Grain Marketing: Prices, Principles & Tools

Dr. Daniel M. O'Brien
Extension Agricultural Economist
K-State Research and Extension

Topics to be Discussed….

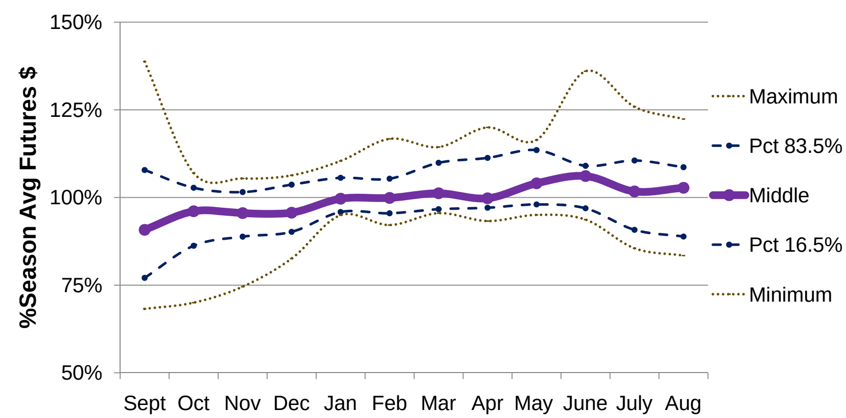
- Trends in Grain Futures, Cash Price & Basis
- Understanding +/– of Grain Marketing Tools
- Using Alternative Grain Marketing Tools & Strategies
  - Anticipating Grain Futures & Basis Trends
  - Pre-harvest, Harvest & Post-harvest Grain Sales
- New Generation Grain Marketing Tools

CBOT Corn Futures

Monthly: August 2001 thru October 2010

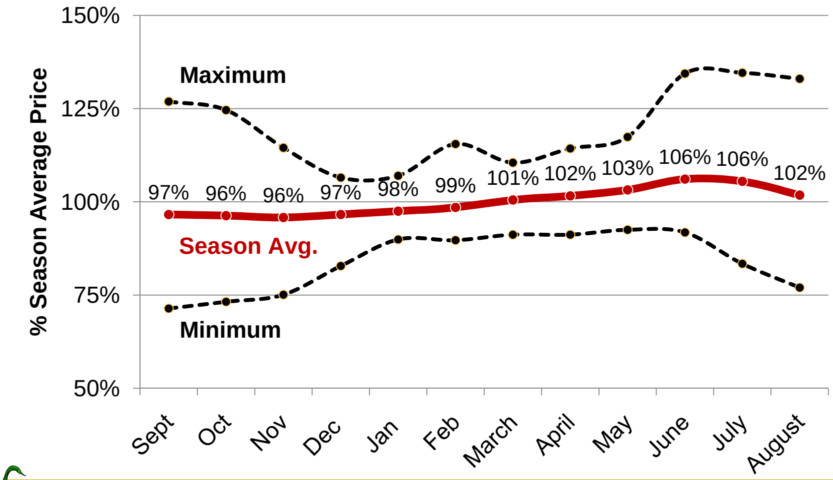
Corn Futures Seasonal Trends

CBOT Corn (MY 2000/01 – MY 2009/10)



