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# Effect of CO2-treatment time on oviposition and colony development of the bumblebee, Bombus terrestris

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The effect of CO2-treatment time on interrupting diapause of B*ombus terrestris* was examined to provide a means for year-round rearing of the bumblebee. The experimental regimes of CO2-treatment time were defined as 11 days of adult emergence (A-11), the day of adult emergence (A-0), late pupal stage (LP), middle pupal stage (MP) and early pupal stage. In egg-laying characteristics, rate of ovipositon in 20 days and oviposition rate of LP, A-11and A-0 were over 76.0% and over 80.0%, respectively, but those of MP and EP were less than 61.1% and 75.0% respectively. At the same time, the days needed to first oviposition shortened to 9.8-10.5 days in A-0, LP and A-11, comparing to 13.7-16.1 days in MP and EP. The rate of colony foundation, progeny-queen produced and period of colony foundation of A-11, which were 41.2%, 32.4% and 61.3days, respectively, were the best results in among those at different CO2-treatment timeand weakened in order of LP, A-0, MP and EP. The number of worker produced was 109.0-110.5 in A-11, LP and A-11, comparing to 82.0-86.8 in MP and EP. And also, the number of progeny-queen produced of A-11, A-0 and LP was 36.1, 41.0 and 71.3, respectively, which corresponded to 1.5-3.1 fold of MP and EP. Above the results, the favorable time of CO2-treatment was determined to be 11 days of adult emergence and also, the day of adult emergence and late pupal stage showed a positive effect on the ovipostion and colony development in CO2-treatment time.