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Maintaining the Cutting Edge

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Use of Expert Systems in Agricultural Economics

J. William Uhrig, organizer and moderator (Purdue University)
James McGrann (Texas A&M University)
Stephen Harsh (Michigan State University)
William Van Beek, Jerald Fletcher (Purdue University)

An expert system is a computer program that enables a computer to mimic an expert in helping people solve specific problems or to select among alternatives.

James Phillips and Stephen Harsh (Michigan State University) developed an expert system to analyze dairy farm financial records for lenders. They focused on only income statements and balance sheets. The financial analysis was carried out with a Lotus 123 spreadsheet and an expert system shell called Insight Two Plus. The purpose of the expert system was to provide a method of screening loans in a portfolio to select those farms that require further analysis.

James McGrann, Timothy Powell and Daryl Ellis (Texas A&M University) developed software to enhance financial management through more effective use of accounting and financial statements data. The target audience includes farmers and ranchers, the Farm Credit System, commercial banks, and educators. The financial analysis questions addressed include: The financial condition of the farm or ranch business, whether the business can support the present operating loan commitments or additional operating capital requested, and whether the financial condition of the farm or ranch business can be improved by re-structuring debt.

Bill Van Beek, Jerry Fletcher and Dave Mengel (Purdue University) developed an expert system called GUFERT that recommends nitrogen fertilizer rate adjustments for a pre-specified yield goal based on physical characteristics and nitrogen management practices. This was further refined and an economic analysis option added and the name changed to N-Man. N-Man is not an optimization or least cost program. It serves as a guide to users by disseminating large amounts of knowledge about the interaction between nitrogen fertilizers, corn yield, and factors related to specific nitrogen application situations.