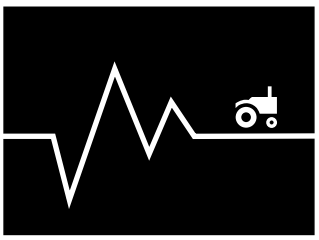

chapter three

PRICE RISK

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Instructor Guidelines

The objective of Chapter Three, *Price Risk,* is to provide agricultural producers with the ability to incorporate risk management into their commodity marketing activities. The chapter includes five modules, and a marketing case study based on the Profit Farms case farm.

Modules 1 through 3 take an overview orientation, and are designed to introduce the concept of risk management as it relates to marketing. Module 1, *Developing a Risk Management Plan,* is designed to communicate the idea that risk management should be a planned activity and fit within the overall farm plan. Risk is defined in a probability context using price risk examples. Alternatives for managing various types of risk are introduced. Module 2, *Developing and Implementing a Marketing Plan,* focuses on marketing as an important part of the management activity. Marketing activities are compared to production activities to illustrate the probabilistic nature of marketing decisions. An essential point is that market uncertainty means planning becomes more critical. Marketing plans must be custom designed for each individual's operation to reflect variations in risk bearing capacity, and different business goals. The essential elements of a marketing plan are also introduced. Module 3, *Marketing Alternatives to Manage Price Risk: Advantages and Disadvantages*, provides an introduction to commodity marketing alternatives. Criteria for evaluating marketing alternatives are suggested. Each marketing alternative is defined, and evaluated relative to its strengths and weaknesses. Five alternatives using the cash market, and two alternatives using futures and options are presented.

Modules 4 and 5 are more specific and focus on understanding and implementing marketing strategies. Module 4, *A Primer on Using Futures and Options in Grain Marketing,* introduces futures and options on agricultural commodities. The focus is on essential terminology and understanding the concept of trading commodity futures and options on futures. Module 5, *How Cash Price and Basis Affect Hedging Outcomes*, incorporates futures and options into grain marketing strategies. Examples of obtaining downside price protection using hedging with futures are presented. Option-based examples are presented for both puts (establishing a minimum price) and calls (speculating on price increases).

The *Profit Farms Marketing Case Study* provides an active learning opportunity for evaluating the implementing commodity marketing alternatives. The case study is based upon Profit Farms (Chapter Eight), and simulates outcomes for marketing alternatives over a one-year marketing period. A price scenario of relatively flat commodity prices is presented. Instructions for facilitators and participants are included with the case study.

Overview of Price Risk Module 1: Developing A Risk Management Plan

This presentation provides an overview to the topic of developing a risk management plan. The focus is on how risk management should be integrated into the overall planning process. While some specific issues or tools are mentioned or used as examples, this presentation is designed to introduce the topic of managing production, financial, and price risk.

Risk management is part of the planning process and should be incorporated into the traditional components of a farm plan. It is not a stand-alone plan. The planning process involves developing expectations or estimates. Since no one has a crystal ball that allows a clear view into the future, producers should not be dismayed if their expectations don't always turn out to be 100 percent accurate. When evaluating the plan and the planning process, compare actual prices, yields, etc. to expectations. Producers need to determine why expectations did not match the actual outcome. Given the available information, were the expectations realistic, too optimistic, or even too pessimistic? Since risk is the chance that an outcome will not meet expectations, risk increases when plans are made based on unrealistic expectations.

Risk management extends to all management decisions. Every management decision contains risk management implications, both what a producer does and doesn't do. Management decisions should be based on the best available information. Collecting and analyzing data is a continuous process.

To deal with risk effectively requires an understanding of your current financial situation, sources of risk, and the tools to help manage the different types of risk (See Chapters 2, 6 and 7). While all producers face the same basic types of risk, the importance of a particular type of risk and the effectiveness of a given risk management tool will vary by producer.

Developing probabilities can be an important part of the risk management planning process. The insight and understanding gained in the process of developing probabilities can be as useful as the probabilities themselves. Focus on crucial issues and ones where you either have or can obtain data. Every event cannot be quantified, however, nor should they be. Historical records are an important part of this process. While historical price data at selected terminal markets may be readily available, what about your local cash market? If a producer doesn't have them, can they be obtained from someone else? Do producers maintain field records? Do they do anything but collect the data? Are the data used in developing projected yields?

The probability examples show a ten-year price history for soft white wheat at Portland, marketing years 1986 through 1995. An alternative to including all years in a ten or twenty year time series would be to separate years according to some crucial component such as stocks to use or production. Then compare price behavior in "high" and "low" stocks years, or compare years with "high" production to years of "low" production. Arranging the data in a cumulative probability distribution can help answer questions such as what is the chance the price will be at or above $3.75? (roughly 60 percent.) Or what is the chance that the price will be below $3.75? (roughly 40 percent.) What is the chance that the price of soft white wheat at Portland will fall between $3.35 (18%) and $4.25 (76%)? (roughly 58 percent: 76–18.) Historical data can be useful, but should never be accepted uncritically. If the factors that influence market fundamentals change, then historical data may not be as relevant. Recognize any bias that may exist in the data set (Note Chapter 5 and see CD ROM, PNW Historical Grain Price Data).

Risk assessment means knowing your capacity to bear risk. Financial statements can be very useful in this regard. They can also show how much risk you can afford as well as how much risk protection you can afford. Just as important is to know what level of risk you and your family will tolerate. Not everyone is a gambler.

Different products or strategies are discussed for dealing with production risk, price risk, revenue risk and financial risk. These are not comprehensive and they are not equally applicable to all producers or to all areas. The new revenue products, income protection and crop revenue coverage, are in a process of rapid change and development.

There is the old cliché that "people don't plan to fail, they fail to plan." Planning is a challenging process and reminds us of some things we would like to forget. It can also show our limitations. Because the farm business often involves family members, differences of opinions and conflicts are common. Planning often forces these disagreements into the open and can lead to bitter disputes. Focus on less controversial issues and those you agree on before tackling the contentious ones.

There are no silver bullets in risk management. A viable plan or strategy for one farm will not necessarily work elsewhere. The purpose of risk management is try and find the right balance between taking risks that will increase profits, while avoiding risks that can lead to unacceptable losses.

Developing a Risk Management Plan

NOTES

SLIDE 1.1 ***Develop a farm plan***

- A farm plan is the umbrella under which other plans reside.
- Risk management is a component of each plan, not a separate plan.

SLIDE 1.2 ***A farm plan includes***

- Goals & objectives
- Land use plan
- Crop plan
- Livestock plan
- Resource inventory
- Financial statement
- Budgets
- Income statement
- Supporting data

SLIDE 1.3 ***Planned vs . actual***

- Plans and decisions are based on expectations.
- Evaluation should compare actual outcome to expectations.

SLIDE 1.4 ***Risk***

- Risk is the possibility that an outcome or event will not meet planned expectations.

NOTES

SLIDE 1.5 ***Risk Management***

- Risk management integrates production, marketing & financial decisions.
- Risk management is a planning process where you assemble and assess information.
- Every management decision carries risk management implications.

SLIDE 1.6 ***Risk Management Requir es***

- Understanding of *your* financial situation.
- Understanding of sources and potential sources of risk.
- Understanding of risk management tools.

SLIDE 1.7 ***Risk management includes***

- Evaluation of alternative plans and risk management strategies.
- Implementation of the plan.
- Monitoring the plan.
- Developing probabilities to formalize risk assessment.

NOTES

SLIDE 1.8 ***Probability***

- Probability is the chance or frequency of an event.
- Probabilities quantify the chance of an event occurring.

SLIDE 1.9 ***Probability***

- What is the probability that soft white wheat at Portland will be under $4.00?
- What is the probability that your wheat yield will be below your 10-year average?

SLIDE 1.10

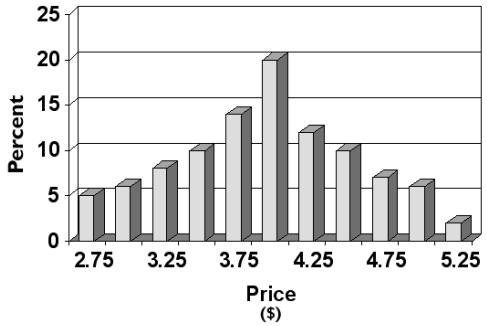

Fig. 1 Probability: Portland soft white wheat 1986-95 monthly price averages

SLIDE 1.11

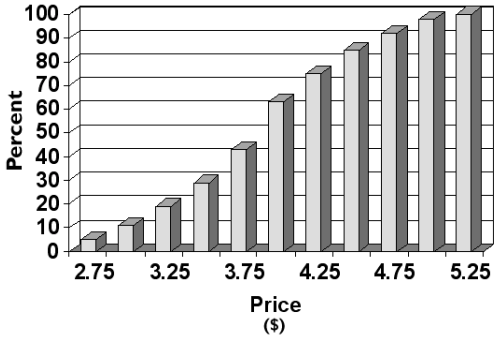

Fig. 2 Cumulative probability: Portland soft white wheat 1986-95 monthly price averages

NOTES

SLIDE 1.12 ***Risk assessment***

- Assessing your capacity to bear risk
- How much risk can you afford?
- How much risk protection can you afford?
- Your willingness to accept risk.

NOTES

SLIDE 1.13 ***Managing pr oduction risk***

- Crop selection
- Diversification
- Cultural practices
- Maintenance and repairs
- Risk reducing technology
- Insurance

SLIDE 1.14 ***Managing price risk***

- Multiple sales
- Contracts
- Hedging
- Market outlook

SLIDE 1.15 ***Managing r evenue risk***

- Income protection: USDA-RMA.[a]
- Crop revenue coverage: private IP[b] and CRC[c] combine price and yield protection into a single program.

[a]USDA-RMA = United States Department of Agriculture, Risk Management Agency

[b]IP = Income Protection

[c]CRC = Crop Revenue Coverage

NOTES

SLIDE 1.16 ***Income pr otection***

- Protects against a decline in actual revenue compared to expected revenue for a given year.
- Price protection varies each year.

SLIDE 1.17 ***Crop r evenue co verage***

- Revenue guarantee, similar to IP.
- Replacement coverage, allowing for increased coverage if price increases.

SLIDE 1.18 ***Managing financial risk***

- Debt structure
- Leverage
- Resource control
- Business organization
- Production efficiency
- Insurance
- Reserve funds
- Off-Farm income

NOTES

SLIDE 1.19 ***Managing all sources of risk***

- Education and knowledge
- Environmental awareness
- Evaluate past decisions

SLIDE 1.20 ***Why manager s don't plan***

- Involves detailed thought and analysis.
- Reminds managers of uncertain future.
- May force manager to seek assistance.
- Forces families to address conflicts.

SLIDE 1.21 ***Basic risk concepts***

- There is no one "best strategy."
- Balance the potential for a profit against the potential for a loss.
- The key to successful risk management is in taking the right risks.
- Risk management does not eliminate risk!

NOTES

Overview of Price Risk Module 2: Developing and Implementing A Marketing Plan

This presentation provides an overview on the topic of developing and implementing a marketing plan. The presentation focuses on how a marketing plan should be customized to fit the producer and his or her situation. The marketing plan must be fully integrated in the overall planning process. While some specific marketing issues or tools are mentioned or used as examples, this presentation is designed to introduce the topic.

Agriculture faces many types of risk and uncertainty. The same elements that make planning difficult also make planning essential to the farm business. Many producers rank price risk as the most serious type of risk they must contend with. Government farm programs traditionally provided price and income risk management for many grain producers. With price supports no longer part of the farm program and income support payments declining, producers need to develop the expertise to evaluate and use alternative price risk tools.

Producers are more comfortable with science-based production where results are viewed as more certain. Marketing, with its roots in the social sciences of economics and psychology is not viewed as a rigorous science because the results are probabilistic, not predictable. There are no recommend marketing practices that have the same degree of assurance that best production management practices carry.

Marketing should not be viewed in isolation from production. Both activities are and should certainly be treated as integrated. The first marketing decision is your decision to produce. Your last production decision is how you will market your grain. Marketing is more than selling a commodity and should be viewed as an on-going activity.

A marketing plan cannot exist in isolation. It should be part of the farm plan or business plan, and should match the goals and financial situation of the producer. One size does not fit all. The marketing plan must be customized.

While a marketing plan will not move market prices higher, it should reduce the need to sell at a time when prices will likely be at their lowest levels. The marketing plan considers the financial needs of the farm as well as the market situation. It's certainly better to sell at an "acceptable" price when the market is moving up, even if it turns out to be below the market high, than to sell at an unacceptable price in a falling market after ignoring higher prices.

Knowing what is an acceptable price means knowing your cost of production. Both your cash and non-cash expenditures must be considered. Knowledge of the current market situation as well as the historical behavior of the market is crucial in developing price expectations. What is the minimum price you can survive on? What market alternatives are available that may help you lock in a price? Are you willing to base your decisions on this plan?

Marketing plans come in many shapes and sizes. While it is usually best to commit the plan to writing, it's the action you take, not the plan or the plan format, that is most important. The plan should answer four basic questions: when, where, what and how to sell? The plan should make some attempt to predict future market behavior using either market fundamentals (supply and demand) or by technical analysis. The marketing strategy should be compatible with your market outlook prediction and the best type of marketing alternative for you to use.

