Non-Convergence in Hard Red Winter (HRW) Wheat Futures

What is Non-Convergence?

by

Dr. G. Art Barnaby, Jr.

Dr. Dan O'Brien

Professors, Agricultural Economics, Kansas State University

Kansas State University

Presented at 4-State Crop Insurance Workshop
Farm Survival Outlook, and Risk Management,
Brush CO., Grand Island, NE., Salina, KS., & Enid, OK.,
November 8-11, 2016

Email: barnaby@ksu.edu

Phone 785.532.1515

Check out our WEB page at
http://www.AgManager.info

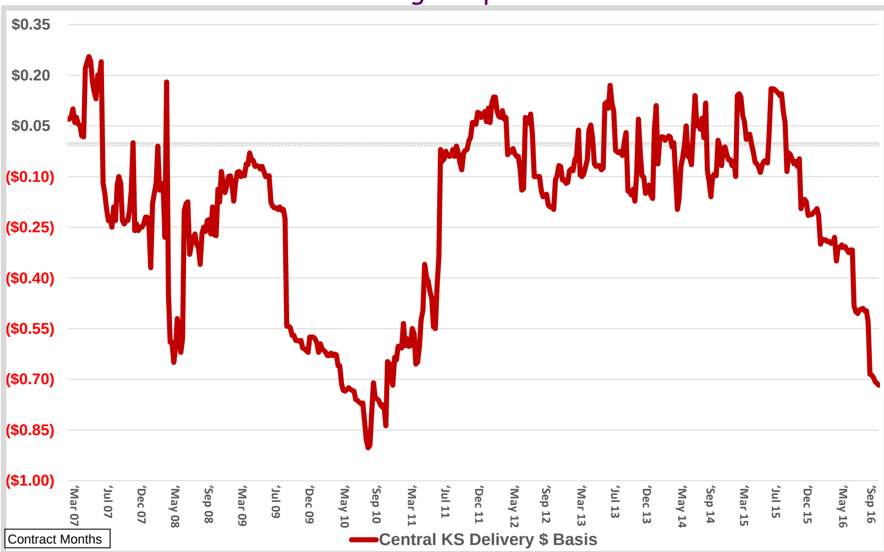
Non-Convergence Issue

1. Non-Convergence in the 2016 Hard Red Winter (HRW) futures contract issue is being presented in a series of 3 videos that include the following topics:
   a. **What is Non-Convergence?**
   b. Alternative policies and consequences for addressing non-convergence.
   c. How does non-convergence affect crop insurance?

Big Wheat Crop Exceeds Storage Causing Non-Convergence

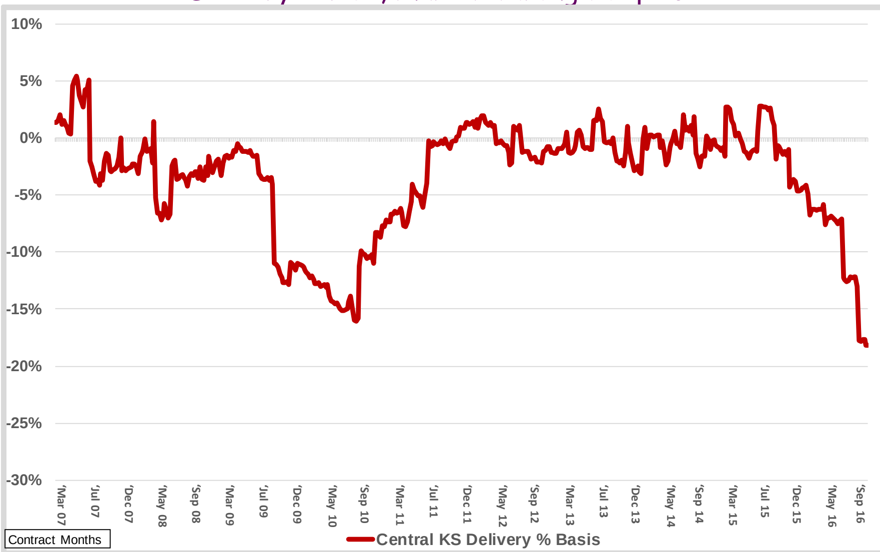
1. Non-convergence occurs when futures and cash don't converge to the same price during delivery.
2. HRW wheat central KS delivery points include Wichita, Salina/Abilene, Hutchinson, plus Kansas City.
3. Non-convergence causes a wide basis and reduces effective price protection from a short hedge.
4. The September 2016 HRW wheat contract non-convergence was about 70-80 cents under.
5. Cash price is the real market vs. futures.

