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# **“MALAYSIAN STINGLESS BEE INDUSTRY: THE NEED FOR CERTIFICATION”**



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- a. Background of the Malaysian Stingless Bee industry – *development, potential and progress*
- b. Challenges
- c. Justification for a Stingless Bee Standards and Certification Scheme



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# PRODUCTION & INCOME POTENTIAL



- a. Production per month:
  - i. Stingless bee honey = 0.5 kg/colony.
  - ii. Stingless bee bread = 0.3 kg/colony.
- b. Market Price:
  - i. Average market price for stingless bee honey: RM250-RM300/kg.  
Can reach as high as RM500.00/kg (due to its limited production).
  - ii. Honey from honey bee : up to RM80.00 per kg
- c. **Example:** Kampung Jabi, Terengganu, the gross income of stingless bee farmers RM1,812.40/month (from honey sales alone).
  - i. Highest income recorded was RM5,600.00 (May)
  - ii. Lowest income recorded was RM700.00 (January)
- d. Contributed to poverty alleviation, especially among single mothers.

*Shamsul Bahri, UMT (2017)*



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# INDUSTRY POTENTIAL

- a. **100 colonies can produce an average of 80 kgs honey/month**, fetching a price of RM150 to RM200 per kg.

Mohammad Hussin, 2019.

- b. **In 2017: Malaysia has 700 registered** stingless bee farmers with **60,000 stingless bee logs**, contributing a total of **140,000 kilogram honey**, generating **RM17 millions**.

Ministry of Agriculture, 2017.

- c. In 2019 - **Malaysia has more than 4,000 stingless bee farmers**. In Pahang alone, there were 110 members registered with the Persatuan Usahawan Kelulut Pahang (PUKP) producing an estimated 1,400kg honey/month.

**Dr. Mohamad Firdaus, [www.UMPnews.com](http://www.UMPnews.com) accessed 31 May 2019.**

- d. "...the stingless bee has contributed as much as **RM4b** into the Malaysian forest industry through **pollination of timber species** (e.g. *Neobalanocarpus heimii* (*cengal*), *Shorea sp.* (*meranti*), and *Intsia bijuga* (*merbau*)... stingless bee-related products were worth **RM66 million** based on the price of stingless bee honey at RM120/kilogram"

Anthony Nogeh Gumbek (former Deputy Minister of Agriculture, Malaysia), 2017.



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# VALUE OF THE STINGLESS BEE INDUSTRY IN MALAYSIA

- a. Assumptions :
  - i. 55,000 colonies
  - ii. Production period = 10 months per year
  - iii. Honey = 0.5 kg/colony/month
  - iv. Bee bread = 0.2 kg/colony/month (30% of the stingless bee products).
  - v. Propolis = 0.3 kg/colony/month (30% from 55,000 colonies)
- b. Estimated honey production = of 27,500 kg/month X 10 months = 275,000 kg at RM200/kg= **RM41.25 millions/year.**
- c. Estimated bee bread 6,500 kg, i.e. With 3,300 kg/month of bee bread = 33,000 kg/10 months at RM90/kg = **RM2.97 millions/year.**
- d. Estimated propolis = 4,950 kg propolis/month = 49,500 kg X RM40/kg = **RM1.98 millions/year**

**RM41.25 millions + RM2.97 millions + RM1.98 millions = RM46.2 millions / year**

Zakbah Mian, Agriculture Department of Malaysia. Undated.