Not all market alternatives need be evaluated. Only those that fit your area and your personality should be considered. Even with the proposed phase out of government farm programs, these programs should not be ignored. The Loan Deficiency Payment or LDP made a significant cash flow contribution to many producers. Others chose to ignore this option, some for valid reasons, but many out of uncertainty. Some producers were completely unaware of this alternative.

Consider the key factors and the advantages and disadvantages of each marketing alternative. You may want to weight some factors higher than others. The weights should match your circumstances, not your neighbors.

Having decision rules is crucial in developing a viable marketing strategy. An open-ended strategy could be one of selling only if the market hits a specific price. The risk is that the market will never get there. Adding a time dimension can be useful. Sell if the market hits $3.20, but no later than February first. A fail-safe strategy could be to start scaling sales as soon as the market price will cover your cash costs of production. A default strategy could be selling when a bank note is due, which is not a recommended strategy.

Decision rules using simple mechanical strategies include both production-based and price-based strategies. A fixed production-based strategy could be selling (or pricing) one-third at harvest, one-third on December fifteenth and one-third on February fifteenth. A flexible or sliding production-based strategy could be to sell (or price) twenty-five to fifty percent at harvest based on price. Sell (or price) only twenty-five percent if price is below the five-year average or if stocks-to-use is below twenty percent. Sell (or price) fifty percent if price is above the five-year average or if

stocks-to-use exceeds twenty percent. A fixed price-based strategy could be to sell (or price) twenty percent of production when cash costs can be covered, or to sell (or price) fifty percent of production if price exceeds the five-year average. Flexibility can be added to price-based strategies by varying the percent of the crop to be sold based on the stocks to use ratio.

The best marketing strategy is one that will keep you in business and also allow you to sleep at night. Markets change and so must your strategy.

Developing and Implementing a Marketing Plan

NOTES

SLIDE 2.1 ***Agricultur e faces man y types of uncer tainty and risk***

- Uncertainty makes planning difficult.
- Uncertainty also makes planning essential.
- Planning changes reactive to proactive.
- Commodity prices are a major source of uncertainty (price risk).
- A marketing plan helps manage but does not eliminate price risk.

SLIDE 2.2 ***Production as science***

- Production is based on:
  - *biological sciences*
  - *physical sciences*
- Results are viewed as "predictable"
  - *fertilizer application and yield response*
  - *pesticide application and control*
  - *variety traits and characteristics*

SLIDE 2.3 ***Marketing as science***

- Marketing is viewed as an inexact science.
- Marketing is based on social sciences.
  - *economics*
  - *psychology*
- Marketing results are probabilistic, not predictable.
- Marketing typically does not have recommended practices.
- Marketing may be frustrating, but is crucial to success.

SLIDE 2.4 ***Marketing is a complex activity***

- Marketing is more than "selling" a commodity.
- Marketing should begin before you plant, not after you harvest (be year around).
- Production and marketing are integrated.
- No single best marketing strategy exits.
  - *varies over time, location, commodity, financial situation, etc.*

NOTES

SLIDE 2.5 ***A marketing plan is necessary, but not sufficient***

- What else?
- A farm plan
  - *goals: short term and long term*
  - *objectives: quantifiable with a time frame*
- Financial statements
  - *know your financial situation*
  - *risk bearing capacity*
  - *cash flow needs*
  - *where you are today and where are going*

SLIDE 2.6 ***Customize marketing plan***

- A marketing plan works only if it fits *your* operation, *your* goals, *your* objectives and *your* financial situation.

SLIDE 2.7 ***Purpose of marketing plan***

- Reduces pressures which can result in selling at a "bad time."
- Helps establish price targets.
  - *compatible with market conditions*
  - *compatible with financial situation*
- Identifies times when market is offering an "acceptable" price.
- Provides tools to help manage price risk.

NOTES

SLIDE 2.8 ***Marketing plan prerequisites***

- Know your cost of production.
- Understand the market.
  - *current*
  - *historical*
- Develop price expectations.
- Develop market price objectives.
- Understand marketing alternatives.
- Have a willingness to follow plan.

SLIDE 2.9 ***Marketing plan defined***

- A course of action which allows a producer to sell a commodity at a time that offers an acceptable profit potential.
- A process to assist in choosing between various methods of marketing a product.

SLIDE 2.10 ***A marketing plan should answer four questions***

- When to sell?
  - *Time of year*
- Where to sell?
  - *Location*
- What to sell?
  - *Product form*
- How to sell?
  - *Compare alternatives*

NOTES

SLIDE 2.11 ***Essential elements in developing a mark eting plan***

- Market outlook
  – *what's going to happen?*
- Marketing alternatives
  – *which alternatives are viable?*
- Marketing strategy
  – *what am I going to do?*
- Disciplined marketing management
  – *following the plan*

NOTES

SLIDE 2.12 ***Mark et outlook using fundamentals***

- Market fundamentals
  – *supply and demand*
- Balance sheet approach
  Beginning Stocks
  \+ *Production*
  – *Utilization*
  = *Ending Stocks*
- Look at changes as well as absolute levels.

SLIDE 2.13 ***Market outlook using technical analysis (charting)***

- Charts give picture of past price behavior.
- Charting forces you to follow the market on a regular basis.
- Charting helps you identify:
  - *market direction*
  - *market trends*
  - *market cycles*

SLIDE 2.14 ***Market alternatives***

- Open (spot) cash market
- Pre-season contracts
- Forward cash sales
- Consignment
- Basis contracts
- Futures contracts
- Government programs

SLIDE 2.15 ***Marketing alternatives***

- Factors to consider
  - *method of delivery*
  - *place of delivery*
  - *time of delivery*
  - *cost of using*
  - *pricing mechanism*
  - *payment schedule*
  - *contingencies*

NOTES

SLIDE 2.16 ***Advantages/Disadvantages***

- Risk
- Cash flow
- Market access
- Price level
- Marketing cost (including time)
- Flexibility
- Negotiating power

NOTES

SLIDE 2.17 ***Developing a marketing strategy***

- Set objectives.
- Define how to meet objectives.
- Establish decision rules.
  - *fixed vs. flexible sales*
  - *time-limited vs. open-ended*
  - *fail-safe vs. default*
- Test the strategy.
  - *evaluate "what ifs"*
  - *forecast the end result*
  - *refine the plan*
- Establish criteria for changing strategy.
  - *establish a contingency plan*
  - *avoid the "second guessing" trap*
- Clearly define decision making responsibilities.

SLIDE 2.18 ***Marketing Management***

- Implement, follow and evaluate plan
- Remember
  - *– discipline is important*
  - *– good planning improves the chance of success*
  - *– good decisions sometimes have bad outcomes*
  - *– evaluate decisions relative to objectives*
  - *– no one goes broke making a small profit*
  - *– your marketing plan must fit your operation*

NOTES

Overview of Price Risk Module 3: Marketing Alternatives to Manage Price Risk: Advantages and Disadvantages

This presentation provides an overview on the advantages and disadvantages of cash-based and futures/options-based marketing alternatives for grain producers. Selecting a marketing alternative should be based on a thorough comparison of available alternatives. It is unlikely that one alternative will consistently be the best choice. Selecting a marketing alternative helps determine not only the type and level of risk, but the risk management alternatives as well.

While selling a commodity in the spot market may be simple and fairly straightforward, marketing, in most circumstances, is not. Marketing is a complex activity because there is no single best alternative and because markets change constantly. There are many factors that affect markets, and as markets change, the preferred ranking among alternatives may also change. Markets are influenced by a wide variety of economic variables that are influenced by uncertain forces like human behavior, international politics, and crop growing conditions around the world. The appropriate marketing strategy has to fit the individual. When comparing marketing alternatives, the producer should look for the alternative that provides the highest net return, while reducing income variability and providing an acceptable level of risk. Trying to maximize short-term income without considering the impact on long term income variability and risk can be a serious mistake.

Producers should use a thoughtful and structured approach when evaluating marketing alternatives. Having set criteria can make this process easier. The order of listing of the criteria does not imply a ranking. The ranking or relative weight given each factor should depend on the individual's situation

The marketing alternatives discussed are those generally, but not universally available for grain. Grain produced for a very specific end use or one that is not commonly produced in a particular geographic region may present the producer with added marketing challenges. A producer should identify the viable marketing alternatives before planting.

Market cost should include opportunity cost, not just the dollars expended. When grain is held in storage, interest on loans continues to accumulate and should be counted as a marketing cost. If there are no outstanding loans, the forgone interest is a marketing cost. The potential impact of the marketing alternative's cost should be considered when developing cash

flow projections. This is particularly true of hedging where margin calls are a factor. And while it may be harder to quantify, the time a producer spends on marketing should also be considered.

Futures/options-based marketing alternatives add complexity. Part of the complexity is nothing more than a lack of familiarity with terminology. Education and experience helps.

In general there is a direct relationship between the potential for a higher return and risk. There may also be a higher cost associated with this greater potential return. Storage for later sale may mean increased risk from storage losses. A cash forward contract may eliminate price risk, but now production risk takes on increased importance. Crop insurance may become more crucial with cash forward contracts. Deferred pricing and basis contracts put the producer in the position of an unsecured creditor in a bankruptcy. Futures-based marketing alternatives shift price risk to basis risk. In cases where cross hedging is required, basis may be less predictable than cash and would therefore increase rather than decrease risk.

Since the cost of the different marketing alternatives can vary considerably, it is important to compare the net selling price, not the gross.

Market outlook should also be considered when evaluating marketing alternatives. If the market outlook indicates that prices will stay flat or decline, why hold the grain? One advantage of options is that they allow the producer to participate in some of the gain if the price moves up. In a flat market there is little upside price potential. So why spend the extra money on a call option if you believe the market will stay flat? An understanding of how market outlook affects the alternative marketing alternatives is important to using them effectively.

The financial situation of a farm business should certainly be considered when evaluating alternative marketing opportunities. Much of the farms ability to withstand risk can be determined from analyzing financial statements.

The cash-based alternatives and the advantages and disadvantages are self-explanatory.

Pricing grain with futures/option-based marketing alternatives still means the grain will be sold in the local cash market, or whatever market is traditionally used. The net selling price to the producer is the combination of the cash market and the futures/options transactions. The effectiveness of a pricing mechanism is influenced largely by the producer's ability to

accurately predict the basis. Hedging will not allow the producer to participate in any price improvement. The cash flow implications of margin calls should also be considered. Options, on the other hand, do allow the producer to gain when prices increase. They allow the producer to establish a minimum selling price and there is no margin requirement.

Choosing among marketing alternatives gives a producer some influence over the type and the amount of risk they will face. Using marketing alternatives effectively as a risk management tool requires understanding the advantages and disadvantages, in addition to the knowledge of how and when to use them.

Marketing Alternatives To Manage Price Risk: Advantages & Disadvantages

NOTES

SLIDE 3.1 ***Marketing overview***

- Marketing is a complex activity with many alternatives.
- No single "best" or "recommended" strategy fits all growers, or even one grower from year to year.
- Objective: find alternative that has:
  - *highest net return*
  - *reduces income variability*
  - *acceptable level of risk*

SLIDE 3.2 ***Criteria for Evaluating Marketing Alternatives***

- Availability
- Cost
- Complexity
- Level of risk
- Type of risk
- Net selling price
- Market outlook
- Financial Situation
- Constraints

SLIDE 3.3 ***Cash market based marketing alternatives***

- Sell at harvest: grain is delivered and sold for cash at harvest in a convenient market.
- Advantages:
  - + *no costs or inconvenience of storage*
  - + *no accumulating interest costs*
  - + *easily understood*
  - + *price is known immediately*
  - + *no shrink or deterioration*
- Disadvantages:
  - – *shortens marketing window*
  - – *harvest price is often lowest*
  - – *eliminates other cash-based alternatives*
  - – *congestion at elevators*

NOTES

SLIDE 3.4 ***Cash market based marketing alternatives***

- Storing for later sale: grain is placed in on-farm or commercial storage and sold at a later time determined by the grower.
- Advantages:
  - + *extends pricing decision window*
  - + *increases delivery flexibility with on-farm storage or increases delivery convenience with commercial storage*
  - + *return on storage if price rises*
- Disadvantages:
  - – *quality may deteriorate*
  - – *decreased delivery flexibility if stored commercially*
  - – *increased storage and interest costs*
  - – *risk of adverse price change during storage*

SLIDE 3.5 ***Cash market based marketing alternatives***

- Cash forward contracts: prior to harvest, grower signs a contract to deliver a fixed quantity and grade of grain as a specified price, and at a specified location.
- Advantages:
  - + *extends pricing decision window*
  - + *eliminates risk of adverse price or basis change*
  - + *easy to understand*
  - + *available in convenient quantities*
- Disadvantages:
  - – *increases production risk; delivery is an obligation*
  - – *reduces flexibility when market conditions change*
  - – *no gain if price rises or basis strengthens*

SLIDE 3.6 ***Cash market based marketing alternatives***

- Deferred pricing contract: grain is delivered to a commercial elevator and sold by a specified date at a price to be determined in the future. Price is tied to local posted bid or a terminal market bid.
- Advantages:
  - + *extends pricing decision window*
  - + *gain when prices rise*
  - + *may eliminate or reduce commercial storage fees*
  - + *possible advance payment*
  - + *convenient contract quantities*
- Disadvantages:
  - – *interest cost and storage fees*
  - – *unsecured creditor in bankruptcy*
  - – *risk of adverse price or basis change until grain is priced*
  - – *potential repayment of advance*