Central KS HRW Basis in Dollars During the Delivery Periods, Mar 07 through Sep 16*



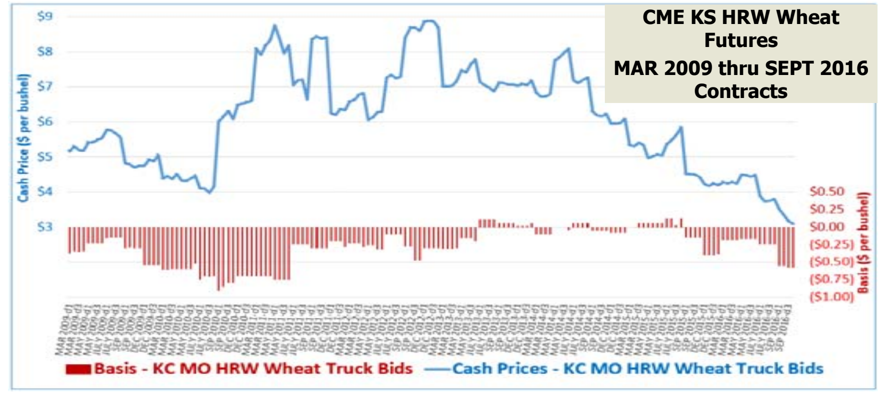
*Cash price defined highest price in USDA, Agricultural Marketing Service's (AMS) range of cash prices for number 1 grade Hard Red Winter (HRW) wheat in Central KS. Source: Agricultural Marketing Service, "Historical Cash Prices", published on AMS Webpage at: https://www.marketnews.usda.gov/mnp/ls-report-config?category=Grain

Central KS HRW Basis Expressed in Percent Difference During the Delivery Period, Mar 07 through Sep 16*

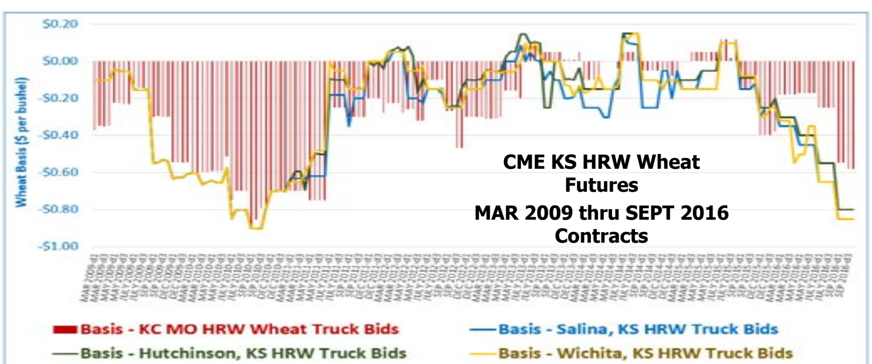


*Cash price defined highest price in USDA, Agricultural Marketing Service's (AMS) range of cash prices for number 1 grade Hard Red Winter (HRW) wheat in Central KS. Source: Agricultural Marketing Service, "Historical Cash Prices", published on AMS Webpage at: https://www.marketnews.usda.gov/mnp/ls-report-config?category=Grain

KC MO HRW Wheat Truck Bids & Basis
@ Period of CME Basis Tracking ⇨ Final Week Prior to Expiring Contract Month



HRW Wheat Truck & Terminal Basis: KC MO & Central KS
@ Period of CME Basis Tracking ⇨ Final Week Prior to Expiring Contract Month



Big Wheat Crop Exceeds Storage Causing Non-Convergence

1. **Cash price is "correct"** because of a large crop exceeding storage limits, and convergence would require futures prices to decline.
2. Farmers can't deliver real grain on futures. What is delivered is a CME approved warehouse receipt/shipping certificate issued by multi-national grain companies.
3. HRW winter wheat market is not trading wheat. **Market is trading a CME approved warehouse receipt**, that currently has more value than wheat.

