>Mangifera indica</i> L.)	Harumanis	MA128
	Nam Dok Mai	MA223
	Chok Anan	MA224
Longan (<i>Dimocarpus longan</i> L.)	Edaw	-
	Berlian	-
	Ping Pong	-
Pomelo (<i>Citrus maxima</i> L.)	Shating	PO51
	Tambun	PO52
	Melomas	PO56
Rose apple (<i>Eugenia aquaea</i>)	Taiwan	-
	Thai King	-
	Kristal Madu	E3
	Apple	-
Coconut (<i>Cocos nucifera</i> L.)	Pandan	CN6
	Matag Green	CN13
	Matag Orange	CN14
	Matag Gold	CN15
Mas cotek (<i>Ficus deltoidea</i>)	MFD 1	-
	MFD 4	-
	MFD 6	-
	MFD 19	-

Kacip fatimah (<i>Labisia pumila</i>)	Pumila Hijau	-
	Pumila Merah	-
	Alata	-
Dukung anak (<i>Phyllanthus</i> sp.)	<i>Phyllanthus niruri</i>	-
	<i>Phyllanthus debelis</i>	-
	<i>Phyllanthus urinaria</i>	-
Misai kucing (<i>Orthosiphon stamineus</i>)	Bunga Putih	-
	Bunga Ungu	-
Roselle (<i>Hibiscus sabdariffa</i> L.)	UMKL-1	-
	Arab	-
Mangosteen (<i>Garcinia mangostana</i>)	Manggis Tempatan	
	Mesta	GA2
Lansium (<i>Lansium domesticum</i>)	Dokong Kering	-
	Duku Terengganu	-
	Duku Johor	-
Mandarin orange (<i>Citrus suhuiensis</i>)	Limau Madu	M33
	Limau Langkat	-
Coffee (<i>Coffea</i> spp.)	MLK 2	-
	MLK 3	-
	MLK 4	-
	MLK 5	-
	MLK 6	-
	MLK 7	-
	Arabica	-
	Robusta	-

Appendix 2

Interpretation of UPOV 1991 Article 15(1) and 15(2) Based on the UPOV “Guidance for the Preparation of Laws Based on the 1991 Act of the UPOV Convention”

UPOV’s Guidance for the Preparation of Laws Based on the UPOV 1991 Act	
<p>UPOV 1991 Article 15(1) [Compulsory exceptions] The breeder’s rights shall not extend to:</p> <p>(i) acts done privately and for non-commercial purposes</p>	<p>Acts possibly not falling within the scope of the exception</p> <p>“The wording of Article 15(1)(i) indicates that acts which are <i>both</i> of a private nature <i>and</i> for non-commercial purposes are covered by the exception. Thus, non-private acts, even where for non-commercial purposes, may be outside the scope of the exception.</p> <p>“Furthermore, the wording indicates that private acts which are undertaken for commercial purposes do not fall within the exception. Thus, a farmer saving his own seed of a variety on his own holding might be considered to be engaged in a private act, but could be considered not to be covered by the exception if the said saving of seed is for commercial purposes. A separate optional exception (see Article 15(2)) has been created within the Convention to address farm-saved seed.”</p> <p>Acts possibly falling within the scope of the exception</p> <p>“The wording of Article 15(1)(i) suggests that it could allow, for example, the propagation of a variety by an amateur gardener for exclusive use in his own garden (i.e. no material of the variety being provided to others), since this may constitute an act which was both private and for non-commercial purposes. Equally, for example, the propagation of a variety by a farmer exclusively for the production of a food crop to be consumed entirely by that farmer and the dependents of the farmer living on that holding, may be considered to fall within the meaning of acts done privately and for non-commercial purposes. Therefore, activities, including for example ‘subsistence farming’, where these constitute acts done privately and for non-commercial purposes, may be considered to be excluded from the scope of the breeder’s right, and farmers who conduct these kinds of activities freely benefit from the availability of protected new varieties.”</p>
<p>(ii) acts done for experimental purposes and</p>	<p>Not elaborated in the Guidance document</p>
<p>(iii) acts done for the purpose of breeding other varieties, and, except where the provisions of Article 14(5) apply, acts referred to in Article 14(1) to (4) in respect of such other varieties.</p>	<p>The “breeder’s exemption”</p> <p>“The exception under Article 15(1)(iii) states that the breeder’s right shall not extend to ‘acts done for the purpose of breeding other varieties, and, except where the provisions of Article 14(5) apply, acts referred to in Article 14(1) to (4) in respect of such other varieties.’. This is a fundamental element of the UPOV system of plant variety protection known as the ‘breeder’s exemption’, whereby there are no restrictions on the use of protected varieties for the purpose of breeding new plant varieties.</p>

