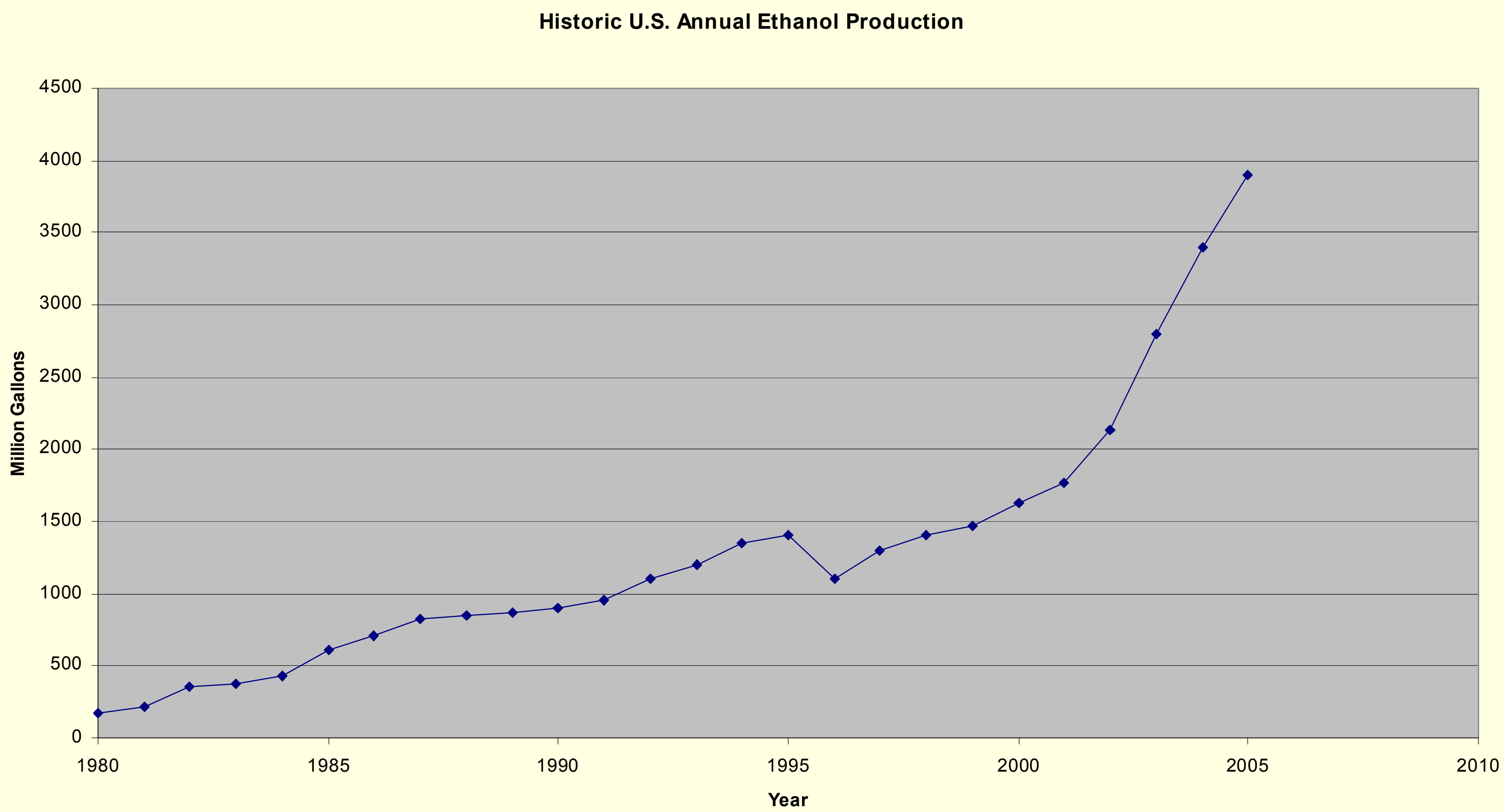
Feed Procurement Strategies in an Ethanol Fueled Market.

Brian Buhr
Professor
Applied Economics
University of Minnesota

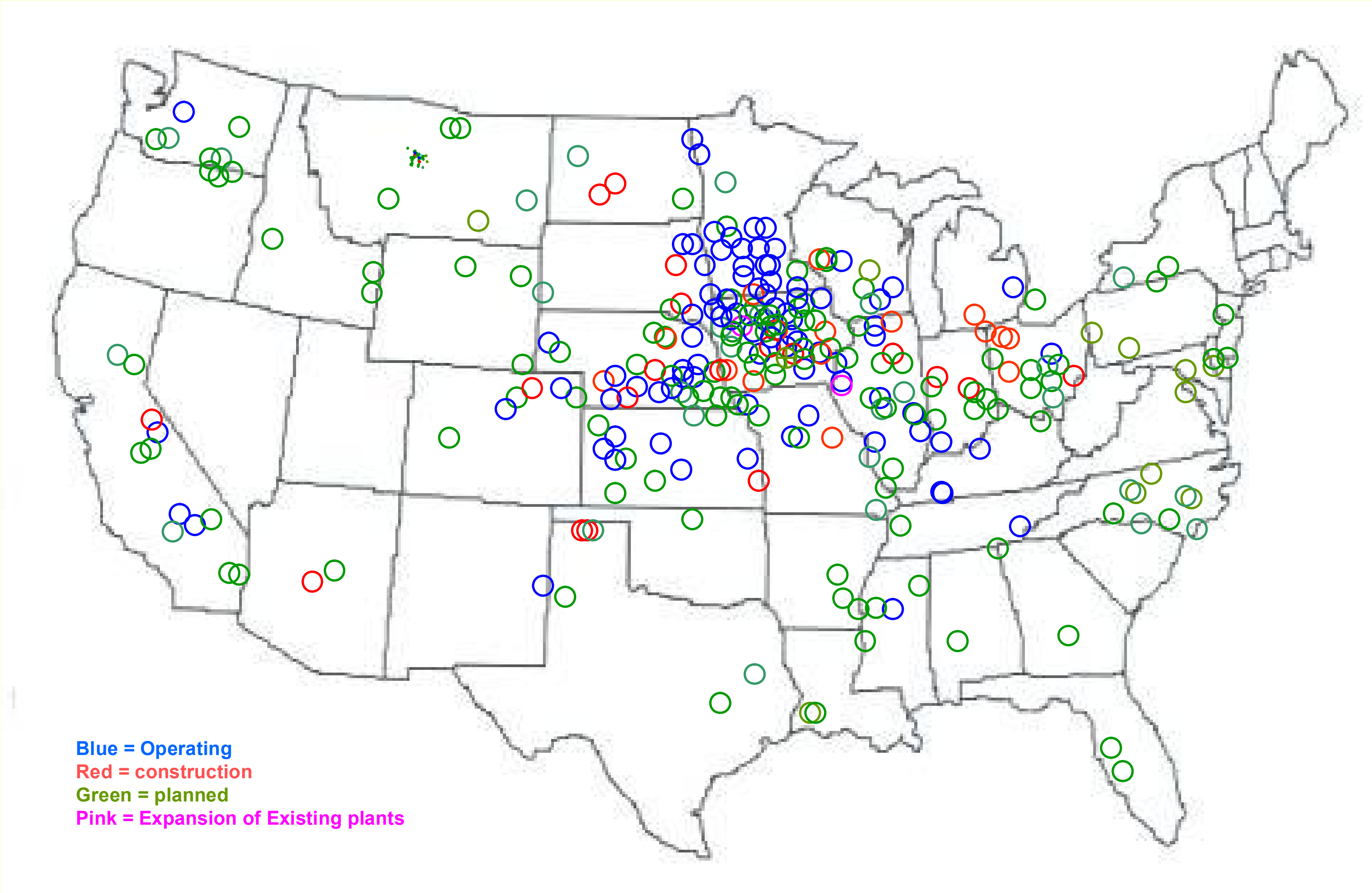
Minnesota Pork Congress
January 17, 2006

