Crop Insurance
What it is
What it's not
When it's Worthwhile

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Managing Risks in the Produce Market

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Goal Today

- What is Risk? What is Risk Management?
- Where crop insurance fits into risk management for vegetable growers
- Specifics of AGR-Lite
  - New crop insurance policy (partly) intended for vegetable growers

Agriculture is Risky

What is Risk?

- Risk is a four-letter word!!!
  - Most people think of risk as something like
  - “Possibility of a loss”
  - “Chance of a bad outcome”
- Usually seen as something bad

What is Risk? Economic definition

- When you take an action and do not know for sure what the exact outcome will be
- Your actions have variable or random outcomes
  - Can be **good or bad**, just unknown when act
- Plant a crop: do not know what yield and price will be—Could make a lot of money
- Rent space at a farmer's market: do not know how much will sell at what price

Major Categories of Agricultural Risk

1. Production and Technical Risk
2. Market and Price Risk
3. Financial Risk
4. Human Resource Risk
5. Legal and Institutional Risk

Go over each and provide examples

Production and Technical Risk

Uncertainty in crop yields or livestock gains due to numerous factors

- <u>Weather</u>: flood, drought, hail, frost, etc.
- <u>Pests and Diseases</u>: ECB, CRW, Soybean Aphid, Soybean Rust, BSE, brucellosis, etc.
- <u>New Technologies</u>: new herbicides, hybrids (transgenics), tillage, planter, harvest machines, milking facilities, organic, intensive grazing methods, IPM, soil testing, etc.
- <u>Input Shortages</u>: custom machinery or application, trucking, pesticides/fertilizers

Market and Price Risk

Uncertainty in prices or ability to market production

- Input price changes: fuel, fertilizer, fungicide, feed/grain, seed, etc.
- Crop and livestock prices vary continuously with world conditions (CBOT, CME)
- Market Access: Hurricane Katrina shut down barge traffic fall 2004
- Farmers market closes or a new one opens
- Processor/Contractor/Buyer goes out of business or changes quality requirements

Financial Risk

Money borrowed or external equity provided creates risk

- Interest rate changes for operating loans
- Change in value of assets used as collateral
- Ability to generate income to meet debt obligations (liquidity and solvency)
- Lender's/investor's willingness to continue lending/providing capital changes

Human Resource Risk

Several people are key to a farm business and potential for changes creates risk

- Employee management problems: availability, retention, turnover, criminal activity, disputes, etc.
- Injury, illness, death of manager/key employee
- Key employee, spouse, child: retires, career change, relocates, etc.
- Family disputes, divorces, etc.: personal stress, plus losses from legal settlements, property diversions, financial reallocations, etc.
- Estate Planning: how are farm assets going to be transferred between generations?

Legal and Institutional Risk

Created by regulations and legal liabilities

- Regulations for manure, chemicals, facility siting, antibiotic use, carcass disposal, burning, food safety
- Liability for accidents: machinery and livestock, visitors to farm operation, food safety
- Labor laws: taxes, worker health and safety, residency requirements
- Contractual obligations: contracts with processors, food safety and GAP/GHP requirements for selling to wholesalers, farmers markets, CSA's
- Tax liability: properly file all required forms
- Ignorance of law is not a legal excuse

Tools to Manage Risks

Numerous risk management tools exist, but they generally fall into these 3 categories

1) Reduce variability of outcomes

2) Maintain decision making flexibility

3) Improve risk bearing capability

I'll overview some tools to manage these risks and how they fit into these categories to give you the idea

Example Tools to Reduce Income Variability

- Insurance
  - Crop insurance (more on this later)
  - Business liability insurance
- Inputs
  - Productive and protective inputs
  - Legal advice
- Diversification

Crop Insurance

- Yield or Revenue Insurance
  - If yield is less than your yield guarantee, receive an indemnity for lost yield
  - If revenue is less than your revenue guarantee, receive an indemnity for lost revenue
- It's all in the details
  - What triggers indemnities, how establish guarantees, how much paid for losses, how much are premiums?
- Reduces both the mean and variability of income: Pay premiums (lower mean), but get indemnities when have losses (lower variability)

Business Liability Insurance

- Provides coverage for your business liability risks
  - Mud on highway causes accident
  - Food poisoning from your produce
  - Visitors on your farm injured
- Part of your farm/home insurance?
  - Tornado/flood damage to property/buildings
  - Fire burns down your storage/cleaning facility

