



INTERNATIONAL STINGLESS BEES CONFERENCE AND WORKSHOP

18th – 20th July 2017

Permai Hotel, Kuala Terengganu



THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA

Meliponiculture as a viable income generating activity for local communities.

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Scope of discussion :-



1) Indo Malayan Stingless bee



2) Meliponiculture in Malaysia – current status



3) Empowering Women through Meliponiculture



5) What to do next

1. Meliponiculture is still a new venture in Malaysia.
2. The interest to commercially domesticate stingless bees in Malaysia started around 2012.
3. There are many knowledge gaps
4. Support by Malaysia government is very encouraging.
5. Meliponiculture is still in its infant stage, but has already gaining immense interest.



Apiculture (beekeeping) in rubber smallholding started in the 80's.



The Objectives of this presentation :

- ▶ To briefly present the current state of knowledge based on recent pilot projects.
- ▶ To propose several steps and initiatives to boost stingless bee industry in Malaysia

Stingless Bee @ kelulut

1. A primarily Tropical group of more than 500 species in the world,
2. Brazil has the most numbers of Stingless bee
3. In Malaysia - 78 species Indo-Malayan Stingless Bees (Rassmusen Catalogue)
4. Indo-Malayan stingless bee could also be found in Indonesia, Thailand, Singapore, Cambodia, Philipines, Vietnam, Laos, Myanmar, India and Taiwan.



Interesting facts !

The parts of the sting (the modified ovipositor) in stingless bee are reduced, modified and not functional.

Kelulut

- Stingless bees (Lebah tidak bersengat)
- Galo-galo (Riau-Minang)
- Lanceng (Jawa)
- Teuwel (Sunda)
- Emmu (Sulawesi)
- Beruang (Sabah)

Classification

- Tribe : Meliponini
- SubFamili : Meliponinae
- Famili : Apidae
- Order: : Hymenoptera

Indo-Malaya (Rasmussen, 2008) - 13 Genera

- 1. *Geniotrigona* Moure 1961 : 3 spesies
- 2. *Heterotrigona* Schwarz 1939 : 3 spesies
- 3. *Homotrigona* Moure 1961 : 4 spesies
- 4. *Lepidotrigona* Schwarz 1939 : 12 spesies
- 5. *Lisotrigona* Moure 1961 : 4 spesies
- 6. *Lophotrigona* Moure 1961 : 1 spesies
- 7. *Odontotrigona* Moure 1961 : 1 spesies
- 8. *Pariotrigona* Moure 1961 : 2 spesies
- 9. *Platytrigona* Moure 1961 a : 6 spesies
- 10. *Sundatrigona* Inoue & Sakagami 1993 : 2 sp.
- 11. *Tetragonilla* Moure 1961 : 4 spesies
- 12. *Tetragonula* : 30 spesies
- 13. *Tetrigona* Moure 1961 : 5 spesies



Heterotrigona erythrogastra



Lepidotrigona ventralis



Lepidotrigona nitidiventris



 Hakipta Prof. Madya Dr. Shamsul Bahri Bin Abd. Razak | Universiti Malaysia Terengganu

Tetrigona peninsularis



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Tetragonula melina

The most common stingless bee domesticated :