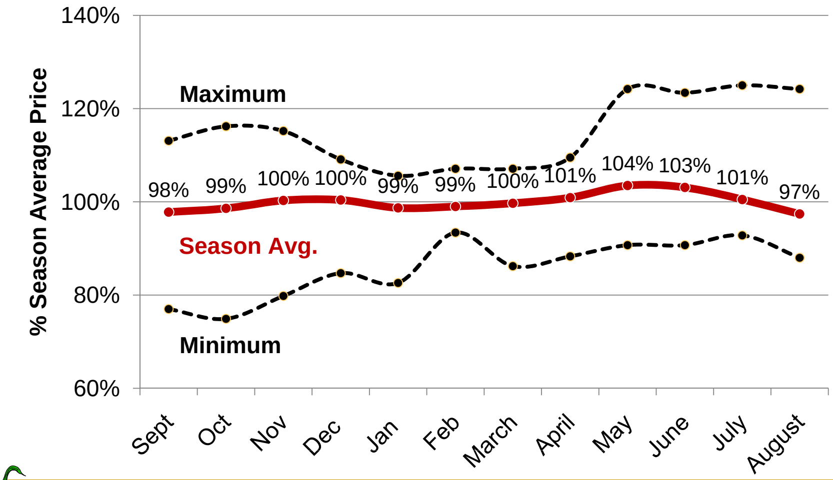
Kansas Corn Seasonal $ Index

"Normal" Marketing Years: 1973-74 thru 2009-10



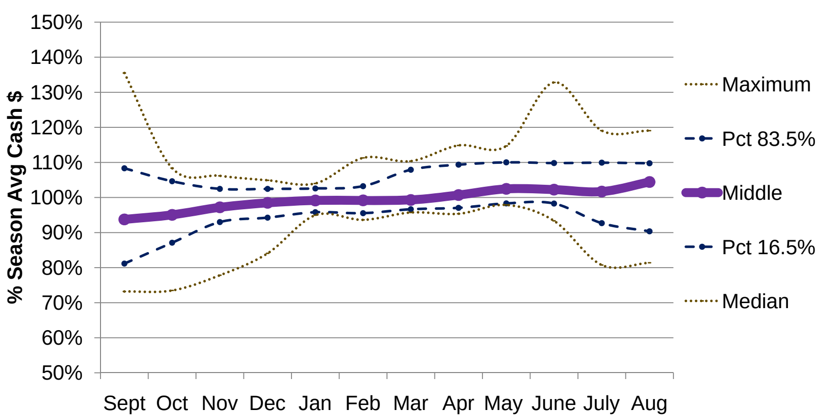
Kansas Corn Seasonal $ Index

"Short" Marketing Years: 1973-74 thru 2009-10



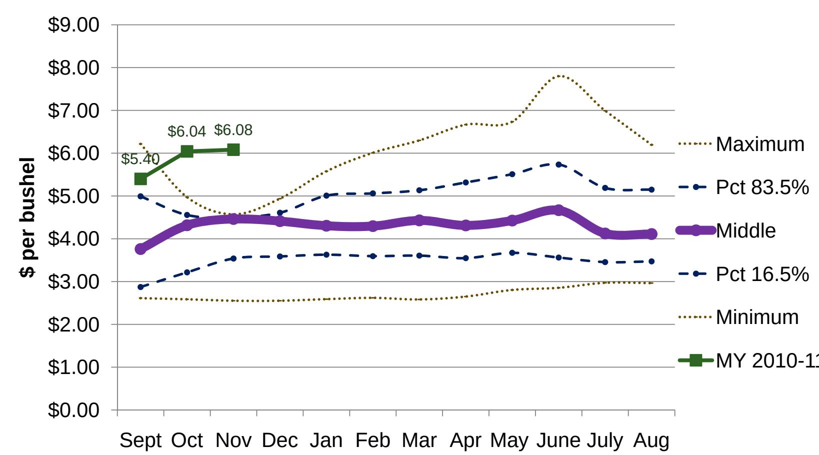
Corn % Cash Price Seasonal Trends

Ogden, Utah (MY 2000/01 – MY 2009/10)



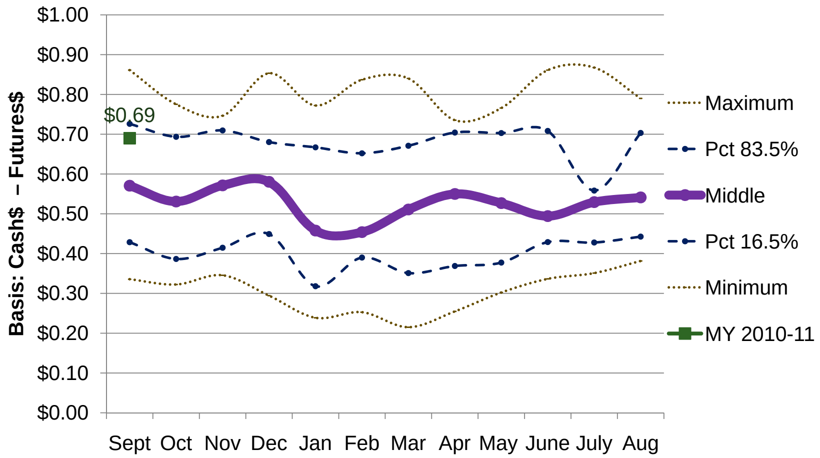
Corn Cash Prices – Ogden, Utah

MY 2000/01 – MY 2009/10 Plus MY 2010-11 thru 11/19/10



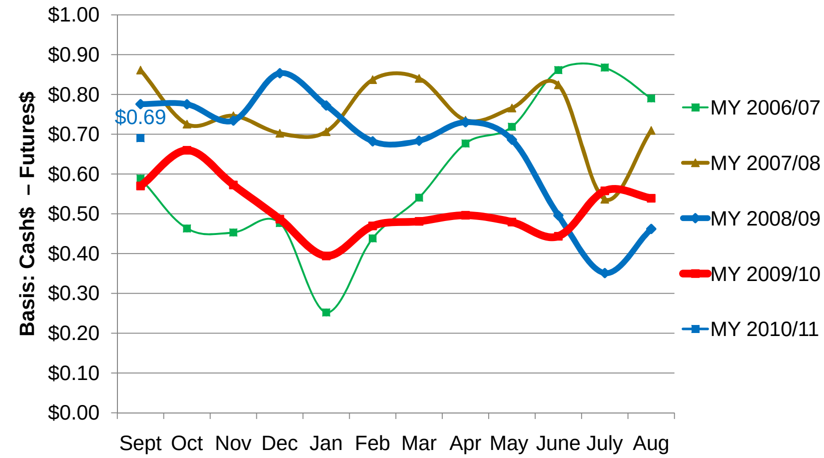
Monthly Corn Basis Distribution

MY 2000/01 – MY 2009/10 Plus MY 2010-11 thru September



Corn Basis – Ogden Utah

MY 2006/07 – MY 2009/10 Plus MY 2010-11 (September)