NOTES

SLIDE 3.7 ***Cash market based marketing alternatives***

- Basis contract: grain is delivered to a commercial elevator and sold prior to a designated date at a specified amount above or below a futures price (or basis).
- Advantages:
  - + *extends pricing decision window*
  - + *may reduce commercial storage costs*
  - + *no risk of adverse basis change*
  - + *convenient contract quantities*
  - + *possible advance partial payment*
- Disadvantages:
  - – *unsecured creditor in bankruptcy*
  - – *risk of adverse price change until grain is priced*
  - – *potential repayment of advance*
  - – *basis knowledge is required*

NOTES

SLIDE 3.8 ***Futures and options based marketing alternatives***

- Hedging with a futures contract:
  - – *Actual or expected cash market position is offset by selling appropriate amount of futures contracts.*
  - – *Futures contracts are "bought back" when grain is sold on cash market.*
  - – *Net price received is a combination of the cash market and futures transactions.*

SLIDE 3.9 ***Cash market based marketing alternatives***

- Hedging with a futures contract:
- Advantages:
  - + *extends pricing decision window*
  - + *risk of adverse price change is eliminated*
  - + *easy to reverse position (liquidity)*
  - + *basis is more predictable than price*
- Disadvantages:
  - – *risk of adverse basis change*
  - – *margin requirements increase interest costs & may cause cash flow problems*
  - – *contracts only in fixed increments*
  - – *requires knowledge of futures & basis*
  - – *eliminates gain from rising cash price*

NOTES

SLIDE 3.10 ***Futures and options based marketing alternatives***

- Using an option contract:
  - – *A put option(s) that allows the holder to take a futures position is purchased for the actual or expected cash position.*
  - – *Options can be exercised, sold, or allowed to expire.*
  - – *Net price received is a combination of the cash market and options market transactions.*

SLIDE 3.11 ***Futures and options based marketing alternatives***

- Using an option contract:
- Advantages:
  - + *extends pricing decision window*
  - + *risk of adverse price change is eliminated*
  - + *partial gain from rising cash price*
  - + *eliminates margin requirements*
  - + *easy to reverse position (liquidity)*
- Disadvantages:
  - – *risk of adverse basis change*
  - – *cost may be greater than price protection*
  - – *contracts in fixed quantities only*
  - – *requires significant knowledge and substantial data*

NOTES

SLIDE 3.12 ***Marketing alternatives can help manage risk***

- Risk cannot be eliminated.
- Using marketing alternatives effectively requires understanding and knowledge.
- Managing price risk must be integrated with production and financial risk management.

Overview of Price Risk Module 4: A Primer on Using Futures and Options in Grain Marketing

This presentation provides a basic introduction to the terminology and concepts associated with trading futures contracts and options on futures contracts. The presentation focuses on basic futures trading terminology, the idea of opening and closing (by offsetting) a futures position, defining options on futures contracts, and identifying sources of value in option premiums. A specific option example (Sep CBT Wheat) is used as a means to establish the relationship between alternative strike prices and value as represented by the premiums. The purpose of the presentation is to provide a level of knowledge about futures and options necessary to understand the concept of hedging.

Cash markets are readily understood by most agricultural producers, especially for immediate (or spot) delivery. However, there needs to be an awareness that cash markets also price agricultural commodities in advance of the actual physical exchange. Whether for immediate or delayed delivery, the real focus of the cash market is on the physical commodity. Futures markets trade futures contracts. Futures contract trading can be viewed as a logical extension of forward cash markets. However, everything is standardized in a futures contract putting the focus on determining price at the time a trade takes place. Additionally, since futures contracts are standardized, they can easily be resolved with money rather than the physical commodity.

Reviewing the specific terms of a futures contract provides the sense that everything influencing value is predetermined. Buyer and seller negotiate price knowing that quantity, quality, delivery period, and location have already been established. Buyer and seller only negotiate the per unit price. Referring to the contract specifications at the end of the handout provides additional reinforcement of futures and option contract specificity. Futures trading is done on a margin. Rather than provide the full value of the contract at the time of the trade, buyers and sellers must post a margin when they initiate a futures trade. Margin accounts must be maintained, since additional monies may be required to keep the account balance at a minimum level if the market moves against a trader. Futures trades are executed through a broker with access to the exchange, so trading futures contracts involves paying a commission (or fee) to a broker for executing trades on your behalf.

As with any market, participants can enter the market as either a buyer or a seller. Buying a futures contract is called being in a long position. A buyer has a commitment to receive delivery and that commitment can be offset (resolved with money) rather than actually receiving delivery. Selling a futures contract is called being in a short position. A seller has a commitment to

make delivery and that commitment can be offset (resolved with money) rather than actually making delivery. Since a buyer (or seller) has a commitment to accept (or make) delivery, actual delivery at the termination of the contract is an obvious alternative to meeting the contractual terms. However, offsetting the obligation (resolving with money) is the most common way of dealing with the commitment. A trader in a long position offsets the position with a sell (short) of the same futures contract (that is, same commodity and same contract month). A trader in a short position offsets the position with a buy (long) of the same futures contract.

Options on futures are a relatively simple extension of futures trading. A futures option gives the option owner (or buyer) the right (not the obligation) to a designated futures position at a specified price (the strike price). The whole idea behind owning an option is that the holder has a right to something, but is not obligated to do anything. The focus of this presentation is on being the buyer (or holder) of options. Sellers of options (or writers) are necessary for option trading to occur, and an option seller has a well defined obligation rather than a right. A designated futures position implies the contract commodity, contract month, and type of position (long or short) are known in advance. Whether the holder has a right to a short (or long) futures position is determined by whether they are holding a put (or a call). The price (or trading value) of an option is represented by the premium, which is quoted on a per unit basis (cents per bushel for grains). Options expire at a predetermined point in time as stated in the option contract specifications. As a general rule, most grain option contracts expire about the 25th day of the month preceding the contract month of the underlying futures contract.

Using an example of puts on CBT Sep wheat can illustrate several points. If the underlying futures contract is trading at 335 cents per bushel, higher strike prices (the right to sell high) are expected to have a higher value (the premium is higher). Lower strike prices (the right to sell low) are expected to have a lower value (a smaller premium). Both ideas can be illustrated by the actual premiums for alternative strike prices. Actual premiums can also be used to illustrate intrinsic and time value. Selecting a strike price for a put that is above the current futures price (the 340 strike in the example) shows that a put that gives the right to sell at 5 cents above the market (340 versus the current futures price of 335) has 5 cents of obvious (or intrinsic) value. However, the current premium is 33.50 cents (28.50 cents more than the 5 cents of intrinsic value). That additional 28.50 cents must be time value. A put with a strike price that is below the current futures price (the 300 strike price) can also be selected for illustration. The 300 put gives the right to sell the futures position at 35 cents below the current price of 335. There is no obvious (or intrinsic) value.

Why is the premium still 12.25 cents? There is a chance that the futures price could move below the 300 strike price before expiration. What factors influence the chance the futures price may drop more than 35 cents to less than 300? Time to expiration (more time, greater chance of a significant price drop) and volatility of the market (more volatility, greater chance of a significant price drop). Call options could be used with similar examples to point out that the concepts are the same, but the value concepts are reversed because calls are the right to a long futures position.

The discussion of closing a futures position can also be enhanced by using actual examples. Select out of the money strike prices to show options that would expire worthless. Options with strike prices that are in the money have value that can either be exercised or sold to capture this market value.

SLIDE 4.1 ***Important Terminology***

- Cash Market
  - *– a market which focuses on the buying and selling of the physical commodity for immediate or delayed delivery*
- Futures Market
  - *– a market which focuses on the buying and selling of futures contracts*
  - *– a logical extension of the cash forward market*
  - *– a transferable agreement to make or take delivery of a standardized amount and quality of a specified commodity at a specified point in time and location*
  - *– think of it as a market offering a temporary sale of your commodity*
  - *– can resolve agreements with money rather than delivery*

NOTES

SLIDE 4.2 ***Futures Contract Specifications***

- Standardized amount:
  - *– contract quantity = 5,000 bushels*
- Standardized quality:
  - *– deliverable grades vary by contract, examples:*
  - *– CBT Wheat: USDA #2 soft red winter*
  - *– MPLS white wheat: USDA #1 soft white*
  - *– KC wheat: USDA #2 hard red winter*
- Specified time:
  - *– contract months for wheat: Jul, Sep, Dec, Mar, May*
- Specified delivery point:
  - *– delivery point varies by contract, examples:*
  - *– CBT wheat = Chicago or Toledo*
  - *– MPLS white wheat = Lower Columbia*

SLIDE 4.3 ***Futures Contract Terminology***

- Margin
  - *– money deposited by traders when entering the futures market to assure performance for all participants*
  - *– usually a small portion of the total contracts value*
  - *– may receive margin calls if market moves against your position*
- Commission
  - *– fee paid to broker for executing a trade in the futures market*
  - *– based on "round-turn" or entry and exit of a contract*
  - *– varies by broker (approx. $30/contract)*

SLIDE 4.4 ***Alternatives in Trading Futures***

- Buy a futures contract(s)
  - *– "long" position*
  - *– have a commitment to delivery*
  - *– can offset commitment at some point*
- Sell a futures contract(s)
  - *– "short" position*
  - *– have a commitment to receive delivery*
  - *– can offset commitment at some point*

Note: entering short or long means you have an obligation (open position) and a margin is required.

- Delivery is an obvious alternative or
- Offset your open position:
  - *– "long" sell same futures contract at current price*
  - *– "short" buy same futures contract at current price*

NOTES

SLIDE 4.5 ***Under standing options on futur es contr acts***

- Options on futures:
  - *– represent the right, (but not the obligation) to enter a designated contract at a specific price*
  - *– the owner of an option is not required to enter a futures position*
- Types of options:
  - *– "put" option represents the right to sell*
  - *– "call" option represents the right to buy*
- Strike price:
  - *– price at which the option buyer has the right to sell (for a put) or buy (for a call) the underlying contract*
- Option premium:
  - *– the market value of the right; quoted in cents per bushel for grain (times 5,000 bushels)*
- Option expiration:
  - *– options expire about the 25th day of the month before the underlying futures contract month*

NOTES

SLIDE 4.6 ***Put Option Example***

NOTES

- Situation:
  - *– mid January*
  - *– objective: evaluate price protection available through harvest (August)*
- Current futures/options market situation:
  - *– CBT SEP wheat futures price = 335.00 cents per bushel*

Strike Price	***Premium (cents/bu)***
300	*12.25*
310	*16.25*
320	*21.25*
330	*27.00*
340	*33.50*

- Know:
  - *– can purchase right to sell CBT Sep futures*
  - *– right to sell at several different strike prices above or below the current market price*
  - *– premiums vary by strike price; right to sell gets more expensive as strike price goes up*
  - *– option on Sep wheat expires about 25 August*
- Option premium influenced by:
  - *– strike price relative to the current futures; intrinsic value exists if strike price is above futures price*
    - 300 put has 0 cents of intrinsic value
    - 340 put has 5 cents of intrinsic value
  - *– time until expiration; futures price can change*
    - 300 put can have intrinsic value if futures price goes below 300
    - more time to expiration = more time value
    - more market volatility = more time value

SLIDE 4.6 ***Put Option Example***

CONTINUED

- Closing a put position
  - *– "sell" at the current premium; premium changes over time as futures price changes and expiration approaches*
  - *– let option expire if worthless; option expires with no intrinsic value*
  - *– exercise and obtain futures position; may be automatic if expires with value*

NOTES

Overview of Price Risk Module 5: How Cash Price and Basis Affect Hedging Outcomes

This presentation provides an introduction to the hedging concept using both futures and options. The focus is on understanding hedging as the process of being involved in two markets simultaneously, so price outcomes are impacted by what happens in both markets. Examples are used to illustrate futures-based hedging outcomes when price increases and decreases with basis unchanged, and when the basis strengthens and weakens. Option-based strategies are illustrated with examples of buying a put for price protection, and buying a call for accessing upside price potential in lieu of holding cash grain. The purpose of the presentation is to provide an understanding of using futures and options as components of alternative grain marketing strategies.

The hedging concept is related to the fundamental idea that being involved in a commodity market as a producer involves price risk. A wheat producer, as an example, is adversely impacted by a declining price when the wheat is growing or in storage. A short futures position provides protection against a declining cash price, because declines in the cash price are offset by gains on the futures position. Conversely, the short futures position can generate losses if the price increases. However, losses on the futures position are offset by gains on the cash market. For the concept to work, the two markets (cash and futures) must be related. Thus, prices in the two markets move up and down together in some reasonably predictable fashion. Basis (defined as the cash price minus the futures price) is what measures the price relationship between the two markets. Basis can get larger (or stronger). A stronger basis implies the cash market price increases relative to the futures price, or the futures price declines relative to the cash price. Basis can also get smaller (or weaker). A weaker basis implies the futures price increases relative to the cash price, or the cash price declines relative to the futures price. Hedging essentially involves a temporary sale in an alternative, but related market (the futures market). How well the temporary market's price behaves relative to the actual cash market price influences hedging effectiveness.

