

The Effectiveness of Alternative Marketing Strategies for Ontario Corn and Soybean Producers



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Marketing Questions



- When to sell?
- What tools to use?
- Use a consistent strategy from year to year?
- Use similar strategies for different commodities?

Historical corn prices in Chatham-Kent



Year	Average	Minimum	Maximum	Range
1992	\$2.75	\$2.32	\$3.20	\$0.88
1993	\$2.99	\$2.73	\$3.66	\$0.93
1994	\$3.29	\$2.63	\$3.88	\$1.25
1995	\$3.62	\$2.84	\$4.59	\$1.75
1996	\$5.43	\$3.54	\$7.40	\$3.86
1997	\$3.79	\$3.24	\$4.35	\$1.11
1998	\$3.24	\$2.71	\$3.89	\$1.18
1999	\$2.79	\$2.46	\$3.04	\$0.58
2000	\$2.81	\$2.39	\$3.42	\$1.03
2001	\$3.24	\$2.75	\$3.66	\$0.91
2002	\$3.56	\$3.11	\$4.38	\$1.27
2003	\$3.48	\$2.89	\$3.95	\$1.06
2004	\$3.31	\$2.23	\$4.32	\$2.09
2005	\$2.47	\$2.25	\$2.91	\$0.66
2006	\$2.69	\$2.09	\$3.80	\$1.71
2007	\$3.72	\$3.23	\$4.44	\$1.21
2008	\$4.89	\$3.59	\$6.61	\$3.02
2009	\$4.08	\$3.59	\$4.70	\$1.11

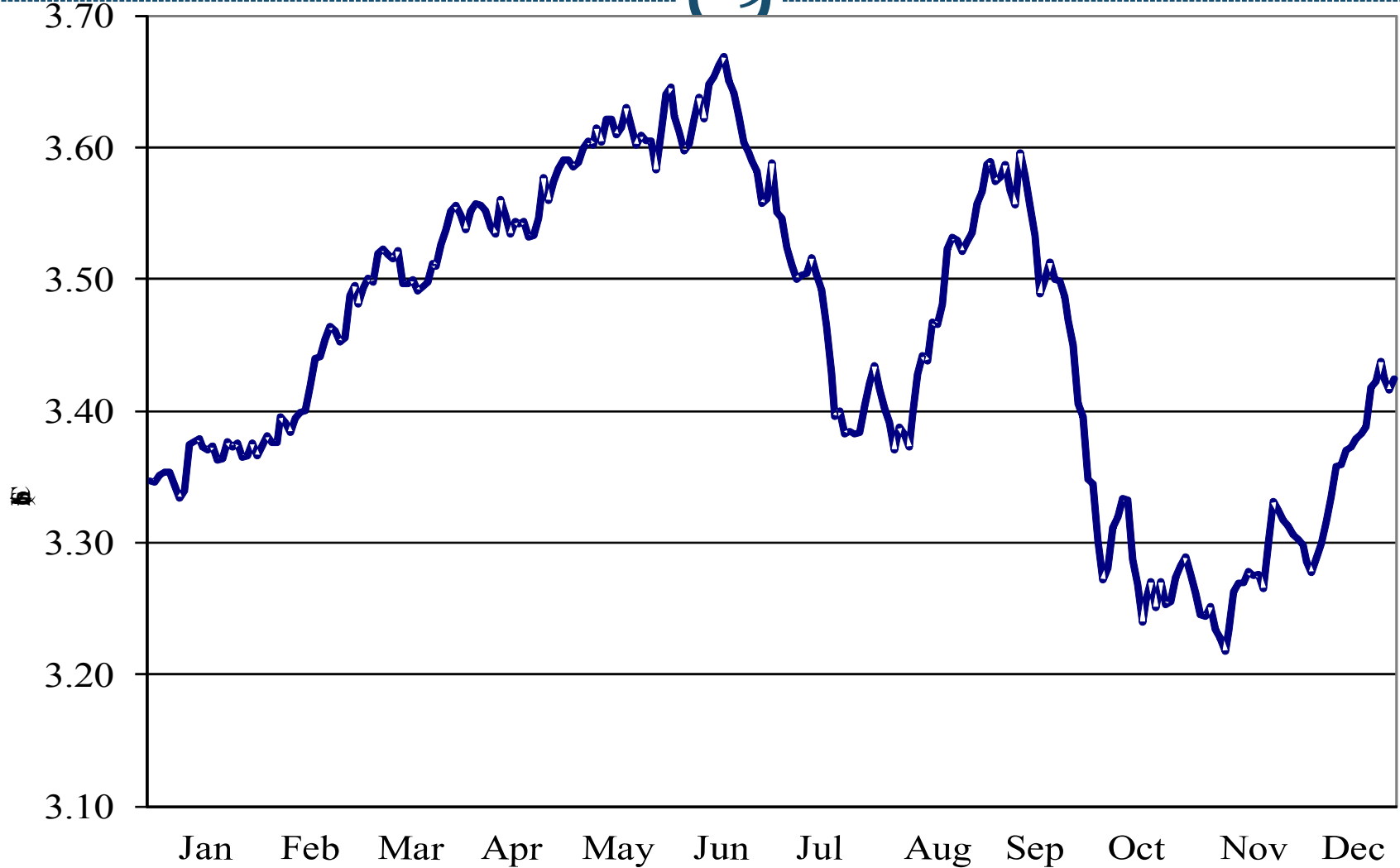
Historical soybean prices in Chatham-Kent



