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Recent discoveries in ecological stoichiometry have indicated that food quality in terms of the phosphorus:carbon (P:C) ratio affects consumers whether the imbalance involves insufficient or excess nutrients. This phenomenon is called the “stoichiometric knife-edge.” In this study, we develop and analyze two consumers feeding on one producer model, which captures this phenomenon. Criteria for local stability and instability of the non-negative equilibria are obtained. The co-existence of the three species is also discussed. Finally, computer simulations are performed to investigate the dynamics of the system. (Received September 09, 2019)