Research Article

An Overview on the Intellectual Properties of the Fisheries Research Institute, Department of Fisheries, Malaysia

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Abstract: *Intellectual creation, namely inventions, designs, literary works, artistic works, symbols, names, images, computer code, etc. is commonly relates to Intellectual property (IP). IP is one of the significant outputs of the research institution including at the Fisheries Research Institute (FRI), Department of Fisheries Malaysia. Awareness on IP generation and registration were only initiated in 9th Malaysian Plan (2006-2010) and starting from 10th Malaysia Plan (2011-2015), IP generation is one of the KPI that needs to be achieved by the FRI. Until March 2024, a total of 55 R&D innovations have been registered as IPs in various categories such as patents (11), utility innovations (10), trademarks (8) and copyrights (24) and 40 of them has been granted. For the past 15 years, the FRI has made provisions in generating and facilitate IP registration with the aim of getting them commercialized to help boosting the fisheries industries in Malaysia. There are great deals remain to be done particularly on establishing a comprehensive and specific internal IP strategy to help FRI in identifying and protecting the IPs, manage risks, promote IPs and, most importantly, generate and grow revenue.*

Keywords: Innovation, Technology, Intellectual Properties, Government Research Institute

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1. INTRODUCTION

Economic growth is known to be spearheaded significantly by new knowledge and innovation. Thus, innovative solutions are one of the key areas highlighted in the United Nations (UN)'s 17 Sustainable Development Goals (SDGs), especially Goal No 9 where Intellectual Property (IP) was identified as a contributor in boosting sustainability (UN SDG, Salvalai et al., 2023). Furthermore, IP was also recognized as key component in the ASEAN Economic Community Blueprint (2025) (Setiati & Darmawan, 2018). As defined by the World Intellectual Property Organization (WIPO), creations of the mind, for instances inventions; designs; symbols, names; images; literary and artistic works that was applied in trade is pertain as IP. IP is protected by law which permit people to earn acknowledgement or monetary gain from what they invent or create at a particular period of time are known as IP rights (The World Trade Organization, 2023). These rights typically exclude others from using, duplicating, or distributing the asset without permission, allowing the owner to protect and benefit from their creation or investment. IP rights also serve as a robust mechanism for protecting the time and effort put in by inventors in order to create the particular IPs (Toma et al., 2018). To earn the exclusive rights provided by the law, IP needs to be lodged with the country's relevant body.

IP protection is vital to fostering innovation and helps to ensure a constant stream of adaptable technologies and innovative products (Pawar & Alarifi, 2023). In the absence of safeguarding of ideas, businesses and individuals would not earn the maximum advantages of their inventions and would not concentrate much on research and development. IPs are classified as patents, copyrights, trademarks and trade secrets that are widely considered to be a fundamental economic asset for any business or research institution (Heim, 2023).

Malaysia has demonstrated a steady rise in the figure of IP registrations. From January 2013 to December 31, 2018, a total of 282,825 IP registration requests were made to MyIPO and a total of 215,036 of them approved. Trademark applications top the list of IP filings from the starts, accompanied by patents, utility innovations, and industrial designs (Anon., 2019).

Documentation on IPs by public research agency in Malaysia is scarce. Hence, this paper is prepared to share several pertinent information regarding IPs of the Fisheries Research Institute (FRI), Department of Fisheries Malaysia, especially on the awareness, implementation and management. Prior to that, we provided some general information associated with IP management in Malaysia, particularly the regulations and authorities involved. It is envisaged that the information conveyed in the present paper will enlighten FRI researchers and others on IPs and their importance.

2. MALAYSIA IP REGULATIONS AND AUTHORITY

IP law, policies, guidelines

In Malaysia, the value of IP to economic rise has been earmarked since the 5th Malaysia Plan (1986-1990) (Azmi & Madieha, 2018). In line with this vision, a robust IP law framework that is well-matched with universal laws and standards was established as shown in Table 1.