Year	Average	Minimum	Maximum	Range
1992	\$6.46	\$5.90	\$7.06	\$1.16
1993	\$7.83	\$6.92	\$9.13	\$2.21
1994	\$8.04	\$6.40	\$9.52	\$3.12
1995	\$8.04	\$7.15	\$9.69	\$2.54
1996	\$10.15	\$8.82	\$11.43	\$2.62
1997	\$10.45	\$8.31	\$12.32	\$4.02
1998	\$8.62	\$7.30	\$9.61	\$2.31
1999	\$6.85	\$5.94	\$8.20	\$2.26
2000	\$7.16	\$6.50	\$8.01	\$1.51
2001	\$7.01	\$6.43	\$7.96	\$1.54
2002	\$7.88	\$6.63	\$8.99	\$2.36
2003	\$8.70	\$7.44	\$10.10	\$2.66
2004	\$9.89	\$5.56	\$14.37	\$8.81
2005	\$6.92	\$5.96	\$8.50	\$2.54
2006	\$6.12	\$5.35	\$7.17	\$1.82
2007	\$8.23	\$6.91	\$11.17	\$4.26
2008	\$12.19	\$8.53	\$15.91	\$7.38
2009	\$11.25	\$8.95	\$13.69	\$4.74

Average Corn Prices in Chatham-Kent: 92-

09



Average Soybean Prices in Chatham-Kent:

97-99



Tools to take advantage of higher pre-harvest prices



- **Forward contracts**
 - Risk: price for large share of production remains unprotected
- **Futures contracts**
 - Risk: margin calls, basis risk
- **Options**
 - Issue: premiums can be high

Previous Studies on Marketing Strategies



- Wisner, Blue, & Baldwin (1998)
 - Use of futures and options increased returns relative to cash sales at harvest for corn and soybeans
- Curtis, Pfeiffer, Lutgen, & Frank (1987)
 - Use of hedges increased returns for soybean producers
- Frank, Irwin, Pfeiffer, & Curtis (1989)
 - Use of options increased returns and reduced variability of returns

Previous Studies on Marketing Strategies



- Other studies did not find differences in returns among different strategies
 - Zulauf & Irwin (1998)
 - Peterson & Tomek (2005)
- Other notable studies
 - Cunningham, Brorsen, & Anderson (2007) – no significant difference in prices received for active vs. mechanical marketing styles
 - Irwin, Good, & Martines-Filho (2006) – found little evidence that market advisory services were able to outperform market benchmarks

Methods



Simulation Model



- Data
 - Historical daily Ontario Commodity Reports
 - ✦ Cash and futures prices
 - Chicago Board of Trade
 - ✦ Options premiums
 - Time period: 1992-2009
- Strategies – developed with input from marketing specialists and producers

Strategies



- Prices are randomly selected from a range of dates
- Sales or contracts for each strategy are made over the same range of dates in every year
- 5 time periods during which sales or contracts are made for the set of strategies
 - Each period is three weeks in length:
 - Harvest (Oct. 21 – Nov. 10 for corn; Oct. 1 – 21 for soybeans)
 - Early in the new year (January 5 – 25)
 - Spring (April 10 – 30)
 - Early summer (June 20 – July 10)

Strategies



- Share of crop sold for selected time periods is selected from specified ranges
 - Based in part on price relative to COP
- The share of the crop sold through forward contracts and futures contracts is based on expected production

Strategies: Cash Sales



Strategy	Tool	Time Period	Share of Crop
1	Cash sale	Harvest	100%
2	Cash sale	Early new year	100%
3	Cash sale	Harvest	20-30%
	Cash sale	Early new year	40-60%
	Cash sale	Early summer	10-40%
4	Cash sale	Harvest	10-20%
	Cash sale	Early new year	10-20%
	Cash sale	Spring	20-30%
	Cash sale	Early summer	20-30%
	Cash sale	Late summer	10-40%