Heterotrigona itama



Geniotrigona thoracica

Sundatrigona moorei resides in ant nest

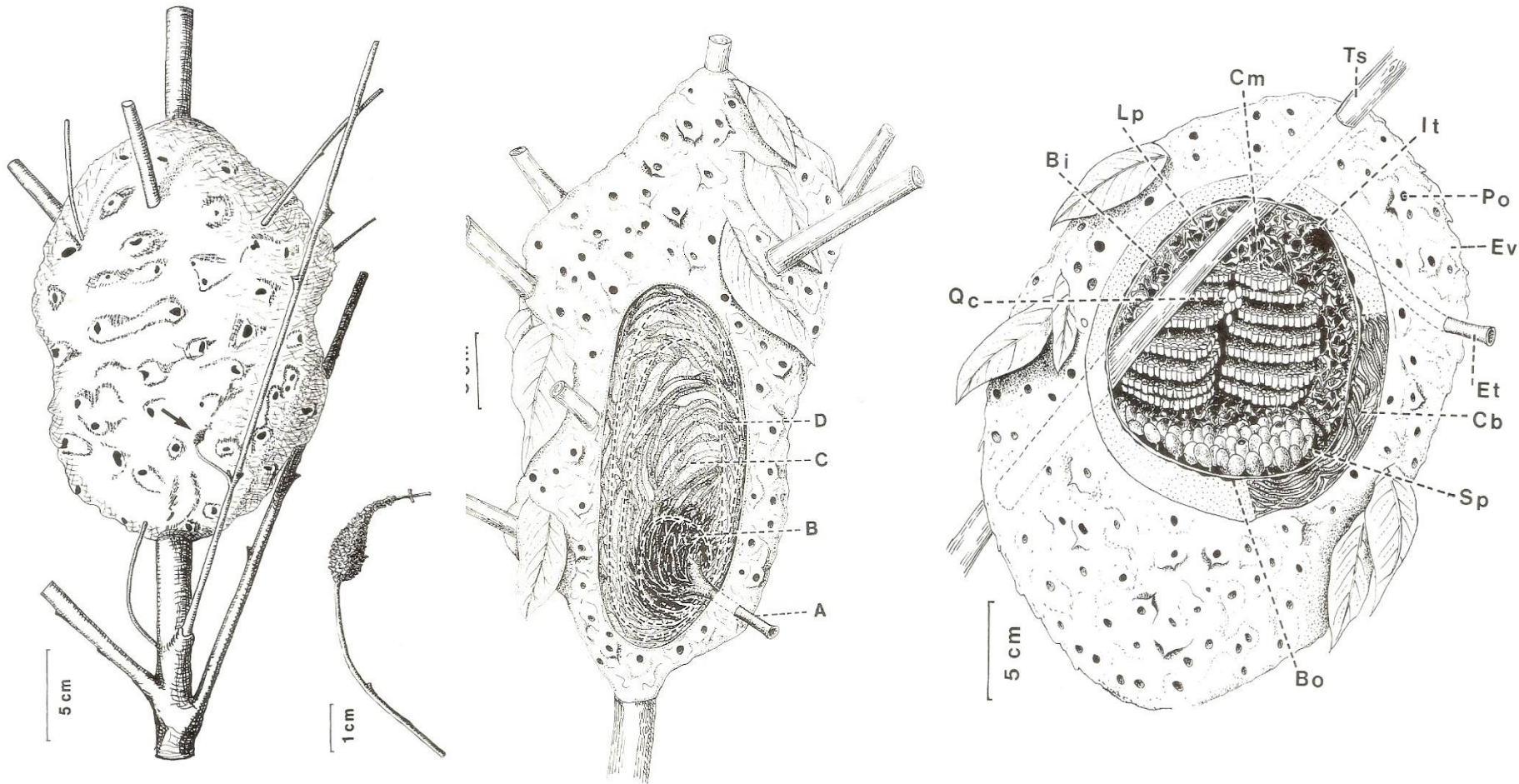




Photo source : Ryan Petrich, Indonesia

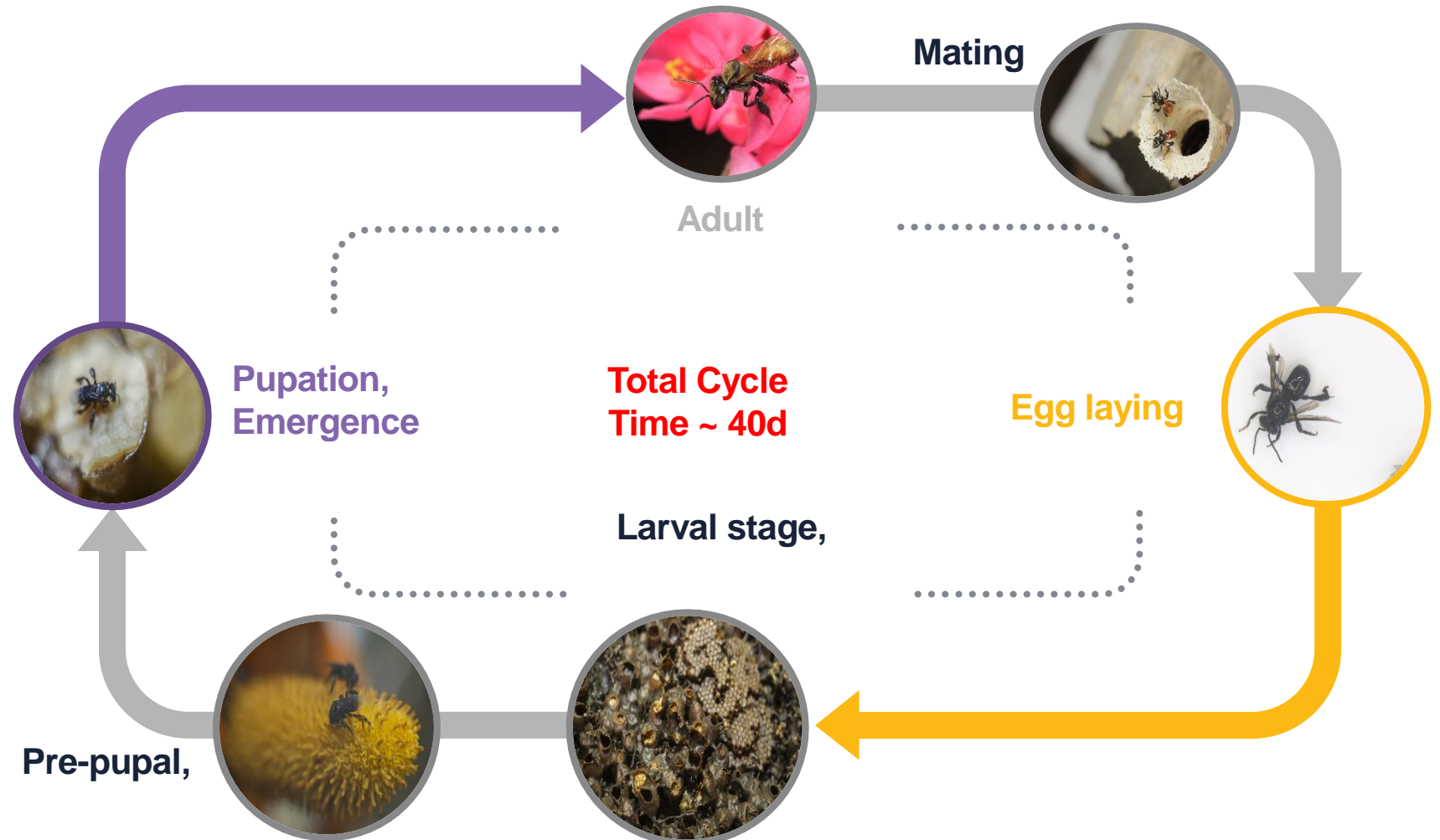


Why stingless bees?

- 1) They don't sting
- 2) Easy to manage
- 3) Honey and other products - higher in medicinal values/properties
- 4) Command higher price (than Apis honey)

The life cycle :

- *Heterotrigona itama*
– 40 days
- Affected by the environment and diet.



