

Public Abstract

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Title:THREE ESSAYS ON THE IDIOSYNCRASIES OF A PERENNIAL CROP: THE CASE OF THE US ALMOND MARKET

The United States (US) is the dominant global producer and exporter of almonds, and its exports are sensitive to both the supply and demand in other countries. In the first essay a proposed framework that captures supply idiosyncrasies of perennial crops is developed to estimate the excess demand elasticity for US almonds. Global supply, demand and price transmission elasticities are estimated and excess demand elasticities computed with the mean export demand elasticity for US almonds found to be relatively inelastic.

Ecosystem Services (ESS) play a key role in providing necessary natural resource inputs into almond production in California. In the second essay, a framework incorporating an ecological and economic (eco-economic) approach is proposed. An explicit ecological variable representing water availability is incorporated into perennial producer supply response models with this eco-economic framework improving fit compared to traditional model specifications.

Almond production in California is not only dependent on quality water for irrigation but also commercial pollination services. Since 2005, commercial pollinator service fees for US almond producers had skyrocketed attributed to colony collapse disorder (CCD). In the third essay a model incorporating the influence of both CCD and water availability on Californian almond producer behavior is used to estimate producer welfare impacts of these two threatened ecosystem services. Simulation results indicate that the mixed impacts of drought and CCD from 2005/06 through 2015/16 had a net increase to US almond farmers' producer surplus.