Ethanol's Rapid Growth

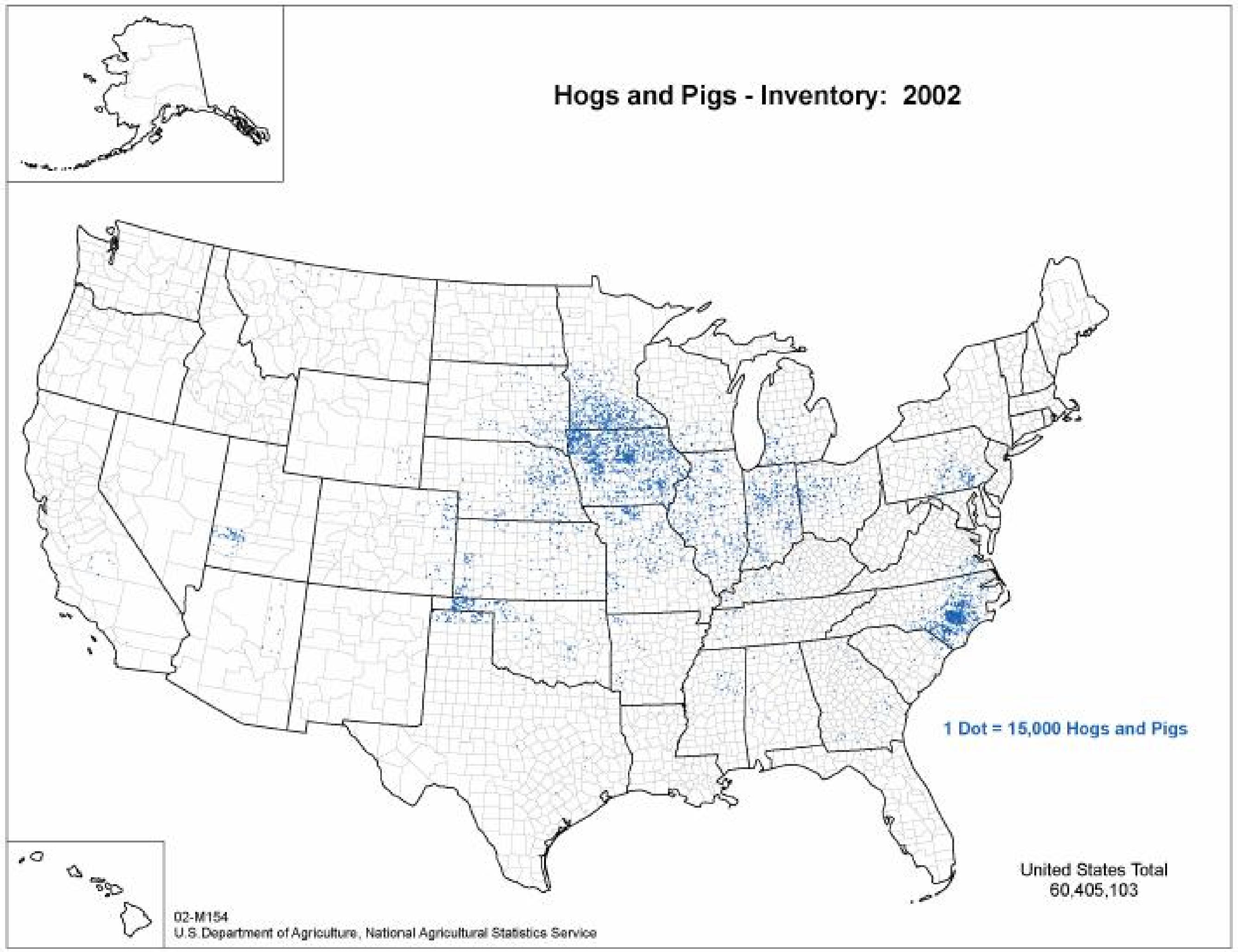


Ethanol Grows Where Corn Grows

Existing & Planned U.S. Corn Processing Plants



Hogs Grow where Corn Grows



Ethanol Corn Use Projections

- CARD, ISU Nov. 2006 (www.card.iastate.edu)
  - **11.2 billion bushels** by 2015 (+20%)
- FAPRI – Missouri (FAPRI July 2006 Baseline)
  - Corn Use for ethanol 3.45 billion bushels by 2010/11
- Robert Wisner, Iowa State University 2006
  - Corn use for ethanol 3.5 billion bushels 2008/09

