MULTI-PERIL CROP INSURANCE AS THE PRIMARY SAFETY NET FOR AMERICAN FARMERS ON THE NORTHERN PLAINS

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Abstract

The United States Congress has yet to pass new farm program legislation after the expiration of the 2008 Farm Bill last year. Most of the provisions of the 2012 farm program have been extended until September 30, 2013 to cover the 2013 crop. Farm bill legislation is always subject to wide array of proposals promoted by different interest groups and that is occurring this time as well.

Two main ideas have surfaced with rather broad agreement. It is generally accepted that direct payments will not be included in the next farm bill. These payments have been made to producers regardless of production or prices. The other main area of agreement is that federally subsidized multi-peril crop insurance should be protected and become the primary safety net component of the next farm bill.

Crop insurance protects producers very well in the event of individual production losses. However, the potential for crop insurance to provide a long term safety net against loss of price is yet to proven. Producers have experienced the benefit of several years of rising crop prices and therefore, insurance levels. If prices decline for a multi-year period, it remains to be seen if producers can reduce their cost of production enough to deal with the lower safety net in the event of a loss. In addition, crop insurance provides no protection against price losses on the portion of yield above the guaranteed level.

Keywords: U.S. Farm Program, multi-peril crop insurance, safety net, cost of production

Farm policy in the United States has undergone numerous changes since the earliest programs were developed in the 1930's. The primary goal has been to provide a financial safety net for farm operations in the event of extremely low commodity prices. Loss of yield was typically dealt with by 1) individual producers purchasing insurance against loss of production and 2) legislative action to provide disaster assistance to impacted producers.

Multi-peril crop insurance is overseen by the Federal Crop Insurance Corporation and delivered by private insurance companies. Multi-peril crop insurance is heavily subsidized with the farmer paying, on average, 38% of the premium and the government (taxpayers) paying 62% of the premium as well as providing administrative and operating support to the private insurance providers. The level of premium subsidy varies by type of policy and coverage level.

Prior to the mid 1980's, multi-peril crop insurance was poorly utilized throughout the country. A higher percentage of acres were covered in the Plains states than other areas of the country. This was likely due to the higher probability of crop loss due to lack of rainfall. Even in these states, less than 50% of the eligible acreage was covered by these policies.

Since the introduction of revenue policies, participation in multi-peril crop insurance has increased significantly. In 2012, 62% of the acreage covered by multi-peril crop insurance and 68% of the policies earning premiums were revenue protection policies. Revenue protection policies provide for a revenue guarantee based on average production history (10-year yield) times coverage level (60 to 85%) times the higher of the spring or harvest time price of the underlying

futures market contract. For crops grown on the northern plains, the spring price is the average price of the harvest month futures contract during the month of February. This sets the price for determining the minimum revenue guarantee for revenue protection policies. The guarantee may increase if the harvest month average price is higher than the spring price. Other insurance policies such as yield protection and revenue protection-harvest price exclusion use the same spring price without any upward adjustment if the harvest price increases.

Thus the revenue safety net is very dependent on the commodity price level during the month of February of the current crop year. This has worked very well since 2007. Commodity prices have been steadily rising, providing for a revenue guarantee high enough to cover most if not total cost of production for many producers if they purchased higher levels of coverage. As currently structured, multi-peril crop insurance follows the market, up and down. In addition, there is no linkage to the cost of production. The costs to produce a crop have been steadily increasing for many years. This is reflected by the cost of production index reported annually by the Economic Research Service, shown in Table 1.

Table 1. Prices Paid Index Annual Average 1990-1992 Base, United States 2003-2011

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011
Index	125	133	141	150	162	188	181	187	209

The Prices Paid Index uses the years 1990-1992 as a base of 100. This index reflects changes in the price of inputs without regard to any adjustments in quantity of inputs used. The index for 2011 is 67% higher than 2003, with the average rate of increase about 8% per year. The only negative change from year to year occurred from 2008 to 2009. This drop in the Prices Paid Index corresponds with the drop in Prices Received by Producers in North Dakota for the three major crops in 2009, shown in Table 2. As crop prices increased substantially in 2010 and again in 2011, the prices paid for inputs increased as well.