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# PRIME MOVERS - AGENCIES

- a. **MOA** (eg. MARDI, FAMA)
- b. **The Ministry of Rural and Regional Development** (RISDA, FELCRA, JAKOA, KEJORA and KETENGAH).
- c. The Ministry of Science, Technology and Innovation, **MOSTI** (SIRIM, Malaysia Genome Institute, and Malaysian Nuclear Agency).
- d. The **Ministry of Higher Education** (eg. USM, UMT, UMK, UiTM, UPM, UKM, UTM and UTHM – R&D, documentation, training).
- e. The **Ministry of Domestic Trade and Consumer Affairs** (Maktab Koperasi Malaysia (MKM), and the ministry's enforcement departments).
- f. The **Ministry of Health** (Food Security and Quality - Food Act, 1993 and Food Regulations, 1985).
- g. The **Ministry of Water, Land and Natural Resources** (Forestry Department).
  - **1988** - set up of **National Apiary Centre** in the Parit Botak Agriculture Centre, Batu Pahat, Johor to implement various activities on commercial bee farming.
  - **2015** – Set up of **Stingless Bee Repository**, Sekayu Agriculture Park, Terengganu (has 21 Indo-Malaysian species, according to 2016 data).
  - **Commercial entrepreneurs** (individuals 80%, companies 18%, and cooperatives 2%)



\*MARDI has its own stingless bee products



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## PRIME MOVERS – THE ENTREPRENEURS

Some Examples:

- a. **Borneo Stingless Bee Sdn.Bhd.:** 30,000 hives, and exports honey to China.
  - b. **Soleha Advanced Farming (SAF)** , also known as Trigona Bee Enterprise (TBE), in Merbok, Kedah (more than 3,000 colonies).  
019- 525 3458 (Mohd Syafiq Syazwan Jafri)
  - c. **Nova Holistic Organic Trigona Farm (NHOTF)** in Segamat, Johor (Also a centre for training and education, collection, and sales of stingless bee equipment.
  - d. **Eddlyn Traditional Herbs** in Pokok Sena, Kedah.
  - e. **Syamille Agrofarm** in Kuala Kangsar (in an agro-tourism setting).
- Some government agencies, like Koperasi Pembangunan Desa (KPD), FELCRA Berhad, RISDA, dan Malaysia Rubber Board, have programs to develop and encourage stingless bee entrepreneurship among its members and help to alleviate poverty, especially single mothers.



**Stingless Bee Repository Taman Pertanian Sekayu**



**USM - R&D, Training**



**RISDA**



**FELCRA**



**Syamilla – Agrotourism and products**





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# EXPORT POTENTIAL– *MALAYSIA BOLEH!*

Example:

- a. **Bayu Gagah Marketing (M) Sdn. Bhd.**  
(Bayu Gagah), Kulim, Kedah.
- b. **Has fulfilled 443 Japanese food criteria & standards.**
- c. Introduced to Hokkaido in September 2018.
- d. Initially **to be marketed in Tokyo dan Osaka.**
- e. To supply: **500 kilogram honey/month.**
- f. Target sales (**first 12 months = RM1.4 million**).



Messrs Ahmad Izlan,  
Hisham Yusof (CEO), Yohei  
and Mohd. Taqjudin – MOU  
signing, Tokyo Big Sight.



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# EXPORT POTENTIAL – BORNEO STINGLESS BEE SDN BHD

- a. Well established, with **30,000 colonies**.
- b. More than **15 years** in stingless bee farming.
- c. Domestic and **export markets (China)**.
- d. A **processing facility** in Kota Kinabalu.
- e. **Brand – ‘Madulut’**
- f. A monthly production capacity of **15 tonnes** of *kelulut* honey.
- g. 2017 - collected 13 tonnes of *kelulut* honey from Sarawak farmers. Future plans include processing bee pollen and propolis.



**Borneo Stingless Bee Sdn Bhd**  
11-0, Ground Floor, Lok Kawi Point,  
Lok Kawi, 89600 Papar, Sabah, Malaysia.  
+6088-758988, +6088-758588  
[enquiry@borneostinglessbee.com](mailto:enquiry@borneostinglessbee.com)

*METRO NEWS, Wednesday, 23 May 2018, by Geryl Ogilvy*



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# STINGLESS BEE HUSBANDRY IN MALAYSIA : TECHNOLOGY AND INNOVATION

- a. **Topping** - suitable in the warm tropics, but **destructive** to forest trees.
- b. In Sabah - some farmers lure the bees from their original hive in trees into hives improvised from **bamboo stems**. This technique is borrowed from Brazil.
- c. In Perak, some farmers use ***labu sayong*** (gourd-shaped earthen jars) in place of wooden hives.





