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**FARMERS and DERIVATIVES**

**A SUCCESSFUL COMBINATION in the 21st CENTURY**

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Managing the "Elecular Revolution"

**INTRODUCTION**

I am honored to be a speaker at the 1999 USDA Outlook Forum. My presence here today is actually a return engagement in as much as while I was a Commissioner at the Commodity Futures Trading Commission (CFTC) I had the good fortune to address the Forum in 1997. In my opinion this event, throughout its 75- year history, has always been one of the most prestigious conferences on current agricultural issues anywhere in the world.

The title of my presentation today is "Farmers and Derivatives - A Successful Combination in the 21<sup>st</sup> Century." I know a little something about farmers because I was actively engaged in agricultural production for nearly forty years. And for the last eight years I have been right in the middle of the use of derivatives, first as a Commissioner of CFTC and now as a consultant to foreign governments that want to permit the use of exchange-traded futures/options in their respective countries. So I would be the first to admit that derivatives are probably at the bottom of most farmers' list of business management tools. Why then, you might ask, do I think that in the 21<sup>st</sup> century farmers and derivatives are going to be a successful combination?

I am going to explain my rational in five parts. First, I will provide a brief

description of a derivative. Second, I am going to talk about 20<sup>th</sup> century farmers and their attitude toward managing yield and price risks. In parts three and four, I'll cover two trends I believe will totally change agriculture as we know it today. In the final section I will briefly examine one type of derivatives I believe will be an important part of new age risk management techniques.

## **DERIVATIVE**

I recognize the term derivative is not a household word, so I will make the definition as simple as possible. A derivative is a contract that involves the trading of rights or obligations based on an underlying product, without necessarily directly transferring that underlying product. The derivative instruments you are probably most familiar with are exchange-traded futures and options. Other derivatives are negotiated between counterparties in the over-the-counter (OTC) market, usually with the help of an intermediary. OTC derivatives come in a variety of forms, including swaps, hybrid instruments, energy forward contracts and trade options. Derivatives are used by a hedger to transfer the risk of an unacceptable change in the price of the underlying product to a speculator who is willing to accept that risk in anticipation of a favorable return on his/her capital investment.

### **Farmers' Attitudes about Managing Yield and Price Risk**

Farm Futures magazine did a survey of 960 farmers last year and found that about five percent of them "are using available tools to manage production and financial risks." Some of the leading professors who teach risk management in land grant universities and many farm management Extension personnel tell me they think the number is closer to ten percent.

In his article entitled "Crop Deregulation is put to the Test in New Rural Crisis," Wall Street Journal reporter Scott Kilman had this to say about farmers and their attitude toward risk management. He quotes Dorothy Gilbert, manager of the family-owned elevator in Keosauqua, Iowa as saying, "They [local farmers] sell just when they need money. That's not smart." Ms. Gilbert had talked to her customers about derivatives, i.e., options on futures, which would have allowed them to lock in a profit early in the growing season. Only one farmer pulled the trigger, followed her advice and bought options. That anecdotal evidence lowers the percentage to something less than one in one hundred farmers in that community.

The Farm Futures magazine survey, the experience of those academics who are on the front line of teaching risk management to producers and the refusal to use derivatives by a high percentage of farmers in Keosauqua, Iowa all raise an interesting question. Why don't more producers manage their yield and price risks? There are of course a number of reasons. The one I believe should be at

the top of the list is the fact that the government managed the "lion's share" of growers production and price risks for 60 years. As a result there was no need for farmers to develop the skill set necessary to manage these risks themselves. Lacking the training and experience necessary to make prudent decisions about managing their production and price risks, most farmers do nothing to minimize such risks.

To their credit a small number of growers have learned how to analyze and manage their business risks since passage of the Federal Agricultural Improvement and Reform Act (FAIR Act). However, the President signed the FAIR Act nearly three years ago. And a majority of producers still don't realize that risk management is an absolute necessity when one farms for the market and not the government.

This fact is painfully clear when you read the headlines in the press concerning the emotional and financial trauma many farmers are experiencing because of devastating declines in prices for many agricultural commodities. For example, when compared to 1997 we find that 1998 prices declined as follows: corn, 27 percent; soybeans, 13 percent; wheat 29 percent; beef 20 percent; and a 50 year low for hogs.<sup>1</sup> The unfortunate result for many producers who had no downside price protection in the face of such low, low prices was captured in the headlines of a recent USA Today cover story, "Farms fold under price crunch."