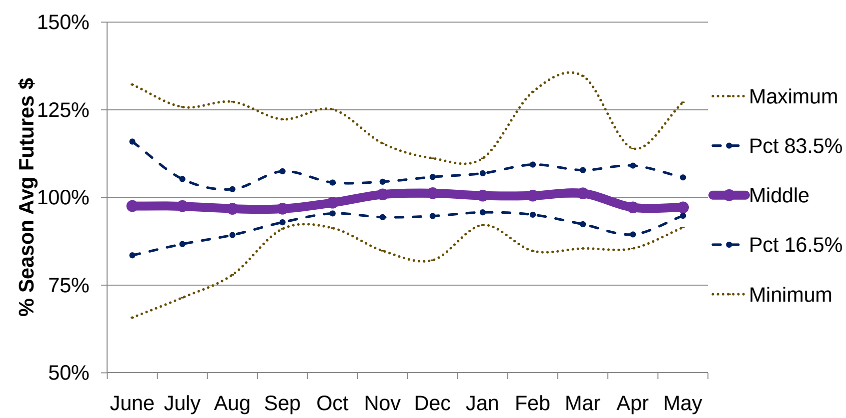


HRW Wheat Futures

KCBT: Monthly, Sept. 2001 thru Oct. 2010

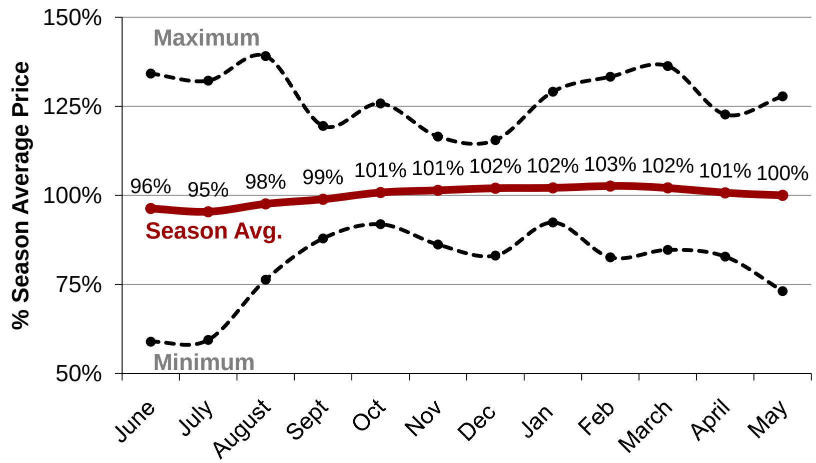
Wheat Futures Seasonal Trends

KCBT Wheat (MY 2000/01 – MY 2009/10)



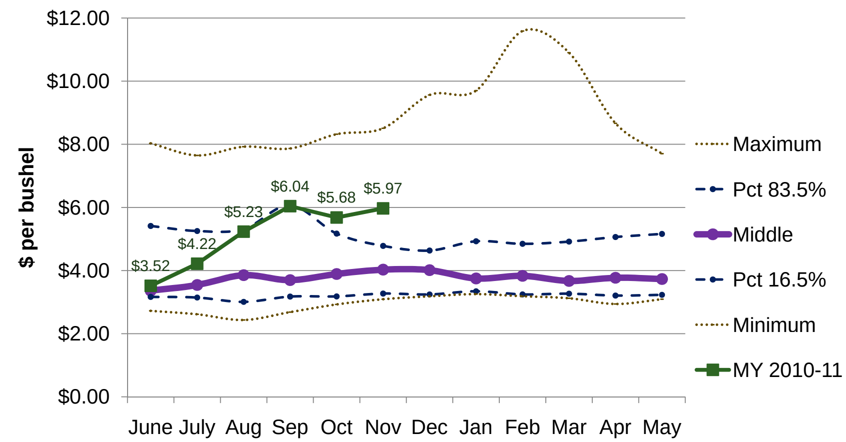
Kansas Wheat Seasonal $ Index

MY 1973-74 through MY 2009-10



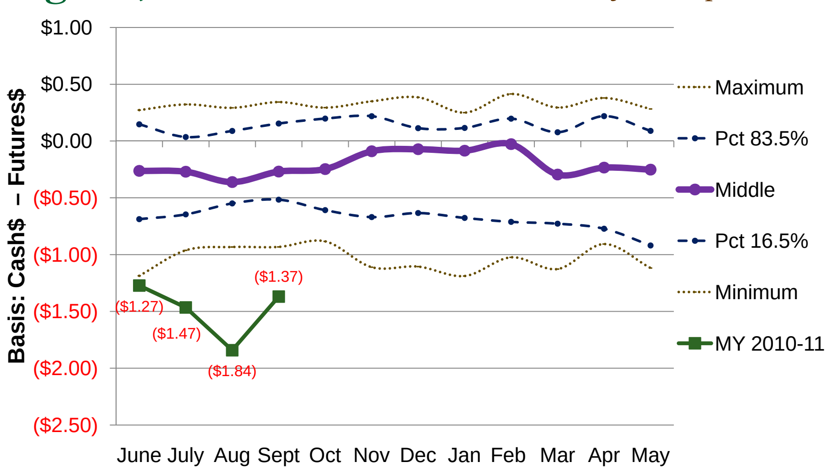
HRW Wheat $s (11% Protein) Ogden, UT

MY 2000/01 – MY 2009/10 Plus MY 2010-11 thru 11/19/10



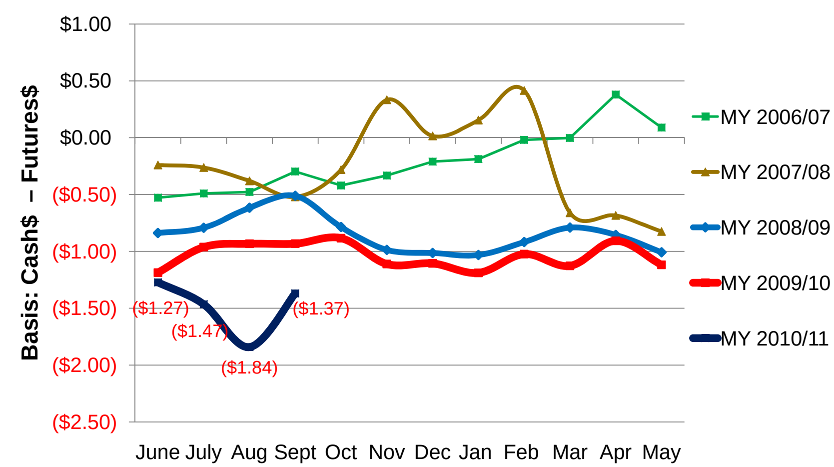
Monthly HRW Wheat Basis (11% Protein) Ogden, UT