- U.S. Corn Production

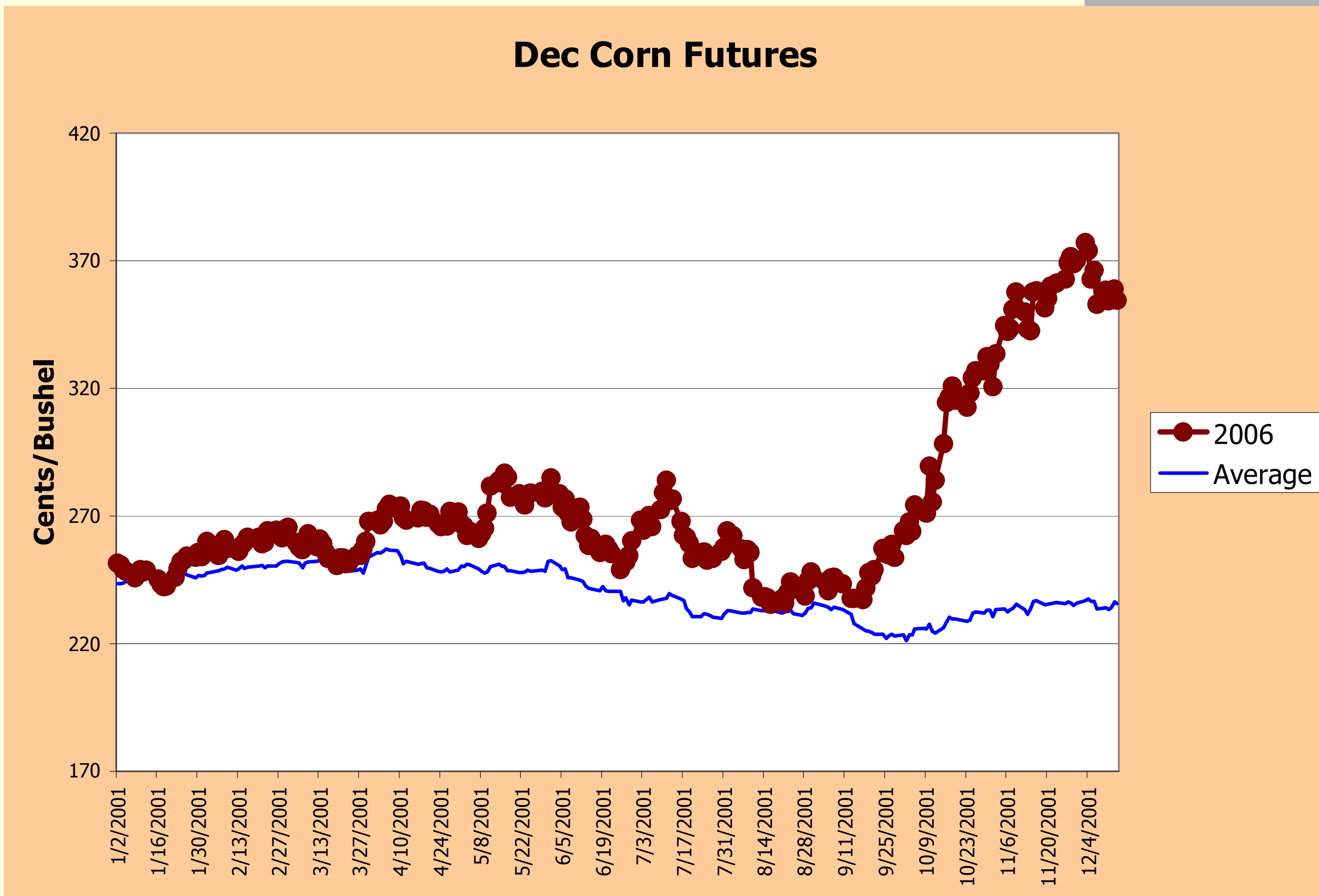
	2004	2005	2006
Billion Bu.:	11.8	11.1	10.7

Feed Price Projections

- CARD, ISU Nov. 2006 (www.card.iastate.edu)
  - $2.56/bu - **<u>$5.43</u>**<u>/bu</u>.
  - Soymeal Price $92.7/ton - $160/ton
- FAPRI – Missouri (FAPRI July 2006 Baseline)
  - Corn Price $2.64/bu
  - Soymeal Price $160.56/ton
- Robert Wisner, Iowa State University 2006
  - Corn Price $2.90/bu - $4.10/bu
  - Soymeal Price $162 - $174/ton

- All account for acreage, yields, rotations, expansion in one form or another.

Price Projections Becoming Reality?



A warm January in a global warming climate?

First, Let's Gain Some Perspective on What Higher Corn Prices Mean to the Hog and Pork Industry.

Perspective on Corn Prices and Feed Costs

- Corn is a Minority Share of Total Costs.
  - Approximately 35%
  - A doubling of corn prices results in a 35% increase in costs of production.

Corn Price is 35% of Total Costs

- Hog Assumptions (NRC, multi-ration phase fed diets)
  - Wean 10 lb – Finish 260 lb (2.7 ADG grow/finish)
    - Corn 9.09 bu (509 lb)
    - Soybean meal 104 lb

Ration Cost Weaner - Finish

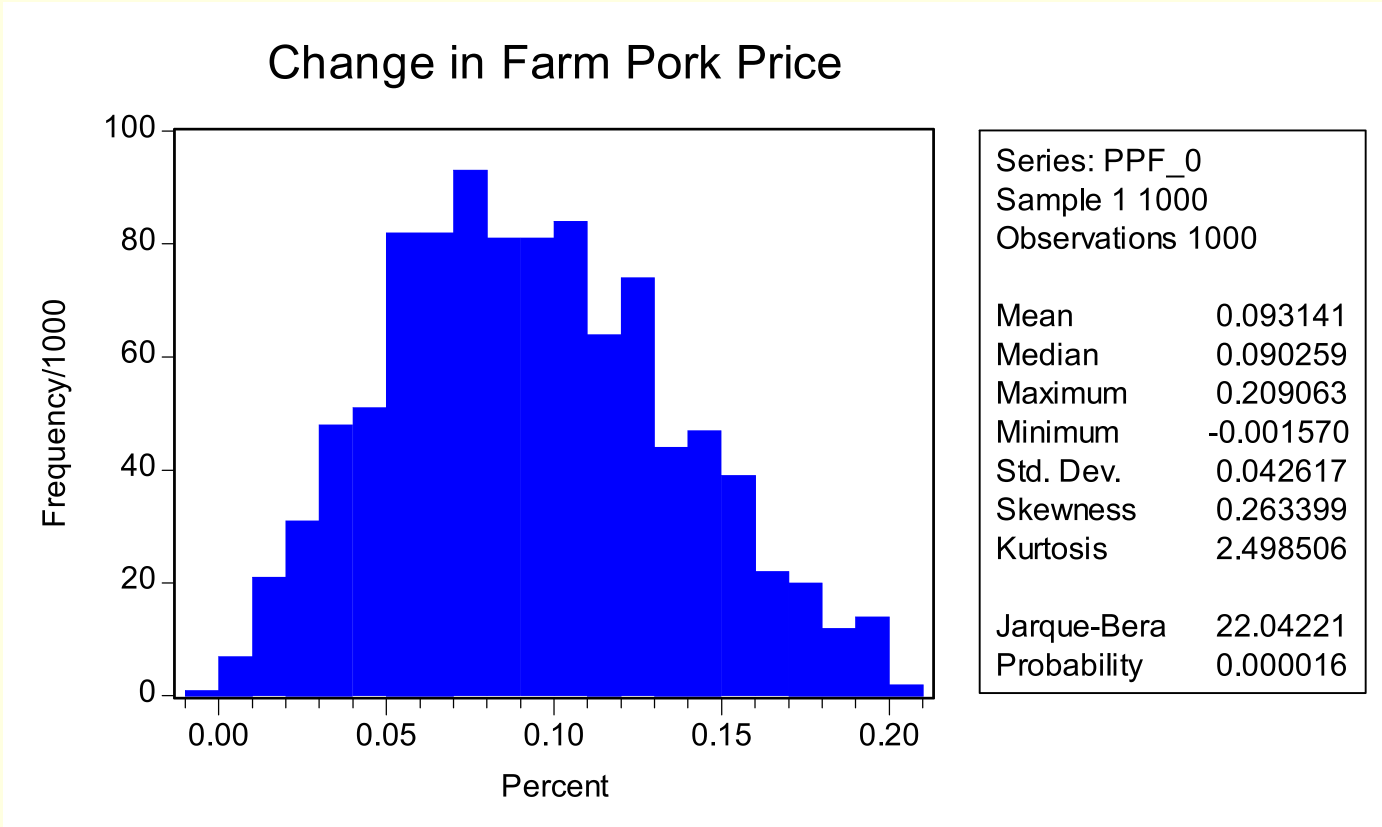
	Hist. Price ($2.15/$192.48)	*Max Price ($5.43/$192)*	*Min Price ($2.56/$92.70)*	*Most Likely ($3.46/$166.77)*
Corn	$ 19.54	$ 49.34	$ 23.26	$ 31.45
SBM	$ 10.01	$ 10.71	$ 4.82	$ 8.67
Total	$ 29.54	$ 60.05	$ 28.08	$ 40.12
% Change Feed Cost		103.26%	-4.95%	35.79%
Ration Cost as Share of Total Costs			**35%**	
% Change Total Costs		***35.92%***	***-1.72%***	***12.45%***
Triangular Distribution		***15.55%***		
Ration Cost as Share of Variable Costs			**39%**	
% Change Variable Costs		***40.49%***	***-1.94%***	***14.03%***
Triangular Distribution VAR		***17.53%***		
DDGS Savings	**$ 0.72**	**$ 0.27**	**$ 0.09**	**$ 0.48**