An example with four alternative outcomes is used to illustrate the hedging concept. The example reflects a wheat producer with a growing winter wheat crop in mid-January. The expected sale date is shortly after harvest, or about mid-August. The example initially portrays how the hedging alternative is evaluated. Select the appropriate futures price (discuss both what commodity and which exchange if appropriate, and the idea of the appropriate contract month given the expected sale date); add the basis (recognizing that basis can be negative or positive); and subtract the cost

of hedging (brokerage commission and interest on margin). Compare the expected hedge price to the other pricing alternatives available. Finally, make a decision about whether or not to hedge, and then how much of the growing crop should be forward priced.

A decision is made to hedge two-thirds of the growing crop (20,000 bushels) with a short position on 4 CBT Sep wheat contracts. Situations A through D illustrate impacts of the hedging decision when: A) price increases with no basis change; B) price decreases with no basis change; C) price decreases with a weaker than expected basis; and D) price increases with a stronger than expected basis. The key points are: 1) if basis does not change, the hedging price is as expected whether price increases or decreases; 2) a weaker basis means the actual price is less than expected by exactly the amount of the basis change, and 3) a stronger basis means the actual price is more than the expected price by exactly the amount of the basis change.

The put option example illustrates a minimum price strategy established in mid-January for a wheat producer expected to sell the wheat crop right after harvest. Evaluating the level of protection needs to include: 1) selecting the appropriate futures contract (similar to the hedging example keeping in mind many options expire late in the month before the contract month); 2) selecting a strike price; and 3) the procedure to determine the expected level of price protection (strike price; plus the basis; minus the cost of the put). The final step is to compare this alternative to other marketing strategies available, and selecting the quantity to protect. Two outcomes (A and B) demonstrate how the put strategy works. The producer receives some of the gain when price increases, and still has a minimum level of price protection when price declines. Both outcomes assume no basis change. Basis change impacts for the put strategy are discussed in a general framework, since impacts are similar to the futures-based hedging outcomes discussed earlier.

The call option example is designed to illustrate the difference between owning the physical commodity in storage (30,000 bushels), or owning calls. The purpose of ownership in both cases is to receive a speculative gain from price increases. The situation is a grain producer in mid-January with wheat in storage. If wheat is stored until mid-April to capture a price increase, holding costs (5 cents per bushel per month) total 20 cents per bushel. A slightly out-of-the-money call (300 strike) has a premium of 15 cents plus a 1 cent broker fee (or 16 cents per bushel). These two alternatives should still be compared to other marketing strategies that offer potential gain from holding. However, focusing on holding grain versus calls suggests buying the call may be less expensive. The strategy is initiated by selling the cash wheat and buying 6 CBT May wheat calls. Situation A and B

demonstrate how the strategy works when price increases or decreases assuming basis remains unchanged. If price increases, the value of the calls increase and the producer (owner of the 6 calls) captures the increase by selling the calls for the premium of 60 cents. If price decreases, the calls expire worthless and the 16 cents per bushel paid is forfeited. However, the storage cost savings of 20 cents per bushel more than offset the loss of the 16 cents paid for the calls. Though not well illustrated by the example, it is also important to note that holding the commodity in storage is subject to more than 16 cents of downside price risk. Holding the wheat would have generated a substantial market loss under outcome B. The market loss of 50 cents (or 310 – 260) was avoided by owning the call rather than the physical commodity.

How Cash Price and Basis Affect Hedging Outcomes

SLIDE 5.1 ***The hedging concept***

- Hedging
  - *– offsetting the risk of an adverse change in the cash market by holding an appropriate futures market position simultaneously*
- Wheat producer example
  - *– crop is planted and growing, wheat available for sale after harvest*
  - *– what is the risk of a price change?*
  - price may decrease
  - *– what futures position will offset the loss from a price decrease?*
  - sell futures (short position)
  - *– net result if price changes*
  - loss on the cash market is offset by gain on the futures position
  - loss on the futures market is offset by a gain on the cash market
- Hedging
  - *– based on idea that cash and futures markets are related and move up and down together*
  - *– relationship between cash and futures is measured by basis*
- Basis
  - *– cash price minus futures price*
  - *– basis is not a constant; can get weaker (smaller value) or stronger (larger value)*
- Hedging effectiveness
  - *– strongly influenced by how the actual basis behaves relative to what is expected*
  - *– remember, the futures market is used only as a temporary sale of your commodity*

NOTES

SLIDE 5.2 ***Short hedge example for wheat producer***

- Situation
  - *mid January; grain producer expects to harvest 30,000 bushels of wheat in August; selling about Aug 15th*
  - *appropriate futures contract month is September*
- Evaluate expected hedge price using CBT Sep futures contract

"appropriate" futures price	= 335 cents/bu.
+ expected basis (local)	= –10
– cost of hedging	= 2
= expected hedge price	= 323 cents

- Compare hedge to other alternatives
  - *cash forward contract*
  - *price with options*
  - *don't price*
- Decision price with hedge
  - *quantity to hedge: 67% of production, or approximately 20,000 bushels*
  - *number of contracts: four (20,000/5,000)*
  - *sell the four Sep contracts at 335*
  - *expected hedge price = 323 cents/bu.*

NOTES

SLIDE 5.3 ***Wheat hedge outcomes***

NOTES

- Situation A
  - – mid August
  - – local price increases to 350¢/bu.
  - basis holds at –10 (under)

Cash Market	Futures Market	Actual Basis
Sell wheat at 350	Sold at 335 Buy at 360 Loss = 25¢	–10

- Hedge outcome

  Cash price = 350

  Loss on futures = 25 (–)

  Cost of hedge = 2 (–)

  Net price = 323 cents/bu.

- Situation B
  - – mid August
  - – local price decreases to 260¢/bu.
  - – basis holds at –10 (under)

Cash Market	Futures Market	Actual Basis
Sell wheat at 260	Sold at 335 Buy at 270 Gain = 65¢	–10

- Hedge outcome

  Cash price = 260

  Gain on futures = 65 (+)

  Cost of hedge = 2 (–)

  Net price = 323 cents/bu.

- Situation C
  - – mid August
  - – local price decreases to 260¢/bu.
  - – basis weakens to –20 (under)

Cash Market	Futures Market	Actual Basis
Sell wheat at 260	Sold at 335 Buy at 280 Gain = 55¢	–20

- Hedge outcome

  Cash price = 260

  Gain on futures = 55 (+)

  Cost of hedge = 2 (–)

  Net price = 313 cents/bu.

Note: Net price was 10 cents below expected hedge price because of weaker basis.

SLIDE 5.3 ***Wheat hedge outcomes***

CONTINUED

- Situation D
  - mid August
  - local price increases to 350¢/bu.
  - basis strengthens to 0

Cash Market	Futures Market	Actual Basis
Sell wheat at 350	Sold at 335 Buy at 350 Loss = 15¢	0

- Hedge outcome

Cash price = 350

Loss on futures = 15 (–)

Cost of hedge = 2 (–)

Net price = 333 cents/bu.

Note: Net price was 10 cents above the expected hedge price because basis strengthened by 10 cents.

NOTES

SLIDE 5.4 ***Put option e xample for wheat pr oducer***

- Situation
  - *– mid January; grain producer expects to harvest 30,000 bushels of wheat in August; selling about August 15th*
  - *– appropriate contract month, September*
- Evaluate expected price protection

strike price of Sep put	=	330
+ expected basis (local)	=	–10
– put cost (prem. + fee)	=	28
= Expected price protection	=	292 cents

- Compare to other alternatives
  - *– cash forward contract*
  - *– hedge with futures*
  - *– don't price*
- Decision buy put options for price protection
  - *– quantity to protect: 67% of production, or approximately 20,000 bushels*
  - *– number of contracts: four (20,000/5,000)*
  - *– buy four CBT 330 Sep wheat put options at 28¢ (27¢ premium + 1¢ broker fee) to obtain protection*
  - *– expected minimum price = 292¢/bu. with potential to benefit if price increases*

Note: How many bushels of the expected crop to hedge will depend on a number of factors. Avoid taking a future's position that can't be backed by grain that you produce. If you don't, you're speculating.

NOTES

SLIDE 5.5 ***Wheat put outcomes***

- Situation A
  - *mid August*
  - *local price increases to 350¢/bu.*
  - *basis holds at –10*

Cash Market	Futures Market	Actual Basis
Sell wheat at 350	Sep futures = 360 330 put premium = 0 (no intrinsic value) Put expires worthless	–10

- Option outcome

Cash price	= 350
Cost of Put	= 28 (-)
Sale of Put	= 0
Net price	= 322¢/bu.

- Situation B
  - *mid August*
  - *local price decreases to 260¢/bu.*
  - *basis holds at –10*

Cash Market	Futures Market	Actual Basis
Sell wheat at 260	Sep futures = 270 330 put premium = 60 (intrinsic value) Sell put for premium	–10

- Option outcome

Cash price	= 260
Cost of Put	= 28 (–)
Sale of Put	= 60 (+)
Net price	= 292¢/bu.

Note: Option is always second best choice!

NOTES

SLIDE 5.6 ***Put option outcomes when basis changes***

- Basis change will impact option-based strategies in the same manner basis changes impact hedges.
- Weakening Basis
  - *the actual price protection will be lower than the expected price protection level*
- Strengthening Basis
  - *the actual price protection will be higher than the expected price protection level*

SLIDE 5.7 ***Call option e xample for wheat pr oducter***

- Situation
  - *mid January; grain producer has 30,000 bushels of wheat in storage*
  - *current cash price is 310¢/bu.*
  - *wants to eliminate holding cost, but believes some potential exists for price gain between now and mid-April*
  - *appropriate contract month, May*
  - *premium on out-of-the-money 300 CBT May wheat call is 15¢*
- Evaluate potential for gain

  cost of holding cash wheat = 20

  cost of buying 300 May call = 16

  = minimum gain from buying call = 4¢
- Compare to other alternatives
  - *cash forward contract*
  - *hedge with futures*
  - *don't price*
- Decision use call option alternative
  - *number of options: six (30,000/5,000)*
  - *sell cash wheat at 310 cents/bu.*
  - *–buys 6 CBT 300 May wheat call options at 16 ¢ (15¢ premium + 1¢ broker fee)*

NOTES

SLIDE 5.7 ***Purchase wheat call outcomes***

- Situation A
  - *mid April*
  - *local price increases to 350¢/bu.*
  - *basis holds at –10*

Cash Market	Futures Market	Actual Basis
Sold wheat at 310	Sep futures = 360 330 call premium = 60 (intrinsic value) Sell call for premium	–10

- Option outcome

Sale of cash wheat	= 310 (+)
Premium paid for 300 call	= 16 (–)
Storage cost savings	= 20 (+)
Proceeds from sale of call	= 60 (+)
Net price	= 374¢/bu.

- Situation B
  - *mid April*
  - *local price decreases to 260¢/bu.*
  - *basis holds at –10*

Cash Market	Futures Market	Actual Basis
Sold wheat at 310	Sep futures = 270 300 call premium = 0 (no intrinsic value) Call expires worthless	–10

- Option outcome

Sale of cash wheat	= 310 (+)
Premium paid for 300 call	= 16 (–)
Storage cost savings	= 20 (+)
Proceeds from sale of call	= 0 (+)
Net price	= 314¢/bu.

NOTES

Profit Farms Wheat Marketing Case Study Version 1.2

Instructor's Guidelines

The objective of the marketing case-farm exercise is to allow participants to use alternative cash-based and futures-based wheat pricing methods and to evaluate the effectiveness of these pricing alternatives as a risk management tool under varying market conditions. There is no "right" answer as to how the Profits should market their wheat. The outcome should be judged on how well it met the participant's objectives and whether the marketing tools worked as expected. In the current version of the case farm, the Profits carry Multiple Peril Crop Insurance on the wheat crop. Since the case farm problem starts in January, the closing date for buying MPCI has already past. The decision whether to carry crop or revenue insurance will be an option for participants in a future version of this case farm. They will choose the type and level of coverage.

The marketing case study is composed of the following:

1) Case farm background and current market situation
2) Wheat marketing ledgers
    a) New crop wheat pricing status sheet
    b) Cash sales
    c) Futures pricing
    d) Options pricing
3) Crop, weather and current market situation reports
    a) January 15
    b) March 31
    c) June 30
    d) August 15
    e) October 15
4) Crop sales summary sheet
5) Income statement

The case study will take at least three hours to complete, allowing time for discussion. Participants should be encouraged to work in teams, but can work independently. Teams should include no more than four participants. Even if they work as a team, participants can utilize different marketing alternatives and track their decisions independently. The case farm description provides background on the Profit Farm. Two *Introduction to Profit Farms* overheads are available to the instructor to introduce the case farm and to summarize the key points. There are overheads for all the worksheets.

The "New Crop Wheat Pricing Status Sheet" should be used to track how much of the projected new crop wheat is priced, how it is priced and how much is unpriced. After participants draw their yield and production, they

can quickly determine whether they over sold and how much wheat will go to on-farm storage. After recording their October sales, they can determine how much wheat will be placed on the end-of-year balance sheet.

The participants should track their wheat pricing decisions using the wheat marketing ledgers. There is a separate sheet for cash-based, futures-based and options-based pricing or sales. Participants should keep the sheets current; recording their sales or pricing decisions before the next market situation report is distributed. Participants will also need to summarize the sales on each sheet. This information will be transferred to the crops sales summary sheet. You should use the overheads for each worksheet to demonstrate how they should be used.

Crop, weather and market information sheets provide current market information at Portland and the local cash market bid. Futures market and option information is also provided. Alternative pricing outcomes can and should be evaluated by the participants on the crop, weather and market information sheets. These sheets are distributed sequentially, allowing 15 to 25 minutes for the participants to make and record their marketing decisions.

