

THREE ESSAYS ON THE ECONOMIC VALUE OF INNOVATION AND QUALITY WITHIN THE SOYBEAN SUPPLY CHAIN

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ABSTRACT

Innovations in the seed quality of soybean has enabled farmers to meet growing global food and energy demands—particularly on specific nutrient components such as protein and oil—and to mitigate the effects of several biotic and abiotic stresses facing soybean plants. However, the farmer’s ability to remain competitive and meet demand through innovation still requires further understanding of several areas, three of which are the focus of this study. This dissertation consists of three chapters, with each chapter containing an essay addressing a specific topic while following a general theme--which is analyzing the economic value of innovation and quality within the soybean supply chain. The first chapter looks at the evolution of soybean drought-tolerance to consider if the impact of innovation is evenly distributed geographically in three U.S. relative soybean maturity zones. In the second chapter, a two-stage hedonic model is presented to estimate marginal implicit values of two important soybean traits—protein and oil content—and analyze the demand and supply factors that affect these values. Finally, the third chapter considers a market share model using import quantity and unit-value data of four soybean exporters to the Philippines—U.S., Canada, China, and the rest of the world (ROW)— to determine whether the downward trend in the U.S. market share is due to inherent soybean quality differences or relative price changes.