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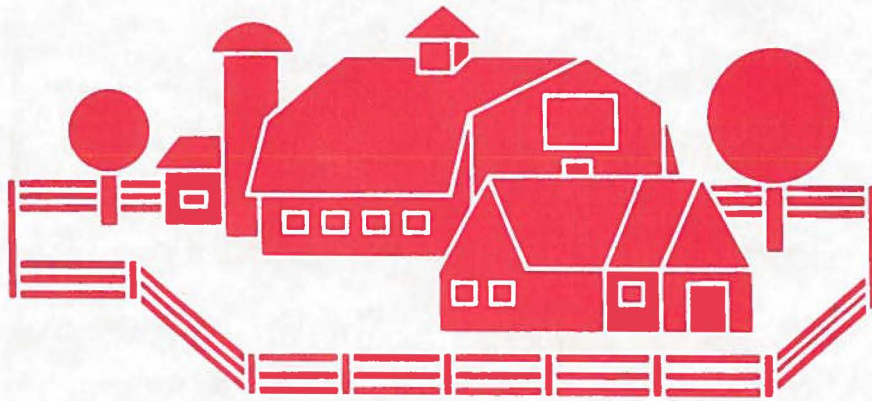
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FARM MANAGEMENT: CHALLENGES AND RESPONSIBILITIES FOR A NEW AGE



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RISK MANAGEMENT ON TOMMORROW'S FARM:
AN EDUCATAIONAL APPROACH

by

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It is indeed a pleasure for me to address this group of Farm Management Specialists on such an important topic as risk management. The title for my discussion is a rather open-ended one, so the approach I'm going to take may be somewhat different than what you expected. Instead of presenting specific examples and applied theories, I will discuss the history, the state of the art, and the future of risk management, especially as it relates to the Extension Service, in four areas. The first part is meant to get us all thinking alike about risk. The second section will deal with the history of risk management and where we are today with risk management programs in Extension. The third section will address where we need to be, and the fourth section will discuss how can we get there and accomplish our goal of properly incorporating risk management in our Extension programming.

INTRODUCTION - WHAT IS RISK:

Risk as we commonly think of it in Extension is the dispersion or volatility of future returns. It is the not knowing what will happen. This is not always a bad situation, because it allows some fluctation of expected future returns which may be positive. Risk, as we often think of it, is the possibility of suffering economic loss, but it can also mean economic gain. Profits are considered a return to risk, where there exists a probability that both an economic loss or an economic gain can occur.

Risk is individualized. Therefore, the data, the risk management tools, and the decisions made will vary amongst individuals. Aggregated data and specific scenarios will provide insights but not answers to individuals' specific problems.

The major sources of risk in agriculture, as defined by Nelson, Casler and Walker fall into seven categories:

1. Production and yield risk
2. Market and price risk
3. Business and financial risk
4. Technology and obsolesence
5. Casualty risk loss
6. Social and legal risk
7. Human risk

Our programming efforts should concentrate on the first three categories of risk. It is these three areas that we, as Farm Management Specialists, can address because of our interdisiplinary approach to problem solving.

Risk affects the decision-making process, complicates the issues, and

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makes information pertaining to risk valuable. Information on production, markets, and finance becomes valuable as well as the risk management tools and techniques used to gain insights to the risk of the variation and dispersion of future returns.

WHERE ARE WE NOW:

Historically, risk was a subject passed over very quickly in Agricultural Economics programs. Many of us with gray hair were trained before the emphasis on risk. We face a situation of having been introduced to risk and the analytical tools and techniques in graduate school. However, we remain at an introductory level. I never heard of stochastic dominance until a few years ago, and I'll bet many of you also lack training and background in the area of risk management. Those of you who are younger have received better training in risk management.

We are now at a stage where risk management is a popular concept. The efforts of Nelson, Casler and Walker led the way in making risk management a popular concept. Extension started to break away from the idea of a static analysis. The efforts of Ikerd, Anderson and Holt were important in changing our thinking to the stochastic mode. The ideas that they set forth were that there exists many possible outcomes to certain management strategies, and those strategies and their outcomes will influence the decision making in future time periods.

