THE COST EFFECTIVENESS OF CROP INSURANCE IN WESTERN NEBRASKA AND EASTERN WYOMING: A CASE FARM STUDY

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ORDER OF PRESENTATION

- Introduction
- Background
  - Key terms defined
  - Different insurance programs explored
- Methods and Procedures
- Results
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INTRODUCTION

- In western Nebraska and eastern Wyoming production agriculture is a very volatile business

- Crop production especially, is a very risky way to make a living with factor such as:

  - Harsh weather

  - Intolerable pests

  - Constantly changing commodity market prices

INTRO CONT.

- Is there any way for farmers to ensure revenue from crop production, even in the years the crop is completely wiped out?

- The USDA Risk Management Agency (RMA) offers different crop revenue insurance programs for risk adverse farmers to invest in

- Investing in crop insurance can be a risk in itself with premiums being expensive and the chances of having a claim are not always guaranteed

QUESTION:

Is revenue crop insurance a worthy investment for farmers in western Nebraska and eastern Wyoming?

BACKGROUND

Definitions:

- <u>Revenue Crop Insurance</u>: provides coverage against reduced gross income as a result of a reduction in yield or price

- <u>APH</u>: Actual Production History, recorded in bushels/acre and is figured yearly based on the historical production of a particular piece of land

REVENUE CROP INSURANCE PROGRAMS

- Income Protection Plan (IP)

- Revenue Assurance (RA)

- Adjusted Gross Revenue insurance (AGR)

- Group Risk Income Protection (GRIP)

- Crop Revenue Coverage (CRC) - the main insurance program explored for this study

ALL PLANS HAVE IN COMMON:

- Use two price discovery times to measure price fluctuation, the price before the insurance period begins (base price) and the price at harvest time (harvest price)

- Base price period for hard red winter wheat in Nebraska is from Aug. 15 - Sept. 14 and the harvest price period is from July 15 – Aug. 15

- Land is broken up into units in which revenue guarantee applies individually to each unit

- All pay the insured producer an indemnity when any combination of harvested and appraisal yield times the harvest price results in insurance revenue that is less than the revenue guarantee

INCOME PROTECTION PLAN (IP)

- Protects against reductions in gross income when a crop's price or yield declines from early season expectations

- Level of revenue protection is chosen by selecting either catastrophic coverage (27.5%) or a coverage level between 50-75%

- Only provided for enterprise units (all acreage of the crop in the county the insurer has an interest)

REVENUE ASSURANCE (RA)

- RA insurance provides dollar denominated coverage by the producer selecting a dollar amount of target revenue (65-75% of total expected revenue)
- Investors are also given a "Harvest Price Option" which is used to recompute the revenue guarantee when the fall harvest price is higher than the price before the insurance period
- Units in RA insurance can be broken into basic, optional, enterprise, and whole farm

AGR AND GRIP

- AGR insures revenue of the entire farm rather than an individual crop by guaranteeing a percentage of average gross revenue, this includes a small amount of livestock revenue

- GRIP insurance makes indemnity payments only when the average county revenue for the insured crop falls below the revenue chosen by the farmer

CROP REVENUE COVERAGE (CRC)

- CRC provides revenue protection based on price and yield expectations by paying for losses below the guarantee at the higher of an early season price or the harvest price

- Policy holders can select any county and crop combination but must insure all acreage of the crop in the county in which they have an interest

- Insurance is offered by units that describe acreage and locations and can be subdivided into optional units that are determined by location and/or production practice

- Producers choose the amount of revenue protection that meets their risk management needs by selecting a coverage level between fifty and seventy-five percent

CRC CONT.

