

# Introduction to Agricultural Options



## Using Risk to Profit Workshop

January 5, 1999

## □ OPTION



Contract Between Two Parties That Conveys A  
**Right** But Not An **Obligation** To Buy Or Sell A  
Specific Commodity Futures Contract At A Specific  
Price Within Specific Time Period For A Premium.

# OPTION COMPONENTS

- 
- \* Underlying Futures Contract
  - \* Strike Price
  - \* Expiration Date
  - \* Seller
  - \* Buyer
  - \* Premium

# COMPONENTS OF OPTION PREMIUM



Intrinsic Value

+ Time Value

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TOTAL VALUE

# INTRINSIC VALUE



- Strike Price
- Underlying Futures Price

# PUT



-  
Out-of-the-money

-  
Strike Price < Futures Price

-  
At-the-money

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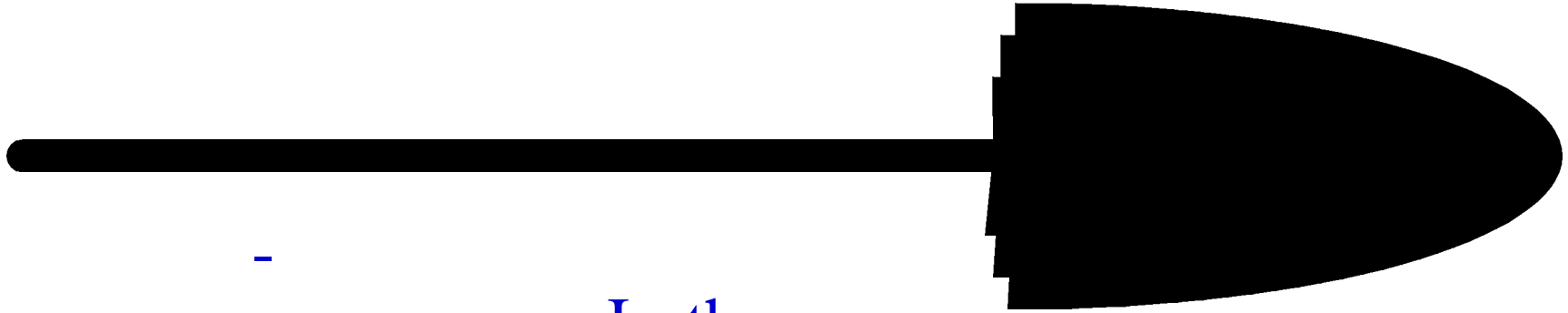
Strike Price = Futures Price

-  
In-the-money

-  
Strike Price > Futures Price

-

# CALL



- In-the-money

- Strike Price < Futures Price

- At-the-money

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- Strike Price = Futures Price

- Out-of-the-money

- Strike Price > Futures Price

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# TIME VALUE



- Volatility Of Underlying Futures
- Interest Rates
- Option Classification
- Time



# OPTIONS ON FUTURES CONTRACTS



1. Options on futures represent the RIGHT, (but not the obligation) to enter a designated contract at a specific price

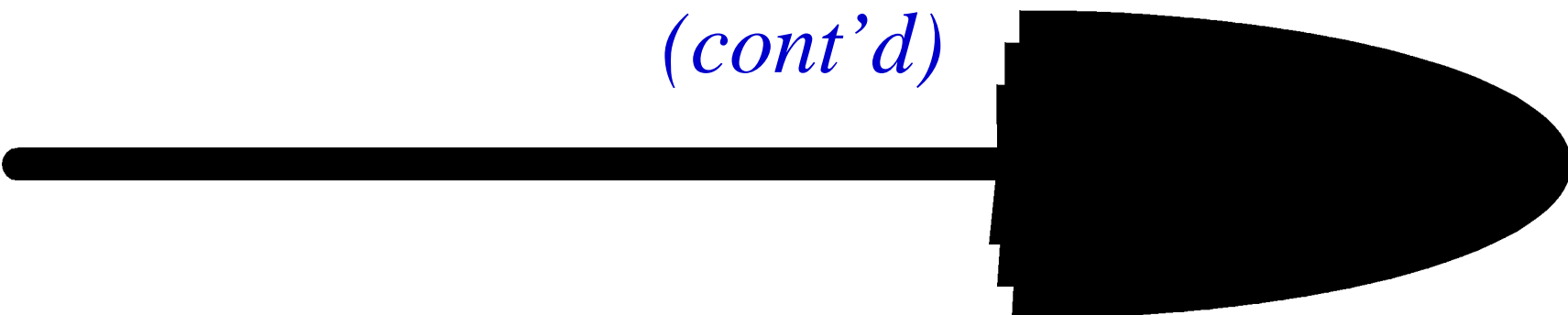
- main focus is that options give the RIGHT to a futures position, but the option owner is not required to enter a futures position

