Livestock Revenue Insurance

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Crop farmers have crop insurance, why can't livestock producers have livestock insurance?

Because until recently, livestock was excluded from the federal crop insurance act.

The Agricultural Risk Protection Act now authorizes livestock revenue insurance pilot programs.

What perils should livestock insurance cover?

- Farmers face both price risk and production risk
- Price risk is much greater than production risk for livestock producers.
- Insuring weight gain or number of animals raises moral hazard fears.
  - Most insurance companies and pork producers are interested in price insurance.

At least two pilot program submissions

- One led by three Iowa crop insurance companies and the Iowa Department of Economic Development and the Iowa Pork Producers Association with help from CARD
- Another led by a private group.

How Does Price Insurance Work?

What do we want insurance to do?

Make a payment when something goes wrong.

The payment should grow as the loss increases.

How Does Price Insurance Work?

Suppose you buy price insurance of $35/cwt.

- If price is $40, no payment.
- If price is $30, then payment is $5/cwt
- If price is $20, then payment is $15/cwt

This is just like purchasing an option on the CME.

Why do we need insurance if we can buy options?

- Contract size on CME may be too large.
- Contract months may not follow marketings.
- Need to cover feed cost risk.
- Wariness of dealing with commodity brokers.

Why insurance? We already have packer contracts!

- Some risk management tools offered by packers limit both upside and downside price movements.
- Are risk management tools offered by packers fairly priced?

How is Coverage Determined?

First decide if operation is a farrow to finish operation or only a finishing operations.

Next determine the number of hogs to be marketed on a monthly basis.

Hog Insurance Policy Set-Up

The policy provides six-month (Feb. - July and Aug. - Jan.) coverage.

It is renewable where the marketing plan and price levels are adjusted each six month period

Price guarantees are based on futures prices and are set by January 15 for the Feb. – July policy and July 15 for the Aug. - Jan. policy

Hog Insurance Policy Set-Up

Farrow to Finish option

Gross margin per hog_t = 2.5*0.74*LeanHog $Price_t$
- 13.22 bu. * Corn $Price_{t-3}$
- (188.52 lb./2000 lb.) * SoyMeal $Price_{t-3}$

Finish Only option

Gross margin per hog_t = 2.5*0.74*LeanHog $Price_t$
- 10.19 bu. * Corn $Price_{t-2}$
- (147.31 lb./2000 lb.) * SoyMeal $Price_{t-2}$

Hog Insurance Policy Set-Up

Hogs are assumed to be marketed at 250 lb.

The lean hog futures price is converted to a live weight basis by multiplying by a factor of 0.74.

The feed prices are lagged to represent the middle of the feeding period.

The production plan is based on estimated livestock returns series from Iowa State University Extension.

Prices in 2000

Month	Lean Hogs ($/cwt)	Corn ($/bu)	Soymeal ($/ton)
Feb	55.47	1.89	144.06
Mar	56.61	1.97	151.24
Apr	57.75	2.06	152.12
May	61.74	2.14	153.00
Jun	65.72	2.18	153.40
Jul	64.30	2.22	153.80

Monthly Guarantees

Month	Gross Margin ($/hog)
Feb	72.75
Mar	73.51
Apr	74.64
May	81.14
Jun	88.07
Jul	85.01

Marketing Plan 1

Month	Gross Margin ($/hog)	Hogs Marketed
Feb	72.75	100
Mar	73.51	0
Apr	74.64	0
May	81.14	0
Jun	88.07	0
Jul	85.01	0

Marketing Plan 1

Coverage Level = 100%

Revenue Guarantee = $7,250

Premium = $155.86 or $1.56/hog

Marketing Plan 2

Month	Gross Margin ($/hog)	Hogs Marketed
Feb	72.75	0
Mar	73.51	0
Apr	74.64	0
May	81.14	0
Jun	88.07	0
Jul	85.01	100

Marketing Plan 2

Coverage Level = 100%

Revenue Guarantee = $8,501

Premium = $649 or $6.49/hog

vs. $1.56 per hog with Plan 1

Marketing Plan 3

Month	Gross Margin ($/hog)	Hogs Marketed
Feb	72.75	17
Mar	73.51	17
Apr	74.64	17
May	81.14	15
Jun	88.07	17
Jul	85.01	17