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## TECHNOLOGY AND INNOVATIONS IN MALAYSIA

- a. Since 2005, **MARDI has pioneered** the rearing of various species of stingless bees for conservation, research, and education - production of honey, propolis and bee pollen. **Durian plots in MARDI that have stingless bee colonies - often able to produce fruits during off seasons.**
- b. **In 2015, USM Health Campus Kubang Kerian – Dr. Mohd. Zulkifli Mustafa created the cooler MUSTAFA Hive (patented) – Meliponiculture Using a Split-able Throne within Air-jacketed palace For Amplification Hive) to produce cleaner stingless bee honey in less time due to its unique, stingless bee friendly design. *This totally discard the topping method.* When combined with **Hilda System (Honey Interlinked Dehydrator and Dispenser Apparatus)**, this method gets rid of a large amount of moisture in the honey and reduces its acidity, thus fetching higher market price.**
- c. In 2017 - SIRIM Tech Venture Sdn. Bhd. (STV) under SIRIM Fraunhofer program introduced the Stingless Bee Integrated Information System (KIIS) - helped stingless bee farmers to enhance their management capability to produce honey, thus increasing their income.



# TRIGOTECH HIVE 4.0

Innovation of Meliponine Sustainability



SAMBUNGAN BERTANGGAM



KOTAK INDUK 2 LAPIS



KAYU KESUKAAN KELULUT & BEBAS KIMIA



REKABENTUK MENARIK & SERAGAM



KOTAK INDUK TERTUTUP



SAMBUNGAN ANTI SERANGGA

**MESRA**  
KELULUT • PENTERNAK • ALAM



CORONG MASUK ANTI KUMBANG



RAWATAN HABA PANAS



KOTAK MADU FLEKSIBEL



KAYU TANPA SAMBUNGAN



KOTAK MADU MUDAH PANTAU



KOTAK MADU ANTI JATUH



LAPISAN PVC LUTCAHAYA



DIREKA UNTUK PECAH KOLONI

JOM LAH...



Jadilah Orang PERTAMA 'LIKE' & 'FOLLOW'

RAJA KELULUT MALAYSIA

014 545 6676

rajakelulut.blogspot.com

By :TrigoTECH Bee Farm - *Raja Kelulut Malaysia*



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# MODULAR STINGLESS BEE HIVE (SARANG KELULUT MODULAR, SKM)

- a. By The Engineering Unit at the Agriculture Institute, Serdang, Selangor in 2017.
- b. Mobile, standard wooden boxes, convenient for **colony multiplication**.
- c. Can be modified, opened up, set up very easily.

## 4 modular hives:

- i. **For baiting** (placing the hive nearby where stingless bees live or fly to bait or lure the bees to move into the wooden hive)
  - ii. **For bridging** (placing the hive next to a bee nest, wherever it is, to lure them into the new hive)
  - iii. **For colony splitting** (to lure bees from a damaged log, or box, or hive)
  - iv. **For duplicating** (used when a colony in a hive is matured and need to expand) respectively.
- a. **An excellent alternative to the conventional methods of physically transferring colonies into new hives which cause the colony to become weak, reduce the success rate to 25%, are time consuming, is labour intensive and need expertise. PUT AN END TO TOPPING METHOD?**





# TECHNOLOGY AND INNOVATION IN MALAYSIA

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- a. 2017 NanoMalaysia Berhad (NanoMalaysia) - An agency under MOSTI – introduced **antimicrobe nanocoating** to fight against bee hive fungal infestations (especially for those that use the topping method), reduce honey contamination, and increase productivity by 20%.

Mohamad Hussin, 2017.

- b. Honey harvesting methods - The conventional **manual syringe** suction method has been upgraded to a variety of ergonomically better, cleaner and more efficient techniques utilizing **rechargeable battery powered suction tools**.



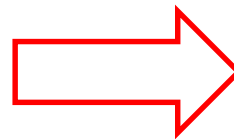


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## TECHNOLOGY AND INNOVATION IN MALAYSIA

2019 - Universiti Malaysia Pahang (UMP) - *Fakulti Kejuruteraan Mekanikal & Pembuatan* (FKMP) introduced the **Sleek Pump**.