Inputs to Reduce Income Variability

- Some inputs are not productive, but <u>protective</u>, i.e., solely for reducing the probability and/or size of losses
  - Fire alarm and sprinkler system, Anti-theft inputs (locks, security system, etc.), Pest control, Flood control, Lightening rods
  - Legal advice: organize farm as LLC to protect your assets, marketing contracts in your best interest, labor contracts and practices legal and limit your liability for fines, tax liability
- Most productive inputs not only change mean returns, but also affect the variability of returns
  - Fertilizer, New/Improved machinery and equipment, Irrigation
  - Information: soil test, pest scouting

Inputs to Reduce Income Variability

- Some inputs aren't productive, but <u>protective</u>, solely for reducing the probability and/or size of losses
  - Fire alarms, sprinkler system, anti-theft devices, pest control, flood control, deer/hog fence
  - Legal advice: organize farm as LLC to protect your assets, marketing contracts in your best interest, labor contracts and practices legal and limit your liability for fines, minimize tax liability
- Most productive inputs change mean returns and the variability of returns
  - Fertilizer, New machinery/equipment, Irrigation
  - Information: soil test, pest scouting

Diversification

- Main idea: don't rely on one enterprise, but spread your assets (time, money) among several
- Find uncorrelated enterprises, so when one is down, the others are not likely not
  - Grain & Livestock: Low grain prices usually mean higher livestock income and vice versa
  - Farm and non-farm enterprises
- Mix a stable enterprise and a risky one
  - Conventional & organic; oats & tomatoes, grain & dairy
- Geographically diversify production and marketing
  - Ridge and valley farms, Minneapolis and Chicago

Comparison of Specialized and Diversified Farms in Kansas, 1992-2001

	Net Farm Income		
Farm Type	Average	St. Dev.	CV
Hog	$78,285	$59,855	76%
Beef Cow	$16,737	$20,670	123%
Beef Backgrounding	$19,795	$28,037	142%
Crop & Livestock	$36,907	$24,243	66%

<u>Main point:</u> If you are going to specialize (be non-diversified) be very good at what you do and plan to weather hard times, your income may be higher, but also more volatile

Source: Kansas Farm Management Association (2001) in KED, ch. 15

Tools to Manage Risks

Three categories of tool to manage risk

1) Reduce variability of outcomes

    (just did this one)

2) Maintain decision making flexibility

3) Improve risk bearing capability

Maintain decision making flexibility

- Don’t lock in activities for a long time, rather maintain flexibility in case situations change
- Annual crops instead of perennial crops
- Invest in buildings and equipment with multiple uses, so can change with opportunities
- Build storage facilities to spread out sales
- Use hoop houses and similar to extend season
- Sell or finish out feeder livestock
- Rent assets (land, machinery) for flexibility, so can drop contract if opportunities change

Improve risk bearing capability

- Main idea: leave a safety margin or have a reserve so you can weather “bad luck”
- Extra Production Capacity:
  - Bigger/newer/extra machinery and extra labor than needed so can “catch up” if rainy spring or harvest
- Liquid Reserve: maintain cash or liquid assets to meet sudden short falls
- Credit Reserve: don’t borrow up to your credit limit so can make it through a bad year
- Make crops more resilient to stresses (drought, pests, water) by longer-term soil management (?)

Summary

- Risk: when actions have variable outcomes
- 5 types in Agriculture
  - Production and Technical Risk
  - Market and Price Risk
  - Financial Risk
  - Human Resource Risk
  - Legal and Institutional Risk
- 3 main categories of risk management tools
  - Reduce variability of outcomes
  - Maintain decision making flexibility
  - Improve risk bearing capability

Where does crop insurance fit in?

- One type of risk management tool to reduce income variability due to
  - Production/Technical (yield) risk and/or
  - Market/Price risk
  - Usually reduces financial risk as a result
- Are other tools to deal with these and other risks in agriculture

Questions?

What is AGR-Lite? Adjusted Gross Revenue-Lite

- Traditional crop insurance programs not useful for many small specialty farmers
  - Crop not covered: fresh tomatoes, sweet corn
  - Organic crops valued at conventional prices
  - NAP coverage insufficient too: need > 50% yield loss, paid at 55% of conventional price
- Penn. Dept. Ag. developed AGR-Lite for its small specialty crop growers
- RMA provides premium subsidies for farmers, now available in many states

What is AGR-Lite?
Adjusted Gross Revenue-Lite

- First available in Wisconsin in 2007
- Whole farm revenue insurance
  - **<u>Gross revenue</u>**, not net revenue
- Gross Revenue guarantee based on 5 year average of Schedule F or similar tax records reported to IRS
  - Some adjustments (<u>Adjusted</u> Gross Revenue)
  - <u>Lite</u>: $1,000,000 liability (indemnity) limit