At this time it is difficult to imagine that anything good could possibly come out of such a sad scenario. Nonetheless, let us hope that 1998 will serve as a wake up call to farmers to get serious about managing their production and price risks. If not perhaps one more "reality check" concerning commodity prices in the future will convince them. The World Bank's first Global Commodity Markets report forecasts that in real terms, prices for commodities will be lower in 2010 than they were in 1997.

You have heard the old saying that when the going gets tough, the tough get going. I believe farmers are a classic example of this adage. They are the epitome of the American tradition of over coming adversity by finding innovative solutions to challenges. And there is a confluence of trends taking place as we speak that will assist them in finding the risk management tools that fit their individual needs. Tools they understand and will be comfortable in using.

As I explain these trends and the farmer friendly risk management tools that are growing out of them you will understand why I believe farmers and derivatives will be a successful combination in the 21<sup>st</sup> century.

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<sup>1</sup> Andrew Osterland, "Agriculture, Prognosis 1999," Business Week, 4 February 1999, 28.

## **THE "ELECULAR" REVOLUTION (ELECTRONIC/MOLECULAR)**

The first trend I am going to talk about is the "Elecular" Revolution (Figure 1). You won't find the word "elecular" in the dictionary. It is a term I coined to refer to the awesome technological power that mankind has at its disposal upon combining the unlimited potential of electronic technology and molecular science.

The business world is responding to the Elecular Revolution in many ways, but one of the more visible responses is the emergence of the "life science" industry. For example, since 1995, Monsanto has changed its primary business from chemicals to crop biotechnology. Over the past three years, it has transformed itself by investing \$8 billion in seed companies like DeKalb Genetics, Asgrow, Calgene, Cargill's foreign seed operations and the European wheat seed breeding business of Unilever. Some time ago the Wall Street Journal carried an article by Scott Kilman in which he wrote, "Biotechnology is making plant breeders hot properties. Monsanto needs to control seed companies in order to get its genetically-engineered traits in the hands of farmers."

DuPont, another of the Fortune 500's most respected companies has its eye on crop biotechnology too. For example, in 1997, there was an estimated one million acres planted with the high-oil corn seed developed by Pioneer and marketed by Optimum - - a joint venture company formed by Pioneer and DuPont. By 1998, plantings in the US of high-oil corn seed had doubled to approximately two million acres.

I believe this two million acres is only the tip of the iceberg in terms of the total number of acres that will be planted in genetically modified organisms (GMOs) in the next century. After all, at the end of 1997 the worldwide total was close to 30 million acres.<sup>2</sup> The reason why more and more farmers will plant GMOs in the future is because there will be a revenue assurance provision written in the contract between the farmer and the seed company. Not only that but the contract will also include a firm price on the inputs the farmer will use and provide the financing to pay for them. Today there are companies that offer various combinations of the GMO seed, inputs and financing, however, I am aware of only one that has included a revenue assurance provision too.

The business process I have just described sounds simple. Believe me it isn't. It is a complex maze of matching seed sales with identity preserved grain storage; salesmen with farmers' orders for seed and input supplies and the contract they have written and signed. And then tracking the movement of the value added grain from the farmer to the elevator to the domestic or foreign end user. This process is a prime example of the Elecular Revolution at work, a fusion of electronic technology and molecular science.

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<sup>2</sup> Alison Maintland, Financial Times, 9 January 1998

To give you a sense of the electronic side of managing all this data, here is a diagram (Figure 2) of how E-Markets of Ames, Iowa makes it happen. NetMarket is just one of many Internet based software applications developed by E-Markets as they connect agribusiness and the food industry. Their Internet address is [www.e-markets.com](http://www.e-markets.com). There may be other companies doing similar applications that I am not aware of. I am familiar with E-Markets because I do consulting work for them.

On the one hand there is nothing new as to the players and the business transactions by and between them in the diagram I just showed you. What is different is the fact that the Internet and GMOs are the change engines that make it happen in the innovative way it does. These same tools are the genesis of the "Evolution of Creative 21<sup>st</sup> Century Business Models for Agriculture." And I believe one of those models will be the "virtually integrated" enterprise.

### **The Evolution of Creative 21st Century Business Models for Agriculture**

My vision of the "virtually integrated" business model for agriculture (Figure 3) would bring together independent enterprises, the technology providers, like E-Markets and the Seed Company, input suppliers, growers, merchandisers, processors, wholesalers/retailers and the consumer. The tie that would bind them would be an Internet based electronic agricultural information system with functional E-Commerce modules. A neutral third party would provide the software and hardware as well as professionally manage the continuous operation of this system. An important element in such a system would be one that provided farmers some risk management tools they don't have available to them now - - more about that in a moment.