Table 2. Prices Received by Producers - North Dakota, 2003-2011, USD per Metric Ton

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011
HRSW	131.17	123.46	133.75	164.98	273.74	264.19	180.04	249.12	300.20
Soybeans	243.24	211.28	197.31	219.73	353.84	356.78	340.25	400.51	437.25
Corn	93.30	74.01	70.86	109.05	159.83	147.24	125.19	197.23	228.73

From 2003 through 2005, crop prices were generally flat, yet the Prices Paid Index increased every year by an average of about 7% per year. There is little doubt that the price of inputs is determined partially by what the market will bear. However there is enough inflationary pressure to push input costs up to a small degree even when the ability to pay, as measured by crop prices, declines.

Crop insurance does not take into account cost of production, only revenue. If cost of production and market price do not move up and down together, crop insurance becomes inefficient as a safety net. The prices for major crops and the insurance guarantee have become very volatile in recent years, shown in Table 3. Revenue product crop insurance policies do a reasonably good job of protecting gross revenue within a crop year with a spring (February) and harvest month price discovery. Since the spring price sets the minimum guarantee for revenue policies for that crop year, any lost production below the guarantee level is indemnified at the higher of the spring or harvest time price. But this guarantee is only for lost production below the guarantee level. If the market price

declines during the year, any yield actually produced is potentially worth less than the guarantee. In addition, yield above the guarantee level is subject to loss in value if market prices decline during the season. This portion of the expected yield is not covered by the insurance policy. Revenue insurance policies alleviate some of the risk in forward pricing a portion of the crop before actual yield is known. The risk of pricing the crop before the yield is known lies in the market rising above the contracted price leaving the producer with having to make up the difference between the contract price and the price level at the contract delivery time period, if a shortfall in production occurs.

From year to year, there is no consistency in price levels and therefore in the level of coverage a producer is able to purchase. Each year, crop insurance prices are reset during the spring discovery

Table 3. Crop Insurance Safety Net Analysis for East Central North Dakota using Projected Yields, Costs and the Projected (Spring) Crop Revenue Insurance Price

Spring wheat	2008	2009	2010	2011	2012	2013	2014
Yield	2.49	2.62	2.76	2.96	2.96	2.96	2.96
Crop Insurance Price	408.11	227.75	199.46	363.29	287.99	310.03	238.77
Revenue Guarantee	711.03	418.24	385.08	752.70	596.68	642.34	494.69
Direct Costs	306.06	365.78	315.82	408.53	454.10	467.81	467.81
Overhead Costs	161.13	179.79	191.77	198.47	220.64	249.15	249.15
Total Listed Costs	467.19	545.57	507.59	607.00	674.73	716.96	716.96
+Labor & Mgmt	77.88	79.83	81.83	83.87	85.97	88.12	88.12
Total All Costs	545.07	625.40	589.42	690.87	760.70	805.08	805.08
Guar%/Total Costs	130.4%	66.9%	65.3%	108.9%	78.4%	79.8%	61.4%
SOYBEAN							
Yield	2.02	2.09	2.02	2.02	2.02	2.02	2.02
Crop Insurance Price	490.76	323.25	339.05	495.53	461.00	472.76	404.07
Revenue Guarantee	693.26	471.86	478.95	700.01	651.23	667.84	570.80
Direct Costs	244.46	315.18	305.17	332.28	360.64	389.50	389.50
Overhead Costs	164.02	180.65	191.06	197.58	219.72	249.20	249.20
Total Listed Costs	408.48	495.83	496.23	529.86	580.36	638.70	638.70
+Labor & Mgmt	77.88	79.83	81.83	83.87	85.97	88.12	88.12
Total All Costs	486.36	575.66	578.05	613.73	666.33	726.82	726.82
Guar%/Total Costs	142.5%	82.0%	82.9%	114.1%	97.7%	91.9%	78.5%
CORN							
Yield	6.32	6.79	6.86	7.00	7.27	7.60	7.60
Crop Insurance Price	198.36	148.40	146.57	220.77	208.65	207.54	174.48
Revenue Guarantee	878.00	705.79	703.95	1081.13	1061.07	1104.33	928.42
Direct Costs	503.15	650.59	569.49	665.49	754.05	819.46	819.46
Overhead Costs	195.04	221.38	232.82	240.03	264.50	302.72	302.72
Total Listed Costs	698.18	871.97	802.31	905.52	1018.55	1122.18	1122.18
+Labor & Mgmt	103.84	106.44	109.10	111.83	114.62	117.49	117.49
Total All Costs	802.02	978.41	911.41	1017.35	1133.17	1239.67	1239.67
Guar%/Total Costs	109.5%	72.1%	77.2%	106.3%	93.6%	89.1%	74.9%

* Note: Yields are in metric tons per hectare and monetary units are US dollars per hectare

period. Spring insurance prices are determined by the markets expectation of the harvest-time price for the new crop. Major changes in supply and demand can result in significantly different price levels from one crop year to the next.