AGR-Lite: Main Idea

- Use your past tax records to determine your expected gross revenue for 2008
- Farmer chooses percentage of this expected gross as their revenue guarantee
  - 65%, 75%, 80% coverage level, implying 35%, 25%, or 20% deductible
- Farmer chooses payment rate (90% or 75%)
  - For every dollar below guarantee, paid 90¢ or 75¢
- After file taxes for 2008, if actual gross revenue is less than chosen guarantee, farmer receives an indemnity based on chosen payment rate

What is Excluded?
The "Adjusted" in AGR-Lite

- Value added activities: (e.g., cost & value of post-production sorting, packaging, etc.)
- Cooperative dividends not directly related to commodities produced
- Income from custom hire machine work
- <u>Most</u> other USDA payments (e.g., disaster)
- Crop insurance indemnity payments

Covered Crops

- <u>Grains:</u> corn, soybeans, wheat, small grains
- <u>Forage:</u> alfalfa, corn silage, silage, …
- <u>Fruit:</u> apples, pears, peaches, plums, cherries, cranberries, numerous berries, …
- <u>Livestock:</u> cattle, hogs, sheep, goats, poultry, dairy, fish, fur, …
- <u>Miscellaneous:</u> mint, ginseng, popcorn, herbs, maple syrup, honey, X-mas trees nursery crops, cut flowers, potted plants, …

Covered Vegetable Crops

- Potatoes, sweet corn, snap beans, peas
- Carrots, onion, beets, garlic, celery, …
- Cabbage, broccoli, cauliflower, …
- Melons, squash, pumpkins, …
- Tomatoes, peppers, eggplant, …
- Greens, asparagus, horseradish, …
- Even more

Crops Not Covered

- Covered crop/livestock must generate income to report on tax forms, so crops marketed through livestock are not covered
  - Forage if sold it is covered, but not if fed to dairy cows (but the milk is covered)
- Coverage based on Gross Income, not net income
  - No indemnity for higher costs, such as dry year when have to run irrigation more or buy forage for livestock/dairy

Insured & Excluded Causes of Loss

- Revenue losses from natural causes (yield) or from market fluctuations (price)
  - Must still follow good farming practices
- Excluded causes of loss
  - Theft, vandalism, “mysterious disappearance”
  - Lack of labor (e.g., to harvest ripe crop)
  - Inability to market commodities due to quarantine, boycott
  - Failure of buyer to pay for commodity

How does AGR-Lite work?

- Calculate average gross revenue from 5 continuous years of tax forms
- A crop generates at least 11.1% of gross revenue
- Each crop has a risk category (1-5)
  - Higher risk crop, higher premium
- Premium is average of premiums for each crop, weighted by % gross revenue from each crop
- Can combine AGR-Lite with APH/CRC policies
  - Gives a premium break for APH/CRC
  - Give specific coverage for those crops

Available AGR-Lite Options

Coverage Level	Payment Rate	Minimum # Crops	Max Annual Income	Premium Subsidy
65%	75%	1	$2,051,282	59%
65%	90%	1	$1,709,402	59%
75%	75%	1	$1,777,778	55%
75%	90%	1	$1,481,481	55%
80%	75%	3	$1,666,667	48%
80%	90%	3	$1,388,889	48%

Hypothetical Example

Year	AGR Income
2002	$85,000
2003	$95,000
2004	$115,000
2005	$95,000
2006	$110,000
5-year avg	$100,000
2007	skip year
2008	coverage year

These all "adjusted" gross revenues

Choose coverage level for revenue guarantee based on this amount

2007 tax forms not field yet

Hypothetical Example

- Suppose chose 75% coverage level and 90% payment rate
- Guarantee = 75% x $100,000 = $75,000
- Actual Adj. Gross Rev = $50,000
- Loss = $75,000 – $50,000 = $25,000
- Indemnity = 90% x $25,000 = $22,500

- Max Indemnity = 90% x $75,000 = $67,500

Random Comments

- Adjusts slowly for income growth/decline
  - Guarantees too low if income rapidly growing
  - Guarantees too high if income rapidly falling
- Combine with specific crop policies when available (overall premium savings)
- Five consecutive years Schedule F/1040 tax records needed
- No more than 50% income from ag commodities purchased for resale

Questions
(other than premiums)