Non-Convergence Issue

1. Non-Convergence in the 2016 Hard Red Winter (HRW) futures contract issue is being presented in a series of 3 videos that include the following topics:
   a. What is Non-Convergence?
   b. **Alternative policies and consequences for addressing non-convergence.**
   c. How does non-convergence affect crop insurance?

Possible reasons for non-convergence

1. Low protein
2. Limited storage due to big wheat crop
3. Low interest rates

Truck Bids for HRW Wheat at Delivery Points (8/26/16)

1. KC MO @ 55 under (current bid 80 cents under 10/21/16)
2. Wichita @ 85 cents under
3. Hutchinson @ 80 cents under
4. Salina/Abilene @ 85 cents under

Policy Alternatives to Address Non-Convergence

1. Expand who can deliver
2. Cash Settle HRW Wheat Futures Contract
3. Double the Fixed Storage Rate in Current HRW Wheat Futures Contract
4. Rail Car track Delivery
5. Variable Rate Storage (VSR)

Who's Cash Price, AMS-USDA or Other and is the Price Correct?

Notice AMS's cash price is jumping all over the board and is the same price on many days. Is that price correct? Were there no cash sales that day so AMS put in a number? Computer error?

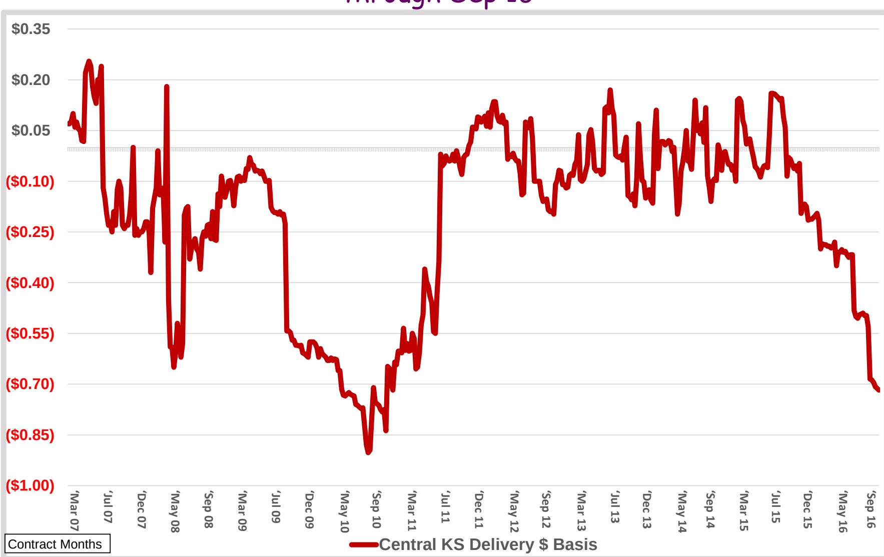
06/12/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	7.17	7.26	Terminal Elevators	Cash
06/13/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	7.17	7.26	Terminal Elevators	Cash
06/16/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	5.88	5.91	Terminal Elevators	Cash
06/17/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	7.17	7.26	Terminal Elevators	Cash
06/18/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	5.97	5.97	Terminal Elevators	Cash
06/19/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	6.03	6.03	Terminal Elevators	Cash
06/20/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	5.98	5.98	Terminal Elevators	Cash
06/23/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	5.99	5.99	Terminal Elevators	Cash
06/24/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	7.17	7.26	Terminal Elevators	Cash
06/25/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	5.95	6.00	Terminal Elevators	Cash
06/26/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	6.07	6.07	Terminal Elevators	Cash
06/27/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	7.17	7.26	Terminal Elevators	Cash
06/30/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	7.17	7.26	Terminal Elevators	Cash
07/01/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	7.17	7.26	Terminal Elevators	Cash
07/02/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	7.17	7.26	Terminal Elevators	Cash
07/07/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	7.17	7.26	Terminal Elevators	Cash
07/08/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	7.17	7.26	Terminal Elevators	Cash
07/09/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	7.17	7.26	Terminal Elevators	Cash
	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	5.35	5.41	Terminal Elevators	Cash

Who's Cash Price, AMS-USDA or Other and is the Cash Price Correct?

