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CENTRAL LIMIT THEOREM AND THE SHORT-TERM TEMPERATURE RESPONSE OF PLANT GROWTH

M. PIETRUSZKA, S. LEWICKA

University of Silesia, Katowice, Poland

In this study we deal with some new mathematical approach to the response of plant cell expansion to temperature. To do this we introduce a simple idea that the normal distribution, due to the Central Limit Theorem, can be used to gain insight into the temperature-dependent elongation growth. The numerical fittings for temperature affected growth are in a very good agreement with empirical data. It is also implied that this finding represents the improvement over previous mathematical attempts to curve-fit this growth-temperature relationship. We suggest, that an observation concerning a crossover effect occurring in temperature driven elongation together with CLT leads to the formulation of a hypothesis about the universal character of such a description, supposedly for many plant species and families. We conclude with the (empirically proven) statement that properly constructed equations of temperature affected growth, should include a specific term proportional to $\exp[-(T - T_0)^2]$ with T_0 corresponding to the temperature of the optimum growth.