Participants do not need to make marketing decisions about the barley crop.

Participants do not need to consider market transaction costs when they calculate the initial gain/loss per bushel for futures and options using the marketing ledger. Hedging transaction costs are calculated on the bottom of the Options Pricing sheet using $.02 per bushel for futures and $.01 per bushel for options.

Participants will not know their wheat yield until August. The yields should be drawn from a pool using one or multiple columns from the Crop Yield Sheet, depending on the size of the group. The ten yields in each column of the Crop Yield Sheet roughly match the ten-year yield history provided in the write-up. An alternative to using more than one column of numbers is to assign the same yield when it is drawn to multiple individuals or groups. The Crop Sales Summary Sheet and the Income Statement should be distributed after participants complete their October pricing decisions.

The farm does carry 65 percent Multiple Peril Crop Insurance with a $3.65 price election. The yield will have to drop below 40 bushels before an indemnity will be paid. Only the 35-bushel yield triggers an indemnity payment.

Owned Land: (40 bu – 35 bu) × $3.65 × 400 acres	= $7,300
Leased Land: (40 bu – 35 bu) × .67 × $3.65 × 100 acres	= $1,215
Total Indemnity Payment	$8,515

October is the last month in which participants can make a marketing or pricing decision. All unsold wheat will be placed on the ending year balance sheet. The change in the beginning and ending inventory will then be used to calculate an accrual-adjustment to the cash income.

Market price summary for instructor

Cash prices	**Jan 15**	**Mar 31**	**Jun 30**	**Aug 15**	**Oct 15**	**Dec 30**
Portland cash	$4.05	$3.80	$3.95	$3.45	$3.50	$3.95
Local cash	$3.55	$3.30	$3.45	$2.95	$3.00	$3.45
Portland cash forward–Aug.	na	$3.50	$3.65			
Local cash forward–Aug.	na	$3.00	$3.15			
Local basis–Sept.				–$10.00		
CBOT futures						
May						
July						
September	335.00	321.00	331.00	305.00		
December	343.00	328.00	339.00	320.00		
CBOT option premiums						
Sep 290 put		$7.50		.25		
Sep 300 put	$9.25	$11.50	$2.50	.50		
Sep 310 put	$13.50	$15.25	$5.75	$5.25		
Sep 320 put	$17.50	$20.00	$8.75	$15.00		
Sep 330 put	$19.50	$27.00	$11.75	$25.00		
Sep 340 put	$25.50	$36.00	$18.75	$35.00		
Sep 350 put			$26.25	$45.00		
Sep 360 put						
Sep 370 put						

Crop yield Sheet

Yld = 35 bu. Total = 16,333 bu.	Yld = 35 bu. Total = 16,333 bu.	Yld = 35 bu. Total = 16,333 bu.
Yld = 45 bu. Total = 21,000 bu.	Yld = 45 bu. Total = 21,000 bu.	Yld = 45 bu. Total = 21,000 bu.
Yld = 55 bu. Total = 25,667 bu.	Yld = 55 bu. Total = 25,667 bu.	Yld = 45 bu. Total = 25,667 bu.
Yld = 55 bu. Total = 25,667 bu.	Yld = 55 bu. Total = 25,667 bu.	Yld = 45 bu. Total = 25,667 bu.
Yld = 65 bu. Total = 30,333 bu.	Yld = 65 bu. Total = 30,333 bu.	Yld = 65 bu. Total = 30,333 bu.
Yld = 75 bu. Total = 35,000 bu.	Yld = 75 bu. Total = 35,000 bu.	Yld = 75 bu. Total = 35,000 bu.
Yld = 75 bu. Total = 35,000 bu.	Yld = 75 bu. Total = 35,000 bu.	Yld = 75 bu. Total = 35,000 bu.
Yld = 75 bu. Total = 35,000 bu.	Yld = 75 bu. Total = 35,000 bu.	Yld = 75 bu. Total = 35,000 bu.
Yld = 85 bu. Total = 39,667 bu.	Yld = 85 bu. Total = 39,667 bu.	Yld = 85 bu. Total = 39,667 bu.

Note: Total yield does not include landlord's share of wheat production.

Purpose

The purpose of the workshop is to allow you to use and evaluate risk management tools and strategies using a case farm example. You can price wheat using both cash-based and futures-based alternatives. At the end of the workshop you will be asked to assess the effectiveness of these tools in managing price under the scenario presented.

Objective

Your objective is to maximize the net returns from marketing the Profit Farm's wheat crop, while meeting the farm's cash flow needs and preserving the farm's net worth position.

Background

The farm is operated by Max and Marlene Profit. The Profits are both 45 years old, have been married 24 years, and have three children—two sons, age 22 and 15, and a daughter, age 16. The oldest son is a recent college graduate and works off the farm. Marlene teaches part-time at the nearby elementary school.

A winter wheat–spring barley–summer fallow rotation is followed: 500 acres in wheat, 500 acres in barley and 500 acres in summer fallow. The Profits own 1,200 acres and lease an additional 300 on a crop-share basis with the Profits getting two-thirds of the crop and paying two-thirds of the fertilizer and crop insurance costs, and 100 percent of all the remaining operating expenses. Winter wheat yields have averaged 61 bushels over the past 10 years, ranging between 37 and 82 bushels per acre. Barley yields have averaged 53 bushels (1.26 tons) over the past 10 years, varying between 29 bushels (.7 tons) and 88 bushels (2.1 tons).

Table 1. Profit Farms—Historic yields for winter wheat and barley

Year	Winter Wheat Bu./Acre	Barley Tons/Acre	Barley Bu./Acre
19X-7	56.0	0.7	29.2
19X-6	73.2	1.4	58.3
19X-5	37.2	1.2	50.0
19X-4	72.2	0.8	33.3
19X-3	48.0	1.3	54.2
19X-2	54.9	0.9	37.5
19X-1	82.0	2.1	87.5
19X0	72.2	1.1	45.8
19X1	57.5	1.3	54.2
19X2	59.6	1.8	75.0
10-yr. Average	61.3	1.26	52.5

The Profit Farm has a strong solvency position with $925,000 in net worth and a debt-asset ratio of 32 percent. Declining commodity prices have reduced farm income in recent years and projecting a positive cash flow has been difficult. The business is operated as a sole proprietorship. Max and Marlene pay taxes on a cash, calendar year basis. High priority, long-term goals shared by Max and Marlene include: 1) operating the farm at a profitable level, 2) realizing a comfortable standard of living for the family, 3) providing substantial financial assistance for the kids' college education, 4) funding a retirement program, and 5) passing the farm along to the children, should they want the opportunity to farm.

The farm is enrolled in the seven-year farm program. The AMTA payment for the 19X3 crop will be received in 19X3 with an expected payment of $.63 and $.24 per bushel for wheat and barley, respectively. This payment is made on the program yield, but applies to only 85 percent of base acreage. The Profit Farm's program yield is 58 bushels on wheat and 48 bushels on barley. The projected AMTA payment is $19,600.

Instructions

It's mid January 19X3. As the owner/manager of Profit Farm, you will decide when to market the 19X2 wheat crop still held in inventory. You will also determine how and when to price the 19X3 wheat production from 400 owned acres and 100 crop share acres. You can ignore the barley crop. The 50 tons of barley held in inventory will be sold in late January as planned for $87 per ton ($4.35 per cwt). Eighty percent of the 624-ton (12,480 bushel) X3 barley crop will be sold at harvest (August).

You have five opportunities to make wheat marketing decisions:

January 15
March 31
June 30
August 15
October 15

New market information will be provided for each marketing decision. All wheat not sold on or before October 15 will be placed on the December 31,19X3 balance sheet inventory and valued at the end-of-year price.

The marketing alternatives on the two wheat crops include:

1) Selling19X2 wheat (inventory)
    a) cash market on January 15, 0 to 5,020 bushels
    b) default cash market sale in March, all X2 wheat not sold on January 15th

2) Pre-harvest Pricing/Selling 19X3 wheat crop:
   a) cash market on August 15 or October 15.
   b) forward cash contract in March or June for August 15 delivery
   c) hedge by selling September futures contract(s) in January, March or June.
   d) hedge by purchasing a September put option in January, March or June.

Combinations of cash, forward cash and futures can be used to price your expected production. However, you cannot sell/price more than the expected production (31,000 bushels) before harvest using any combination of the various marketing alternatives.

You can lift a hedge prior to harvest by buying back futures contracts and/or selling any put options you purchased prior to the contract/option expiration. **You may not, however, cancel forward cash contracts.**

Forward cash contracts that are in excess of actual production will be settled by purchasing the shortage at the August 15 cash price. Cash forward contracting must be done in 1,000-bushel increments. Hedging and options involve 5,000-bushel contracts. Use of the hedging alternative will cost 2 cents per bushel for commissions and interest on margins. Use of options will involve a 1-cent per bushel commission.

You will not know your actual wheat yield until harvest (August) when you draw a yield from a pool that approximates the historical yields on the Profit's farm. The total yield on the yield slip shows what you can sell since it does not include the landlords share. The farm carries 65 percent yield coverage using Multiple Peril Crop Insurance with a $3.65 price election.

Each individual or team will track their marketing decisions on worksheets. Record your marketing decisions on the marketing ledger. You will calculate the net selling price for the X3 wheat crop sold in 19X3. You will also calculate accrual adjusted farm income.

Each individual or team will be asked to critique their marketing decisions at the end of the exercise.

"Did you make the best use of the market information available to you? "

"Did your selection of marketing tools do a reasonably good job of managing risk?"

"Did your risk management strategy fit the financial needs of the Profit Farm?"

The following are included for your information:

- The December 31, 19X2 Balance Sheet
- 19X2 Income Statement
- 19X3 Projected Cash Flow Budget
- Cash operating expenses for 19X2
- A wheat enterprise budget for Profit Farms, owned ground
- A wheat enterprise budget for Profit Farms, leased ground
- Market situation reports: January, March, June, August and October
- Current information on new crop wheat market conditions:
  - *current cash prices for Portland and local elevators*
  - *current forward cash contract prices for harvest delivery (if available)*
  - *CBOT September futures prices (if appropriate)*
  - *option premiums for CBOT September puts (if appropriate)*

Suggested Procedure

Evaluate cash flow needs, calculate breakeven prices and yields for wheat, consider marketing alternatives and develop a marketing plan.

Table 2. Balance Sheet for Max and Marlene Profit 12/31/X2

ASSETS	Cost	Market
Current assets		
Cash & checking	$21,664	$21,664
Savings	40,428	40,428
Marketable securities	1,250	2,210
Accounts Receivable	9,000	9,000
Inventories:		
Wheat (5,020 bu. @ $3.50)	17,570	17,570
Barley (50 tons @ $87)	4,350	4,350
Supplies	1,365	1,365
Prepaid expenses	1,256	1,256
Investment in growing crop	42,760	42,760
Total current assets	**$139,643**	**$140,603**
Noncurrent assets		
Machinery & equipment (schedule 1)	$121,635	$178.500
Coop. investment	7,500	7,500
Real estate (schedule 2)	620,000	937,500
Total noncurrent assets	**$749,135**	**$1,123,500**
Total business assets	$888,778	$1,264,103
Personal assets	XXX	$68,764
TOTAL ASSETS	**$888,778**	**$1,332,867**

LIABILITIES	
Current liabilities	
Accounts payable	$3,291
Notes due 12 months	32,070
Current portion term debt (schedule 3)	26,192
Accrued interest:	
Account payment & notes due 1 year	940
Noncurrent debt (schedule 3)	5,602
Accrued property taxes	1,944
Accrued income & social security tax	20,163
Deferred tax–current (schedule 4)	26,694
Total current liabilities	**$116,896**
Noncurrent liabilities	
Noncurrent portion term debt (schedule 3)	223,366
Total noncurrent liabilities	**$223,366**

	Cost	Market
Total current & noncurrent liabilities	$340,262	$340,262
Deferred tax noncurrent assets	XXX	59,422
Total business liabilities	**$340,262**	**$399,684**
Personal liabilities	XXX	8,199
TOTAL LIABILITIES	**$340,262**	**$407,883**

OWNER EQUITY		
Retained earnings	$548,516	$548,516
Contributed capital	0	0
Personal net worth	XXX	60,565
Valuation equity	XXX	315,903
TOTAL OWNER EQUITY	**$548,516**	**$924,984**
TOTAL LIABILITIES & OWNER EQUITY	**$888,778**	**$1,332,867**

Table 3. Income Statement for Max and Marlene Profit Year Ending 12/31/X2

REVENUES		
Cash grain sales	$190,812	
Inventory change (Schedule 5)	-39,580	$151,232
Change in accounts receivable (Schedule 5)		9,000
Government payments: AMTA		21,135
Gross revenue		$181,367
EXPENSES		
Cash operating expenses (Schedule 6)	$95,644	
Accrual adjustments: Unused assets (Schedule 7)	-1,719	
Unpaid items (Schedule7)	721	
Depreciation: Machinery	33,643	
Buildings & improvements	2,000	
Total Operating Expenses		$130,289
Interest: Cash	$27,139	
Change in accrued interest (Schedule 8)	-772	26,367
Net farm income from operations		$24,711
Gain/loss sale of farm capital assets		3,500
NET FARM INCOME		**$28,211**
Nonfarm income		
Wages	$15,780	
Interest & dividends	770	
Total nonfarm income		16,550
NET INCOME, BEFORE TAXES		**$44,761**
Income & social security taxes, cash	$4,394	
Change in accrued tax & deferred tax (Schedule 9)	+4,329	-8,723
NET INCOME, AFTER TAXES		**$36,038**