MY 2000/01 – MY 2009/10 + June-Sept 2010

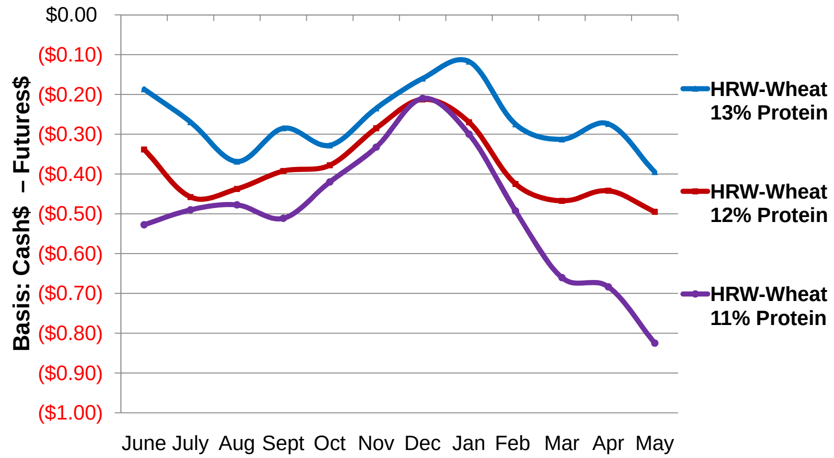


HRW Wheat Basis (11%), Ogden UT

MY 2006/07 – MY 2009/10 + June-September 2010

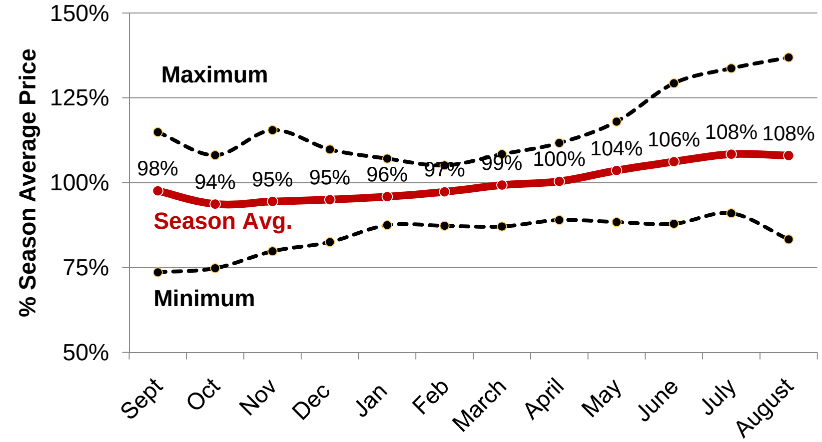


Monthly HRW Wheat Basis (11-13% Protein) Ogden, UT MY 2005/06 – MY 2009/10



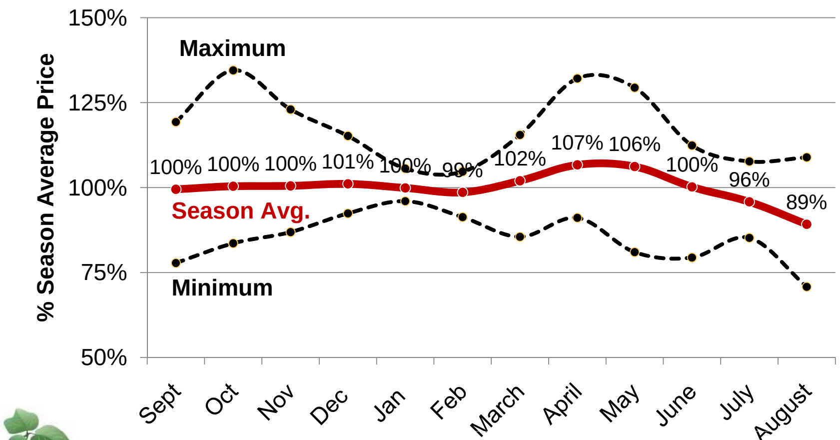
Kansas Soybean Seasonal $ Index

"Normal Crop" Marketing Years: 1973-74 thru 2009-10



Kansas Soybean Seasonal $ Index

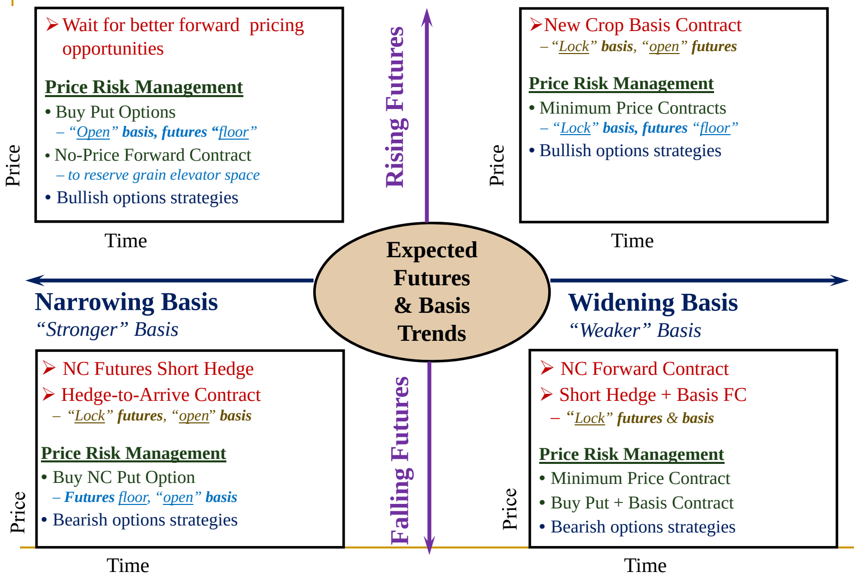
"Short Crop" Marketing Years: 1973-74 thru 2009-10