1. AMS-USDA archived data replaced with daily AMS-USDA price reports

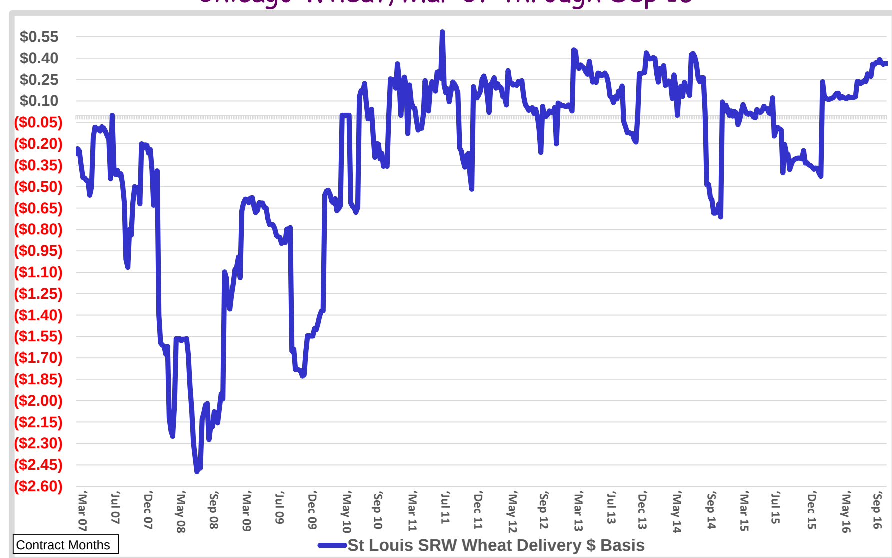
07/01/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	5.87	6.02	Daily Report	Cash
07/02/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	5.78	6.05	Daily Report	Cash
07/03/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	5.90	6.09	Daily Report	Cash
07/07/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	5.67	5.81	Daily Report	Cash
07/08/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	5.69	5.71	Daily Report	Cash
07/09/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	5.56	5.63	Daily Report	Cash
07/10/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	5.57	5.63	Daily Report	Cash
07/11/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	5.35	5.41	Daily Report	Cash
07/14/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	5.46	5.52	Daily Report	Cash
09/02/14	St. Louis, MO	SOFT RED WINTER	US NO 2	Bushel	Truck	4.95	4.95	Daily Report	Cash

Central KS HRW Basis in Dollars During the Delivery Periods, Mar 07 through Sep 16*



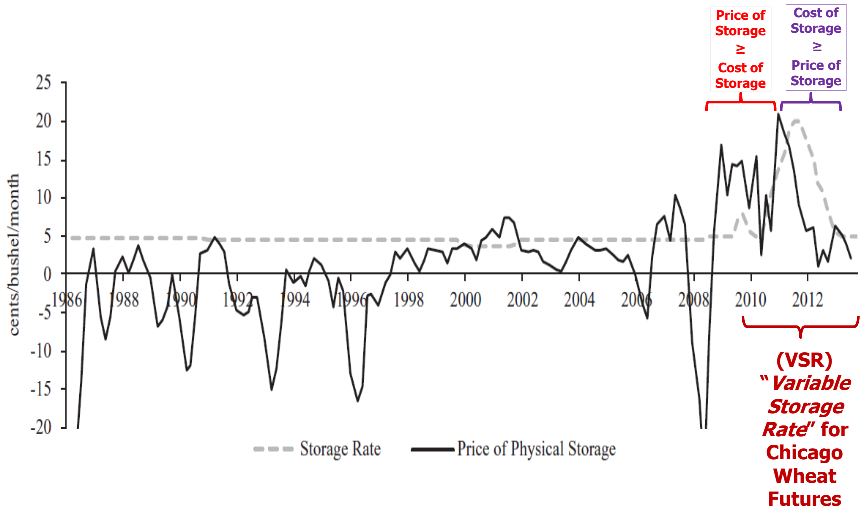
*Cash price defined highest price in USDA, Agricultural Marketing Service's (AMS) range of cash prices for number 1 grade Hard Red Winter (HRW) wheat in Central KS. Source: Agricultural Marketing Service, "Historical Cash Prices", published on AMS Webpage at: https://www.marketnews.usda.gov/mnp/ls-report-config?category=Grain