Research in risk management now has the analytical tools. They are in place, and the more recent graduates in Agricultural Economics have used these tools. However, the tools that are available are cumbersome, hard to use, and the data for risk management has been rather sparse.

We are now facing a situation where Extension is caught short in risk management expertise, in the analytical tools, and in the area of data to effectively put together a good risk management program.

WHERE DO WE NEED TO BE:

Hopefully, we are heading toward the day when Extension can develop an effective and meaningful program in risk management. I am referring to a program that will answer the individual's concerns with a proper analysis with his or her data. An analysis which considers many risk management options and their interactions which provides a stochastic analysis of the possible outcomes for that individual's specific situation. In order to do that, we need acceptance in Extension of this concept. If risk is individualized, then we need to work more one-on-one in the area of risk management. We also need to wholesale these tools, concepts, etc., to make them available to other agricultural professionals. We need to conduct in-depth agent training. County agents and area agents will have to be trained to do this work. Thus, we need their acceptance of the risk management program. State specialists also need to accept risk management programs for both the audience here (ag economists in farm management and marketing), and other disciplines--agronomy, soil science, and the livestock sciences. As we increase our knowledge of risk management, it is important that the other agricultural disciplines have an idea of how their programs impact and interact with our programs. We need to provide them with insight as to the effects of their programs with respect to risk management and the resulting effects on the total farm operation.

HOW DO WE GET THERE:

As I mentioned at the beginning of this paper, there are many of us who need further training in the area of risk management. I see five problems that need to be addressed before we make risk management an acceptable program in Extension. The five problems are: the tools to do the work, training, interaction, acceptance, and the data.

First of all, let me talk about the tools. The tools have already been developed by research, but they are cumbersome. They are not in the user friendly mode that we need for Extension use. We need to make these tools available in a manner in which they can be used in the field. If some of you attended the workshop that was held last summer at Cornell in conjunction with the AAEEA meetings, you were introduced to a risk management program which was recently developed. This program resulted from the efforts of Rob King, Roy Black, Jerry Skees, Brian Shurle, Art Barnaby and myself. Rob King indicated recently that he is interested in providing analytical subroutines for risk management which can be put together in any number of ways. They could be used for analyzing data in risk management programs. I have some problems with providing such programs without charge. At the Cornell workshop, the participants (or anybody who wanted it) were given the the computer program being used. That program analyzes the interaction of up to four crops, looking at probabalistic yields, prices, and combinations of three strategies that an individual might use. The workshop included management strategies such as crop mix, forward contracting, and crop insurance. The program's results included a cumulative distribution function of net cash flows. That program and the source code were made available to the workshop participants at that time.

Extension has started charging for programs and at the same time is concerned with the acceptance of programs. I remember, as do many of you, 1972 when Ken Thomas presented seminars on the financial analysis programs that had been developed at Minnesota. Those programs were made available to everyone, but if it takes 12 years for risk management programs to be accepted because they are free, we're in trouble. It appears to me that financial analysis whole-farm programs were never really accepted until there was a charge for them. I have problems with giving away risk management subroutines. Maybe there should be a charge for these programs which will make them more readily accepted.

Most of us are not familiar with the tools, the techniques and the data requirements of risk management, and need further in-depth training. The AAEEA workshop, provided three hours of contact time. Three hours is just not enough time to cover the subject properly. Specialists need in-depth risk management training in both fundamentals and application. I don't know how we will accomplish this and create a teaching package in risk management. One option is the Minnesota Extension Summer School (MESS) held in June in Duluth, Minnesota. Duluth is a pretty nice place to visit in the summertime. The summer school has three one-week sessions with 20 contact hours in each session. It gives people the opportunity to get away from the office and the telephone and into a learning environment. It is possible that we could develop a course there for state specialists.

Training for county agents and area agents is another important task that needs to be done. It is difficult to get enough contact time for in-depth training of agents. We need some other form or method of delivery for agent training. Surely there could be training modules developed using several methods of delivery that would provide adequate training for Extension agents. These might also be used for educational purposes directly with farmers.