Table 1. List of Malaysia acts pertaining with IP administration and regulation

Act	Purpose
Patents Act 1983 (Act 291) Patents Regulation 1986	offer safe keeping of inventions that are new, inventive, and industrially applicable.
Copyright Act 1987 (Act 332)	safeguards literary, artistic, and musical works, ensuring creators' rights
Industrial Designs Act 1996 (Act 552)	protected under the covering the aesthetic aspects of products.
Malaysian Intellectual Property Corporation Act 2002 (Act 617)	enacted to establish the Intellectual Property Corporation of Malaysia and to provide for its functions and powers and for matters connected therewith
Layout Designs of Integrated Circuits Act 2000 (Act 601)	protects layout-designs of integrated circuits
Geographical Indications Act 2000 (Act 602)	provide the protection of geographical indications and for matters connected therewith
Trade Marks Act 2019 (Act 815); Trademark Regulations 2019	provide protection for distinctive signs, logos, and symbols used to identify goods and services.

Besides that, Malaysia also recognizes the usefulness of trade secrets, by furnishing protection by way of various authorize means, namely contractual agreements and the common law.

Apart from the law, policies and guidelines were also developed to support this cause. The first official guidelines on this matter i.e *Garis Panduan bagi Pengurusan Harta Intelek yang dimiliki Kerajaan dan Agihan Saguhati Hasil Penyelidikan yang dikomersialkan kepada Pegawai-Pegawai Awam (Pekeliling Perkhidmatan Bilangan 5 Tahun 1999)* was issued to address the IP and commercialization issue specifically for public sectors. The mission was further manifested with the launching of the National Intellectual Property Policy (NIPP)/ *Dasar Harta Intelek Negara* (DHIN) in July 2007 to chart national IP initiatives, including laws and regulations, and to steer all government IP activities.

One of the objectives of the NIPP/DHIN is to attain the highest standard of IP protection, which requires the constant updating of laws and regulations to keep pace with international developments, new challenges and emerging issues. The NIPP focuses on maximizing the contribution of IP in accelerating socio-economic and technological development through the creation of an environment that encourages continuous creation of IP, provides a high standard IP protection system, advocates the exploitation of commercially potential IP, fosters development of the supporting industries and builds human resource capability to successfully implement the policy.

A few years later, the Intellectual Property Commercialization Policy for Research and Development (R&D) Projects Funded by The Government of Malaysia was launched in the year 2009 and the latest *Dasar Sains, Teknologi dan Inovasi Negara* (DSTIN) 2021-2030. The main goals of these policies and guidelines are to harness IP as a new engine of growth for the enhancement of economic and social prosperity. The DSTIN 2021-2030 was formulated to strengthen the position of science technology and innovation (STI) in the development and growth of an innovation-based economy.

The National Biotechnology Policy is another related policy that regards IP as a mainstay of the growth of domestic industry. The Policy, which contains nine initiatives, outlines a legislative and regulatory framework, which includes having a strong IP protection regime to support research and development (R&D) and commercialization efforts as one of its specific thrusts.

The international IP organization is known as the “World Intellectual Property Organization," abbreviated as WIPO. Most countries have an IP organization. For Malaysia, the administering and regulating of IP is under the acumen of the Malaysia Intellectual Property Corporation (MyIPO). MyIPO was established in accordance with the Malaysian Intellectual Property Corporation Act 2002 in March 2003 with the purpose of creating a statutory body to manage registration applications and oversee protection acts for all components of IP. MyIPO continued to play strategic roles with the launch of the NIPP/DHIN in 2007. MyIPO administers and enforces IP legislation as in Table 1.

Prior to this, IPR in Malaysia was regulated by the Trademark and Guarantee Office. This office was later renamed the Trademark and Patent Office in 1983, under the administration of the Ministry of Trade and Industry. On 27 October 1990, the Ministry go through a reorganization and subsequently this Office was positioned under the authority of the Ministry of Domestic Trade and Consumer Affairs and was renamed the Intellectual Property Division.

Table 2 describes IP categories currently available in Malaysia, including the definition and purpose of each IP, estimation of application duration, protection time frame, the associated legislation and examples. There are 8 IP categories, which are patents, utility Innovations (UI), copyrights, trademarks, industrial designs, geographical indications, layout designs of integrated circuits and trade secrets.