Table 4. Income Statement Supporting Schedules for Max and Marlene Profit Year Ending 12/31/X2

Schedule 5: Revenue Accrual Adjustments

Item	Beginning balance sheet	Ending balance sheet	Difference
Stored crops			
Winter wheat	-$48,750	+$17,570	-$31,180
Barley	-12,750	+4,350	-8,400
Total			-$39,580
Accounts receivable	-0	+$9,000	+$9,000

Schedule 6: Cash Operating Expenses

Item	$
Chemicals	$10,185
Crop insurance	2,325
Fertilizer	31,329
Fuel and lubrication	10,205
Hired labor	5,000
Insurance (property and liability)	2,012
Miscellaneous	10,120
Repairs	3,888
Seed	5,150
Taxes, personal and real estate	15,430
Total	**$95,644**

Table 5. Cash Flow Budget for Max and Marlene Profit Year Ending 12/31/X3

Item	Actual 'X2	Projected 'X3	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1. Beginning cash balance	$9,610	$21,664	$21,664	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000
Operating receipts:														
2. Crops	190,812	147,769	25,315							61,227	61,227			
3. Government payments	21,135	19,000										19,000		
4. Other														
5. Capital receipts: Machinery, real estate	3,500	3,500												3,500
6. Non-farm Income: Off-farm wages	15,780	15,777	1,753	1,753	1,753	1,753	1,753				1,753	1,753	1,753	1,753
7. Interest & dividends	770	1,317	152	165	100	100	100	100	100	100	100	100	100	100
8. **TOTAL CASH AVAILABLE** (add lines 1-7)	241,607	209,027	48,884	6,918	6,853	6,853	6,853	5,100	5,100	66,327	68,080	25,853	6,853	10,353
Operating expenses:														
9. Chemicals	10,185	10,185				8,125		2,060						
10. Custom														
11. Fertilizer	31,329	31,329				15,623			10,721		4,985			
12. Gas, fuel, oil	10,205	10,205	250	250	250	1,800	250	250	1,105	3,100	2,000	250	250	450
13. Insurance	4,337	4,337			709						1,616			2,012
14. Labor hired	5,000	5,000							1,500	3,500				
15. Marketing & transportation	2,106	2,106	720							693	693			
16. Rents & leases														
17. Repairs	15,430	15,430	2,500	2,500	500	1,000	500	250	250	1,500	3,200	250	480	2,500
18. Seed	10,120	10,120			5,950						4,170			
19. Storage														
20. Supplies	850	850	150	50	50	50	50	50	100	100	100	50	50	50
21. Taxes: real estate & personal property	3,888	3,888				1,944						1,944		
22. Misc.	2,194	2,194	183	183	183	183	183	183	183	183	183	183	183	181
23. **Total cash operating expenditures** (add lines 9-22)	95,644	95,644	3,803	2,983	7,642	28,725	983	2,793	13,859	9,076	16,947	2,677	963	5,193

Table 5. Cash Flow Budget *continued*

Item	Actual '$X2$	Projected '$X3$	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
24. Capital expenditures: Machinery & equipment		$15,000												$15,000
25. Building & improments														R. weeder
26. Other expenditures: Family living	42,596	43,000	3,583	3,583	3,583	3,583	3,583	3,583	3,583	3,583	3,583	3,583	3,583	3,587
27. Investments	2,000	2,000		2,000										
28. Income tax & social security	4,394	20,163		20,163										
29. Term debt payments: Principal	24,027	27,395		3,965	3,240							2,537	14,936	2,717
30. Interest	23,155	20,892		1,312	592							13,525	4,274	1,189
31. **TOTAL CASH REQUIRED** (add lines 23-30)	191,816	224,094	7,386	34,006	15,057	32,308	4,566	6,376	17,442	12,659	20,530	22,322	23,756	27,686
32. **CASH AVAILABLE LESS CASH REQUIRED** (add lines 23-30)	49,791	–15,067	41,498	–27,088	–8,204	–25,455	2,287	–1,276	–12,342	53,668	47,550	3,531	–16,903	–17,333
33. Inflows from savings	0	15,482		15,000							482			
34. Cash position before borrowing	49,791	415	41,498	–12,088	–8,204	–25,455	2,287	–1,276	–12,342	53,668	48,032	3,531	–16,903	–17,333
35. Money to be borrowed: Operating loans		122,783		17,088	13,204	30,455	2,713	6,276	17,342			1,469	21,903	12,333
36. Term debt		10,000												10,000
37. Operating loan payments: Principal		119,148	32,070							44,402	42,676			
38. Interest		4,895	273								4,266	356		
39. Outflows to savings		4,155	4,155											
40. Ending cash balance	21,664	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Loan balances (at end of period):		35,705		17,088	30,292	60,747	63,460	69,736	87,078	42,676		1,469	23,372	35,705
41. Current year's operating loan														
42. Previous year's operating loan	32,070													
43. Term debt loans	249,558	232,163	249,558	245,593	242,353	242,353	242,353	242,353	242,353	242,353	242,353	239,816	224,880	232,163
44. Total loans	281,628	267,868	249,558	262,681	272,645	303,100	305,813	312,089	329,431	285,029	242,353	241,285	248,252	267,868
Consistency check:														
45. Total inflows (8+33+35+36)			48,884	39,006	20,057	37,308	9,566	11,376	22,442	66,327	68,562	27,322	28,756	32,686
45. Total outflows (31+37+38+39+40)			48,884	39,006	20,057	37,308	9,566	11,376	22,442	66,327	68,562	27,322	28,756	32,686
45. Budgeting error (45-46)			0	0	0	0	0	0	0	0	0	0	0	0

Table 6. Summary of Projected Economic Costs Per Acre for Winter Wheat and Summer Fallow, Owned and Leased Land

Item		Cost per acre Owned	Leased
Variable costs			
Seed (60 lbs. @ 13.9¢)		$8.34	$8.34
Fertilizers:	Nitrogen, Aqua (70 lbs. @ 31.1¢)	21.77	14.59
	Nitrogen, Sol. 32 (10 lbs. @ 47.2¢)	4.72	3.16
	Phosphorous, 10-34-0 (10 lbs. @ 46.6¢)	4.66	3.12
	Sulfur, 12-0-0-26 (10 lbs. @ 24.6¢)	2.46	1.65
Herbicides:	Roundup (s.f.) (12 oz. @ 42¢)	5.04	5.04
	Harmony Extra (1/3 oz. @ $16.05)	5.35	5.35
	MCPA (_ pt. @ $2.55)	1.28	1.28
Crop insurance		3.46	2.32
Fuel & lubrication ($10,205 whole farm x .52 allocation ÷ 500 acres)		10.61	10.61
Repairs ($15,430 whole farm x .52 allocation ÷ 500 acres)		16.05	16.05
Hired labor ($5,000 whole farm x .52 allocation ÷ 500 acres)		5.20	5.20
Operator labor (2,500 hrs. x $10 x .52 allocation ÷ 500 acres)		26.00	26.00
Miscellaneous ($5,150 whole farm x .52 allocation ÷ 500 acres)		5.36	5.36
Interest on operating capital (total variable costs ÷ 2 x 10%)		6.02	5.41
Total variable costs		$126.32	$113.48
Fixed costs			
Depreciation ($33,643 whole farm x .52 allocation ÷ 500 acres)		$34.99	$34.99
Personal property taxes & insurance on machinery ($5,255 whole farm x .52 allocation ÷ 500 acres)		5.47	5.47
Real estate taxes ($3.24 per acre x 2 acres)		6.48	0.00
Interest on debt			
Machinery ($7,367 total interest x .52 allocation ÷ 500 acres)		7.66	7.66
Land ($13,525 total interest ÷ 1,200 acres x 2 acres)		22.54	0.00
Interest on equity			
Machinery ($213,500 mkt. – $116,651 debt x 10% interest x .52 allocation ÷ 500 acres)		10.07	10.07
Land ($937,500 mkt. real estate – $150,000 bldgs. – $154,575 debt x 4% interest ÷ 1,200 acres x 2 acres)		42.20	0.00
Management (65 bu. x $3.25 mkt. x 7%)		14.79	14.79
Total fixed costs		$144.20	$72.98
TOTAL ECONOMIC COSTS PER ACRE		$270.52	$186.46
TOTAL ECONOMIC COSTS PER BUSHEL @ 65 bu. owned / 43.3 bu. leased		$4.16	$4.31

Table 7. Summary of Projected Cash Expenditures Per Acre for Winter Wheat and Summer Fallow, Owned and Leased Land

Item	$ per acre	
	Owned	**Leased**
Variable costs		
Seed	$8.34	$8.34
Fertilizer	33.61	22.52
Herbicides	11.67	11.67
Crop insurance	3.46	2.32
Fuel & lubrication ($10,205 whole farm x .52 allocation ÷ 500 acres)	10.61	10.61
Repairs ($15,430 whole farm x .52 allocation ÷ 500 acres)	16.05	16.05
Hired labor ($5,000 whole farm x .52 allocation ÷ 500 acres)	5.20	5.20
Miscellaneous ($5,150 whole farm x .52 allocation ÷ 500 acres)	5.36	5.36
Interest on operating capital loan	5.18	4.71
Total variable costs	$99.48	$86.78
Fixed costs		
Personal property taxes & insurance on machinery ($5,255 whole farm x .52 allocation ÷ 500 acres)	$5.47	$5.47
Real estate taxes	6.48	0
Interest on machinery & land debt	30.20	7.66
Total fixed costs	$42.15	$13.13
Other expenditures		
Principal on term debt		
Machinery ($24,858 whole farm x .52 alloc. ÷ 500 acres)	$25.85	$25.85
Land ($2,537 ÷1,200 acres x 2 acres)	4.23	0
Personal withdrawals ($45,000 whole farm x .52 allocation ÷ 500 acres)[a]	46.80	46.80
Total other expenditures	$76.88	$72.65
TOTAL CASH EXPENDITURES PER ACRE	$218.51	$172.56
TOTAL CASH EXPENDITURES PER BUSHEL		
@ 65 bu. owned / 43.3 bu. leased	$3.36	$3.99

[a] Does not include income and social security taxes.

Form 1. Wheat Mark eting Ledger—Ne w Crop Wheat Pricing Status Sheet

	Pre-harvest			Harvest	Post-harvest	
	January	**March**	**June**	**August**	**October**	**December**
Expected production bushels	31,000			—	—	—
Priced: bushels						
Forward cash	NA			—	—	—
Futures				—	—	—
Options				—	—	—
– Total price				—	—	—
= Un-priced: bushels				—	—	—
Actual production	—	—	—		—	—
– Forward cash and August cash sales	—	—	—		—	—
= Storage	—	—	—		—	—
– Cash sales	—	—	—	—		—
= Inventory	—	—	—	—		

Form 2. Wheat Mark eting Ledger—Cash sales

Wheat inventory sales (Old crop—19X2)

Sale month	**Bushels**	**Price**	**Total**
January	_____	$3.55	$_____
March	_____	$_____	$_____ (D)
Total	5,020		

Forward cash sales for August delivery (New crop—19X3)

	March 31	**June 30**	**Total**
Bid price	_____	_____	X
Quantity	_____	_____	_____ (E)
Total revenue	_____	_____	_____ (F)

Cash sales (New Crop—19X3)

	August 15	**Oct. 15**	**Total**
Price	_____	_____	X
Quantity	_____	_____	_____ (G)
Revenue	_____	_____	_____ (H)

Total 19X3 cash market sales = E + G _____Bu. (1)

Form 3. Wheat Mark eting Ledger—Futur e Pricing

CBOT September 19X3 futures January hedge

	January	March	June	August	Total	
Futures price	_____	_____	_____	_____	×	
Bushels sold	_____	×	×	×	_____	
Bushels bought	×	_____	_____	_____	_____	
Gain (loss)/bu.		_____	_____	_____	×	
Total gain (loss)		_____	_____	_____	_____	(A1)

CBOT September 19X3 futures March hedge

	March	June	August	Total	
Futures price	_____	_____	_____	×	
Bushels sold	_____	×	×	_____	
Bushels bought	×	_____	_____	_____	
Gain (loss)/bu.	_____	_____	_____	×	
Total gain (loss)	_____	_____	_____	_____	(A2)

CBOT September 19X3 futures June hedge

	June	August	Total	
Futures price	_____	_____	×	
Bushels sold	_____	×	_____	
Bushels bought	×	_____	_____	
Gain (loss)/bu.	_____	_____	×	
Total gain (loss)	_____	_____	_____	(A3)

Total futures gain (loss) = A1 + A2 + A3 _____ (A)

Note: Transaction costs are calculated on the Options price sheet.