Types of Grain Marketing Tools

- Cash Grain Sales
- Forward Cash Contracts
- Basis Contracts
- Hedge-to-Arrive (HTA) Contracts
- Minimum Price Contracts
- Marketing Loans (USDA – FSA)
- Short Futures Hedges
- Buying Put Options
- Selling Cash Grain & Buying Call Options
- Combinations of Buying Puts & Calls
- Price Later Contracts

Preharvest Grain Sales Strategies



Types of Forward Contracts

Commitment for Future Sale & Delivery of Grain

- **Forward Cash Contracts**
  - Cash Price, quantity (bu.) & delivery date are set
    - *BOTH futures selling price & local cash basis are determined*
- **Basis Contract**
  - Local Basis, quantity (bu.) & delivery date are set
- **Hedge-to-Arrive (HTA)/"Open Basis" Contract**
  - Futures Price, quantity (bu.) & delivery date are set
- **Minimum Price Contract**
  - Minimum Cash $, quantity (bu.) & delivery date are set

Marketing Assistance Loans (USDA-FSA)

- **Grain Sale Cash Flow Coverage**
  - Provides grain producers with interim financing to meet cash flow needs without having to sell their commodities when market prices are typically at harvest-time lows
- **Marketing Loans are "Non-Recourse"**
  - The grain is pledged as loan collateral
  - Producers have the option of delivering the grain to the Commodity Credit Corporation (CCC) as full payment for the loan at maturity
  - Under some circumstances, producers may repay marketing loans at less than principal plus accrued interest and other charges
- **Alternative: Loan Deficiency Payment (LDP)**
  - In lieu of a marketing assistance loan, grain producers may be eligible for an LDP

2010 USDA-FSA Grain Marketing Loan Rates for Weber County, Utah (Ogden)

Corn	$2.25 /bu
Grain Sorghum	$3.93 /cwt ($2.20 /bu)
Soybeans	$4.71 /bu
Sunflower-Oil Type	$9.42 /cwt
Wheat (HRW)	$2.96 /bu
Wheat (SWW)	$3.24 /bu
Wheat (SWW)	$3.92 /bu

Hedging Prices by “Selling” Futures

- **“Short Hedges” Lock in Grain Futures $s**
  - Removing futures price variation as a source of risk
    - Are taking a “short” or “sell” position in grain futures
      - *“Selling” KCBT July 2011 Wheat or CBOT DEC 2011 Corn*
    - Subject to “margin calls” to maintain equity or dollar value of the futures margin account
- **“Hedging” versus “Speculating” in Futures**
  - Hedges work if enough grain is produced & sold in the cash market to cover the futures market position
    - However, producers would be in a speculative position **IF** crop production < futures contract position

Hedging With Futures

- **“Pricing” Hedges on Grain Production**

1) ***(Prehedge)*** **Analyze hedging opportunity**
   - ***Futures*** *less* ***Basis*** *less* ***Brokers’ fees***
2) ***(Placing the Hedge)*** **Sell futures contract(s)** nearest to the grain delivery period
   - In a **“Short”** or “sell” futures position
3) ***(Closing Out the Hedge Position)***
   - Buy back futures contract(s)
   - Sell cash grain (optional)

Forward Contract Vs Futures Hedge

- **If Basis Projection is Accurate, then..**
  - Forward Contract $ = Futures Hedge $

- **Who Carries the Futures Account?**
  - **FC:** Elevator contacts broker & pays any margin calls
  - **Hedge:** Producer works w. broker, pays margin calls
- **Delivery Commitment?**
  - **FC:** Delivery commitment of X bushels for $X price
  - **Hedge:** No delivery commitment to elevator

- **Basis Commitment?**
  - **FC:** ***Set*** cash basis / **Hedge:** ***Varying*** cash basis

Buying Grain Put Options

Setting Futures Price Floors by Buying Put Options

- **Why Buy Put Options?**
  - “Puts” provide protection from falling grain futures prices
  - If grain producer-sellers buy put options, they are protecting themselves from falling grain futures prices
    - But, they are leaving themselves the opportunity to still benefit if grain futures prices should rise
  - Similar to “Minimum Price Contracts”
- **Technical Definition of Put Options**
  - Puts provide “the right but not the obligation” to take “short” or “sell” positions in futures markets
    - Avoiding margin calls that are possible with “Short Hedges”

Mechanics of Buying Grain Put Options

- **Strike Price = Grain Futures "Insurance" Level**
  - "In-the-Money" Put Strike Price > Futures Price
  - "At-the-Money" Put Strike Price = Futures Price
  - "Out of-the-Money" Put Strike Price < Futures Price
- **Put "Premium" ⇨ Cost of Buying Put Option**
- **Futures Price Floor with Put Options**
  - Strike Price$^{(Put)}$ – Premium$^{(Put)}$ – Brokers Fee
- **"Expected" Cash Price Floor with Put Options**
  - Strike Price$^{(Put)}$ – Premium$^{(Put)}$– Brokers Fee – Basis$^{(Est.)}$

Sell Cash + Buying Grain Call Options

Being in Position to Gain from Later Futures $ Increases

- **Why Buy Call Options?**
  - "Calls" provide protection from rising grain futures prices
  - If grain producer-sellers buy call options after selling cash grain, they are positioning themselves to gain from rising grain futures prices
  - Similar to post-harvest "Minimum Price Contracts"
- **Technical Definition of Call Options**
  - Calls provide "the right but not the obligation" to take "long" or "buy" positions in futures markets
    - Avoiding the margin calls possible with "buying futures"