The interaction which I am referring to is the interaction among all state Extension specialists whose Extension programs interact with the major sources of risk facing the farmer. We could work cooperatively in the areas of production and yield risk, market and price risk, and business and financial risk. There was a comment in a previous paper presented here that some of the other colleagues (specialists in other disciplines in Extension) don't really understand economics. I'm not sure this is entirely true but, in turn, we need to understand the implications of the programs of other disciplines, because risk management involves such things as the use of pesticides, the use of good varieties, etc. For example, do pesticides reduce risk? Do they reduce production risk and increase financial risk? This is an example of the interaction which is important for all Extension specialists and agents to understand. Integrated pest management is a strong Extension program and is very popular. Yet how many of you have been asked to analyze the economics of integrated pest management programs? Aren't most of our Ag Extension programs in some way risk reduction techniques, if you really think about it? It is not difficult to view the problem as interdisciplinary because of the tools and the data requirements. An analysis of risk management most often will utilize the data of other disciplines.

The acceptance of a risk management program really comes through the knowledge of the individuals who are directly involved with a program--the people who are teaching and using a technique or program. They learn because of the need to know. Risk management falls into this category and is a popular issue because survival is an important goal for many farmers in these tough economic times. Risk management will be accepted when usable tools are available coupled with adequate training. For example, when I was training agents recently, I asked the county agents if they knew which crop was the most risky in their respective county. They weren't sure. So we proceeded to study the problem using aggregate county data. We did an analysis using 10 years of data and went through the procedures of determining the average yields and the standard deviation. We talked about the normal curve. Many of them could remember the bell-shaped curve from a previous statistics class. With their memories refreshed, we started adapting the standard deviation to the normal curve. They got the idea of variation in terms of bushels, or pounds, or tons. But we were comparing bushels of corn to bushels of soybeans, so that really didn't provide them with an answer to the original question. We then went on to develop the coefficient of correlation. This example was rather simple and did not require much time, but it started them thinking about yields in a stochastic manner. The point is we can work with real and useful examples in risk management--and because we can do that--I believe these techniques will be readily accepted.

The biggest problem I see is that of data availability. Using risk management tools with an individual requires a tremendous amount of data. Most of our farm management record programs fall short in providing adequate data either because the time span is too short or the yield data are aggregated from different fields or farms. We recently did a study using yield data for 150 Minnesota farmers from our farm management associations. All records had to have at least a 10 year yield history. The data available was the average yield for the farm by year. In some cases this would suffice, but if farmers had half of their farms on a good soil and half on sand, it would not reveal that information. Most record systems provide an average yield of the whole farm which will mask the variation of individual fields or farms. We can develop an answer using whole farm yields which is better than what we were using. What we really need is yield histories by fields. Most record systems have this capability, and we should encourage farmers to record

their data this way. But the problem is that we need that data now.

The new APH crop insurance program will have yields by units and also by crop share arrangements, but not everyone will be in the crop insurance program. That will surely provide us with better information, but not until some time in the future. Everything has to come together at once in order to develop an overall program, and the data might be the most difficult aspect.

The data needed for price expectations is another story. Historical prices might not be the best for stochastic use. Our study used the cumulative density functions developed at Michigan State for price probabilities for the future year. Michigan State has their model running which provides stochastic information for commodity prices. The program presented at the Extension workshop at Cornell had the flexibility so that an individual could enter their own price expectations.

WHERE TO FROM HERE:

How do we get all of this to come about? It is a chicken and egg question with respect to the data versus the tools, the techniques and the delivery system. I have not discussed personnel and financing, which are other important aspects of accomplishing our task, but I'm sure we will get it done. I would like to close by saying that a lot of people have done a lot of work in the area of risk management. The Southern and Western Farm Management Committees have accomplished much, as well as the North Central Regional group. Why can't we coordinate our activities and make this a national effort. Risk management provides us with a wonderful opportunity to develop a national program.