

DEPARTMENT OF AGRICULTURAL & RESOURCE ECONOMICS SEMINAR SERIES

SUSTAINABLE CORN PRODUCTION IN THE PHILIPPINES

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SIKAP/STRIVE, Inc.

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During the last four decades, marked developments were made in terms of the provision of various corn seed technologies in the Philippines. The government, research institutions and the private sector served as competing and cooperating entities in providing the best package of seed technologies to farmers. However, in order to evaluate the relevance of these introduced technologies, it is important to examine the productivity and sustainability trends of the corn industry through time. Has there been improvement in corn productivity due to conventional plant breeding (e.g. hybridization) and biotechnology (e.g. genetic engineering)? Has there been improvement in resource use efficiency in terms of land use, fertilizer application, energy, labor and farm chemicals? These are some of the issues that this paper tried to evaluate.

The major objective of the study was to analyze corn productivity and resource use efficiency trends through time. More specifically, the paper: assessed the productivity and resource use efficiency of corn and corresponding determinants during the last four decades; evaluated the magnitude and sources of productivity and resource use efficiency in corn; and made policy recommendations based on the results.

The basic hypothesis raised by this paper was: Corn productivity and resource use efficiency improvements through time are driven by recent technology developments (e.g. hybridization and genetic engineering). To test this hypothesis, the paper proceeded with a trend analysis using secondary data. This was complemented by regression analysis of primary and secondary data sources.

There were five indicators of resource use efficiency included in this study. These indicators are land use efficiency, fertilizer use efficiency, human labor use efficiency, animal-machine labor use efficiency and farm chemicals use efficiency. To add robustness in the assessment of resource use efficiency of corn through time, three regression productivity models were estimated using econometric procedures. These models include two production functions for total corn and yellow using time series secondary data, and a yellow corn production function using pooled primary data.

Dr. Gonzales

is a senior policy researcher and an international consulting agricultural economist. He finished his B.S. Education, cum laude at St. Mary's University; his M.S. Economics, as a Senden scholar at the Asian Social Institute; and his Ph.D. in Agricultural Economics at the University of Tennessee under a Fulbright-Hays Scholarship.

He has written over 180 technical articles related to agricultural policy, feasibility studies, the economics of food and agriculture, and agribusiness development. His recent books include: *Breaking New Ground: The Prospects of Enhancing the Corn Sector's Global Competitiveness Through Biotechnology* (2000), *Food-Carrying and Income Generating Capacities of the Rice Sector* (2002), *Towards Food Security and Rice Self-Sufficiency: A Major Development Challenge for the Philippines in the New Millennium* (2003), *Technical and Allocative Efficiency of Philippine Rice Production* (2004), *Harnessing the Benefits of Biotechnology: The Case of Bt Corn in the Philippines* (2006), *Four Seasons of Commercialization: Monitoring and Evaluating the Socio-Economic Impact of Bt Corn in the Philippines* (2007); *Ex Ante Impact Assessment of 3-in-1 Rice* (2008) and *Modern Biotechnology and Agriculture: A History of the Commercialization of Biotech Maize in the Philippines* (2009). Four of these publications were awarded: "Best Book Award" by the National Academy of Science and Technology (NAST) in 2007, 2008 and 2009.

Dr. Gonzales was also a former Liaison Scientist for Asia and Research Fellow of the International Food Policy Research Institute (IFPRI) Washington D.C. and Agricultural Economist of the International Rice Research Institute (IRRI), Los Baños, Laguna. He coordinated rice and food policy researches for IFPRI and IRRI from 1980 to 1992. As senior agricultural policy consultant, he has worked with the Asian Development Bank; World Bank; the United Nations Food and Agriculture Organization (UN-FAO); United States Agency for International Development (USAID); Philippine Senate; the Department of Agriculture (DA); Philippine Rice Research Institute (PhilRice); the Department of Agrarian Reform (DAR); and the Department of Science and Technology (DOST), among others. Currently, he is a member of the Department of Science and Technology Biosafety Committee (DOST-BC); Senior Rice Policy Adviser of PhilRice; Senior Visiting Lecturer of the Center for Food and Agribusiness, University of Asia and the Pacific (UA&P), Affiliate Faculty and Visiting Lecturer of St. Mary's University, and Founding President and Chairman of the Board of Trustees of the Society Towards Reinforcing Inherent Viability for Enrichment (SIKAP/STRIVE, Inc.) – a non-stock, non-profit organization engaged in policy research, advocacy, and values education.