Form 4. Wheat Mark eting Ledger—Options Pricing

CBOT September 19X3 puts January hedge

	January	March	June	August	Total	
Strike price	_____	_____	_____	_____	×	
Premium	_____	_____	_____	_____	×	
Bushels bought	_____	×	×	×	_____	
Bushels sold	×	_____	_____	_____	_____	
Gain (loss)/bu.		_____	_____	_____		
Total gain (loss)		_____	_____	_____	_____	(B1)

CBOT September 19X3 puts March hedge

	March	June	August	Total	
Strike price	_____	_____	_____	×	
Premium	_____	_____	_____	×	
Bushels bought	_____	×	×	_____	
Bushels sold	×	_____	_____	_____	
Gain (loss)/bu.	_____	_____	_____		
Total gain (loss)	_____	_____	_____	_____	(B2)

CBOT September 19X3 puts June hedge

	June	August	Total	
Strike price	_____	_____	×	
Premium	_____	_____	×	
Bushels bought	_____	×	_____	
Bushels sold	×	_____	_____	
Gain (loss)/bu.	_____	_____		
Total gain (loss)	_____	_____	_____	(B3)

Total options gain (loss) = B1 + B2 + B3 _____ **(B)**

Hedging transaction adjustment

A + B = Hedging gain (loss) $_____

– Futures expense: _____ bu. sold x $.02 = $_____

– Options expense:_____ bu. sold x $.01 = $_____

= Net hedging gain (loss) $_____ (C)

Crop and Weather Situation

Extemely cold weather persists in the Plains as far south as Oklahoma. Even with limited snow cover in many areas, crop damage is expected to be minimal.

Winter wheat and rye seedings: released January 19X3

Winter wheat and rye: area seeded, United States, 19X1-X3

Item	Area seeded			Area seeded as percentage of previous crop year		
	1,000 acres			*Percent*		
	19X1	**19X2**	**19X3**	**19X1**	**19X2**	**19X3**
Winter wheat	51,570	49,250	49,650	101	96	101
Rye	1,495	1,605	1,690	07	107	105

Market Situation—Portland: $4.05 Local cash: $3.55

January's WASDE report showed only minor revisions to December's report. Domestic use is unchanged from December. Projected U.S. exports are down 5 million bushels and production is unchanged, leaving ending stocks higher by a like amount. The range on USDA's projected average farm level wheat price is down $.05 from last month at $3.45 to $3.65.

U.S. wheat supply, use and ending stocks. (million bushels)

	19X2	**19X1**	**19X0**	**5-year avg.**
Supply	2,945	3,036	2,975	2,918
Use	2,435	2,456	2,350	2,395
Ending stocks	510	580	625	523
Stocks-to-use ratio	21%	24%	27%	21.9%

Projected global supplies are up from the previous month, primarily because of a larger projected Australian crop. The damage to Australia's wheat crop from the late spring frost appears to be less than initially projected. Projected use is also up as China's imports are projected up 2 million metric tons above December estimates.

World wheat production, use and ending stocks. (million metric tons)

	19X2/X3	**19X1/X2**	**19X0/X1**	**5-year avg.**
Production	550	540	535	563.3
Use	548	555	560	565.3
Ending stocks	120	118	133	122.3
Stocks-to-use ratio	22%	21%	24%	21.6%

Decision: Sell wheat in inventory or hold until March.

Examine pricing opportunities for wheat to be delivered at harvest

Forward cash contract bid: August delivery	= na
CBOT Sep wheat futures	= 335.00
Expected basis	= –10

Future price	+	Exp. harvest basis	=	Exp. net price
_____		_____		_____

CBOT options

Strike price	**Put premium**
Sep 290	
Sep 300	9.25
Sep 310	13.50
Sep 320	17.50
Sep 330	19.50
Sep 340	25.50

Strike price	+	Exp. harvest basis	–	Premium	=	Exp. net price
_____		_____		_____		_____
_____		_____		_____		_____

Should I sell some wheat today? Yes/No Quantity _____

How? _____

Why? _____

Crop and Weather Situation

- Prospective plantings: Released March 30, 19X3
- Corn growers inted to plant 72.0 million acres of corn for all purposes in 19X3, down 8.9 percent form last year and 1.4 percent above 19X1.
- Winter wheat seeded area totals 49.8 million acres, up slightly from the previous estimate and 1 percent above last year.
- Durum wheat intended plantings are 3.4 million acres, up 21 percent from last year.

Market Situation—Portland: $3.80 Local cash: $3.30

Projected U.S. ending stocks for 19X2/X3 are up 15 million bushels from last month because of a reduction in exports and a slight upward revision in production. The smaller projected exports are due to a slower than expected pace of sales and shipments to date. The projected range on USDA's average farm level wheat price is down 5 cents on each end to $3.40 to $3.60.

U.S. wheat supply, use and ending stocks. (million bushels)

	19X2	**19X1**	**19X0**	**5-year avg.**
Supply	2,948	3,036	2,975	2,918
Use	2,423	2,456	2,350	2,395
Ending stocks	525	580	625	523
Stocks-to-use ratio	22%	24%	27%	21.9%

The 19X2/X3 world production and ending stocks are up from last month, with a larger Australian crop accounting for most of the gains. Forecast imports are down for Russia and several other countries, but up for Morocco. On the export side, projected exports are higher for Eastern Europe and India, but lower for the EU and the United States.

World wheat production, use and ending stocks. (million metric tons)

	19X2/X3	**19X1/X2**	**19X0/X1**	**5-year avg.**
Production	554	540	535	563.3
Use	546	555	560	565.3
Ending stocks	126	118	133	122.3
Stocks-to-use ratio	23%	21%	24%	21.6%

Examine pricing opportunities for wheat to be delivered at harvest
Forward cash contract bid for August 15 delivery
= Portland $3.50 Local $3.00
CBOT Sep wheat futures = 321.00
Expected basis = –10

Future price	+	Exp. harvest basis	=	Exp. net price
_____		_____		_____

CBOT options

Strike price	**Put premium**
Sep 290	7.50
Sep 300	11.50
Sep 310	15.25
Sep 320	20.00
Sep 330	27.00
Sep 340	36.00

Strike price	+	Exp. harvest basis	–	Premium	=	Exp. net price
_____		_____		_____		_____
_____		_____		_____		_____

Should I sell some wheat today? Yes/No Quantity _____

How? _____

Why? _____

Form 7. June 30

With planting of 19X3/X4 crops still underway in the Northern Hemisphere and several months away in the Southern Hemisphere, early-season projections in this report are highly tentative. Methods used to project U.S. acreage and yields are noted in the footnotes of each table. Today's National Agricultural Statistics Service forecasts are used for U.S. winter wheat.

U.S. Wheat Supply and Use[a]

Item	19X1/X2	19X2/X3 Est.	19X3/X4 Projections	
			May	June
	Million acres			
Area				
Planted	72.2	70.0	70.7[c]	70.5[c]
Harvested	62.7	61.4	61.4[c]	60.9[c]
	Bushels			
Yield per harvested acre	38.2	37.8	37.8[c]	38.5[c]
	Million Bushels			
Beginning stocks	531	580	525	545
Production	2,396	2,321	2,323	2,345
Imports	109	78	100	100
Supply, total	3,036	2,979	2,948	2,990
Food	872	855	875	865
Seed	96	98	98	98
Feed and residual	272	300	250	250
Domestic, total	1,240	1,233	1,233	1,220
Exports	1,228	1,201	1,200	1,200
Use, total	2,456	2,434	2,423	2,420
Ending stocks, total	580	545	525	570
Farmer-owned reserve	6	0		
CCC inventory	150	142		
Free stocks	424	369		
Outstanding loans	67	50		
Average farm price ($/bu.)[b]	3.26	3.50	3.35–3.65	3.25–3.65

Note: Totals may not add due to rounding

[a] Marketing year beginning June 1.

[b] Marketing year weighted average price received by farmers.

[c] For May planted acres reported in March 31, 19X3, Prospective Plantings. Harvested acres for spring wheat (including durum) projected using harvested-to-planted ratios by state for previous ten years (excluding high and low years). Projected yields are an average for previous ten years (excluding high and low years). For June, winter wheat harvested acreage and yield reported in June 12 Crop Production. Planted and harvested acres for spring wheat have been adjusted because of cold, wet conditions in the Northern Plains.

Crop and Weather Situation

Wheat yields in Texas and Oklahoma exceed earlier estimates. Crop conditions in the Northern Plains show 80 percent of the wheat crop rated as good to excellent, and only 4 percent rated poor.

Market Situation—Portland: $3.95 Local cash: $3.45

Projected 19X3/X4 U.S. wheat supplies are up 42 million from last month because of larger carryin stocks and a slightly bigger 19X3 crop. Projected production is up 20 million bushels from last month, with the survey-based winter wheat forecast up 25 million bushels. A smaller spring wheat crop is projected because of lower planted and harvested acres. The projected range on USDA's 19X3 average wheat price is down 10 cents from last month on the lower end to $3.25 to $3.65.

U.S. wheat supply, use and ending stocks. (million bushels)

	19X3	**19X2**	**19X1**	**5-year avg.**
Supply	2,989	2,979	3,036	2,918
Use	2,413	2,434	2,456	2,395
Ending stocks	576	545	580	523
Stocks-to-use ratio	24%	22%	24%	21.9%

Projected 19X3/X4 global wheat stocks are up from last month and exceed a year earlier. Global production is up slightly as larger crops in Australia, and Pakistan offset smaller output in China. Global imports are up slightly, with imports up one million metric tons for China and down 500,000 tons for Pakistan.

World wheat production, use and ending stocks. (million metric tons)

	19X3/X4	**19X2/X3**	**19X1/X2**	**5-year avg.**
Production	585	560	540	563.3
Use	570	558	555	565.3
Ending stocks	135	121	118	122.3
Stocks-to-use ratio	24%	22%	21%	21.6%

Examine pricing opportunities for wheat to be delivered at harvest
Forward cash contract bid for August 15 delivery
= Portland –$3.65 Local –$3.15
CBOT Sep wheat futures = 331.00
Expected basis = –10

Future price	+	Exp. harvest basis	=	Exp. net price
_____		_____		_____

CBOT options

Strike price	**Call premium**	**Put premium**
Sep 300		2.50
Sep 310		5.75
Sep 320		8.75
Sep 330		11.75
Sep 340		18.75
Sep 350		26.25

Strike price	+	Exp. harvest basis	–	Premium	=	Exp. net price
_____		_____		_____		_____
_____		_____		_____		_____

Should I sell some wheat today? Yes/No Quantity _____

How? _____

Why? _____

Crop and Weather Situation

All wheat production is placed at 2.42 billion bushels, up 2 percent over 19X2. Based on August 1 conditions, the U.S. yield is forecast at 41 bushels per acre, the third highest yield on record.

Market Situation—Portland: $3.45 Local cash: $2.95

Forecast U.S. 19X3 wheat production is down 4 million bushels from last month, but 41 million bushels above the X2 wheat crop. Forecast imports are down 5 million bushels from last month. The smaller supplies are reflected in reduced 19X3 ending stocks, as use projections are unchanged from July. The projected price range is up 5 cents on each end to $3.30 to $3.70 per bushel.

U.S. wheat supply, use and ending stocks. (million bushels)

	19X3	**19X2**	**19X1**	**5-year avg.**
Supply	2,987	2,979	3,036	2,918
Use	2,420	2,434	2,456	2,395
Ending stocks	576	545	580	523
Stocks-to-use ratio	23%	22%	24%	21.9%

Projected 19X3/X4 global wheat production, use and ending stocks are down from last month. Global production is down 6 million tons from last month as smaller expected crops in Ukraine, India, Kazakstan and Eastern Europe more than offset larger output in China and Canada. Forecast imports are down 1 million tons for China. Forecast exports are down 0.5 million tons for the EU, India and Ukraine, but up 0.5 million for Canada. Projected ending stocks are 12 million tons below last month's below last month's projection.

World wheat production, use and ending stocks. (million metric tons)

	19X3/X4	**19X2/X3**	**19X1/X2**	**5-year avg.**
Production	581	563	540	563.3
Use	573	560	555	565.3
Ending stocks	127	120	118	122.3
Stocks-to-use ratio	22%	22%	21%	21.6%

Examine pricing opportunities for wheat to be delivered at harvest

CBOT Sep wheat futures = 305.00

CBOT options

Strike price	**Put premium**
Sep 300	.25
Sep 310	.50
Sep 320	5.25
Sep 330	15.00
Sep 340	25.00
Sep 350	35.00
Sep 360	45.00

Should I sell some wheat today? Yes/No Quantity _____

How? _____

Why? _____

Crop and Weather Situation

Corn grain production is forecast at 9.4 billion bushels, virtually unchanged from last month and up 4 percent from 19X2. Yields are expected to average 131.0 bushels per acre, unchanged from last month but up 4.0 bushels from a year ago.

Market Situation—Portland: $3.50 Local cash: $3.00

Forecast U.S. 19X3 wheat production is unchanged from last month, but 39 million bushels above the X2 wheat crop. Forecast imports are unchanged from last month. Ending stocks are down slightly, but stocks-to-use ratio remained unchanged. The projected farm level wheat price range is up 5 cents on each end to $3.40 to $3.80 per bushel.

U.S. wheat supply, use and ending stocks. (million bushels)

	19X3	**19X2**	**19X1**	**5-year avg.**
Supply	2,986	2,979	3,036	2,918
Use	2,420	2,434	2,456	2,395
Ending stocks	566	545	580	523
Stocks-to-use ratio	23%	22%	24%	21.9%

Projected 19X3/X4 global wheat production, use and ending stocks are down slightly from last month. Global production is down 4 million tons from last month as smaller expected crops in Eastern Europe more than offset larger output in China. Forecast imports are down 1 million tons for China. Forecast exports are down 0.5 million tons for the EU, India and Ukraine, but up 0.5 million for Canada. Projected ending stocks are 5 million tons below last month's projection.