Table 2. Description of intellectual properties categories available in Malaysia (Adapted and revised from https://www.paulhypepage.my/guide-faq/intellectual-property-ip-rights-of-malaysia/ retrieved on 25th March 2024).

Types of Intellectual Property	Definition and Purpose	Duration of Application Processed by MyIPO*	Protection Validity Timeframe	Legal Protection Governed	Examples
Patents	• A new and industrially applicable invention; product or process that offers an innovative solution to a problem or task. • These categories are typically excluded from patentability: ➢ Discoveries, scientific theories, mathematical methods, non-human-made plant or animal varieties, certain biological processes, business methods, game rules, mental acts, as well as methods for surgical or therapeutic treatment and diagnostic methods applied to humans or animals. *Requires substantive examination (SE) prior to granted	Application can take up to 3 – 5 years to complete	Protected **20 years** from the date of application	Patents Act 1983 [Act 291]	• Drones • iPhone • Bluetooth • Global Positioning System (GPS) • 3-Dimensional Printer • Self-Driving Car • Solar Panel
Utility Innovations (UI)	Aim to protect minor, practical enhancements to existing products or processes, rewarding inventors for valuable improvements that might not meet the strict criteria for regular patents. *Requires substantive examination (SE) prior to granted	Application can take up to 2 – 3 years to complete	A total of **20 years** of protection, starting with an initial 10-year term. This protection can be extended for two additional 5-year terms by submitting a formal extension request.	Patents Act 1983 [Act 291]	• Artificial Heart Valve • Door Lock System • Improved Solar Water Heater • Anticancer Composition

Copyrights	• Automatically granted to the creator as soon as the work is created and fixed in a tangible form, such as a book, painting, musical composition, or digital content. • The aim is to motivate creators through financial incentives and control over their work, fostering creative expression. • In Malaysia, registering a work for copyright is not obligatory, but copyright owners have the option to voluntarily register their work if they wish.	Approximately between 3 – 6 months from the filing date	Protection lasts for the creator's lifetime and continues for **50 years** after their death	Copyright Act 1987 [Act 332]	• Novel • Poem • Photograph • Movie • Song Lyrics • Sound Recording • Painting • YouTube Video
Trademarks	• Symbol, word, phrase, design, or combination of these elements that represents a product, service or organization. • It acts as a unique marker that sets apart and helps consumers easily recognize the origin of products or services.	Approximately between 9 – 15 months from the filing date	Initially valid for **10 years** from the application date and can be renewed in 10-year increments	Trade Marks Act 2019 [Act 815]	
Industrial Designs	• Must be novel, not primarily functional, and not dependent on the appearance of another integral article. • The design can include both 3-dimensional elements like shape and structure and 2-dimensional aspects like patterns and ornamentation. • The visual aspects, which could be the product's shape, structure, surface decorations or a combination of these elements, that contribute to the product's distinct and attractive look.	Approximately between 9 – 12 months from the filing date	Maximum protection period is **25 years.** It begins with an initial 5-year term from the filing date and can be extended for four additional consecutive five-year periods.	Industrial Designs Act 1996 [Act 552]	• Piaggio 'Vespa' Scooter • Tupperware • Anglepoise Lamp • The Apple iMac • Petronas Twin Towers

Geographical Indications (GI)	• Identifies a product originating from a specific place and having qualities or characteristics associated with that location. • It prevents unauthorized use of the geographical name and benefits local communities by increasing the value of their products.	Approximately between 6 – 18 months from the filing date	Initial **10-year** validity Renewable for every 10 years while in use.	Geographical Indications Act 2000 [Act 602]	• Perlis Harumanis • Terengganu Songket • Sabah Tea • Langkawi Gamat
Layout Designs of Integrated Circuit (IC)	• IC layout design play a vital role in semiconductor manufacturing for a creation of complex and miniaturized electronic devices. • Key criteria for the protection focus on its originality, material fixation and qualifying person/right holder	There is no registration system	Maximum of **15 years** from the date of creation or 10 years from its first commercial use, whichever comes first	Layout-Designs of Integrated Circuits Act 2006	• Computer Processors • Network Switcher
Trade Secrets	• Confidential and valuable data include formulas, processes, techniques, practices, designs or other confidential information that give a business a competitive edge. • Not officially registered with the government but instead protected through security measures and confidentiality agreements. • Those who have access (a limited group of persons) to the trade secret are obligated to maintain its secrecy.	As soon as practicable after assignment	An **indefinite** duration, unless it is uncovered or legally obtained and made known to the public	Protected by legal actions for breaking confidentiality under common law and contract agreements	• Google's Search Algorithm • Kentucky Fried Chicken • Listerine • Krispy Kreme Doughnuts

