AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Crop Insurance in 2020

By Tom Zacharias, NCIS

At the 31st Congress of the International Association of Agricultural Production Insurers held in Athens Greece in September, I was asked to participate in a panel entitled "Risk Management Instruments for Agricultural Production in the Year 2020." The moderator of the panel was Dr. Kurt Weinberger of Osterreichische Hagel. Other panel participants included: Karl Murr, Munich Re; Maciej Krzysztofowicz, European Commission; and, Ignacio Machetti, Agroseguro.

When thinking about the U.S. crop insurance market and the program in the year 2020, it is perhaps useful to think about what our "world" will look like in 2020. Admittedly, one cannot predict this, but we can discuss the major trends we see today and sort them into two categories. What trends or factors will increase by the year 2020; and second, what will we have more of. You could also look at it conversely, what trends or factors will be decreasing, that is, what will we have less of? From this, one can draw some conclusions regarding the future of the agricultural production sector and the demand for crop insurance as a tool to manage risk in the sector.

Increasing Trends

What will we have more of in the year 2020?

1) Population growth - Barring any major global catastrophes or pandemics, we will surely observe increased population growth. The world population hit seven billion people on October 31st, and it is expected that we will easily exceed 8 billion in population by 2025. According to the United Nations, global population is likely to exceed 10 billion by 2100. This growth will put enormous pressure on our natural resource base and, of course, increase the demand for food and agricultural products.

2) Political Uncertainty and Government Fiscal Constraints - Although we hope for the best for our nation and the world we live in, it is difficult, at present, to envision any reduction in political uncertainty for the short to intermediate term. Arab Spring, economic and political tension in the European Union, the rise of the emerging economies, and the partisanship of U.S. politics all seem to point to increased political uncertainty. Between now and 2020, the U.S. alone will have held three presidential elections. This international political uncertainty coupled with the fiscal constraints faced by so many of the world's developed and developing economies, will ultimately impact agricultural policy in one form or another.

3) Climate and Weather Uncertainty – the U.S. Climate Change Science Program's recent report on the impacts of climate change on U.S. agriculture and natural resources indicates that the U.S. warmed and became wetter overall during the last century, but those changes varied across regions. The report concludes that climate change will continue to have significant effects on U.S. agriculture, water resources, land resources, and biodiversity in the 21st century as temperature extremes begin

exceeding thresholds that harm crop growth more frequently and precipitation and runoff patterns continue to change. No doubt, agricultural risk management will play a fundamental role in addressing the impacts of weather and climate uncertainty.

4) Demand from Emerging Economies - Between now and 2020, it is most likely that we will continue to observe steady economic growth in the so-called "emerging economies" namely, Brazil, China, and India. A recent issue of *The Economist* magazine on world economic conditions said that China could overtake the U.S. economy in the next decade. The emerging economies of Brazil, India, China and Russia will enjoy an agricultural boom over the next decade. Rising incomes and urbanization in developing countries will provide the main source of growth for world agricultural production, consumption and trade. As incomes rise, diets are expected to slowly diversify away from staple foods towards increased meats and processed foods that will favor livestock and dairy products.

5) Agricultural Technological Innovations - The history of agriculture is the history of innovation and improved productivity. The "induced innovation hypothesis," a macroeconomic hypothesis first proposed in 1932 by J.R. Hicks in his work *"The Theory of Wages,"* proposed that "a change in the relative prices of the factors of production is itself a spur to invention, and to invention of a particular kind—directed to economizing the use of a factor which has become relatively expensive." Because of resource constraints and the ever increasing world population, we will have to develop new technologies and continue to study crop genetics in order to improve yields and fight disease.

Decreasing Trends

What will we have less of in the year 2020?

1) Arable Land It is an old adage "...you cannot invent more land..." Not only can we not invent land, we may not be able to reclaim agricultural land that has been subject to either severe water or wind erosion, or the effects of urban sprawl.

2) Quantity and Quality Water - The 2011 United Nations Brief on world water quality indicates that declining water quality has become a global issue of concern as human population continues to grow, industrial and agricultural activities expand, and climate change threatens to cause major alterations to the hydrological cycle. According to the U.N., GDPs of developing countries can be altered by as much as five percent due to lack of and/or poor quality water.

The Crop Insurance Product

One question that remains is what the mix of business products will look like in the next decade, for example, the use of individual coverage versus area or index plans. Still in development at NCIS is an economic model to examine a farmer's optimal use of area and individual crop insurance when area and individual losses are positively, but imperfectly

correlated. If premium rates for both plans are actuarially fair, the farmer will purchase full individual insurance and no area insurance. If area insurance is free and individual insurance is offered at an actuarially fair rate, area insurance replaces a portion of individual insurance demand.

We must also increase coverage outside of that available for conventional field crops. The U.S. has high participation in the major growing areas, but lower participation among specialty crop producers for crops such as fruits and vegetables. A major challenge will be our ability to develop new crop insurance programs that provide effective coverage for farmers and at the same time provide the potential for underwriting gain for participating insurers.

In summary, crop insurance is becoming the primary vehicle through which agricultural productive capacity is maintained in the U.S. and internationally. It allows farmers to finance and manage their risks from year to year. U.S. farmer and political support has never been stronger for crop insurance. Most farm groups support some form of crop insurance in their short term U.S. Deficit Reduction proposals and longer term Farm Bill proposals. With respect to agricultural policy at the national level, the crop insurance program through its application of actuarial principles enables policy makers and participating insurers to plan and budget for the outlays associated with managing agricultural yield and price risk.

The specific nature of U.S. crop insurance in 2020 is impossible to predict, but the trends and factors discussed here strongly suggest that crop insurance and the use of risk management tools will have an increasing role in production agriculture and agricultural policy. There will be short run challenges, no doubt, but our industry has a long and successful history of adapting to change, and meeting the demands placed upon it.