St. Louis SRW Wheat Basis in Dollars During the Delivery Periods for Chicago Wheat, Mar 07 through Sep 16*



*Cash price defined highest price in USDA, Agricultural Marketing Service's (AMS) range of cash prices for number 2 grade Soft Red Winter (HRW) wheat in St. Louis, truck bid. Source: Agricultural Marketing Service, "Historical Cash Prices", published on AMS Webpage at: https://www.marketnews.usda.gov/mnp/ls-report-config?category=Grain

Toledo "Price of Physical Storage" vs "Storage Rate": 1986-2013
"Futures Market Failure?" Garcia, Irwin, Smith (AJAE January 2015)



Policy Alternatives to Address Non-Convergence

6. Status Quo

7. Would HRW wheat contract benefit by changing from a warehouse receipt to a shipping certificate (St. Louis, KC & Tulsa)?

How do Farmers Manage Risk assuming NO Change in Futures Contract

1. On farm storage, allows for improved basis after harvest, protein premiums, or specialty wheat with a higher price.

2. At times, a Chicago wheat hedge may perform better than KC.

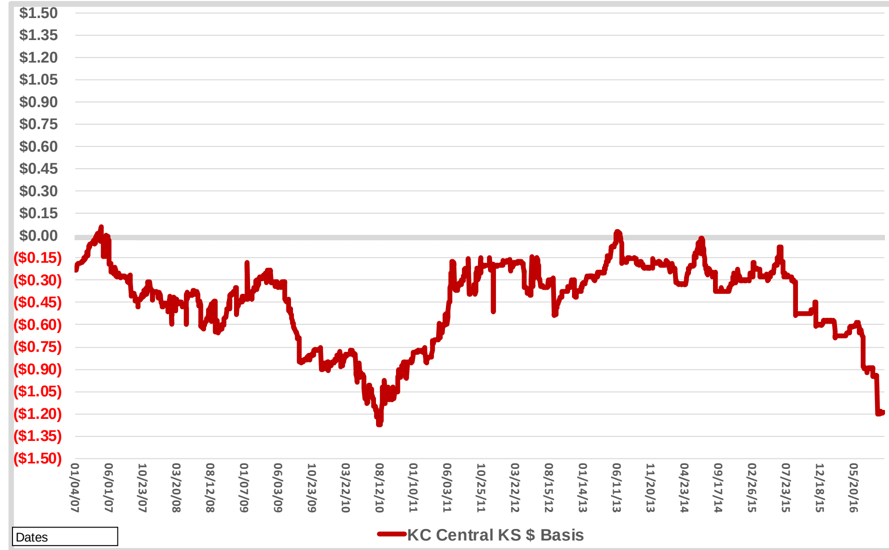
3. Chicago wheat has the VSR storage rate.

