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1.0 Product Background

- Massive amount of oil palm factory in Malaysia represent the amount biomass waste is in large quantity too. This lignocellulosic agricultural waste (AW) has a potential to be the alternative media that can replace rubber tree sawdust (RS) to become the growing media for the production of *Pleurotus Ostreatus*. [1]
- Nutrients in this biomass waste is not enough for the growth of mushroom. Therefore, eggshells (ES) will be added into the substrate as calcium source. [2]
- Demand of mushroom is high as Figure 1 shows the increasing quantity of mushroom that Malaysia import from other countries in order to overcome the high demand.

2.0 Advantages & Novelties

- Waste management
- Alternative economic source
- Green technology
- Zero waste
- Nutritious food source
- Low cost and abundant
- Portable set up
- Hygienic plantation

Commercial vs Our Invention

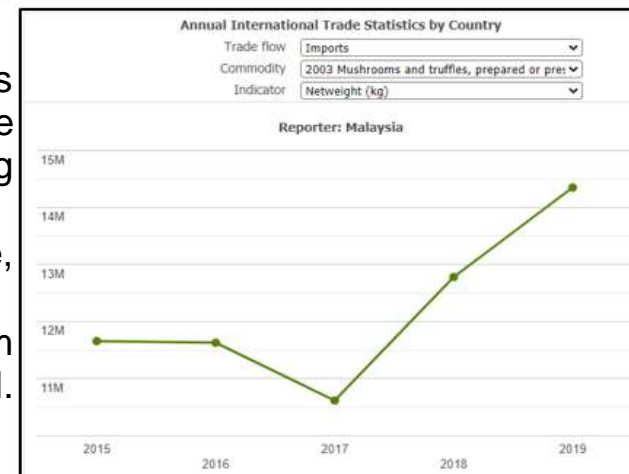
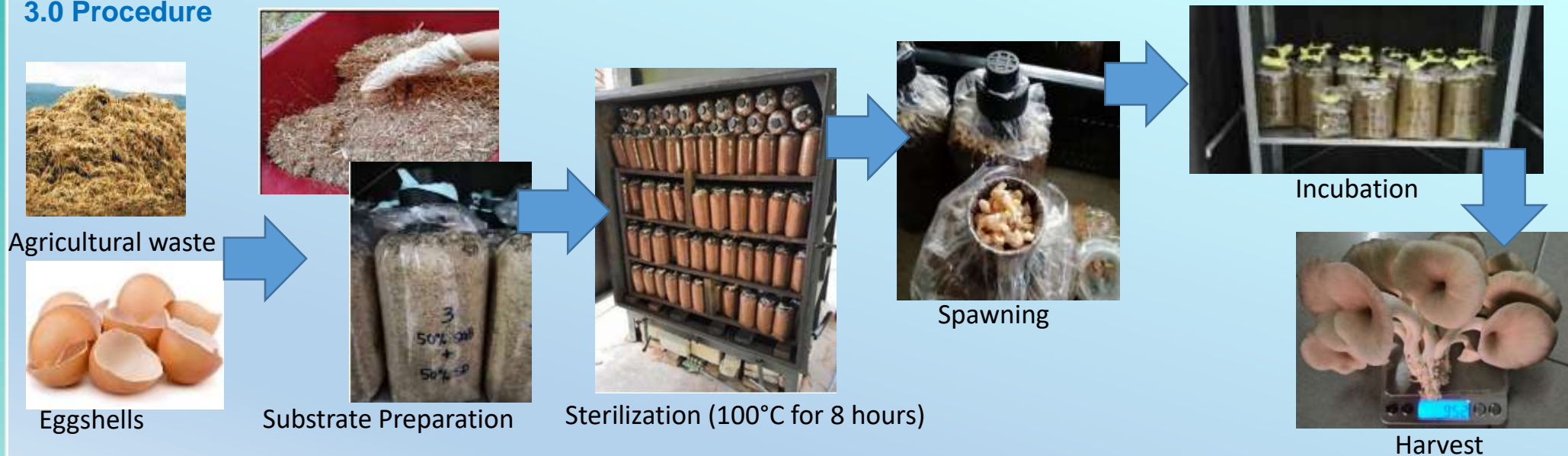


Figure 2. 1: Quantity of Mushroom Import into Malaysia [3]

3.0 Procedure



4.0 Product Nutrition

- Antitumor, antiviral, antithrombotic, antioxidants
- No cholesterol
- Abundant essential amino acids
- Nutrition parameter g/100g [4]
- Moisture (%) 88.75 ± 0.02
- Protein (%) 25.91 ± 1.28
- Fibre (%) 10.41 ± 1.84
- Fat (%) 2.18 ± 0.21
- Carbohydrate (%) 42.14 ± 3.45
- Ash (%) 10.91 ± 1.22

5.0 Economic Analysis

Condition	Commercial	Alternative
Substrate	RS, Calcium Carbonate	AW, RS, ES
Composition	100% RS	25% AW + 75% RS
Production cost (RM/bag)	1.50	1.00
Yield (g/bag)	246.232	251.085
Profit Margin (%)	96.65	97.25

8.0 Achievement/Award

- GOLD CITREX, 2020

6.0 Marketability

- Supermarket
- Restaurant
- Fresh Market
- Food Co-ops
- Grocery Stores
- Mushroom Product Company

9.0 Collaboration/ Grant

- RDU170138 (FRGS)
- RDU1703168 (UMP)
- RDU1903152



7.0 Conclusion

The invention of mushroom substrate from agriculture waste has huge potential to apply for alternative economic source, practical, significantly improves waste management, food production sustainability and potentially generates income.

11.0 References

- [1] Tsegaye, Z., & Tefera, G. (2017). Cultivation of Oyster Mushroom (*Pleurotusostreatus* Kumm , 1871) using Agro-Industrial Residues, 1.
- [2] Ogidi et al. (2019). Calcium Bioaccumulation by *Pleurotus ostreatus* and *Lentinus squarrosulus* Cultivated on Palm Tree Wastes Supplemented with Calcium-Rich Animal Wastes or Calcium Salts
- [3] Trend Economy: Annual International Trade Statistics, 2020
- [4] Tolera and Abera, (2017), Nutritional quality of Oyster Mushroom (*Pleurotus Ostreatus*) as affected by osmotic pretreatments and drying methods, *Food Science & Nutrition*, 5:989–996.

10.0 Publication

Fathie Ahmad Zakil, Mohd Shafiq Mohd Sueb and Ruzinah Isha (2019). Growth and Yield Performance of *Pleurotus ostreatus* on Various Agro-Industrial Wastes in Malaysia. International Conference on Biosciences and Medical Engineering (ICBME 2019) Noorhalieza Ali, Amal Nafissa Mohd Tabi, **Fathie Ahmad Zakil**, Wan Nur Fauzan Mohd Fauzai and Onn Hassan (2013). Yield Performance and Biological Efficiency of Empty Fruit Bunch (EFB) and Palm Pressed Fibre (PPF) as Substrates for the Cultivation of *Pleurotus Ostreatus*, *Jurnal Teknologi*, 64:1 (2013) 93-99