Perspective on Corn Prices and Feed Costs

- Corn is a Minority Share of Total Costs.
  - Approximately 35%
  - A doubling of corn prices results in a 35% increase in costs of production.
- Hog Production is a Margin Business.
  - Capital and ROI seeks a long-run equilibrium - Around 7-12%
  - Corn price increase → Hog Price Increase → ROI unchanged
  - Cost increases pass through to consumer
  - But less quantities of pork

Long Run Impact on Hog Prices

Farm Price of Pork Increases on Average **9.3%**
From $61.01/ carcass cwt to $66.70/carcass cwt



Bottom Line Market Dynamics

- Most Likely Feed Cost Increase = $10.58/head
- Expected Hog Price Response = $14.26/head
- **Net Gain of $3.64/head for hog finishing.**

- **DO NOTHING with procurement….**

  …..If you can survive to the long-run!

Production Management Strategies to Mitigate the Need for Procurement

Production Management Strategies for Mitigation

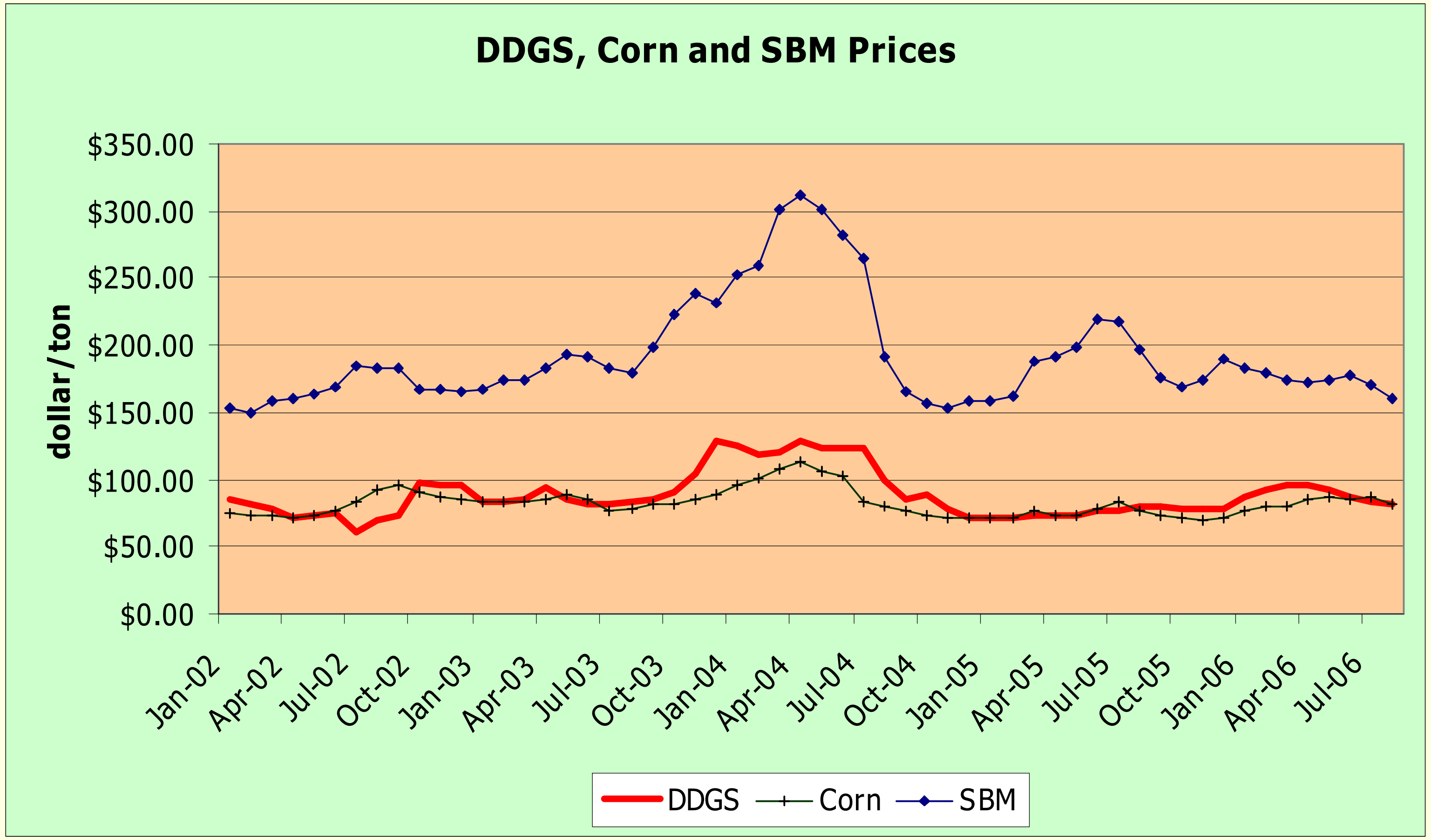
- Feeding Co-Products of Ethanol

Two Sources of Further Information:

http://www.ddgs.umn.edu

http://www.porkboard.org *– Distiller Grains Conference*

Ethanol Co-Product Substitution



So Far, DDGS Follow Corn Prices.

