1125-37-1256 **Jean-Jacques Kengwoung-Keumo*** (jkengwou@cameron.edu), Department of Mathematical Sciences, Cameron University, Lawton, OK 73505. *Competition between a nonallelopathic phytoplankton and an allelopathic phytoplankton species under predation.*

We propose a model of two-species competition in the chemostat for a single growth-limiting, nonreproducing resource that extends that of Roy (2009). The model allows allelopathic effects of one toxin-producing species, both on itself (autotoxicity) and on its nontoxic competitor (phytotoxicity). We show that a stable coexistence equilibrium exists as long as (a) there are allelopathic effects and (b) the input nutrient concentration is above a critical value. The model is reconsidered under predation and instantaneous nutrient recycling. Each of the models is analyzed for boundedness, equilibria, stability, and uniform persistence (or permanence). Each model structure fits very well with some harmful algal bloom observations where the phytoplankton assemblage can be envisioned in two compartments, toxin producing and non-toxic. The Prymnesium Parvum literature, where the suppressing effects of allelochemicals are quite pronounced, is a classic example. This work advances knowledge in an area of research becoming ever more important, which is understanding the functioning of allelopathy in food webs. (Received September 15, 2016)