- APH procedure is used to provide an established process for setting yields, underwriting, and yield measurements

- Crops covered by CRC in Wyoming are wheat and corn

- Crops covered in Nebraska are corn, grain sorghum, soybeans, and wheat

FIGURING CRC GUARANTEE EXAMPLE:

APH: 24 bu/acre   Coverage Level: 75%   Acres: 500
Guaranteed Bushels: (24*.75*500)= **9,000**
CRC base price: $4.25
Monetary Guarantee: (9000*4.25)= **$38,250**

Adjustment if the market falls: Harvest Price: $3.25
Adjustment factor: (4.25/3.25)=1.308
New Bushel Guarantee: [9000*(4.25/3.25)]= **11,769**
Monetary Guarantee: (11769*3.25)= $38,250

SO _if you produce 8,000 bu you get paid:_
[(11,769-8000)*3.25]= **$12,249.25**

Bottom line is when the market drops, the adjustment factor changes the number of guaranteed bushels at the harvest price.

FIGURING CRC GUARANTEE EXAMPLE 2:

APH: 24 bu/acre   Coverage Level: 75%   Acres: 500

Guaranteed Bushels: (24*.75*500)= **9,000**

CRC base price: $4.25

Monetary Guarantee: (9000*4.25)= **$38,250**

Adjustment if the market strengthens: Harvest price: $5.25

New Monetary Guarantee: 9000*5.25= **$47,250.00**

SO _if you produce 8,000 bu you get paid:_

[(9000-8000)*5.25]= **$5,250.00**

METHODS AND PROCEDURES

- A case farm was used to illustrate the risk and reward tradeoff of investing in CRC insurance

- The case farm is located in western Nebraska in Cheyenne and Kimball counties

- It utilizes a wheat, millet, summer fallow rotation

- Only the CRC insurance on the wheat was analyzed

- All of the following data was recorded by the case farm manager in the past years

PREFERRED INCOME AND CRC GUARANTEE

Year	Cash Flow Income	CRC Guarantee	Premium
2009	$82,219.00	$67,178.00	$6,667.00
2008	$178,808.80	$99,072.00	$7,723.00
2003	$71,053.86	$69,054.50	$4,582.00*
2002	$64,160.60	$44,595.00	$2,959.00
2001	$65,905.18	$40,621.12	$2,048.40
2000	$60,835.18	$40,084.62	$1,845.35

The * premium is an estimation based on the previous year's premium.
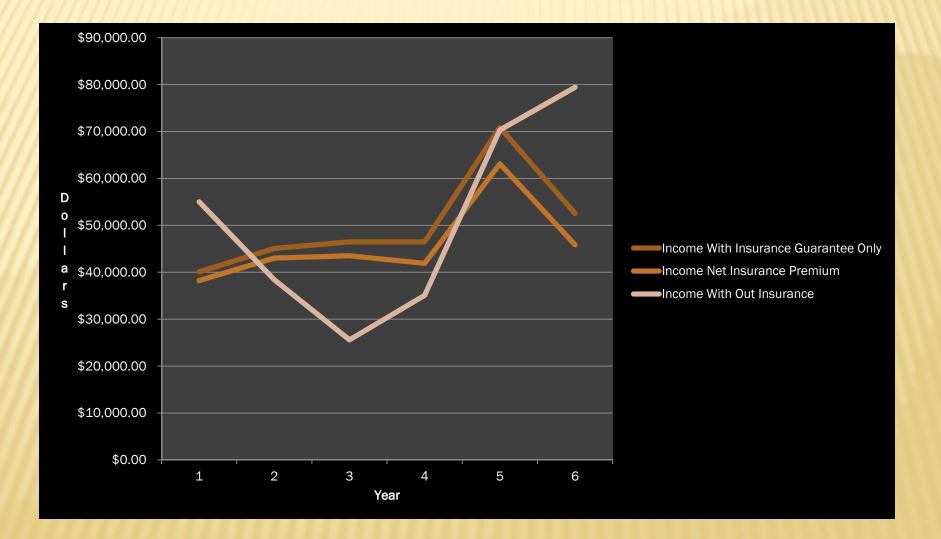
CRC GUARANTEED BUSHELS AND ACTUAL YIELD