DDGS Only Moderate Offset for Corn

Summary of Livestock Feed Cost Impacts from Ethanol Production

Corn/Soymeal Price Levels	*Hist. Price ($2.15/$192.48)*	*Max Price ($5.43/$192)*	*Min Price ($2.56/$92.70)*	*Most Likely ($3.46/$166.77)*	***Expected Feed Cost Change***
	$/head				
Broilers	$ 0.38	$ 0.69	$ 0.32	$ 0.49	27%
w/ 10% DDG	$ 0.02	$ 0.02	$ 0.01	$ 0.02	Small Benefit
Swine	$ 29.54	$ 60.05	$ 28.08	$ 40.12	18%
w/ 10% DDG	$ 0.72	$ 0.27	$ 0.09	$ 0.48	Moderate Benefit
Beef Cattle	$ 200.81	$ 401.68	$ 220.04	$ 279.27	6%
w/ 40% WDG	$ 69.52	$ 178.71	$ 77.29	$ 111.35	Strong Benefit
Dairy	$ 1,019.73	$ 1,587.75	$ 1,000.25	$ 1,218.96	11%
w/ 20% DDG	$ 38.24	$ (238.11)	$ (116.19)	$ (120.09)	Relative Protein Cost?

- Key Considerations
  - DDGS Price Follows Corn Price – Change as Production Increases?
  - Burning DDGS in ethanol?
  - Fractionation impacts?
  - Extracting Oil?
  - Ethanol will do what yields the highest value for ethanol.

Production Management Strategies for Mitigation

- Feeding Co-Products of Ethanol
- Production Optimization With High Feed Costs
  - Other feed ingredients
  - Regional shifts over time
  - Finishing weight, Stocking Density, Asset Utilization, Slaughter Weight, Grid optimization.
    - Can you carry more pigs to lighter weights in facility to optimize stocking densities and increase throughput by staying left of the inflection of the lean growth curve?
- If This is a Global Change in Corn Prices How Much Can We Adapt Production in the Long Run?

Summary of NO Procurement Strategy

- Markets revert to long run ROI in margin industries, offsetting need for procurement

- Optimize Production in New Paradigm of Higher Feed Costs.
    - Fits in knowledge space of industry.
    - Outcomes more predictable for technical changes than market management.
    - What does the industry look like with ongoing feed pressure?

Procurement Risk Management: Prices and Quantities

Procurement Management

- Price <u>AND</u> Quantity

- Overview of Possibilities to Begin Planning.
  - Numerous situational strategies.

- Spreading is the operative word
  - Spread* price and quantity risk over time.
  - Spread futures and forward contracts
  - Spread hog prices and corn prices (crush)

•Spread is often a technical term in futures trading strategies where you buy a contract in one period and sell the same asset in another period or buy one asset in a time period and sell a related asset in the same time period. In general the idea is to maximize the gain of the transaction, but minimize it's risk. The present context is similar in that we're trying to 'spread' the risk around and gain from those actions. More simply: Don't put your eggs in one basket.

Three Procurement Strategies

1) Hand-to-mouth procurement.
   - Guarantees average price.
   - Simple to use – goal is to minimize transactions cost.
   - No advanced knowledge of forwards or futures.
   - The core of most decision rule contracts – grain producers actually pay service fees for these strategies.
   - Can manage as throughput – no storage.
   - Risk exposure is primarily in grain availability.

2) Long corn hedge using futures contracts or forward contracts.

3) Trading the hog – corn crush (sell hogs, buy feed)

   Last published study Kenyon and Clay 1987

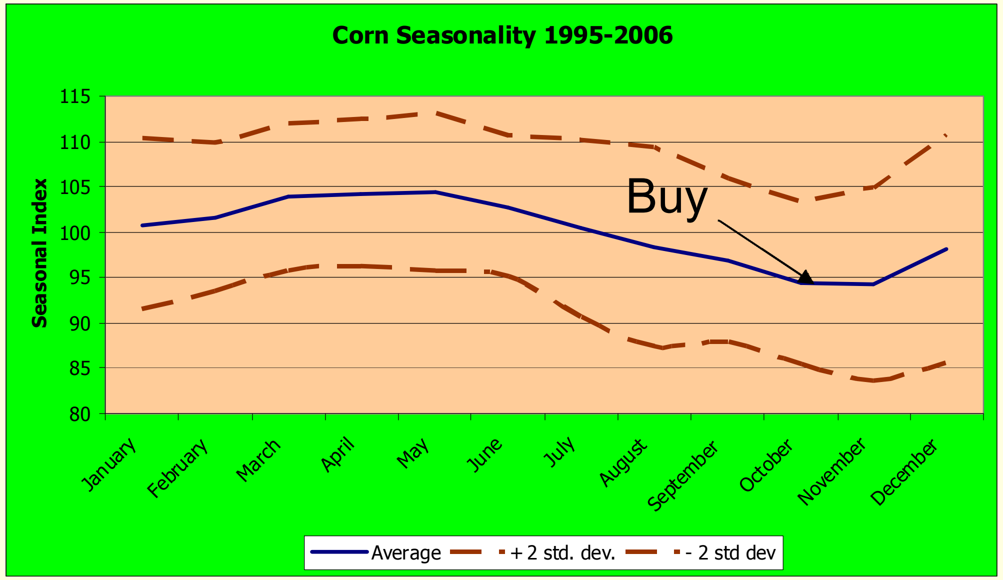
Long Corn Hedge: Futures and Forwards.

- Buy Corn Futures or Enter Forward Contract.
- Futures are exchange traded, forwards are private party contracts.
- Both offer price for delivery in future.
- Forwards are more flexible
  - Quantities completely adjustable.
  - Time of <u>delivery</u> completely adjustable.
  - Terms of pricing widely adjustable (fences, floors, ceilings, moving averages, seasonal pricing, fixed basis, variable basis, fixed price, average price etc.)
  - Pricing terms can be difficult to understand.
  - Possible to write in non-price incentives.
  - Much easier to use – no margins, service fees, delivery simpler.

Four Fundamental Grain Marketing Concepts Provide Foundations for Strategies.

- Seasonals
- Basis
- Carrying costs
- Convenience yields – what is the value of having grain on hand and available for use versus risk of not getting grain.