*Duration of registration to be approved by MyIPO is estimated by considering if the application did not contain any deficiency or face any opposition.

3. IP REGISTRATION AT THE FISHERIES RESEARCH INSTITUTE, DEPARTMENT OF FISHERIES

In line with the launching and issuance of policies and guidelines pertaining to IP creation and commercialization, the public research institutions have also expanded their focus in R&D to include these aspects, including FRI. The FRI was established in 1957 in Gelugor, Penang under the Department of Fisheries Malaysia, Ministry of Agriculture (at that time). At the beginning, R&D at FRI focused on three main thrusts, namely, capture fisheries, aquaculture and aquatic ecology. The goal was to solve problems of the local fishing industry with main outputs consisting of fishery resource management advisory services, technology development for aquaculture, production of technical papers, books, papers, reports and other technical publications. With enhanced roles, regional and international commitments and new challenges in the fisheries sector, R&D interest has been expanded to include fish health, anthropogenic pollution, marine parks, terrestrial fisheries and endangered turtles and marine mammal species. Starting in the year 2009, R&D activities have been accentuated on the production of innovation/fishery technology and commercialization with specific KPI on IP registration set for the FRI, DOF. To ensure smooth implementation of IP generation and management, a small unit was set up in 2010 specifically for this.

Awareness of IP registration at FRI was commenced in 2009 in accordance with the launching of related policies and guidelines by the government. For the first time in history, FRI registered its first patent i.e "Method for Semen Cryopreservation & In vitro Fertilization of Tor sp." with MyIPO in the year 2009. Figure 1 illustrates the trend and number of IPs registered from 2009 until 2023. The registration has increased gradually since 2009 with two more IPs filed in 2012 and 2014. FRI researchers were motivated by this accomplishment and gathered previous and current R&D output to produce more IPs during the 11th Malaysia Plan (2016-2020).

