UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

MATHEMATICAL MODELS OF STINGLESS BEE POPULATIONS

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IN THE NAME OF ALLAH, THE MOST GRACIOUS, THE MOST MERCIFUL

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ABSTRACT

The purpose of this research is to design a model that is used for calculating the population of stingless bees. This research also purposed to help bee farmers in order to estimate the population of stingless bees. The devise was tested upon stingless bees habitat and being compared with the sting bees habitat using the mathematical model.he parameter used for this research are the maximum laying rate of the queen (L), reaction of brood mortality (w), the most extreme rate in which hive bees will ended up foragers (α), social inhibition (σ), and the worker are requited to the forager class from the hive bees class (m). The comparison between the amount of population between sting bees and stingless bees habitat was investigated in this study.

1 INTRODUCTION

The researchers have classified bees into two groups, which is sting bee and stingless bee. Stingless bees (Trigona spp) are very friendly to human. Stingless bees get a highly demand due to the lower maintenance cost, no sting and easy to handle.

The stingless bees live longer than the other bee. Although often simply called 'native bees', the common name of 'stingless bees' is preferred because it distinguishes them from the other species. As the name suggests, their stings are vestigial and useless in defense. They are all about 3-8mm long which is smaller than commercial honeybee.

There are two type of hive for the domesticated stingless bee. Two type of hive; natural honey pot and artificial honeypot. Natural honeypots are made from propolis while artificial honey pots are made from Polyurethane (PU). Propolis is in black colour and not arranged well in the box. So, this is little bit difficult to harvest the honey from stingless bees. The artificial honeypot are arranged in the hive.

I choose the population of bee using mathematical method for my research as I want to calculate the population of stingless bees in artificial honeypot. Nowadays, it's difficult to find the stingless bee honey in the natural honeypot. Many of beekeepers and entrepreneur produce honey in the artificial honeypot. Most of them are doubtful about the production of stingless bee in order to collect amount the honey in artificial honeypots. This research is beneficial to beekeepers and entrepreneurs itself. I gained the information about this research by discussion with people, conference papers and other sources.