Strategies: Forward Contracts



Strategy	Tool	Time Period	Share of Crop
5	Forward contract	Spring	40-60%
	Cash sale	Harvest	40-60%
6	Forward contract	Early summer	40-60%
	Cash sale	Harvest	40-60%
7	Forward contract	Spring	25-35%
	Forward contract	Early summer	25-35%
	Cash sale	Harvest	30-50%

Strategies: Futures Contracts



Strategy	Tool	Time Period	Share of Crop
8	Futures contract - short	Spring	75-100%
	Futures contract - long	Harvest	75-100%
	Cash sale	Harvest	100%
9	Futures contract - short	Early summer	75-100%
	Futures contract - long	Harvest	75-100%
	Cash sale	Harvest	100%
10	Futures contract - short	Spring	40-60%
	Futures contract - short	Early summer	40-60%
	Futures contract - long	Harvest	80-100%
	Cash sale	Harvest	100%

Strategies: Options



Strategy	Tool	Time Period	Share of Crop
11	Put option	Spring	75-100%
	Offset option (if profitable)	Harvest	75-100%
	Cash sale	Harvest	100%
12	Put option	Early summer	75-100%
	Offset option (if profitable)	Harvest	75-100%
	Cash sale	Harvest	100%
13	Put option	Spring	40-60%
	Put option	Early summer	40-60%
	Offset option (if profitable)	Harvest	80-100%
	Cash sale	Harvest	100%

Strategies: Other



Strategy	Tool	Time Period	Share of Crop
14	Forward contract	Spring	40-60%
	Futures contract - short	Early summer	40-60%
	Futures contract - long	Harvest	40-60%
	Cash sale	Harvest	100%
15	Forward contract	Spring	40-60%
	Put option	Early summer	40-60%
	Offset option (if profitable)	Harvest	40-60%
	Cash sale	Harvest	100%
16	Depends on market conditions		

Other Model Considerations



- Storage costs
- Interest on inventory
- Interest costs on funds required for trading accounts
- Commission fees
- Converting to Canadian currency
- Options: strike prices close to current futures prices are selected
- Options are offset at harvest if any value remains
- Returns for each strategy are on a per-bushel basis

Methods of Analysis



- Simulation model is run 1,000 times for each strategy
 - Accounts for semi-random selection of date and percentage of crop sold
- Average prices generated by the model for each strategy are compared to that of the baseline strategy
- Simulation model also provides measures of risk for each strategy
 - Variability of prices
 - Probability that price is below a specific threshold (90% of COP)

Methods of Analysis



- Results analyzed across entire time period (1992-2009)
- Results broken down into two groups
 - Years in which pre-harvest prices are higher than COP
 - ✦ Corn: 1994-1998, 2000, 2004, 2007-2009
 - ✦ Soybeans: 1994-1998, 2003-2004, 2008-2009
 - Years in which pre-harvest prices are lower than COP
 - Relative effectiveness of strategies are compared across both groups

Results of the Simulation Model



Results for Corn: All Years



- Average price for the baseline strategy: \$3.26/bu
- Strategies with highest average prices:
 - Futures contracts (spring & early summer) +31.7
 - Futures contract (spring) +31.7
 - Forward (spring) & futures contract (early summer) +29.8
 - Futures contract (early summer) +29.0

Results for Corn: All Years



- Other strategies that performed well:
 - Forward contract (spring) & put option (early summer) +26.8
 - Variable (depends on market conditions) +25.2
 - Put option (early summer) +24.2
 - Put options (spring & early summer) +20.1
 - Put option (spring) +15.3
- Prices for forward contract strategies were 9.0 to 12.5 cents/bu higher than the baseline
- Prices for other cash sale strategies were only 3.5 to 7.2 cents/bu higher than the baseline

Results for Soybeans: All Years



- Average price for the baseline strategy: \$7.66/bu
- Strategies with highest average prices:
 - Variable (depends on market conditions) +80.6
 - Cash sales (each time period) +60.3
 - Cash sale (new year) +59.0
 - Forward (spring) & futures contract (early summer) +54.3

Results for Soybeans: All Years



- Prices for futures contract strategies were 30.6 to 50.6 cents/bu higher than the baseline
- Prices for forward contract strategies were 23.6 to 29.9 cents/bu higher than the baseline
- Prices for options strategies were 8.2 to 28.2 cents/bu higher than the baseline

Results: All Years



- Variability of prices
 - Highest for futures contract strategies
 - Lower for strategies with options than for strategies with futures
 - Lowest for forward contract strategies and most cash sale strategies

Results: All Years



- Probability that price is less than 90% of COP
 - For the baseline strategy: 47.5% for corn; 30.0% for soybeans
 - Only one strategy for corn and two for soybeans had greater probabilities of prices below the threshold
 - For corn, this probability tended to be much lower for pre-harvest strategies
 - ✦ As low as 23.0% for futures contract strategies
 - For soybeans these differences tended to be smaller
 - The dynamic strategy had a much lower probability than the baseline for both crops