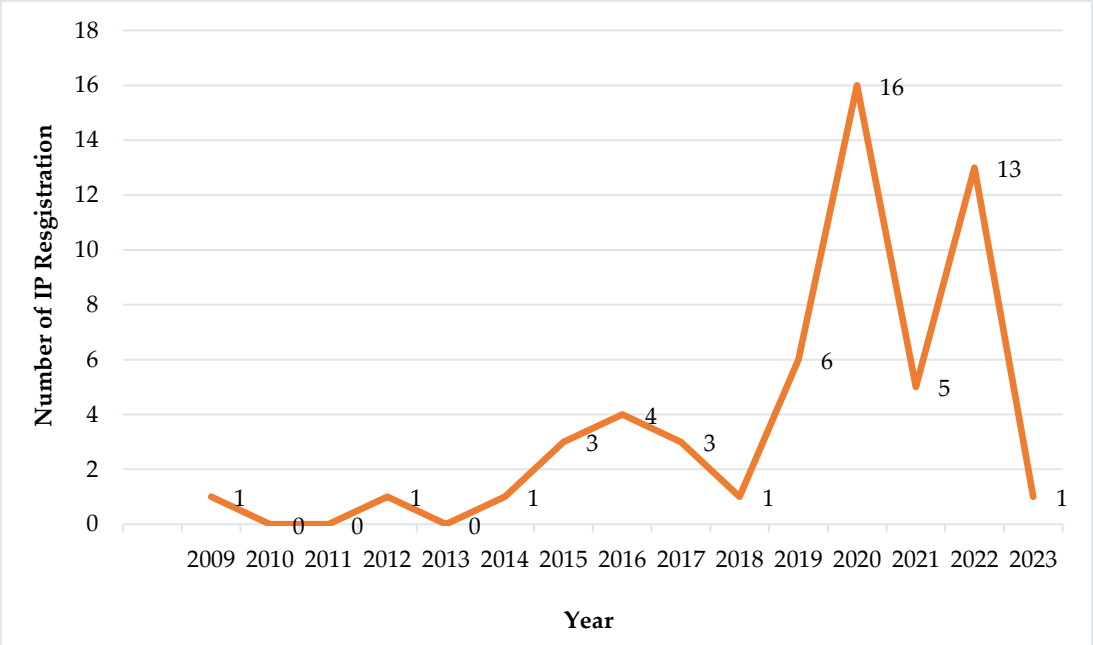

Figure 1. Trend in Intellectual Property registration by the Fisheries Research Institute, Department of Fisheries Malaysia

The first few technology disclosures at the FRI ended up being registered as patents or at least UI. With time, more thorough assessment was performed and other types of IP were considered. Until March 2024, a total of 55 R&D innovations have been registered as IPs in various categories such as patents, utility innovations, trademarks and copyrights (Figure 2). The most numerous registrations

fall under the copyright category (24). This may be due to the cheaper and simpler registration process for copyright registration compared to other IP categories. Coming in second, is patent (11), followed by UI (10), trademark (8) and industrial design. To date, a total of 40 IPs has been certified by MyIPO. In view that IP registration is a technical and tedious process, an IP agent was appointed to assist FRI in this matter.

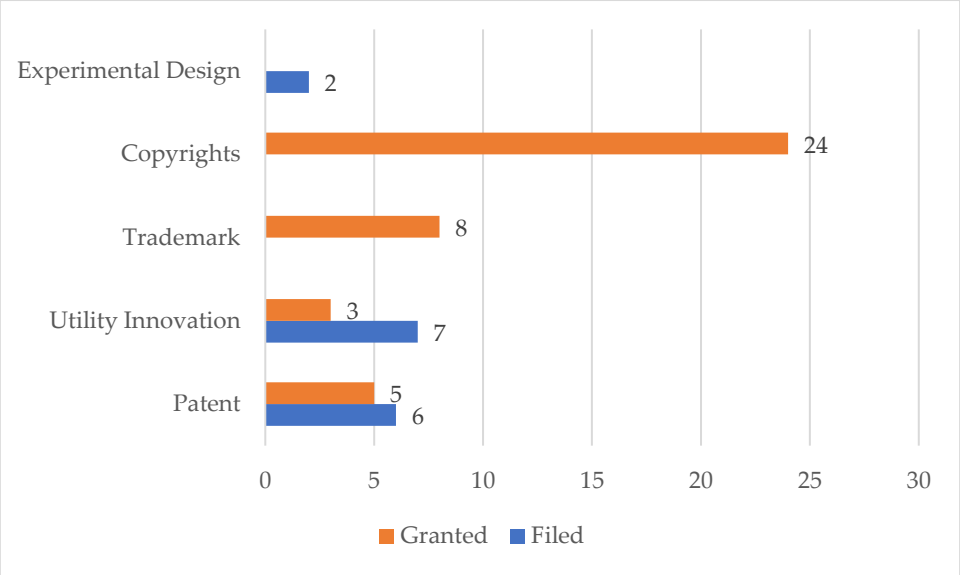

Figure 2. Categories and number of Intellectual Properties of the Fisheries Research Institute, Department of Fisheries Malaysia filed and granted

4. LIST OF IPS REGISTERED BY THE FRI

The IPs registered by the FRI are as listed below. The detailed explanation on these IPs can be accessed from the FRI website (https.//www.fri.dof.gov.my) and also in documented form (Wan Norhana, 2022).

4.1 Patent

A patent is a unit of exclusive rights favored to the inventor for a period of 20 years, in replacement for public declaration of the invention which has to be an idea that provides practical solution to a specific challenge in actual setting. It may be a product or process (Section 12 of Malaysian Patents Act 1983). According to Sections 11, 14-16 of the Malaysian Patents Act (1983), an invention is patentable only if it complies with three important criteria ie (i) novelty (new, not anticipated by any prior art, existing technology or knowledge). (ii) inventive steps (not obvious to a person having ordinary skill in the art and (iii) industrial applicability (can be made or used in any kind of industry).

