Increasing Propolis Production of Stingless Bee (Tetragonilla collina) for Promoting Species Conservation and Sustainable Utilization

Wongsaroj, Natchapon (School: Damrongratsongkroh School)
Hathakong, Witsanuchai (School: Damrongratsongkroh School)
Sakhun, Tanakon (School: Damrongratsongkroh School)

Tetragonilla collina is an underground burrow stingless bee. They build a long round nesting tube that enrich with propolis to protect barrier against external invaders or weathering threats. Propolis, a natural product of high economic value from stingless bees, has been used as an ingredient in pharmaceutical and daily life products. However, harvesting of the product (honey and propolis) from this type of bee which lives underground could destroy the nest, and result in declining of population and extinction risk. The objectives of this project were to study the effects of cover materials on activation of nesting tube construction for increasing the propolis production and also to investigate propolis properties. The entrance of stingless bees was covered with pots of different kinds of material (translucent plastic, opaque plastic and clay) and different size (pot height: 10, 20 and 30 cm; diameter of entrance hole 2, 3 and 4 cm). It was found that clay pot having 20 cm height and 3 cm entrance hole diameter was the most suitable cover material to save stingless bee species and give the highest amount of propolis (3.93 times higher than that from the natural nesting tube). The obtained propolis also had better quality in fungal inhibition, it showed 1.28 and 1.04 times higher Penicillium sp. inhibition activity than those from the natural tube and from Tetragonula pegdeni nest, respectively. This method enables sustainable utilization and conservation of the bee which help increase the community income.

Awards Won: