1144-34-153 **Lale Asik*** (lale.asik@ttu.edu), Department of Mathematics and Statistics, Texas Tech University, Broadway and Boston, Lubbock, TX 79409-1042, and **Jackson Kulik** (jackson.kulik@ttu.edu), **K.R. Long** (krlong014@gmail.com) and **Angela Peace** (a.peace@ttu.edu). *Dynamics of a Stoichiometric Producer-Grazer System with Seasonal Effects on Light Level.*

Many population systems are subject to seasonally varying environments. As a result, many species exhibit seasonal changes in their life-history parameters. It is quite natural to try to understand how seasonal forcing affects population dynamics subject to stoichiometric constraints, such as nutrient/light availability and food quality. Here, we use a variation of a stoichiometric Lotka-Volterra type model, known as the LKE model, as a case study, focusing on seasonal variation in the producer's light-dependent carrying capacity. Positivity and boundedness of model solutions are studied, as well as numerical explorations and bifurcations analyses. In the absence of seasonal effects, the LKE model suggests that the dynamics are either stable equilibrium or limit cycles. However, through bifurcation analysis we observe that seasonal forcing can lead to complicated population dynamics, including periodic and quasi-periodic solutions.

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