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Linking Science and Education To Enhance Understanding of Risk

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Today we have embarked on an attempt to "**Survey Agriculture's New Frontiers**" at Outlook '98. We are looking at issues involving food safety and marketing, as well as the impacts of biotechnology, infrastructure changes, international trade, and the economics and finance of small farms and rural businesses. All of these issues have one thing in common for American agriculture. They are all in a state of change and that change represents some level of RISK to the economic well being and survival of the individual farm, ranch or agribusiness.

If we define risk in a very broad sense, we might think of it in terms of exposure to the probability of an adverse effect that can happen in the future as evidenced in the variability of (data series) over time. In an economic sense, risk is uncertainty that "matters" and involves the probability of losing (or making) money. It may manifest itself in the form of adverse effects on human health, the lack of adequate credit or legal actions that threaten a business. We know, for instance, that price and yield vary significantly over time and we have devoted much effort over the years to mitigating the effects of the factors that cause those variations. The passage of new Policy Legislation, the collapse of the Asian Economies, or the occurrence of a 100 year storm are **events** that create their own set of "risks" and we must attempt to help the growers understand and deal with them. To complicate matters, most of these risk factors don't fit neatly into some little box; rarely do we have a change in one arena that doesn't affect a multitude of others.

Public Policy Issues:

Issues such as environmental regulations, trade policies and other governmental programs are all areas where the perception of the public is a driving force that determines how we ultimately conduct business. In rural areas, we find that there is a great deal of stress resulting from risks due to changes in technology, global exposure at the local level, and the overall "industrialization" of agriculture. These events represent both challenges and opportunities. Never forget that profits are returns to taking risks. We must be vigilant and creative in both the public and private sectors to take full advantage of these occurrences.

Technology

You will have opportunities at this conference to hear discussions of bio-tech innovations and issues, future bio-engineered commodities, and the future of insect resistant crops. When you couple these discussions with the question of "who will control these innovations" therein lies a tremendous area of risk and uncertainty for the supplier, producer, and processor. How near is the day when the grower will have diminished markets for his crops or livestock if they are not "bio-engineered?" What are the implications for capturing new efficiencies and are there environmental risks or benefits associated with the new products?

New risk management tools are coming on line to assist producers, although much remains to be done. The Economic Research Service (ERS) has completed 45 reports examining the feasibility of insuring crops not currently insured through the Crop Insurance program. The ERS is also investigating market-based methods for limiting farm risks, including yield futures contracts and other tools.

International Trade:

Almost without exception, the concurrent sessions of this conference having to do with commodities, are heavily weighted with a "global" perspective. Pick any page of your program and you will find titles such as the "Trends in Asian Cotton Trade" and "Coping with Sanitary and Phytosanitary Trade Barriers." We are facing risks that have different dimensions or were not even present a few years ago. Reduced trade barriers provide new opportunities abroad and create new challenges at home.

Changing Infrastructure:

The evolution occurring in agriculture's infrastructure is perhaps the greatest area of uncertainty, with the largest number of tentacles reaching into other areas of the food and fiber sector. Concentration within sectors is being propelled by changes in technology and genetics, and firms are racing to stake out their claims to various segments of agricultural production. Round-up ready soybeans, high oil corn, and satellite crop scouting for disease and insects are examples which are just the tip of the iceberg. Farmland Industries, the largest farmer owned cooperative in the country, will not buy hogs or cattle from their members if they are not from "approved" genetic lines. Integration of the poultry, and now the swine industries have shown the way that could eventually lead to "systems" that will furnish inputs, management, and financing to growers. Contracting between the producer and the processor may become an important area where risks and risk-sharing must be recognized. All these developments may alter the role of local firms and lead to the decline of some rural outlets that supply today's agriculture.

Where Do We Go From Here? The Role of Science and Education

Our Historical Base

If I have painted a bleak picture of risk today, I really didn't intend to. We have much experience and prior work to use from our strong history of risk management research and education. The Land Grant University System, partnering with the Cooperative Research, Education and Extension System has addressed economics of risk management in the past. In the 1970's and 80's Ikerd, Anderson, and Nelson along with Baldwin, Wisner, and Good placed emphasis on risk management in both production and marketing. Today, when the issues are more complex and the challenges greater than ever, the CSREES and its Land Grant University partners are emphasizing this important area. Fundamental work is underway to develop and improve statistical techniques that will use the growing body of data to more accurately capture decision making processes. Applied research and outreach on whole-farm risk management models are being conducted by Irwin, Miranda, Williams, Dismukes and others in research efforts designed to capture the multi-dimensional aspects of risk management.

Current Efforts

The understanding and management of risk in agriculture is currently being addressed, as directed by the Federal Agricultural Improvement and Reform Act of 1996. Section 192 of this statute gave a mandate to the Secretary of Agriculture to, "...provide such education in management of financial risks inherent in the production and marketing of agricultural commodities." In April of 1997 the Secretary solidified the educational effort in risk management in a decision memorandum that created the "USDA's Risk Management Education Steering Committee whose members are the Administrators of the Cooperative State Research, Education, and Extension Service (CSREES), and the Risk Management Agency (RMA) and a Commissioner from the Commodity Futures Trading Commission. This Steering Committee is guiding an expanded program in risk management education, with private sector participation, that will assist the agricultural community in dealing with the new risk environment. A Request for Proposals (RFP) to address areas where there are "gaps" in our body of knowledge (research), educational content (curricula), and delivery vehicles has recently been announced.. In addition, a "pre-session" will be held at the American Agricultural Economics Association (AAEA) meetings in Salt Lake this summer to address pressing producer and agribusiness needs for risk management research and education.

Risk Management Strategies

Additional research and education is preparing producers and agribusinesses to think strategically as a method of managing day-to-day risks and adapting to shocks caused by unexpected weather or global market events. Research at Land Grant Universities is developing new models and decision aids that will assist rural businesses cope with the combined set of risks that they now face. Interdisciplinary programs in the production, marketing and financial areas are focusing attention on the interrelationships among the various risk areas.

New approaches and strategies are being identified. The ERS is conducting analyses that use a whole-farm approach to improve understanding of how farm households may self-insure. These may include diversifying activities, working off farm, and making adjustments in savings and borrowing. These approaches, and others, are relevant for small and limited resource farm families as well as for other farm and rural businesses across the size spectrum.

The Challenge Ahead

Much of what I've covered relates to public sector activities. Now, in an era of increasing complexity and growing demands for risk management science and education, we must think of new models and partners for our science and education programs. To achieve maximum understanding with available resources, our efforts in agricultural risk management must link public sector science and education to the many opportunities that exist to further understanding through contacts within the private sector. So called "delivery points" exist in multiples within the private sector as farmers and agribusiness operators interact around production, marketing and financial considerations. I would encourage each of you to become involved in this very exciting time for research and extension education in risk management.. Risk management by participants in the American agricultural sector as we approach the 21st century contains much "new ground" where linking science and education can make significant contributions.