

IMPORT DEMAND AND POTENTIAL FOR DOMESTIC PRODUCTION OF GUAR

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The Sustainable Bioeconomy for Arid Regions (SBAR) Center of Excellence was established in September 2017 with the support from USDA-NIFA Grant No. 2017-68005-26876. SBAR's research and outreach works to optimize and integrate the production of guayule (why-oo-lee) and guar to enable sustainable biofuels and other high-value product markets in the Southwest United States. Guar is a drought tolerant legume that is mainly produced in India and Pakistan. India is the primary supplier of guar and produces about 80 percent of total global production. The benefits of Guar to U.S. farmers as green manure, livestock feed, and selling value-added products such as guar gum. Due to its low water use and nitrate fixating qualities, guar can provide benefits to producer current crop rotations and potentially increase total farm profitability. The objective of this research is to analyze the import demand for guar and determine the market potential of producing guar in the southwestern United States. The research estimates an inverse demand function to estimate import demand for guar seed. The model estimates that the price of guar seed is a function of annual seed imports, the number of natural gas wells in the U.S., import, and export price ratio for natural gas, and a dummy variable that takes the value of 1 in peak price years and 0 otherwise. The research used annual data from the USDA on guar imports to the U.S. from 1989 to 2016 to estimate an average price. The model has an R square of 0.89 suggesting that the model has a good fit. This means that 89% of the variance in guar import price can be explained by the variance in one or more of the variables. The empirical results indicate that all estimated variables are statistically significant. There is a negative relationship between quantity imported and import price, which is consistent with the demand theory. One of the most important factors when determining the price of guar seed is the number of natural gas wells in the U.S. This means that an increase in the number of natural gas wells in the U.S. would greatly increase the price for guar. Guar's drought tolerance, low input requirements, and nitrogen fixation qualities make it an ideal crop to be incorporated into current crop rotations. As we look towards the future, producers in the southwest will need alternative crops that increase profits while decreasing water usage and total inputs. Guar fits well as a potential crop that producers could use to improve profits while decreasing water consumption. Also, the nitrogen fixation abilities of guar can decrease the variable costs of crops following in rotation. The future of domestic production of guar is highly dependent on trends in the oil industry, further domestic research, and domestic marketing of guar. Thus, through research and extension activities that will be performed by the SBAR team, farmers in Southwest United states will eventually be able to take advantage of this huge market presented by the high demand for guar gum.

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