Meliponiculture products

1

HONEY

4

2

BEE BREAD

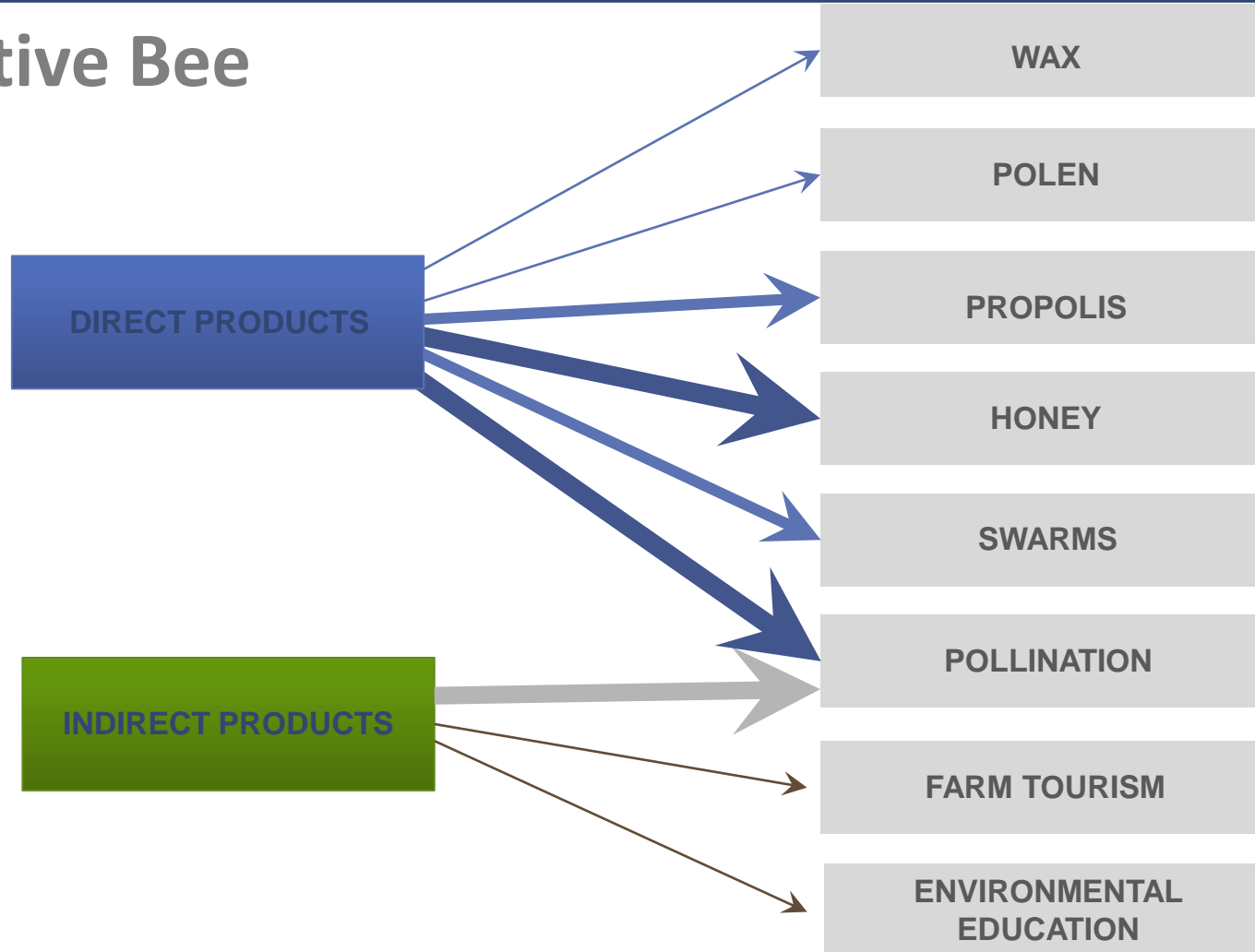
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PROPOLIS

DOWNSTREAM
PRODUCTS



Native Bee



Cosmoceutical products provide more revenue :

- Cosmeceutical products provide a better income and revenue to the smallholders.
- Unaffected by seasonal and nectar flow.
- The products command higher price.
- Continuous stream of income

