Colony Development of *Bombus terrestris* L. (Hymenoptera: Apidae) by Different Hibernation Period

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The objective of this study was to find out the appropriate period of over wintering for good colony production of bumblebee (*B. terrestris*) under control environmental condition for mass rearing.

The young mated queens for each treatment were allowed to hibernate in peat box for one week to develop fat bodies for hibernation. The queens were provided low temperature 4-5℃ with 80% R · H for 10, 12, 16 weeks. On the other hands, a group of 20 queen (without hibernation) were provided with temperature 27±2℃ and humidity 60±10%, for egg laying as a control. All queens were facilitated with fresh pollen and 50% sugar water in a transparent plastic box with mesh on upper side for ventilation. The data suggest that 12 weeks hibernated queens were the best, with 80% successful colony foundation as compared to a control (35%). The earlier one start oviposition in 16.6±14.7 day, with average 133.8±52.5, 121.0±68.9 and 74.1±69.2 number of workers, males and new queens respectively which are significantly higher than 10 weeks which produces lower number 66.3±0.5 of new queens while non-hibernated queens did not produce new queen.

For better colony development, flight activity period after hibernation has key role. The queens were allowed to develop ovaries for 1, 3, 7, 10 and 14 days for flight activity after hibernation. It is clear that the queens provided with 10 days for flight activity, started oviposition 26 days earlier than an average of 7, 3 and 1 days. That also effect its colony development with 124.6±52.2, 136.5±92.0 and 72.2±68.7 number of workers, males and new queens respectively, which have significantly higher population than 14 and 7 days with 120.0±64.9, 114.6±72.5, 41.3± 12.9 and 106.0±51.5, 167.5±74.1, 42.4±40.6 number of workers, males and new queens respectively.

This study suggest that lot of new queens and workers can be produced in mass rearing under 12 weeks hibernation with 10 days flight activity period.