	<p>“The second part of Article 15(1)(iii) ‘and, except where the provisions of Article 14(5) apply, acts referred to in Article 14(1) to (4) in respect of such other varieties.’ clarifies that, except for the varieties included in Article 14(5), i.e. essentially derived varieties; varieties which are not clearly distinguishable of the protected variety and varieties whose production requires the repeated use of the protected variety, the commercialization of the new varieties obtained does not require the authorization of the title holder of the protected variety used to create those new varieties.</p> <p>“[The UPOV Guidance gives the example of a] situation where a breeder uses a protected variety A and a non-protected variety B for the breeding of a new variety C. [In this situation,] no authorization is required to breed variety C. Furthermore, the commercialization of variety C would not require the authorization of the breeder of variety A except where variety C was an essentially derived variety, or was a variety that required the repeated use of the protected variety A or was a variety which was not clearly distinguishable from the protected variety A (see Article 14(5) of the 1991 Act of the UPOV Convention).”</p>
<p>UPOV 1991 Article 15(2) [Optional exception] Notwithstanding Article 14, each Contracting Party may, within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder, restrict the breeder’s right in relation to any variety in order to permit farmers to use for propagating purposes, on their own holdings, the product of the harvest which they have obtained by planting, on their own holdings, the protected variety or a variety covered by Article 14(5)(a)(i) or (ii).</p>	<p>Deciding on implementing the optional exception</p> <p>“[T]he optional exception was aimed at those crops where, for the member of the Union concerned, there was a common practice of farmers saving harvested material for further propagation...</p> <p>“The optional exception may be considered to relate to selected crops where the product of the harvest is used for propagating purposes, for example small-grained cereals where the harvested grain can equally be used as seed i.e. propagating material. Taken together with the recommendation relating to Article 15(2) of the Diplomatic Conference of 1991, the wording also indicates that it may be considered inappropriate to introduce the optional exception for agricultural or horticultural sectors, such as fruit, ornamentals and vegetables, where it has not been a common practice for the harvested material to be used as propagating material.”</p> <p>Reasonable limits and safeguarding of the legitimate interests of the breeder</p> <p>“[T]he optional exception may be introduced for selected crops ... For those crops where the optional exception is introduced; in relation to the introduction of reasonable limits and the safeguarding of the legitimate interests of the breeder within plant breeders’ rights legislation, the factors below, or a combination of such factors, amongst others, might be considered.</p> <p><i>“Type of variety</i> Where it is decided to introduce the optional exception for a particular crop or species, it is possible to specify only certain types of varieties for which it would be applicable. For example, authorities might decide not to extend the optional exception to certain types of varieties, e.g. hybrid varieties or synthetic varieties. This allows authorities to take into account whether there has been a common practice of farmers saving harvested material for further propagation and whether it would be appropriate to introduce the optional exception for such types of varieties.</p> <p><i>“Size of holding / crop area / crop value</i> Examples of factors which might be used to establish reasonable limits and to safeguard the legitimate interests of the breeder are the size of the farmer’s holding, the area of crop concerned grown by the farmer, or the value of the</p>

harvested crop. Thus, ‘small farmers’ with small holdings (or small areas of crop) might be permitted to use farm-saved seed to a different extent and with a different level of remuneration to breeders than ‘large farmers’. However, the size of holding (or crop area) determining a small farm may differ when considering reasonable limits and safeguarding the legitimate interests of the breeder for each member of the Union...

“Proportion or amount of harvested crop

An example of another factor which might be considered in relation to reasonable limits and safeguarding the legitimate interests of the breeder is the proportion, or amount, of the crop concerned which would be the subject of the optional exception. Thus, for example, a member of the Union could choose to specify the maximum percentage of the harvested crop which the farmer may use for further propagation. The specified percentage might be varied in relation to the size of farm (or crop area) and/or the level of remuneration, as a percentage of standard remuneration, specified in relation to the proportion of farm-saved seed used by a farmer. Furthermore, the amount of the harvested crop to which the optional exception applies could be fixed in relation to the quantity of propagating material of the protected variety originally obtained by the farmer, by the amount appropriate to plant on the farmer’s holding, or the amount to be reasonably consumed by the farmer and his dependents. The amount could also be expressed as a maximum acreage which may be planted using the harvested crop.