## 2. Types of Options

- "put" option represents the right to sell
- "call" option represents the right to buy


# OPTIONS ON FUTURES CONTRACTS

*(cont'd)*

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3. Strike price is the price at which the option buyer has the right to sell (for a put) or buy (for a call) the underlying contract
  4. Option premium is the market value of the right  
- quoted in cents per bushel (5000 bu.)
  5. Option Expiration
    - a. expire about the 25th day of month before the underlying futures contract month

# OPTION EXAMPLES

## (Focus on Puts)



Mid January - Puts on CBT Sep 99 wheat

CBT Sep wheat futures price = 335.00 cents/bu.

<u>Strike Price</u>	<u>Premium</u> <u>(cents/bu.)</u>
300	12.25
310	16.25
320	21.25
330	27.00
340	33.50

# OPTION EXAMPLES

(Focus on Puts)

*(cont'd)*



Know:

1. can purchase right to sell CBT Sep futures
2. right to sell at several different strike prices above or below the current market price
3. premiums vary by strike price
  - right to sell is more expensive as strike price goes up
4. option on Sep wheat expires about 25 Aug 99

# OPTION EXAMPLES

(Focus on Puts)

*(cont'd)*

Option premium influenced by:

1. strike price relative to the current futures price:
  - a. intrinsic value if above futures price
    - 300 put has 0 cents of intrinsic value
    - 340 put has 5 cents of intrinsic value
2. time until expiration:
  - a. futures price can change
    - 300 put can have intrinsic value if futures price goes below 300
  - b. more time to expiration = more time value
  - c. more market volatility = more time value

# OPTION EXAMPLES

(Focus on Puts)

*(cont'd)*



Closing a put position:

- a. “sell” at the current premium
  - premium changes over time as futures price changes and expiration approaches
- b. let option expire if worthless
  - option expires with no intrinsic value
- c. exercise and obtain futures position
  - may be automatic if expires with value

# CALL OPTION EXAMPLE

## Sell Cash Wheat and Purchase Call



1. Mid Jan. - Grain producer has 30,000 bushels of wheat in storage. Current cash price is 310 cents/bu. Wants to eliminate holding costs, but feels some potential for price gain between now and mid-Apr. Premium on 300 CBT May wheat call = 10 cents
2. Evaluate potential for gain:

Cost of holding cash wheat = 12

Cost of buying 300 Chi May Call = 10

# CALL OPTION EXAMPLE

## Sell Cash Wheat (*cont'd*)



### 3. Compare to other alternatives:

- decides to use call option alternative
- sell cash wheat at 310 cents/bu.
- buys 6 Chicago 300 May wheat calls (5000 bu. each) at 10 cents



# PURCHASE WHEAT CALL OUTCOME

## Mid-Apr and Price Increases

A. Local price increases to 350 cents/bu.

<u>Cash Market</u>	<u>Futures Market</u>	<u>Actual Basis</u>
Sold wheat at 310	Sep Futures price = 360	
	300 Call premium = 60	-10
	(intrinsic value)	
	Sell call for premium	

### Outcome

Sale of cash wheat	= 310 (+)
Premium paid for 300 call	= 10 (-)
Storage cost savings	= 12 (+)
Proceeds from sale of call	= 60 (+)

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Net Price = 372 cents/bu.

# PURCHASE WHEAT CALL OUTCOME

## Mid-Apr and Price Decreases

B. Local price decreases to 260 cents/bu.

Cash Market

Futures Market

Actual  
Basis

Sold wheat  
at 310

Sep Futures price = 280  
300 Call premium = 0  
(no intrinsic value)  
Call expires worthless

-10

### Outcome

Sale of cash wheat	= 310 (+)
Premium paid for 300 call	= 10 (-)
Storage cost savings	= 12 (+)
Proceeds from sale of call	= 0 (+)

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Net Price = 312 cents/bu.