Patent protection is among the most powerful types of IP protection. It is also the most expansive to file and the longest to be processed. The cost of filing a patent differs between IP agents, which includes several steps, i.e., patent search, drafting patent specifications, filing to MyIPO and Substantive Examination. On top of that, there is an annual renewal fee that increases over time. To cut the cost, the inventor or IP manager could also conduct his own patent search through Public Search Room, MyIPO or via internet access to IP Online on earlier Malaysian patent documents. The procedure for international filing is more intricate and expensive. Table 3 lists all the patents filed in Malaysia and granted from the year 2009 until 2023.

Procedure of patent registration can be prolonged due to delays in examination, opposition proceedings, and other administrative processes, which can extend the time frame for securing granted

rights. Managing IP registrations in multiple jurisdictions can be a complex task due to varying country requirements and timelines for IP protection. Coordinating protection worldwide can be both time-consuming and more costly.

Table 3. List of the patents own by the FRI (granted and filed in Malaysia)

Patent (Granted)	Certificate No.
1. Method for Semen Cryopreservation & In vitro Fertilization of Tor sp.	MY-154881-A
2. Arowana Sense	MY-172900-A
3. Composition containing *Piper betel* Extract for Prevention and Treatment of Bacterial Diseases in Aquatic Animals (SirehMAX)	MY-176273-A
4. Composition for Prawn Feed and Method of Preparing, Storing and Utilizing Thereof (PrimEZeat)	MY-182835-A
5. System with Jellyfish Underwater Diversion Mechanism	MY-189637-A
6. Oral Vaccine Against Streptococcosis of Fish (StrepToVax)	MY-191398-A
Patent (Filed)	**Filing No.**
1. Leech Remover	PI2017703059
2. Improvised Cockle Harvesting Apparatus (Ergo Cockles Harvester)	PI2019005586
3. A Shellfish Sorting Apparatus (Hydro Cockles Sorter)	PI2019005587
4. Apparatus for Coral Cultivation (MyDoF Coral Tripod)	PI2019007467
5. Photobioreactor for Cultivating Algae and Method for Managing Cultivation Media Thereof	PI2019007636
6. Streptokit	PI20230006263

4.2 Utility innovation (UI)

Compared to patent, UI is a "secondary" invention that does not need to undergo the stricter test of inventiveness. A Malaysian UI application undergoes substantive examination comparable to patent application, albeit with a lower registrability bar (Azlina and Oon 2018). Table 4 registers the UIs by FRI. The cost for filing UI is slightly cheaper than a patent.

Table 4. List of the utility innovations own by the FRI (granted and filed)

Utility Innovation (Granted)	Certificate No.
1. Fish Feed (EcoCIM)	MY-179558-A
2. Turtle Exclusion Device (S-TED)	MY-177152-A
3. A Water Sampling Device (TruBOWS)	MY-185880-A
Utility Innovation (Filed)	**Filing No.**
1. Apparatus for Supplying Seawater to Aquaculture Facility (SMARTWIN)	UI2018701940
2. Fish Feed Composition for Improving Maturing Phase of Fish or Aquatic Animals (NutriKarp Aquafeed)	UI2019006209
3. A Rotating Aquaculture Filter	UI2019006745
4. Aquatic Animal Feed Premix (GROWEZMIX)	UI2020001983
5. A Method for Expanding Feed Premixes to Produce Floating Pellets (M-SPEX)	UI2020004695
6. KRIPeK (Kit Rawatan Ikan Perut Kembung)	UI2021005765
7. An Immunogenic Composition for Prevention or Treatment of Viral Nervous Necrosis	UI2021006234

4.3 Trademark

Trademark pertains to a word, phrase, or design that signalizes a brand. The functions of trademarks include highlighting origin of a product, helping consumers to decide on goods and services effortlessly, representing the quality of products, playing a significant role in promoting and could be turned into a valuable asset by licensing or franchising. The cost of filing a trademark cost around RM 2000. Table 5 itemized the trademarks owned by FRI.