World wheat production, use and ending stocks. (million metric tons)

	19X3/X4	**19X2/X3**	**19X1/X2**	**5-year avg.**
Production	575	563	540	563.3
Use	576	560	555	565.3
Ending stocks	119	122	118	122.3
Stocks-to-use ratio	21%	22%	21%	21.6%

Form 10. Crop Sales Summar y Sheet

Sales of 19X2 crop

	Quantity		**Price**		**Revenue**
Barley	50 ton	×	$87	=	$4,350
Wheat	5,020 bu.			+	$_____(D: marketing ledger)
			Total	=	(Y) $_____

Forward contract revenue adjustment[a]

19X3 total wheat production		_____ bu.
19X3 wheat forward contracted	–	_____ bu. (E: marketing ledger)
	=	–_____ bu.
	×	$2.95
Forward contract revenue adjustment	=	$_____

19X3 Wheat average sales price (see wheat marketing ledger.)

Cash sales		$ _____ (H: marketing ledger)
Forward cash sales	+	$ _____ (F: marketing ledger)
Forward contract revenue adjustment	+	$ _____ ([a] adding a negative number)
Net hedging gain (loss)	+	$ _____ (C: marketing ledger)
Total revenue received	=	$ _____
Total 19X3 wheat sold	÷	_____ bu. (I marketing ledger)
Average price per bushel sold	=	$ _____

Sales of 19X3 crop (transfer from above)

	Quantity		**Price**		**Revenue**
Barley	500 ton	×	$85	=	$42,500 (J)
Wheat	_____ bu.	×	$ ____	=	$ _____ (K)
		Total	J+K	=	(Z) $_____

Total grain sales made in 19X3 = Y + Z (W) $ _____

[a]Use only if the quantity of wheat y ou forward contracted exceeded total wheat pr oduction.

Form 11. Income Statement Max and Marlene Pr ofit Year Ending 12/31/X3

REVENUES			
Grain sales (see cr op sales summar y sheet)		$_____ (W)	
Inventory change (see belo w)	+/–	$_____	
Gross revenue from cr ops			= $_____
Insurance indemnity (ma y not apply)	+	$_____	
Change in accounts r eceivable	+/–	$ 0	
Go vernment payments: AMTA	+	$19,610	
Gross revenue			= $_____ (J)
EXPENSES			
Cash operating expenses		$93,175	
Crop insurance expense	+	$ 2,325	= $95,500
Accrual adjustments:			
Change in prepaid expenses	+	$ 0	
Change in accounts r eceivable	+	$ 0	
Depreciation:	+	$ 35,000	
Total operating expenses			= $130,500
Cash interest paid	+	$ 26,500	
Change in accrued inter est	+	$ 0	
Total expense			= $157,000 (K)
Net farm income fr om operations		(J – K)	= $_____
Gain (loss) sale of farm ca pital assets	+	$ 0	
NET FARM INCOME			= $_____
Nonfarm income	+	$16,500	
NET INCOME, BEFORE TAXES			= $_____
Term debt principle:		$25,000	
Family living:		$43,000	
Taxes:		?	

19X3 Crop Inventory

Crop	Produced[a]	Sales[a]	Inventory[a]	Value of Inventory
Barley@ $85/ton	624 tons	500 tons	124 tons	$10,540
Wheat @ $3.45/bu.	_____	_____	_____	$ _____[b]

[a] 19X3 wheat production, sales and inventory information is summarized on the Ne w Crop Wheat Pricing Status Sheet

[b] Transfer the wheat inventory value to the table belo w.

Form 11. Income Statement Max and Marlene Pr ofit Year Ending 12/31/X3 contin ued

19X3 Accrual adjustment to revenue based on inventory change

Stored crops	Beg. bal. sheet value	End. bal. sheet value	Difference
Barley	– $ 4,350	+ $10,540	= $6,190 (a)
Wheat	– $17,570	+ $_____	= $_____ (b)
Total		a + b	= $_____ [a]

[a] Transfer to income statement.

Appendix A

Glossary of Terms

At-the-Money:

A term used to describe a put or call option with a strike price that is equal to the current market price of the underlying futures contract. An at-the-money option has no intrinsic value, so the entire premium represents time value.

Basis:

The difference between the cash price and the futures price (the local cash price minus the futures price). The outcome of all futures and options based marketing strategies is a combination of what happens to a cash position and a futures position. Thus, how the two markets behave relative to each other determines the actual price from hedging. Basis provides a single value that reflects this relative relationship between the two markets. In a broader sense, basis can measure the relationship between any two market prices. Therefore, the term is sometimes used to describe the relationship between two cash markets (for example, the local cash price and the Portland cash price).

Basis Risk:

The risk associated with not being able to predict the basis accurately. The outcome of a hedged position is determined by the actual basis relative to the expected basis. Thus, the accuracy of the basis prediction (expected basis) determines the actual hedge price relative to the expected hedge price. Basis risk that is lower than the risk associated with a cash position is necessary for hedging to reduce price risk.

Broker:

An agent that conducts or arranges for actual futures and options trades per a customer's instructions. The broker is represented by a firm that has access to the trading floor, and charges a commission for this service.

Call Option:

The right (but not the obligation) to buy a specified futures contract at a stated price on or before a designated date.

Cash Market:

A market which focuses on buying and selling the physical commodity for immediate or near term delivery. Since the focus of a cash market is the actual commodity, your commodity will actually be delivered and sold to a cash market.

Commission:

The fee charged by the broker for conducting futures and options trades on your behalf. Such fees vary widely, and generally depend on trading volume and the additional services provided by the brokerage firm.

Commodity Option:
The right (but not the obligation) to a specified commodity futures contract position at a stated price during a designated time period. An option can either be the right to a short futures position (a put) or the right to a long futures position (a call).

Contract Month:
The calendar month when a futures contract matures (also called the delivery month). The contract month establishes a time frame for potential delivery of the commodity (which influences the value of the contract) and determines the last trading day of the futures contract.

Exercising an Option:
The processs used by the holder of an option to convert the right to a specified futures position at a stated price into an actual futures position.

Exercise Price:
See Strike Price.

Expiration Date:
The date when the option holder loses the right to exercise the option. The expiration date for commodity options is determined by the contract month of the underlying futures contract. Expiration dates vary, but for grains the date usually occurs sometime late in the month just prior to the contract month of the underlying futures contract.

Extrinsic Value:
See Time Value.

Futures Contract:
A transferable and legally binding agreement whereby the seller agrees to deliver and the buyer agrees to accept delivery of a standardized amount and quality of a commodity at a specified location during a designated time period. The obligation created by the sale or purchase of a futures contract can be fulfilled in two ways. A seller can offset the promise by taking the opposite position (a buy) on the same futures contract, or deliver the commodity per the agreement. A buyer can offset the promise by taking the opposite position (a sell) on the same futures contract, or accept delivery of the commodity per the agreement.

Grantor:
See Writer.

Hedging:
The practice of offsetting price risk associated with the cash market by simultaneously holding an offsetting position in the futures market.

Hedging Costs:
Transaction costs associated with being involved in the futures market as a result of hedging or trading options. These generally include broker's commissions and the interest cost associated with having money deposited in your margin account. Although hedging costs vary depending on commissions, interest rates, and the period of time you maintain a futures or option position, hedging costs are generally about 1 to 4 cents per bushel.

Holder:
The buyer (or owner) of a commodity option. The holder has the right (but not the obligation) to enter into the specified futures position at the stated (strike) price.

In-the-Money:
A commodity option that has value if exercised immediately. A put is in-the-money if its strike price is above the current market price of the underlying futures contract. A call is in-the-money if its strike price is below the current market price of the underlying futures contract.

Initial Margin:
The initial deposit necessary to open a long or short futures position. See Margin.

Intrinsic Value:
The value of a commodity option if immediately exercised. Intrinsic value for an in-the-money put is equal to the strike price minus the current market price of the underlying futures contract. Intrinsic value for an in-the-money call is equal to the current market price of the underlying futures contract minus the strike price. At-the-money and out-of-the-money options have no intrinsic value.

Long Position:
The designation given to a situation where one has purchased a futures contract. An individual in a long position has an obligation to offset the long position with the sale of the same futures contract, or accept delivery of the commodity.

Maintenance Margin:
The minimum amount of money per contract that must be kept on deposit as losses occur. See Margin.

Margin:
Money deposited by buyers and sellers of futures contracts and sellers of options to ensure performance. The initial margin is the amount that must be deposited at the time an order to buy or sell a futures contract or sell an option is placed. If losses occur, the initial margin is reduced by the amount of the loss. When the initial margin less the loss reaches a minimum level (maintenance margin), a margin call is triggered and additional money must be deposited to keep the position.

Margin Call:
A call from a broker for additional funds to bring the margin up to some minimum level. See Margin.

Nearby Futures Contract:
The futures contract month with a maturity closest to the current date or closest to some other specified date.

Offset:
The commonly used mechanism for eliminating a futures position by taking an opposite position in the same futures contract. A short position (sold a futures contract) can be offset with a long (buying the same futures contract). Conversely, a long position (bought a futures contract) can be offset with a short (selling the same futures contract).

Option:
See Commodity Option.

Out-of-the-Money:
A commodity option that has no value if exercised immediately. A put is out-of-the-money if its strike price is below the current market price of the underlying futures contract. A call is out-of-the-money if its strike price is above the current market price of the underlying futures contract.

Premium:
The market price (or value) of the option, which is determined by the sum of intrinsic and time value. Grain option premiums are quoted in cents per bushel.

Price Risk:
The risk associated with an unexpected and unfavorable change in the cash market price.

Put:
The right (but not the obligation) to sell a specified futures contract at a stated price on or before a designated date.

Round Turn:
The process of entering the futures market with a long or short position and then offsetting your position with an opposite transaction. For futures contracts, brokers commissions are quoted per contract for a round turn.

Seat:
A position on an exchange that gives the holder the right to conduct actual trades on the trading floor. The number of seats is limited and owners can sell the seat to someone else.

Short Position:
The designation given to a situation where one has sold a futures contract. An individual in a short position has an obligation to offset the short position with a buy on the same futures contract, or deliver the commodity.

Speculating:
Buying and selling futures or options contracts for the purpose of earning a profit by correctly anticipating commodity price changes. Speculating in commodity futures and options is generally considered a high risk investment strategy. Speculation occurs whenever a futures/options position is maintained without an offsetting position in the cash market.

Strengthening Basis:
Occurs when the basis is getting larger. Since basis can be a positive or negative number, a stregthening basis means larger positive number or a smaller negative number. Basis gets stronger whenever the cash price increases relative to the futures price.

Strike Price:
The price at which the holder of a commodity option has the right to enter into the specified futures position should the holder choose to exercise (also called the exercise price or striking price). The holder of a put has the right to a short futures position at the strike price. The holder of a call has the right to a long futures position at the strike price.

Time Value:
The amount buyers are willing to pay for an option in anticipation that a change in the price of the underlying futures contract over time will bring about an increase in the option's value (also called extrinsic value). The premium (which represents the option's market value) is composed of time value and intrinsic value. Thus, the amount by which the premium exceeds the option's intrinsic value represents time value. For at-the-money and out-of-the-money options (which have no intrinsic value), the entire premium represents time value.

Trading Pit:
An area of the exchange's trading floor where the actual trading of a specific futures contract or option takes place.

Weakening Basis:
Occurs when the basis is getting smaller. Since basis can be a positive or negative number, a weakening basis means a smaller positive number or a larger negative number. Basis gets weaker whenever the cash price decreases relative to the futures price.

Writer:
The seller of an option (also called the grantor). For a put, the writer has the obligation (but not the right) to give the option holder a short position on the underlying futures contract at the strike price. For a call, the writer has the obligation (but not the right) to give the option holder a long position on the underlying futures contract at the strike price.

Underlying Futures Contract:
The specific futures contract that the option conveys the right to sell (for a put) or buy (for a call).

Appendix B

Table 1. Grain Futures Contracts Currently Traded on US Exchanges

Exchange	Commodity	Contract Quantity	Contract Months
Chicago Board of Trade (CBT)	Corn	5000 bu.	Mar, May, Jul, Sep, Dec
Chicago Board of Trade (CBT)	Wheat (soft red winter)	5000 bu.	Mar, May, Jul, Sep, Dec
Chicago Board of Trade (CBT)	Oats	5000 bu.	Mar, May, Jul, Sep, Dec
Kansas City Board of Trade (KC)	Wheat (hard red winter)	5000 bu.	Mar, May, Jul, Sep, Dec
Minneapolis Grain Exchange (MPLS)	Wheat (hard red spring)	5000 bu.	Mar, May, Jul, Sep, Dec
Minneapolis Grain Exchange (MPLS)	Wheat (soft white)	5000 bu.	Mar, May, Jul, Sep, Dec
MidAmerica Commodity Exch. (MCE)	Corn	1000 bu.	Mar, May, Jul, Sep, Dec
MidAmerica Commodity Exch. (MCE)	Oats	1000 bu.	Mar, May, Jul, Sep, Dec
MidAmerica Commodity Exch. (MCE)	Wheat (soft red winter)	1000 bu.	Mar, May, Jul, Sep, Dec

Note: Put and call options with a variety of strike prices are available for most of the listed futures contracts.