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# Congressional Research Service

## Report for Congress

### 97-572: Managing Farm Risk in a New Policy Era

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Updated January 22, 1999

#### Summary

The elimination of target price deficiency payments to farmers and the recent decline in some farm commodity prices have raised questions about the adequacy of tools to help farmers manage their risk. Currently many farmers receive market transition payments. Many also have at their disposal a subsidized crop insurance program that provides basically free catastrophic coverage against crop yield losses, and allows them to buy additional coverage at a subsidized rate. Several new revenue insurance programs are available in some regions. These make payments to producers when crop revenue falls below a target level. Farmers are also using the private futures market to protect themselves against the risk of lower prices when they market their crops. Enhancements to the crop insurance and revenue insurance programs are expected to be considered by the 106<sup>th</sup> Congress in order to improve the farm financial safety net and preclude the need for ad hoc legislative assistance such as the \$5.9 billion in farm aid provided by the FY1999 omnibus appropriations act.

#### Background

Farming is commonly viewed as an inherently risky enterprise. In their operations, farmers are exposed to both *production* risks and *price* risks. Farm production levels can vary significantly from year to year, primarily because farmers operate at the mercy of nature and frequently are subjected to weather-related and other natural disasters. Farm operators can also experience wide swings in the prices they receive for the commodities they grow, depending on total production levels and demand conditions both domestically and internationally. Since farm income is primarily determined by the combination of production and prices, annual farm income therefore can be volatile.

Over the years, the federal government has played an active role in helping to temper the effects of risk on farm income. On the production side, the government has widely expanded coverage and increased the subsidy of the federal crop insurance program. To help mitigate price risk, the government for many years

administered price and income support programs for producers of major field crops. Beginning in the 1970s and up until 1996, these commodity support programs provided direct payments to participating producers when market prices fell below a government-set target price. However, the omnibus 1996 farm bill ([P.L. 104-127](#)) terminated target price deficiency payments and replaced them with fixed but declining 7-year annual payments that are no longer tied to market prices. Consequently, farmers have been required to assume greater responsibility for managing their risk.

To help minimize risk in the absence of deficiency payments, a new tool, revenue insurance, has been introduced and is gaining in popularity among farmers. Another tool that is not new, but also has been attracting interest among agricultural producers, is the use of the futures market as a means of hedging price risk.

## Crop Insurance

The federal crop insurance program is administered by the U.S. Department of Agriculture's Risk Management Agency (RMA). The program is designed to protect crop producers from unavoidable risks associated with adverse weather, plant diseases, and insect infestations. Most policies are sold and completely serviced through approved private insurance companies that are reinsured by USDA. There are four sources of federal costs for the crop insurance program. USDA absorbs a large percentage of the program losses (the difference between premiums collected and indemnities paid out), subsidizes a portion of the premium paid by participating producers, compensates the reinsured companies for a portion of their operating and administrative expenses, and pays the salaries and expenses of the RMA.

Under the current program, a producer who grows an insurable crop selects a percentage of crop yield and a price coverage level and pays a premium that increases as the levels of insurable yield and price coverage rises. However, all eligible producers can receive catastrophic (CAT) coverage without paying a premium. The premium for this portion of coverage is completely subsidized by the federal government. The farmer pays an administrative fee of \$50 per crop per county for CAT coverage, and in return can receive a payment equal to 60 percent of the estimated market price of the crop, on losses in excess of 50 percent of normal yield.

Any producer who opts for CAT coverage has the opportunity to purchase additional insurance coverage from a private crop insurance company. For an additional premium paid by the producer, and partially subsidized by the government, a producer can "buy up" the 50/60 catastrophic coverage to any equivalent level of coverage between 50/100 and 85/100, (i.e., 85 percent of yield and 100 percent of the estimated market price.) For more information on the mechanics of crop insurance, see CRS Report 97-453 ENR, *Farm Disaster Assistance*.

Modifications to the crop insurance program are expected to be an issue in the 106<sup>th</sup> Congress, in light of the \$5.9 billion financial and disaster assistance package made available in late 1998. (See CRS Report 98-952, *The Emergency Agricultural Provisions in the FY1999 Omnibus Appropriations Act* for more on this assistance.) Producers in regions that have been stricken with large crop losses in multiple years complain that the current program does not provide them with adequate levels of coverage. Yield coverage is determined by a producer's actual production history, and several years of losses can significantly reduce insurable yield. Some have suggested that the crop insurance program should be "privatized" and that the federal subsidies currently paid to private insurance companies for their administrative expenses be eliminated and converted to additional premium subsidies to farmers. Others have suggested that revenue insurance, which is currently available on a limited basis, should be widely expanded.

## Revenue Insurance

Farm revenue insurance combines the production guarantee component of crop insurance with the price guarantee formerly used under the federal price support programs to create a target farm revenue guarantee for a crop farmer. Although revenue insurance programs can be structured in a myriad of ways, a common characteristic of such a program is the establishment of a revenue target for every farmer. Farmers then receive an indemnity payment when farm revenue falls below a certain percentage of that target.