Table 5. List of the trademarks own by the FRI

Trademark	Certificate No.	
1. SirehMAX	2016060275, Class 5	
2. SitroPro	2016061898, Class 31 2016061867, Class 5	
3. DOFia Red	2017065862, Class 31	
4. WASTETRONICS	2021029907, Class 11	
5. SHOS-Spotter	2021029905, Class 11	
6. M-SPEX	2022026731, Class 7	
7. TruBoWS	2016053741 Class 9	
8. Biomedia	2022031903, Class 1	

4.4 Copyright

Generally, copyright applies to an original creative work that have been generated. A patent protects new inventions, processes, or scientific creations, a trademark protects brands, logos, and slogans, while a copyright safe guards authentic works of authorship. MyIPO provides copyright notification through the Copyright Voluntary Notification System. The cost of filing a copyright is the simplest and cheapest, which is only RM 200 per copyright. The register of FRI Copyrights is indicated in Table 6.

Table 6. List of copyrights produced by the FRI

Copyright (granted)	Certificate No.
1. Apparatus for Supplying Seawater to Aquaculture Facility (SMARTWIN)	CRLY00028247
2. CENTS-RAS	CRLY00028245

3. GARLEX	CRLY00028224
4. Leech Remover (Break and Protect)	CRLY00028231
5. Mobile System and Method for Providing Information on Oceanic Resources Location (FISHMIPS)	CRLY00028243
6. An Apparatus for Producing Feed Pellets (M-SPEX)	CRLY00028242
7. Spawning Stretcher	CRLY00028238
8. Sistem Asuhan Ikan Kelah	CRLY00028241
9. Sarawak Jellyfish Collecting Device (SAJECD)	CRLY00028244
10. Sarawak Acetes Retention Device (SARD)	CRLY00028246
11. Sperm Pump Collector	CRLY00028237
12. Spermate Kit	CRLY00028235
13. Tilapia Eggs Incubator (TEI)	CRLY00028233
14. V-Feeder Device	CRLY00028239
15. Coral Propagation using Rapid Setting Cement-Based Mortars as a Substrate	CRLY2021P04201
16. Standard *Operasi Piawai* (SOP) *Pengangkutan Udang Hidup Tanpa Air*	CRLY2022W05138
17. *Ternakan Udang Putih Penaeus vannamei Super Intensif*	CRLY2022W05139
18. SOP *Penghasilan Moina sp. Secara Intensif* dan *Higenik*	CRLY2022W05140
19. A Floating-Nursery Tank (*Tangki Asuhan Terapung* (TAT)	CRLY2022W05141
20. *Prosedur Kacukan Berjadual Ikan Tilapia* (KBT)	CRLY2022W05142
21. *Sistem Penetasan Ikan Kelah*	CRLY2022W05143
22. *Sistem Kanister Mudah Alih Kuda Laut* –Sea Horse Portable Canister System (Seaponies)	CRLY2022W05144
23. Clownfish Breeding Shelter (MyCLOWNBeeS)	CRLY2023W06205

4.5 Industrial design

According to MyIPO, an industrial design denotes features of shape, configuration, pattern or ornament applied to an article by any industrial process, which in the finished article, appeal to the eye and are judged by the eyes. The holder of a registered design has the prerogative to make, import, sell or hire out any applicable article of the design. Table 7 highlights the industrial designs recently filed by, the FRI in the year 2022, which are on the design of smart water quality detection and control systems in fish ponds and tanks.

Table 7. List of industrial designs by the FRI

Industrial Design	Filing No.
Sistem Pintar Pengesanan Oksigen Terlarut dan Pengawalan Paddle Wheel *di dalam Kolam*	22-E1885-0101
Sistem Automasi dan IoT *untuk Pengesanan & Kawalan Kualiti Air di dalam Tangki*	22-E1942-0101

5. IP REGISTRATION PROCESS

In gist, the IP registration process at the FRI begins with the disclosure of invention/technology by the researcher to the Technical Committee Meeting for Intellectual Property Registration and Commercialization (*Mesyuarat Jawatankuasa Teknikal Pendaftaran Harta Intelek dan Pengkomersialan*) (JTPHIP) chaired by the Senior Director of the Fisheries Research Institute which is held annually. The

JTPHIP is comprised of the directors of DOF division's, legal advisor or their representatives. The JTPHIP will come out with the proposed list of new potential IP and its category. This list will be conveyed to the top management for endorsement. The whole process of IP registration is illustrated in Figure 3. IPs filed by FRI are fully owned by the Department of Fisheries Malaysia and the Government of Malaysia in general. The names of the researchers involved in the development of the IP will be listed in the patent form as inventors.