Results for Corn: Higher-Price Years



- Results are similar to those across all years but with greater differences from the baseline
- Average price for the baseline strategy: \$3.41/bu
- Strategies with highest average prices:
 - Futures contracts (spring & early summer) +56.1
 - Forward (spring) & futures contract (early summer) +55.9
 - Futures contract (spring) +54.8
 - Futures contract (early summer) +53.0

Results for Corn: Higher-Price Years



- Other strategies that performed well:
 - Forward contract (spring) & put option (early summer) +47.8
 - Put option (early summer) +39.3
 - Variable (depends on market conditions) +36.5
 - Put options (spring & early summer) +34.0
 - Put option (spring) +27.9
- Prices for forward contract strategies were 22.1 to 27.3 cents/bu higher than the baseline
- Prices for other cash sale strategies were only 1.6 to 11.2 cents/bu higher than the baseline

Results for Soybeans: Higher-Price Years



- Results are similar to those across all years but with greater differences from the baseline
- Average price for the baseline strategy: \$8.09/bu
- Strategies with highest average prices:
 - Variable (depends on market conditions) +113.8
 - Forward (spring) & futures contract (early summer) +106.0
 - Futures contract (early summer) +88.0
 - Futures contracts (spring & early summer) +85.1
 - Forward (spring) & put option (early summer) +82.9

Results for Soybeans: Higher-Price Years



- Other strategies that performed well:
 - Futures contract (spring) +74.9
 - Cash sales (each time period) +71.9
 - Cash sale (new year) +67.1
 - Cash sales (harvest, new year, early summer) +57.8
- Prices for forward contract strategies were 53.3 to 63.4 cents/bu higher than the baseline
- Prices for options strategies were 28.8 to 49.4 cents/bu higher than the baseline

Results: Higher-Price Years



- Probability that price is less than 90% of COP
 - For the baseline strategy: 37.3% for corn; 20.1% for soybeans
 - Only one strategy for each crop had greater probabilities of prices below the threshold
 - These probabilities for the pre-harvest strategies are substantially lower than the baseline for both crops
 - ✦ For corn, the probabilities for futures and forward contract strategies were as low as 0.2% and 9.6%
 - ✦ For soybeans, the probabilities for pre-harvest strategies ranged from 0.0% to 11.1%

Results for Corn: Lower-Price Years



- Results are much different than for higher-price years
- Average price for the baseline strategy: \$3.06/bu
- Strategies with highest average prices:
 - Cash sale (new year) +14.2
 - Variable +11.1
- Average prices for some strategies were less than the baseline (e.g., forward contract strategies)

Results for Soybeans: Lower-Price Years



- Average price for the baseline strategy: \$7.12/bu
- Strategies with highest average prices:
 - Cash sale (new year) +49.0
 - Cash sales (each time period) +45.9
 - Variable +39.1
 - Cash sales (harvest, new year, early summer) +38.3
- Pre-harvest strategies performed poorly relative to the baseline, often generating prices that were below that of the baseline

Results: Lower-Price Years



- **Probability that price is less than 90% of COP**
 - For the baseline strategy: 60.3% for corn; 39.9% for soybeans
 - Variable strategy had a much lower probability than the baseline for both crops
 - For corn, cash sale strategies had lower probabilities than pre-harvest strategies
 - For soybeans, most pre-harvest strategies had higher probabilities than the baseline

Factors Impacting the Results



- Results affected by 1996 and 2008
 - Without these years the differences from the baseline would have been lower for the pre-harvest strategies
- Use of elevator storage rates
 - May affect average prices for strategies that use multiple cash sales throughout the year

Limitations



- Model does not account for production risk or yield fluctuations
 - Also does not take into account grade or moisture level
- Assumptions had to be made in the specification of marketing strategies, such as the timing and amounts of sales
 - Changes to these specifications may affect the results of the model to some degree
- Each strategy involved using the same tool during the same time period in each year

Limitations



- Strategies with futures and options did not hedge the Canadian dollar
- Results for strategies with options may be sensitive to the selection of strike prices

Summary



- Across all years, differences were found in the results between corn and soybeans
 - Relative performance of pre-harvest strategies was better for corn
 - Relative performance of cash sale strategies was better for soybeans
- In higher-price years, pre-harvest strategies performed well for both crops
 - These strategies also had much lower probabilities of prices below the threshold than did the baseline
- In years with lower market prices:

Summary



- Variable strategy did relatively well for both crops across both higher-price years and lower-price years
- Strategies that used futures or options tended to do better than those with forward contracts since the price for the entire expected production could be hedged

Recommendations



- Use different strategies depending on current market conditions
- Pre-harvest strategies should be used in years where pre-harvest prices are greater than COP

Thank you.
Any Questions?