The 1996 farm bill required the Secretary of Agriculture to administer a revenue insurance pilot program for crop years 1997 through 2000 for producers of grains and other commodities considered appropriate by the Secretary. Three major revenue insurance products are currently available to farmers on specified commodities in certain states: 1) Crop Revenue Coverage (CRC); 2) Income Protection (IP); and 3) Revenue Assurance (RA). These products are part and parcel of the crop insurance program. The main difference is that they insure against deviations from a target level of revenue, while the basic crop insurance program, as described above, protects against crop yield losses only. Premiums for revenue insurance are therefore subsidized at a rate comparable to catastrophic and "buy up" crop insurance coverage.

Income Protection is designed to protect participating producers against reductions in gross income when a crop's price or yield deviates from early-season expectations. For corn for example, the target level of revenue would be equal to the producer's historical crop yield (measured in bushels per acre) multiplied by the average futures price for corn in February for December delivery. A producer can then select a coverage level, (e.g., 75 percent of the target revenue), and would pay a higher premium as the coverage level rises. A farmer would receive an indemnity payment if actual revenue fell below the insured portion of the target revenue. Actual revenue is calculated by multiplying the farmer's actual yield times the harvest price, which in the case of corn would be the November futures price for December delivery. Revenue Assurance (RA) is very similar to IP, except that RA uses a county adjustment factor to determine crop prices. In 1999, IP is available for wheat and barley in ID, MN, MT, ND, OR, SD, and WA; wheat only in KS; corn and soybeans in IA, IL, IN, MD and NC; corn only in NY and PA; soybeans only in AR, cotton in AL and GA; and sorghum in TX. RA is available exclusively on corn and soybeans in Iowa, Illinois, Minnesota and South Dakota.

Crop Revenue Coverage, which is currently the most widely available and used revenue insurance product, operates in a similar fashion as IP with one major difference. Like IP, CRC provides revenue protection based on price and yield expectations. However, CRC also contains "replacement cost coverage" to protect the farmer against losses when market prices rise. Under this product, the price used to calculate target revenue is the higher of the early-season price or the harvest price. The additional coverage afforded by CRC can be beneficial to the farmer when there is a widespread disaster that reduces crop production to the point that market prices rise significantly between planting and harvest. Because such higher prices increase CRC payout, CRC premiums are generally higher than for IP. During the 1998 crop year, eligible producers purchased 151,600 CRC policies on 25 million acres of farmland, equivalent to just over 10 percent of all crop insurance policies sold. For the 1999 crop year, CRC is available for corn, wheat, sorghum, soybeans, cotton, and rice in most of the states that have significant production of these commodities.

New crops and counties eligible for crop insurance have been added each year as the products gained in popularity and the mechanics of the program were tested. Beginning in 1999, two new products are being

offered on a limited basis -- an Adjusted Gross Revenue Pilot Insurance Program allows producers in certain counties in FL, ME, MA, MI and NH to insure the revenue of the entire farm as a unit rather than on individual crops, including a small amount of livestock revenue. A Group Risk Income Protection (GRIP) Program will also be offered this year in certain counties in IN, IL and IA. GRIP will pay a participating producer whenever the crop revenue of the county falls below a certain percentage of the target revenue of the county.

Supporters of revenue insurance would like Congress to consider making revenue insurance a permanently authorized program and expand its availability to all crops currently eligible for crop insurance, as a means of expanding available farm risk management options and improving the farmer "safety net." Other policymakers are concerned that an expanded revenue insurance program could expose the federal government to large financial losses, since none of these programs has a very long track record and none has been subjected to a major widespread disaster year such as the drought of 1988 and the Midwest flood of 1993.

## Futures Markets

Another way to avoid price risk is to trade futures contracts on private markets that operate without government subsidy (but with federal regulatory oversight). A futures contract is an agreement to buy or sell a set quantity of a commodity at some date in the future *at today's price*. By using futures contracts, farmers can hedge against the risk of lower prices when they are ready to bring their crops to market. Six U.S. futures exchanges offer dozens of contracts based on farm commodities.

### Hedging Against Price Risk

As an example, consider a corn farmer who plants a crop in the spring. He has a general idea of what his costs will be and -- barring catastrophe -- of the size of his harvest. If he looks at the current price of corn and judges it to be high enough to cover his costs, he might consider hedging. Through a broker, called a futures commission merchant, the farmer would purchase enough corn futures contracts to cover his expected harvest, thus locking in the higher price. Corn futures contracts are offered on the Chicago Board of Trade (CBOT) with expiration dates in March, May, July, September, and December. Each contract is an agreement to buy or sell 5,000 bushels of corn.