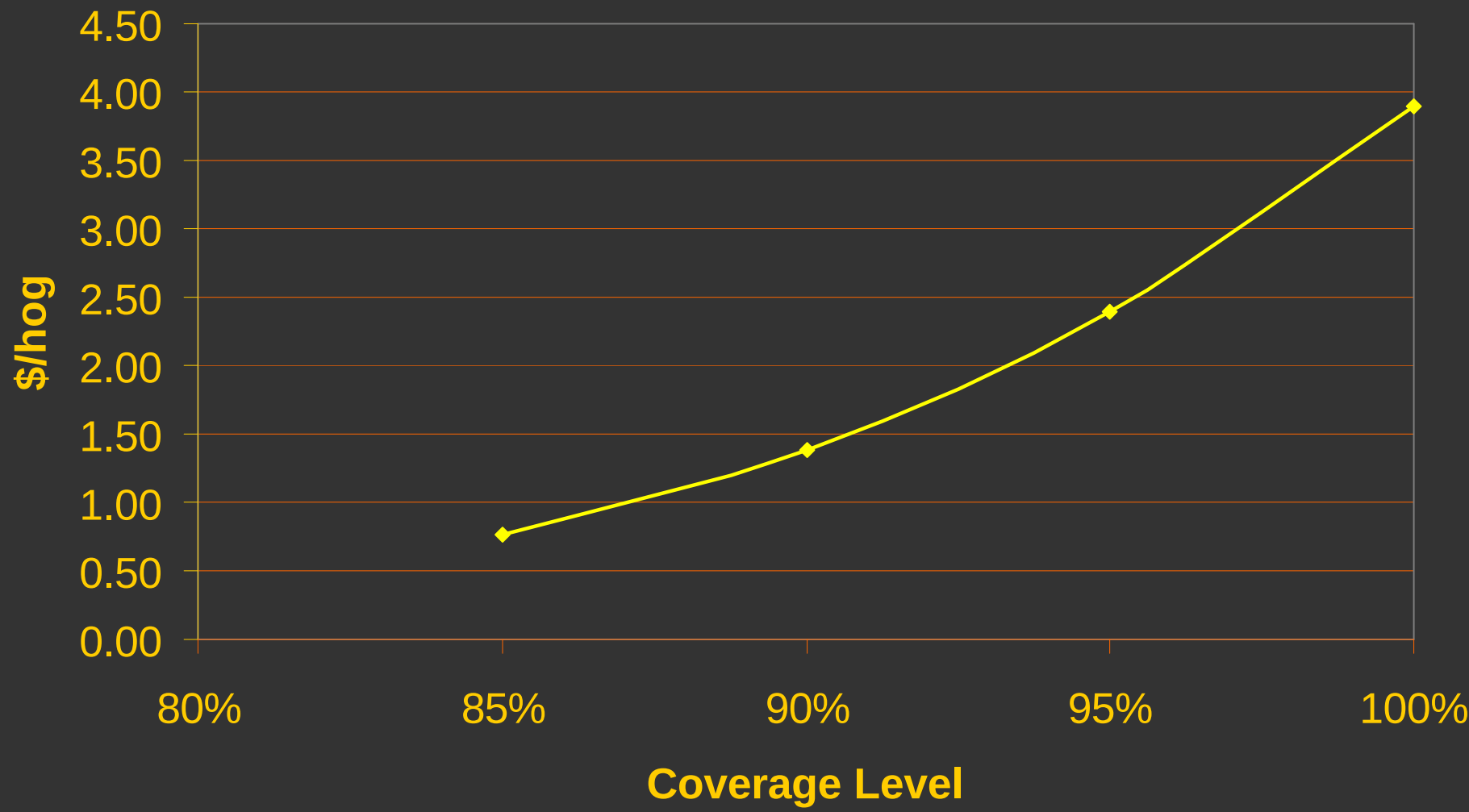
Marketing Plan 3

Coverage Level = 100%

Revenue Guarantee = $7,915

Premium = $390 or $3.90/hog

Effect of Coverage Level on Per-Hog Premium Under Plan 3



Determinants of Premium

Coverage level

Degree of temporal diversification of marketing plan (six months of marketing vs one month)

Level of prices

Price volatilities

Determining Indemnities

Month	Projected Lean Hogs ($/cwt)	Actual Lean Hogs ($/cwt)
Feb	55.47	55.54
Mar	56.61	61.45
Apr	57.75	67.36
May	61.74	68.61
Jun	65.72	69.86
Jul	64.30	68.07

Determining Indemnities

Month	Projected Corn ($/cwt)	Actual Corn ($/bu)	Projected Soymeal ($/ton)	Actual Soymeal ($/ton)
Feb	1.89	1.89	144.06	144.06
Mar	1.97	2.00	151.24	151.24
Apr	2.06	2.11	152.12	159.98
May	2.14	2.22	153.00	168.72
Jun	2.18	2.29	153.40	177.89
Jul	2.22	2.35	153.80	187.06

Any Indemnity?

Feed prices up

Hog prices up

Depends on the relative weights

Determining Indemnities

Month	Projected Revenue ($/hog)	Actual Revenue ($/hog)
Feb	72.75	72.88
Mar	73.51	82.16
Apr	74.64	91.33
May	81.14	91.88
Jun	88.07	92.85
Jul	85.01	88.21

Any Indemnity Under Plan 3?

Revenue guarantee = $7,915

Revenue to count = $8,645

No indemnity

This policy is an exotic option

An Asian, basket, spread option.

- Asian (option on average price of a futures contract)
- Basket (more than one asset)
- Spread (difference between asset values)