Mechanics of Selling Cash Grain + Buying Grain Call Options

- **Strike Price (SP)**
  - "In-the-Money" Call Strike Price < Futures Price
  - "At-the-Money" Call Strike Price = Futures Price
  - "Out of-the-Money" Call Strike Price > Futures Price
- **Call "Premium" ⇨ Cost of Buying Call Option**
- **Futures Price Rise Coverage with Call Options**
  - Gains Above: SP$^{(Call)}$ + Premium$^{(Call)}$ + Brokers Fee
- **Minimum $ With Cash Sale + Buy Call Options**
  - Cash$ – Premium$^{(Call)}$ – Brokers Fee

Price Trend Effects

On Cash Sales & Forward Contracts

Pricing Alternatives	Falling Futures	Rising Futures	Wider Basis	Narrower Basis
Cash Market Sales	(–)	(+)	(–)	(+)
Forward Cash Contract	None	None	None	None
Basis Contract	(–)	(+)	None	None
Hedge-to-Arrive (HTA)	None	None	(–)	(+)
Minimum Price Contract	None	(+)	None	None
Marketing Loans (FSA)	None	(+)	(–)	(+)

Price Trend Effects

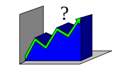
On Futures, Options & Marketing Loans

Pricing Alternatives	Falling Futures	Rising Futures	Wider Basis	Narrower Basis
Short Futures Hedge	None	None	(–)	(+)
Buy Put Options	None	(+)	(–)	(+)
Sell Cash & Buy Calls	None	(+)	None	None
Marketing Loans	None	(+)	(–)	(+)

Risk Exposure of Marketing Tools

A. Options Volatility Risk

- Risk that option premiums will not change 1-for-1 with cash/futures as the price level changes

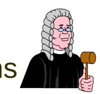


B. Production Risk if Pre-harvest Pricing

- Risk of being unable to deliver grain to fulfill a contract

C. Counter Party Risk

- Risk that a buyer wont fulfill their contract obligations

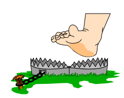


D. Control Risk

- Risk of market actions getting “out of control” before corrective actions can be taken by the seller

Areas of Risk Exposure

For Cash Sales & Forward Contracts

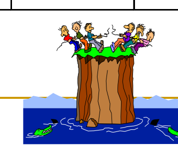


Pricing Alternatives	Options Volatility	Prodn. Risk if Prehvst.	Counter Party Risk	Control Risk
Cash Market Sales	---	---	---	Yes
Forward Cash Contract	---	Yes	Yes	---
Basis Contract	---	Yes	Yes	Yes
Hedge-to-Arrive (HTA)	---	Yes	Yes	Yes
Minimum Price Contract	Yes	Yes	Yes	Yes
Price Later Contract	---	---	Yes	Yes

Areas of Risk Exposure

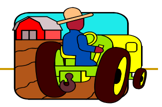
For Futures, Options & Marketing Loans

Pricing Alternatives	Options Volatility	Prodn. Risk if Prehvst.	Counter Party Risk	Control Risk
Short Futures Hedge	---	Yes	---	Yes
Buy Put Options	Yes	Yes	---	Yes
Sell Cash & Buy Calls	Yes	---	---	Yes
Marketing Loans	---	---	---	Yes



Grain Forward Pricing Decisions

- **How Much to Forward Contract or Hedge?**
  - **For Pre-Harvest Pricing:**
    - Max of 50%-75% of expected production *(average yields)*
      - *If have a short crop, use Crop Insurance Coverage revenues to help fill Forward Contract obligations*
    - **Recommended**: A disciplined grain marketing plan
- **What Time Period to Set Grain Delivery In?**
  - Examine Harvest vs Post Harvest Basis, Storage Returns, & Grain Delivery Opportunities
  - Timing of cash flow needs



Preharvest Grain Sales Strategies

Expected Futures & Basis Trends

Rising Futures / Narrowing Basis ("Stronger" Basis)

- ➢ Wait for better forward pricing opportunities

Price Risk Management
- Buy Put Options
  - *"Open" basis, futures "floor"*
- No-Price Forward Contract
  - *to reserve grain elevator space*
- Bullish options strategies

Rising Futures / Widening Basis ("Weaker" Basis)

- ➢ New Crop Basis Contract
  - *"Lock" basis, "open" futures*

Price Risk Management
- Minimum Price Contracts
  - *"Lock" basis, futures "floor"*
- Bullish options strategies

Falling Futures / Narrowing Basis ("Stronger" Basis)

- ➢ NC Futures Short Hedge
- ➢ Hedge-to-Arrive Contract
  - *"Lock" futures, "open" basis*

Price Risk Management
- Buy NC Put Option
  - *Futures floor, "open" basis*
- Bearish options strategies

Falling Futures / Widening Basis ("Weaker" Basis)

- ➢ NC Forward Contract
- ➢ Short Hedge + Basis FC
  - *"Lock" futures & basis*

Price Risk Management
- Minimum Price Contract
- Buy Put + Basis Contract
- Bearish options strategies

(Axes in each quadrant: Price, Time)

Harvest & Postharvest Grain Sales Strategies

Expected Futures & Basis Trends

Rising Futures / Narrowing Basis ("Stronger" Basis)

- ➢ Store grain & sell later
  - *"Long cash" position*

Price Risk Management
- Store cash grain & Buy Put Options
  - *"Open" basis, futures "floor"*
- Store grain & use Bullish Option Strategies

Rising Futures / Widening Basis ("Weaker" Basis)

- ➢ Store & Basis Contract
  - *"Lock" basis, "open" futures*

Price Risk Management
- Sell cash grain & Buy Call Options or Buy Futures
  - *"Lock" basis, allow ⇧ futures*
- Minimum Price Contract (later delivery)
- Sell Cash + Bullish Options