The farmer would take a "short position", obliging him to sell at the price which was then current. The other party, the "long position," agrees to buy at that price. If corn prices subsequently fall, the short position gains value: the farmer has the right to sell at the old, higher price. If prices remain low through the expiration date of the contract, the farmer's futures position will compensate for the lost revenues in cash market sales.

However, should corn prices rise, the other party will profit. The farmer will have locked in a price for his crop at less than the going market price. However, he will receive the stipulated price, which must have appeared satisfactory at the time of the hedge.<sup>(1)</sup> The point of hedging is not to make a profit, but to avoid a loss.

Settlement of the contract can take place in two ways. Agricultural futures provide for physical delivery: the farmer could deliver the amount of corn specified by his futures contracts to a warehouse designated by the futures exchange. For most market participants, this is not a practical option. Most contracts are settled in cash: to do this, the farmer would go back to his broker and enter into an equal but opposite transaction. That is, he would buy a number of long contracts equal to his short position. His net position

would then be zero; he would have agreed to buy and sell the same quantity of corn on the same expiration date. Once the offsetting transaction is complete, the profit or loss in the hedging transaction is determined by the difference between the prices at which the short and long sales were made. (Again, however, there is no real profit or loss in hedging -- if, for example, prices have risen, the futures trades lose money, but the farmer's physical inventory of corn should gain value by about the same amount.)

### **Indirect Use of Futures Markets**

Many farmers who do not participate in futures markets directly do so indirectly. Forward contracts, which are firm agreements to make a cash sale at today's price, are a common feature of farm markets. A farmer may enter into a forward contract to sell his crop to a local board of trade or grain elevator at a certain future time at today's price. This has the same effect, from the farmer's point of view, as the hedging strategy described above: someone else has assumed the risk of falling prices. That person -- the elevator or the board of trade -- may then go to the futures markets to hedge that risk.

### **Speculation**

Over 16.6 million corn futures contracts were traded on the CBOT during 1997. At the end of 1997, the number of contracts that remained open was only 315,286. This "open interest" figure indicates the amount of hedging that is going on: hedgers typically hold their contracts to expiration. The vast majority of trading, as these numbers suggest, is accounted for by speculators who seek to profit by correctly forecasting price trends, and who tend to open and close positions rapidly. Speculative trading is useful to farm producers in two ways. It provides liquidity: a hedger who wishes to enter or exit the market at any moment can find someone to take the opposite side of the trade and to assume the risk that the hedger wishes to avoid. Second, it provides a central marketplace where information about commodity supply and demand can be collected, translated into a market-clearing price, and disseminated. This function of the market is called price discovery. The futures market price is often used as a reference point in cash markets.

From time to time, concerns arise that excessive speculation can cause volatility in commodity prices. In 1958, Congress enacted a ban on onion futures (which remains in force) on just these grounds. The bulk of economic research indicates that speculation does not tend to increase volatility over the long term, but it may do so during short periods known as bubbles, manias, or panics.

### **Options**

An option grants the holder the right to buy or sell a commodity at a set price up until the expiration of the contract. Options differ from futures in that the right to buy or sell is not an obligation: if prices do not move the way the option holder hoped, he can simply let the option expire unexercised. The option buyer pays a premium for this right. The other party, the option seller (or writer), keeps the premium and comes out ahead if prices move against the buyer or remain stable.

Options can also be used for hedging. The advantage of an option is that the buyer can protect against unfavorable price movements without giving up possible windfall profits from favorable price moves. If the corn farmer above was hedging with options, he would buy a put option, giving him the right to sell a fixed price. The option gains value if prices fall below the exercise (or strike) price. If prices rise, he would let the option expire unexercised, and still be able to sell his crop at the new (higher) price.

Options on agricultural commodities are restricted by the Commodity Exchange Act, which provides the

basis for federal regulation of futures markets. Such options were banned completely in the 1970s following widespread fraud in the market, and are now permitted in only a few commodities. However, options on futures contracts are available. An option on a futures contract is basically equivalent to a futures contract that becomes effective only if prices go the option buyer's way. Over 5 million options on corn futures were traded on the CBOT during 1997.

### **New Contracts for Farm Risk Management**

The futures exchanges have been creative in devising new contracts to control risk. A recent innovation is the CBOT's corn yield future, which is linked not to the price of corn but to USDA estimates of yield per acre in certain corn-growing regions. This contract enables farmers and others to hedge against shortfalls in production, a variation on the crop insurance programs described above. Acceptance of this contract has been slow (only about 1,100 corn yield futures were traded in 1997), perhaps because of the availability of subsidized crop insurance. Futures and options markets for certain dairy products were also launched in 1998. USDA has also developed a new dairy options pilot program that will educate dairy farmers and temporarily subsidize dairy farmer activity in the options market.

### **Footnotes**

1. [\(back\)](#) A limitation of the futures markets as a risk management tool is that they permit hedging only at current prices. If the current price is below a producer's profitability level, all the producer can do is lock in a loss.

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