How AGR-Lite does premiums

- Crops categorized from low to high risk, plus one "other" category (very high risk)
- Each crop risk category has base premium rate = premium as % total liability (max indemnity)
- Calculate % revenue for each crop
- Your premium rate is the average of the premium rates for each crop, weighted by the % of your revenue from that crop
- Diversity Factor: as have more crops, lower rate
- Premium subsidy: farmer pays 41%, 45%, 52% of premium, with lower % for lower coverage

Hypothetical Example

- $100,000 avg revenue with 75% coverage level and 90% payment rate gives $75,000 guarantee and liability of $67,500
- 75% revenue from crop 1, 25% from crop 2
  - Crop 1 premium rate = 0.10, Crop 2 rate = 0.05
- Revenue Weighted Average rate
  - 0.75 x 0.10 + 0.25 x 0.05 = 0.0875
- Diversity factor = 0.0875 x <u>0.667</u> = 0.0584
- Premium is 0.0584 x $67,500 = $3,942
- Premium subsidy rate is 55%, so farmer pays (100 – 55) = 44%, or 0.45 x $3,942 = $1,774

How to get lower premium rates

- Derive more revenue from low risk crops
  - See next slides for crop lists
- Have as many crops as you can
  - Diversity factor reduces premium rate more
- Choose lower coverage level
  - Implies higher premium subsidy rate

Crop Risk Categories

- Category 1: lowest risk
  - Oats, Rye
- Category 2: moderately low risk
  - Cabbage, Cucumbers, Flowers (Other), Processing Sweet Corn, Barley
- Category 3: moderate risk
  - Asparagus, Beets, Broccoli, Brussel Sprouts, Carrots, Cauliflower, Garlic, Herbs, Horseradish, Popcorn Strawberries, Cranberries, Potted Flowers, Seasonal Potted Plants, Flower Seed, Maple Syrup, Pumpkins, Processing Summer Squash, Winter Squash
  - Corn, Soybeans, Wheat, Alfalfa, Clover, Hybrid Corn Seed, Forage Production, Other Forage Seeds

Crop Risk Categories

- Category 4: moderately high risk
  - Green Peas, Greens, Mixed Vegetables, Fresh Market Snap Beans, Fresh Market Sweet Corn, Fresh Market Tomatoes, Onions, Peppers (Other), Eggplant, Dry Beans, Grapes, Vegetable Seed
  - Apples, Plums, Blueberries, Raspberries, Other Berries, Christmas Trees, Mint, Cut Flowers, Dried Flowers, Flower Bulbs, Bedding Plants, Ginseng, Other Small Grains
- Category 5: high risk
  - Potatoes, Tart Cherries, Apricots, Peaches, Pears, Melons (All Other), Celery, Other Vegetables, Other Crops, Other Fruits,

Main Point

- Get as many low risk crops and as much of your revenue from them as you can
  - See if you can get 11.1% of revenue from a category 2 or 3 crop, will reduce your premiums
- Choose general categories with care and group crops carefully
  - Mixed Vegetables (4) vs Other Vegetables (5)
  - Flowers (Other) (2) vs Potted Flowers (3) vs Cut Flowers or Dried Flowers (4)
- If you can, insure the crop under a standard crop insurance policy, then add AGR-Lite, will save on overall premium rate

Diversity Factor

Ranges 67% to about 40%

These are all Risk Category 4 crops

See effect of coverage level on premium rates as well

How do AGR-Lite premiums compare to other policies?

Risk Category	65% Covg Lvl*	75% Covg Lvl*
1	2.2%	3.4%
2	3.0%	4.5%
3	3.8%	5.6%
4	5.4%	7.6%
5	6.4%	8.6%
	Avg Rate for WI in 2007	
Corn CRC	5.9%	
Soybeans CRC	5.0%	
Wheat CRC	5.7%	

*Rates do not include diversity factors.

Main Point

- AGR-Lite premiums are about the same as for corn, soybeans, wheat CRC
  - Can be a little higher if no diversity factor
  - A little lower once include diversity factors

Is AGR-Lite Worth the Cost?

- If $100,000 revenue, 75% coverage level and 90% payment rate
  - Trigger is $75,000 with $67,500 max payment
  - About 4.5% premium rate for $67,500 liability costs $3,038, or about 3% of expected $100,000 income
- Insurance increases your costs about 3%
  - Is 3% lower income worth an income guarantee of 67.5%?
  - Do you need a guarantee? Can you survive without one? What about peace of mind?
  - Can you pass the cost along in your prices?

Questions?

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