Falling Futures / Narrowing Basis ("Stronger" Basis)

- ➢ Sell Cash Grain
- ➢ Storage Futures Hedge or HTA
  - *"Lock" futures, "open" basis*

Price Risk Management
- Store grain & Buy Put Options
  - *"Open" basis, futures "floor"*
- Store grain & Bearish Options
- Marketing Loan (Price floor)

Falling Futures / Widening Basis ("Weaker" Basis)

- ➢ Sell Cash Grain
- ➢ Storage Forward Contract Sale
  - *"Lock" futures & basis*

Price Risk Management
- Store, Basis Contract & Buy Puts
- Store, Forward Contract & Buy Calls
  - *"Lock" basis, futures "floor"*
- Marketing Loan (Price floor)

(Axes in each quadrant: Price, Time)

New Generation Marketing Contracts

Alexander, Patrick & Reimer (2006)

1) Automated Pricing Contracts

- **Pricing Rules**
  - Followed in a predetermined, nondiscretionary manner for a specific pricing window
- **Average Pricing Contract** - most common
  - Designed to give the producer an average price
  - Pricing an equal amount of bushels every business day during the pricing window
- **More complex Automated Pricing Contracts**
  - Allow producers to establish more parameters in the pricing criteria

New Generation Contracts (continued)

2) Managed Hedging Contracts

- **Pricing Decision**
  - Made by individual analyst chosen by the producer
- **Method Used**
  - Producer chooses the number of bushels to price and the analyst who makes pricing decisions
- **Passive role of Grain Producer**
  - Producer takes a passive role in pricing decisions a regarding the designated bushels

New Generation Contracts (continued)

3) Combination Contracts

- **Pricing Decision**
  - Producer utilizes automated pricing rules
- **Method Used**
  - Producer is allowed to share in gains, if any, from pricing decisions made by the pricing analyst
- **Passive role of Grain Producer**
  - Producer takes a more of an active role in pricing decisions a regarding the designated bushels

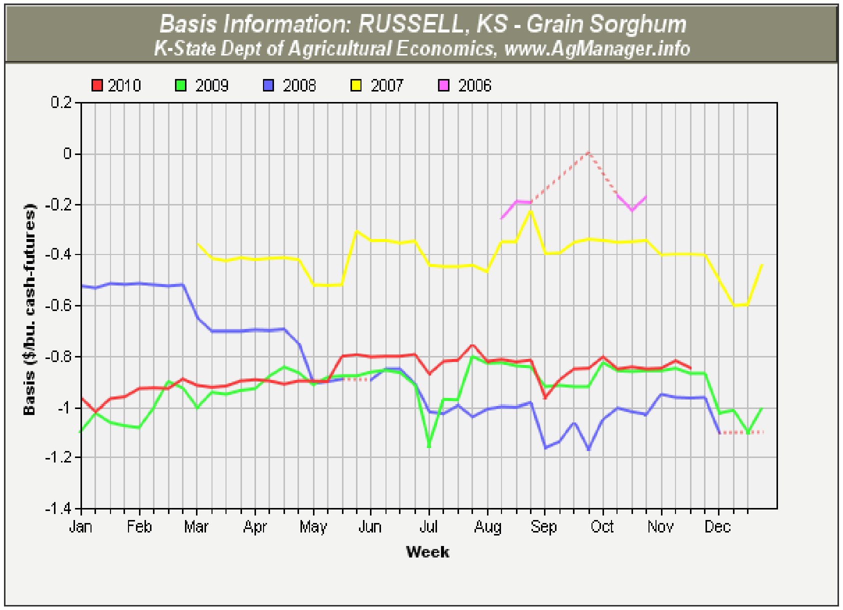
New Crop DEC 2010 Grain Sorghum Forward Pricing Examples for Russell County, Kansas

1) Short Hedge – *Selling Futures*
2) Forward Contract – *Delivery Commitment*
3) Put Option – *Setting a Price Floor*

2010 Preharvest Grain Sorghum Hedge

Hedging on March 10, 2010

- **Target Sales Date: November 1, 2010**
- **Corn Futures Price *(3/10/2010)***
  - DEC 2010 CBOT Corn = $3.94 ¾
- **Expected Milo Basis – Russell, Kansas**
  - $0.80 - $1.00 under DEC CBOT Corn on Nov. 1st ***
- **2010 Milo Hedge Expected Price = $3.04 /bu**
  - DEC 2010 CBOT Corn - Basis - Broker
  - **$3.95 - $0.90 - $0.01 = $3.04**

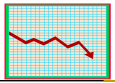


Short Hedge - 2010 New Crop Milo

Scenario A:* *Falling* *Corn Futures $s **(From $3.95 to $2.95)**

Date Cash	Futures	Basis
Expt. $: **$3.05** ($3.95 - 0.90) By November 1, 2010		
On 3/10/2010 No Cash Transactions	On 3/10/2010 Sell DEC '10 @$3.95	Expt ($0.90)
On 11/1/2010 **Sell Cash Corn @ $2.12**	On 11/1/2010 Buy DEC '10 @$2.95	Actual ($0.83)
	**Net Gain/Loss on Futures:** Gain of $1.00 /bu (- $0.01 broker)	

Final Net Price = $3.12 /bu
Cash $2.12 + $1.00 Futures Gain



Short Hedge - 2010 New Crop Milo

Scenario B:* *Rising* *Corn $s **(From $3.95 to $4.95 /bu)**

Date Cash	Futures	Basis
Expt. $: **$3.05** ($3.95 - 0.90*) By November 1, 2010		
On 3/10/2010 No Cash Transactions	On 3/10/2010 Sell DEC '10 @$3.95	Expt ($0.90)
On 11/1/10 **Sell Cash Corn @ $4.12**	On 11/1/10 Buy DEC '10 @$4.95	Actual ($0.83)
	**Net Gain/Loss on Futures:** Loss of $1.00 /bu (- $0.01 broker)	