Pilot projects : Meliponiculture in rubber smallholders

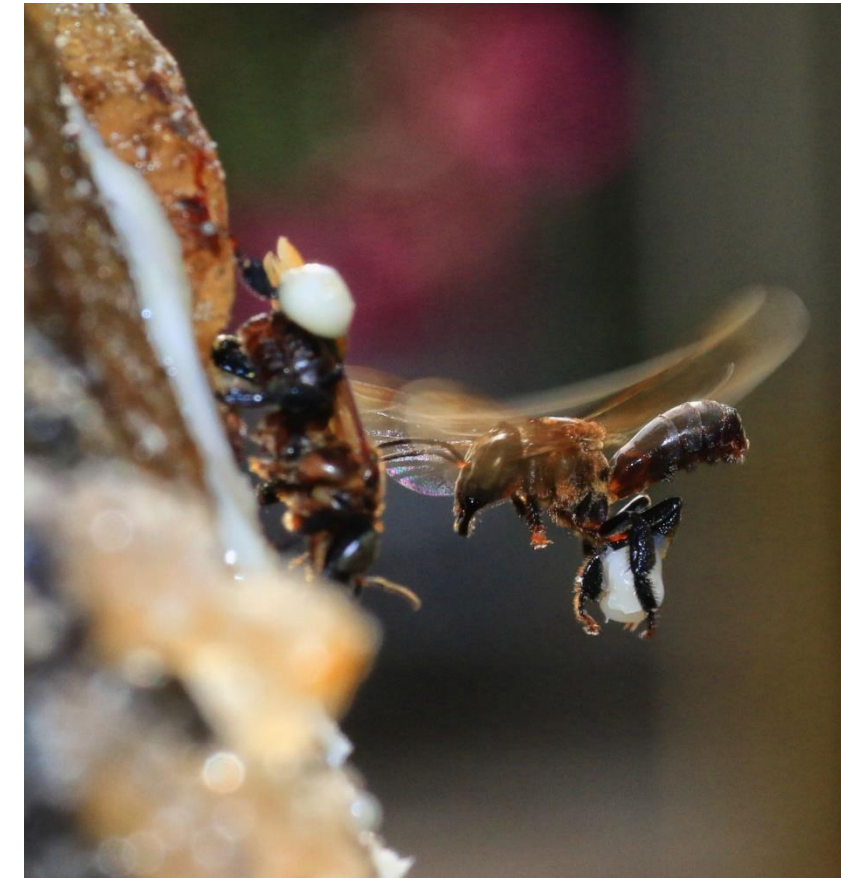
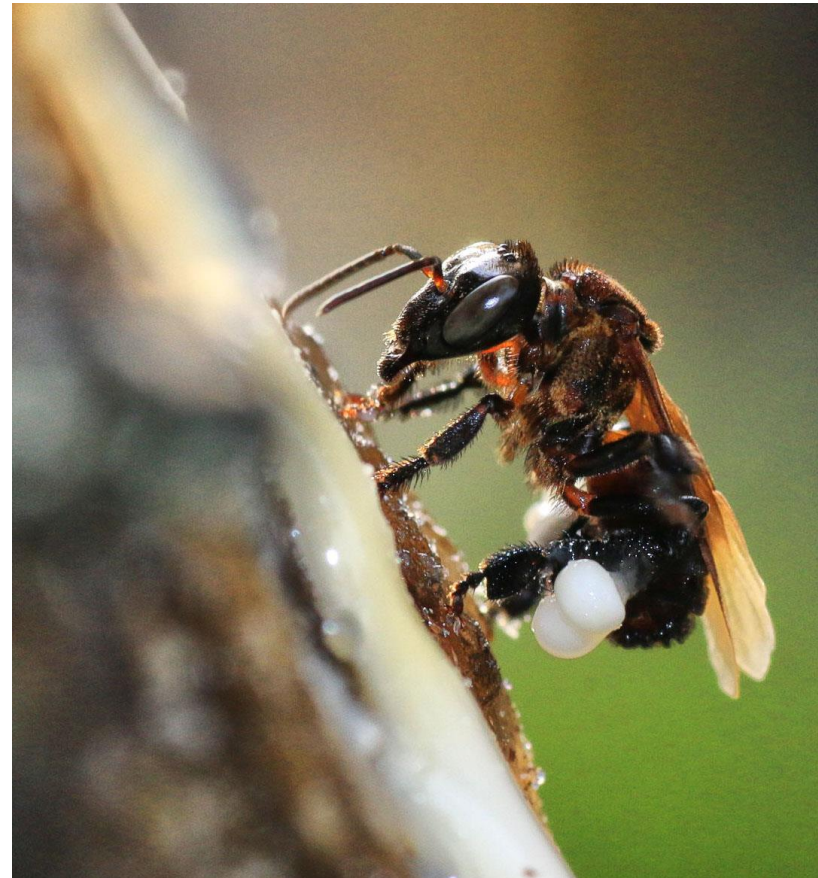