“Changing situations

Plant variety protection encourages the introduction of new varieties and this may, in itself, lead to changes in the level of harvested material used for further propagation (farm-saved seed) of the crop concerned. Furthermore, evolution of farming practices and breeding and propagation methodologies, as well as economic developments could lead to changes in the level of harvested material used for further propagation. Thus, a member of the Union could, for example, limit the level of farm-saved seed to those levels which had been common practice before the introduction of plant variety protection.

“Remuneration

For those crops where the optional exception is introduced, a requirement to provide remuneration to breeders might be considered as a means of safeguarding the legitimate interests of the breeders.

“Farmer’s holding

...[T]he optional exception relates to the use of the product of the harvest by the farmer on his own holding. Thus, for example, the optional exception does not extend to propagating material which was produced on the holding of another farmer.

“Implementation of the optional exception in Article 15(2)

The inclusion of the optional exception in the 1991 Act of the UPOV Convention recognizes that, for some crops, there has been a common practice of farmers saving the product of the harvest for propagating purposes, and this provision allows each member of the Union to take account of this practice and the issues involved on a crop-by-crop basis, when providing plant variety protection ... [I]f the optional exception is implemented, it [should be] done in a way which does not undermine the incentives provided by the UPOV Convention for breeders to develop new varieties...”

Appendix 3

List of Rice Seed Varieties Released for the Malaysian Market 1964-2021

No.	Rice Variety	Year Announced	PBR Status
1.	Malinja	1964	Not Protected
2.	Mahsuri	1965	Not Protected
3.	Ria	1966	Not Protected
4.	Bahagia	1968	Not Protected
5.	Murni	1972	Not Protected
6.	Pulut Masria	1972	Not Protected
7.	Jaya	1973	Not Protected
8.	Sri Malaysia I	1974	Not Protected
9.	Sri Malaysia II	1974	Not Protected
10.	Pulut Malaysia I	1974	Not Protected
11.	Setanjung (MR1)	1979	Not Protected
12.	Sekencang (MR7)	1979	Not Protected
13.	Sekembang (MR10)	1979	Not Protected
14.	Kadaria (MR27)	1981	Not Protected
15.	Pulut Siding	1981	Not Protected
16.	Manik (MR52)	1984	Not Protected
17.	Muda (MR71)	1984	Not Protected
18.	Seberang (MR77)	1984	Not Protected
19.	Makmur (MR73)	1985	Not Protected
20.	MR84	1986	Not Protected
21.	MR81	1988	Not Protected
22.	MR103	1990	Not Protected
23.	MR106	1990	Not Protected
24.	Pulut Hitam 9	1990	Not Protected
25.	MR123	1991	Not Protected
26.	MR127	1991	Not Protected
27.	MR159	1995	Not Protected
28.	MR167	1995	Not Protected
29.	MR185	1997	Not Protected
30.	MR211	1999	Not Protected
31.	MRQ50	1999	Not Protected
32.	MR219	2001	Not Protected
33.	MR220	2003	Not Protected
34.	MRQ74	2005	Not Protected
35.	MR232	2006	Not Protected
36.	MR220 CL1	2010	Protected
37.	MR220 CL2	2010	Protected
38.	MRM16	2010	Not Protected

39.	MR253	2010	Protected
40.	MR263	2010	Protected
41.	MR269	2012	Protected
42.	MRQ76	2012	Not Protected
43.	MRIA 1	2013	Protected
44.	MR284	2015	Not Protected
45.	Siraj MR297	2016	Protected
46.	MRQ88	2016	Not Protected
47.	Warna 98	2018	Not Protected
48.	Sempadan MR303	2018	Not Protected
49.	Sebernas MR307	2018	Not Protected
50.	UKMRC2	2019	Protected
51.	UKMRC8	2019	Protected
52.	MR12H (KADARIA 1)	2019	Not Protected
53.	IS21 (NMR152)	2021	Protected

Malaysia has a unique and functional system in place for protecting intellectual property on plant varieties. Its Protection of New Plant Varieties Act 2004 provides for the granting of rights to plant breeders while also recognizing farmers' innovations and safeguarding exceptions for their rights to save, use, exchange and sell seeds.

This delicate balance could however be upended if Malaysia signs on to the 1991 Act of the International Convention for the Protection of New Varieties of Plants (UPOV 1991). Designed to further the interests of commercial breeders in developed countries, the UPOV 1991 regime will severely restrict the age-old farming practice of seed saving and promote corporate seed monopolies in its stead, thereby undermining farming livelihoods, food security and agricultural biodiversity.

Drawing on rigorous research and interactions on the ground with domestic food farmers, this report sounds a clarion call to resist pressures for Malaysia to join UPOV 1991, and makes the case for a plant variety protection framework that is more attuned to the needs of the country's agricultural system.

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