Final Net Price = $3.12 /bu
Cash $4.12 - $1.00 Futures Loss

Futures Margins

- **Initial Margin Deposit**:
  - Required up front, good faith deposit by exchanges
- **Margin Account**
  - Losses/gains in futures position reflected here
  - Minimum required margin account balance
- **Margin Deposit**
  - Additional money required when margin account falls below minimum balance due to losses in futures position

Corn Futures Margin Deposit Example

Sell 5,000 bu DEC CBOT Corn @ $3.95/bu on 3/10/2010

Prices Trend Up		Prices Trend Down	
3/4: Sell $3.95 CBT DEC Corn		3/4: Sell $3.95 CBT DEC Corn	
Initial Deposit	= $1,500	Initial Deposit	= $1,500
Minimum Deposit	= $1,000	Minimum Deposit	= $1,000
6/1: CBOT DEC Corn @ $4.95		6/1: CBOT DEC Corn @ $2.95	
Loss in Futures	($5,000)	Gain in Futures	+$5,000
Account balance	($3,500)	Account balance	$6,500
Margin Call	+$4,500	**Margin Call**	= $ 0
New Account balance	= $1,000	New Account balance	= $6,500

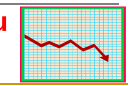


Forward Contract - 2010 New Crop Milo

Scenario A:* *Falling* *Corn Futures $s **(From $3.95 to $2.95)**

Date Cash	Futures / Contracts	Basis
Expt. $: **$3.05** ($3.95 - 0.90) By November 1, 2010		
On 3/10/2010 No Cash Transactions	On 3/10/10 ($3.95 Futures) Forward Contract @ $3.05	Contract ($0.90)
On 11/1/10 **Deliver FC Milo @ $3.05** **Vs. Cash price of $2.12**	On 11/1/10 ($2.95 Futures) No futures transaction	Contract ($0.83)
Net Gain in Cash Price: Gain of $0.93 /bu		

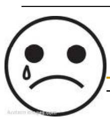
Final Net Forward Contract Price = $3.05 /bu



Forward Contract - 2010 New Crop Milo

Scenario B:* *Rising* *Corn Futures $s **(From $3.95 to $4.95)**

Date Cash	Futures	Basis
Expt. $: **$3.05** ($3.95 - 0.90) By November 1, 2010		
On 3/10/2010 No Cash Transactions	On 3/10/2010 ($3.95 Futures) Forward Contract @ $3.05	Contract ($0.90)
On 11/1/10 **Deliver FC Corn @ $3.05** **Vs. Cash price of $4.12**	On 11/1/10 ($4.95 Futures) No futures transaction	Contract ($0.83)
Net Loss in Cash Price: Loss of $1.07 /bu		



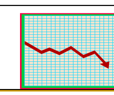
Final Net Forward Contract Price = $3.05 /bu

Put Option - 2010 New Crop Milo

Scenario A:* *Falling* *Corn Futures $ **(DEC $3.95 to $2.95/bu)**

Date Cash	Futures	Basis
Floor Price$: **$2.60** by November 1, 2010	$3.90 Futures Strike $ – $0.40 Put Premium Cost – $0.90 Basis*	
On 3/10/2010 No Cash Transactions	On 3/10/2010 ($3.95 DEC'10 CBOT) Buy DEC'10 $3.90 put @$0.40	Expt ($0.90)
On 11/1/2010 **Sell Cash Corn @ $2.12**	On 11/1/10 ($2.95 DEC'10 CBOT) Sell DEC'10 $3.90 put @$0.95	Actual ($0.83)
	Net Gain/Loss on Put Option: Gain of $0.55 /bu (- $0.02 broker)	


Final Net Price = $2.67 /bu
Cash $2.12 + $0.55 Futures Gain



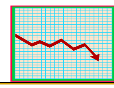
Put Option - 2010 New Crop Milo

Scenario B: ***Rising*** *Corn Prices* **(DEC $3.95 to $4.95 /bu)**

Date Cash	Futures	Basis
Floor Price$: **$2.60** by November 1, 2010	$3.90 Futures Strike $ – $0.40 Put Premium Cost – $0.90 Basis*	
On 3/10/2010 No Cash Transactions	On 3/10/2010 ($3.95 DEC'10 CBOT) Buy DEC'10 $3.90 put @$0.40	Expt ($0.90)
On 11/1/2010 **Sell Cash Corn @ $4.12**	On 11/1/10 ($4.95 DEC'10 KCBT) Sell DEC'10 $3.90 put @$0.01	Actual ($0.83)
	Net Gain/Loss on Put Option: Loss of $0.39 /bu (- $0.02 broker)	

Final Net Price = $3.73 /bu

Cash $4.12 – $0.39 Futures Loss



Results for 2010 New Crop Milo Forward Pricing Examples (11/1/2010)

Futures Trends	Cash Sale	Short Hedge	Forward Contract	Put Option Price Floor
Falling Futures ($3.95 ⇨$2.95 /bu)	**$2.12** Last	**$3.12** 1st	**$3.05** 2nd Best	**$2.67** 3rd Best
Rising Futures ($3.95 ⇨$4.95 /bu)	**$4.12** 1st	**$3.12** 3rd Best	**$3.05** Last	**$3.73** 2nd Best

Questions or Comments?

K-State Research and Extension
Extension Agricultural Economics
Website:

www.Agmanager.Info