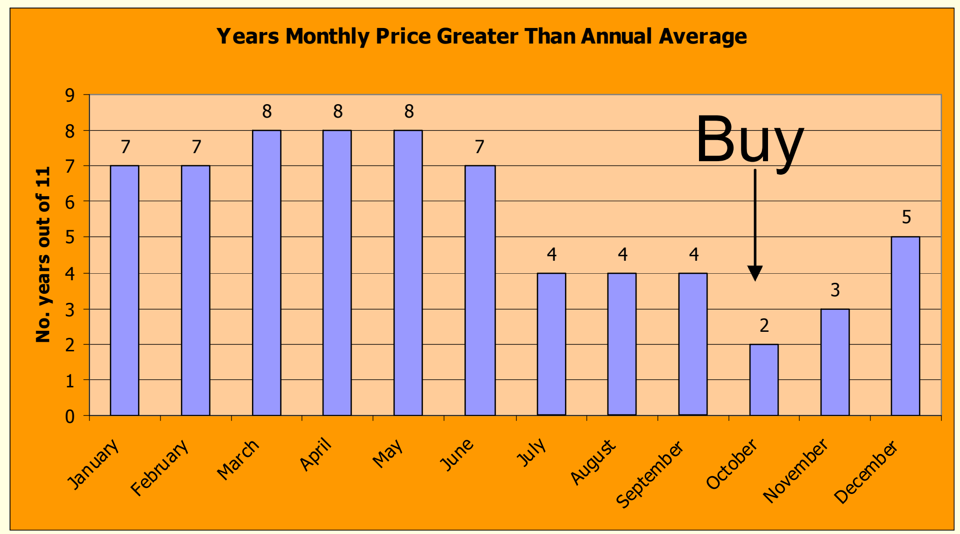
Corn Seasonals



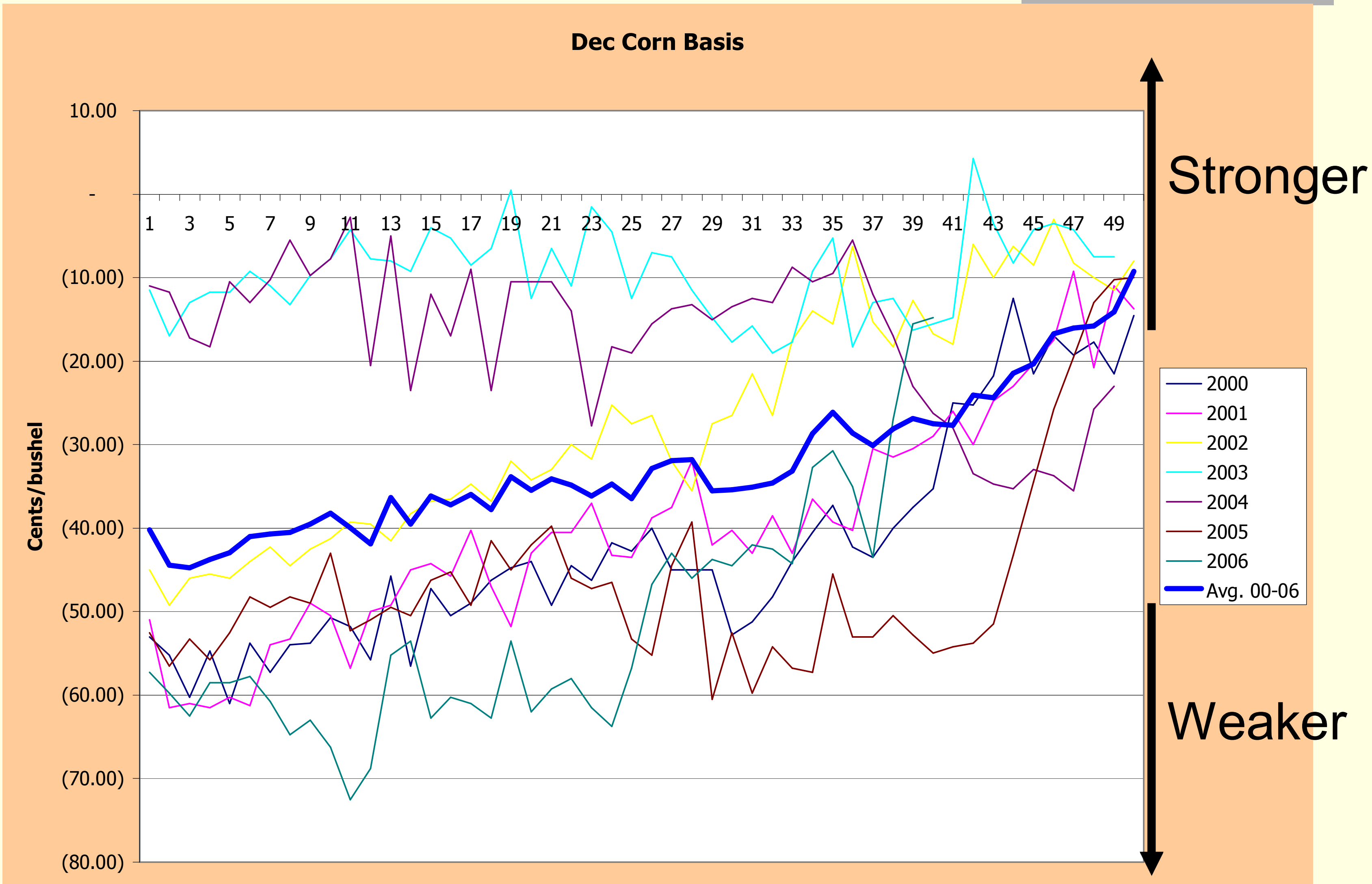
The Odds Favor New Crop Buying.

When new crop is high, It's really high…

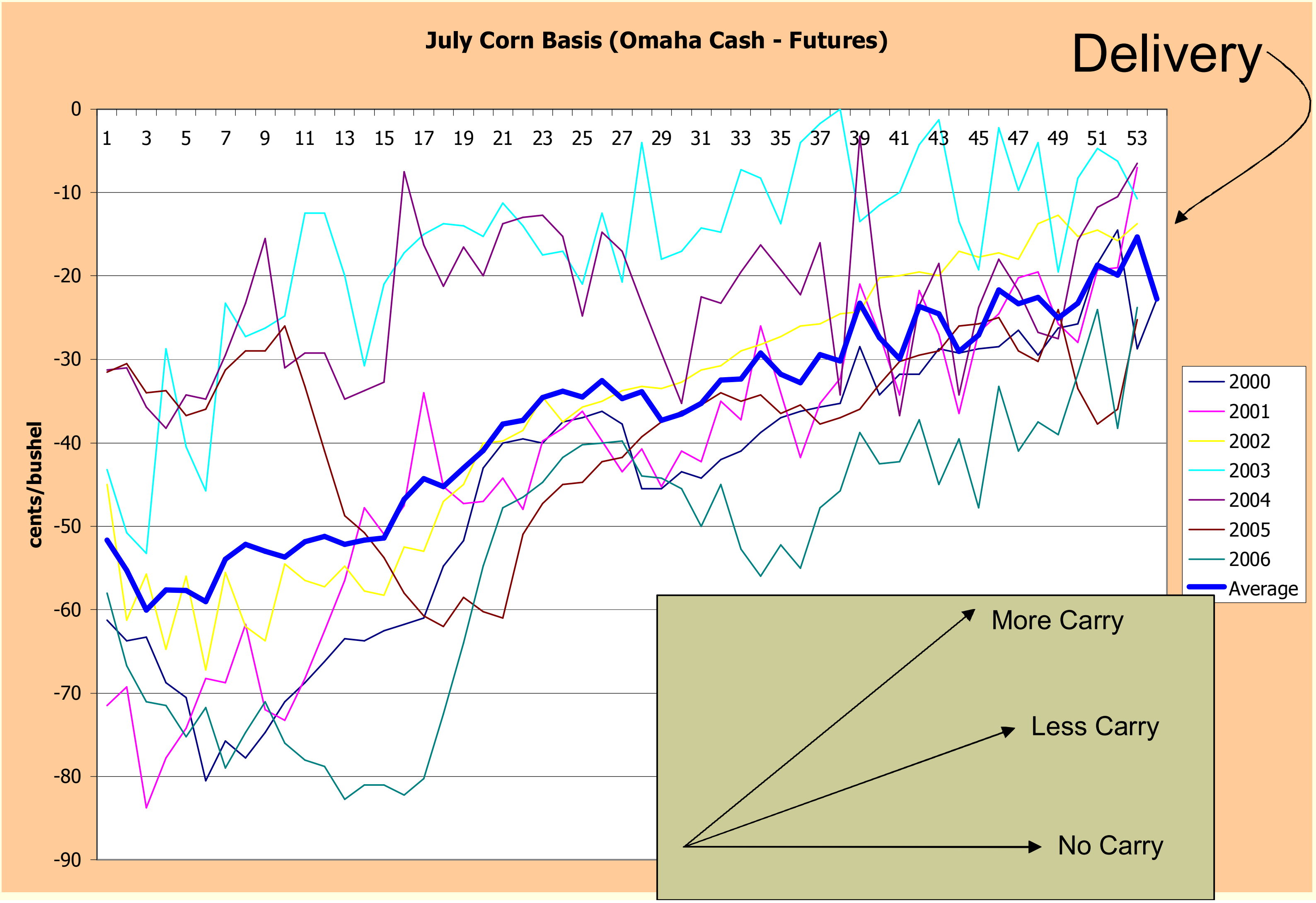
As decision rule: "I <u>will</u> buy some of my feed needs on opportunities in these months"