Note !

Experiments were carried out in tapped and untapped rubber smallholders.

Stingless bees collecting latex

- Latex (resinous materials) is the basic component in making propolis (cerumen, batumen) that constitute the internal structure of the nest.
- Propolis from different sources, geographical location, seasons give different chemical properties/profile.





Rubber smallholders involved actively in the meliponiculture/rubber scheme

Flavonoid content (proximate analysis)

- A very interesting finding :

Flavonoid content (antioxidant) in propolis of two stingless bee species i.e *Heterotrigona itama* and *Geniotrigona thoracica* is 200 and 80 time higher as compared to the other 20 species of stingless bees.

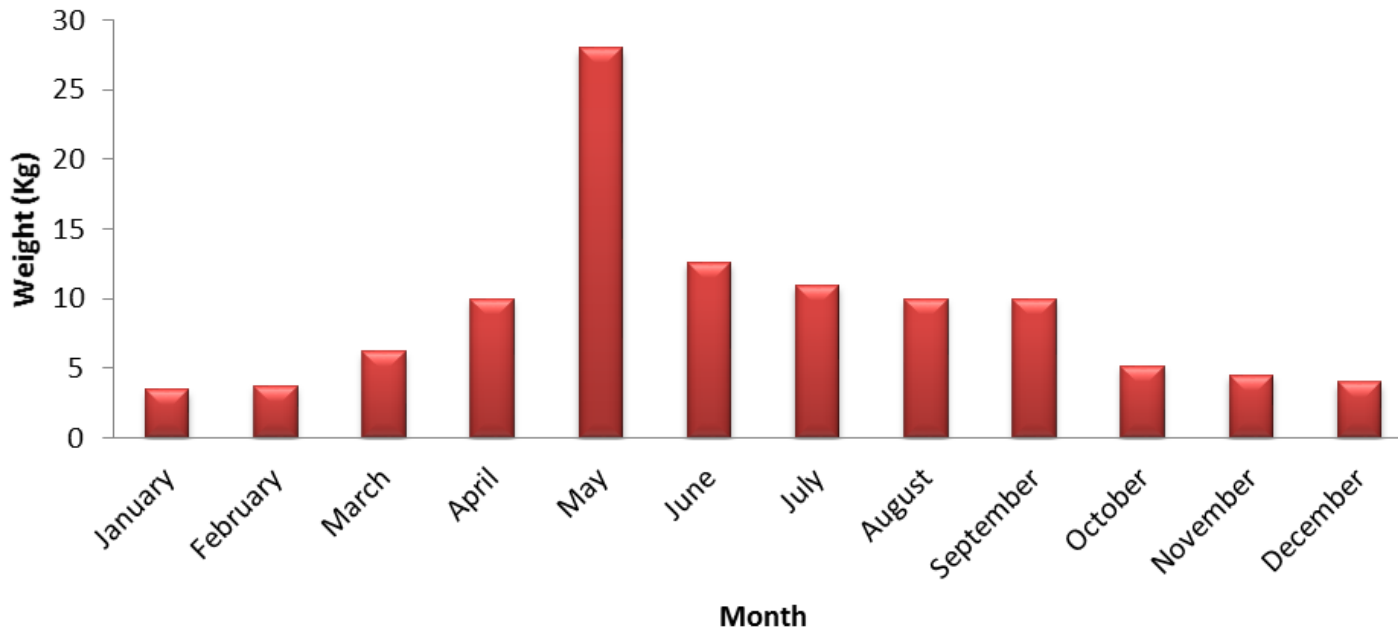




Note !

Average stingless bee honey retail price RM250-300/kg (57 – 70 USD/kg)

Mean of Honey Yield kg/month



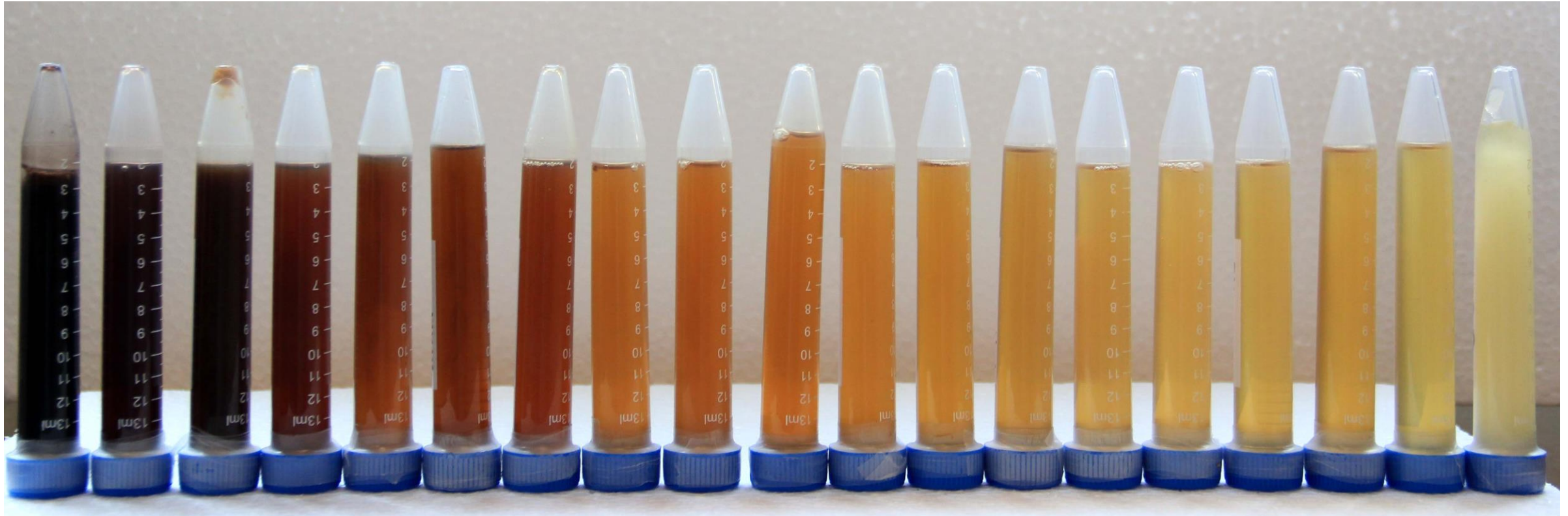
Month	Yield (Kg)	Value (RM)
January	3.5	700.00
February	3.75	750.00
March	6.2	1,240.00
April	10.0	2,000.00
May	28.0	5,600.00
June	12.6	2,520.00
July	11.0	2,200.00
August	10.0	2,000.00
September	10.0	2,000.00
October	5.2	1,040.00
November	4.5	900.00
December	4.0	800.00

Average stingless bee honey yield in Kg. Jabi, Terengganu (9kg/m/y – RM1812.40/417.00 usd)

- Income = RM 21,750.00/year
(5000 usd/year)
- (RM 1812.50/month/ 417 usd/m)



• The income is solely from stingless bee honey sold.