4. Delivery of Chicago wheat is with a shipping certificate and includes all wheat classes.

2017 July HRW Wheat

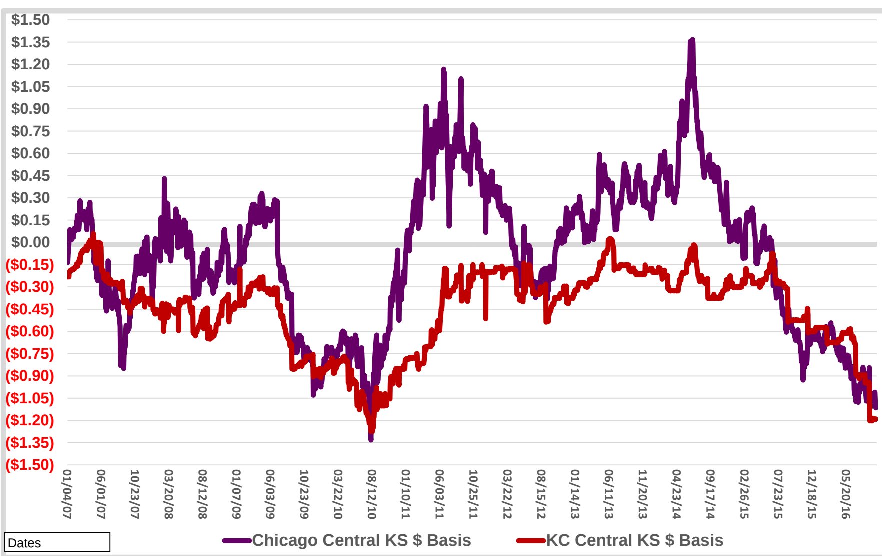
2016 July SRW Wheat

Central KS Wheat HRW & SRW Daily Nearby Basis in Dollars*



*Cash Price is defined as the mid-point of the USDA Agricultural Marketing Service's (AMS) daily cash prices for number 1 grade hard red winter wheat in Central Kansas. Daily basis is the difference between cash prices and nearby closing futures prices.

Central KS Wheat HRW & SRW Daily Nearby Basis in Dollars*



*Cash Price is defined as the mid-point of the USDA Agricultural Marketing Service's (AMS) daily cash prices for number 1 grade hard red winter wheat in Central Kansas. Daily basis is the difference between cash prices and nearby closing futures prices.

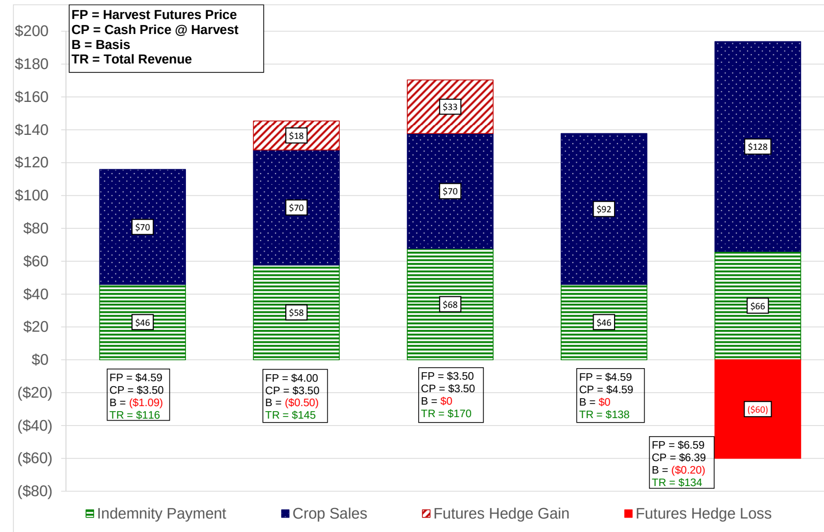
Non-Convergence Issue

1. Non-Convergence in the 2016 Hard Red Winter (HRW) futures contract issue is being presented in a series of 3 videos that include the following topics:
   a. What is Non-Convergence?
   b. Alternative policies and consequences for addressing non-convergence.
   c. **How does non-convergence affect crop insurance?**

Non-Convergence Affects Crop Insurance Too

1. Only falling futures prices causes the crop insurance low price peril to trigger payments. A falling cash price has no effect on crop insurance.
2. The $4.59 crop insurance strike price includes the market's expectation of non-convergence.
3. Futures markets set the crop insurance planting prices & harvest prices.
4. Crop insurance assumes a zero basis. This helps cover some of the non-insurable elevator price dockage for light test weight, foreign material, cracked kernels, farmer paid premium est.

Revenue Streams by Source for 75% RP Insured Wheat Farm with a 40 Bu. APH under 5 Different Harvest Price Scenarios and Half of a Crop with 30 bu. Hedged @ $4.59.

