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ESTIMATING THE DEVELOPMENT RATE OF *Mythimna sequax* (FRANCLEMONT) (LEPIDOPTERA: NOCTUIDAE) USING NON-LINEAR MODELS

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Temperature is one of the most important abiotic factors influencing the biology and population dynamics of ectothermic animals. Studies on the influence of temperature on development rate of insect pests have received special attention because this information can be used to predict the occurrence of the different life stages of the pest under field conditions. In this context, this study aimed to estimate the development rate (1/development time) of *Mythimna sequax* (Franclemont), a pest of several economically important crops, using seven non-linear models. Data on the development time of the immature stages of *M. sequax* at the constant temperatures of 14, 18, 20, 22, 25, 26, 30 e 32 ±1 ºC were obtained from the literature and from experiments conducted under laboratory-controlled conditions. The best models for each development stage were selected using the Corrected Akaike Information Criterion. Although the performance of the models has varied according to the insect development stage, Lactin-2($D(T)= e^{[\rho T]} - e^{[\rho Tmax - [Tmax-T]/\Delta]} + \lambda$) and Briere-2 ($D(T)= aT[T-T_0][T_{max}-T]^{1/m}$) were the models that showed the best performance in most development stages, and therefore are recommended for *M. sequax*. The lower temperature threshold (T_0), upper temperature threshold (T_{max}) and optimum temperature (T_{opt}) estimated by the model Lactin-2 for the egg-adult life cycle were respectively 8.6, 32.0 and 29.8 ºC. For Briere-2, the estimated T_0, T_{max} and T_{opt} were respectively 6.6, 32.0 and 28.0 ºC. Our results shown that both models can be used to estimate the development rate of *M. sequax* aiming to predict the occurrence of its immature stages in the field and determine the best period for implementing control measures. Also, these models can be applied in studies involving the understanding of the effects of global warming on *M. sequax* number of generations.

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