Facts !

Colors of honey are determined by the source of nectars and ash content (the minerals).



Empowering the single mothers in
Jabi, Terengganu.

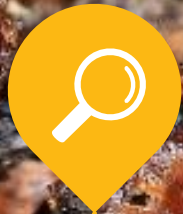


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A designer honey





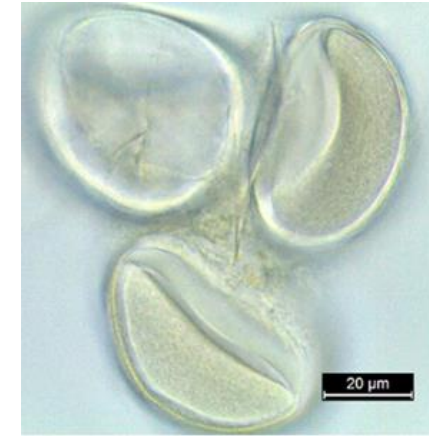
Black soldier fly larvae in stingless bee hive



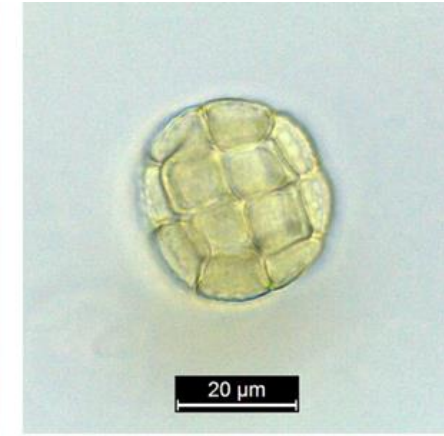
Symptoms of *Haptoncus luteolus* attack on stingless bee colony

Recommended key research areas

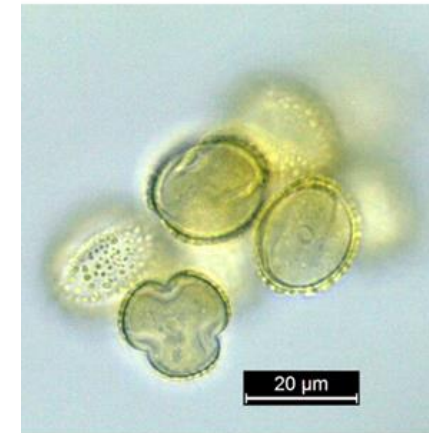
1. Financial viability
2. A comprehensive bee botany and phenology study (meliponiscape)
3. Palynology (study of pollen) and Melissopalynology (the study of pollen in honey)
4. Characteristics of stingless bee products
5. Value chain analysis



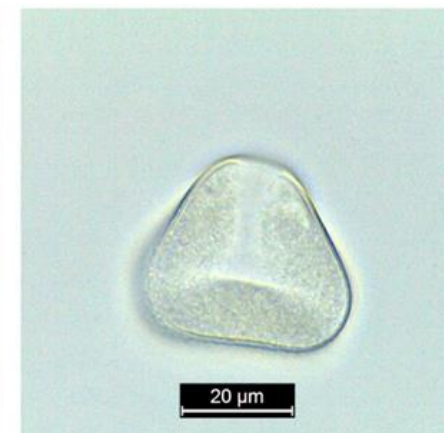
unknown pollen



Acacia pollen



unknown pollen



Oil palm pollen

Conclusions :

- Meliponiculture in Malaysia has many potentials
- Several issues relating to legislation and regulation, standard, environmental, Good Agriculture (kelulut) practices should be addressed and put into practice soon
- Other products from meliponiculture such as propolis/bee bread have good potential to be further exploited
-



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Universiti Malaysia Terengganu

Good to Great.



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Thank you very much