Year	APH Range in Bushels/Acre	CRC Coverage	Total Acres Planted	Number of Bushels Guaranteed	Actual Yield in Bushels
2009	19.5-26.3	75%	361.2	5991.42	9057.34
2008	19.5-44.3	75%	560.4	12049.87	11956.75
2003	35-80	75%	457	13915.51	10500.32
2002	35-80	75%	396.4	13915.51	7665.01
2001	35-55	75%	458.8	13618.52	11601.35
2000	35-55	75%	411.8	12725.28	17466.91

INCOME COMPARISON

Year	Income With Insurance Guarantee Only	Income Net Insurance Premium	Premium to Guaranteed Income Ratio	Income With Out Insurance
2009 price = $8.77	$52,544.75	$45,877.75	0.09924	$79,432.87
*2008 price = $5.88	$70,853.24	$63,112.24	0.07795	$70,305.69
*2003 price = $3.34	$46,477.80	$41,895.80	0.06557	$35,071.07
*2002 price = $3.34	$46,477.80	$43,518.8	0.06635	$25,601.13
*2001 price = $3.31	$45,077.30	$43,028.90	0.05043	$38,400.46
2000 price = $3.15	$40,084.63	$38,239.28	0.04604	$55,020.77

An * shows the years that there was a claim on insurance

INCOME COMPARISON

COMPARISON OF PREMIUMS PAID TO INDEMNITIES RECEIVED

Year	Premiums	Indemnities
2009	$6,667.00	$0.00
2008	$7,723.00	$548.00
2003	$4,582.00	$11,407.00
2002	$2,959.00	$20,877.00
2001	$2,048.00	$6,677.00
2000	$1,845.00	$0.00
Totals	**$25,824.00**	**$39,509.00**

RESULTS

- The case farm had claims on insurance in 4 of the 6 years

- 3 of those 4 years the benefit from insurance claims was greater than the cost of premiums

- It is evident that Crop Revenue Coverage insurance served as an effective way for the farm manager in this case to protect the farm's guaranteed income

RISING PREMIUM COSTS

- The ratio of premiums to guaranteed revenue has risen over the years recorded by the farm manager
- This brings up the question of whether the increasing premium prices are still worth it
- What ratio of premiums to guaranteed revenue revenue would make the premiums "too expensive"?
- $301,516 *?=$39,509   ?=.131

CONCLUSION

- Investigated different revenue crop insurance programs, specifically CRC insurance
- With all the calculations based on the case farm's data, it was determined that revenue crop insurance, such as CRC, has in fact proven to be beneficial to producers in the western Nebraska, eastern Wyoming region
- Revenue crop insurance is NOT, however a of making a profit on a yearly basis - just an excellent way of decreasing risk of income loss

RECOMMENDATIONS

- Farmers should research insurance programs available to them

- Decide how to best break up their land into units (this can make quite a difference)

- Decide what level of protection is sufficient for the farm

- Use of insurance as an effective risk management tool

LIMITATIONS OF STUDY

- Only 6 years of data with a fairly large gap in the middle

- Only one case study farm to represent the farming community in a fairly large area

- Only one insurance program was studied in depth and only one level of coverage

IDEAS FOR FURTHER STUDY

- Collect data from a larger population of farms in the area who do invest in revenue crop insurance

- Study the effects of the different insurance programs

- Also investigate specific insurance offered by private insurance companies such as hail, drought, flood, etc.

SOURCES

Madden, K. (2010, February 21). Crop Insurance Experience. (T. Madden, Interviewer)

Madden, K. (2009). *Historical Crop Insurance Records*. Potter, NE.

Risk Management Agency. (1999, December). *2000 Revenue Crop Insurance Plans*. Retrieved November 11, 2009, from United States Department of Agriculture: http://www.rma.usda.gov/pubs/2000/2000rcip.pdf

Risk Management Agency. (2009, June). *Crop Policies*. Retrieved November 21, 2009, from United States Department of Agriculture: http://www.rma.usda.gov/policies/

QUESTIONS