[www.UMPnews.com](http://www.UMPnews.com) accessed 31 May 2019.



Advantages:

- i. Faster suction.
- ii. Battery up to 4 hours of continuous suction.
- iii. Honey collected with less bubbles.





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# MALAYSIAN STINGLESS BEE PRODUCTS

- a. In Malaysia, the raw products produced by stingless bees are **honey, bee bread, bee pollen, and propolis**, which are utilized to make:
- Foods
  - Cosmetics
  - Pharmaceutical and health products
- b. Most have **excellent packaging**. Sold in shops, kiosks, stalls, and bazaars, promoted and **marketed through the internet**.

**BUT...WHO CAN GUARANTEE THEIR QUALITY AND PURITY?**



**Pembekal & Penjual  
Madu Kelulut Asli  
Selangor, Kuala  
Lumpur & Seluruh  
Malaysia**



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# INDUSTRY CHALLENGES

- **Oversupply, and fake honey.**
- **Lack of standards and quality check.**
- **Lack of enforcement and regulation.**
- **Poor branding.**
- **Health and safety issues.**
- **Poor agriculture practices.**
- **No warranty for bee-keeping apparatus.**
- **Non-certified trainers.**
- **Lack of farm auditing and certification.**





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# THE MALAYSIAN STINGLESS BEE STANDARD

- a. **1983 Food Act and 1985 Food Regulations – Bee honey must not contain:**
  - i. More than 20% moisture.
  - ii. Not less than 60% reducing sugars.
- b. 2017 - MOSTI through SIRIM, MARDI, the Malaysian Genome Institute (MGI), the National Institute of Biotechnology Malaysia (NIBM) and NanoMalaysia developed the **Stingless Bee Honey Standard (Standard Madu Kelulut)**, i.e. **Malaysian Standard MS26792017 Good Agriculture Practices (GAP) – Bee (*tribus Apini*) and Stingless Bees (*tribus Meliponini*) Husbandry**, and **Malaysian Standard MS 26932017 Stingless bee honey – Specification**.
- c. The standards **determine the permissible content** of carbohydrates, protein, amino acids, vitamins, minerals and **antioxidants** in stingless bee honey.
- d. **Branding** of stingless bee honey is based on its **free antioxidants** (phenolic acid) content.
- e. These contents are the basis of standards development to **guarantee the purity and high quality** of stingless bee products – a sort of warranty for **Malaysia’s stingless bee honey as superfood**.



MS2679:2017



MS2693:2017



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# WHY STANDARDS ?

- a. To eradicate the widespread fakery of stingless bee honey in the market (**said to be 80%!**)
  - i. Harms the health of consumers.
  - ii. Badly hurt the reputation of genuine stingless bee honey entrepreneurs.
- b. To provide a **benchmark of standards** for the Ministry of Agriculture to enthrone the stingless bee honey as a superfood.
- c. To help set up an official and authoritative body as a standards reference for honey quality, monitor and regulate market price based on product quality.
- d. Guarantee that the quality of Malaysian stingless bee products can meet international standards and thus be able to penetrate international markets.
- e. Strengthen the Malaysian stingless bee product brands.



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# WHY STANDARDS ?

- a. Enculturate good agriculture practices (GAP) among stingless bee farmers and entrepreneurs in Malaysia.
- b. Inculcate the culture of producing food according to stringent safety standards among producers of stingless bee related products.
- c. Help conserve the environment through sustainable stingless bee farming systems.
- d. Provide official reference materials for Malaysian stingless bee education and research in standards.
- e. Develop and update an official online Malaysia Stingless Bee Registry and Information Centre – regardless of status. Promotion, marketing, knowledge sharing platform (multilingual).



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# THE BIG QUESTIONS ?

- What standards to use?
- Who will oversee the implementation of the standards?
- How to implement the standards?





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## IIPM's PROPOSALS ARE...

