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**Xiaoli Wang** and **Junping Shi\*** (jxshix@wm.edu), Department of Mathematics, College of William and Mary, Williamsburg, VA 23187, and **Guohong Zhang**. *Bifurcation and pattern formation in diffusive Klausmeier model of water-plant interaction.*

A reaction-diffusion model describing water and plant interaction proposed by Klausmeier is studied. The existence of non-constant steady state solutions is shown through bifurcation methods, and the existence of large amplitude spatial patterned solutions is shown using associated shadow system. It is rigorously shown that non-homogeneous patterned grassland exists when the rain fall is at a lower level in which homogeneous grassland cannot survive. This is a joint work with Xiaoli Wang and Guohong Zhang. (Received January 09, 2019)