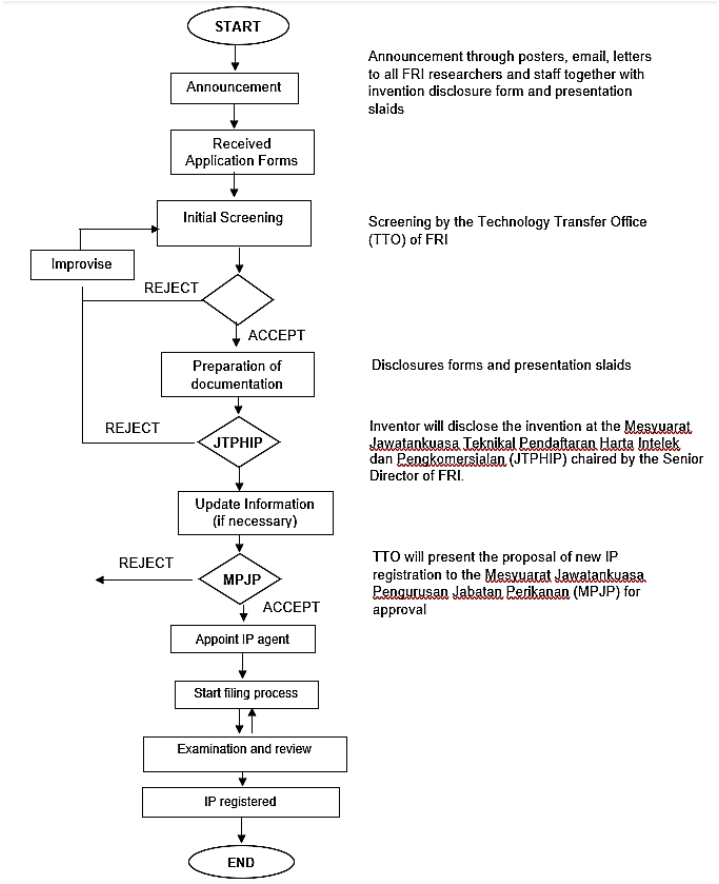

Figure 3. Flow chart of IP registration process at the Fisheries Research Institute, Department of Fisheries Malaysia

6. ISSUES AND CHALLENGES

Among the main issues are the financial implications of IP registration. The costs associated with registering and maintaining IP are substantial. Although it could be turned into an asset, the current exploitation rate of FRI IPs is still low. Besides that, one of the obstacles is lack of understanding of the methods of valuation of these IPs. Unlike physical property that already has an established market and valuation, the IP managers still have limited understanding of how to assess the true value of FRI IPs.

The unfamiliarity amongst the researchers and IP managers on IP systems has discouraged the capability in exploiting IP rights effectively. Inadequate IP management skills within government research institutes such as FRI have downgraded the ability to fully benefit from the IPs generated. This is also the case for the local Small and Medium Scale (SME) business (Sukarmijan & Sapong 2014).

8. CONCLUSION

From the information shared, we can see that Malaysia has quite extensive laws and policies for the effective administration and management of IP in Malaysia. However, the implementation of IP systems varies among the agencies. For FRI, in the past 15 years, provisions were made to generate and facilitate IP registration with the aim of getting them commercialized to help boost the fisheries industry in Malaysia. Until March 2024, a total of 55 R&D innovations have been registered as IPs in various categories such as patents (11), utility innovations (10), trademarks (8) and copyrights (24) and 40 of them have been granted. There are great deals remain to be done, particularly on establishing a comprehensive and specific internal IP strategy to help FRI in identifying and protecting the IPs, manage risks, promote IPs and, most importantly, generate and grow revenue.

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