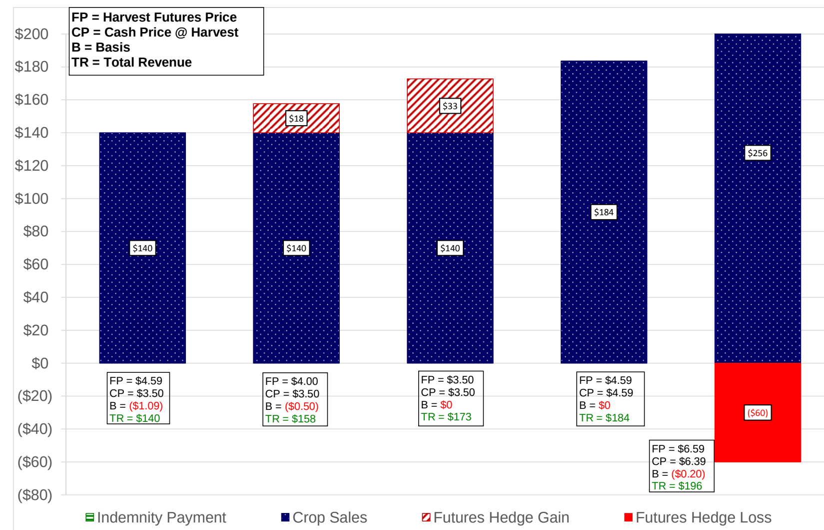


Example Farm Data Presented in the Bar Chart Assumes a 75% Insured Great Plains Wheat Farmer under RP, $4.59 Insurance Price, and Hedges 75% of the APH Yield at an Average Price of $4.59 and 20 Bu. Crop Yield **(details)**

	Futures & Cash Price Don't Change	Futures Price Falls 59 Cents	Futures Price Falls 59 Cents to Cash, Zero Basis	Cash Price Increase to Futures	Futures & Cash Price Both Increase
APH (10 yr Average Yield)	40.0	40.0	40.0	40.0	40.0
Strike price hedge/Crop ins	$4.59	$4.59	$4.59	$4.59	$4.59
Expected Gross Revenue[1]	$183.60	$183.60	$183.60	$183.60	$183.60
Coverage	75%	75%	75%	75%	75%
Harvest Yield	20.0	20.0	20.0	20.0	20.0
Harvest Futures Price	$4.59	$4.00	$3.50	$4.59	$6.59
Cash Price @ Harvest	$3.50	$3.50	$3.50	$4.59	$6.39
Harvest Basis	($1.09)	($0.50)	$0.00	$0.00	($0.20)
Indemnity Payment[2]	$45.90	$57.70	$67.70	$45.90	$65.90
Crop Sales	$70.00	$70.00	$70.00	$91.80	$127.80
Futures Hedge Gain		$17.70	$32.70	$0.00	$0.00
Futures Hedge Loss[3]					($60.00)
Total Revenue	$115.90	$145.40	$170.40	$137.70	$133.70

[1]Expected Gross Revenue may not cover costs for a number of reasons. Recent yield losses will lower 10 year average yield below expected yield or wheat prices are below cost of production.
[2]Indemnity payment is gross and farmer paid premium has not been deducted.
[3]When prices increase a hedge farmer receives margin call, but one sells the crop at higher cash price or the Revenue Protection (RP) crop insurance contract replaces the guaranteed bushels at the higher price.

Revenue Streams by Source for 75% RP Insured Wheat Farm with a 40 Bu. APH under 5 Different Harvest Price Scenarios and a Normal Crop with 30 bu. Hedged @ $4.59.



SUMMARY

1. Once farmers plant their crop, they are long the market!
2. All farmer marketing plans include feeding their crop to livestock or dairy cows, storing the crop for later sales, deferred price contracts, forward cash contracts, minimum price contracts, hedge to arrive contracts, selling futures, buying put options, buy puts-sell calls, cash sales off the combine at harvest, etc. **assumes production.**
3. Only RP will insure a percentage of a farmer's expected production at replacement value.
4. Farmers may manage price risk by forward pricing the insured production.
5. Farmers will liquidate their long position, even if it only means selling cash grain off of the combine.

SUMMARY

1. Non-Convergence's impact on short hedges, alternative policies on how to address non-convergence, and the impact of non-convergence on crop insurance will be presented in a 3 video series on AgManager.info.