If projected prices are very high during the month of February, it may be possible for producers to insure at a level that guarantees a profit. Likewise, if prices are very depressed during the month of February and remain low through the harvest month contract, the safety net provided by crop insurance may be low enough to result in severe financial hardship in the event of a significant loss.

Currently, there is significant support in the agricultural industry to rely on crop insurance as the primary safety net in the next farm program. The insured price of major commodities has been very attractive and generally rising since 2006, shown in Table 4. This extended period of excellent coverage may be leading to some denial of the outcome should prices begin a multi-year downward trend. The declining coverage as a result of lower insurance prices would be further compounded by the cost of production which may not be as quick to adjust to the lower price levels.

Table 4. Revenue Protection Insurance Prices, 2003-2011, USD per Metric Ton

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011
HRSW	138.52	146.97	127.13	204.66	242.88	408.22	227.81	260.15	363.39
Soybeans	268.96	246.92	211.28	227.08	358.25	490.90	354.94	427.33	495.67
Corn	93.30	111.41	91.33	140.15	159.83	212.59	159.05	217.31	248.81

Costs of production indices for some of the major inputs needed for crop production are shown in table 5. Over the past 9 years, the price of all of these inputs has increased, but there has been considerable variation in the level of increase. It can also be argued that the ability to impact the cost of these items by individual producers varies considerably by input item. The cost of inputs to the farm business can be altered by 1) the quantity used and 2) the price per unit. To deal with potential declining commodity prices and therefore, declining value of the crop insurance safety net, producers will have to make adjustments to the overall cost of inputs to the extent they have any control.

Table 5. Cost of Production Index, Selected Items, United States, 2003-2011

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011
Seeds	154	158	168	182	204	259	299	310	332
Fertilizer	124	140	164	176	216	392	275	252	328
Chemicals	121	121	123	128	129	139	150	144	145
Fuels	140	165	216	239	264	344	228	284	362
Machinery	151	162	173	182	191	209	222	230	244
Rent	123	126	129	141	147	165	184	190	205
Interest	94	126	129	133	142	147	138	132	135
Wages	157	160	165	171	177	183	187	189	192

Reducing the quantity used for most of the inputs listed would have a significant potential to reduce production as well and thereby be counter-productive. The most likely exceptions would be machinery and interest inputs. By reducing or delaying machinery purchases, the total machine cost per unit of production may be held in check. This will also reduce the need for financing, therefore reducing the interest expense. If there is excess hired labor on the farm it may be possible to reduce this input but most operations do not have excess labor capacity.

The ability of individual producers to impact the price of inputs used is insignificant for most of the listed items with the exception of rent. Land rent is the one input producers have more ability to set the level. It is also one of the largest input items for most major crops. Many land rent contracts are multi-year and therefore may be slow to adjust. But an extended period of low profitability will eventually lead to some level of decrease in land rents. It is difficult to see where individual producers can have much impact on the price of any of the other listed inputs. Any reduction in price level is likely to come about as a result of the industries involved finding it necessary to reduce prices to remain competitive in a financially weaker market.

Conclusions

Federally subsidized multi-peril crop insurance is currently being pursued as the primary component of the safety net in the next U.S. farm program. This is being touted as a more market oriented alternative to direct payments. Direct payments have been made regardless of the need and have come under considerable scrutiny during recent years of record net income levels for the crop production sector in the United States.

Crop insurance works very well as yield insurance. The level of coverage is at the individual insurance unit level and accounts very well for individual losses. Yields used for insurance levels do not change significantly from year to year and are generally reflective of trend yields due to improvements in technology. Therefore the coverage level due to yield is very stable and predictable from year to year.

The effectiveness of the price component of revenue protection insurance policies is less clear. Since 2007, the price level determined for revenue policies has been quite favorable. This has resulted in strong support for protecting crop insurance as the primary safety net component of the next farm bill. It remains to be seen if the reliance on crop insurance is acceptable if crop prices and therefore insurance price levels decline for an extended period of time. Crop insurance does a good job of protecting against individual yield loss. How well crop insurance effectively protects against systemic losses such as price declines is less clear.

Individual producers can alter their cost of production to some degree but not likely enough to offset a significant downturn in crop prices. A multi-year period of crop prices below cost of production will likely result in pressure from farm groups for another disaster compensation program.