In a "virtually integrated" enterprise there would be no centrally managed and controlled hierarchy with bureaucratic turf battles. On the contrary, the "virtually integrated" model would allow each player to retain its autonomy, independence, and ability to adapt quickly to new market demands and advanced technology. Another characteristic of the virtually integrated business model would be an absence of the traditional "I win - you lose" gamesmanship between buyers and sellers in the agricultural sector. In its place you will see a "demand driven" economic chain with the consumer in the drivers seat. I believe the "virtually integrated" arrangement will become one of the dominant business practices in agriculture in the new millenium.

There are two reasons why I believe that will happen. The first one I have already mentioned - - the "Elecular" Revolution. The "virtually integrated" model lends itself to accommodating the management demands of the "life sciences" industry. Second, in order to be competitive in the 21<sup>st</sup> century global economy, US agriculture needs to practice "costing the entire economic chain." Economist

Alfred Marshall wrote about it in the 1890s and Peter Drucker had this to say about it in the 1990s, "managing the economic cost chain will become a necessity. Indeed, executives need to organize and manage not only the cost chain but also every thing else - as one economic whole, regardless of the legal boundaries of individual companies."<sup>3</sup> Peter Drucker is considered by many to be the "most important management thinker of our time."<sup>4</sup>

One of the most daunting challenges to "costing the entire economic chain" in agriculture is the development of risk management tools farmers will use because they understand them. And they know and trust the companies that stand behind these tools. That brings me to the final section of my presentation.

### **AGRICULTURAL TRADE OPTIONS**

An Agricultural Trade Option (ATO) is a contract between two entities that are commercially involved in certain enumerated agricultural commodities. The Commodity Futures Trading Commission (CFTC) recognizes these entities might be a farmer, a livestock or poultry feeder, an elevator, a processor or a merchant handling grain. The contract gives one party the right, but not the obligation to deliver an agricultural commodity to the counter party. If delivery takes place the buyer pays the seller the strike price that was agreed upon by the parties at the time the option was written. In return for this price guarantee the seller of the commodity paid the buyer a premium when the option was originally entered into. Call it a price insurance policy if you like.

Although it took me four years to get the CFTC to lift its ban on Agricultural Trade Options (ATOs), I was finally successful in achieving that goal some two weeks before my term as a Commissioner was up in November of 1997. Then about six months after I left the CFTC to become a Fellow at the Institute of Politics, John F. Kennedy School of Government, at Harvard University, the agency published its Interim Final Rules on ATOs. I was disappointed in the regulatory structure laid out in the Interim Final Rules because in my opinion it is too restrictive. Apparently others in the agricultural sector feel the same way because no one has registered to become an Agricultural Trade Option Merchant (ATOM). As a result ATOs are not being used. I believe this will change as the grain trade industry, producer associations and the CFTC work together to amend the Interim Final Rules. When that happens here are some examples of ATOs that will be farmer friendly.

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<sup>3</sup> Peter F. Drucker, *Managing in a Time of Great Change* (New York: First Truman Talley Books/Plume, April 1998), 129

<sup>4</sup>Statement by Warren Bennis on the page entitled Praise for Peter Drucker and "Managing in a Time of Great Change" in the book by the same name (New York: Truman Talley Books/Plume, 1995).

## EXAMPLE NUMBER ONE

For those producers who consider 1998 to be a lesson in what can happen if you don't have an insurance policy on price a simple "Walk Away" Agricultural Trade Option can be an attractive alternative to doing nothing or forward contracting. Another advantage of an ATO is that it allows a farmer to execute the option with an elevator, processor or merchant they know and trust; mostly local or nearby business establishments. The ATO can be tailored to fit each grower's individual situation as to quantity. It doesn't have to be for a fixed number of bushels like an exchange-traded option.

The expiration date can also be customized to meet each farmer's particular need. In fact the ATO can exceed the present exchange-traded option's one-year time frame. Under certain circumstances the farmer can buy a put and sell a call, thereby building a "fence" around a price range that he/she considers acceptable. This strategy will reduce the premium cost of the transaction.