Representative Corn Basis: Dec Corn



Representative Corn Basis: Jul Corn



Costs of Carry

- Physical Carrying Costs
  - Storage
  - Drying Costs
  - Shrink – spoilage, etc.
- Time Value of Money
  - Interest costs.

What is Market Carry?

- Sample Corn Carry
- You're buying corn 10/15
- DEC-JUL Market Carry is $0.19/bu.
- Suppose Cost Carry also is $0.19/bu.
- What should you do in a 1995 crop year?
- What should you do in a 2005 crop year?

Year	Dec 10/15	July 10/15	Dec/Jul Carry
1990	2.28	2.47	0.19
1991	2.46	2.67	0.21
1992	2.10	2.29	0.19
1993	2.49	2.63	0.15
1994	2.18	2.41	0.23
1995	**3.28**	**3.33**	**0.05**
1996	2.87	3.01	0.14
1997	2.90	3.07	0.17
1998	2.27	2.50	0.23
1999	1.99	2.23	0.23
2000	2.07	2.32	0.25
2001	2.06	2.32	0.26
2002	2.54	2.66	0.12
2003	2.17	2.31	0.15
2004	2.07	2.31	0.24
2005	**2.04**	**2.31**	**0.27**
2006	3.17	3.34	0.16
Ave.	**2.41**	**2.60**	**0.19**

Carry Helps Make The Futures Versus Forwards Decision.

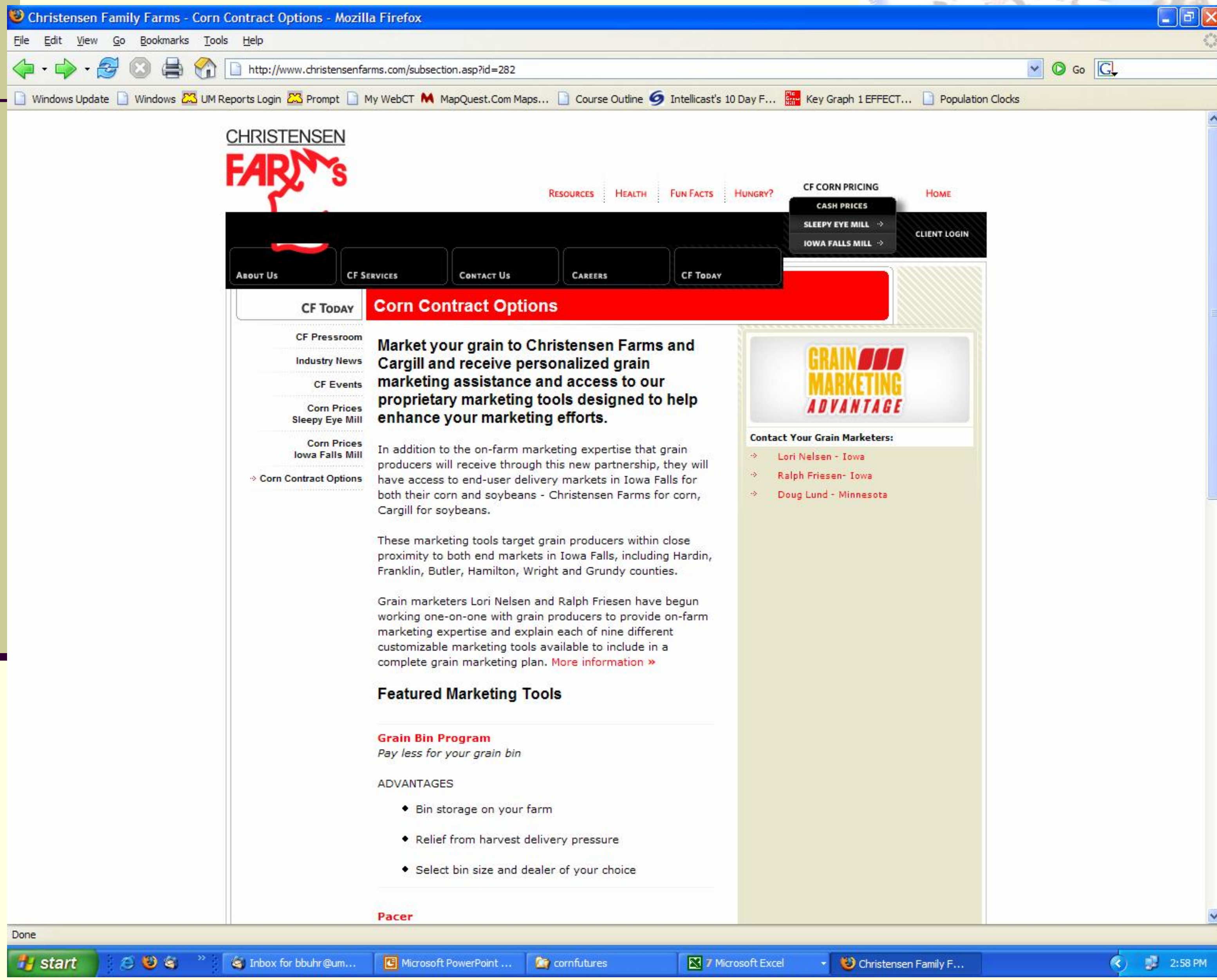
- Sample Corn Carry
- You buying corn 10/15
- DEC-JUL Market Carry is $0.19/bu.
- Suppose Cost Carry also is $0.19/bu.
- **1995 – Buy July futures corn in October.**
- **2005 – Buy cash corn in October.**