- a. **Set up** a specific body/agency named **Malaysia Stingless Bee Council (MSBC)**, to spearhead and oversee the implementation Malaysian Standard MS26792017 Good Agriculture Practices (GAP) – Bee (*tribus Apini*) and Stingless Bees (*tribus Meliponini*) Husbandry, and Malaysian Standard MS 26932017 Stingless bee honey – Specification.
- b. **The MSBC will enforce the Malaysia Sustainable Stingless Bee Certification (MSSBC) program** – i.e. the certification for the husbandry and processing of stingless bee products (**similar to HALAL by JAKIM, and MSPO by SIRIM**).
- c. The **MSSBC** certificate is to be awarded by SIRIM Berhad to all qualified applicants.



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## IIPM's PROPOSALS ARE...

- d. **Appoint a Main MSSBC Committee** to coordinate and provide advisories on:
  - i. The planning and
  - ii. The proper implementation of the MSSBC. The members are representatives from academia, government agencies, the stingless bee industry, scientists, and professionals.
- e. **Appoint a MSSBC Implementation Sub-Committee** to:
  - i. Draft the MSSBC **SOPs, criteria and indicators**
  - ii. Oversee MSSBC training, practical, workshops, evaluation and auditing of the Malaysian stingless bee industry.
- f. **Appoint auditors, trainers and consultants** to facilitate the training, practical, workshops, evaluation and auditing of the MSSBC program.





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## OBJECTIVE/FUNCTIONS OF MSBC

- a. Membership and registry.
- b. Coordination of research and development programs.
- c. Awareness programs.
- d. Entrepreneur training and development.
- e. Certification and guarantee of honey quality.
- f. Market networks.
- g. Stockpile management.
- h. Malaysia Sustainable Stingless Bee Certification (MSSBC).

### VISION

*“To be the centre of excellence and main reference for stingless bee industry standards and best practices in Malaysia”.*



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# MSSBC AND MSPO: SIMILARITIES

## MSPO

1. MPOCC (Under MPOB)
2. Structured
3. Plantations and Organized Smallholders, Independent Smallholders, PO Mills.
4. 7 Principles
5. 33 Criteria
6. 114 Indicators
7. Training and documentation
8. Auditing (internal and external)
9. Certification (by SIRIM)
10. Surveillance audit for re-certification

## MSSBC

1. MSSBC (Under MOA?)
2. Structured
3. Stingless Bee farms, product processing premises/facilities/factories
4. Principles (To be developed)
5. Criteria (To be developed)
6. Indicators (To be developed)
7. Training and documentation
8. Auditing (internal and external)
9. Certification (by SIRIM)
10. Surveillance audit for re-certification
11. Tagging/Rating of farms (by stars? criteria– based on spp., area, range & quality of products), etc.



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# WHO SHOULD BE CERTIFIED?

Domestic (and international?):

- a. Stingless bee farmers and entrepreneurs.
- b. Stingless bee-related products entrepreneurs (processing of stingless bee products).
- c. Stingless bee organizations and societies (as a group).
- d. Stingless bee hobbyists (must have own stingless bee farm/hives with colonies).
- e. Schools, colleges, universities and other training centres (must have stingless bee projects in their premises).
- f. Agencies and entities that have stingless bee projects (such as plantations, smallholders, FELCRA, Agriculture Departments, Malaysia Rubber Board).



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# CONCLUSION

- a. There has been **a significant decreasing trend in the bee population across the world.**
- b. Between 1996 and 1997 - **Malaysia lost big bee populations because of uncontrollable pest & diseases.**
- c. In 2016, thousands of farmed stingless bee colonies died out because of **the El Nino phenomenon.**
- d. Since 2007 – **bee colony collapsed disorder** - millions of bee colonies in the western hemisphere have been lost.

Datuk Dr. Mohamad Zabawi of MARDI, Serdang.

- e. **MSSBC is the WAY FORWARD** for the industry in Malaysia.
- f. Let us give our full support for stingless bee sustainability through Good Agriculture Practices and the SIRIM standards.
- g. ***GIVE (MSSBC) YOUR VOTE!***

**THANK YOU!**



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