In an exchange-traded option the strike price is for a specific dollar amount per bushel/pound. The same is true for an ATO. However, with a revenue assurance type ATO the strike price will be stated in total dollars per farm unit. And remember, this generic "Walk Away" ATO allows a farmer, for example, to legally walk away from the contract and sell his/her commodity to the highest bidder.

## EXAMPLE NUMBER TWO

A moment ago I mentioned that the strike price could be "tied to a revenue assurance type ATO that would guarantee total dollars per farm unit." Here is one way this ATO might be offered to farmers.

A seed company wants to overcome the perception that a particular high oil corn seed has a yield drag problem. It negotiates the standard seed sales contract with the farmer, which, along with other considerations, would specify the number of acres to be planted and the premium to be paid per bushel. The Seed Company then writes a revenue assurance ATO using the number of acres and the December futures price plus the premium that has already been agreed to. It then adds to the equation the anticipated yield per acre. For example, 100 acres X 200 bushels per acre X \$2.50 (futures @\$2.20 + \$0.30 premium) per bushel. This results in a strike price of \$50,000.00 for that farm unit. The farmer pays a premium for that revenue guarantee. The Seed Company covers the price risk by using an exchange-traded derivative and an OTC weather derivative<sup>5</sup> to cover

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<sup>5</sup> One type of weather derivative is based on indexes of Heating Degree-Days (HDD) and Cooling Degree-Days (CDD).

the yield risk. Or it could turn to an intermediary in the OTC market, like Koch Industries or Enron Corporation, that would handle the price and yield risks. The intermediation costs would be included in the premium the Seed Company paid. Or the Seed Company could use a derivative and crop insurance to cover its risk. Keep in mind the farmer gets \$50,000.00 even if the price per bushel at harvest is less than \$2.20 or even if weather related events preclude the farmer from delivering the 20,000 bushels. If the price at harvest for number two yellow corn is higher than \$2.20 then the farmer can "walk away" from the contract and sell it to the highest bidder. Also, it is important to remember the Seed Company would have to register as an Agricultural Trade Option Merchant (ATOM) and its sales people would have to register as Associated Persons (APs) in order to write, offer and execute an ATO.

### **EXAMPLE NUMBER THREE**

The final example I will use covers a price risk management technique I believe will be given serious consideration by counterparties to ATOs. The operative principle is that of an Asian or Average Price option. According to the "Dictionary of Financial Risk Management," written by Gary L. Gastineau, an Asian option is, "An option whose settlement value is based on the difference between the strike and the average price (rate) of the underlying on selected dates over the life of the option, or over a period beginning on some start date and ending at expiration."

The following example is courtesy of Tim Andriesen of Koch Industries, Wichita Kansas. XYZ elevator, which is registered as an ATOM, is offering a "growing season" call option. This option pays off based on the average price of the December Futures contract between May 1 and July 31. This option struck at \$2.60 costs 7 cents. At the same time the December \$2.60 call is trading at 12.5 cents. The ATO contract between the farmer and XYZ elevator clearly states that the time frame and the absolute level of protection are less with the growing season Asian style option. However, the cost of this ATO is 5.5 cents less than the December call.

Given the random nature of markets there is something to be said in favor of a farmer selling for the average price over a given time frame. Predicting the weather and trying to outguess the market has its limitations. Even for those advisory services with state-of-the-art computer models and Ph.D. analysts.

Consider the following information from the AgMas Project at the University of Illinois: "the average net advisory (Fee based professional Market Advisory Service) corn price over the three years (1995-96-97) for the 19 programs is \$2.65 per bushel, which is two cents above the three-year market benchmark price of \$2.63." "The three-year average net advisory soybean price is \$6.73 per bushel, which is 17 cents above the three-year market benchmark price of \$6.65." The purpose of the AgMas Project is to present an evaluation of advisory



service pricing performance. Complete information is available at <http://www.aces.uiuc.edu/~agmas/>.

### **Conclusion**

President Clinton and Secretary of Agriculture Glickman have publicly announced their intention to provide a "safety net" for farmers. Congress is considering what shape this "safety net" program should take and how it might be funded. In the meantime there is a process in place that will ultimately provide a "safety net" for farmers and I have described it in this presentation. That process would be greatly enhanced if the CFTC Agricultural Trade Option Pilot Program were amended as quickly as possible. As I said earlier, I believe the grain trade industry, producer associations and the CFTC are all working together in an effort to amend the Interim Final Rules in a way that will work for everyone concerned. I for one am optimistic that there will be an amended version by late spring or early summer.