Year	Dec 10/15	July 10/15	Dec/Jul Carry
1990	2.28	2.47	0.19
1991	2.46	2.67	0.21
1992	2.10	2.29	0.19
1993	2.49	2.63	0.15
1994	2.18	2.41	0.23
1995	**3.28**	**3.33**	**0.05**
1996	2.87	3.01	0.14
1997	2.90	3.07	0.17
1998	2.27	2.50	0.23
1999	1.99	2.23	0.23
2000	2.07	2.32	0.25
2001	2.06	2.32	0.26
2002	2.54	2.66	0.12
2003	2.17	2.31	0.15
2004	2.07	2.31	0.24
2005	**2.04**	**2.31**	**0.27**
2006	3.17	3.34	0.16
Ave.	**2.41**	**2.60**	**0.19**

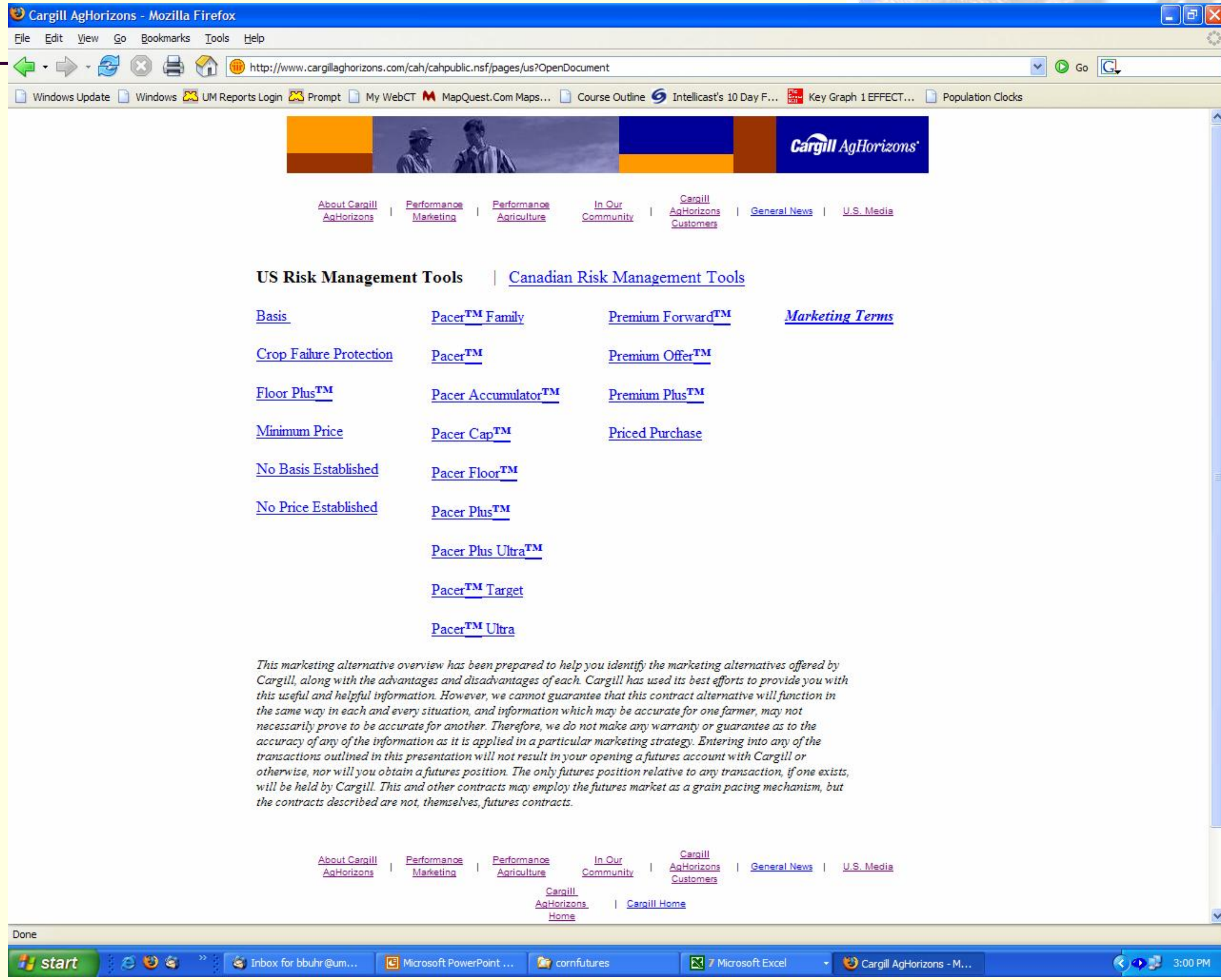
Convenience Yield

- Value of supply assurance.
- Equal transaction cost of futures delivery?
- Varies dependent on stocks/use ratio.
- Maximum is difference between market price and breakeven profit level.

Forward Contracting Possibilities



Cargill AgHorizons Has Solutions



Forward Contracts Offer Non-Price Provisions

- Price structures based on situations = service.
  - ‘I just want the average price”
  - “I think the market’s going up, but have bills to pay”
  - “I want managed marketing.”
  - These are not readily available to the corn grower in the open market, they can be provided as a service.
- Offer non-price incentives
  - Grain bin programs – shared storage costs
  - Manure credit – especially with corn-on-corn rotations.
  - Shared crop insurance premiums for pre-harvest marketing.

Hog/Corn Crush The True Spread

- Sell hogs and buy corn.
- Cost-plus contracts are a form of hog/corn/soy crush.
- CBOT/CME estimates 1 short lean hog for 2 long corn contracts.
- Kenyon and Clay, 1987 JOFM showed can smooth profit margins and slightly increase returns with hog/corn spread.
- CME/CBOT offer joint clearing with SPAN which determines risk of position and calculates margin requirement so would be cheaper than executing on two separate exchanges.
- Other Relevant Issue is that Packer Contracts Represent the Hog Leg of the Crush.

Conclusions

- Not in Panic Buying Mode
  - In margin business, long run ROI prevails
  - Re-imagining production in an environment of higher feed costs.
  - Substitution is key
- Forward Contracts are Superior Procurement Strategy
  - Flexibility in all aspects of price and delivery.
  - Non- price provisions – especially hooks.
- Need to Develop Procurement Plans to fit Situation. As Ed Usset says:

  Be <u>PROACTIVE</u> not <u>REACTIVE</u> not <u>OVERACTIVE</u>

Thank You